Attachment 1: Stakeholder Comments on Draft Recommendations and WE&T Guidance Plan

This attachment includes detailed comments from the following stakeholders:

COMMENTS ON DRAFT SUMMARY RECOMMENDATIONS

Comments from IOUs and CPUC

- Energy Division, California Public Utilities Commission
  - Tory Francisco
  - Lisa Paulo
- Pacific Gas & Electric Company
- San Diego Gas & Electric Company
- Southern California Edison
- Southern California Gas Company

Comments from other stakeholders

- Brightline Defense Project
- California Community Colleges Chancellors’ Office (Jim Caldwell)
- California Division of Apprenticeship Standards, Department of Industrial Relations, Labor and Workforce Development Agency (Diane Ravnik)
- California Workforce Investment Board (Amy Wallace)
- Emerald Cities Collaborative (Denise Fairchild)
- Hangtown Electric, Inc. (Johnnie R Smith)
- International Brotherhood of Electrical Workers Local 11
- Laborers’ International Union of North America Local 261 (David De La Torre)
- Marina Mechanical (Jim Hussey)
- Natural Resources Defense Council (Lara Ettenson)
- Smith and Sons Electric (David Smith)
- The Greenlining Institute
COMMENTS ON DRAFT 1 OF GUIDANCE PLAN

Comments from IOUs and CPUC

- Energy Division, California Public Utilities Commission
- Pacific Gas & Electric Company
- San Diego Gas & Electric Company
- Southern California Edison
- Southern California Gas Company

Comments from other stakeholders

- Brightline Defense Project
- California Construction Industry Labor Management Cooperation Trust
- Laborers’ International Union of North America (David De La Torre)
- Natural Resources Defense Council

COMMENTS ON DRAFT 2 OF GUIDANCE PLAN AND/OR APPENDICES

Comments from IOUs and CPUC

- Energy Division, California Public Utilities Commission
- Pacific Gas & Electric Company
  - Guidance Plan comments
  - Appendices comments
- Southern California Edison
  - General comments
  - Specific comments

Comments from other stakeholders

- California Community Colleges Chancellors’ Office (Jim Caldwell)
- California Division of Apprenticeship Standards (Diane Ravnik) and California Workforce Investment Board (Tim Rainey)
- The Greenlining Institute (Ryan Young)
General Areas PG&E Supports

1. Promoting workforce development and skills-building instruction.
2. Supporting inclusion efforts.
3. Increasing engagement with external stakeholders.
4. Taking steps to better understand the connection between work quality and energy savings.

General Areas of Concern and Requests

Consider the following when preparing the first draft of the guidance plan:

1. A roadmap is needed. Roadmap should include data-backed prioritization advice. For example, where should we start and why, what’s most important, what does success look like, what is the goal, how do we get to the ultimate goal?
2. Provide all references and data used to substantiate recommendations.
3. All recommendations need to be specific and actionable. If they’re not currently actionable, a plan for making them actionable should be included. If that doesn’t exist, we suggest removing the recommendation from the report.
4. More stakeholder feedback is needed before discussions take place around adoption of any of the recommendations.
5. Lead times to implement these recommendations are needed. This can be part of the “roadmap” and/or part of an implementation timeline.
6. Clarify the target/audience for each recommendation. Audiences in recommendations seem to include CPUC and the IOUs.
7. All recommendations need to fit within the regulatory framework in which the programs currently operate.
8. Explain what success looks like for each of the recommendations. How do we know that we’ve effectively implemented the recommendations?
9. We need recommendations for Strategic Goals 4, 5 and 7 as soon as possible. Keep structure of the report to the Strategic Goals.

Strategic Goal 1: Workforce Education and Training Program Modification

1. The proposed funding split is premature and should not necessarily be fixed, prior to determining needs on a regional and program-level basis.
2. Using $33.3M per year is not a good starting point. Funding levels for 2013-2014 is $57,961,561 for a two-year period.
3. Data is lacking to substantiate all of these recommendations.
4. Specifics are lacking.
5. PG&E supports including more stakeholders in our WE&T activities, although any external board should serve in an advisory capacity, as opposed to a governing capacity.
6. PG&E supports tailored implementation plans.
7. Clarify the target/audience for each recommendation—CPUC or IOUs.

Strategic Goal 2: Inclusion

1. Baseline assessments and program impact evaluations are needed prior to implementing any of the recommendations.
2. Clarify to which programs these recommendations apply.
3. Any future data collection efforts should perhaps take place outside of the IOU domain, e.g., at a state level. CPUC guidance based off of recent and current data collection efforts and evaluations should be completed before any further data collection or reporting requirements are issued.
4. PG&E supports a consistently-applied definition of “disadvantaged worker” but prefer it be aligned with what the CPUC is already using. Are there other state agencies using another definition?
5. More support/data is needed demonstrating the value of adding another “program” (i.e., consolidating MUSH projects). This particular recommendation seems backwards as it is pushing the resource programs to drive workforce as opposed to workforce aiding Programs to meet their goals.

**Strategic Goal 3: Resource Program Integration**

1. PG&E supports the goals behind process improvements and workforce standard recommendations. PG&E already implements specific requirements for programs. Where requirements have been relatively more complicated, more trainings have been developed in response. However, the “right” certification or training does not always exist nor is there always stakeholder consensus for it. As a result and in some instances, PG&E suggests focusing on requirements and competencies, as opposed to industry certifications which might negatively impact the program or relationships with our partners. Where it might make sense to require a certain certification, data is needed that demonstrates savings and market potential.
2. Recommendations need to address how workforce development can support the resource programs as opposed to how the resource programs can drive workforce development.
3. Data is needed to support both process improvements and workforce standards. Unless there is clear data demonstrating energy savings correlating with work quality, it’s difficult to consider these recommendations. Data provided should be applicable to the California regulatory environment.
4. PG&E agrees that inspections are important. However, data has shown that a random sampling coupled with ongoing monitoring is most effective.

**Strategic Goal 6: Evaluation of Workforce Education and Training Programs**

1. PG&E agrees conceptually that it makes sense to utilize the “installed” savings rather than a theoretical maximum savings possible. However, many issues need to be resolved by the CPUC prior to move forward with this approach.
2. PG&E agrees that the effort to understand the connection between work quality and energy savings is critical.
3. Specify the definition of workforce development program success.
San Diego Gas & Electric Company (SDG&E) appreciates the work Dr. Carol Zabin has done to support the Workforce Education and Training (WE&T) Statewide Strategic Planning. The Scope of Work (PG&E Contract No. 2500833423 Attachment 1) for this project on page 4 of the Statement of Work requires the following methodology to address each identified Strategic Goal:

- Initiating and driving long-term WE&T development and strategic planning, including identification and leveraging of funding streams and market sector needs.
- Supporting community college and adult education efforts to develop education based on visible career paths in energy efficiency (EE) and demand-side management (DSM).
- Incorporating DSM into traditional contractor, apprenticeship and technician training.
- Supporting the creation or expansion of energy management and efficiency-focused curriculum by college and university programs and fostering this knowledge in clear view of students and faculty.
- Supporting the development of K-12 curriculum, programs and teacher training to include a basic understanding of energy and DSM fundamentals as well as energy-related career education.
- Achieving the fullest participation by minority, low income and disadvantaged communities in training and education.
- Continued support and training opportunities for other key members of the energy workforce, including engineers, facility managers, designers and marketing professionals.

As stated above, the Scope of Work requires a variety of assessments, identification and analysis of obstacles and opportunities for implementing proposed approaches, prior to a proposed roadmap with recommendations with actionable approaches. The draft before us, at this time, does not have these preliminary data that we believe is necessary in order to fully evaluate the merits of these January 10, 2014 draft recommendations. At this time, until SDG&E has the opportunity to review the entire Guidance Plan, we reserve judgment on the merits of the Plan recommendations. Nonetheless, SDG&E provides its comments on these recommendations without the benefit of reviewing the entire plan.

A. Funding Recommendations

Strategic Goal (SG) 1 Recommendation (R) A (SG1RA) and SG2RG provide funding recommendations for various activities the draft does not provide details for supporting the recommendations aside from the author’s belief that these are the required minimum funding levels. It would be most helpful if the study would provide some type of cost-benefit analysis to justify these minimum levels. Ultimately, Energy Efficiency (EE) monies are being spent on these WE&T efforts because some EE benefits would be realized, e.g., for every $1 spent on WE&T efforts, xx KWH/MW/Therms will be saved, even if these are not immediate. Supplemental information should be provided, e.g., for every WE&T $1000 spent, 1 green job is created. Decision-makers would benefit from information so that appropriate program funding levels can be made.

The funding recommendations would also benefit from identification of any public or private funding for similar efforts that are available for leveraging, thus increasing the effectiveness of the Energy Efficiency WE&T funds. For example, the California Clean Energy Jobs Act (Proposition 39) provides significant funding for EE workforce training through the California Workforce Investment Board Grant Program,
with the immediate potential for qualified trainees to gain employment in school energy efficiency projects. Additional benefits can also be achieved from the evaluation of the effectiveness of this initiative.

B. Program Administration and Governance

The Draft provides recommendations for program governance, SG1RD, and administration, SG1RF. SDG&E believes that the Commission currently has a variety of new administration structures that are in its infancy. SDG&E recommends that before another third party administration and governance structure for WE&T be recommended, evaluation of these non-IOU administration structures should be conducted to determine their strengths and weaknesses.

C. Need for Public Comment

Several recommendations, e.g., most of the SG2 and SG3B recommendations, impact several market actors, particularly contractor companies who will be responsible for hiring these workers. These recommendations include minimum wage floors, definition of disadvantaged worker, and OSHA specifications. It is imperative that the public be afforded the opportunity to provide their comments and feedback on these recommendations as these potentially impact their business costs.

D. Evaluation of WE&T Programs (SG 6)

WE&T utility programs were never intended to become ratepayer-funded full-course curriculum offerings that would persist over a long period of time. Historically, educational institutions and trade unions evolve and develop long term programs, certifications and degree programs that meet the current demand in the workforce. For example, computer science/engineering degrees were non-existent until the computer age took off such that universities, colleges, and K-12 schools provide computer-specific training and degrees. Environmental Science/Engineering were not major areas of interest and were usually found as special topics in the Biological Sciences departments. Today, many students are entering specific Environmental degree programs. Similarly, the market demand for EE training should drive the natural evolution of Energy Efficiency “science” degrees and careers, if there is a strong sustained interest with economic benefits for students. With this in mind, SDG&E recommends that the plan provide a timeline when the market place will naturally provide these trainings/degrees/ certificate programs in educational institutions, similar to the “off-ramping of EE programs” once market transformation has taken place. To that end, it is important to have some measureable metrics that will indicate when this has occurred.

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2 Regional Energy Networks (REN), Community Choice Aggregators (CCA), and Statewide Marketing Education and Outreach assigned to California Center for Sustainable Energy (CCSE).
**SUMMARY OF RECOMMENDATIONS:**

### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<tr>
<td>A. Allocate a significant amount of WE&amp;T dollars to targeted programs for workers' skill-building:</td>
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<td>1. We recommend that at least $80 million of WE&amp;T funds per three-year cycle go to workforce development in order to affect meaningful change in this arena.</td>
<td>Although the CLEESP mandates workforce education and training, most of the Centergies budget currently goes towards educating buyers and sellers of energy efficiency services, rather than skills development for workers involved in the design, installation, and maintenance of EE/DSM work. Most of the Connections budget goes to consumer education, not career development. Workforce development and market development require a different guiding strategy for programming, and distinct activities and delivery mechanisms. There is a need for increased efforts in the area of workforce development in order to carry out the CLEESP vision, which will require a significant increase in resources. Our recommended allocations represent the minimum amount that we believe would have a statewide impact on workforce development in each of the four categories (professionals, non-residential trades, non-residential trades and inclusion). We prioritize among the four categories based on the following criteria: i. Estimated program costs based on preliminary</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group Have concerns: IOUs do not want to lower budget to current programs</td>
<td>Get stakeholder feedback on the quantity of $ to be allocated to workforce dev’t vs. market dev’t; e.g. how much $ is needed for different types of activities, and how to prioritize programming based on needs and opportunities.</td>
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<td>2. Within the $80m (per 3-year cycle) for workforce development, we propose the following allocation:</td>
<td>Connections 9-12 career prep/awareness counts in inclusion. The rest is counted under market-building.</td>
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<td>• $20m for professionals</td>
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<td>• $20m for non-residential trades</td>
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<td>• $20m for residential trades</td>
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<td>• $20m for inclusion</td>
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While rationalization, formulation, and "how to" details are forthcoming, recommendations regarding the structural programmatic modifications recommended in items B, C, and E have some merit. Yet, in order to develop more cohesive and informed workforce and market development guiding strategies, there should be the establishment of clear metrics of success to determine that rate payer funds are being used effectively to indirectly achieve higher DSM savings potential from these non-resource activities.

Thus, clearly understood and agreed-upon metrics/goals about the outcomes for targeted skill-building need to be established before budgets are proposed. Below are only a few of possibly many questions to ask of the current, relevant workforce development market condition assessment before informing the goal setting and budget allocation process.

**Goal Setting:**
- What is the future forecasted demand that warrants this change in EE workforce development spending? Once trained, what are the requirements for the "trained" resources to stay in the state?
- Where are the training needs for the workforce? SCE is currently covering a few key sectors to support rebate programs. What more is needed?
- What are the position titles, job requirements, and expectation for these worker training and certification? What kind of training content is expected? What training outcome is required? What kinds of training experts are needed to deliver? Are there test-in/test-out requirements? What are the certification organizations? Are there ongoing maintenance training requirements? If yes, what should it be?

**Budget Allocation:**
- $20m for professionals (What kind? Which sector?)
- $20m for non-residential trades (Which trade? Which sector and applications?)
- $20m for residential trades (Which trade? Which sector and applications?)
- $20m for inclusion (What purpose?)

SCE proposes 2015 as the foundational year to pave the way for the current, relevant workforce development market condition assessment and the goal setting and budget allocation process.

The work quality topic requires further discussion.
### SUMMARY OF RECOMMENDATIONS:

#### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<td>B. Redesign workforce skills development programming</td>
<td>Current programming for workforce skills development is limited. Most programming in this area does not follow best practice for skills development and does not fully leverage the rich infrastructure of CA accredited education and training institutions. Short, open-door classes are still the primary program delivery mechanism, although this is not an effective skills-building strategy. Partnerships with apprenticeships have been extremely limited so far.</td>
<td><strong>Support:</strong> State workforce development agency and education institution leaders; Stakeholder advisory group <strong>Have concerns:</strong> IOUs have concerns about how to get credit for energy savings from programs based on partnerships.</td>
<td>Get stakeholder feedback on how to structure effective partnerships for each key institutional partnership. Discuss with stakeholders, IOUs and CPUC how to incorporate partnership-based activities with other IOU program objectives re: energy savings.</td>
<td>SCE acknowledges short, stand-alone classes can be improved to be more interactive, and analytical. Improvements could also be made to the marketing efforts that support them. Nonetheless, short, stand-alone, and open-door classes may have benefit to a quickly changing market environment in certain DSM fields with higher employee turnover which can be the case in fields which rely on government subsidies (e.g., ARRA or solar funding) or changing economic circumstances. In these cases, they can provide value in attracting and educating first time participants with minimal prior skills training, especially as employers risk lack of productive work time for new trainees. They also serve participants seeking to meet continuing education credits requirements. Specific to HVAC WE&amp;T, apprenticeship programs do not reach the entire market. Thus, identifying objective and measureable key characteristics of high quality WE&amp;T, opportunities can be extended and leveraged across all interested stakeholders. This can assist in preventing further polarization of workforce KSAs and workforce economic issues.</td>
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| C. Career pathway plans: | Design an implementation plan for each major career pathway (professional, commercial trades, residential trades) with the following elements: | **1.** Because of the limited partnerships with key state education and training institutions and a lack of best practices in the offerings described above, the IOUs’ current workforce development programming has not been effective in reaching and developing the skills of workers in the key | Get stakeholder feedback on priority activities and delivery mechanisms for each career pathway plan. Get stakeholder feedback on how to structure the process for determining | Career pathways need to be defined and established for skills advancement but EE and DR may reflect a niche training industry not yet universally supported by curriculum in colleges, universities and trade schools. The limited level of partnerships between IOUs and apprenticeship programs may merely reflect the still early stages of engagement. The need and/or requirements for the proposed RFP cannot be determined until the proposed WE&T program modifications goal setting and budget allocation process is informed. Refer to Strategic Goal 1, comments to item A. |

| Stakeholder Concerns/Controversy | Recommendations and stakeholder feedback; ii. Ability to leverage other funds (state and/or employer) iii. Importance in the CLEESP iv. Share of occupations from the NA projections [4:1 trades:prof; 1:1 res:non-res] v. Key role of specifiers and designers vi. Where are there work quality problems? vii. Where are their key new emerging technologies that require new skills for critical occupations? | **Support:** State workforce development agency and education institution leaders; Stakeholder advisory group **Have concerns:** IOUs have concerns about how to get credit for energy savings from programs based on partnerships. | Get stakeholder feedback on how to structure effective partnerships for each key institutional partnership. Discuss with stakeholders, IOUs and CPUC how to incorporate partnership-based activities with other IOU program objectives re: energy savings. | SCE acknowledges short, stand-alone classes can be improved to be more interactive, and analytical. Improvements could also be made to the marketing efforts that support them. Nonetheless, short, stand-alone, and open-door classes may have benefit to a quickly changing market environment in certain DSM fields with higher employee turnover which can be the case in fields which rely on government subsidies (e.g., ARRA or solar funding) or changing economic circumstances. In these cases, they can provide value in attracting and educating first time participants with minimal prior skills training, especially as employers risk lack of productive work time for new trainees. They also serve participants seeking to meet continuing education credits requirements. Specific to HVAC WE&T, apprenticeship programs do not reach the entire market. Thus, identifying objective and measureable key characteristics of high quality WE&T, opportunities can be extended and leveraged across all interested stakeholders. This can assist in preventing further polarization of workforce KSAs and workforce economic issues. |

#### Data Supporting Recommendation

- borehole testing
- literature review
- survey of stakeholders
- focus groups

#### Stakeholder Concerns/Controversy

- limited partnerships between IOUs and apprenticeship programs
- limited level of partnerships between IOUs and apprenticeship programs
- need and/or requirements for the proposed RFP cannot be determined until the proposed WE&T program modifications goal setting and budget allocation process is informed.

#### Next Steps

- get stakeholder feedback on how to structure effective partnerships for each key institutional partnership.
- discuss with stakeholders, IOUs and CPUC how to incorporate partnership-based activities with other IOU program objectives re: energy savings.
## SUMMARY OF RECOMMENDATIONS:

### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<td>2. Governing council should appoint Industry and SME advisory group for each occupation, which will be responsible for identifying certifications and skill standards for each.</td>
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<td>3. Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions.</td>
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<td>4. Plan should determine key opportunities to incorporate EE skills and knowledge at specific points in the career pathway for priority occupations. Key points in the career pathway are pipeline preparation, core post-secondary education, and incumbent worker training.</td>
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<td>5. Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms.</td>
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<td>6. Funds should support incorporation of EE specific knowledge and skills through support for curriculum development, train the trainer etc.</td>
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<td>7. Programming should leverage funding for classroom and other training from key institutions wherever possible.</td>
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<td>8. Programming should use sector strategy approach for incumbent worker training, based on commitments from multiple employers.</td>
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<td>9. In-house IOU skills training should be limited and reserved to cover gaps that partners can't fill, with commitment to transfer courses to other training institutions over time.</td>
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### COMMENTS

- Governing council should appoint Industry and SME advisory group for each occupation, which will be responsible for identifying certifications and skill standards for each occupation.
- Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions.
- Plan should determine key opportunities to incorporate EE skills and knowledge at specific points in the career pathway for priority occupations. Key points in the career pathway are pipeline preparation, core post-secondary education, and incumbent worker training.
- Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms.
- Funds should support incorporation of EE specific knowledge and skills through support for curriculum development, train the trainer etc.
- Programming should leverage funding for classroom and other training from key institutions wherever possible.
- Programming should use sector strategy approach for incumbent worker training, based on commitments from multiple employers.
- In-house IOU skills training should be limited and reserved to cover gaps that partners can't fill, with commitment to transfer courses to other training institutions over time.

### D. Governance and accountability:

1. Plan must be approved first by governing board composed of key state workforce, education, and energy agencies, and technical experts
2. CPUC should consider recommendations of governing board and approve final plan
3. Logic model should be followed that provides evaluation framework, including PPMs, for...
**SUMMARY OF RECOMMENDATIONS:**

**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<td>measuring the impact of skill development on immediate energy savings and market transformation</td>
<td>EE/DSM occupations.</td>
<td>ii. Most of the prior IOU-led attempts to bring stakeholders together for WE&amp;T planning and consensus-building around standards have been contentious; e.g. the HVAC Sector Strategy.</td>
<td>iii. los of control of the program direction. and energy agencies. Get feedback on logic model and PPMs, and evaluation structure for measuring impact on energy savings and market transformation.</td>
<td>COMMENTS</td>
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**E. Phase 1 Programs**

We suggest the following programs that can be initiated in 2014 for each occupational group, which are low-hanging fruit that can serve as learning arenas for the new configuration:

1. Professionals: RFP to be let out to 4-year accredited architecture and engineering departments to incorporate energy efficiency skills and knowledge into their curricula for degree programs.
2. Commercial trades: Partnership/sector strategy with CA Division of Apprenticeship Standards to incorporate EE skills and knowledge into journey upgrade programs for key crafts.
4. Inclusion: RFP for Pilot Project Energy Efficiency Bridge Program in one region that leverages other investments and connects to apprenticeship.

**F. Administrator:**

Administrator should have the capacity and willingness to manage and staff the plan outlined above.

**Option 1:** IOUs manage and staff guidance plan, or issue an RFP for a 3rd party

**Although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development**

**Option 1: Support:** Most IOU WE&T staff would like to retain primary ownership over the funds. Several expressed a desire/willingness to include

**Explore the pluses and minuses of each option, soliciting stakeholder feedback and adding detail to each proposal.**

**SCE Comments, 1/24/2014**

The need and/or requirements for the proposed RFP cannot be determined until the proposed WE&T program modifications goal setting and budget allocation process is informed. Refer to Strategic Goal 1, comments to item A.

In offering more details, and specific to the Professionals group, there may already be ample professional certification and degree curricula in the areas of sustainability, EE, and DR certification, etc. Due diligence regarding how these trainings are delivered should be undertaken before creating a duplicative delivery strategy. Specific to the Commercial/Residential Trades groups, an overall staffing process should be developed, similar to workforce development planning for IOU Transmission and Distribution staff personnel, which takes into account future forecasted supply and demand needs for trained personnel. This requires uniformly defined job categories which may benefit planning with a broad number of players (e.g., apprentice trade schools).

Criteria for best practices that are objective and measureable may be better suited to address all stakeholders interested in efforts to maintain neutrality and inclusivity.

**SCE notes that it is not legal to transfer administration of this or any other ratepayer funded program to any entity unregulated by the Commission, unless there is statutory authority for such a delegation. These are IOUs funded programs and should be managed by the IOUs. IOUs are the best suited to manage, develop and administer the broader WE&T strategies given their administration role within the**
### SUMMARY OF RECOMMENDATIONS:

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<td>Option 1</td>
<td>Implementer. Some workforce partners with the state's core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative administration of the workforce development portion of WE&amp;T would be more effective.</td>
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<td>broader DSM program and policy arena. IOUs also have workforce development methodologies from other parts of their business which can be applied to DSM workforce development. However, given the broad nature of this goal and the diverse number of participants/stakeholders and lack of a clear, single non-profit institution with oversight, knowledge and experience with administering, developing, and implementing DSM programs, it is prudent for IOUs to remain in an administrative capacity, especially given the quickly changing nature of DSM programs and needs (e.g., SONGS outage, development of alternative program delivery strategies such as the Preferred Resources Plan, etc.). IOUs have direct insights into ever changing policy issues which a non-profit and academic institutions lack given that the energy field may not be their primary area of expertise.</td>
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<td>Option 2</td>
<td>CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization. The content of the recommendations are the same in either case, and both could still include IOU participation in program development, or best-practice IOU-led offerings such as the retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&amp;T portfolio overall.</td>
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<td>Implementer. Option 2: CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization. The content of the recommendations are the same in either case, and both could still include IOU participation in program development, or best-practice IOU-led offerings such as the retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&amp;T portfolio overall.</td>
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<td>Option 2: Members of the stakeholder advisory group (including the state labor agencies) liked the idea of a more systematic, collaborative tie between the WE&amp;T programs and the state's other primary workforce development and education agencies, and the potential it presents for program alignment and fund leveraging. Concern: Most IOU WE&amp;T staff are wary of relinquishing ownership to an outside entity. Some stakeholders and IOUs expressed concern that there isn't currently a clear choice of a non-profit to lead the Option 2 effort. Several noted issues that may arise around maintaining CPUC oversight over ratepayer funds.</td>
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<td><strong>COMMMENTS</strong></td>
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### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<tr>
<td><strong>A.</strong> Prioritize creation of good-paying jobs and workforce diversity as key IOU goals along with efficiency outcomes:</td>
<td>Successful workforce inclusion programs have established goal setting and monitoring in order to improve outcomes. In order for the IOUs to have the authority to direct resources towards these efforts, they need direction from the CPUC.</td>
<td>Support: Some equity groups, including those in the Stakeholder Advisory Group, support this recommendation.</td>
<td>Set stakeholder feedback on language of proposed CPUC direction.</td>
<td><strong>The IOUs programs are designed to deliver EE measures for the purpose of meeting energy goals. Implementing this recommendation would increase administrative costs for developing tracking systems to collect and report the information. Contractor costs also are likely to increase in order to accommodate tracking and reporting requirements. The level of increase is unknown at this time. IOUs may be able to obtain such data from firms that contract directly with SCE to provide services. For firms without a direct business relationship with the IOUs, logistical hurdles are unknown but likely substantial.</strong></td>
<td><strong>The CPUC should explicitly direct IOUs to promote, measure, and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals.</strong></td>
</tr>
<tr>
<td><strong>B.</strong> Define Disadvantaged Worker meaningfully and consistently:</td>
<td>i. Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring.</td>
<td>Support: Some equity groups support this recommendation.</td>
<td>Test revised definition with Stakeholder Advisory Group.</td>
<td><strong>The recommendation is a reasonable starting point for obtaining input and comment by stakeholders that may not be engaged in EE activities other than WE&amp;T.</strong></td>
<td><strong>The CPUC should set a common definition of “Disadvantaged Worker” that will be used by all IOUs in designing inclusion programs and tracking and reporting results.</strong></td>
</tr>
<tr>
<td>1. The CPUC should set a common definition of “Disadvantaged Worker” that will be used by all IOUs in designing inclusion programs and tracking and reporting results.</td>
<td>ii. Many existing public works programs have developed similar definitions of Disadvantaged Worker. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility.</td>
<td>Have concerns: IOUs are concerned that the promotion of job creation and workforce diversity in EE/DSM programs cannot be resourced using ratepayer funds.</td>
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<td><strong>The CPUC should explicitly direct IOUs and many of their contractors, we recommend that initial goal be conservative in order to ensure success and acceptance. We suggest an initial goal of 15% of EE/DSM work, measured in</strong></td>
</tr>
<tr>
<td>ii. Many existing public works programs have developed similar definitions of Disadvantaged Worker. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility.</td>
<td>iii. The combination of these two sets of criteria have proved in other programs to identify an adequate number of individuals who most need employment opportunity and who are capable of developing the necessary skills to do good work.</td>
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<td><strong>The CPUC should set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</strong></td>
</tr>
<tr>
<td>i. Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring.</td>
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<td><strong>The IOUs programs are designed to deliver EE measures for the purpose of meeting energy goals. Implementing this recommendation would increase administrative costs for developing tracking systems to collect and report the information. Contractor costs also are likely to increase in order to accommodate tracking and reporting requirements. The level of increase is unknown at this time. IOUs may be able to obtain such data from firms that contract directly with SCE to provide services. For firms without a direct business relationship with the IOUs, logistical hurdles are unknown but likely substantial.</strong></td>
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<tr>
<td>C. Set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</td>
<td>Models from other successful programs.</td>
<td>Support: Some equity groups support this recommendation.</td>
<td>Develop an initial goal in consultation with key stakeholders.</td>
<td><strong>The recommendation is a reasonable starting point for obtaining input and comment by stakeholders that may not be engaged in EE activities other than WE&amp;T.</strong></td>
<td><strong>Successful experience from G.O. 156.</strong></td>
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1 Disadvantaged Worker criteria: Household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.  
2 The unemployment rate is 150% of the median unemployment rate for the county.
### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<tr>
<td>1. Institute a required, electronic workforce reporting system for EE/DSM contractors to capture information:</td>
<td>Successful equity and inclusion programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements.</td>
<td>Support: Labor groups familiar with reporting data support this recommendation.</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
<td>This would require the IOUs to ask program qualified contractors to submit their payroll with individual works information. Parties have represented that systems and software may be readily available for this purpose. The Commission must ensure that worker privacy/confidentiality safeguards are in place. Affected contractors who are not participating directly in the WE&amp;T study should have the opportunity to comment on any recommendations. This requirement will increase program costs and may negatively impact cost effectiveness in a manner that could require deletion of certain program measures in order to offset the lower cost effectiveness. This recommendation should be limited for consideration to firms that contract directly with SCE to provide services.</td>
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<td>2. Include the following data points:</td>
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<td>a. Hours worked</td>
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<td>b. Rate of pay</td>
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<td>c. Disadvantaged status, zip code of residence</td>
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<td>d. Race, ethnicity, and gender</td>
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<td>e. Trade/occupation</td>
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<td>f. Journey/apprentice level</td>
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<td>g. Certifications held</td>
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<td>3. Make the reports publicly available.</td>
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<td>4. Contractors who achieve or exceed goals will receive compliance points in next round of procurement.</td>
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<td>E. Ensure baseline quality of jobs created by efficiency investments:</td>
<td>Interviews indicate ESAP wages range from $12/hour to high $20s/hour.</td>
<td>Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs.</td>
<td>Set feedback on $16/wage floor from Stakeholder Advisory Group and request specific information to stakeholders on LCP Tracker.</td>
<td>A wage floor may not be a good indicator of job quality or job performance nor may it serve as a guarantee of such performance. If contractor data is collected, wage level can be evaluated to see if a positive correlation with installation quality can be established that would support establishment of wage floors. A wage floor will likely lower program cost effectiveness and add to program administration costs with the required compensation and reporting costs and may lead to elimination of some measures in order to meet cost effectiveness and administrative cost requirements. A wage floor may compress progression ladders that currently exist for the program by requiring wages to be increased for lower level positions without a correlating increase to higher level positions. SCE looks forward to comments by affected stakeholders in advance of CPUC consideration of this recommendation. This recommendation should be limited for consideration to firms that contract directly with SCE to provide services.</td>
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<tr>
<td>Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years).</td>
<td>LA DWP’s utility pre-craft worker program starts trainees at $16/hour.</td>
<td>Higher wages typically contribute to higher skill development, and better outcomes.</td>
<td>Have concerns: Some equity groups (Brightline Defense), contractors are concerned. A wage floor could increase cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. ESAP contractors have concerns that they will be expected to bear burden of wage floor without overall program budget increase. Cost of collecting and reporting data.</td>
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<td>F. Improve job opportunities created by efficiency investments:</td>
<td>California Labor Code requires prevailing wages and apprenticeship utilization on public capital projects. Contrary to this general public policy, it exempts &quot;work done directly by any public utility company pursuant to order of the Public Utilities Commission or other public authority.&quot; Cal. Lab. Code Sec. 1720(a)(1).</td>
<td>This recommendation may increase program costs and negatively affect portfolio cost effectiveness. This recommendation should be limited for consideration to firms that contract directly with SCE to provide services. For other EE firms without a direct contractual relationship with SCE, the utility is not in a position to collect or determine compliance with this requirement. SCE looks forward to comments from affected parties that have not been participants in the WE&amp;T study.</td>
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<td>G. Consolidate all incentives and efficiency programs that target the municipal/government, university, school, or hospital sectors into a comprehensive MUSH program. Introduce an inclusion requirement in the MUSH program:</td>
<td>Energy Upgrade California and Sierra Nevada Energy Works. Programs in San Francisco, Portland and Seattle utilities. PLAs with targeted hire requirements at LA-METRO, LAUSD, CRA/LA, LACCD.</td>
<td>SCE supports cost effective energy efficiency and development of workforce strategies that can help achieve this goal, however this recommendation exceeds the scope of the WE&amp;T strategic assessment and intrudes into program design in a manner that likely would be counterproductive. Current programs are designed to communicate effectively with specific sectors and obtain buy-in from a diverse group of decision makers at state agencies, regional and local governments, local and state education institutions, and hospitals. The current program design has led to increased participation and energy savings by cities, counties, Regional Energy Networks, k-12, CSU, UC, and hospitals. Developing a one-size-fits-all strategy for these segments in order to test the premise that increased energy savings can be delivered through increased scale is likely to reduce stakeholder involvement and energy savings from the programs. The CPUC should carefully consider comments by interested parties within the above segments prior to considering this recommendation.</td>
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<td>6. Open list to new contractors on a restricted timeline (e.g. every 2 years)</td>
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<td>H. Establish training bridge program to link residential EE workers to non-residential EE jobs.</td>
<td>Power Pathways, CCCO Career Advancement Academies, Pre-apprenticeship collaborations such as SF City Build, IBEW Local 11 and LATTC</td>
<td>Support: Education and labor stakeholders</td>
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<td>Have concerns: Some stakeholders have indicated concerns with the viability of ESAP workers entering in bridge programs; some ESAP contractors indicate there are viable career pathways within ESAP employers.</td>
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<tr>
<td>I. Strengthen ESAP and MIDI as entry point to a higher skilled, higher-paid career in commercial and industrial EE:</td>
<td>i. Interviews and EE Decision indicate expansion of MIDI program. ii. The level of skills required for residential ESAP and MIDI programs are similar: lower and thus more suited to an entry-level position. However, on the job, ESAP and MIDI installers gain valuable experience in both soft and hard skills, preparing them to move up the ladder. iii. The contractors who run the ESAP programs tend to hire from the local, low-income community, making it a natural entry point for a more diverse workforce. However, it should not be an end point for low-income workers.</td>
<td>Support: Some equity advocates were interested in learning more about the details of the recommendation to determine their support. Have concerns: One equity group (Brightline Defense) and IOU staff expressed concern over a wage floor increasing the cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. Contractors were concerned over the wage floor: Will contractors be expected to bear burden of wage floor without overall program budget increase? They are also concerned about the cost of collecting and reporting data.</td>
<td>Test $16/wage floor with Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
<td>See comments above on wage floor, reporting and training bridge. SCE reiterates the recommendations may increase costs, negatively affect program cost effectiveness, and lead to measure being removed from the program in order to offset the increased costs and meet cost effectiveness thresholds.</td>
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### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 3, RESOURCE PROGRAM INTEGRATION

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| **A. Process improvements:** Implement changes through program design, implementation, approval, and evaluation process to create stronger incentives for high quality work. | 1. In emerging technology demonstration projects, the most qualified firms and workers are selected to install new equipment or measures. ETCC reports currently do not consider the skill of the workers necessary for proper installation, and do not inform program requirements for the types of contractors that should participate to ensure quality. | il. Work papers often assume 100% correct installation without identifying the conditions necessary to ensure that is the case. ii. By handling work quality problems with technology failures, customer behavior, and other variables (installation rates and gross realization rates), we cannot know what the specific impact of different workforce interventions are. iii. Current QA and inspection processes are intended to reduce fraudulent behavior and do not identify faulty installation. It is standard best practice that inspectors have a higher level of technical skill than installers, and current QA processes do not consider the technical skill of the inspection team. | Support: PRG support for eliminating three-strike rule for fraudulent behavior. Widespread concern (from PRG) that work quality is not addressed systematically in existing processes and unanimous support for adjusting program processes to account for work quality. Unanimous agreement that process improvements are a necessary, but not sufficient, condition to address work quality; standards are also critical. | Determine which programs can accommodate pay-for-performance requirements. Solicit stakeholder feedback on these recommendations Define “Fraudulent behavior” | SCE responds to some of the recommendations as indicated below: Related to item A.1, integration of WE&T and HVAC programs is currently happening in the SCE territory. SCE is requiring industry recognized certifications for program participation, which provides WE&T opportunities to increase levels of certification and develop integrated program/WE&T scaffolds to up-level workforce. SCE observes that a lack of consumer awareness/education on what it means to hold prestigious industry credentials continues to be problematic – low cost continues to be a primary factor decision making. Related to item A.2, current work paper development does not account for expectations for the effectiveness of actual install rates which would require deeper, programmatic knowledge of contractor inspection rates, failed installation rates, as well as other market and contractor factors which could delay the completion of work papers. Collection of this data may not be timely, cost-effective or readily accessible. Work papers go through a lengthy technical review and approval process, that could in fact slow down the ability to adjust contractor requirements over time as any changes would need to be vetted through the work paper review process. If the goals behind the recommendation are deemed to be meritorious, incorporating the requirements in programs plans or policies may be a preferable approach. Related to item A.4, it is impractical to develop an adjustment for new, emerging measures for the following reasons: • There may be little installation data available until the measure is actually installed. • Any data made available early in the process will likely be statistically insignificant, and perhaps not indicative of the full roll-out of the measure • New measures usually get inspection by IOUs, which often result in adjustments to the offer and/or vendors. • As pointed out in the supporting data, there are many reasons why a measure may not yield 100% realization rate. Beyond gross installation failures, identifying other installation issues for early measure launch (before impact evaluation) may be difficult given other uncertainties in the measure. Adjustments to measure savings due to installation quality should not be made until there is adequate data and the measure offer has “stabilized.” Typically this would be informed by an ex-post evaluation. |}
established, samples should be used to modify rates. IOU credit should be based on results of those quality inspections.

5. Quality Assurance processes (Inspection and Verification) should focus more on quality of installation. Highly skilled technicians should be assigned to inspect installations at the beginning of the program and then randomly throughout programs.

6. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on quality.

7. Institute zero-tolerance policy for fraudulent behavior (for Trade Professionals, Customers, and other Contractors), with a three-year exclusion from participating in ratepayer funded programs.

8. Pay-for-performance requirements: Withhold fully crediting the IOUs and some portion of incentive payments until inspections confirm that equipment is properly installed and operational over the course of its effective useful life (or other meaningful period of time).

Related to Item A.5, “highly skilled” needs to be defined according to objective and measurable criteria. Participation by interested stakeholders will be critical to success.

Related to Item A.7, zero tolerance for fraudulent behavior is appropriate. SCE looks forward to reviewing comments from interested parties that are not participating in the WE&T assessment. The specific recommendation needs to be thought out to ensure penalties are precise in addressing offenders. A three-year contractor exclusion may harm workers that did not participate in the activity triggering the exclusion.

Related to Item A.8, the EE incentive mechanism generally is handled in a separate proceeding and addresses numerous issues including timing of incentive payments and reliability of engineering estimates. Substantial elements of the incentive mechanism rely on ex-post evaluation of achieved savings. The EE incentive proceeding is the appropriate forum to consider whether current or future mechanisms should be informed by the recommendations in this assessment in a manner that does not introduce unwarranted uncertainty.
### Workforce Standards: Change the competitive environment to attract high performing contractors and screen out or improve the performance of lower qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.

1. Require CALCTP certification for contractors and technicians on all projects involving advanced lighting controls.
2. Require BPI firm accreditation (rather than individual certification) for all Whole House retrofit projects.
3. Require at least NATE certification for all projects involving residential HVAC measures. For commercial HVAC programs, require completion of a registered apprenticeship program OR US Star OR an associate’s degree in HVAC and a NATE certification OR Industry Competency Exam (ICE) and NATE certification.
4. Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility.
   i. ALL contractors and subcontractors working on projects with total costs $500 or more: proof of proper licensing, bonding, & workers compensation and building permit signed off by building inspector, if required by law.
   ii. MUSH properties, non-residential properties that are either 50,000+ square feet or CALCTP is the industry recognized standard for advanced lighting control systems. Title 24 requires CALCTP for acceptance testing. Energy Upgrade CA requires that one person on staff has BPI certification. With BPI firm accreditation, rigorous quality assurance is built into BPI accreditation processes. Persistent documented problems related to performance in HVAC programs. Documented challenges of properly installing advanced lighting control systems. ESAP wages range from $12/hour to $20/hour.

<table>
<thead>
<tr>
<th>Support: Stakeholders comment that standards are necessary, but not effective without verification and enforcement.</th>
<th>Determine the project size threshold(s) for different Responsible Contractor requirements ($50K or $100K? $1 million?)</th>
<th>Solicit stakeholder feedback of specific recommendations.</th>
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<tbody>
<tr>
<td>Widespread stakeholder support for CALCTP requirement</td>
<td>Widespread contractor support for BPI standard, (except HVAC)</td>
<td>Have Concerns:</td>
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<tr>
<td>PRG group thinks Responsible Contractor Policies are considered extremely effective strategies to improve work quality in the construction trades</td>
<td>PRG is the industry recognized standard for HVAC</td>
<td>IOUs are unclear about new Title 24 regulations regarding advanced lighting controls—does Title 24 apply to equipment or integrated systems? Industry experts claim that Title 24 does not require the installation of integrated advanced lighting systems—only the component parts. New Title 24 standards will affect structure of IOU incentives.</td>
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DCALCTP is the industry recognized standard for advanced lighting control systems. Title 24 requires CALCTP for acceptance testing. Energy Upgrade CA requires that one person on staff has BPI certification. With BPI firm accreditation, rigorous quality assurance is built into BPI accreditation processes. Persistent documented problems related to performance in HVAC programs. Documented challenges of properly installing advanced lighting control systems. ESAP wages range from $12/hour to $20/hour.

### Stakeholder Support:

- **Recommendation in item B.1** does not clearly prescribe the extent of the proposed requirement for CALCTP certification. Would it apply to ALL jobs through building energy code, for utility incentives, or for the ability to call it a “CALCTP-Certified” advanced lighting control system?
- **SCE** responds to some of the recommendations as indicated below:

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<tr>
<th>Recommendation in item B.4 are technical in nature. Many affected stakeholders have not participated in the WE&amp;T Assessment and should have the opportunity to comment on the recommendations prior to consideration by the CPUC.</th>
<th>SCE responds to some of the recommendations as indicated below:</th>
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<tr>
<td>Depending on the extent of the requirement, the rigor for quantifiable savings data will vary. Utilities agree and fully support the CALCTP, but are required to quantify increased savings or persistence of savings if incentives are involved. There are also baseline considerations as a part of the savings equation since Title 24 also requires controls. If aspects such as these are not resolved, utility incentives are limited, causing difficulty in the implementation of the requirements listed here.</td>
<td>Parties are exploring the provision of increased incentives for CALCTP installations. It is important to recognize that demonstrating significant incremental energy savings above and beyond savings achieved through existing programs may be a challenge, given the Title 24 code environment (given some design requirements assume high quality installation) and the existing baseline for lighting installations. Furthermore, it is important to ensure that implementing incentives for CALCTP training will not result in reduced savings estimates for existing incentive programs. Despite these challenges, SCE is committed to effectively completing the Trial Study and incorporating the results into our future incentive programs.</td>
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### Recommendations in item B.3 do not account for all industry recognized certifications and credentials. Moreover, these are different levels of credentials, which may or may not address targeted needs of specific programs. Programs may be better suited to identify competencies required for program participation and/or certifications that appropriately and adequately address those competencies.

- **The Western HVAC Performance Alliance (WHPA)** is currently trying to identify certification competencies to build a stackable credentials model—which will be useful in determining which certifications are relevant and applicable to various scopes of work.

### Recommendations in item B.4 are technical in nature. Many affected stakeholders have not participated in the WE&T Assessment and should have the opportunity to comment on the recommendations prior to consideration by the CPUC.
have total construction costs of $50,000+, and residential properties that have 4+ stories: 3rd party administrators, ESCOs, & contractors that perform the work must pre-qualify themselves and any sub-contractors using a more detailed pre-qualification process. This should include the criteria for all contractors (4i):

a. a list of at least 3 similar past projects & references
b. 60% of workforce comprised of journey-persons who completed a registered apprenticeship program in California, or are currently enrolled in such a program.
c. Require 20% of jobsite electrical workers should be OSHA 10-hour General Industry Safety and Health Certified.
d. Require at least one jobsite electrical worker should be OSHA 30-hour General Industry Safety and Health Certified.
e. Require that any electrician working on indoor or outdoor lighting controls be a California Advanced Lighting Controls Training Program – CALCTP certified contractor and/or electrician.
f. Contractor should have a documented history of full compliance to state, health, safety and work standards.
g. In addition, the contractor’s performance over time should be tracked in PIRMS.

iii. Consolidate MUSH incentives into more streamlined programs
5. Establish wage floor [compensation standard] requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)

6. Develop an online project & payroll reporting system for contractors to input information. IOUs should utilize a 3rd party contact/labor compliance company or perform compliance in-house to ensure that goals are being met with positive and negative consequences to enforce requirements.

This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.

SCE is accountable for program results and the contractor relationship. SCE is willing to consider suggestions that can lead to improved program quality and increased energy savings. This recommendation appears to suggest developing a scorecard for suppliers. SCE utilizes these scorecards with a number of suppliers today.

Related to Item C.2, each of the evaluation criteria will need to be objectively defined. SCE will not use interviews as an evaluation criterion. Interviews can be used as part of SCE’s supplier ‘due diligence’ during the RFP process for down-selecting prior to negotiations.
2. Pilot PIPS/PRMS for new program solicitations to ensure best value. When used for solicitations, vendor selection is based on five filters: Past Performance Information, Project Capability (technical risk, ability to manage non-technical risk, value added, financial milestones), Interviews of key personnel, Prioritizing vendors (identify best value), and Cost verification (make sure best value is within cost range). Although PIPS/PRMS can be used to manage projects, it will work most effectively when it is used for contractor selection as well.
**SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs**

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<tr>
<td>A. Modify market assessments (e.g., work papers for DEER and non-DEER measures; Potential, Goals, and Target studies; sector-specific market characterizations) to address work quality and workforce characteristics:</td>
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<td>The possible execution of this recommendation could be an issue, based upon previous CPUC direction as outlined below:</td>
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<td>1. Explicitly address skill requirements and other resources required for assumed energy savings of energy efficiency measures.</td>
<td>I. The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Support:</td>
<td>Short-term: Obtain stakeholder feedback on recommendation and develop cost estimates.</td>
<td>Have concerns:</td>
<td>Previous direction from the CPUC has provided contradictory direction about how installation adjustments are incorporated into ex ante savings. This should be resolved.</td>
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<td>The same installation adjustment approach should be utilized for potential studies, goals, DEER, and work papers. This currently is not the case.</td>
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<td>Potential analysis should recognize that some potential may never be realized by ideal contractor execution. For instance, some installation effects may never be known until service is performed. From a program claims perspective, this service has occurred and the claim should be made, but the realized savings will be zero for some sample of these services.</td>
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<td>Data used to quantify the installation factor should not be double counted, as could be the case now. For instance, an ISR can be used for savings evaluations, but then the DEER values used with the ISR should not be calibrated to &quot;installed&quot; usage values, as this potentially double counts installation impacts a second time.</td>
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<td>Per the item below, the typical deemed impact evaluation considers if measures have been installed. There are multiple reasons why a measure may not realize full savings. The impact study would need to disaggregate those other reasons from installation to be useful for this application.</td>
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<td>Installation quality would also need to be considered in addition to actual counts to be meaningful in this application. Consistent with using measure case installation rates, code base cases used for DEER and work papers should also reflect the documented quality of installation that is typically present, instead of the ideal case required by the CPUC. Note that in most cases, CPUC policy has not allowed this, even though there is no double counting with the Codes and Standards (C&amp;S) program due to the C&amp;S program attribution adjustments.</td>
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<td>Additionally, in order for inclusion of work quality and workforce characteristics in EM&amp;V reports to have meaningful relevance, significant sample sizes would need to be collected across targeted program implementation markets. However, given different labor supply and demand constraints across sub-markets within IOUs and across IOUs, this information may not be meaningful to derive causal impact of workforce quality level to the ex post savings impacts. For example, the adequate supply of qualified technicians in Coachella Valley could be reasonably competitive whereas the supply level for similar technicians in the Owen’s Valley could be reasonably constrained. As a result, inclusion of this data point in EM&amp;V studies may introduce more uncertainty and/or higher variability of results than to assume similar assumptions of satisfactory installation (thereby focusing any savings variances on the installed technology itself). This may require a higher level of data collection for labor rates, effectiveness of installation, etc. across varying measure types.</td>
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<tr>
<td>2. Investigate and report demand for workers with identified skills (e.g., wages, benefits, working conditions and career ladders; certifications and licensing requirements; availability of skilled workers in local labor markets; education and training programs available to workers)</td>
<td>ii. Essential data for relevant labor markets (e.g., certifications, availability of skilled workers) are not available for program design and implementation. In addition, emerging technology reports do not routinely document skill requirements and work quality issues (e.g., call backs) associated with demonstrations. Without these data, program administrators must rely largely on anecdotal information and general impressions when assessing the potential benefits of certification requirements and specific training opportunities, and when setting priorities for workforce training investments.</td>
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<td>Pilot/demonstrate level of detail required for specifying skill requirements and other key data.</td>
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<tr>
<td>B. Develop and adopt EM&amp;V protocols for workforce and labor market data collection</td>
<td>Limited data are presently available on the characteristics of workers participating in ESA and IOU energy efficiency programs.</td>
<td>Support: Consistent with prior CPUC Decisions</td>
<td>Short-term: Closely follow on-going activities for 2013-2014</td>
<td></td>
<td>Prior to implementing this recommendation, the Commission should seek public</td>
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**SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs**

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<td>Protocols are to be developed to be applicable to all EM&amp;V components, including market assessments, process evaluations, and impact evaluations. Note that the 2013-2014 EM&amp;V Plan does address this topic but the detailed work plan is currently under development and extent of efforts in this area and efforts in this area are expected to be constrained by limited resources.</td>
<td>These data are essential in order to better understand the skills of workers and contractors responsible for installation and maintenance of energy efficiency measures, to consider relationship of work quality to skills of workers conducting work, and to assess influence of IOU programs on achievement of the State's workforce objectives.</td>
<td>Have concerns: ODC reported potential barriers of collecting data from contractors including company privacy, willingness to share private company data, and concerns with contractor response rates.</td>
<td>program cycle; provide comments and recommend that study consultants reach out to experts knowledgeable of state and federal labor force data collection.</td>
<td>comment and review in the affected proceedings to determine the feasibility and costs for such a proposal. This requirement will increase program costs (and require additional M&amp;E resources) and may negatively impact cost effectiveness in a manner that could require deletion of certain program measures in order to offset the lower cost effectiveness. Limit to existing programs where firms contract directly with utilities to deliver services or install measures. This would require the IOUs to ask program qualified contractors to submit payroll with individual work information. Any PDs/Contracts would need to incorporate SCE’s Edison Private Information (EPI) exhibit. This may be a roadblock to any agreement with the UCs and Cal-State Universities.</td>
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**C.** Explicitly consider contractor and worker characteristics and their impact on work quality as part of impact evaluations for specific resource programs.

1. While work quality issues are now being addressed as part of selected programs, additional attention regarding the measurement of work quality and the underlying factors responsible for variations in work quality is required. Strategies to promote work quality, including certification requirements for workers and contractors, should also be part of evaluations.

   - Specific resource programs to consider include: Advanced Lighting Programs and CALCTP Certification, Residential HVAC Quality Installation/Quality Maintenance, Non-residential HVAC Quality Installation/Quality Maintenance, and new construction programs.

2. Support: Have concerns:

   - Short-term: Emphasize importance of clearly defining quality for pilots for on-going studies, including CEC and potential IOU studies comparing CALCTP and non-CALCTP projects.

   - Longer-term: Select programs where work quality is expected or known to be an issue (e.g., programs with complex measures and systems, where quality is costly to identify, and where incentives for quality are weak. Develop and implements plans for explicitly addressing work quality.

Prior to implementing this recommendation, the Commission should seek public comment and review in the affected proceedings to determine the feasibility and costs for such a proposal. This requirement will increase program costs (and require additional M&E resources) and may negatively impact cost effectiveness in a manner that could require deletion of certain program measures in order to offset the lower cost effectiveness. Limit to existing programs where firms contract directly with utilities to deliver services or install measures.

**D.** Modify program theory and logic models, program tracking systems, program performance metrics (PPMs), and process evaluations for adopted recommendations from SG_1, SG_2, and SG_3.

While Guidance Document will provide some suggestions on how to revise key EM&V program elements, these suggestions need to be more fully developed with stakeholder input for those recommendations that are adopted.

   - Support: Consistent with CPUC direction

   - Have concerns:

   - Short-term: Stakeholder feedback on how best to evaluate proposed recommendations

The program theory modification is required to incorporate any and all recommendations from this document. Changes to program theory, logic models, and tracking systems should be spelled out, planned and budgeted for significantly before required implementation. Changes, especially to tracking systems can be costly and take significant time to implement.
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<tr>
<td>E. For IOU workforce education and training programs, develop and test methodologies for assessing implications of IOU initiatives related to skills development and partnerships on resource acquisition and other broader objectives for energy efficiency</td>
<td>The IOU WE&amp;T programs and the associated impact evaluations have focused on “market building” activities. An increased emphasis on skills development and on partnerships (SG_1 recommendations) with core educational institutions and community organizations will require adoption of new approaches to EM&amp;V. While the IOUs have various ongoing efforts related to skills development and partnerships, assessments of the benefits of these initiatives (i.e., skills development and partnerships) to the IOU ratepayers are needed if additional resources are to be allocated to these activities.</td>
<td>Support:</td>
<td>Short-term: Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships. Identify programs and EM&amp;V approach where significant IOU resources are allocated currently to skills development and partnerships.</td>
<td>Long-Term: Need to clearly define expectations for success associated with “Market Building Activities” including: training needs for the workforce, content, what kinds of experts are needed to deliver, test-in/test-out, and ongoing maintenance. Information may be difficult to collect and quantify.</td>
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<td>Long-Term: Incorporate revisions for adopted recommendations into Program Implementation Plans and EM&amp;V plans.</td>
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Recommendations for Strategic Goal #7 (Evaluation of Web Portal) are currently being developed.
WE&T Statewide Strategic Planning Consultant

DRAFT summary recommendations

January 10, 2014

Lead Researcher:
Dr. Carol Zabin, UC Berkeley Donald Vial Center

*Not for public dissemination*

Comments from the Southern California Gas Company
STRATEGIC GOAL 1: WORKFORCE EDUCATION AND TRAINING PROGRAM MODIFICATION

The IOUs’ dedicate most of their WE&T resources for growing the market for energy efficiency services rather than skills-building for the workforce who carry out the work, and the current structure of their programs is not well-suited to improve the DSM skills and knowledge of large numbers of workers in the key occupations that impact energy efficiency outcomes. By increasing the emphasis on skills development, the WE&T programs can better meet the CLEESP’s vision that “By 2020, California’s workforce is trained and fully engaged to provide the human capital necessary to achieve California’s economic energy efficiency and demand-side management potential.”1

Most of the IOUs’ WE&T resources are dedicated to very short, stand-alone, free classes open to any interested person. Most participants are either end-users (building managers or home owners who are potential buyers of energy efficiency services) or contractors and professionals in managerial positions (sellers of energy efficiency services). The offerings are not effective at reaching workers in the key EE/DSM occupations or at developing workers’ skills:

- Most current offerings do not involve the state’s core education and training institutions for the key EE/DSM occupations, thus missing an opportunity to incorporate DSM content into the main period of training that workers in key occupations go through. These are: UC/CSUs for professionals, and apprenticeship and community colleges for the trades.
- Most current offerings do not adhere to best practices for skill-building training. Best practices include clear outcomes for each class, classes that are sequenced and build upon each other, competency testing at class completion, tied to recognized, stackable credentials, hands-on learning, and for incumbent workers, a clear commitment and involvement by their employers.
- The 2010-2012 WE&T process evaluation by ODC found that the Centergies classes heavily emphasize information about technologies, rather than skill-based outcomes.2
- Due to the course structure and content delivery style, ODC concluded that participation in Centergies training does not guarantee that participants will have obtained the skills necessary to carry out high-quality work.3

Recommendations
We recommend the IOUs direct a significant portion of WE&T resources to EE/DSM skill-building activities for the critical occupations. Our recommended approach would affect occupational transformation on a broad scale by leveraging the state’s core accredited education and training institutions, and promoting the identification of clear certifications and skill standards.

We recommend developing comprehensive implementation plans to customize programming targeted to each of the three career pathways. These plans should align with and leverage the core education and training institutions (UC/CSU for professionals, CCC and state-certified apprenticeship for the trades). Each of the plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation. We offer more detailed recommendations on processes for prioritization and program delivery in our full guidance plan. We also present three “Phase 1” programs that can be initiated in 2014, which are low-hanging fruit that can serve as learning arenas for the new WE&T configuration.4

Our proposal involves structured oversight from a governing board of key state workforce, education, and energy agencies, plus technical experts (e.g. the Lawrence Berkeley Lab). The governing council should appoint industry and subject-matter experts to an advisory group for each occupation, which will be responsible for identifying certificatIOns and skill standards.

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1 CLEESP, p 74
2 2010-2012 WE&T Centergies Process Evaluation, ODC. Pages 12, 13
3 Ibid, p 14
4 This may require accelerated direction from the CPUC (e.g., Advice Letter process at a minimum)
### SUMMARY OF RECOMMENDATIONS:
#### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<td>A. Allocate a significant amount of WE&amp;T dollars to targeted programs for workers' skill-building:</td>
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<tr>
<td>1. We recommend that at least $80 million of WE&amp;T funds per three-year cycle go to workforce development in order to affect meaningful change in this arena.</td>
<td>Although the CLEESP mandates workforce education and training, most of the Centergies budget currently goes towards educating buyers and sellers of energy efficiency services, rather than skills development for workers involved in the design, installation, and maintenance of EE/DSM work. Most of the Connections budget goes to consumer education, not career development. Workforce development and market development require a different guiding strategy for programming, and distinct activities and delivery mechanisms. There is a need for increased efforts in the area of workforce development in order to carry out the CLEESP vision, which will require a significant increase in resources. Our recommended allocations represent the minimum amount that we believe would have a statewide impact on workforce development in each of the four categories (professionals, res trades, non-res trades and inclusion). We prioritize among the four categories based on the following criteria: i. Estimated program costs based on preliminary recommendations and stakeholder feedback; ii. Ability to leverage other funds (state and/or employer); iii. Importance in the CLEESP; iv. Share of occupations from the NA projections (4:1 trades:prof; 1:1 res:non-res)</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group Have concerns: IOUs do not want to lower budget to current programs</td>
<td>Get stakeholder feedback on the quantity of $ to be allocated to workforce dev’t vs. market dev’t; e.g. how much $ is needed for different types of activities, and how to prioritize programming based on needs and opportunities.</td>
<td>Market and workforce development can often present two different resource needs. IOU portfolios as a whole, address market (building) development training more so than workforce development training, as defined by the Consultant in the recommendations. IOU training does emphasize on-going skills training for incumbent and newly, but experienced workers entering the EE workplace to provide customers participating in EE programs with competent, qualified services. A workforce development infrastructure exists, using numerous state agency and local government funded channels, so it would be helpful to have a recommendation that shows how the current relationship between workforce development agencies and IOUs could be enhanced in a proven cost effective manner. The CLEESP sets long-term goals for which WET programs and resource program areas of the portfolio have begun to converge on. Strengthened skills of critical occupation categories is necessary, but the recommendation has only identified general (major) occupations, which is void of alignment to specific CLEESP goals, or market driven occupations of greatest benefit to customize training around. The Food Service Energy Centers (FSEC - a component of the total WE&amp;T budget) works closely with culinary and community, state and universities to train students, educators, and staff on industry skills and workforce opportunities. The recommendations are based on the aspiration that the IOUs, through energy efficiency, can influence the labor market through certifications and skill-building courses. Taking any steps in meeting the recommendations would substantially increase WE&amp;T related budgets, significantly change the charter of WE&amp;T (and the IOUs roles in labor education), and plenty of time to get there.</td>
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<td>2. Within the $80m (per 3-year cycle) for workforce development, we propose the following allocation: • $20m for professionals • $20m for non-residential trades • $20m for residential trades • $20m for inclusion Connections 9-12 career prep/awareness counts in inclusion. The rest is counted under market-building.</td>
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<td>v. Key role of specifiers and designers</td>
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<td>vi. Where are there work quality problems?</td>
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<td>vii. Where are their key new emerging technologies that require new skills for critical occupations?</td>
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<td><strong>B. Redesign workforce skills development programming</strong></td>
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<td>1. Phase out short, stand-alone classes as a mechanism for skills-building program delivery (except classes designated for 20% dedicated to market development)</td>
<td>Current programming for workforce skills development is limited. Most programming in this area does not follow best practice for skills development and does not fully leverage the rich infrastructure of CA accredited education and training institutions. Short, open-door classes are still the primary program delivery mechanism, although this is not an effective skills-building strategy. Partnerships with apprenticeships have been extremely limited so far.</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group. Have concerns: IOUs have concerns about how to get credit for energy savings from programs based on partnerships.</td>
<td>Get stakeholder feedback on how to structure effective partnerships for each key institutional partnership. Discuss with stakeholders, IOUs and CPUC how to incorporate partnership-based activities with other IOU program objectives re: energy savings.</td>
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<td>2. Orient programming around partnerships with core accredited education and training institutions for each major occupation/career pathway: professionals; commercial trades workers, and residential trades workers</td>
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<td><strong>C. Career pathway plans:</strong> Design an implementation plan for each major career pathway (professional, commercial trades, residential trades) with the following elements:</td>
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<td>1. Each of the 3 plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation (i.e. UC, CSU, and CCC for professionals; DAS and CCC for commercial trades; CCC for residential trades).</td>
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<td>2. Governing council should appoint Industry and SME advisory group for each occupation, which will be responsible for identifying certifications and skill standards for each.</td>
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<td>3. Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions.</td>
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<td>4. Plan should determine key opportunities to incorporate EE skills and knowledge at specific points in the career pathway for priority occupations. Key points in the career pathway are pipeline preparation, core post-secondary education, and incumbent worker training.</td>
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<td>5. Funds should be allocated wherever possible to existing training programs linked to state-</td>
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<td>i. Because of the limited partnerships with key state education and training institutions and a lack of best practices in the offerings described above, the IOUs' current workforce development programming has not been effective in reaching and developing the skills of workers in the key careers. Developing career pathway-specific plans built around key institutional partnerships, and with defined stakeholder input, will lead to more effective and well-aligned workforce skills-building programming.</td>
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<td>ii. There is a widely acknowledged lack of clarity and consensus on certifications and skill standards for the critical occupations.</td>
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<td>iii. The IOUs have internal expertise on emerging technologies, and certain</td>
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<td>viii. IOUs have concerns about how to get credit for energy savings from programs based on partnerships.</td>
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<tr>
<td><strong>Comments</strong></td>
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<tr>
<td>IOU training does emphasize on-going skills training for incumbent and newly, but experienced workers entering the EE workplace to provide customers participating in EE programs with competent, qualified services. IOUs welcome guidance on how to better incorporate any of its training content/curriculum into core accredited education and training institution courses. The Food Service Energy Centers (FSEC) offers standalone offerings that build on each other that participants attend at any of the statewide energy centers during the year.</td>
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<td>Strengthening skills of critical occupation categories is necessary, but the recommendation is void of market driven occupations of greatest benefit to customize training around. IOU training currently prioritizes workforce skills training for incumbent and newly, but experienced workers entering the EE workplace to provide customers participating in EE programs with competent, qualified services.</td>
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<td>6.</td>
<td>recognized credentials, via RFPs or other funding mechanisms.</td>
<td>areas of quality problems (not always within the WE&amp;T staff, however). They do not have expertise on career pathways or workforce development strategies.</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group.</td>
<td>Get stakeholder feedback on governance structure.</td>
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<tr>
<td>7.</td>
<td>Funds should support incorporation of EE specific knowledge and skills through support for curriculum development, train the trainer etc.</td>
<td>Funds should support incorporation of EE programs, as well as many training providers. Leveraging existing resources and infrastructure can increase programs’ impact.</td>
<td>Support: California DAS supports the apprenticeship proposal; UC Berkeley architecture department is a strong.</td>
<td>Strengthening skills of critical occupation categories is necessary, but the recommendation is void of market driven occupations of greatest benefit to customize training around. IOU training currently prioritizes workforce skills training for incumbent and newly, but experienced workers entering the EE workplace to provide customers participating in EE programs with competent, qualified services.</td>
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<tr>
<td>8.</td>
<td>Programming should leverage funding for classroom and other training from key institutions wherever possible.</td>
<td>Significant employer commitment to training programs increases their effectiveness.</td>
<td>Support: CA DAS supports the apprenticeship proposal; UC Berkeley architecture department is a strong.</td>
<td>Write up the three specific proposals for stakeholder feedback and input.</td>
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<tr>
<td>9.</td>
<td>Programming should use sector strategy approach for incumbent worker training, based on commitments from multiple employers.</td>
<td>Linking or embedding training initiatives with long-term career pathways, in particular core occupational training institutions, also increases their effectiveness.</td>
<td>Support: CA DAS supports the apprenticeship proposal; UC Berkeley architecture department is a strong.</td>
<td>Write up the three specific proposals for stakeholder feedback and input.</td>
</tr>
<tr>
<td>7.</td>
<td>In-house IOU skills training should be limited and reserved to cover gaps that partners can’t fill, with commitment to transfer courses to other training institutions over time.</td>
<td>Budget constraints are a concern to the IOUs WE&amp;T programs, as well as many training providers. Leveraging existing resources and infrastructure can increase programs’ impact.</td>
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**D. Governance and accountability:**

1. Plan must be approved first by governing board composed of key state workforce, education, and energy agencies, and technical experts.
2. CPUC should consider recommendations of governing board and approve final plan.
3. Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation.

**E. Phase 1 Programs**

We suggest the following programs that can be initiated in 2014 for each occupational group, which are low-hanging fruit that can serve as learning arenas for the new configuration:

1. Professionals: RFP to be let out to 4-year...
### SUMMARY OF RECOMMENDATIONS:
#### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

<table>
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<tr>
<td>1. Accredit architecture and engineering departments to incorporate energy efficiency skills and knowledge into their curricula for degree programs</td>
<td>term as the larger framework is developed and put into place.</td>
<td>supporter of the professional proposal.</td>
<td><strong>Next Steps</strong></td>
<td><strong>COMMENTS</strong></td>
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<tr>
<td>2. Commercial trades: Partnership/sector strategy with CA Division of Apprenticeship Standards to incorporate EE skills and knowledge into journey upgrade programs for key crafts.</td>
<td>ii. We received clear feedback from professional 4 year programs about the huge potential value of an IOU-sponsored RFP to incorporate leading EE/DSM skills into curricula.</td>
<td>Have concerns: None?</td>
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<td>3. Residential trades: Review and consolidate existing Community College partnerships around supporting skills-building best practices at Colleges</td>
<td>iii. DAS has already indicated its eagerness to participate in this type of partnership on EE/DSM skills.</td>
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<td>4. Inclusion: RFP for Pilot Project Energy Efficiency Bridge Program in one region that leverages other investments and connects to apprenticeship.</td>
<td>iv. Our research indicates a number of productive relationships with local Colleges and community training institutions exist.</td>
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<td>v. There are some examples of bridge programs that connect disadvantaged youth with pre-apprenticeship.</td>
<td>v.</td>
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<td><strong>F. Administrator:</strong></td>
<td>Administrator should have the capacity and willingness to manage and staff the plan outlined above.</td>
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<td><strong>Next Steps</strong></td>
<td><strong>COMMENTS</strong></td>
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<td>Option 1. IOUs manage and staff guidance plan, or issue an RFP for a 3rd party implementer.</td>
<td>Although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development partnerships with the state’s core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative administration of the workforce development portion of WE&amp;T would be more effective.</td>
<td></td>
<td><strong>Option 1. Support:</strong></td>
<td><strong>Option 1. Support:</strong></td>
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<td>Option 2. CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization.</td>
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<td></td>
<td>Most IOU WE&amp;T staff would like to retain primary ownership over the funds. Several expressed a desire/willingness to include more workforce partners in the program design process we’ve described.</td>
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<td>The content of the recommendations are the same in either case, and both could still include IOU participation in program development, or best-practice IOU-led offerings such as the retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&amp;T portfolio overall.</td>
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<td></td>
<td>Concerns: some of the stakeholder advisory group expressed concern about the IOUs’ capacity to effectively execute the type of partnership structure we describe.</td>
<td>Explore the pluses and minuses of each option, soliciting stakeholder feedback and adding detail to each proposal.</td>
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<td>To increase the likelihood of advancing market [building] development training of IOUs in greater coordination with the workforce development activities of state/local agencies in a manner that can sustain progress, a focused working group has merits.</td>
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<td></td>
<td><strong>To increase the likelihood of advancing market development training of IOUs in greater coordination with the workforce development activities of state/local agencies in a manner that can sustain progress, a focused working group has merits.</strong></td>
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<td>program alignment and fund leveraging. Concern: Most IOU WE&amp;T staff are wary of relinquishing ownership to an outside entity. Some stakeholders and IOUs expressed concern that there isn’t currently a clear choice of a non-profit to lead the Option 2 effort. Several noted issues that may arise around maintaining CPUC oversight over ratepayer funds.</td>
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**STRATEGIC GOAL 2: INCLUSION FOR DISADVANTAGED WORKERS**

Currently, the substantial and diverse investments being made by the IOUs in the energy efficiency and DSM programs do not include interventions to support the creation of middle-class career pathways for low-income communities, communities of color and other disadvantaged populations. While these investments offer a promising opportunity to build middle-class career pathways for low-income people and jobseekers with barriers to employment ("disadvantaged workers"), there are several barriers in place that prohibit the IOUs from achieving the California Long Term Energy Efficiency’s Strategic Plan goal of increasing “participation from within minority, low income and disadvantaged communities in achieving California’s economic energy efficiency potential”:

- The work of investor-owned utilities in California was not historically seen as public investments akin to government public works projects, and thus the public policy direction of requiring inclusive hiring policies and family-supporting wages applied to publicly-funded capital projects has only been recently considered by the CPUC.
- The IOUs do not currently have clear authority and direction to allocate resources to proven practices that increase minority, low-income, and disadvantaged worker participation in public works and energy efficiency projects.
- The IOUs currently lack of a working definition of “disadvantaged worker” and lack clear performance metrics or program goals by which to measure progress in hiring these workers.
- Current data collection methods do not provide a comprehensive picture on the demographic profile of the workforce being employed to carry out EE/DSM programs by occupation or job category, nor do they collect detailed data on compensation structures and wages by occupation and job category. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect this data.
- The IOUs currently lack clearly articulated pathways for disadvantaged workers to advance along a career ladder as they gain more experience, training and skills. An effective ecosystem of agencies and organizations (including: low income weatherization providers, community based organizations, community colleges, local and state workforce investment boards, utility workforce development staff, labor unions and contractors) can create a pipeline of ready and able workers through effective recruitment, training and placement of disadvantaged workers.
- The IOUs currently lack the contracting and procurement tools need to shape incentives or requirements for contractors to hire trained and ready workers from disadvantaged communities. Contracts for higher-paid, higher-skill work (such as EE work in schools, universities and hospitals), tend to be smaller and do not always require deep, complex retrofits, which may prevent contractors from bringing on hired and ready workers from disadvantaged communities.

Data collection efforts are necessary to support these goals. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect workforce data to evaluate job quality and the demographic profile of workers. We recommend that this be done through an on-line workforce reporting system (such as Elations or LCP Tracker); these systems are inexpensive and have been used by many awarding agencies in the state. In addition, the IOUs should adopt a definition of disadvantaged worker and apply it meaningfully and consistently across all EE programs. This definition can then be used to design inclusion programs, and to track and measure results. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria 6); and/or b) an individual who is a resident of a high unemployment zip code in her/his county. The IOUs should also institute data collection as

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integrating procurement and contracting ("demand-side") strategies with recruitment, screening, skills development, training, wrap-around services and credentialing ("supply-side") strategies is essential to achieving the full scope of California’s EE goals.

**Recommendations**

The CPUC should direct IOUs to measure and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals. The CPUC’s direction should have clear metrics and performance standards to meet these goals.

We propose a two track strategy. First, the IOUs should ensure the quality of jobs created by EE investments. We recommend that the IOUs set a wage floor for the ESAP, Direct Install, and Third Party programs, since these program implementers and contractors have direct contracting or subcontracting relationships with the IOUs. Second, we recommend that the IOUs launch a pilot MUSH sector program that includes a targeted hire program. This MUSH sector program can follow the standards used in public works construction, where targeted hire programs, tied to apprenticeship, have been very successful in many local governments in California and nationally.

The IOUs currently lack of a working definition of “disadvantaged worker” and lack clear performance metrics or program goals by which to measure progress in hiring these workers.

Data collection efforts are necessary to support these goals. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect workforce data to evaluate job quality and the demographic profile of workers. We recommend that this be done through an on-line workforce reporting system (such as Elations or LCP Tracker); these systems are inexpensive and have been used by many awarding agencies in the state. In addition, the IOUs should adopt a definition of disadvantaged worker and apply it meaningfully and consistently across all EE programs. This definition can then be used to design inclusion programs, and to track and measure results. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria 6); and/or b) an individual who is a resident of a high unemployment zip code in her/his county. The IOUs should also institute data collection as

Once a definition is set, the IOUs should set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs. We recommend a conservative initial goal (such as 15% of new entry level job openings in IOU supported EE/DSM work) in order to ensure success and acceptance by both IOUs and contractors. This goal can be increased over time as programs and contractors and IOU staff become familiar with them. The results of these goals can be tracked by the workforce reporting system and made publicly available, as a scorecard, similar to that used in General Order 156 which has been successful for promoting diversity in procurement. Contractors meeting goals should receive additional points in the next round of program procurement. In order to ensure that workers are trained and ready to perform higher skill work, we also recommend funding for pre-apprenticeship training programs that will provide disadvantaged workers the skills, training and abilities needed to be successful in entry-level MUSH and large commercial EE and utility employment. This funding should be released in the form of an RFP, and should encourage the mobility of ESAP and other residential workers into higher wage higher skilled jobs in the MUSH sector.

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6 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

7 The unemployment rate is 150% of the median unemployment rate for the county.
### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<td><strong>A.</strong> Prioritize creation of good-paying jobs and workforce diversity as key IOU goals along with efficiency outcomes:</td>
<td>Successful workforce inclusion programs have established goal setting and monitoring in order to improve outcomes. In order for the IOUs to have the authority to direct resources towards these efforts, they need direction from the CPUC.</td>
<td>Support: Some equity groups, including those in the Stakeholder Advisory Group, support this recommendation.</td>
<td>Get stakeholder feedback on language of proposed CPUC direction.</td>
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<td></td>
<td>General Order 156 is an example of the IOUs’ ability to create a new program and achieve diversity goals in response to specific CPUC direction.</td>
<td>Have concerns: IOUs are concerned that the promotion of job creation and workforce diversity in EE/DSM programs cannot be resourced using ratepayer funds.</td>
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<td></td>
<td>The CPUC should explicitly direct IOUs to promote, measure, and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals.</td>
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<td>Because this is a new effort for EE/DSM programs:</td>
<td>Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring.</td>
<td>Test revised definition with Stakeholder Advisory Group.</td>
<td>In order to consider these recommendations, a consensus definition and feasibility analysis testing implemented use of a consensus definition is needed. This would help prove the sustainable use of the definition for all stakeholders.</td>
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<td></td>
<td>Many existing public works programs have developed similar definitions of Disadvantaged Worker. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility.</td>
<td>Support: Some equity groups support this recommendation.</td>
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<td></td>
<td>The combination of these two sets of criteria have proved in other programs to identify an adequate number of individuals who most need employment opportunity and who are capable of developing the necessary skills to do good work.</td>
<td>Have concerns: IOU staff and ESA contractors expressed concern whether experienced ESAP workers should be included in this definition to reinforce ESAP as an entry point to EE/DSM careers for disadvantaged workers. (ESAP dropped from definition as a result of stakeholder consultation.)</td>
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<td><strong>B.</strong> Define Disadvantaged Worker meaningfully and consistently:</td>
<td>Models from other successful programs. Current lack of specific goal. Successful experience from G.O. 156.</td>
<td>Support: Some equity groups support this recommendation.</td>
<td></td>
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<tr>
<td>1. The CPUC should set a common definition of “Disadvantaged Worker” that will be used by all IOUs in designing inclusion programs and tracking and reporting results.</td>
<td></td>
<td>Have concerns: IOU staff, contractors, and members of the Stakeholder Advisory Group expressed the following concerns: How will the goal be set? Will goal apply across the board to all EE/DSM programs? Will each program need to meet the goal or will utilities be allowed to achieve goal by averaging results across programs, e.g. ESAP compensates for lack of inclusion elsewhere? Desire for voluntary goal vs. desire for penalties in the event goal is not achieved. How will efforts to drive inclusion affect cost-effectiveness? Will CPUC adjust cost-effectiveness requirements to reflect inclusion goal?</td>
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<td>2. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria); and/or b) an individual who is a resident of a high unemployment zip code in her/his county.</td>
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<td>3. Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring.</td>
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<td>4. Many existing public works programs have developed similar definitions of Disadvantaged Worker. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility.</td>
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<td>5. The combination of these two sets of criteria have proved in other programs to identify an adequate number of individuals who most need employment opportunity and who are capable of developing the necessary skills to do good work.</td>
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<td>6. Set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</td>
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<td>1. Because this is a new effort for the IOUs and many of their contractors, we recommend that the initial goal be conservative in order to ensure success and acceptance. We suggest an initial goal of 15% of EE/DSM work, measured in worker hours, for Disadvantaged Worker participation.</td>
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<td>2. This goal can be increased over time as the programs are developed and participants become more familiar with them.</td>
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<td><strong>D. Institute a required, electronic workforce reporting system for EE/DSM contractors to capture information:</strong></td>
<td>Successful equity and inclusion programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements.</td>
<td>Support: Labor groups familiar with reporting data support this recommendation.</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
<td>In order to consider these recommendations, a consensus definition and feasibility analysis testing implemented use of a consensus definition is needed. This would help prove the sustainable use of the definition for all stakeholders. Some form of phased voluntary approach for adopting specific requirements or targets should be incorporated into the recommendation.</td>
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<tr>
<td>1. Require monthly reports using LCP tracker or some other established program that works with payroll companies.</td>
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<td>Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concerns over the potential cost of reporting data. IOU staff have expressed concern over lack of direction from CPUC regarding importance of inclusion vs-a-vs cost-effectiveness trade-off.</td>
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<td>2. Include the following data points:</td>
<td>a. Hours worked</td>
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<td>b. Rate of pay</td>
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<td>c. Disadvantaged status, zip code of residence</td>
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<td></td>
<td>d. Race, ethnicity, and gender</td>
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<td></td>
<td>e. Trade/occupation</td>
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<td>f. Journey/apprentice level</td>
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<td>g. Certifications held</td>
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<td><strong>E. Ensure baseline quality of jobs created by efficiency investments:</strong></td>
<td>i. Interviews indicate ESAP wages range from $12/hour to high $20s/hour.</td>
<td>Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs.</td>
<td>Get feedback on $16/wage floor from Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
<td>Agree with concerns of contractors SCG advocates for the development and implementation of a common training curriculum for all measure install personnel working in the ESA Program. Such training will provide a uniform and consistent foundation amongst all install personnel statewide, allowing for career advancement while working on behalf of any of the IOU’s ESA Program as well as similarly skilled work outside of this program. This opportunity will be pursued by SCG ESAP and proposed to the other IOUs.</td>
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<td></td>
<td>ii. LA DWP’s utility pre-craft worker program starts trainees at $16/hour.</td>
<td>Have concerns: Some IOU staff, one equity group (Brightline Defense), and contractors are concerned. A wage floor could increase cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. ESP contractors have concerns that they will be expected to bear burden of wage floor without overall program budget increase. Cost of collecting and reporting data.</td>
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<td>iii. Higher wages typically contribute to higher skill development, and better outcomes.</td>
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<td><strong>F. Improve job opportunities created by efficiency investments:</strong></td>
<td>California Labor Code requires prevailing wages and apprenticeship utilization on public capital projects. Contrary to this general public policy, it exempts “work done directly by any public utility company pursuant to order of the Public Utilities Commission or other public authority.” Cal. Lab. Code Sec. 1720(a)(1).</td>
<td>California Labor Code requires prevailing wages and apprenticeship utilization on public capital projects. Contrary to this general public policy, it exempts “work done directly by any public utility company pursuant to order of the Public Utilities Commission or other public authority.” Cal. Lab. Code Sec. 1720(a)(1).</td>
<td>In order to consider these recommendations, a consensus definition and feasibility analysis testing implemented use of a consensus definition is needed. This would help prove the sustainable use of the definition for all stakeholders. Some form of phased voluntary approach for adopting specific requirements or targets should be incorporated into the recommendation.</td>
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<td><strong>G. Consolidate all incentives and investments:</strong></td>
<td>Energy Upgrade California and Sierra Nevada</td>
<td>Support:</td>
<td>Gather more data on</td>
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<td>1. Bundle programs to create scale for contractors.</td>
<td>Energy Works. Programs in San Francisco, Portland and Seattle utilities, PLAs with targeted hire requirements at LA-METRO, LAUSD, CRA/LA, LACCD.</td>
<td>Have concerns: IOU staff have expressed concern that increased coordination and adoption of &quot;new&quot; policies along multiple programs will delay implementation of these practices.</td>
<td>MUSH programs to build out recommendations. Test detailed recommendations at non-residential EE stakeholder meeting in January.</td>
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<td>2. Focus MUSH incentives on deep retrofits and whole building programs.</td>
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<td>Have concerns: IOU staff express concern over the cost of compliance with targeted hiring programs may make MUSH programs less cost-effective. Requirement that customers use contractors off pre-qualified list may discourage participation. Fear that Disadvantaged Workers may not have the skills necessary to perform the work. Contractors may not have sufficient work to add new hires to meet DW targeted hire requirement.</td>
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<td>3. Increase allocation for this program to at least $100 million.</td>
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<td>5. Restrict contractor participation to increase market share and positive outcomes for participating contractors:</td>
<td>a. Require competitive application process to reward contractors that meet or exceed worker skill standards, Disadvantaged Worker hiring goals, and wage floors.</td>
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<td>6. Open list to new contractors on a restricted timeline (e.g. every 2 years).</td>
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<td>H. Establish training bridge program to link residential EE workers to non-residential EE jobs.</td>
<td>Power Pathways, CCCO Career Advancement Academies, Pre-apprenticeship collaborations such as SF City Build, IBEW Local 11 and LATTThe</td>
<td>Support: Education and labor stakeholders have indicated concerns with the viability of ESAP workers entering in bridge programs; some ESAP contractors indicate there are viable career pathways within ESAP employers.</td>
<td>Agree with contractor concerns SCS advocates for the development and implementation of a common training curriculum for all measure install personnel working in the ESA Program. Such training will provide a uniform and consistent foundation amongst all install personnel statewide, allowing for career advancement while working on behalf of any of the IOU’s ESA Program as well as similarly skilled work outside of this program. This opportunity will be pursued by SCS ESAP and proposed to the other IOUs.</td>
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| 1. Strengthen ESAP and MIDI as entry point to a higher skilled, higher-paid career in commercial and industrial EE: | l. Interviews and EE Decision indicate expansion of MIDI program.  
ii. The level of skills required for residential ESAP and MIDI programs are similar: lower and thus more suited to an entry-level position. However, on the job, ESAP and MIDI installers gain valuable experience in both soft and hard skills, preparing them to move up the ladder.  
iii. The contractors who run the ESAP programs tend to hire from the local, low-income community, making it a natural entry point for a more diverse workforce. However, it should not be an end point for low-income workers. | Support: Some equity advocates were interested in learning more about the details of the recommendation to determine their support.  
Have concerns: One equity group (Brightline Defense) and IOU staff expressed concern over a wage floor increasing the cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. Contractors were concerned over the wage floor: Will contractors be expected to bear burden of wage floor without overall program budget increase? They are also concerned about the cost of collecting and reporting data. | Test $16/wage floor with Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker. | Agree with contractor concerns  
SCG advocates for the development and implementation of a common training curriculum for all measure install personnel working in the ESA Program. Such training will provide a uniform and consistent foundation amongst all install personnel statewide, allowing for career advancement while working on behalf of any of the IOU’s ESA Program as well as similarly skilled work outside of this program. This opportunity will be pursued by SCG ESAP and proposed to the other IOUs. |
STRATEGIC GOAL 3: INTEGRATING WORKFORCE EFFORTS WITH RESOURCE PROGRAMS

There is substantial evidence that improper equipment installation, operation, and maintenance lowers the realized energy savings of energy efficient measures and most likely explains some of the differences between ex ante savings estimates and ex post evaluations. Specific sources include the 2011 WE&T Needs Assessment, where results from case studies for several distinct market sectors are reported, an extensive annotated bibliography that will form an appendix to the guidance plan, and recent interviews with current and former IOU staff, subject matter experts, and industry professionals, which were conducted for this project. This evidence spans complex advanced lighting and HVAC systems as well as installations of simpler energy efficiency equipment.

The extent to which improper equipment installation, operation, and maintenance reduces the energy outcomes for California’s Demand Side Management (DSM) programs is unknown. While specific studies have investigated the extent of poor installations for specific technologies (e.g., HVAC, advanced lighting, building construction), comparable data across measures and programs are not collected for California’s DSM programs that could systematically determine where poor work quality may be reducing energy savings.

Workers can acquire, through training and on-the-job experience, the necessary skills to perform high quality work, but training alone is not a sufficient condition to ensure high quality work. The market must also demand quality work. The IOU DSM programs have introduced various program requirements to ensure high quality work, ranging from contractor licensing requirements to quality assurance programs to customer information; however, these are minimal compared to the much more robust workforce and related standards found in many other sectors in the economy, including in segments of the building and construction industry, the key industry for energy efficiency investments. The current process for program planning, approval, and implementation does not specifically reward the IOUs for ensuring high work quality nor penalize them when energy savings are left on the table due to improper installation, operation, or maintenance of energy efficiency measures. 10 The common response to poor work quality continues to be support for training, but the return on these investments—for both ratepayers and the trainees—is limited without greater demand for quality work.

The following recommendations suggest a series of process improvements to better understand and incorporate the impacts of work quality on energy goals and 2) suggest workforce standards for IOUs to incorporate into the management of EE programs that will both reduce the risk of inaccurate savings estimates due to work quality, and encourage higher performing and more qualified contractors to participate in DSM programs.

Recommendations

Process Improvements: First, we recommend a series of process improvements to create a stronger incentive structure to ensure proper installation and maintenance of energy efficiency measures.

The existing program development, approval, implementation, and evaluation processes neither reward nor penalize the IOUs for their influence over work quality and its impact on energy savings. Assumptions about the installation and performance of energy efficiency equipment are based on technical specifications and engineering assessments, and fail to account for the impact of worker skills and performance on equipment performance (and energy savings). Often, equipment is assumed to be installed correctly and in-service, without either specifying the level of technician skill required or verifying quality in the field to substantiate these claims.

The CPUC applies discounts (“haircuts”) to the IOU-claimed energy savings to avoid over-estimating, but these reductions do not isolate the effects of different program requirements or workforce standards. Since the IOUs perceive that stricter program requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily adopt higher standards, unless there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear incentive if they evaluated performance in real time, but they mostly are limited to catching fraudulent behavior. Real-time across the board inspections are costly and increase transaction costs and program friction for customers. Finally, the program implementation and evaluation cycles are not conducive to providing timely feedback on effective program requirements, and as stated above, impact evaluations do not document or isolate work quality problems.

Our recommended process improvements address the shortcomings of the current quality assurance and discount process, and call for the identification of minimum contractor requirements and worker skills/credentials needed to carry out work correctly up front. These recommendations will reduce the risk of large gaps between ex ante estimates and ex post evaluations for deemed measures and savings left on the table due to installation problems for custom measures.

Workforce Standards: Second, we recommend several different types of contractor and workforce standards designed to screen out less qualified contractors and create an environment to encourage participation by high performing contractors in energy efficiency work. Workforce standards refer to interventions that shift the competitive environment toward higher performance. Workforce standards are a quality control mechanism that can reduce the need for more expensive post-installation quality assurance activities.

The lack of available information on work quality and its impact on the portfolio should not be used as an excuse to delay adopting workforce standards, many of which are “no regrets” or “do-no-harm” approaches with multiple co-benefits, including deeper retrofits. Because different standards can have the same effects in the labor market, there is some flexibility in how standards can be applied to different programs. For example, establishing a wage requirement can have the same effect as a skill requirement because if all contractors have to pay higher wages, contractors who have invested in higher skilled workers will be able to more effectively compete in the market. Similarly, policies to contract with high performing contractors will result in the use of skilled workers as effectively as establishing specific skill standards for workers for each program or technology. Each of these types of standards acts to support higher quality contractors, and screen out or improve the performance of lower quality contractors.

In making recommendations, we mapped the resource programs by delivery mechanisms, target market, and technology in order to identify the simplest approach given the existing program structure. Given the range of technologies currently offered and the ever-changing technological environment, it is very difficult to establish and maintain, not to mention enforce, appropriate specific worker skill standards for every measure and program in the IOU portfolio. When there is widespread industry agreement for particular skill standards, 11 they are effective ways for establishing a bar for participating technicians and contractors. In the absence of agreed upon skill standards, contractor qualifications or wage standards would be simpler approaches to improve performance and work quality.

10 For custom projects, which represent a large percentage of the savings in recent portfolios, customers lose rebates (and IOUs lose savings credit) when equipment is not functioning for any number of reasons, including low-quality installation. The new Efficiency Savings and Performance Incentive (ESPI) creates a mechanism that encourages IOUs to manage EE programs in a way that ensure actual savings meet or exceed estimates (for deemed measures with a high degree of uncertainty).

11 For example CALCTP for advanced lighting controls or DOE Task Analysis for different energy efficiency jobs.
In our exploration and evaluation of different standards, we also identified a new model for addressing and improving contractor performance. The "best value" Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS) gradually improve performance by giving vendors or contractors more responsibility in defining quality work by reporting their efforts and their results. Because all contractors are invited to identify metrics, measure, and report their performance and added-value, high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve. This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.
### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 3, RESOURCE PROGRAM INTEGRATION

<table>
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<tr>
<th>Recommendation</th>
<th>Data Supporting Recommendation</th>
<th>Concerns/Controversy</th>
<th>Next Steps</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td><strong>A. Process Improvements:</strong> Implement changes through program design, implementation, approval, and evaluation process to create stronger incentives for high quality work.</td>
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<tr>
<td>1. Identify and document contractor competencies and markets and worker skills/credentials for field demonstration projects</td>
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<td>2. In developing program plans, consider and document alternative approaches for addressing workforce issues (e.g., mix of certification requirements, training opportunities, and quality assurance/verification). Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings.</td>
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<td>3. Program Implementation Plans should specify how program requirements will increase the demand for quality installations. Initial plans should consider alternative scenarios prior to selecting a specific approach. This could replace the current WE&amp;T integration section of PIP templates.</td>
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<td>4. Develop a discount (haircut) to isolate the effects of work quality to apply to energy savings calculations. When measures are first introduced, inspections of performance should be used to establish the equivalent of a measure-specific “gross realization rate” and “installation rate.” Once measure-specific rates are established, samples should be used to modify rates. IOU credit should be based on results of those quality inspections.</td>
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<td><strong>Support:</strong> PRG support for eliminating three-strikes rule for fraudulent behavior. Widespread concern (from PRG) that work quality is not addressed systematically in existing processes and unanimous support for adjusting program processes to account for work quality. Unanimous agreement that process improvements are a necessary, but not sufficient, condition to address work quality; standards are also critical. <strong>Have Concerns:</strong> IOUs point out that work quality can be difficult to define and measure. IOU and ED staff are concerned that the benefits of isolating and measuring work quality issues may not exceed the costs of doing so. Contractor groups (written comments on EUC) want QA to be educational rather than punitive, incorporating mentorship. IOUs are concerned about program “friction” for customers.</td>
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<td><strong>Next Steps</strong></td>
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<td>Determine which programs can accommodate pay-for-performance requirements. Solicit stakeholder feedback on these recommendations. Define “fraudulent behavior.” Incorporating phased approach, or possible phases, for achieving outcomes expressed in this recommendation would be more informative.</td>
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<td><strong>COMMENTS</strong></td>
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| **i.** In emerging technology demonstration projects, the most qualified firms and workers are selected to install new equipment or measures. ETCC reports currently do not consider the skill of the workers necessary for proper installation, and do not inform program requirements for the types of contractors that should participate to ensure quality. **ii.** Work papers often assume 100% correct installation without identifying the conditions necessary to ensure that is the case. **iii.** By bundling work quality problems with technology failures, customer behavior, and other variables (installation rates and gross realization rates), we cannot know what the specific impact of different workforce interventions are. **iv.** Current QA and inspection processes are intended to reduce fraudulent behavior and do not identify faulty installation. It is standard best practice that inspectors have a higher level of technical skill than installers, and current QA processes do not consider the technical skill of the inspection team. **v.** Currently, there is a “three-strikes” rule for fraudulent behavior. **vi.** The ESPI mechanism uses a combination of ex ante estimates and ex post evaluations to determine shareholder incentive for IOUs, but custom project savings are confirmed shortly after installation, not accounting for failures down the road due. | | | | |
5. Quality Assurance processes (Inspection and Verification) should focus more on quality of installation. Highly skilled technicians should be assigned to inspect installations at beginning of program and then randomly throughout programs.

6. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on quality.

7. Institute zero-tolerance policy for fraudulent behavior (for Trade Professionals, Customers, and other Contractors), with a three-year exclusion from participating in ratepayer funded programs.

8. Pay-for-performance requirements: Withhold fully crediting the IOUs and some portion of incentive payments until inspections confirm that equipment is properly installed and operational over the course of its effective useful life (or other meaningful period of time).
### B. Workforce Standards: Change the competitive environment to attract high performing contractors and screen out or improve the performance of lower-qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.

1. Require CALCTP certification for contractors and technicians on all projects involving advanced lighting controls.

2. Require BPI firm accreditation (rather than individual certification) for all Whole House retrofit projects.

3. Require at least NATE certification for all projects involving residential HVAC measures. For commercial HVAC programs, require completion of a registered apprenticeship program OR US Star OR an associate’s degree in HVAC and a NATE certification OR Industry Competency Exam (ICE) and NATE certification.

4. Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility.
   - **i.** ALL contractors and subcontractors working on projects with total costs $500 or more: proof of proper licensing, bonding, & workers compensation and building permit signed off by building inspector, if required by law.
   - **ii.** MUSH properties, non-residential properties that are either 50,000+ square feet or

CALCTP is the industry recognized standard for advanced lighting control systems. Title 24 requires CALCTP for acceptance testing. Energy Upgrade CA requires that one person on staff has BPI certification. With BPI firm accreditation, rigorous quality assurance is built in to BPI accreditation processes. Persistent documented problems related to performance in HVAC programs. Documented challenges of properly installing advanced lighting control systems. ESAP wages range from $12/hour to high $20s/hour.

### Support:

- Stakeholders comment that standards are necessary, but not effective without verification and enforcement.
- Widespread stakeholder support for CALCTP requirement.
- Widespread contractor support for BPI standard, (except HVAC)
- PRG group thinks Responsible Contractor Policies are considered extremely effective strategies to improve work quality in the construction trades.

### Have Concerns:

- IOUs are unclear about new Title 24 regulations regarding advanced lighting controls—does Title 24 apply to equipment or integrated systems? Industry experts claim that Title 24 does not require the installation of integrated advanced lighting systems—only the component parts. New Title 24 standards will affect structure of IOU incentives.

Determine the project size threshold(s) for different Responsible Contractor requirements ($50K or $100K? $1 million?)

Determine project type (building types) for Responsible Contractor requirements and how to tier requirements for projects of different scales.

Solicit stakeholder feedback of specific recommendations.

Incorporating phased approach, or possible phases, for achieving outcomes expressed in this recommendation would be helpful.
have total construction costs of $50,000+, and residential properties that have 4+ stories: 3rd party administrators, ESCOs, & contractors that perform the work must pre-qualify themselves and any sub-contractors using a more detailed pre-qualification process. This should include the criteria for all contractors (4i):

a. a list of at least 3 similar past projects & references
b. 60% of workforce comprised of journey-persons who completed a registered apprenticeship program in California, or are currently enrolled in such a program.
c. Require 20% of jobsite electrical workers should be OSHA 10-hour General Industry Safety and Health Certified.
d. Require at least one jobsite electrical worker should be OSHA 30-hour General Industry Safety and Health Certified.
e. Require that any electrician working on indoor or outdoor lighting controls be a California Advanced Lighting Controls Training Program – CALCTP certified contractor and or electrician.
f. Contractor should have a documented history of full compliance to state, health, safety and work standards.
g. In addition, the contractor’s performance over time should be tracked in PIRMS.

iii. Consolidate MUSH incentives into more streamlined programs
5. Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)

6. Develop an online project & payroll reporting system for contractors to input information. IOUs should utilize a 3rd party contact/labor compliance company or perform compliance in-house to ensure that goals are being met with positive and negative consequences to enforce requirements.

C. “Best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS): Pilot new model of procurement and contract management that invites contractors to identify metrics, measure, and report their performance and added-value, the effect being that high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve.

1. Pilot PIPS/PIRMS in the HVAC QI and QM programs. As participating contractors report on their maintenance activities, customer satisfaction, actual energy savings, and other metrics of performance, it will become clear which contractors are meeting or exceeding program goals.

This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.

Clarify how this model could work in HVAC QI and QM and for new solicitation processes.

Solicit stakeholder feedback.
2. Pilot PIPS/PRMS for new program solicitations to ensure best value. When used for solicitations, vendor selection is based on five filters: Past Performance Information, Project Capability (technical risk, ability to manage non-technical risk, value added, financial milestones), Interviews of key personnel, Prioritizing vendors (identify best value), and Cost verification (make sure best value is within cost range). Although PIPS/PRMS can be used to manage projects, it will work most effectively when it is used for contractor selection as well.
Recommendations for Strategic Goal #4 (Supporting Sector Strategies) and Strategic Goal #5 (Stakeholder Involvement) are currently being developed.

**STRATEGIC GOAL 6: EVALUATION OF WORKFORCE EDUCATION AND TRAINING PROGRAM**

Evaluation, measurement, and verification (EM&V) studies for the IOU energy efficiency and other demand-side management programs serve a number of functions, including supporting development and refinement of programs, verifying prior savings, and supporting the determination of shareholder incentives. These studies are driven in large part by the primary objective of these programs – resource acquisition, but they also address market transformation and other objectives.

Prior EM&V studies have not systematically addressed the skills and other characteristics of workers and contractors responsible for the installation and maintenance of energy efficiency measures and systems or the impact of these characteristics on performance. At present, a limited set of contractor characterization studies are in the planning phase. In addition the EM&V studies have not addressed the extent to which variations in work quality explain differences between ex ante and ex post energy savings.

The EM&V studies focused on the WE&T programs (e.g., trainings and other educational programs offered by IOUs, partnerships between the IOUs and educational institutions and community-based organizations) have not focused on skills acquisition and its impact on energy savings, but rather mostly on DSM investment decisions by end-users or increased DSM sales by contractors. As a general rule, data collected from participants in IOU offered trainings are not designed to support assessments of programs focused on skills development. Methods for assessing the contribution of IOUs to the outcomes of partnerships with educational institutions and community-based organizations have not been developed either.

The implications of the limited attention to work quality and workforce characteristics is significant, particularly as the goals for IOU energy efficiency programs are both increased and broadened. The lack of studies on the characteristics of contractors and workers and on the extent to which work quality affects energy savings limits the extent to which the benefits of workforce initiatives can be evaluated. The lack of information of the benefits of workforce initiatives means that opportunities for increasing the cost-effectiveness of energy efficiency programs relative to renewable and traditional generation resources are necessarily overlooked. Moreover, assessments of how the IOU programs affect the broader set of objectives, including market transformation and inclusion of disadvantaged workers, are also hampered.

As a consequence and as described in more detail below, the recommendations include explicit incorporation of work quality and workforce characteristics in market assessments, process evaluations, and impact evaluations. Additional feedback will be solicited from stakeholders in the short-term. For the long-term, additional EM&V studies to address work quality and workforce characteristics are proposed.
### SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

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<th>Rationale and Evidence Supporting Recommendation</th>
<th>Stakeholder Feedback</th>
<th>Next Steps</th>
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<tbody>
<tr>
<td><strong>A.</strong> Modify market assessments (e.g., work papers for DEER and non-DEER measures; Potential, Goals, and Target studies; sector-specific market characterizations) to address work quality and workforce characteristics:</td>
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<tr>
<td>1. Explicitly address skill requirements and other resources required for assumed energy savings of energy efficiency measures.</td>
<td>The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Support:</td>
<td>Short-term: Observe stakeholder feedback on recommendation and develop cost estimates.</td>
<td>Incorporate phased approach for integrating outcomes expressed by this recommendation.</td>
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<td></td>
<td>i. The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Have concerns:</td>
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<td>ii. Essential data for relevant labor markets (e.g., certifications, availability of skilled workers) are not available for program design and implementation. In addition, emerging technology reports do not routinely document skill requirements and work quality issues (e.g., call backs) associated with demonstrations. Without these data, program administrators must rely largely on anecdotal information and general impressions when assessing the potential benefits of certification requirements and specific training opportunities, and when setting priorities for workforce training investments.</td>
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<td>2. Investigate and report demand for workers with identified skills (e.g., wages, benefits, working conditions and career ladders; certifications and licensing requirements; availability of skilled workers in local labor markets; education and training programs available to workers)</td>
<td>Limited data are presently available on the characteristics of workers participating in ESA and IOU energy efficiency programs. These data are essential in order to better understand the skills of workers and contractors responsible for installation and maintenance of energy efficiency measures, to consider relationship of work quality to skills of workers conducting work, and to assess influence of IOU programs on achievement of the State’s workforce objectives.</td>
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<td>i. While work quality issues are now being addressed as part of selected programs, additional attention</td>
<td>Support:</td>
<td>Short-term: Closely follow on-going activities for 2013-2014 program cycle; provide comments and recommend that study consultants reach out to experts knowledgeable of state and federal labor force data collection</td>
<td>Phased approach for adopting EM&amp;V protocols should be incorporated into the recommendation.</td>
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<td>Support: Consistent with prior CPUC Decisions</td>
<td>Have concerns: CDC reported potential barriers of collecting data from contractors including company privacy, willingness to share private company data, and concerns with contractor response rates.</td>
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<td><strong>B.</strong> Develop and adopt EM&amp;V protocols for workforce and labor market data collection</td>
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<td>Protocols are to be developed to be applicable to all EM&amp;V components, including market assessments, process evaluations, and impact evaluations.</td>
<td>Note that the 2013-2014 EM&amp;V Plan does address this topic but the detailed work plan is currently under development and extent of efforts in this area and efforts in this area are expected to be constrained by limited resources.</td>
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<td><strong>C.</strong> Explicitly consider contractor and worker characteristics and their impact on work quality as part of impact evaluations for</td>
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<td></td>
<td>i. While work quality issues are now being addressed as part of selected programs, additional attention</td>
<td>Support:</td>
<td>Short-term: Emphasize importance of clearly defining quality for</td>
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<tr>
<td>Recommendation</td>
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<td><strong>Specific resource programs</strong></td>
<td>Regarding the measurement of work quality and the underlying factors responsible for variations in work quality is required. Strategies to promote work quality, including certification requirements for workers and contractors, should also be part of evaluation. ii. Specific resource programs to consider include: Advanced Lighting Programs and CALCTP Certification, Residential HVAC Quality Installation/Quality Maintenance, Non-residential HVAC Quality Installation/Quality Maintenance, and new construction programs.</td>
<td>Pilots for on-going studies, including CEC and potential IOU studies comparing CALCTP and non-CALCTP projects. <strong>Longer-term:</strong> Select programs where work quality is expected or known to be an issue (e.g., programs with complex measures and systems, where quality is costly to identify, and where incentives for quality are weak. Develop and implements plans for explicitly addressing work quality.</td>
<td><strong>Support:</strong> Consistent with CPUC direction</td>
<td><strong>Have concerns:</strong> Short-term: Stakeholder feedback on how best to evaluate proposed recommendations. <strong>Long-term:</strong> Incorporate revisions for adopted recommendations into Program Implementation Plans and EM&amp;V plans.</td>
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<td><strong>Modify program theory and logic models, program tracking systems, program performance metrics (PPMs), and process evaluations for adopted recommendations from SG_1, SG_2, and SG_3.</strong></td>
<td>While Guidance Document will provide some suggestions on how to revise key EM&amp;V program elements, these suggestions need to be more fully developed with stakeholder input for those recommendations that are adopted.</td>
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<td><strong>For IOU workforce education and training programs, develop and test methodologies for assessing implications of IOU initiatives related to skills development and partnerships on resource acquisition and other broader objectives for energy efficiency.</strong></td>
<td>The IOU WE&amp;T programs and the associated impact evaluations have focused on “market building” activities. An increased emphasis on skills development and on partnerships (SG_1 recommendations) with core educational institutions and community organizations will require adoption of new approaches to EM&amp;V. While the IOUs have various on-going efforts related to skills development and partnerships, assessments of the benefits of these initiatives (i.e., skills development and partnerships) to the IOU ratepayers are needed if additional resources are to be allocated to these activities.</td>
<td><strong>Support:</strong> Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships. Identify programs and EM&amp;V approach where significant IOU resources are allocated currently to skills development and partnerships. <strong>Long-term:</strong> Develop and implement pilot projects to test how best to assess the benefits of these initiatives to IOU ratepayers.</td>
<td><strong>Have concerns:</strong></td>
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## SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

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Recommendations for Strategic Goal #7 (Evaluation of Web Portal) are currently being developed.
STRATEGIC GOAL 1: WORKFORCE EDUCATION AND TRAINING PROGRAM MODIFICATION

The IOUs dedicate most of their WE&T resources for growing the market for energy efficiency services rather than skills-building for the workforce who carries out the work, and the current structure of their programs is not well-suited to improve the DSM skills and knowledge of large numbers of workers in the key occupations that impact energy efficiency outcomes. By increasing the emphasis on skills development, the WE&T programs can better meet the CLEESP’s vision that “By 2020, California’s workforce is trained and fully engaged to provide the human capital necessary to achieve California’s economic energy efficiency and demand-side management potential.”

Most of the IOUs’ WE&T resources are dedicated to very short, stand-alone, free classes open to any interested person. Most participants are either end-users (building managers or home owners who are potential buyers of energy efficiency services) or contractors and professionals in managerial positions (sellers of energy efficiency services). The offerings are not effective at reaching workers in the key EE/DSM occupations or at developing workers’ skills:

- Most current offerings do not involve the state’s core education and training institutions for the key EE/DSM occupations, thus missing an opportunity to incorporate DSM content into the main period of training that workers in key occupations go through. These are: UC/CSUs for professionals, and apprenticeship and community colleges for the trades.
- Most current offerings do not adhere to best practices for skill-building training. Best practices include clear prerequisites and learning outcomes for each class, classes that are sequenced and build upon each other, competency testing at class completion, tied to recognized, stackable credentials, hands-on-learning, and for incumbent workers, a clear commitment and involvement by their employers.
- The 2010-2012 WE&T process evaluation by ODC found that the Centergies classes heavily emphasize information about technologies, rather than skill-based outcomes.
- Due to the course structure and content delivery style, ODC concluded that participation in Centergies training does not guarantee that participants will have obtained the skills necessary to carry out high-quality work.

Recommendations

We recommend the IOUs direct a significant portion of WE&T resources to EE/DSM skill-building activities for the critical occupations. Our recommended approach would affect occupational transformation on a broad scale by leveraging the state’s core accredited education and training institutions, and promoting the identification of clear certifications and skill standards.

The IOUs should substantially increase WE&T resources for workforce development (e.g. to at least $80 million per three-year cycle), and then redesign this programming with increased participation and oversight from state workforce development experts. This process could be administered by the IOUs or by a 3rd party via RFP. An alternative approach would have the CPUC develop the necessary interagency agreement to with the CA Labor and Workforce Development Agency to transfer administration of some or all of these activities to the CA Workforce Investment Board or a non-profit organization. This alternative would ensure closer cooperation between the energy, education and labor agencies.

We recommend developing comprehensive implementation plans to customize programming targeted to each of the three career pathways. These plans should align with and leverage the core education and training institutions (UC/CSU for professionals, CCC and state-certified apprenticeship for the trades). Each of the plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation. We offer more detailed recommendations on processes for prioritization and program delivery in our full guidance plan. We also present three “Phase 1” programs that can be initiated in 2014, which are low-hanging fruit that can serve as learning arenas for the new WE&T configuration.

Our proposal involves structured oversight from a governing board of key state workforce, education, and energy agencies, plus technical experts (e.g. the Lawrence Berkeley Lab). The governing council should appoint industry and subject-matter experts to an advisory group for each occupation, which will be responsible for identifying certifications and skill standards.

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1 CLEESP, p 74.
2 2010-2012 WE&T Centergies Process Evaluation, ODC, Pages 12, 13
3 Ibid, p 14
4 This may require accelerated direction from the CPUC (e.g., Advice Letter process at a minimum)
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<tr>
<td>A. Allocate a significant amount of WE&amp;T dollars to targeted programs for workers' skill-building:</td>
<td>Although the CLEESP mandates workforce education and training, most of the Centergies budget currently goes towards educating buyers and sellers of energy efficiency services, rather than skills development for workers involved in the design, installation, and maintenance of EE/DSM work. Most of the Connections budget goes to consumer education, not career development. Workforce development and market development require a different guiding strategy for programming, and distinct activities and delivery mechanisms. There is a need for increased efforts in the area of workforce development in order to carry out the CLEESP vision, which will require a significant increase in resources. Our recommended allocations represent the minimum amount that we believe would have a statewide impact on workforce development in each of the four categories (professionals, res trades, non-res trades and inclusion).</td>
<td>Support:</td>
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<td>1. Within the $80m (per 3-year cycle) for workforce development, we propose the following allocation:</td>
<td></td>
<td>Stakeholder development agency and education institution leaders; Stakeholder advisory group</td>
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<td>• $20m for professionals</td>
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<td>Have concerns:</td>
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<td>• $20m for non-residential trades</td>
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<td>IOUs do not want to lower budget to current programs</td>
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<td>• $20m for residential trades</td>
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<td>Support stakeholder feedback on the quantity of $ to be allocated to workforce dev/vs. market dev; e.g. how much $ is needed for different types of activities, and how to prioritize programming based on needs and opportunities.</td>
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<td>• $20m for inclusion</td>
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<td>Connections 9-12 career prep/awareness counts in inclusion. The rest is counted under market-building.</td>
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**SUMMARY OF RECOMMENDATIONS:**

**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<tr>
<td><strong>B. Redesign workforce skills development programming</strong></td>
<td>Current programming for workforce skills development is limited. Most programming in this area does not follow best practice for skills development and does not fully leverage the rich infrastructure of CA accredited education and training institutions. Short, open-door classes are still the primary program delivery mechanism, although this is not an effective skills-building strategy. Partnerships with apprenticeships have been extremely limited so far.</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Have concerns: IOUs have concerns about how to get credit for energy savings from programs based on partnerships.</td>
<td>Agree</td>
<td>Comments: &quot;Leverage the rich infrastructure of CA accredited education and training institutions&quot; = Another point to bolster this position is the waste of resources when redundant or competing options are in place.</td>
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</table>

Comment [TNF2]: Another point to bolster this position is the waste of resources when redundant or competing options are in place.

Comment [TNF3]: Some work quality problems may be confidential? (i.e. if firm specific). How do we address that?
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<tr>
<td>1. Incorporate EE skills and knowledge at specific points in the career pathway for priority occupations. Key points in the career pathway are pipeline preparation, core post-secondary education, and incumbent worker training.</td>
<td>and consensus on certifications and skill standards for the critical occupations. iii. The IOUs have internal expertise on emerging technologies, and certain areas of quality problems (not always within the WE&amp;T staff, however). They do not have expertise on career pathways or workforce development strategies. iv. Budget constraints are a concern to the IOUs WE&amp;T programs, as well as many training providers. Leveraging existing resources and infrastructure can increase programs’ impact. v. Significant employer commitment to training programs increases their effectiveness. vi. Linking or embedding training initiatives with long-term career pathways, in particular core occupational training institutions, also increases their effectiveness.</td>
<td>Stakeholder Concerns/Controversy</td>
<td>Next Steps</td>
<td>POSITION (Choose 1: Agree, Disagree, Disagree with Comments)</td>
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<td>2. Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms.</td>
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<td>3. Funds should support incorporation of EE specific knowledge and skills through support for curriculum development, train the trainer etc.</td>
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<td>4. Programming should leverage funding for classroom and other training from key institutions wherever possible.</td>
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<td>5. In-house IOU skills training should be limited and reserved to cover gaps that partners can’t fill, with commitment to transfer courses to other training institutions over time.</td>
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<td>6. Governance and accountability:</td>
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<td>i. Although some ad-hoc partnerships have been successful, there is a lack of internal capacity in the IOUs’ WE&amp;T programs to effectively develop broad-based partnerships with each of the state’s key training institutions for EE/DSM occupations. ii. Most of the prior IOU-led attempts to bring stakeholders together for WE&amp;T planning and consensus-building around standards have been contentious, e.g. the HVAC Sector Strategy.</td>
<td>Support: WE&amp;T program leadership and coordination with the IOUs and state workforce and education agencies. Stakeholder advisory group. “Logic model should reflect the following: ‘Why are we doing this? What results are expected? What impact will it have on energy savings and market transformation?’”</td>
<td>COMMENTS</td>
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<td>1. Plan must be approved first by governing board composed of key state workforce, education, and energy agencies, and technical experts.</td>
<td>i. Although some ad-hoc partnerships have been successful, there is a lack of internal capacity in the IOUs’ WE&amp;T programs to effectively develop broad-based partnerships with each of the state’s key training institutions for EE/DSM occupations. ii. Most of the prior IOU-led attempts to bring stakeholders together for WE&amp;T planning and consensus-building around standards have been contentious, e.g. the HVAC Sector Strategy.</td>
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<td>2. CPUC should consider recommendations of governing board and approve final plan</td>
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<td>3. Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation</td>
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SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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| **E. Phase 1 Programs** | **F. Administrator:** Administrator should have the capacity and willingness to manage and staff the plan outlined above. **Option 1.** IOUs manage and staff guidance plan, or issue an RFP for a 3rd party implementer. **Option 2.** CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization. 

The content of the recommendations are the same in either case, and both could still include IOU participation in program development, or best practice IOU-led offerings such as the Although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development partnerships with the state’s core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative administration of the workforce development portion of WE&T would be more effective. **Option 1.** Support: Most IOU WE&T staff would like to retain primary ownership over the funds. Several expressed a desire/willingness to include more workforce partners in the program design process we’ve described. **Concerns:** some of the stakeholder advisory group expressed concern about the IOU capacity to effectively execute the type of partnership structure we describe. **Option 2.** Explore the pluses and minuses of each option, soliciting stakeholder feedback and adding detail to each proposal. |

- Force is a public forum for input on the IOUs’ programs, but not an adequate forum for program development.

- The changes we propose are significant and will take time to fully implement. We offer the Phase 1 programs as concrete programs that can be carried out in the near-term as the larger framework is developed and put into place.

- We received clear feedback from professional 4 year programs about the huge potential value of an IOU-sponsored RFP to incorporate leading EE/DSM skills into curricula.

- DAS has already indicated its eagerness to participate in this type of partnership on EE/DSM skills.

- Our research indicates a number of productive relationships with local Colleges and community training institutions exist.

- There are some examples of bridge programs that connect disadvantaged youth with pre-apprenticeship.

- Support: CA DAS supports the apprenticeship proposal; UC Berkeley architecture department is a strong supporter of the professional proposal.

- Have concerns: None?

- Write up the three specific proposals for stakeholder feedback and input.

- Support: IOUs manage and staff guidance plan, or issue an RFP for a 3rd party implementer.

- Option 2. CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization. The content of the recommendations are the same in either case, and both could still include IOU participation in program development, or best practice IOU-led offerings such as the although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development partnerships with the state’s core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative administration of the workforce development portion of WE&T would be more effective. **Option 1.** Support: Most IOU WE&T staff would like to retain primary ownership over the funds. Several expressed a desire/willingness to include more workforce partners in the program design process we’ve described. **Concerns:** some of the stakeholder advisory group expressed concern about the IOU capacity to effectively execute the type of partnership structure we describe. **Option 2.** Explore the pluses and minuses of each option, soliciting stakeholder feedback and adding detail to each proposal. |
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<td>retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&amp;T portfolio overall.</td>
<td>Option 2 Support: Members of the stakeholder advisory group (including the state labor agencies) liked the idea of a more systematic, collaborative tie between the WE&amp;T programs and the state's other primary workforce development and education agencies, and the potential it presents for program alignment and fund leveraging. Concern: Most IOU WE&amp;T staff are wary of relinquishing ownership to an outside entity. Some stakeholders and IOUs expressed concern that there isn't currently a clear choice of a non-profit to lead the Option 2 effort. Several noted issues that may arise around maintaining CPUC oversight over ratepayer funds.</td>
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<td>Comment [TNF5]: We also need to be wary of conflict of interest concerns, and for-profit colleges with questionable ethics (see AG investigation of Everest, Heald, and WyoTech.)</td>
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STRATEGIC GOAL 2: INCLUSION FOR DISADVANTAGED WORKERS

Currently, the substantial and diverse investments being made by the IOUs in the energy efficiency and DSM programs do not include interventions to support the creation of middle-class career pathways for low-income communities, communities of color and other disadvantaged populations. While these investments offer a promising opportunity to build middle-class career pathways for low-income people and jobseekers with barriers to employment (“disadvantaged workers”), there are several barriers in place that prohibit the IOUs from achieving the California Long Term Energy Efficiency’s Strategic Plan goal of increasing “participation from within minority, low income and disadvantaged communities in achieving California’s economic energy efficiency potential”.

- The work of investor-owned utilities in California was not historically seen as public investments akin to government public works projects, and thus the public policy direction of requiring inclusive hiring policies and family-supporting wages applied to publicly-funded capital projects has only recently been considered by the CPUC.
- The IOUs do not currently have clear authority and direction to allocate resources to proven practices that increase minority, low-income, and disadvantaged worker participation in public works and energy efficiency projects.
- The IOUs currently lack a working definition of “disadvantaged worker” and lack clear performance metrics or program goals by which to measure progress in hiring these workers.
- Current data collection methods do not provide a comprehensive picture on the demographic profile of the workforce being employed to carry out EE/DSM programs by occupation or job category, nor do they collect detailed data on compensation structures and wages by occupation and job category. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect this data.
- The IOUs currently lack clearly articulated pathways for disadvantaged workers to advance along a career ladder as they gain more experience, training and skills. An effective ecosystem of agencies and organizations (including: low income weatherization providers, community based organizations, community colleges, local and state workforce investment boards, utility workforce development staff, labor unions and contractors) can create a pipeline of ready and able workers through effective recruitment, training and placement of disadvantaged workers.
- The IOUs currently lack the contracting and procurement tools to shape incentives or requirements for contractors to hire trained and ready workers from disadvantaged communities. Contracts for higher-paid, higher-skill work (such as EE work in schools, universities and hospitals), tend to be smaller and do not always require deep, complex retrofits, which may prevent contractors from bringing on hired and ready workers from disadvantaged communities.

In order to ensure that workers are trained and ready to perform higher skill work, we also recommend funding for entry-level job openings in IOU supported EE/DSM work) in order to ensure success and acceptance by both IOUs and contractors. This goal can be increased over time as programs are developed and contractors and IOU staff become familiar with them. The results of these goals can be tracked by the workforce reporting system and made publicly available, as a scorecard, similar to that used in General Order 156 which has been successful for promoting diversity in procurement. Contractors meeting goals should receive additional points in the next round of program procurement.

Once a definition is set, the IOUs should set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs. We recommend a conservative initial goal (such as 15% of new entry level job openings in IOU supported EE/DSM work) in order to ensure success and acceptance by both IOUs and contractors. This goal can be increased over time as programs are developed and contractors and IOU staff become familiar with them. The results of these goals can be tracked by the workforce reporting system and made publicly available, as a scorecard, similar to that used in General Order 156 which has been successful for promoting diversity in procurement. Contractors meeting goals should receive additional points in the next round of program procurement.

In order to ensure that workers are trained and ready to perform higher skill work, we also recommend funding for pre-apprenticeship training programs that will provide disadvantaged workers the skills, training and abilities needed to be successful in entry-level MUSH and large commercial EE and utility employment. This funding should be released in the form of an RFP, and should encourage the mobility of ESAP and other residential workers into higher wage higher skilled jobs in the MUSH sector.

Recommendations

The CPUC should direct IOUs to measure and report quality job creation and workforce diversity so that they can allocate appropriate compensation and program resources to achieve inclusion goals. The CPUC’s direction should have clear metrics and performance standards to meet these goals.

We propose a two track strategy. First, the IOUs should ensure the quality of jobs created by EE investments. We recommend that the IOUs set a wage floor for the ESAP, Direct Install, and Third Party programs, since these program implementers and contractors have direct contracting or subcontracting relationships with the IOUs. Second, we recommend that the IOUs launch a pilot MUSH market program that includes a targeted hire program. This MUSH sector program can follow the standards used in public works construction, where targeted hire programs, tied to apprenticeship, have been very successful in many local governments in California and nationally.

Data collection efforts are necessary to support these goals. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect workforce data to evaluate job quality and the demographic profile of workers. We recommend that this be done through an on-line workforce reporting system (such as E-Build or LCIC Tracker); these systems are inexpensive and have been used by many awarding agencies in the state. In addition, the IOUs should adopt a definition of disadvantaged worker and apply it meaningfully and consistently across all EE programs. This definition can then be used to design inclusion programs, and to track and measure results. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria); and/or b) an individual who is a resident of a high unemployment zip code in her/his county.

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1. Page 74
2. Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.
3. The unemployment rate is 150% of the median unemployment rate for the county.

Comment [TNF6]: What are these metrics and performance indicators?
Comment [TNF7]: For what ESA occupations? (Outreach and Assessment Contractors, installers, office personnel, HVAC installers, etc.)? This needs to be a little more specific.
Comment [TNF8]: ?
Comment [TNF9]: Do we mean additional points/consideration in the contract renewal / rebidding phases?
**SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION**

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<td><strong>A. Prioritize creation of good-paying jobs and workforce diversity as key IOU goals along with efficiency outcomes:</strong>&lt;br&gt;The CPUC should explicitly direct IOUs to promote, measure, and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals.</td>
<td>Successful workforce inclusion programs have established goal setting and monitoring in order to improve outcomes. In order for the IOUs to have the authority to direct resources towards these efforts, they need direction from the CPUC.&lt;br&gt;General Order 156 is an example of the IOUs’ ability to create a new program and achieve diversity goals in response to specific CPUC direction.</td>
<td>Support: Some equity groups, including those in the Stakeholder Advisory Group, support this recommendation.&lt;br&gt;Have concerns: IOUs are concerned that the promotion of job creation and workforce diversity in EE/DSM programs cannot be resourced using ratepayer funds.</td>
<td>Get stakeholder feedback on language of proposed CPUC direction.</td>
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<td><strong>B. Define Disadvantaged Worker meaningfully and consistently:</strong>&lt;br&gt;1. The CPUC should set a common definition of “Disadvantaged Worker” that will be used by all IOUs in designing inclusion programs and tracking and reporting results.&lt;br&gt;2. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria); and/or b) an individual who is a resident of a high-unemployment zip code in her/his county.</td>
<td>i. Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring.&lt;br&gt;ii. Many existing public works programs have developed similar definitions of Disadvantaged Worker. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility.&lt;br&gt;iii. The combination of these two sets of criteria have proved in other programs to identify an adequate number of individuals who most need employment opportunity and who are capable of developing the necessary skills to do good work.</td>
<td>Support: Some equity groups support this recommendation.&lt;br&gt;Have concerns: IOU staff and ESA contractors expressed concern whether experienced ESAP workers should be included in this definition to reinforce ESAP as an entry point to EE/DSM careers for disadvantaged workers. (ESAP dropped from definition as a result of stakeholder consultation.)</td>
<td>Test revised definition with Stakeholder Advisory Group.</td>
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<td><strong>C. Set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</strong>&lt;br&gt;1. Because this is a new effort for the IOUs and many of their contractors, we recommend that the initial goal be conservative in order to ensure success and acceptance. We suggest an initial goal of 15% of EE/DSM work, measured in worker hours, for Disadvantaged Worker participation.</td>
<td>Models from other successful programs. Successful experience from G.O. 156.</td>
<td>Support: Some equity groups support this recommendation.&lt;br&gt;Have concerns: IOU staff, contractors, and members of the Stakeholder Advisory Group expressed the following concerns: How will the goal be set? Will each program need to meet the goal or will utilities be allowed to achieve goal by averaging results across programs, e.g. ESAP compensates for lack of inclusion elsewhere? Desire for penalties in the event goal is not achieved. How will efforts to drive inclusion affect cost-effectiveness? Will CPUC adjust.</td>
<td>Develop an initial goal in consultation with key stakeholders.</td>
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8 Disadvantaged Worker criteria: Household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.<br>9 The unemployment rate is 150% of the median unemployment rate for the county.
<table>
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<tr>
<th>Recommendation</th>
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<th>Stakeholder Concerns/Controversy</th>
<th>Next Steps</th>
<th>POSITION (Choose 1: Agree, Disagree, Disagree with Comments)</th>
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<tr>
<td>2. This goal can be increased over time as the programs are developed and participants become more familiar with them.</td>
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<td>cost-effectiveness requirements to reflect inclusion goal?</td>
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<td>3. Institute a required, electronic workforce reporting system for EE/DSM contractors to capture information:</td>
<td>Successful equity and inclusiveness programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements.</td>
<td>Support: Labor groups familiar with reporting data support this recommendation.</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
<td>a. <em>Hours worked</em>&lt;br&gt;b. Rate of pay&lt;br&gt;c. Disadvantaged status, zip code of residence&lt;br&gt;d. Race, ethnicity, and gender&lt;br&gt;e. Trade/occupation&lt;br&gt;f. Journey/apprenticeship level&lt;br&gt;g. Certifications held*</td>
<td>These need to be double checked and aligned with what was ordered in 12-08-044 and 12-11-05.</td>
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<td>4. Ensure baseline quality of jobs created by efficiency investments:</td>
<td>Interviews indicate ESAP wages range from $12/hour to high $20s/hour.&lt;br&gt;a. LA DWP’s utility pre-craft worker program starts trainees at $16/hour.&lt;br&gt;b. Higher wages typically contribute to higher skill development, and better outcomes.</td>
<td>Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs.</td>
<td>Get feedback on $16/wage floor from Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
<td><em>a wage floor of $16</em> - Is this all ESA related contractors/employees? What about subcontractors (i.e. refrigerator delivery/installers, others?) Also, how does this compare to the CSD WAP local service provider/ Community Action Program (CAP) agencies? If these wages conflict, we may have problems instituting the long-term goals of better inter-program (ESA and WAP) coordination...</td>
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<td>5. Ensure job opportunities created by efficiency investments:</td>
<td>California Labor Code requires providing wages and apprenticeship utilization on public capital projects. Contrary to this general</td>
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**Comments [TNF10]:** These need to be double checked and aligned with what was ordered in 12-08-044 and 12-11-05. |<br>(a) Contractor and subcontractor contract terms (competitive bid, direct award, etc.);<br>(b) Contractor and subcontractor compensation schemes (hourly, piecework, salaried, etc.);<br>(c) Number of inspection failures and the types of failures (including the number of enrolled customers later deemed ineligible, number of incorrectly assessed households and instances of measure installation inspection failures);<br>(d) Level and type of Utilities’ training (including lead safety training) and screening (including background check) these specific contractors have completed;<br>(e) Customer feedback for these contractors, positive and negative;<br>(f) Demographic data of the current Energy Savings Assistance Program workforce, including minority, local, low income, disabled, displaced, and other disadvantaged communities; and<br>(g) The Utilities’ assessment of any other needs of the existing workforce to meet the current and future Energy Savings Assistance Program demands. |

**Comments [TNF11]:** Is this all ESA related contractors/employees? What about subcontractors (i.e. refrigerator delivery/installers, others?) Also, how does this compare to the CSD WAP local service provider/ Community Action Program (CAP) agencies? If these wages conflict, we may have problems instituting the long-term goals of better inter-program (ESA and WAP) coordination...
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<tr>
<td><strong>G. Consolidate all incentives and efficiency programs that target the municipal/government, university, school, or hospital sectors into a comprehensive MUSH program. Introduce an inclusion requirement in the MUSH program:</strong></td>
<td>Energy Upgrade California and Sierra Nevada Energy Works. Programs in San Francisco, Portland and Seattle utilities. PLAs with targeted hire requirements at LA-METRO, LAUSD, CRA/LA, LACCD.</td>
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<td>1. Bundle programs to create scale for contractors.</td>
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<td>2. Focus MUSH incentives on deep retrofits and whole building programs.</td>
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<td>3. Increase allocation for this program to at least $500 million.</td>
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<td>4. Apply aspects of Energy Upgrade California as a model framework:</td>
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<td>a. Establish pre-qualified list of contractors.</td>
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<td>b. Require MUSH incentive recipients to work with IOU-designated contractors.</td>
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<td>5. Restrict contractor participation to increase market share and positive outcomes for participating contractors:</td>
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<td>a. Require competitive application process to reward contractors that meet or exceed worker skill standards, disadvantaged Worker hiring goals, and wage floors.</td>
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<td>b. Open list to new contractors on a restricted timeline (e.g. every 2 years).</td>
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<td><strong>H. Establish training bridge program to link residential EE</strong></td>
<td>Power Pathways, CCCD Career Advancement Academies, Pre-apprenticeship collaborations</td>
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<td>workers to non-residential EE jobs.</td>
<td>Release an RFP for creation of a pre-apprenticeship training program that will provide disadvantaged workers the skills, training and abilities needed to bridge between residential EE workers and non-residential EE employment opportunities and provide access to entry-level non-residential EE and utility employment.</td>
<td>Have concerns: Some stakeholders have indicated concerns with the viability of ESAP workers entering in bridge programs; some ESAP contractors indicate there are viable career pathways within ESAP employers.</td>
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<td>I. Strengthen ESAP and MIDI as entry point to a higher skilled, higher paid career in commercial and industrial EE:</td>
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<td>1. The IOUs should apply the wage floor and workforce reporting requirements to MIDI as the program is developed.</td>
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<td>2. Education and workforce development partners should articulate career ladder and opportunities for advancement to ESAP and MIDI workforce.</td>
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<td>such as SF City Build, IBEW Local 11 and LATTC</td>
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<td>1. Interviews and EE Decision indicate expansion of MIDI program.</td>
<td>Support: Some equity advocates were interested in learning more about the details of the recommendation to determine their support.</td>
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<td>i. The level of skills required for residential ESAP and MIDI programs are similar lower and thus more suited to an entry-level position. However, on the job, ESAP and MIDI installers gain valuable experience in both soft and hard skills, preparing them to move up the ladder.</td>
<td>Have concerns: One equity group (Brightline Defense) and IOU staff expressed concern over a wage floor increasing the cost of program and reducing number of installations. Wage floor could lower cost-effectiveness below goal. Contractors were concerned over the wage floor: Will contractors be expected to bear burden of wage floor without overall program budget increase? They are also concerned about the cost of collecting and reporting data.</td>
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<td>iii. The contractors who run the ESAP programs tend to hire from the local, low-income community, making it a natural entry point for a more diverse workforce. However, it should not be an end point for low-income workers.</td>
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<td>Test $16/wage floor with Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
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changing technological environment, it is very difficult to establish and maintain, not to mention enforce, appropriate standards for every measure and program in the IOU portfolio. When there is widespread industry agreement for particular incentive if they evaluated performance in real time, but they mostly are limited to catching fraudulent behavior. Real requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear contractors have to pay higher wages, contractors who have invested in higher skilled workers will be able to more quality.

The existing program development, approval, implementation, and evaluation processes neither reward nor penalize the IOUs for their influence over work quality and its impact on energy savings. Assumptions about the installation and performance of energy efficiency equipment are based on technical specifications and engineering assessments, and fail to account for the impact of worker skills and performance on equipment performance (and energy savings). Often, equipment is assumed to be installed correctly and in-service, without either specifying the level of technician skill required or verifying quality in the field to substantiate those claims. The CPCU applies discounts (“haircuts”) to the IOU-claimed energy savings to avoid over-estimating, but these reductions do not isolate the effects of different program requirements or workforce standards. Since the IOUs perceive that stricter program requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily adopt higher standards, unless there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear incentive if they evaluated performance in real time, but they mostly are limited to catching fraudulent behavior. Real-time across the board inspections are costly and increase transaction costs and program friction for the customer and the participating contractor. Finally, the program implementation and evaluation cycles are not conducive to providing timely feedback on effective program requirements, and as stated above, impact evaluations do not document or isolate work quality problems.

Our recommended process improvements address the shortcomings of the current quality assurance and discount process, and call for the identification of minimum contractor requirements and worker skills/credentials needed to carry out work correctly up front. These recommendations will reduce the risk of large gaps between ex ante estimates and ex post evaluations for deemed measures and savings left on the table due to installation problems for custom measures.

Recommendations

Process Improvements: First, we recommend a series of process improvements to create a stronger incentive structure to ensure proper installation and maintenance of energy efficiency measures.

Workforce Standards: Second, we recommend several different types of contractor and workforce standards designed to screen out less qualified contractors and create an environment to encourage participation by high performing contractors in energy efficiency work. Workforce standards are a quality control mechanism that can reduce the need for more expensive post-installation quality assurance activities.

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The following recommendations 1) suggest a series of process improvements to better understand and incorporate the impacts of work quality on energy goals and 2) suggest workforce standards for IOUs to incorporate into the management of EE programs that will both reduce the risk of inaccurate savings estimates due to work quality, and encourage higher performing and more qualified contractors to participate in DSM programs.

The extent to which improper equipment installation, operation, and maintenance reduces the energy outcomes for California’s Demand Side Management (DSM) programs is unknown. While specific studies have investigated the extent of poor installations for specific technologies (e.g., HVAC, advanced lighting, building construction), comparable data across measures and programs are not collected for California’s DSM programs that could systematically determine where poor work quality may be reducing energy savings. Workers can acquire, through training and on-the-job experience, the necessary skills to perform high quality work, but training alone is not a sufficient condition to ensure high quality work. The market must also demand quality work. The IOU DSM programs have introduced various program requirements to ensure high quality work, ranging from contractor licensing requirements to quality assurance programs to customer information; however, these are minimal compared to the much more robust workforce and related standards found in many other sectors in the economy, including in segments of the building and construction industry, the key industry for energy efficiency investments. The current process for program planning, approval, and implementation does not specifically reward the IOUs for ensuring high work quality nor penalize them when energy savings are left on the table due to improper installation, operation, or maintenance of energy efficiency measures. 10 The common response to poor work quality continues to be support for training, but the return on these investments—for both ratepayers and the trainee—is limited without greater demand for work quality.

The CPUC applies discounts (“haircuts”) to the IOU-claimed energy savings to avoid over-estimating, but these reductions do not isolate the effects of different program requirements or workforce standards. Since the IOUs perceive that stricter program requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily adopt higher standards, unless there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear incentive if they evaluated performance in real time, but they mostly are limited to catching fraudulent behavior. Real-time across the board inspections are costly and increase transaction costs and program friction for the customer and the participating contractor. Finally, the program implementation and evaluation cycles are not conducive to providing timely feedback on effective program requirements, and as stated above, impact evaluations do not document or isolate work quality problems.

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Recommendations

Process Improvements: First, we recommend a series of process improvements to create a stronger incentive structure to ensure proper installation and maintenance of energy efficiency measures.

Workforce Standards:Second, we recommend several different types of contractor and workforce standards designed to screen out less qualified contractors and create an environment to encourage participation by high performing contractors in energy efficiency work. Workforce standards are a quality control mechanism that can reduce the need for more expensive post-installation quality assurance activities.
In our exploration and evaluation of different standards, we also identified a new model for addressing and improving contractor performance. The “best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS) gradually improve performance by giving vendors or contractors more responsibility in defining quality work by reporting their efforts and their results. Because all contractors are invited to identify metrics, measure, and report their performance and added-value, high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve. This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.
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<tbody>
<tr>
<td>A. Process Improvements:</td>
<td>Implement changes through program design, implementation, approval, and evaluation process to create stronger incentives for high quality work.</td>
<td>1. Identify and document contractor competencies and markets and worker skills/credentials for field demonstration projects.</td>
<td>2. In developing program plans, consider and document alternative approaches for addressing workforce issues (e.g., mix of certification requirements, training opportunities, and quality assurance/verification.) Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings.</td>
<td>3. Program Implementation Plans should specify how program requirements will increase the demand for quality installations. Initial plans should consider alternative scenarios prior to selecting a specific approach. This could replace the current WET integration section of PIP templates.</td>
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<td>5. In emerging technology demonstration projects, the most qualified firms and workers are selected to install new equipment or measures. ETC reports currently do not consider the skill of the workers necessary for proper installation, and do not inform program requirements for the types of contractors that should participate to ensure quality.</td>
<td>6. Work papers often assume 100% correct installation without identifying the conditions necessary to ensure that is the case.</td>
<td>7. By bundling work quality problems with technology failures, customer behavior, and other variables (installation rates and gross realization rates), we cannot know what the specific impact of different workforce interventions are.</td>
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<td>Support: PRG support for eliminating three-strikes rule for fraudulent behavior.</td>
<td>Widespread concern (from PRG) that work quality is not addressed systematically in existing processes and unanimous support for adjusting program processes to account for work quality. Unanimous agreement that process improvements are a necessary, but not sufficient, condition to address work quality; standards are also critical.</td>
<td>Have Concerns: IOUs point out that work quality can be difficult to define and measure.</td>
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<td>Determine which programs can accommodate pay-for-performance requirements. Solicit stakeholder feedback on these recommendations. Define “fraudulent behavior.”</td>
<td>“By bundling work quality problems with technology failures, customer behavior, and other variables (installation rates and gross realization rates)” Can smart meter data disaggregation help solve this?</td>
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Comment [TNF15]: Can smart meter data disaggregation help solve this?
5. Quality Assurance processes (Inspection and Verification) should focus more on quality of installation. Highly skilled technicians should be assigned to inspect installations at the beginning of program and then randomly throughout program.

6. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on quality.

7. Institute zero-tolerance policy for fraudulent behavior (for Trade Professionals, Customers, and other Contractors), with a three-year exclusion from participating in ratepayer funded programs.

8. Pay-for-performance requirements: Withhold fully crediting the IOUs and some portion of incentive payments until inspections confirm that equipment is properly installed and operational over the course of its effective useful life (or other meaningful period of time).

Comment [TNF13]: In ESA, contractors (and their installations) are randomly inspected and if problems arise those contractors are flagged and receive more scrutiny and have a higher chance of having their work picked for inspection.

Comment [TNF14]: Perhaps using pre- and post-bill/usage analysis? How exactly?
### B. Workforce Standards: Change the competitive environment to attract high performing contractors and screen out or improve the performance of lower-qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.

1. **Require CALCTP certification for contractors and technicians on all projects involving advanced lighting control systems.**

2. **Require BPI firm accreditation (rather than individual certification) for all Whole House retrofit projects.**

3. **Require at least NATE certification for all projects involving residential HVAC measures.** For commercial HVAC programs, require completion of a registered apprenticeship program OR US Star OR an associate’s degree in HVAC and a NATE certification OR Industry Competency Exam (ICE) and NATE certification.

4. **Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility.**

   - i. **ALL contractors and subcontractors working on projects with total costs $500 or more: proof of proper licensing, bonding, & workers compensation and building permit signed off by building inspector, if required by law.**

   - ii. **MUSH properties, non-residential properties that are either 50,000 square feet or CALCTP is the industry recognized standard for advanced lighting control systems. Title 24 requires CALCTP for acceptance testing. Energy Upgrade CA requires that one person on staff has BPI certification. With BPI firm accreditation, rigorous quality assurance is built into BPI accreditation processes. Persistent documented problems related to performance in HVAC programs. Documented challenges of properly installing advanced lighting control systems.**

ESAP wages range from $12/hour to high $20s/hour.

**Support:** Stakeholders comment that standards are necessary, but not effective without verification and enforcement. Widespread stakeholder support for CALCTP requirement. Widespread contractor support for BPI standard, (except HVAC) PRG group thinks Responsible Contractor Policies are considered extremely effective strategies to improve work quality in the construction trades.

**Have Concerns:** IOUs are unclear about new Title 24 regulations regarding advanced lighting controls—does Title 24 apply to equipment or integrated systems? Industry experts claim that Title 24 does not require the installation of integrated advanced lighting systems—only the component parts. New Title 24 standards will affect structure of IOU incentives.

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<tr>
<th>Determine the project size threshold(s) for different Responsible Contractor requirements ($50K or $100K? $1 million?)</th>
<th><strong>&quot;Whole House retrofit projects&quot; - Does this include RENs programs? What about EUC-MF?</strong></th>
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<tr>
<td>Determine project type (building types) for Responsible Contractor requirements and how to tier requirements for projects of different scales.</td>
<td>Solicit stakeholder feedback of specific recommendations.</td>
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</table>

Comment [TNF16]: Does this include RENs programs? What about EUC-MF?
have total construction costs of $50,000+ and residential properties that have 4+ stories: 3rd party administrators, ESCOs, & contractors that perform the work must pre-qualify themselves and any sub-contractors using a more detailed pre-qualification process. This should include the criteria for all contractors (41):

a. a list of at least 3 similar past projects & references
b. 60% of workforce comprised of journeypersons who completed a registered apprenticeship program in California, or are currently enrolled in such a program.

c. Require 20% of jobsite electrical workers should be OSHA 10-hour General Industry Safety and Health Certified.

d. Require at least one jobsite electrical worker should be OSHA 30-hour General Industry Safety and Health Certified.

e. Require that any electrician working on indoor or outdoor lighting controls be a California Advanced Lighting Controls Training Program – CALCPT certified contractor and or electrician.

f. Contractor should have a documented history of full compliance to state, health, safety and work standards.

g. In addition, the contractor’s performance over time should be tracked in PIRMS.

iii. Consolidate MUSH incentives into more streamlined programs
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<tr>
<td>5. Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years).</td>
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<td>6. Develop an online project &amp; payroll reporting system for contractors to input information. IOUs should utilize a 3rd party contact/labor compliance company or perform compliance in-house to ensure that goals are being met with positive and negative consequences to enforce requirements.</td>
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<td>C. “Best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS): Pilot new model of procurement and contract management that invites contractors to identify metrics, measure, and report their performance and added-value, the effect being that high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve.</td>
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<tr>
<td>1. Pilot PIPS/PIRMS in the HVAC QI and QM programs. As participating contractors report on their maintenance activities, customer satisfaction, actual energy savings, and other metrics of performance, it will become clear which contractors are meeting or exceeding program goals.</td>
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This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.

Clarify how this model could work in HVAC QI and QM and for new solicitation processes.

Solicit stakeholder feedback.
2. Pilot PIPS/PHMS for new program solicitations to ensure best value. When used for solicitations, vendor selection is based on five filters: Past Performance Information, Project Capability (technical risk, ability to manage non-technical risk, value added, financial milestones), Interviews of key personnel, Prioritizing vendors (identify best value), and Cost verification (make sure best value is within cost range). Although PIPS/PHMS can be used to manage projects, it will work most effectively when it is used for contractor selection as well.
Recommendations for Strategic Goal #4 (Supporting Sector Strategies) and Strategic Goal #5 (Stakeholder Involvement) are currently being developed.

STRATEGIC GOAL 6: EVALUATION OF WORKFORCE EDUCATION AND TRAINING PROGRAM

Evaluation, measurement, and verification (EM&V) studies for the IOU energy efficiency and other demand-side management programs serve a number of functions, including supporting development and refinement of programs, verifying prior savings, and supporting the determination of shareholder incentives. These studies are driven in large part by the primary objective of these programs – resource acquisition, but they also address market transformation and other objectives.

Prior EM&V studies have not systematically addressed the skills and other characteristics of workers and contractors responsible for the installation and maintenance of energy efficiency measures and systems or the impact of these characteristics on performance. At present, a limited set of contractor characterization studies are in the planning phase. In addition the EM&V studies have not addressed the extent to which variations in work quality explain differences between ex ante and ex post energy savings.

The EM&V studies focused on the WE&T programs (e.g., trainings and other educational programs offered by IOUs, partnerships between the IOUs and educational institutions and community-based organizations) have not focused on skills acquisition and its impact on energy savings, but rather mostly on DSM investment decisions by end-users or increased DSM sales by contractors. As a general rule, data collected from participants in IOU offered trainings are not designed to support assessments of programs focused on skills development. Methods for assessing the contribution of IOUs to the outcomes of partnerships with educational institutions and community-based organizations have not been developed either.

The implications of the limited attention to work quality and workforce characteristics is significant, particularly as the goals for IOU energy efficiency programs are both increased and broadened. The lack of studies on the characteristics of contractors and workers and on the extent to which work quality affects energy savings limits the extent to which the benefits of workforce initiatives can be evaluated. The lack of information of the benefits of workforce initiatives means that opportunities for increasing the cost-effectiveness of energy efficiency programs relative to renewable and traditional generation resources are necessarily overlooked. Moreover, assessments of how the IOU programs affect the broader set of objectives, including market transformation and inclusion of disadvantaged workers, are also hampered.

As a consequence and as described in more detail below, the recommendations include explicit incorporation of work quality and workforce characteristics in market assessments, process evaluations, and impact evaluations. Additional feedback will be solicited from stakeholders in the short-term. For the long-term, additional EM&V studies to address work quality and workforce characteristics are proposed.
<p>| SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs |</p>
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<thead>
<tr>
<th>Recommendation</th>
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<tr>
<td>A. Modify market assessments (e.g., work papers for DEER and non-DEER measures; Potential, Goals, and Target studies; sector-specific market characterizations) to address work quality and workforce characteristics:</td>
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<td>1. Explicitly address skill requirements and other resources required for assumed energy savings of energy efficiency measures.</td>
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<td>2. Investigate and report demand for workers with identified skills (e.g., wages, benefits, working conditions and career ladders; certifications and licensing requirements; availability of skilled workers in local labor markets; education and training programs available to workers)</td>
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<td>i. The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Support:</td>
<td>Short-term:</td>
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<td>ii. Essential data for relevant labor markets (e.g., certifications, availability of skilled workers) are not available for program design and implementation. In addition, emerging technology reports do not routinely document skill requirements and work quality issues (e.g., call backs) associated with demonstrations. Without these data, program administrators must rely largely on anecdotal information and general impressions when assessing the potential benefits of certification requirements and specific training opportunities, and when setting priorities for workforce training investments.</td>
<td>Support:</td>
<td>Have concerns:</td>
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<td>B. Develop and adopt EM&amp;V protocols for workforce and labor market data collection</td>
<td>Protocols are to be developed to be applicable to all EM&amp;V components, including market assessments, process evaluations, and impact evaluations. Note that the 2013-2014 EM&amp;V Plan does address this topic but the detailed work plan is currently under development and extent of efforts in this area and efforts in this area are expected to be constrained by limited resources.</td>
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<td>Limited data are presently available on the characteristics of workers participating in ESA and IOU energy efficiency programs. These data are essential in order to better understand the skills of workers and contractors responsible for installation and maintenance of energy efficiency measures, to consider relationships of work quality to skills of workers conducting work, and to assess influence of IOU programs on achievement of the State’s workforce objectives.</td>
<td>Support:</td>
<td>Short-term:</td>
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<td>Consistent with prior CPUC Decisions</td>
<td>Have concerns:</td>
<td>Obtain stakeholder feedback on recommendation and develop cost estimates.</td>
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<td>C. Explicitly consider contractor and worker</td>
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<tr>
<td>i. While work quality issues are now</td>
<td>Support:</td>
<td>Short-term:</td>
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</table>

**COMMENT**

**POSITION**

(Choose 1: Agree, Disagree, Disagree with Comments)

**COMMENT**
### SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

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<td>characteristics and their impact on work quality as part of impact evaluations for specific resource programs</td>
<td>being addressed as part of selected programs, additional attention regarding the measurement of work quality and the underlying factors responsible for variations in work quality is required. Strategies to promote work quality, including certification requirements for workers and contractors, should also be part of evaluation.</td>
<td>Have concerns: Emphasis importance of clearly defining quality for pilots for on-going studies, including CEC and potential IOU studies comparing CALCTP and non-CALCTP projects. Longer-term: Select programs where work quality is expected or known to be an issue (e.g., programs with complex measures and systems, where quality is costly to identify, and where incentives for quality are weak. Develop and implements plans for explicitly addressing work quality</td>
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<tr>
<td>D. Modify program theory and logic models, program tracking systems, program performance metrics (PPMs), and process evaluations for adopted recommendations from SG_1, SG_2, and SG_3.</td>
<td>While Guidance Document will provide some suggestions on how to revise key EM&amp;V program elements, these suggestions need to be more fully developed with stakeholder input for those recommendations that are adopted.</td>
<td>Support: Consistent with CPUC direction Have concerns:</td>
<td>Short-term: Stakeholder feedback on how best to evaluate proposed recommendations Long-term: Incorporate revisions for adopted recommendations into Program Implementation Plans and EM&amp;V plans</td>
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<tr>
<td>E. For IOU workforce education and training programs, develop and test methodologies for assessing implications of IOU initiatives related to skills development and partnerships on resource acquisition and other broader objectives for energy efficiency</td>
<td>The IOU WE&amp;T programs and the associated impact evaluations have focused on &quot;market building&quot; activities. An increased emphasis on skills development and on partnerships (SG_3 recommendations) with core educational institutions and community organizations will require adoption of new approaches to EM&amp;V. While the IOUs have various on-going efforts related to skills development and partnerships, assessments of the benefits of these initiatives (i.e., skills development and partnerships) to the IOU ratepayers are needed if additional.</td>
<td>Support: Have concerns:</td>
<td>Short-term: Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships, identify programs and EM&amp;V approach where significant IOU resources are allocated currently to skills development and partnerships</td>
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<td>resources are to be allocated to these activities.</td>
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<td>Long-Term: Develop and implement pilot projects to test how best to assess the benefits of these initiatives to IOU ratepayers</td>
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Recommendations for Strategic Goal #7 (Evaluation of Web Portal) are currently being developed.
WE&T Statewide Strategic Planning Consultant

DRAFT summary recommendations

January 10, 2014

Lead Researcher:
Dr. Carol Zabin, UC Berkeley Donald Vial Center

*Not for public dissemination*

Comments from Lisa Paulo, CPUC Energy Division
STRATEGIC GOAL 1: WORKFORCE EDUCATION AND TRAINING PROGRAM MODIFICATION

The IOUs’ dedicate most of their WE&T resources for growing the market for energy efficiency services rather than skills-building for the work force who carries out the work, and the current structure of their programs is not well-suited to improve the DSM skills and knowledge of large numbers of workers in the key occupations that impact energy efficiency outcomes. By increasing the emphasis on skills development, the WE&T programs can better meet the CLEESP’s vision that “By 2020, California’s workforce is trained and fully engaged to provide the human capital necessary to achieve California’s economic energy efficiency and demand-side management potential.”¹

Most of the IOUs’ WE&T resources are dedicated to very short, stand-alone, free classes open to any interested person. Most participants are either end-users (building managers or home owners who are potential buyers of energy efficiency services) or contractors and professionals in managerial positions (sellers of energy efficiency services). The offerings are not effective at reaching workers in the key EE/DSM occupations or at developing workers’ skills:

- Most current offerings do not involve the state’s core education and training institutions for the key EE/DSM occupations, thus missing an opportunity to incorporate DSM content into the main period of training that workers in key occupations go through. These are: UC/CSUs for professionals, and apprenticeship and community colleges for the trades.
- Most current offerings do not adhere to best practices for skill-building training. Best practices include clear prerequisites and learning outcomes for each class, classes that are sequenced and build upon each other, competency testing at class completion, tied to recognized, stackable credentials, hands-on learning, and for incumbent workers, a clear commitment and involvement by their employers.
- The 2010-2012 WE&T process evaluation by ODC found that the Centergies classes heavily emphasize information about technologies, rather than skill-based outcomes.²
- Due to the course structure and content delivery style, ODC concluded that participation in Centergies training does not guarantee that participants will have obtained the skills necessary to carry out high-quality work.³

Recommendations

We recommend the IOUs direct a significant portion of WE&T resources to EE/DSM skill-building activities for the critical occupations. Our recommended approach would affect occupational transformation on a broad scale by leveraging the state’s core accredited education and training institutions, and promoting the identification of clear certifications and skill standards.

The IOUs should substantially increase WE&T resources for workforce development (e.g. to at least $80 million per three-year cycle), and then redesign this programming with increased participation and oversight from state workforce development experts. This process could be administered by the IOUs or by a 3rd party via RFP. An alternative approach would have the CPUC develop the necessary interagency agreement to with the CA Labor and Workforce Development Agency to transfer administration of some or all of these activities to the CA Workforce Investment Board or a non-profit organization. This alternative would ensure closer cooperation between the energy, education and labor agencies.

¹ CLEESP, p 74.
² 2010-2012 WE&T Centergies Process Evaluation, ODC. Pages 12, 13
³ Ibid, p 14
We recommend developing comprehensive implementation plans to customize programming targeted to each of the three career pathways. These plans should align with and leverage the core education and training institutions (UC/CSU for professionals, CCC and state-certified apprenticeship for the trades). Each of the plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation. We offer more detailed recommendations on processes for prioritization and program delivery in our full guidance plan. We also present three “Phase 1” programs that can be initiated in 2014, which are low-hanging fruit that can serve as learning arenas for the new WE&T configuration.  

Our proposal involves structured oversight from a governing board of key state workforce, education, and energy agencies, plus technical experts (e.g. the Lawrence Berkeley Lab). The governing council should appoint industry and subject-matter experts to an advisory group for each occupation, which will be responsible for identifying certifications and skill standards.

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4 This may require accelerated direction from the CPUC (e.g., Advice Letter process at a minimum)
<table>
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<tr>
<td><strong>A. Allocate a significant amount of WE&amp;T dollars to targeted programs for workers' skill-building:</strong></td>
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<td>1. We recommend that at least $80 million of WE&amp;T funds per three-year cycle go to workforce development in order to affect meaningful change in this arena.</td>
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<td>2. Within the $80m (per 3-year cycle) for workforce development, we propose the following allocation:</td>
<td>• $20m for professionals</td>
<td>• $20m for non-residential trades</td>
<td>• $20m for residential trades</td>
<td>• $20m for inclusion</td>
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<td>Connections 9-12 career prep/awareness counts in inclusion. The rest is counted under market-building.</td>
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<td>Although the CLEESP mandates workforce education and training, most of the Centeregies budget currently goes towards educating buyers and sellers of energy efficiency services, rather than skills development for workers involved in the design, installation, and maintenance of EE/DSM work. Most of the Connections budget goes to consumer education, not career development.</td>
<td>Workforce development and market development require a different guiding strategy for programming, and distinct activities and delivery mechanisms. There is a need for increased efforts in the area of workforce development in order to carry out the CLEESP vision, which will require a significant increase in resources.</td>
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<td>Our recommended allocations represent the minimum amount that we believe would have a statewide impact on workforce development in each of the four categories (professionals, res trades, non-res trades and inclusion).</td>
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<td>We prioritize among the four categories based on the following criteria:</td>
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<td>i. Estimated program costs based on preliminary recommendations and stakeholder feedback;</td>
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<td>ii. Ability to leverage other funds (state and/or employer);</td>
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<td>iii. Importance in the CLEESP</td>
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<td>iv. Share of occupations</td>
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<td><strong>Recommendation</strong></td>
<td>from the NA projections (4:1 trades:prof; 1:1 rec:non-rec)</td>
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<td><strong>Comments</strong></td>
<td>v. Key role of specifiers and designers</td>
<td>vi. Where are there work quality problems?</td>
<td>vii. Where are their key new emerging technologies that require new skills for critical occupations?</td>
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<td><strong>B. Redesign workforce skills development programming</strong></td>
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<td>1. Phase out short, stand-alone classes as a mechanism for skills-building program delivery (except classes designated for 20% dedicated to market development)</td>
<td>Current programming for workforce skills development is limited. Most programming in this area does not follow best practice for skills development and does not fully leverage the rich infrastructure of CA accredited education and training institutions. Short, open-door classes are still the primary program delivery mechanism, although this is not an effective skills-building strategy. Partnerships with apprenticeships have been extremely limited so far.</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Get stakeholder feedback on how to structure effective partnerships for each key institutional partnership. Discuss with stakeholders, IOUs and CPUC how to incorporate partnership-based activities with other IOU program objectives re: energy savings.</td>
<td>Question 80/20 split between market creation and WE&amp;T. Is budget data available that justifies this split (ex: What percentage are the IOU currently allocating to market creation vs. training). I realize that the IOUs are responding to a data request for this information.</td>
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<td>2. Orient programming around partnerships with core accredited education and training institutions for each major occupation/career pathway: professionals; commercial trades workers, and residential trades workers</td>
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<td><strong>C. Career pathway plans:</strong></td>
<td>Because of the limited partnerships with key state education and training institutions and a lack of best practices in the offerings described above (CF: What data used to justify this conclusion ex IOU annual reports including reporting on program performance metrics), the IOUs’ current workforce development programming has not been effective in reaching and developing the skills of workers in the key careers. Developing career pathway-specific plans built around key institutional</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Get stakeholder feedback on priority activities and delivery mechanisms for each career pathway plan.</td>
<td>Career Pathways recommendations seem useful. Still needs to be flushed out with more detail on “how” the IOUs should (ex: IOU specific sector strategy “how-to” manual). Governing board concept needs to be better flushed out with some degree of legal analysis to determine an actionable process for initiating this including how joint funding could work)</td>
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<td>Design an implementation plan for each major career pathway (professional, commercial trades, residential trades) with the following elements:</td>
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<td>1. Each of the 3 plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation (i.e. UC,CSU, and CCC for professionals; DAS and CCC for commercial trades; CCC for residential trades). Governing council should appoint Industry and SME advisory group for each occupation, which will be responsible for identifying certifications and skill standards for each.</td>
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<td>2. Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions.</td>
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<td>3. Plan should determine key opportunities to</td>
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<td>4. Plan should determine key opportunities to</td>
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<td>incorporate EE skills and knowledge at specific points in the career pathway for priority occupations. Key points in the career pathway are pipeline preparation, core post-secondary education, and incumbent worker training.</td>
<td>partnerships, and with defined stakeholder input, will lead to more effective and well-aligned workforce skills-building programming.</td>
<td>ii. There is a widely acknowledged lack of clarity and consensus on certifications and skill standards for the critical occupations (LP1: from whom? Need references)</td>
<td>Next Steps</td>
<td>POSITION (Choose 1: Agree, Disagree, Disagree with Comments)</td>
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<tr>
<td>6. Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms.</td>
<td>There is a lack of clarity and consensus on certifications and skill standards for the critical occupations (LP1: from whom? Need references)</td>
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<td>7. Programming should leverage funding for classroom and other training from key institutions wherever possible.</td>
<td>The IOUs have internal expertise on emerging technologies, and certain areas of quality problems (not always within the WE&amp;T staff, however). They do not have expertise on career pathways or workforce development strategies.</td>
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<td>8. Programming should use sector strategy approach for incumbent worker training, based on commitments from multiple employers.</td>
<td>Budget constraints are a concern to the IOUs WE&amp;T programs, (LP: backed up by survey responses? Can be shared while maintaining anonymity) as well as many training providers. Leveraging existing resources and infrastructure can increase programs’ impact.</td>
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<td>9. In-house IOU skills training should be limited and reserved to cover gaps that partners can’t fill, with commitment to transfer courses to other training institutions over time.</td>
<td>Significant employer commitment to training programs increases their effectiveness (LP: Reference). Linking or embedding training initiatives with long-term career pathways, in particular core occupational training institutions, also increases their effectiveness (LP: Reference).</td>
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D. Governance and accountability: 1. Plan must be approved first by governing board composed of key state workforce, education, and energy agencies, and technical experts 2. CPUC should consider recommendations of
### SUMMARY OF RECOMMENDATIONS:
#### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<td>governing board and approve final plan</td>
<td>Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation.</td>
<td>Have concerns:</td>
<td>Have concerns:</td>
<td>Boad with CPUC and other state workforce education and energy agencies. Get feedback on logic model and PPMs, and evaluation structure for measuring impact on energy savings and market transformation.</td>
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<td>3. Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation.</td>
<td>Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation.</td>
<td>Have concerns: IOUs are concerned about burdensome oversight and loss of control of the program direction.</td>
<td>Have concerns:</td>
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<td>4. Most of the prior IOU-led attempts to bring stakeholders together for WE&amp;T planning and consensus-building around standards have been contentious; e.g. the HVAC Sector Strategy LP1: Are there other examples or just the HVAC example? Need to justify the term “most”.</td>
<td>The changes we propose are significant and will take time to fully implement. We offer the Phase 1 programs as concrete programs that can be carried out in the near-term as the larger framework is developed and put into place.</td>
<td>Have concerns: IOUs are concerned about burdensome oversight and loss of control of the program direction.</td>
<td>Have concerns:</td>
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<td>5. The CPUC’s WE&amp;T Task Force is a public forum for input on the IOUs’ programs, but not an adequate forum for program development LP1: How could existing stakeholder taskforce be leveraged for any recommendations included overall? Good resource at the ground level that should be capitalized on and/or reinvented to serve a specific purpose.</td>
<td>The changes we propose are significant and will take time to fully implement. We offer the Phase 1 programs as concrete programs that can be carried out in the near-term as the larger framework is developed and put into place.</td>
<td>Have concerns: IOUs are concerned about burdensome oversight and loss of control of the program direction.</td>
<td>Have concerns:</td>
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<td>E. Phase 1 Programs</td>
<td>We suggest the following programs (LP1: Sector Strategies? Not “programs”?): that can be initiated in 2014 for each occupational group, which are low-hanging fruit that can serve as learning arenas for the new configuration:</td>
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<tr>
<td>1. Professionals: RFP to be let out to 4 year accredited architecture and engineering departments to incorporate energy efficiency skills and knowledge into their curricula for degree programs</td>
<td>Support: CA DAS supports the apprenticeship proposal; UC Berkeley architecture department is a strong supporter of the professional proposal. Have concerns: None?</td>
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<tr>
<td>2. Commercial trades: Partnership/sector strategy with CA Division of Apprenticeship Standards to incorporate EE skills and knowledge into journey upgrade programs for key crafts.</td>
<td>DAS has already indicated its Support: CA DAS supports the apprenticeship proposal; UC Berkeley architecture department is a strong supporter of the professional proposal. Have concerns: None?</td>
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### SUMMARY OF RECOMMENDATIONS:
**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<td>3. Residential trades: Review and consolidate existing Community College partnerships around supporting skills-building best practices at Colleges</td>
<td>eagerness to participate in this type of partnership on EE/DSM skills.</td>
<td>iv. Our research indicates a number of productive relationships with local Colleges and community training institutions exist. v. There are some examples of bridge programs that connect disadvantaged youth with pre-apprenticeship.</td>
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<td>4. Inclusion: RFP for Pilot Project Energy Efficiency Bridge Program in one region that leverages other investments and connects to apprenticeship.</td>
<td>eagerness to participate in this type of partnership on EE/DSM skills.</td>
<td>iv. Our research indicates a number of productive relationships with local Colleges and community training institutions exist. v. There are some examples of bridge programs that connect disadvantaged youth with pre-apprenticeship.</td>
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**F. Administrator:** Administrator should have the capacity and willingness to manage and staff the plan outlined above. Option 1: IOUs manage and staff guidance plan, or issue an RFP for a 3rd party implementer. Option 2: CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization. The content of the recommendations are the same in either case, and both could still include IOU participation in program development, or best-practice IOU-led offerings such as the retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&T portfolio overall.

Although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development partnerships with the state’s core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative administration of the workforce development portion of WE&T would be more effective. (LP1: This is why the decision directed the IOUs to hire an expert consultant to help “them” do a better job. This should be the primary focus of this effort. Too soon to jump the gun and remove IOUs from process which should be considered only if they are not able to succeed. Suggest the option to remove IOUs be included as a secondary recommendation if they are not successful.)

**Option 1.** Support: Most IOU WE&T staff would like to retain primary ownership over the funds. Several expressed a desire/willingness to include more workforce partners in the program design process we’ve described. **Concerns:** some of the stakeholder advisory group expressed concern about the IOUs’ capacity to effectively execute the type of partnership structure we describe.

**Option 2** Support: Members of the stakeholder advisory group (including the state labor agencies) liked the idea of a more systematic, collaborative tie between the WE&T programs and the state’s other primary workforce development and education agencies, and the potential it presents for program alignment and fund leveraging. **Concern:** Most IOU WE&T staff are wary of relinquishing ownership to an outside entity. Some stakeholders and IOUs expressed concern that...
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<td>there isn’t currently a clear choice of a non-profit to lead the Option 2 effort, several noted issues that may arise around maintaining CPUC oversight over ratepayer funds.</td>
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STRATEGIC GOAL 2: INCLUSION FOR DISADVANTAGED WORKERS

Currently, the substantial and diverse investments being made by the IOUs in the energy efficiency and DSM programs do not include interventions to support the creation of middle-class career pathways for low-income communities, communities of color and other disadvantaged populations. While these investments offer a promising opportunity to build middle-class career pathways for low-income people and jobseekers with barriers to employment (“disadvantaged workers”), there are several barriers in place that prohibit the IOUs from achieving the California Long Term Energy Efficiency’s Strategic Plan goal of increasing “participation from within minority, low income and disadvantaged communities in achieving California’s economic energy efficiency potential”\(^1\):

- The work of investor-owned utilities in California was not historically seen as public investments akin to government public works projects, and thus the public policy direction of requiring inclusive hiring policies and family-supporting wages applied to publicly-funded capital projects has only been recently considered by the CPUC.
- The IOUs do not currently have clear authority and direction to allocate resources to proven practices that increase minority, low-income, and disadvantaged worker participation in public works and energy efficiency projects.
- The IOUs currently lack a working definition of “disadvantaged worker” and lack clear performance metrics or program goals by which to measure progress in hiring these workers.
- Current data collection methods do not provide a comprehensive picture on the demographic profile of the workforce being employed to carry out EE/DSM projects by occupation or job category, nor do they collect detailed data on compensation structures and wages by occupation and job category. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect this data.
- The IOUs currently lack clearly articulated pathways for disadvantaged workers to advance along a career ladder as they gain more experience, training and skills. An effective ecosystem of agencies and organizations (including low income weatherization providers, community based organizations, community colleges, local and state workforce investment boards, utility workforce development staff, labor unions and contractors) can create a pipeline of ready and able workers through effective recruitment, training and placement of disadvantaged workers.
- The IOUs currently lack the contracting and procurement tools need to shape incentives or requirements for contractors to hire trained and ready workers from disadvantaged communities. Contracts for higher-paid, higher-skill work (such as EE work in schools, universities and hospitals), tend to be smaller and do not always require deep, complex retrofits, which may prevent contractors from bringing on hired and ready workers from disadvantaged communities.

Integrating procurement and contracting (“demand-side”) strategies with recruitment, screening, skills development, training, wrap-around services and credentialing (“supply-side”) strategies is essential to achieving the full scope of California’s EE goals.

**Recommendations**

The CPUC should direct IOUs to measure and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals. The CPUC’s direction should have clear metrics and performance standards to meet these goals.

We propose a two track strategy. First, the IOUs should ensure the quality of jobs created by EE investments. We recommend that the IOUs set a wage floor for the ESAP, Direct Install, and Third Party programs, since these program implementers and contractors have direct contracting or subcontracting relationships with the IOUs. Second, we recommend that the IOUs launch a pilot MUSH sector program that includes a targeted hire program. This MUSH sector program can follow the standards used in public works construction, where targeted hire programs, tied to apprenticeship, have been very successful in many local governments in California and nationally.

Data collection efforts are necessary to support these goals. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect workforce data to evaluate job quality and the demographic profile of workers. We recommend that this be done through an on-line workforce reporting system (such as Elations or LCP Tracker); these systems are inexpensive and have been used by many awarding agencies in the state. In addition, the IOUs should adopt a definition of disadvantaged worker and apply it meaningfully and consistently across all EE programs. This definition can then be used to design inclusion programs, and to track and measure results. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria\(^{\wedge}\)); and/or b) an individual who is a resident of a high unemployment zip code in her/his county\(^2\). The IOUs should also institute data collection as

Once a definition is set, the IOUs should set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs. We recommend a conservative initial goal (such as 15% of new entry level job openings in IOU supported EE/DSM work) in order to ensure success and acceptance by both IOUs and contractors. This goal can be increased over time as programs are developed and contractors and IOU staff become familiar with them. The results of these goals can be tracked by the workforce reporting system and made publicly available, as a scorecard, similar to that used in General Order 156 which has been successful for promoting diversity in procurement. Contractors meeting goals should receive additional points in the next round of program procurement. In order to ensure that workers are trained and ready to perform higher skill work, we also recommend funding for pre-apprenticeship training programs that will provide disadvantaged workers the skills, training and abilities needed to be successful in entry-level MUSH and large commercial EE and utility employment. This funding should be released in the form of an RFP, and should encourage the mobility of ESAP and other residential workers into higher wage higher skilled jobs in the MUSH sector.

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\(^1\) Page 74

\(^2\) Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

\(^{\wedge}\) The unemployment rate is 150% of the median unemployment rate for the county.
SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<td>A. Prioritize creation of good-paying jobs and workforce diversity as key IOU goals along with efficiency outcomes:</td>
<td>Successful workforce inclusion programs have established goal setting and monitoring in order to improve outcomes. In order for the IOUs to have the authority to direct resources towards these efforts, they need direction from the CPUC. General Order 156 is an example of the IOUs' ability to create a new program and achieve diversity goals in response to specific CPUC direction.</td>
<td>Support: Some equity groups, including those in the Stakeholder Advisory Group, support this recommendation.</td>
<td>Set stakeholder feedback on language of proposed CPUC direction.</td>
<td>What are and who determines the criteria for a quality job? Is there an existing definition of this? May need more analysis to support this recommendation in the future to determine what kind of jobs are currently evolving from IOU programs. Are they already considered “quality” and if not why? This analysis will help establish baseline also to develop appropriate goals for this recommendation.</td>
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<td>B. Define Disadvantaged Worker meaningfully and consistently:</td>
<td>l. Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring. ii. Many existing public works programs have developed similar definitions of Disadvantaged Worker (DP). What are these definitions and how do they compare with what is being proposed? Include in appendix. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility. iii. The combination of these two sets of criteria have proved in other programs to develop the necessary skills to do good work. (PE: Reference?)</td>
<td>Support: Some equity groups support this recommendation.</td>
<td>Test revised definition with Stakeholder Advisory Group.</td>
<td>For definition of disadvantaged worker, why include “b”. “a” should cover it. Including “b” leaves room for gaming and taking advantage of the system; people could relocate to disadvantaged communities to receive prioritization when they really are not disadvantaged, or there just may be middle class people living in disadvantaged communities.</td>
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<td>C. Set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</td>
<td>Models from other successful programs. Successful experience from G.O. 156.</td>
<td>Support: Some equity groups support this recommendation.</td>
<td>Develop an initial goal in consultation with key stakeholders.</td>
<td>For the 15% target, what is the baseline? What about contractors who already employ a high percentage of disadvantaged workers? Alternatively, how are trades that, by necessity, have higher skilled workers (ex: electricians), which may it more challenging to find disadvantaged workers that have these high skillsets, since most of these workers are already gainfully employed? Will they need to take on the additional task of hiring unskilled workers (in their particular trade) and fully train them? Not sure if this would be an issue, but absent supporting data there are unknown implications.</td>
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6 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

7 The unemployment rate is 150% of the median unemployment rate for the county.
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<td>Disadvantaged Worker participation. 2. This goal can be increased over time as the programs are developed and participants become more familiar with them.</td>
<td>achieved. How will efforts to drive inclusion affect cost-effectiveness? Will CPUC adjust cost-effectiveness requirements to reflect inclusion goal?</td>
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<td>D. Institute a required, electronic workforce reporting system for EE/DSM contractors to capture information: 1. Require monthly reports using LCP tracker or some other established program that works with payroll companies. 2. Include the following data points: a. Hours worked b. Rate of pay c. Disadvantaged status, zip code of residence d. Race, ethnicity, and gender e. Trade/occupation f. Journey/apprentice level g. Certifications held 3. Make the reports publicly available. 4. Contractors who achieve or exceed goals will receive compliance points in next round of procurement.</td>
<td>Successful equity and inclusion programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements. Support: Labor groups familiar with reporting data support this recommendation. Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concern over the potential cost of reporting data. IOU staff have expressed concern over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
<td>Good recommendation. Need to clarify process for collecting this data and this process needs to be in place before implementing this requirement. Need better description of the &quot;points&quot; recommendation. Not clear what this is for and how it would work.</td>
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<td>E. Ensure baseline quality of jobs created by efficiency investments: Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)</td>
<td>Interviews indicate ESAP wages range from $12/hour to high $20s/hour. LA DWP’s utility pre-craft worker program starts trainees at $16/hour. Higher wages typically contribute to higher skill development, and better outcomes. Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs. Have concerns: Some IOU staff, one equity group (Brightline Defense), and contractors are concerned. A wage floor could increase cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. ESAP contractors have concerns that they will be expected to bear burden of wage floor without overall program budget increase. Cost of collecting and reporting data.</td>
<td>Get feedback on $16/wage floor from Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
<td>Need clear justification for this wage floor rate. How do LA DWP rates correlate with other economic regions? Is this rate appropriate statewide with no consideration of regional markets? Does the California Labor Code prevailing wage support this rate across the board?</td>
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<td>F. Improve job opportunities</td>
<td>California Labor Code requires prevailing</td>
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<td>Does the California Labor Code prevailing wage support the wage floor above across the board?</td>
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<td>created by created by efficiency investments: Align the requirements of ratepayer- or IOU-funded efficiency investments in public sector buildings with the prevailing wage and apprenticeship standards of California public works projects, wages and apprenticeship utilization on public capital projects. Contrary to this general public policy, it exempts “work done directly by any public utility company pursuant to order of the Public Utilities Commission or other public authority.” Cal. Lab. Code Sec. 1720(a)(1).</td>
<td>Why was the exemption put into place with regard to “work done directly by any public utility company pursuant to order of the Public Utilities Commission or other public authority.” Is the reason for that exemption still valid?</td>
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<td>G. Consolidate all incentives and efficiency programs that target the municipal/government, university, school, or hospital sectors into a comprehensive MUSH program. Introduce an inclusion requirement in the MUSH program: 1. Bundle programs to create scale for contractors. 2. Focus MUSH incentives on deep retrofits and whole building programs. 3. Increase allocation for this program to at least $100 million. 4. Apply aspects of Energy Upgrade California as a model framework: a. Establish pre-qualified list of contractors. b. Require MUSH incentive recipients to work with IOU-designated contractors. 5. Restrict contractor participation to increase market share and positive outcomes for participating contractors: a. Require competitive application process to reward contractors that meet or exceed worker skill standards, Disadvantaged Worker hiring goals, and wage floors. 6. Open list to new contractors on a restricted timeline (e.g. every 2 years). Energy Upgrade California and Sierra Nevada Energy Works. Programs in San Francisco, Portland and Seattle utilities. PLAs with targeted hire requirements at LA-METRO, LAUSD, CRA/LA, LACCD. Support: Have concerns: IOU staff have expressed concern that increased coordination and adoption of “new” policies along multiple programs will may delay implementation of these practices. IOU staff express concern over the cost of compliance with targeted hiring programs may make reduce cost-effectiveness of MUSH programs. Requirement that customers use contractors off pre-qualified list may discourage participation. Fear that Disadvantaged Workers may not have the skills necessary to perform the work. Contractors may not have sufficient work to add new hires to meet DW targeted hire requirement. Gather more data on MUSH programs to build out recommendations. Test detailed recommendations at non-residential EE stakeholder meeting in January.</td>
<td>Does it make sense to bundle programs? Are the measures/markets similar or different? How is allocation increase of $100 million justified? Supporting data? Has there been a consideration of lessons learned from evaluations of the EUC program?</td>
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| **H. Establish training bridge program to link residential EE workers to non-residential EE jobs.**
  Release an RFP for creation of a pre-apprenticeship training program that will provide disadvantaged workers the skills, training and abilities needed to bridge between residential EE workers and non-residential EE employment opportunities and provide access to entry-level non-residential EE and utility employment. | Power Pathways, CCCO Career Advancement Academies, Pre-apprenticeship collaborations such as SF City Build, IBEW Local 11 and LATTC | Support: Education and labor stakeholders
Have concerns: Some stakeholders have indicated concerns with the viability of ESAP workers entering in bridge programs; some ESAP contractors indicate there are viable career pathways within ESAP employers. | Test $16/wage floor with Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker. | Seems like a good recommendation but need more info on how markets/measures similar or different, where skillsets are similar.
Thought goal was to create career pathways within the residential sector not siphon workers away to the non-residential sector. Need more skilled workers within the residential sector.
Need clarification of purpose and objective for this recommendation. | |
| **I. Strengthen ESAP and MIDI as entry point to a higher skilled, higher-paid career in commercial and industrial EE:**
  1. The IOUs should apply the wage floor and workforce reporting requirements to MIDI as the program is developed.
  2. Education and workforce development partners should articulate career ladder and opportunities for advancement to ESAP and MIDI workforce. | i. Interviews and EE Decision indicate expansion of MIDI program (LP1: Reference?)
ii. The level of skills required for residential ESAP and MIDI programs are similar: lower and thus more suited to an entry-level position. However, on the job, ESAP and MIDI installers gain valuable experience in both soft and hard skills (LP1: Reference?), preparing them to move up the ladder.
iii. The contractors who run the ESAP programs tend to hire from the local, low-income community, making it a natural entry point for a more diverse workforce. However, it should not be an end point for low-income workers (LP1: Reference?). | Support: Some equity advocates were interested in learning more about the details of the recommendation to determine their support.
Have concerns: One equity group (Brightline Defense) and IOU staff expressed concern over a wage floor increasing the cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. Contractors were concerned over the wage floor: Will contractors be expected to bear burden of wage floor without overall program budget increase? They are also concerned about the cost of collecting and reporting data. | Like suggestion to pilot these kinds of strategies once operationalized before applying broadly. | |
STRATEGIC GOAL 3: INTEGRATING WORKFORCE EFFORTS WITH RESOURCE PROGRAMS

There is substantial evidence that improper equipment installation, operation, and maintenance lowers the realized energy savings of energy efficient measures and most likely explains some of the differences between ex ante savings estimates and ex post evaluations. Specific sources include the 2011 WE&T Needs Assessment, where results from case studies for different market sectors are reported, an extensive annotated bibliography that will form an appendix to the guidance plan, and recent interviews with current and former IOU staff, subject matter experts, and industry professionals, which were conducted for this project. This evidence spans complex advanced lighting and HVAC systems as well as installations of simpler energy efficiency equipment.

The extent to which improper equipment installation, operation, and maintenance reduces the energy outcomes for California’s Demand Side Management (DSM) programs is unknown. While specific studies have investigated the extent of poor installations for specific technologies (e.g., HVAC, advanced lighting, building construction), comparable data across measures and programs are not collected for California’s DSM programs that could systematically determine where poor work quality may be reducing energy savings.

Workers can acquire, through training and on-the-job experience, the necessary skills to perform high quality work, but training alone is not a sufficient condition to ensure high quality work. The market must also demand quality work. The IOU DSM programs have introduced various program requirements to ensure high quality work, ranging from contractor licensing requirements to quality assurance programs to customer information; however, these are minimal compared to the much more robust workforce and related standards found in many other sectors in the economy, including in segments of the building and construction industry, the key industry for energy efficiency investments. The current process for program planning, approval, and implementation does not specifically reward the IOUs for ensuring high work quality or penalize them when energy savings are left on the table due to improper installation, operation, or maintenance of energy efficiency measures. The common response to poor work quality continues to be support for training, but the return on these investments—for both ratepayers and the trainees—is limited without greater need for work quality.

The following recommendations 1) suggest a series of process improvements to better understand and incorporate the impacts of work quality on energy goals and 2) suggest workforce standards for IOUs to incorporate into the management of EE programs that will both reduce the risk of inaccurate savings estimates due to work quality, and encourage higher performing and more qualified contractors to participate in DSM programs.

Recommendations

Process Improvements: First, we recommend a series of process improvements to create a stronger incentive structure to ensure proper installation and maintenance of energy efficiency measures.

The existing program development, approval, implementation, and evaluation processes neither reward nor penalize the IOUs for their influence over work quality and its impact on energy savings. Assumptions about the installation and performance of energy efficiency equipment are based on technical specifications and engineering assessments, and fail to account for the impact of worker skills and performance on equipment performance (and energy savings). Often, equipment is assumed to be installed correctly and in-service, without either specifying the level of technician skill required or verifying quality in the field to substantiate those claims.

The CPUC applies discounts (“haircuts”) to the IOU-claimed energy savings to avoid over-estimating, but these reductions do not isolate the effects of different program requirements or workforce standards. Since the IOUs perceive that stricter program requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily adopt higher standards, unless there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear incentive if they evaluated performance in real time, but they mostly are limited to catching fraudulent behavior. Real-time across the board inspections are costly and increase transaction costs and program friction for customers. Finally, the program implementation and evaluation cycles are not conducive to providing timely feedback on effective program requirements, and as stated above, impact evaluations do not document or isolate work quality problems.

Our recommended process improvements address the shortcomings of the current quality assurance and discount process, and call for the identification of minimum contractor requirements and worker skills/credentials needed to carry out work correctly. These recommendations will reduce the risk of large gaps between ex ante estimates and ex post evaluations for deemed measures and savings left on the table due to installation problems for custom measures. The recommendations will also reduce the risk of improper installation, operation, and maintenance, which can lower energy savings.

Workforce Standards: Second, we recommend several different types of contractor and workforce standards designed to screen out less qualified contractors and create an environment to encourage participation by high performing contractors in energy efficiency work. Workforce standards refer to interventions that shift the competitive environment toward higher performance. Workforce standards are a quality control mechanism that can reduce the need for more expensive post-installation quality assurance activities.

The lack of available information on work quality and its impact on the portfolio should not be used as an excuse to delay adopting workforce standards, many of which are “no regrets” or “do-no-harm” approaches with multiple co-benefits, including deeper retrofits. Because different standards can have the same effects in the labor market, there is some flexibility in how standards can be adopted to different programs. For example, establishing a wage requirement can have the same effect as a skill requirement because if all contractors have to pay higher wages, contractors who have invested in higher skilled workers will be able to more effectively compete in the market. Similarly, policies to contract with high performing contractors will result in the use of skilled workers as effectively as establishing specific skill standards for workers for each program or technology. Each of these types of standards acts to support higher quality contractors, and screen out or improve the performance of lower quality contractors.

In making recommendations, we mapped the program resources by delivery mechanisms, target market, and technology in order to identify the simplest approach given the existing program structure. Given the range of technologies currently offered and the ever-changing technological environment, it is very difficult to establish and maintain, not to mention enforce, appropriate specific worker skill standards for every measure and program in the IOU portfolio. When there is widespread industry agreement for particular skill standards, they are effective ways for establishing a bar for participating technicians and contractors. In the absence of agreed upon skill standards, contractor qualifications or wage standards would be simpler approaches to improve performance and work quality.

11 For example CALCTP for advanced lighting controls or DOE Task Analysis for different energy efficiency jobs.

12 For custom projects, which represent a large percentage of the savings in recent portfolios, customers lose rebates (and IOUs lose savings credit) when equipment is not functioning for any number of reasons, including low-quality installation. The new Efficiency Savings and Performance Incentive (ESPI) creates a mechanism that encourages IOUs to manage EE programs in a way that ensure actual savings meet or exceed estimates (for deemed measures with a high degree of uncertainty).
In our exploration and evaluation of different standards, we also identified a new model for addressing and improving contractor performance. The “best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS) gradually improve performance by giving vendors or contractors more responsibility in defining quality work by reporting their efforts and their results. Because all contractors are invited to identify metrics, measure, and report their performance and added value, high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve. This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.
SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 3, RESOURCE PROGRAM INTEGRATION

Recommendation | Data Supporting Recommendation | Concerns/Controversy | Next Steps | POSITION (Choose 1: Agree, Disagree, Disagree with Comments) | COMMENTS

A. Process improvements: Implement changes through program design, implementation, approval, and evaluation process to create stronger incentives for high quality work.

1. Identify and document contractor competencies and markets and worker skills/credentials for field demonstration projects.

2. In developing program plans, consider and document alternative approaches for addressing workforce issues (e.g. mix of certification requirements, training opportunities, and quality assurance/verification. Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings.

3. Program Implementation Plans should specify how program requirements will increase the demand for quality installations. Initial plans should consider alternative scenarios prior to selecting a specific approach.

4. Develop a discount (haircut) to isolate the effects of work quality to apply to energy savings calculations. When measures are first introduced, inspections of performance should be used to establish the equivalent of a measure-specific “gross realization rate” and

- In emerging technology demonstration projects, the most qualified firms and workers are selected to install new equipment or measures. ETCC reports currently do not consider the skill of the workers necessary for proper installation, and do not inform program requirements for the types of contractors that should participate to ensure quality.
- Work papers often assume 100% correct installation without identifying the conditions necessary to ensure that is the case.
- By bundling work quality problems with technology failures, customer behavior, and other variables (installation rates and gross realization rates), we cannot know what the specific impact of different workforce interventions are.
- Current QA and inspection processes are intended to reduce fraudulent behavior and do not identify faulty installation. It is standard best practice that inspectors have a higher level of technical skill than installers, and current QA processes do not consider the technical skill of the inspection team.
- Currently, there is a “three-strikes” rule for fraudulent behavior.
- The ESPi mechanism uses a combination of ex ante estimates and ex post evaluations to determine shareholder incentive for IOUs, but custom project savings are confirmed shortly after installation, not accounting for failures down the road due.

Support: PRG support for eliminating three-strikes rule for fraudulent behavior.

Widespread concern (from PRG) that work quality is not addressed systematically in existing processes and unanimous support for adjusting program processes to account for work quality. Unanimous agreement that process improvements are a necessary, but not sufficient, condition to address work quality; standards are also critical.

Have Concerns: IOUs point out that work quality can be difficult to define and measure.

IOUs and ED staff are concerned that the benefits of isolating and measuring work quality issues may not exceed the costs of doing so.

Contractor groups (written comments on EUC) want QA to be educational rather than punitive, incorporating mentorship.

IOU staff point out the high cost of rigorous QA.

IOUs are concerned about program “friction” for customers.

Determine which programs can accommodate pay-for-performance requirements.

Solicit stakeholder feedback on these recommendations

Define “Fraudulent behavior.”

Need more description for how these recommendation would be initiated including how they should be measured, what the cost/benefit implications are, what the baseline of workforce standards currently are and what they should be, etc.

May need to wait until further EM&V analysis could be conducted (as described in recommendations for Strategic Goal #6).

Many of these recommendations here are not IOU specific and seem to be more for the CPUC. This needs to be clearly stipulated in the final document (for all the recommendations) as well as identifying what is actionable now vs. later and what additional analysis, data gathering, or steps are needed prior to initiation of recommendations if needed.
“Installation rate.” Once measure-specific rates are established, samples should be used to modify rates. IOU credit should be based on results of those quality inspections.

5. Quality Assurance processes (Inspection and Verification) should focus more on quality of installation. Highly skilled technicians should be assigned to inspect installations at beginning of program and then randomly throughout programs.

6. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on quality.

7. Institute zero-tolerance policy for fraudulent behavior (for Trade Professionals, Customers, and other Contractors), with a three-year exclusion from participating in ratepayer funded programs.

8. Pay-for-performance requirements: Withhold fully crediting the IOUs and some portion of incentive payments until inspections confirm that equipment is properly installed and operational over the course of its effective useful life (or other meaningful period of time).
### B. Workforce Standards:

Change the competitive environment to attract high performing contractors and screen out or improve the performance of lower-qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.

1. Require CALCTP certification for contractors and technicians on all projects involving advanced lighting controls.

2. Require BPI firm accreditation (rather than individual certification) for all Whole House retrofit projects.

3. Require at least NATE certification for all projects involving residential HVAC measures. For commercial HVAC programs, require completion of a registered apprenticeship program OR US Star OR an associate’s degree in HVAC and a NATE certification OR Industry Competency Exam (ICE) and NATE certification.

4. Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility.

   - i. ALL contractors and subcontractors working on projects with total costs $500 or more: proof of proper licensing, bonding, & workers compensation and building permit signed off by building inspector, if required by law.

   - ii. MUSH properties, non-residential properties that are either 50,000+ square feet or

<table>
<thead>
<tr>
<th>CALCTP is the industry recognized standard for advanced lighting control systems. Title 24 requires CALCTP for acceptance testing. [BPI References]</th>
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<tr>
<td>Persistent documented problems related to performance in HVAC programs. [BPI References].</td>
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<tr>
<td>Documented challenges of properly installing advanced lighting control systems.</td>
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<td>ESAP wages range from $12/hour to high $20/hour.</td>
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### Support:

Stakeholders comment that standards are necessary, but not effective without verification and enforcement.

Widespread stakeholder support for CALCTP requirement.

Widespread contractor support for BPI standard, (except HVAC).

PRG group thinks Responsible Contractor Policies are considered extremely effective strategies to improve work quality in the construction trades.

### Have Concerns:

IOUs are unclear about new Title 24 regulations regarding advanced lighting controls—does Title 24 apply to equipment or integrated systems? Industry experts claim that Title 24 does not require the installation of integrated advanced lighting systems—only the component parts. New Title 24 standards will affect structure of IOU incentives.

### Determine the project size threshold(s) for different Responsible Contractor requirements ($50K or $100K? $1 million?)

### Determine project type (building type) for Responsible Contractor requirements and how to tier requirements for projects of different scales.

### Solicit stakeholder feedback of specific recommendations.

### Per previous comment, need description of criteria / and examples of ideal workforce standards. Better references here may better support / clarify recommendation.

Why is $500 the cut-off point for job value requiring more oversight in terms of proper paperwork?

Why are 60%, 20%, $1,000,000 the appropriate targets for the correlating recommendations? Based on what study, etc.?

Need better references and/or supporting data for these recommendations generally.

Need to reflect coordination and consideration of what ODC is doing on data tracking related recommendations generally.
have total construction costs of $50,000+, and residential properties that have 4+ stories: 3rd party administrators, ESCOs, & contractors that perform the work must pre-qualify themselves and any sub-contractors using a more detailed pre-qualification process. This should include the criteria for all contractors [46]:

a. a list of at least 3 similar past projects & references [LP1: References?]

b. 60% of workforce comprised of journeypersons who completed a registered apprenticeship program in California [LP1: References?] or are currently enrolled in such a program.

c. Require 20% of jobsite electrical workers should be OSHA 10-hour General Industry Safety and Health Certified [LP1: References?]

d. Require at least one jobsite electrical worker should be OSHA 30-hour General Industry Safety and Health Certified.

e. Require that any electrician working on indoor or outdoor lighting controls be a California Advanced Lighting Controls Training Program – CALCTP certified contractor and or electrician.

f. Contractor should have a documented history of full compliance to state, health, safety and work standards.

g. In addition, the contractor's performance over time should be tracked in PIRMS.
iii. Consolidate MUSH incentives into more streamlined programs & for MUSH projects, in addition to requirements in 4i and 4ii, require payment of prevailing wages. For MUSH project with total construction costs $1,000,000+, include targeted hiring requirements.

5. Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)

6. Develop an online project & payroll reporting system for contractors to input information. IOUs should utilize a 3rd party contact/labor compliance company or perform compliance in-house to ensure that goals are being met with positive and negative consequences to enforce requirements.

C. “Best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS): Pilot new model of procurement and contract management that invites contractors to identify metrics, measure, and report their performance and added-value, the effect being that high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve.

1. Pilot PIPS/PIRMS in the HVAC QI and QM programs. As participating contractors report on their maintenance activities, customer satisfaction, actual energy savings, and other metrics of performance, it will become clear which contractors are meeting or exceeding

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<td>This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.</td>
<td>Clarify how this model could work in HVAC QI and QM and for new solicitation processes. Solicit stakeholder feedback</td>
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<td>Seems like a good suggestion buy why are PIPS and PIRMS better than other models? Do other models exist for additional consideration?</td>
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2. Pilot PIPS/PIRMS for new program solicitations to ensure best value. When used for solicitations, vendor selection is based on five filters: Past Performance Information, Project Capability (technical risk, ability to manage non-technical risk, value added, financial milestones), Interviews of key personnel, Prioritizing vendors (identify best value), and Cost verification (make sure best value is within cost range). Although PIPS/PIRMS can be used to manage projects, it will work most effectively when it is used for contractor selection as well.
Recommendations for Strategic Goal #4 (Supporting Sector Strategies) and Strategic Goal #5 (Stakeholder Involvement) are currently being developed.

**STRATEGIC GOAL 6: EVALUATION OF WORKFORCE EDUCATION AND TRAINING PROGRAM**

Evaluation, measurement, and verification (EM&V) studies for the IOU energy efficiency and other demand-side management programs serve a number of functions, including supporting development and refinement of programs, verifying prior savings, and supporting the determination of shareholder incentives. These studies are driven in large part by the primary objective of these programs – resource acquisition, but they also address market transformation and other objectives.

Prior EM&V studies have not systematically addressed the skills and other characteristics of workers and contractors responsible for the installation and maintenance of energy efficiency measures and systems or the impact of these characteristics on performance. At present, a limited set of contractor characterization studies are in the planning phase. In addition, the EM&V studies have not addressed the extent to which variations in work quality explain differences between ex ante and ex post energy savings.

The EM&V studies focused on the WE&T programs (e.g., trainings and other educational programs offered by IOUs, partnerships between the IOUs and educational institutions and community-based organizations) have not focused on skills acquisition and its impact on energy savings, but rather mostly on DSM investment decisions by end-users or increased DSM sales by contractors. As a general rule, data collected from participants in IOU offered trainings are not designed to support assessments of programs focused on skills development. Methods for assessing the contribution of IOUs to the outcomes of partnerships with educational institutions and community-based organizations have not been developed either.

The implications of the limited attention to work quality and workforce characteristics is significant, particularly as the goals for IOU energy efficiency programs are both increased and broadened. The lack of studies on the characteristics of contractors and workers and on the extent to which work quality affects energy savings limits the extent to which the benefits of workforce initiatives can be evaluated. The lack of information on the benefits of workforce initiatives means that opportunities for increasing the cost-effectiveness of energy efficiency programs relative to renewable and traditional generation resources are necessarily overlooked. Moreover, assessments of how the IOU programs affect the broader set of objectives, including market transformation and inclusion of disadvantaged workers, are also hampered.

As a consequence and as described in more detail below, the recommendations include explicit incorporation of work quality and workforce characteristics in market assessments, process evaluations, and impact evaluations. Additional feedback will be solicited from stakeholders in the short-term. For the long-term, additional EM&V studies to address work quality and workforce characteristics are proposed.
# SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Rationale and Evidence Supporting Recommendation</th>
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<th>Next Steps</th>
<th>POSITION (Choose 1: Agree, Disagree, Disagree with Comments)</th>
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<tr>
<td><strong>A.</strong> Modify market assessments (e.g., work papers for DEER and non-DEER measures; Potential, Goals, and Target studies; sector-specific market characterizations) to address work quality and workforce characteristics:</td>
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<td>These are good suggestions but need to reflect better incorporation and leveraging of what ODC is doing along these lines. Need clear delineation between what IOUs can initiate on their own vs. what the CPUC needs to initiate if there is support.</td>
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<td>1. Explicitly address skill requirements and other resources required for assumed energy savings of energy efficiency measures.</td>
<td>i. The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Support:</td>
<td>Short-term:</td>
<td>Consistently follow on-going activities for 2013-2014 program cycle; provide comments and recommend that study consultants reach out to experts knowledgeable of state and federal labor force data collection.</td>
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<td>2. Investigate and report demand for workers with identified skills (e.g., wages, benefits, working conditions and career ladders; certifications and licensing requirements; availability of skilled workers in local labor markets; education and training programs available to workers)</td>
<td>ii. Essential data for relevant labor markets (e.g., certifications, availability of skilled workers) are not available for program design and implementation. In addition, emerging technology reports do not routinely document skill requirements and work quality issues (e.g., call backs) associated with demonstrations. Without these data, program administrators must rely largely on anecdotal information and general impressions when assessing the potential benefits of certification requirements and specific training opportunities, and when setting priorities for workforce training investments.</td>
<td>Support:</td>
<td>Short-term:</td>
<td>Closely follow on-going data collection, on design and testing of questionnaires and program tracking systems, and on including experts in the workforce data collection area.</td>
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<td><strong>B.</strong> Develop and adopt EM&amp;V protocols for workforce and labor market data collection</td>
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<td>Protocols are to be developed to be applicable to all EM&amp;V components, including market assessments, process evaluations, and impact evaluations.</td>
<td>Limited data are presently available on the characteristics of workers participating in ESA and IOU energy efficiency programs. These data are essential in order to better understand the skills of workers and contractors responsible for installation and maintenance of energy efficiency measures, to consider relationship of work quality to skills of workers conducting work, and to assess influence of IOU programs on achievement of the State's workforce objectives.</td>
<td>Support:</td>
<td>Short-term:</td>
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<td>Note that the 2013-2014 EM&amp;V Plan does not address this topic but the detailed work plan does currently under development and extent of efforts in this area and efforts in this area are expected to be constrained by limited resources.</td>
<td>Have concerns:</td>
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<td><strong>C.</strong> Explicitly consider contractor and worker</td>
<td>1. While work quality issues are now</td>
<td>Support:</td>
<td>Short-term:</td>
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<td>D. Modify program theory and logic models, program tracking systems, program performance metrics (PPMs), and process evaluations for adopted recommendations from SG_1, SG_2, and SG_3.</td>
<td>While Guidance Document will provide some suggestions on how to revise key EM&amp;V program elements, these suggestions need to be more fully developed with stakeholder input for those recommendations that are adopted.</td>
<td>Support:</td>
<td>Short-term: Stakeholder feedback on how best to evaluate proposed recommendations</td>
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<tr>
<td>E. For IOU workforce education and training programs, develop and test methodologies for assessing implications of IOU initiatives related to skills development and partnerships on resource acquisition and other broader objectives for energy efficiency</td>
<td>The IOU WE&amp;T programs and the associated impact evaluations have focused on &quot;market building&quot; activities. An increased emphasis on skills development and on partnerships (SG_1 recommendations) with core educational institutions and community organizations will require adoption of new approaches to EM&amp;V. While the IOUs have various on-going efforts related to skills development and partnerships, assessments of the benefits of these initiatives (i.e., skills development and partnerships) to the IOU ratepayers are needed if additional</td>
<td>Support:</td>
<td>Short-term: Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships. Identify programs and EM&amp;V approach where significant IOU resources are allocated currently to skills development and partnerships</td>
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</table>
Recommendation | Rationale and Evidence Supporting Recommendation | Stakeholder Feedback | Next Steps | POSITION (Choose 1: Agree, Disagree, Disagree with Comments) | COMMENT
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resources are to be allocated to these activities. |  |  | Long-Term: Develop and implement pilot projects to test how best to assess the benefits of these initiatives to IOU ratepayers |  |  

Recommendations for Strategic Goal #7 (Evaluation of Web Portal) are currently being developed.
WE&T Statewide Strategic Planning Consultant

DRAFT summary recommendations

January 10, 2014

Lead Researcher:
Dr. Carol Zabin, UC Berkeley Donald Vial Center

*Not for public dissemination*

Comments from Brightline Defense Project
STRATEGIC GOAL 1: WORKFORCE EDUCATION AND TRAINING PROGRAM MODIFICATION

The IOUs’ dedicate most of their WE&T resources for growing the market for energy efficiency services rather than skills-building for the workforce who carries out the work, and the current structure of their programs is not well-suited to improve the DSM skills and knowledge of large numbers of workers in the key occupations that impact energy efficiency outcomes. By increasing the emphasis on skills development, the WE&T programs can better meet the CLEESP’s vision that “By 2020, California’s workforce is trained and fully engaged to provide the human capital necessary to achieve California’s economic energy efficiency and demand-side management potential.”

Most of the IOUs’ WE&T resources are dedicated to very short, stand-alone, free classes open to any interested person. Most participants are either end users (building managers or home owners who are potential buyers of energy efficiency services) or contractors and professionals in managerial positions (sellers of energy efficiency services). The offerings are not effective at reaching workers in the key EE/DSM occupations or at developing workers’ skills:

- Most current offerings do not involve the state’s core education and training institutions for the key EE/DSM occupations, thus missing an opportunity to incorporate DSM content into the main period of training that workers in key occupations go through. These are: UC/CSUs for professionals, and apprenticeship and community colleges for the trades.
- Most current offerings do not adhere to best practices for skill-building training. Best practices include clear prerequisites and learning outcomes for each class, classes that are sequenced and build upon each other, competency testing at class completion, tied to recognized, stackable credentials, hands-on learning, and for incumbent workers, a clear commitment and involvement by their employers.
- The 2010-2012 WE&T process evaluation by ODC found that the Centergies classes heavily emphasize information about technologies, rather than skill-based outcomes.
- Due to the course structure and content delivery style, ODC concluded that participation in Centergies training does not guarantee that participants will have obtained the skills necessary to carry out high-quality work.

Recommendations

We recommend the IOUs direct a significant portion of WE&T resources to EE/DSM skill-building activities for the critical occupations. Our recommended approach would affect occupational transformation on a broad scale by leveraging the state’s core accredited education and training institutions, and promoting the identification of clear certifications and skill standards.

The IOUs should substantially increase WE&T resources for workforce development (e.g. to at least $80 million per three-year cycle), and then redesign this programming with increased participation and oversight from state workforce development experts. This process could be administered by the IOUs or by a third party via RFP. An alternative approach would have the CPUC develop the necessary interagency agreement to with the CA Labor and Workforce Development Agency to transfer administration of some or all of these activities to the CA Workforce Investment Board or a non-profit organization. This alternative would ensure closer cooperation between the energy, education and labor agencies.

We recommend developing comprehensive implementation plans to customize programming targeted to each of the three career pathways. These plans should align with and leverage the core education and training institutions (UC/CSU for professionals, CCC and state-certified apprenticeship for the trades). Each of the plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation. We offer more detailed recommendations on processes for prioritization and program delivery in our full guidance plan. We also present three “Phase 1” programs that can be initiated in 2014, which are low-hanging fruit that can serve as learning arenas for the new WE&T configuration.

Our proposal involves structured oversight from a governing board of key state workforce, education, and energy agencies, plus technical experts (e.g. the Lawrence Berkeley Lab). The governing council should appoint industry and subject-matter experts to an advisory group for each occupation, which will be responsible for identifying certifications and skill standards.

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1 CLEESP, p 74
2 2010-2012 WE&T Centergies Process Evaluation, ODC. Pages 12, 13
3 Ibid, p 14
4 This may require accelerated direction from the CPUC (e.g., Advice Letter process at a minimum)
### SUMMARY OF RECOMMENDATIONS:

#### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

<table>
<thead>
<tr>
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<tr>
<td>A. Allocate a significant amount of WE&amp;T dollars to targeted programs for workers' skill-building:</td>
<td>Although the CLEESP mandates workforce education and training, most of the Centergies budget currently goes towards educating buyers and sellers of energy efficiency services, rather than skills development for workers involved in the design, installation, and maintenance of EE/DSM work. Most of the Connections budget goes to consumer education, not career development. Workforce development and market development require a different guiding strategy for programming, and distinct activities and delivery mechanisms. There is a need for increased efforts in the area of workforce development in order to carry out the CLEESP vision, which will require a significant increase in resources. Our recommended allocations represent the minimum amount that we believe would have a statewide impact on workforce development in each of the four categories (professionals, res trades, non-res trades and inclusion). We prioritize among the four categories based on the following criteria:</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Get stakeholder feedback on the quantity of $ to be allocated to workforce dev’t vs. market dev’t; e.g. how much $ is needed for different types of activities, and how to prioritize programming based on needs and opportunities.</td>
<td>Before supporting this recommendation, Brightline would like to see more specifics in the guidance plan on how $20 million was reached for each of the four buckets (professionals, non-residential trades, residential trades, inclusion).</td>
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<tr>
<td>1. We recommend that at least $80 million of WE&amp;T funds per three-year cycle go to workforce development in order to affect meaningful change in this arena.</td>
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<td>2. Within the $80m (per 3-year cycle) for workforce development, we propose the following allocation:</td>
<td>• $20m for professionals  • $20m for non-residential trades  • $20m for residential trades  • $20m for inclusion Connections 9-12 career prep/awareness counts in inclusion. The rest is counted under market-building.</td>
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<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Get stakeholder feedback on the quantity of $ to be allocated to workforce dev’t vs. market dev’t; e.g. how much $ is needed for different types of activities, and how to prioritize programming based on needs and opportunities.</td>
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<tr>
<td>B. Redesign workforce skills development programming</td>
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<td>1. Phase out short, stand-alone classes as a mechanism for skills-building program delivery (except classes designated for 20% dedicated to market development)</td>
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<td>2. Orient programming around partnerships with core accredited education and training institutions for each major occupation/career pathway: professionals; commercial trades workers, and residential trades workers</td>
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<td>C. Career pathway plans: Design an implementation plan for each major career pathway (professional, commercial trades, residential trades) with the following elements:</td>
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<td>1. Each of the 3 plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation (i.e. UC, CSU, and CCC for professionals; DAS and CCC for commercial trades; CCC for residential trades).</td>
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<td>2. Governing council should appoint Industry and SME advisory group for each occupation, which will be responsible for identifying certifications and skill standards for each.</td>
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<td>3. Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions.</td>
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<td>4. Plan should determine key opportunities to</td>
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**COMMENTS**: Brightline is supportive of aligning workforce skills development programming as long as such programming is inclusive of all community and labor organizations.
### SUMMARY OF RECOMMENDATIONS:

**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<tr>
<td>1. Incorporate EE skills and knowledge at specific points in the career pathway for priority occupations. Key points in the career pathway are pipeline preparation, core post-secondary education, and incumbent worker training.</td>
<td>and consensus on certifications and skill standards for the critical occupations.</td>
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<td>2. Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms.</td>
<td>iii. The IOUs have internal expertise on emerging technologies, and certain areas of quality problems (not always within the WE&amp;T staff, however). They do not have expertise on career pathways or workforce development strategies.</td>
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<td>3. Funds should support incorporation of EE specific knowledge and skills through support for curriculum development, train the trainer etc.</td>
<td>iv. Budget constraints are a concern to the IOUs WE&amp;T programs, as well as many training providers. Leveraging existing resources and infrastructure can increase programs’ impact.</td>
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<td>4. Programming should leverage funding for classroom and other training from key institutions wherever possible.</td>
<td>v. Significant employer commitment to training programs increases their effectiveness.</td>
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<td>5. Programming should use sector strategy approach for incumbent worker training, based on commitments from multiple employers.</td>
<td>vi. Linking or embedding training initiatives with long-term career pathways, in particular core occupational training institutions, also increases their effectiveness.</td>
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<td>6. In-house IOU skills training should be limited and reserved to cover gaps that partners can't fill, with commitment to transfer courses to other training institutions over time.</td>
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### Governance and accountability:

1. Plan must be approved first by governing board composed of key state workforce, education, and energy agencies, and technical experts.
2. CPUC should consider recommendations of governing board and approve final plan.
3. Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation.

- Although some ad-hoc partnerships have been successful, there is a lack of internal capacity in the IOUs WE&T programs to effectively develop broad-based partnerships with each of the state’s key training institutions for EE/DSM occupations.
- Most of the prior IOU-led attempts to bring stakeholders together for WE&T planning and consensus-building around standards have been contentious, e.g. the HVAC Sector Strategy.
- The CPUC’s WE&T Task Support: State workforce development agency and education institution leaders; Stakeholder advisory group Have concerns: IOUs are concerned about burdensome oversight and loss of control of the program direction.

Before supporting this recommendation, Brightline would need to know more specifics about this governing board: 1) Would such a governing board act in a strictly advisory capacity, or direct the CPUC and/or IOUs to act? 2) Who would appoint members of this governing board? 3) How would public participation factor into this board? 4) Are there additional budgetary, legal, and/or statutory considerations to resolve in constituting this board?
SUMMARY OF RECOMMENDATIONS:
STRATEGIC GOAL 1, Workforce Education and Training Program Modification

Recommendation | Data Supporting Recommendation | Stakeholder Concerns/Controversy | Next Steps | COMMENTS
--- | --- | --- | --- | ---
E. Phase 1 Programs

- We suggest the following programs that can be initiated in 2014 for each occupational group, which are low-hanging fruit that can serve as learning arenas for the new configuration:
  1. Professionals: RFP to be let out to 4 year accredited architecture and engineering departments to incorporate energy efficiency skills and knowledge into their curricula for degree programs.
  2. Commercial trades: Partnership/sector strategy with CA Division of Apprenticeship Standards to incorporate EE skills and knowledge into journey upgrade programs for key crafts.
  4. Inclusion: RFP for Pilot Project Energy Efficiency Bridge Program in one region that leverages other investments and connects to apprenticeship.

- The changes we propose are significant and will take time to fully implement. We offer the Phase 1 programs as concrete programs that can be carried out in the near-term as the larger framework is developed and put into place.
- We received clear feedback from professional 4 year programs about the huge potential value of an IOU-sponsored RFP to incorporate leading EE/DSM skills into curricula.
- DAS has already indicated its eagerness to participate in this type of partnership on EE/DSM skills.
- Our research indicates a number of productive relationships with local Colleges and community training institutions exist.
- There are some examples of bridge programs that connect disadvantaged youth with pre-apprenticeship.

F. Administrator:

- Administrator should have the capacity and willingness to manage and staff the plan outlined above.
  - Option 1: IOUs manage and staff guidance plan, or issue an RFP for a 3rd party implementer.
  - Option 2: CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization.

- Although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development partnerships with the state’s core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative administration of the workforce development portion of WE&T would be more effective.

- Option 1: Support: Most IOU WE&T staff would like to retain primary ownership over the funds. Several expressed a desire/willingness to include more workforce partners in the program design process we’ve described. Concerns: some of the stakeholder advisory group expressed concern about the IOUs’ capacity to effectively execute the type of partnership structure we describe.

- Explore the pluses and minuses of each option, soliciting stakeholder feedback and adding detail to each proposal.

- Would need more detail behind each proposal.

- Brightline is particularly interested in seeing examples of bridge programs that connect disadvantaged youth with pre-apprenticeship. Input from the ESA service providers seems also necessary for this transformation.
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<td>retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&amp;T portfolio overall.</td>
<td>Option 2 Support: Members of the stakeholder advisory group (including the state labor agencies) liked the idea of a more systematic, collaborative tie between the WE&amp;T programs and the state’s other primary workforce development and education agencies, and the potential it presents for program alignment and fund leveraging.</td>
<td>Concern: Most IOU WE&amp;T staff are wary of relinquishing ownership to an outside entity. Some stakeholders and IOUs expressed concern that there isn’t currently a clear choice of a non-profit to lead the Option 2 effort. Several noted issues that may arise around maintaining CPUC oversight over ratepayer funds.</td>
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STRATEGIC GOAL 2: INCLUSION FOR DISADVANTAGED WORKERS

Currently, the substantial and diverse investments being made by the IOUs in the energy efficiency and DSM programs do not include interventions to support the creation of middle-class career pathways for low-income communities, communities of color and other disadvantaged populations. While these investments offer a promising opportunity to build middle-class career pathways for low-income people and jobseekers with barriers to employment ("disadvantaged workers"), there are several barriers in place that prohibit the IOUs from achieving the California Long Term Energy Efficiency’s Strategic Plan goal of increasing "participation from within minority, low income and disadvantaged communities in achieving California’s economic energy efficiency potential".

- The work of investor-owned utilities in California was not historically seen as public investments akin to government public works projects, and thus the public policy direction of requiring inclusive hiring policies and family-supporting wages applied to publicly-funded capital projects has only been recently considered by the CPUC.

- The IOUs do not currently have clear authority and direction to allocate resources to proven practices that increase minority, low-income, and disadvantaged worker participation in public works and energy efficiency projects.

- The IOUs currently lack of a working definition of "disadvantaged worker" and lack clear performance metrics or program goals by which to measure progress in hiring these workers.

- Current data collection methods do not provide a comprehensive picture on the demographic profile of the workforce being employed to carry out EE/DSM programs by occupation or job category, nor do they collect detailed data on compensation structures and wages by occupation and job category. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect this data.

- The IOUs currently lack clearly articulated pathways for disadvantaged workers to advance along a career ladder as they gain more experience, training and skills. An effective ecosystem of agencies and organizations (including low income weatherization providers, community based organizations, community colleges, local and state workforce investment boards, utility workforce development staff, labor unions and contractors) can create a pipeline of ready and able workers through effective recruitment, training and placement of disadvantaged workers.

- The IOUs currently lack the contracting and procurement tools to create contracts tied to performance for hire trained and ready workers from disadvantaged communities. Contracts for higher-paid, higher-skill work (such as EE work in schools, universities and hospitals), tend to be smaller and do not always require deep, complex retrofits, which may prevent contractors from bringing on hired and ready workers from disadvantaged communities.

Integrating contracting and procurement ("demand-side") strategies with recruitment, screening, skills development, training, wrap-around services and credentialing ("supply-side") strategies is essential to achieving the full scope of California’s EE goals.

Recommendations

The CPUC should direct IOUs to measure and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals. The CPUC’s direction should have clear metrics and performance standards to meet these goals.

We propose a two track strategy. First, the IOUs should ensure the quality of jobs created by EE investments. We recommend that the IOUs set a wage floor for the ESAP, Direct Install, and Third Party programs, since these programs implementers and contractors have direct contracting or subcontracting relationships with the IOUs. Second, we recommend that the IOUs launch a pilot MUSH market program that includes a targeted hire program. This MUSH sector program can follow the standards used in public works construction, where targeted hire programs, tied to apprenticeship, have been very successful in many local governments in California and nationally.

Data collection efforts are necessary to support these goals. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect workforce data to evaluate job quality and the demographic profile of workers. We recommend that this be done through an on-line workforce reporting system (such as Elations or LCP Tracker); these systems are inexpensive and have been used by many awarding agencies in the state. In addition, the IOUs should adopt a definition of disadvantaged worker and apply it meaningfully and consistently across all EE programs. This definition can then be used to design inclusion programs, and to track and measure results. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria); and/or b) an individual who is a resident of a high unemployment zip code in her/his county. The IOUs should also institute data collection as attached.

Once a definition is set, the IOUs should set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs. We recommend a conservative initial goal (such as 15% of new entry level job openings in IOU supported EE/DSM work) in order to ensure success and acceptance by both IOUs and contractors. This goal can be increased over time as programs are developed and contractors and IOU staff become familiar with them. The results of these goals can be tracked by the workforce reporting system and made publicly available, as a scorecard, similar to that used in General Order 156 which has been successful for promoting diversity in procurement. Contractors meeting goals should receive additional points in the next round of program procurement.

In order to ensure that workers are trained and ready to perform higher skill work, we also recommend funding for pre-apprenticeship training programs that will provide disadvantaged workers the skills, training and abilities needed to be successful in entry-level MUSH and large commercial EE and utility employment. This funding should be released in the form of an RFP, and should encourage the mobility of ESAP and other residential workers into higher wage higher skilled jobs in the MUSH sector.

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6 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

7 The unemployment rate is 150% of the median unemployment rate for the county.
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<tr>
<td><strong>A. Prioritize creation of good-paying jobs and workforce diversity as key IOU goals along with efficiency outcomes:</strong></td>
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<td>The CPUC should explicitly direct IOUs to promote, measure, and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals.</td>
<td>Successful workforce inclusion programs have established goal setting and monitoring in order to improve outcomes. In order for the IOUs to have the authority to direct resources towards these efforts, they need direction from the CPUC.</td>
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<td>General Order 156 is an example of the IOUs' ability to create a new program and achieve diversity goals in response to specific CPUC direction.</td>
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<td>1. The CPUC should set a common definition of “Disadvantaged Worker” that will be used by all IOUs in designing inclusion programs and tracking and reporting results.</td>
<td>l. Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring.</td>
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<td>2. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria); and/or b) an individual who is a resident of a high unemployment zip code in her/his county.</td>
<td>ii. Many existing public works programs have developed similar definitions of Disadvantaged Worker. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility.</td>
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<td>iii. The combination of these two sets of criteria have proved in other programs to identify an adequate number of individuals who most need employment opportunity and who are capable of developing the necessary skills to do good work.</td>
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<td><strong>C. Set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</strong></td>
<td>Models from other successful programs. Current lack of specific goal. Successful experience from G.O. 156.</td>
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<td>1. Because this is a new effort for the IOUs and many of their contractors, we recommend that the initial goal be conservative in order to ensure success and acceptance. We suggest an initial goal of 15% of EE/DSM work, measured in worker hours, for Disadvantaged Worker participation.</td>
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6 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

7 The unemployment rate is 150% of the median unemployment rate for the county.
## SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<tr>
<td>2. This goal can be increased over time as the programs are developed and participants become more familiar with them.</td>
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<td>cost-effectiveness requirements to reflect inclusion goal?</td>
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<td><strong>D. Institute a required, electronic workforce reporting system for EE/DSM contractors to capture information:</strong></td>
<td>Successful equity and inclusion programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements.</td>
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<td>1. Require monthly reports using LCP tracker or some other established program that works with payroll companies.</td>
<td>Support: Labor groups familiar with reporting data support this recommendation.</td>
<td>Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concerned over the potential cost of reporting data. IOU staff have expressed concerned over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
<td>Agree.</td>
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<td>2. Include the following data points: a. Hours worked b. Rate of pay c. Disadvantaged status, zip code of residence d. Race, ethnicity, and gender e. Trade/occupation f. Journey/apprentice level g. Certifications held</td>
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<td>3. Make the reports publicly available.</td>
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<td>4. Contractors who achieve or exceed goals will receive compliance points in next round of procurement.</td>
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<td><strong>E. Ensure baseline quality of jobs created by efficiency investments:</strong> Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)</td>
<td>Interviews indicate ESAP wages range from $12/hour to high $20s/hour. i. LA DWP’s utility pre-craft worker program starts trainees at $16/hour. ii. Higher wages typically contribute to higher skill development, and better outcomes.</td>
<td>Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs. Have concerns: Some IOU staff, one equity group (Brightline Defense), and contractors are concerned. A wage floor could increase cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. ESAP contractors have concerns that they will be expected to bear burden of wage floor without overall program budget increase. Cost of collecting and reporting data.</td>
<td>Get feedback on $16 wage floor from Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
<td>Our position has been mischaracterized here. Brightline supports the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs. On multiple prior occasions, Brightline has articulated the same position attributed to Greenlining in this regard. Additionally as a priority, Brightline also believes that a process should be established to include more stakeholders and to determine the appropriate wage floor. As the Consultant states in its next steps under Recommendation C, the Consultant seeks to develop minimum workforce participation goal for disadvantaged workers “in consultation with key stakeholders.” Similarly, Brightline believes that a wage floor should be established in consultation with key stakeholders – to accurately reflect the prevailing wage rates and benefits that vary from county to county. Diane Ravnik of the Department of Apprenticeship Standards also has an excellent point about whether such a wage floor would be inclusive of benefits. A $16 wage floor seems an arbitrary.</td>
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<td>F. Improve job opportunities created by created by efficiency investments:</td>
<td>Align the requirements of ratepayer- or IOU-funded efficiency investments in public sector buildings with the prevailing wage and apprenticeship standards of California public works projects.</td>
<td>California Labor Code requires prevailing wages and apprenticeship utilization on public capital projects. Contrary to this general public policy, it exempts “work done directly by any public utility company pursuant to order of the Public Utilities Commission or other public authority.” Cal. Lab. Code Sec. 1720(a)(1).</td>
<td>So this would require legislation to amend the California Labor Code? What would this look like?</td>
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<td>G. Consolidate all incentives and efficiency programs that target the municipal/government, university, school, or hospital sectors into a comprehensive MUSH program. Introduce an inclusion requirement in the MUSH program:</td>
<td>Energy Upgrade California and Sierra Nevada Energy Works. Programs in San Francisco, Portland and Seattle utilities. PLAs with targeted hire requirements at LA-METRO, LAUSD, CRA/LA, LACCD.</td>
<td>Support: Have concerns: IOU staff have expressed concern that increased coordination and adoption of “new” policies along multiple programs will delay implementation of these practices. IOU staff express concern over the cost of compliance with targeted hiring programs may make reduce cost-effectiveness of MUSH programs. Requirement that customers use contractors off pre-qualified list may discourage participation. Fear that Disadvantaged Workers may not have the skills necessary to perform the work. Contractors may not have sufficient work to add new hires to meet DW targeted hire requirement.</td>
<td>Gather more data on MUSH programs to build out recommendations. Test detailed recommendations at non-residential EE stakeholder meeting in January.</td>
<td>Would need more specifics and substantiation.</td>
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<td>6. Open list to new contractors on a restricted timeline (e.g. every 2 years).</td>
<td>Power Pathways, CCCO Career Advancement Academies, Pre-apprenticeship collaborations such as SF City Build, IBEW Local 11 and LATTC</td>
<td>Support: Education and labor stakeholders</td>
<td>Would like to see more incorporation of ESA contractor stakeholder concerns.</td>
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<td>H. Establish training bridge program to link residential EE workers to non-residential EE jobs.</td>
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<td>Have concerns: Some stakeholders have indicated concerns with the viability of ESAP workers entering in bridge programs; some ESAP contractors indicate there are viable career pathways within ESAP employers.</td>
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<td>I. Strengthen ESAP and MIDI as entry point to a higher skilled, higher-paid career in commercial and industrial EE:</td>
<td>i. Interviews and EE Decision indicate expansion of MIDI program. ii. The level of skills required for residential ESAP and MIDI programs are similar: lower and thus more suited to an entry-level position. However, on the job, ESAP and MIDI installers gain valuable experience in both soft and hard skills, preparing them to move up the ladder. iii. The contractors who run the ESAP programs tend to hire from the local, low-income community, making it a natural entry point for a more diverse workforce. However, it should not be an end point for low-income workers.</td>
<td>Support: Some equity advocates were interested in learning more about the details of the recommendation to determine their support. Have concerns: One equity group (Brightline Defense) and IOU staff expressed concern over a wage floor increasing the cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. Contractors were concerned over the wage floor: Will contractors be expected to bear burden of wage floor without overall program budget increase? They are also concerned about the cost of collecting and reporting data.</td>
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STRATEGIC GOAL 3: INTEGRATING WORKFORCE EFFORTS WITH RESOURCE PROGRAMS

There is substantial evidence that improper equipment installation, operation, and maintenance lowers the realized energy savings of energy efficient measures and most likely explains some of the differences between ex ante savings estimates and ex post evaluations. Specific sources include the 2011 WE&T Needs Assessment, where results from case studies for several distinct market sectors are reported, an extensive annotated bibliography that will form an appendix to the guidance plan, and recent interviews with current and former IOU staff, subject matter experts, and industry professionals, which were conducted for this project. This evidence spans complex advanced lighting and HVAC systems as well as installations of simpler energy efficiency equipment.

The extent to which improper equipment installation, operation, and maintenance reduces the energy outcomes for California’s Demand Side Management (DSM) programs is unknown. While specific studies have investigated the extent of poor installations for specific technologies (e.g., HVAC, advanced lighting, building construction), comparable data across measures and programs are not collected for California’s DSM programs that could systematically determine where poor work quality may be reducing energy savings.

Workers can acquire, through training and on-the-job experience, the necessary skills to perform high quality work, but training alone is not a sufficient condition to ensure high quality work. The market must also demand quality work. The IOU DSM programs have introduced various program requirements to ensure high quality work, ranging from contractor licensing requirements to quality assurance programs to customer information; however, these are minimal compared to the much more robust workforce and related standards found in many other sectors in the economy, including in segments of the building and construction industry, the key industry for energy efficiency investments. The current process for program planning, approval, and implementation does not specifically reward the IOUs for ensuring high work quality nor penalize them when energy savings are left on the table due to improper installation, operation, or maintenance of energy efficiency measures. The common response to poor work quality continues to be support for training, but the return on these investments—for both ratepayers and the trainees—is limited without greater demand for work quality.

The following recommendations 1) suggest a series of process improvements to better understand and incorporate the impacts of work quality on energy goals and 2) suggest workforce standards for IOUs to incorporate into the management of EE programs that will both reduce the risk of inaccurate savings estimates due to work quality, and encourage higher performing and more qualified contractors to participate in DSM programs.

Recommendations

Process Improvements: First, we recommend a series of process improvements to create a stronger incentive structure to ensure proper installation and maintenance of energy efficiency measures. The existing program development, approval, implementation, and evaluation processes neither reward nor penalize the IOUs for their influence over work quality and its impact on energy savings. Assumptions about the installation and performance of energy efficiency equipment are based on technical specifications and engineering assessments, and fail to account for the impact of worker skills and performance on equipment performance (and energy savings). Often, equipment is assumed to be installed correctly and in-service, without either specifying the level of technician skill required or verifying quality in the field to substantiate those claims.

The CPUC applies discounts (“haircuts”) to the IOU-claimed energy savings to avoid over-estimating, but these reductions do not isolate the effects of different program requirements or workforce standards. Since the IOUs perceive that stricter program requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily adopt higher standards, unless there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear incentive if they evaluated performance in real time, but they mostly are limited to catching fraudulent behavior. Real-time across the board inspections are costly and increase transaction costs and program friction for customer. Finally, the program implementation and evaluation cycles are not conducive to providing timely feedback on effective program requirements, and as stated above, impact evaluations do not document or isolate work quality problems.

Our recommended process improvements address the shortcomings of the current quality assurance and discount process, and call for the identification of minimum contractor requirements and worker skills/credentials needed to carry out work correctly up front. These recommendations will reduce the risk of large gaps between ex ante estimates and ex post evaluations for deemed measures and savings left on the table due to installation problems for custom measures.

Workforce Standards: Second, we recommend several different types of contractor and workforce standards designed to screen out less qualified contractors and create an environment to encourage participation by high performing contractors in energy efficiency work. Workforce standards refer to interventions that shift the competitive environment toward better performance. Workforce standards are a quality control mechanism that can reduce the need for more expensive post-installation quality assurance activities.

The lack of available information on work quality and its impact on the portfolio should not be used as an excuse to delay adopting workforce standards, many of which are “no regrets” or “do-no-harm” approaches with multiple co-benefits, including deeper retrofits. Because different standards can have the same effects in the labor market, there is some flexibility in how standards can be applied to different programs. For example, establishing a wage requirement can have the same effect as a skill requirement because if all contractors have to pay higher wages, contractors who have invested in higher skilled workers will be able to more effectively compete in the market. Similarly, policies to contract with higher performing contractors will result in the use of skilled workers as effectively as establishing specific skill standards for workers for each program or technology. Each of these types of standards acts to support higher quality contractors, and screen out or improve the performance of lower quality contractors.

In making recommendations, we mapped the resources programs by delivery mechanisms, target market, and technology in order to identify the simplest approach given the existing program structure. Given the range of technologies currently offered and the ever-changing technological environment, it is very difficult to establish and maintain, not to mention enforce, appropriate specific worker skill standards for every measure and program in the IOU portfolio. When there is widespread industry agreement for particular skill standards, they are effective ways for establishing a bar for participating technicians and contractors. In the absence of agreed upon skill standards, contractor qualifications or wage standards would be simpler approaches to improve performance and work quality.

10 For custom projects, which represent a large percentage of the savings in recent portfolios, customers lose rebates (and IOUs lose savings credit) when equipment is not functioning for any number of reasons, including low-quality installation. The new Efficiency Savings and Performance Incentive (ESPI) creates a mechanism that encourages IOUs to manage EE programs in a way that ensure actual savings meet or exceed estimates (for deemed measures with a high degree of uncertainty).

11 For example CALCTP for advanced lighting controls or DOE Task Analysis for different energy efficiency jobs.
In our exploration and evaluation of different standards, we also identified a new model for addressing and improving contractor performance. The "best value" Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS) gradually improve performance by giving vendors or contractors more responsibility in defining quality work by reporting their efforts and their results. Because all contractors are invited to identify metrics, measure, and report their performance and added-value, high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve. This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.
### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 3, RESOURCE PROGRAM INTEGRATION

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<td>A. Process Improvements: Implement changes through program design, implementation, approval, and evaluation process to create stronger incentives for high quality work.</td>
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<tr>
<td>1. Identify and document contractor competencies and markets and worker skills/credentials for field demonstration projects</td>
<td>Identify and document contractor competencies and markets and worker skills/credentials for field demonstration projects</td>
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<td>2. In developing program plans, consider and document alternative approaches for addressing workforce issues (e.g. mix of certification requirements, training opportunities, and quality assurance/verification). Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings.</td>
<td>In emerging technology demonstration projects, the most qualified firms and workers are selected to install new equipment or measures. ETCC reports currently do not consider the skill of the workers necessary for proper installation, and do not inform program requirements for the types of contractors that should participate to ensure quality. Work papers often assume 100% correct installation without identifying the conditions necessary to ensure that is the case. By bundling work quality problems with technology failures, customer behavior, and other variables (installation rates and gross realization rates), we cannot know what the specific impact of different workforce interventions are. Current QA and inspection processes are intended to reduce fraudulent behavior and do not identify faulty installation. It is standard best practice that inspectors have a higher level of technical skill than installers, and current QA processes do not consider the technical skill of the inspection team. Currently, there is a “three-strikes” rule for fraudulent behavior. The ESPi mechanism uses a combination of ex ante estimates and ex post evaluations to determine shareholder incentive for IOUs, but custom project savings are confirmed shortly after installation, not accounting for failures down the road due.</td>
<td>Support: PRG support for eliminating three-strikes rule for fraudulent behavior. Widespread concern (from PRG) that work quality is not addressed systematically in existing processes and unanimous support for adjusting program processes to account for work quality. Unanimous agreement that process improvements are a necessary, but not sufficient, condition to address work quality; standards are also critical.</td>
<td>Determine which programs can accommodate pay-for-performance requirements. Solicit stakeholder feedback on these recommendations Define “Fraudulent behavior”</td>
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<td>3. Program Implementation Plans should specify how program requirements will increase the demand for quality installations. Initial plans should consider alternative scenarios prior to selecting a specific approach. This could replace the current WE&amp;T integration section of PIP templates.</td>
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<td>4. Develop a discount (haircut) to isolate the effects of work quality to apply to energy savings calculations. When measures are first introduced, inspections of performance should be used to establish the equivalent of a measure-specific “gross realization rate” and “installation rate”. Once measure-specific rates are</td>
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5. Quality Assurance processes (Inspection and Verification) should focus more on quality of installation. Highly skilled technicians should be assigned to inspect installations at beginning of program and then randomly throughout programs.

6. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on quality.

7. Institute zero-tolerance policy for fraudulent behavior (for Trade Professionals, Customers, and other Contractors), with a three-year exclusion from participating in ratepayer funded programs.

8. Pay-for-performance requirements: Withhold fully crediting the IOUs and some portion of incentive payments until inspections confirm that equipment is properly installed and operational over the course of its effective useful life (or other meaningful period of time).
### B. Workforce Standards

Change the competitive environment to attract high performing contractors and screen out or improve the performance of lower-qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.

1. Require CALCTP certification for contractors and technicians on all projects involving advanced lighting controls.
2. Require BPI firm accreditation (rather than individual certification) for all Whole House retrofit projects.
3. Require at least NATE certification for all projects involving residential HVAC measures. For commercial HVAC programs, require completion of a registered apprenticeship program OR US Star OR an associate’s degree in HVAC and a NATE certification OR Industry Competency Exam (ICE) and NATE certification.
4. Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs)
   - requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility.
     - i. ALL contractors and subcontractors working on projects with total costs $500 or more: proof of proper licensing, bonding, & workers compensation and building permit signed off by building inspector, if required by law.
     - ii. MUSH properties, non-residential properties that are either 50,000+ square feet or

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<tr>
<td><strong>CALCTP</strong></td>
<td>is the industry recognized standard for advanced lighting control systems. Title 24 requires CALCTP for acceptance testing. Energy Upgrade CA requires that one person on staff has BPI certification. With BPI firm accreditation, rigorous quality assurance is built in to BPI accreditation processes. Persistent documented problems related to performance in HVAC programs. Documented challenges of properly installing advanced lighting control systems. ESAP wages range from $12/hour to high $20x/hour.</td>
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<tr>
<td><strong>Support:</strong></td>
<td>Stakeholders comment that standards are necessary, but not effective without verification and enforcement. Widespread stakeholder support for CALCTP requirement Widespread contractor support for BPI standard, (except HVAC) PRG group thinks Responsible Contractor Policies are considered extremely effective strategies to improve work quality in the construction trades</td>
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<tr>
<td><strong>Have Concerns:</strong></td>
<td>IOUs are unclear about new Title 24 regulations regarding advanced lighting controls—does Title 24 apply to equipment or integrated systems? Industry experts claim that Title 24 does not require the installation of integrated advanced lighting systems—only the component parts. New Title 24 standards will affect structure of IOU incentives.</td>
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</table>

Determine the project size threshold(s) for different Responsible Contractor requirements ($50K or $100K? $1 million?)

Determine project type (building types) for Responsible Contractor requirements and how to tier requirements for projects of different scales.

Solicit stakeholder feedback of specific recommendations.
have total construction costs of $50,000+, and residential properties that have 4+ stories:
3rd party administrators, ESCOs, & contractors that perform the work must pre-qualify themselves and any sub-contractors using a more detailed pre-qualification process. This should include the criteria for all contractors:

   a. a list of at least 3 similar past projects & references
b. 60% of workforce comprised of journey-persons who completed a registered apprenticeship program in California, or are currently enrolled in such a program.
c. Require 20% of jobsite electrical workers should be OSHA 10-hour General Industry Safety and Health Certified.
d. Require at least one jobsite electrical worker should be OSHA 30-hour General Industry Safety and Health Certified.
e. Require that any electrician working on indoor or outdoor lighting controls be a California Advanced Lighting Controls Training Program — CALCTP certified contractor and or electrician.
f. Contractor should have a documented history of full compliance to state, health, safety and work standards.
g. In addition, the contractor’s performance over time should be tracked in PIRMS.

iii. Consolidate MUSH incentives into more streamlined programs
& for MUSH projects, in addition to requirements in 4i and 4ii, require payment of prevailing wages. For MUSH project with total construction costs $1,000,000+, include targeted hiring requirements.

5. Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)

6. Develop an online project & payroll reporting system for contractors to input information. IOUs should utilize a 3rd party contact/labor compliance company or perform compliance in-house to ensure that goals are being met with positive and negative consequences to enforce requirements.

C. “Best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS): Pilot new model of procurement and contract management that invites contractors to identify metrics, measure, and report their performance and added-value, the effect being that high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve.

1. Pilot PIPS/PIRMS in the HVAC QI and QM programs. As participating contractors report on their maintenance activities, customer satisfaction, actual energy savings, and other metrics of performance, it will become clear which contractors are meeting or exceeding program goals.

This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.

Clarity how this model could work in HVAC QI and QM and for new solicitation processes. Solicit stakeholder feedback.
2. Pilot PIPS/PIRMS for new program solicitations to ensure best value. When used for solicitations, vendor selection is based on five filters: Past Performance Information, Project Capability (technical risk, ability to manage non-technical risk, value added, financial milestones), Interviews of key personnel, Prioritizing vendors (identify best value), and Cost verification (make sure best value is within cost range). Although PIPS/PIRMS can be used to manage projects, it will work most effectively when it is used for contractor selection as well.
Recommendations for Strategic Goal #4 (Supporting Sector Strategies) and Strategic Goal #5 (Stakeholder Involvement) are currently being developed.

**STRATEGIC GOAL 6: EVALUATION OF WORKFORCE EDUCATION AND TRAINING PROGRAM**

Evaluation, measurement, and verification (EM&V) studies for the IOU energy efficiency and other demand-side management programs serve a number of functions, including supporting development and refinement of programs, verifying prior savings, and supporting the determination of shareholder incentives. These studies are driven in large part by the primary objective of these programs – resource acquisition, but they also address market transformation and other objectives.

Prior EM&V studies have not systematically addressed the skills and other characteristics of workers and contractors responsible for the installation and maintenance of energy efficiency measures and systems or the impact of these characteristics on performance. At present, a limited set of contractor characterization studies are in the planning phase. In addition the EM&V studies have not addressed the extent to which variations in work quality explain differences between ex ante and ex post energy savings.

The EM&V studies focused on the WE&T programs (e.g., trainings and other educational programs offered by IOUs, partnerships between the IOUs and educational institutions and community-based organizations) have not focused on skills acquisition and its impact on energy savings, but rather mostly on DSM investment decisions by end-users or increased DSM sales by contractors. As a general rule, data collected from participants in IOU offered trainings are not designed to support assessments of programs focused on skills development. Methods for assessing the contribution of IOUs to the outcomes of partnerships with educational institutions and community-based organizations have not been developed either.

The implications of the limited attention to work quality and workforce characteristics is significant, particularly as the goals for IOU energy efficiency programs are both increased and broadened. The lack of studies on the characteristics of contractors and workers and on the extent to which work quality affects energy savings limits the extent to which the benefits of workforce initiatives can be evaluated. The lack of information of the benefits of workforce initiatives means that opportunities for increasing the cost-effectiveness of energy efficiency programs relative to renewable and traditional generation resources are necessarily overlooked. Moreover, assessments of how the IOU programs affect the broader set of objectives, including market transformation and inclusion of disadvantaged workers, are also hampered.

As a consequence and as described in more detail below, the recommendations include explicit incorporation of work quality and workforce characteristics in market assessments, process evaluations, and impact evaluations. Additional feedback will be solicited from stakeholders in the short-term. For the long-term, additional EM&V studies to address work quality and workforce characteristics are proposed.
<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Rationale and Evidence Supporting Recommendation</th>
<th>Stakeholder Feedback</th>
<th>Next Steps</th>
<th>POSITION (Choose 1: Agree, Disagree, Disagree with Comments)</th>
<th>COMMENT</th>
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<tr>
<td>A. Modify market assessments (e.g., work papers for DEER and non-DEER measures; Potential, Goals, and Target studies; sector-specific market characterizations) to address work quality and workforce characteristics:</td>
<td>i. The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Support: i.</td>
<td>Short-term: Obtain stakeholder feedback on recommendation and develop cost estimates.</td>
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<td>ii. Essential data for relevant labor markets (e.g., certifications, availability of skilled workers in local labor markets; education and training programs available to workers)</td>
<td>Have concerns: ii.</td>
<td>Long-term: Modify requirements for work papers and for Emerging Technology reports. Prepare work plan with support of energy and labor agencies and academic experts for proposed studies.</td>
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<td>B. Develop and adopt EM&amp;V protocols for workforce and labor market data collection</td>
<td>Limited data are presently available on the characteristics of workers participating in ESA and IOU energy efficiency programs. These data are essential in order to better understand the skills of workers and contractors responsible for installation and maintenance of energy efficiency measures, to consider relationship of work quality to skills of workers conducting work, and to assess influence of IOU programs on achievement of the State's workforce objectives.</td>
<td>Support:</td>
<td>Short-term: Closely follow on-going activities for 2013-2014 program cycle; provide comments and recommend that study consultants reach out to experts knowledgeable of state and federal labor force data collection.</td>
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<td>C. Explicitly consider contractor and worker</td>
<td>While work quality issues are now considered, further consideration is needed to ensure that these issues are adequately addressed.</td>
<td>Support: i.</td>
<td>Short-term:</td>
<td></td>
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<td>Recommendation</td>
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<td><strong>D.</strong> Modify program theory and logic models, program tracking systems, program performance metrics (PPMs), and process evaluations for adopted recommendations from SG_1, SG_2, and SG_3.</td>
<td>While Guidance Document will provide some suggestions on how to revise key EM&amp;V program elements, these suggestions need to be more fully developed with stakeholder input for those recommendations that are adopted.</td>
<td>Support: Consistent with CPUC direction</td>
<td>Short-term: Stakeholder feedback on how best to evaluate proposed recommendations</td>
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<td><strong>E.</strong> For IOU workforce education and training programs, develop and test methodologies for assessing implications of IOU initiatives related to skills development and partnerships on resource acquisition and other broader objectives for energy efficiency.</td>
<td>The IOU WE&amp;T programs and the associated impact evaluations have focused on “market building” activities. An increased emphasis on skills development and on partnerships (SG_1 recommendations) with core educational institutions and community organizations will require adoption of new approaches to EM&amp;V. While the IOUs have various on-going efforts related to skills development and partnerships, assessments of the benefits of these initiatives (i.e., skills development and partnerships) to the IOU ratepayers are needed if additional resources are allocated currently to skills development and partnerships.</td>
<td>Support: Have concerns</td>
<td>Short-term: Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships. Identify programs and EM&amp;V approaches where significant IOU resources are allocated currently to skills development and partnerships</td>
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<td>resources are to be allocated to these activities.</td>
<td>Long-Term: Develop and implement pilot projects to test how best to assess the benefits of these initiatives to IOU ratepayers</td>
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Recommendations for Strategic Goal #7 (Evaluation of Web Portal) are currently being developed.
STRATEGIC GOAL 1, Workforce Education and Training Program Modification

Includes questions and responses from Carol Zabin

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<tr>
<th>DVC Recommendations</th>
<th>Position</th>
<th>Comments by Jim Caldwell</th>
<th>Questions/responses from Carol Zabin</th>
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<tbody>
<tr>
<td>Orient programming around partnerships with core accredited education and training institutions for each major occupation/career pathway: professionals; commercial trades workers, and residential trades workers</td>
<td>Agree</td>
<td>This recommendation would be better stated as: Market Adoption, Compliance, and Capacity factors need to be the primary determinants for targeting training programs. This includes: (1) what key occupations require new skills or will be needed in larger numbers to drive and support the market’s adoption of EE measures, (2) where are the workforce compliance gaps that need to be bridged to meet the state’s EE mandates, and (3) what is the capacity of the state’s educational institutions to meet the labor market demand and bridge the priority skills gaps.</td>
<td>I agree with your description of the 3 key factors to determine priorities. What do you mean by the word “compliance” in this context?</td>
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<td>Each of the 3 (occupation/career pathway implementation) plans should be led by a statewide staff person with understanding of and credibility within the key institution for each occupation (i.e. UC, CSU, and CCC for professionals; DAS and CCC for commercial trades; CCC for residential trades).</td>
<td>Agree</td>
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<td>Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions.</td>
<td>Agree, see comments</td>
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<td><strong>Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms. Funds should support incorporation of EE specific knowledge and skills through support for curriculum development, train the trainer etc.</strong></td>
<td><strong>Strategic funding for existing programs is the fastest, most economical way to add capacity and achieve programmatic advances. Accelerating or expanding programs are key elements for program sustainability and responsiveness to industry needs. Many programs exist that provide an excellent foundation but lack significant EE content. These types of programs should be evaluated as opportunities for strategic funding.</strong></td>
<td><strong>Agree, see comments</strong></td>
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<td><strong>Plan must be approved first by governing board composed of key state workforce, education, and energy agencies, and technical experts. CPUC should consider recommendations of governing board and approve final plan.</strong></td>
<td><strong>The case hasn’t been made that a governing board is needed, that it can provide significantly improved workforce outcomes and associated impact on the state’s EE goals, or that it will yield an attractive return on whatever costs are associated with it. On the other hand, there is consensus that a unifying force is needed to harmonize IOU workforce programs into statewide initiatives with regional overlays to address specific economic clusters. This suggests a facilitation strategy rather than a governance strategy. The recommendation should be for an advisory body that assists the IOUs in developing and executing a unified statewide approach. One function of this advisory council could be facilitating harmonization of the IOUs’ WE&amp;T investment programs before they’re submitted to the CPUC for approval.</strong></td>
<td><strong>Disagree</strong></td>
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<td><strong>With an advisory group rather than a governing group, how would you address the following:</strong></td>
<td><strong>I think you will see that contrary to your comment, there is not consensus that an advisory group is preferred, once you read the stakeholder responses.</strong></td>
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We suggest the following programs that can be initiated in 2014 for each occupational group, which are low-hanging fruit that can serve as learning arenas for the new configuration:

1. Professionals: RFP to be let out to 4 year accredited architecture and engineering departments to incorporate energy efficiency skills and knowledge into their curricula for degree programs.

2. Commercial trades: Partnership/sector strategy with CA Division of Apprenticeship Standards to incorporate EE skills and knowledge into journey upgrade programs for key crafts.


<table>
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<th>Disagree</th>
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<td><strong>This recommendation is problematic on several levels:</strong></td>
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**Structural** – Developing separate programs by occupational grouping perpetuates a siloed approach to workforce development, and is detrimental to meeting the state’s EE mandates. The sector strategy approach agreed upon by the IOUs and DVC is most effective when the full range of occupations for a specific technology or market opportunity is addressed in priority order to meet resource program goals.

**Occupational boundaries** – limiting the community colleges to residential energy efficiency ignores vast education and training capabilities in the commercial EE sector, creating a significant gap in the state’s ability to respond to CLEESP workforce mandates. Several hundred existing community college commercial EE programs can have a major impact (e.g. the nationally-recognized HVAC and Environmental Control Technology programs at Laney College). Further, placing apprenticeships and community colleges in separate siloes adds new barriers to collaboration, threatening progress in building the career lattices required for an effective EE workforce.

**RFPs vs. Partnerships** – This section is unclear whether RFPs are recommended for one occupational group or for all three. Putting the occupational silo issue aside, questions arise about how to fund initiatives (statewide and/or regional?), how to create partnerships that are agile and responsive, how to create

I think we haven’t made this recommendation clear enough because your comments seem to reflect things we don’t mean, so I apologize for that.

First, to clear up some confusion:

We are not suggesting that the community colleges only be brought in for residential programs.

The 3 projects listed in these recommendations are strategic opportunities that the IOUs can contribute to, and community colleges can play a role in all three.

For the professional architecture project, community colleges are a feeder to 4 years, and can play a role in these projects to help prepare their folks to transfer.

For the commercial trades, we are proposing a community college-DAS-apprenticeship partnership that we are talking to John Dunn about and that has the support of CWIB, DAS, ETP, so we are hoping you can get behind it too. It doesn’t take away from any other CC commercial trades programs, but it suggests starting with the strongest programs with highest completion and job placement and deepest training, and expanding from there, just like what happened with CALCTP.

For residential programs, we would like your opinion on the best low hanging "sector strategy” fruit—what about your Title 24 sector strategy proposal? This would tie
and sustain relevant programs over the long term, how to create capacity for dealing with future technologies and market dynamics, how to reflect adjustments in resource programs portfolios. RFPs typically create a framework that’s appropriate for the time in which they’re issued, but can be rigid and restrictive over the long term. And then there’s the problem of maintaining continuity of programs spanning multiple RFP cycles, especially when contracts are awarded to new applicants rather than the incumbent contract holder. RFPs may be the right answer, but a lot more exploratory work is needed before selecting this path versus others.

**Added Value** – The web portal specified in the CLEESP should be built to provide a single point of contact for sharing EE training curriculum, identifying career pathways across the state, enabling employers to target strategic career pathways for recruiting, etc. Such a portal would be most effective if it spanned all occupations and career pathways to reflect the way employers do their recruiting and incumbent worker training.

nicely into the existing CC building inspector programs and could also get at incumbent workers through partnerships with municipalities.

In terms of the funding allocation by occupational group, we agree with you that sector strategies should consider all the occupations in a particular market and not a priori choose one. However, as a practical matter, we think it’s easier to design a training program for one occupation at a time, and to designate a lead educational institution (or educational partners like CC and DAS) that is the main home institution for that occupation.

We all agree that to switch from the current programs to a new way of doing things, we need specific goals, and fairly specific budgets allocated to meet those goals.

So how should the pots of money be allocated? Instead of by occupation, the idea we have been thinking about is an allocation for core institutions, an allocation for sector strategies that address incumbent workers, and an allocation for sector strategies for inclusion/pipeline.

On the RFPs vs. non RFPs, we think that the sector strategies that you are leading for your PGE contract or other IOU staff is doing can be grandfathered in if it meets the criteria that would be used in an RFP. But we think it is a mistake for the IOUs or their consultants to be the only ones who are allowed to lead a sector strategy.
Administrator should have the capacity and willingness to manage and staff the plan outlined above.

**Option 1.** IOUs manage and staff guidance plan, or issue an RFP for a 3rd party implementer.
**Option 2.** CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization.

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<td><strong>Agree, with exceptions</strong></td>
<td>The concept of an Administrator as outlined would be effective in the context of Option 1. The question is which is which option would be more effective – a unifying force that is embraced by the IOUs or an added layer of governance reporting into the CPUC.</td>
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What do you mean by a unifying administrator? You mean all the IOUs would contribute $ into a state wide program? I am very interested in your ideas here because the IOUs seem to have such different capacities and interest in adopting a different approach.

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**Strategic Goal 2: Inclusion for Disadvantaged Workers**

The California Community Colleges are fully inclusive of disadvantaged workers, and will collaborate with stakeholders on programs that advance the careers of these populations.

**Strategic Goal 3: Integrating Workforce Efforts with Resource Programs**

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<th>DVC Recommendations</th>
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<tr>
<td><strong>Workforce Standards:</strong> Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.</td>
<td><strong>Agree, with exceptions</strong></td>
<td>Workforce standards are essential to cost-effective implementation of EE measures. While there are exceptions (such as BPI and CALCTP), many industry certifications lack specificity for skills related to EE. Industry groups and certifying bodies need to incorporate updates to workforce standards that require EE training. Certification parameters in the Goal 3 Workforce Standards section need further examination. Requiring an Associate’s Degree in addition to NATE certification is not a practical recommendation for commercial</td>
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HVAC competency.

The commercial workforce standards cite apprenticeships as a career pathway to higher levels of certification, but do not address career lattice structures created by community college certificate programs and work experience. Industry focus on these structures, coupled with programs to bridge competency gaps if any, is already underway as a path to multiple levels of certifications. These community college pathways need to be included in the recommendations.

Recommendations for Strategic Goal 3 are heavily focused on installation. The built environment far outstrips new installation as an opportunity for meeting the CLEESP goals and AB 32 EE mandates. Programs for Building Operations Professionals need to be included within these recommendations.

**Additional Comments and Questions:**

1. These recommendations – new governance, RFPs to redistribute investment to third parties, major changes to current IOU training programs - all occur as the state’s EE landscape is undergoing a seismic shift:

   a. **Prop 39** – Infusing $2.5B into K-14 EE programs, and more importantly, investment firms across the country have targeted the $100B+ EE market represented by California’s K-14 buildings. The trigger effect intended by Tom Steyer appears to have worked. What does this mean for labor market demand and workforce capacity?

   b. **Title 24** – The 2013 code update is sweeping, impacting most EE occupations across the EE value chain. What is the scale of incumbent workforce training required to realize the EE benefits projected from 2013 Title 24 Code?
c. **Retirements and Attrition** – Will we have the skilled workforce ready to replace these experienced workers? Will we be able to upgrade EE standards compliance through these new workers?

d. **New Market Dynamics** – Commercial Property Assessment Clean Energy programs (PACE) make EE projects easier to justify and provide new sources of capital. The intended effects of Cap and Trade also is altering the equation for clean energy investments. What new labor market demand is projected for these dynamics?

e. **Deferred maintenance** – Commercial equipment upgrades and replacements deferred during the recent recession are expected to produce a bubble of EE activities. Do we have the workforce capacity to add these activities to the current EE adoption run rate? Can we assure that adequate EE skills will be applied by the workers conducting these activities?

So, there are significant questions about the scale, timing, disruptive effects, costs, and other consequences associated with the Don Vial Center recommendations. This is not to say that changes are not required, only that the timing and scaling of implementation are critical considerations.

2. It’s curious that programs done well through collaboration between the IOUs and the community colleges and other educational institutions are not referenced as foundational to the new environment to be created by implementing the Don Vial Center recommendations.

3. The Don Vial Center assembled a strong, talented team for this project, so it’s natural that expectations are high for positive outcomes. Because the DVC recommendations would dramatically alter the IOUs’ WE&T investment strategies, additional expectations exist for supporting data, rigorous gap analysis, upside/downside assessments, potential consequences, and examination of alternatives. Additionally, the legal boundaries for some of the DVC recommendations have been questioned and remain undefined. Availability of the analyses underlying the draft recommendations will be essential to providing advisory council inputs to the final recommendations.
California Division of Apprenticeship Standards, Department of Industrial Relations (DAS/DIR) 
Labor and Workforce Development Agency (LWDA) Comments on the WE&T Statewide Strategic 
Planning Draft Guidance Document and Recommendations

Submitted by: Diane Ravnik, Chief, DAS
January 28, 2014

The Division of Apprentice Standards’ comments are guided by the overarching goal of the CPUC in 
directing development of this Statewide Strategic Planning Guidance document, specifically “in 
consultation with the California state government workforce agencies, to develop a comprehensive 
approach to workforce, education and training for the (IOU’s) energy efficiency programs.”

This direction, from the CPUC to design a strategic plan “in consultation with California state 
government workforce agencies” represents, we believe, the goal of coordinating, leveraging, aligning 
and engaging the resources of those state government agencies that have particular expertise in 
education, training and workforce development (notably the state’s educational agencies and the Labor 
and Workforce Development Agency’s California Workforce Investment Board (CWIB) and Division of 
Apprenticeship Standards (DAS)) with the State’s agencies and entities with particular expertise in 
energy and achieving energy efficiency – specifically, in this case, the State’s Investor Owned Utilities 
(IOUs).

Strategic Goal 1 Recommendations

The DAS concurs with the recommendation to more clearly direct WE&T funds to 4 delineated areas (of 
professionals, non-residential trades, residential trades and inclusion) as we believe this approach better 
utilizes and focuses and the IOU’s WE&T resources for better result over the previous more “shotgun” 
approach to training, open and available to any and all interested parties sharing few “common 
denominators.”

We agree with other comments requesting further detail and exposition of the particular amounts to be 
allocated to each of the 4 areas; as well as more detail within the 4 areas of how funds might be 
directed. For instance, in the non-residential trades allocation, DAS would strongly urge that funds be 
directed to increase and enhance the skills of skilled trades workers already possessing basic skills and 
experience – as described in Sub-section E. Phase 1 Programs. That is, that in this area, and perhaps 
others of the four delineated areas, there be established certain pre-requisites for class registration – so 
that learning can occur from a similar starting point, creating a more quickly and readily deployable 
skilled workforce – and in this regard endorse the concepts expressed in Sub-sections B and C– to 
redesign workforce skill development programming and create career pathways. Since the DAS was 
specifically mentioned in C.1. as a resource for providing staff to WE&T for commercial trades, we 
endorse this recommendation to work with our regular apprenticeship educational partners at the 
California Community Colleges Chancellor’s Office to do so.

With respect to “Administrator” outlined in Sub-section F, the DAS endorses “Option 2” that the CPUC 
work with the LWDA to transfer administration for at least 3 of the 4 delineated areas for funding 
(excluding the “Professionals” which might be better administered by one of the state’s higher 
educational agencies). In particular, as recommended, the LWDA’s California Workforce Investment
Board (CWIB) has particular experience and expertise in grant administration, especially that which would address the WE&T’s “inclusion” goals.

**Strategic Goal 2 Recommendations**

DAS generally concurs with the recommendations offered herein – particularly the need to identify and document contractor and worker competencies and skills and provide skill certifications and quality verification.

With respect to the $16 wage floor recommended in Subsection E, DAS would offer a caveat to that recommendation that the wage floor be set for individuals at the conclusion of training, rather than the start, as some apprentices in different areas of the state may start their training and employment at a relatively low wage, but quickly accelerate (with regular wage increases every 6 months) to wages well above the suggested wage floor, to $20, $40 or more, especially when health and welfare benefits are factored in. Such highly paid workers have been shown to be highly cost-effective, especially because their high skill and pay levels have been shown to contribute to timely completion of work within budget. We would suggest, too, that appropriate wage rates may vary from area to area throughout the state. One measure of appropriate wages the consultant may wish to consider, where available, would be a percentage of locally prevailing wage rates, published by the DIR. The provision of health and welfare benefits should also be considered and encouraged for any floor.

**Strategic Goal 3 Recommendations**

DAS strongly endorses the recommendations for skill credentials and certifications at all levels.

The establishment and enforcement of a “Responsible Contractor Policy” is essential to insure necessary consumer protections at all levels. Certainly, all contractors should be in strict compliance with state laws on contractor licensing, workers compensation and applicable employee taxes, wages, health and safety and building permitting. DAS would endorse pre-qualification of contractors. All provisions itemized for contractor qualification in Subsection B.4 (a) – (g) should be required. DAS would further recommend a much higher requirement (than the proposed 20%) for OSHA 10 certification – something closer to 60% -- as such should be a basic pre-requisite for most all construction work and is generally provided to every starting construction craft apprentice in their first period of all state-registered apprenticeship programs.
Comments from the California Workforce Investment Board on Draft Summary Recommendations (January 2014)

Lisa, Carol, and team-

Thank you so much for allowing CWIB additional time to respond- I apologize for the delay, however, wanted to make sure that we were in alignment at the leadership level!

This is a fantastic set of recommendations, and we are in agreement with the substance and direction of each of these. We are also looking forward to the next iteration, which delineates the respective recommendations to the IOUS, CEC, etc.

In particular, the recommendations around Strategic Goal 1 create a real opportunity to achieve substantive impact in workforce development and training in alignment with IOU goals and skill and job demands.

The CWIB is very supportive of the recommendation to create a competitive procurement or solicitation (RFP) process for the bulk of the workforce/training dollars, and believe that many of the very real concerns expressed in the document can be addressed and mitigated with a thoughtful, tailored, and strategic grant making/contracting process. There are examples of very sophisticated procurement frameworks for workforce service and training that can be drawn upon to help achieve the multiple goals of the IOUs and State in the process. There are many specific recommendations in Strategic Goals 1 which may be applied in whole or in part, and which should be seriously considered by any entity undertaking the procurement process. A strategic procurement process has many benefits, including increasing competition among eligible and quality applicants, creating opportunities to secure matching funds, and allowing for a transparent analysis of program/training provider effectiveness and performance. This procurement process should clearly outline the functions, activities, and outcomes to be achieved, and align these with clearly identified skill and job needs as determined by the funder and business/employers. The suggested proportion of dollars to be spent on the various categories (20%, 20% etc.), is a good first cut, and we recommend that this be coupled with an analysis that reflects both the cost of differing types of training, the target region or area, population demographics (e.g. skill or educational attainment at program entry), and proportions adjusted accordingly. We also recognize the concern of the IOUS expressed in the document around existing program sustainability (which can be addressed through procurement/RFP, for example by awarding extra “points” for past program performance and expertise), and the importance of being able to apply funding to needs as they arise (which could be addressed by holding back a small (10% for example) pool of funds to specifically apply to emerging needs that fall outside the grant making timelines, and which have fewer restrictions/parameters.

We also agree with the CWIB and other State workforce partners and aligned stakeholders providing support in developing and aligning these investments, and lending technical and substantive expertise in workforce development and training. We do recommend additional conversation and research into defining the roles, implications, and potential advantages of this strategy, and welcome the opportunity to continue this work.

My apologies for not inserting this into the format- hopefully this feedback is helpful in this form! We agree with direction of each of the recommendations in the matrix, while acknowledging that additional details and reconciliation of some of the concerns are part of the next step in this process.
Please don't hesitate to be in touch if you need additional information or clarification in the meantime- and thank you all again for such great work!

Amy Wallace
WE&T Statewide Strategic Planning Consultant

DRAFT summary recommendations

January 10, 2014

Lead Researcher:
Dr. Carol Zabin, UC Berkeley Donald Vial Center

PRELIMINARY COMMENTS OFFERED BY
EMERALD CITIES COLLABORATIVE
January 29, 2014

*Not for public dissemination*
STRATEGIC GOAL 1: WORKFORCE EDUCATION AND TRAINING PROGRAM MODIFICATION

The IOUs' dedicate most of their WE&T resources for growing the market for energy efficiency services rather than skills-building for the work force who carries out the work, and the current structure of their programs is not well-suited to improve the DSM skills and knowledge of large numbers of workers in the key occupations that impact energy efficiency outcomes. By increasing the emphasis on skills development, the WE&T programs can better meet the CLEESP's vision that "By 2020, California's workforce is trained and fully engaged to provide the human capital necessary to achieve California's economic energy efficiency and demand-side management potential."1

Most of the IOUs' WE&T resources are dedicated to very short, stand-alone, free classes open to any interested person. Most participants are either end-users (building managers or home owners who are potential buyers of energy efficiency services) or contractors and professionals in managerial positions (sellers of energy efficiency services). The offerings are not effective at reaching workers in the key EE/DSM occupations or at developing workers' skills:

- Most current offerings do not involve the state's core education and training institutions for the key EE/DSM occupations, thus missing an opportunity to incorporate DSM content into the main period of training that workers in key occupations go through.
- These are UC/CSUs for professionals, and apprenticeship and community colleges for the trades.
- Most current offerings do not adhere to best practices for skill-building training. Best practices include clear prerequisites and learning outcomes for each class, classes that are sequenced and build upon each other, competency testing at class completion, tied to recognized, stackable credentials, hands-on learning, and for incumbent workers, a clear commitment and involvement by their employers.
- The 2010-2012 WE&T process evaluation by ODC found that the Centergies classes heavily emphasize information about technologies, rather than skill-based outcomes.2
- Due to the course structure and content delivery style, ODC concluded that participation in Centergies training does not guarantee that participants will have obtained the skills necessary to carry out high-quality work.3

Recommendations

We recommend the IOUs direct a significant portion of WE&T resources to EE/DSM skill-building activities for the critical occupations. Our recommended approach would affect occupational transformation on a broad scale by leveraging the state's core accredited education and training institutions, and promoting the identification of clear certifications and skill standards.

The IOUs should substantially increase WE&T resources for workforce development (e.g. to at least $80 million per three-year cycle), and then redesign this programming with increased participation and oversight from state workforce development experts. This process could be administered by the IOUs or by a 3rd party via RFP. An alternative approach would have the CPUC develop the necessary interagency agreement to with the CA Labor and Workforce Development Agency to transfer administration of some or all of these activities to the CA Workforce Investment Board or a non-profit organization. This alternative would ensure closer cooperation between the energy, education and labor agencies.

We recommend developing comprehensive implementation plans to customize programming targeted to each of the three career pathways. These plans should align with and leverage the core education and training institutions (UC/CSU for professionals, CCC and state-certified apprenticeship for the trades). Each of the plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation. We offer more detailed recommendations on processes for prioritization and program delivery in our full guidance plan. We also present three “Phase 1” programs that can be initiated in 2014, which are low-hanging fruit that can serve as learning arenas for the new WE&T configuration.4

Our proposal involves structured oversight from a governing board of key state workforce, education, and energy agencies, plus technical experts (e.g. the Lawrence Berkeley Lab). The governing council should appoint industry and subject-matter experts to an advisory group for each occupation, which will be responsible for identifying certification and skill standards.

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1 CLEESP, p 74
2 2010-2012 WE&T Centergies Process Evaluation, ODC. Pages 12, 13
3 Ibid, p 14
4 This may require accelerated direction from the CPUC (e.g., Advice Letter process at a minimum)
### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 1, Workforce Education and Training Program Modification

<table>
<thead>
<tr>
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<tr>
<td>A. Allocate a significant amount of WE&amp;T dollars to targeted programs for workers’ skill-building:</td>
<td>Although the CLEESP mandates workforce education and training, most of the Centergies budget currently goes towards educating buyers and sellers of energy efficiency services, rather than skills development for workers involved in the design, installation, and maintenance of EE/DSM work. Most of the Connections budget goes to consumer education, not career development. Workforce development and market development require a different guiding strategy for programming, and distinct activities and delivery mechanisms. There is a need for increased efforts in the area of workforce development in order to carry out the CLEESP vision, which will require a significant increase in resources. Our recommended allocations represent the minimum amount that we believe would have a statewide impact on workforce development in each of the four categories (professionals, res trades, non-res trades and inclusion).</td>
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<td>1. We recommend that at least $80 million of WE&amp;T funds per three-year cycle go to workforce development in order to affect meaningful change in this arena.</td>
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<td>Agree</td>
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<td>2. Within the $80m (per 3-year cycle) for workforce development, we propose the following allocation:</td>
<td>• $20m for professionals • $20m for non-residential trades • $20m for residential trades • $20m for inclusion</td>
<td>Connections 9-12 career prep awareness counts in inclusion. The rest is counted under market-building.</td>
<td></td>
<td>Agree</td>
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<td></td>
<td>• $20m for professionals • $20m for non-residential trades • $20m for residential trades • $20m for inclusion</td>
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<td></td>
<td>Connections 9-12 career prep awareness counts in inclusion. The rest is counted under market-building.</td>
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<td>Agree</td>
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<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Have concerns: IOUs do not want to lower budget to current programs</td>
<td>Get stakeholder feedback on the quantity of $ to be allocated to workforce dev’t vs. market dev’t; e.g. how much $ is needed for different types of activities, and how to prioritize programming based on needs and opportunities.</td>
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<td>Agree</td>
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<td>i. Estimated program costs based on preliminary recommendations and stakeholder feedback; ii. Ability to leverage other funds (state and/or employer) iii. Importance in the CLEESP iv. Share of occupations</td>
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<td>Agree</td>
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The allocation formula should specify or consider:
- Need evidence that training funds/allocation aligns with local/regional demand market
- Allocation should support IOUs/RENs targeted energy efficiency strategy and needs
- The allocation should be considered by region on a formula basis to local governments with workforce planning integrated into the IOUs regional energy networks.
- Specifically structure as an incentive funding that leverage targets (at least on a 1:1 basis) based upon the funds available in the regional market place and the demand side strategies. While the funds pre-suppose leveraging, it should be specific about this and assessed on the extent to which it addresses regional funding needs/opportunities/resources
- Training dollars need to be based on where the jobs are
- Market development should come from marketing not training budget.
### SUMMARY OF RECOMMENDATIONS:

**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<td>B. Redesign workforce skills development programming</td>
<td>Current programming for workforce skills development is limited. Most programming in this area does not follow best practice for skills development and does not fully leverage the rich infrastructure of CA accredited education and training institutions. Short, open-door classes are still the primary program delivery mechanism, although this is not an effective skills-building strategy. Partnerships with apprenticeships have been extremely limited so far.</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group Have concerns: IOUs have concerns about how to get credit for energy savings from programs based on partnerships.</td>
<td>Get stakeholder feedback on how to structure effective partnerships for each key institutional partnership. Discuss with stakeholders, IOUs and CPUC how to incorporate partnership-based activities with other IOU program objectives re: energy savings.</td>
<td>1. Agree 2. Concerns Concern – Orient programming around local government – with core responsibility and resources for local economic development -- with responsibility to convene workforce training organizations (labor, community colleges, community based organizations, WIBs, etc. to develop regional energy workforce strategy and partnership. The framework, standards, but flexible guidelines for training can be established at the State level, but implemented at the regional level. Again, the REN framework within the IOU/CPUC offers an approved, pre-existing framework for implementation.</td>
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<td>C. Career pathway plans:</td>
<td>Design an implementation plan for each major career pathway (professional, commercial, residential trades) with the following elements: 1. Each of the 3 plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation (i.e. UC,CSU, and CCC for professionals; DAS and CCC for commercial trades; CCC for residential trades). 2. Governing council should appoint Industry and SME advisory group for each occupation, which will be responsible for identifying certifications and skill standards for each. 3. Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions. 4. Plan should determine key opportunities to incorporate the limited partnerships with key state education and training institutions and a lack of best practices in the offerings described above, the IOUs' current workforce development programming has not been effective in reaching and developing the skills of workers in the key careers. Developing career pathway-specific plans built around key institutional partnerships, and with defined stakeholder input, will lead to more effective and well-aligned workforce skills-building programming.</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group Have concerns: IOUs have concerns about how to get credit for energy savings from programs based on partnerships.</td>
<td>Get stakeholder feedback on priority activities and delivery mechanisms for each career pathway plan.</td>
<td>Agree/Disagree Each level of training should be considered in a comprehensive planning process. But, this should be best implemented at a regional, as opposed to State level. And done collaboratively in a way that includes industry, labor, community colleges, community-based organizations, WIBs, etc... so as to develop pipeline/integrated strategies. As the CPUC has initiated efforts to study how integrated demand side management program should be merged – so should WE&amp;T programs. The content specific work is the responsibility of each of the specialized training agencies and each should be funded to implement their part of the regional strategy as codified in a workforce MOU.</td>
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#### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<td>5.</td>
<td>Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms.</td>
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<td>6.</td>
<td>Funds should support incorporation of EE specific knowledge and skills through support for curriculum development, train the trainer etc.</td>
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<td>7.</td>
<td>Programming should leverage funding for classroom and other training from key institutions wherever possible.</td>
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<td>8.</td>
<td>Programming should use sector strategy approach for incumbent worker training, based on commitments from multiple employers.</td>
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<td>9.</td>
<td>In-house IOU skills training should be limited and reserved to cover gaps that partners can't fill, with commitment to transfer courses to other training institutions over time.</td>
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**D. Governance and accountability:**

1. Plan must be approved first by governing board composed of key state workforce, education, and energy agencies, and technical experts
2. CPUC should consider recommendations of governing board and approve final plan
3. Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation
4. Although some ad-hoc partnerships have been successful, there is a lack of internal capacity in the IOUs WE&T programs to effectively develop broad-based partnerships with each of the state's key training institutions for EE/DSM occupations.
5. Most of the prior IOU-led attempts to bring stakeholders together for WE&T planning and consensus-building around standards have been contentious, e.g. the HVAC Sector Strategy.
6. The CPUC's WE&T Task Support:

**Support:**
- State workforce development agency and education institution leaders;
- Stakeholder advisory group

**Have concerns:**
- IOUs are concerned about burdensome oversight and loss of control of the program direction.

**Get stakeholder feedback on governance structure.**
- Discuss governing board with CPUC and other state workforce education and energy agencies.
- Get feedback on logic model and PPMs, and evaluation structure for measuring impact on energy savings and market transformation.
### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<td>E. Phase 1 Programs</td>
<td>1.</td>
<td>The changes we propose are significant and will take time to fully implement. We offer the Phase 1 programs as concrete programs that can be carried out in the near-term as the larger framework is developed and put into place.</td>
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<td>2.</td>
<td>We received clear feedback from professional 4 year programs about the huge potential value of an IOU-sponsored RFP to incorporate leading EE/DSM skills into curricula.</td>
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<td>3.</td>
<td>DAS has already indicated its eagerness to participate in this type of partnership on EE/DSM skills.</td>
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<td>4.</td>
<td>Our research indicates a number of productive relationships with local Colleges and community training institutions exist.</td>
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<td>F. Administrator:</td>
<td>1.</td>
<td>Although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development partnerships with the state's core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative administration of the workforce development portion of WE&amp;T would be more effective.</td>
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### COMMENTS

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<tr>
<td>Support: CA DAS supports the apprenticeship proposal; UC Berkeley architecture department is a strong supporter of the professional proposal. T</td>
<td>Write up the three specific proposals for stakeholder feedback and input.</td>
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<td>Have concerns: None?</td>
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| Option 1. | Support: Most IOU WE&T staff would like to retain primary ownership over the funds. Several expressed a desire/willingness to include more workforce partners in the program design process we've described. Concerns: some of the stakeholder advisory group expressed concern about the IOUs' capacity to effectively execute the type of partnership structure we describe. | Explore the pluses and minuses of each option, soliciting stakeholder feedback and adding detail to each proposal. |
| Disagree with Comment | Consider using the IOU's REN/regional management structure to plan and implement the program with Statewide Advisory Committee oversight for both composition of stakeholders and content and outcome of workforce program. |
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<tr>
<td>Retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&amp;T portfolio overall.</td>
<td>Option 2 Support: Members of the stakeholder advisory group (including the state labor agencies) liked the idea of a more systematic, collaborative tie between the WE&amp;T programs and the state’s other primary workforce development and education agencies, and the potential it presents for program alignment and fund leveraging. Concern: Most IOU WE&amp;T staff are wary of relinquishing ownership to an outside entity. Some stakeholders and IOUs expressed concern that there isn’t currently a clear choice of a non-profit to lead the Option 2 effort. Several noted issues that may arise around maintaining CPUC oversight over ratepayer funds.</td>
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**STRATEGIC GOAL 2: INCLUSION FOR DISADVANTAGED WORKERS**

Currently, the substantial and diverse investments being made by the IOUs in the energy efficiency and DSM programs do not include interventions to support the creation of middle-class career pathways for low-income communities, communities of color and other disadvantaged populations. While these investments offer a promising opportunity to build middle-class career pathways for low-income people and jobseekers with barriers to employment ("disadvantaged workers"), there are several barriers in place that prohibit the IOUs from achieving the California Long Term Energy Efficiency’s Strategic Plan goal of increasing “participation from within minority, low income and disadvantaged communities in achieving California’s economic energy efficiency potential”.

- The work of investor-owned utilities in California was not historically seen as public investments akin to government public works projects, and thus the public policy direction of requiring inclusive hiring policies and family-supporting wages applied to publicly-funded capital projects has only been recently considered by the CPUC.
- The IOUs do not currently have clear authority and direction to allocate resources to proven practices that increase minority, low-income, and disadvantaged worker participation in public works and energy efficiency projects.
- The IOUs currently lack of a working definition of "disadvantaged worker" and lack clear performance metrics or program goals by which to measure progress in hiring these workers.
- Current data collection methods do not provide a comprehensive picture on the demographic profile of the workforce being employed to carry out EE/DSM programs by occupation or job category, nor do they collect detailed data on compensation structures and wages by occupation and job category. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect this data.
- The IOUs currently lack clearly articulated pathways for disadvantaged workers to advance along a career ladder as they gain more experience, training and skills. An effective ecosystem of agencies and organizations (including low income weatherization providers, community based organizations, community colleges, local and state workforce investment boards, utility workforce development staff, labor unions and contractors) can create a pipeline of ready and able workers through effective recruitment, training and placement of disadvantaged workers.
- The IOUs currently lack the contracting and procurement tools need to shape incentives or requirements for contractors to hire trained and ready workers from disadvantaged communities. Contracts for higher-paid, higher-skill work (such as EE work in schools, universities and hospitals), tend to be smaller and do not always require deep, complex retrofits, which may prevent contractors from bringing on hired and ready workers from disadvantaged communities.

Integrating contracting and procurement ("demand-side") strategies with recruitment, screening, skills development, training, wrap-around services and credentialing ("supply-side") strategies is essential to achieving the full scope of California’s EE goals.

**Recommendations**

The CPUC should direct IOUs to measure and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals. The CPUC’s direction should have clear metrics and performance standards to meet these goals.

We propose a two track strategy. First, the IOUs should ensure the quality of jobs created by EE investments. We recommend that the IOUs set a wage floor for the ESAP, Direct Install, and Third Party programs, since these program implementers and contractors have direct contracting or subcontracting relationships with the IOUs. Second, we recommend that the IOUs launch a pilot MUSH sector program that includes a targeted hire program. This MUSH sector program can follow the standards used in public works construction, where targeted hire programs, tied to apprenticeship, have been very successful in many local governments in California and nationally.

Data collection efforts are necessary to support these goals. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect workforce data to evaluate job quality and the demographic profile of workers. We recommend that this be done through an on-line workforce reporting system (such as Elations or LCP Tracker); these systems are inexpensive and have been used by many awarding agencies in the state. In addition, the IOUs should adopt a definition of disadvantaged worker and apply it meaningfully and consistently across all EE programs. This definition can then be used to design inclusion programs, and to track and measure results. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria); and/or b) an individual who is a resident of a high unemployment zip code in her/his county. The IOUs should also institute data collection as

Once a definition is set, the IOUs should set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs. We recommend a conservative initial goal (such as 15% of new entry level job openings in IOU supported EE/DSM work) in order to ensure success and acceptance by both IOUs and contractors. This goal can be increased over time as programs are developed and contractors and IOU staff become familiar with them. The results of these goals can be tracked by the workforce reporting system and made publicly available, as a scorecard, similar to that used in General Order 156 which has been successful for promoting diversity in procurement. Contractors meeting goals should receive additional points in the next round of program procurement.

In order to ensure that workers are trained and ready to perform higher skill work, we also recommend funding for pre-apprenticeship training programs that will provide disadvantaged workers the skills, training and abilities needed to be successful in entry-level MUSH and large commercial EE and utility employment. This funding should be released in the form of an RFP, and should encourage the mobility of ESAP and other residential workers into higher wage higher skilled jobs in the MUSH sector.

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6 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

7 The unemployment rate is 150% of the median unemployment rate for the county.

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<tr>
<td>A. Prioritize creation of good-paying jobs and workforce diversity as key IOU goals along with efficiency outcomes:</td>
<td>Successful workforce inclusion programs have established goal setting and monitoring in order to improve outcomes. In order for the IOUs to have the authority to direct resources towards these efforts, they need direction from the CPUC. General Order 156 is an example of the IOUs’ ability to create a new program and achieve diversity goals in response to specific CPUC direction.</td>
<td>Support: Some equity groups, including those in the Stakeholder Advisory Group, support this recommendation. Have concerns: IOUs are concerned that the promotion of job creation and workforce diversity in EE/DSM programs cannot be resourced using ratepayer funds.</td>
<td>Get stakeholder feedback on language of proposed CPUC direction.</td>
<td>Agree</td>
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<tr>
<td>B. Define Disadvantaged Worker meaningfully and consistently;</td>
<td>l. Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring. ii. Many existing public works programs have developed similar definitions of Disadvantaged Worker. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility. iii. The combination of these two sets of criteria have proved in other programs to identify an adequate number of individuals who most need employment opportunity and who are capable of developing the necessary skills to do good work.</td>
<td>Support: Some equity groups support this recommendation. Have concerns: IOU staff and ESA contractors expressed concern whether experienced ESAP workers should be included in this definition to reinforce ESAP as an entry point to EE/DSM careers for disadvantaged workers. (ESAP dropped from definition as a result of stakeholder consultation.)</td>
<td>Test revised definition with Stakeholder Advisory Group.</td>
<td>Agree Preference would be for definition A which is more targeted, although do not object to option B.</td>
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<tr>
<td>C. Set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</td>
<td>l. Models from other successful programs. Current lack of specific goal. Successful experience from G.O. 156.</td>
<td>Support: Some equity groups support this recommendation. Have concerns: IOU staff, contractors, and members of the Stakeholder Advisory Group expressed the following concerns: How will the goal be set? Will goal apply across the board to all EE/DSM programs? Will each program need to meet the goal or will utilities be allowed to achieve goal by averaging results across programs, e.g. ESAP compensates for lack of inclusion elsewhere? Desire for voluntary goal vs. desire for penalties in the event goal is not achieved. How will efforts to drive inclusion affect cost-effectiveness? Will CPUC adjust</td>
<td>Develop an initial goal in consultation with key stakeholders.</td>
<td>Agree Discussion re: target should consider the industry “standard” of 20%</td>
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6 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

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<tr>
<td>2. This goal can be increased over time as the programs are developed and participants become more familiar with them.</td>
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<td>cost-effectiveness requirements to reflect inclusion goal?</td>
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<td>D. Institute a required, electronic workforce reporting system for EE/DSM contractors to capture information:</td>
<td>Successful equity and inclusion programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements.</td>
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<td>1. Require monthly reports using LCP tracker or some other established program that works with payroll companies.</td>
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<td>2. Include the following data points:</td>
<td>a. Hours worked</td>
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<td>b. Rate of pay</td>
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<td>c. Disadvantaged status, zip code of residence</td>
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<td>d. Race, ethnicity, and gender</td>
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<td>e. Trade/occupation level</td>
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<td>f. Journey/apprentice level</td>
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<td>g. Certifications held</td>
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<td>3. Make the reports publicly available.</td>
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<td>4. Contractors who achieve or exceed goals will receive compliance points in next round of procurement.</td>
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<td>E. Ensure baseline quality of jobs created by efficiency investments:</td>
<td>i. Interviews indicate ESAP wages range from $12/hour to high $20s/hour.</td>
<td>Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs.</td>
<td>Set feedback on $16/wage floor from Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
<td>Agree with qualifications</td>
<td>The wage standards should reflect the higher level of skills required to produce quality work. Moreover, efforts need to be made to develop the market so that small, minority, veterans, and woman owned contractors are able to compete for work. The E-Contractor Academy developed to support the inclusion goals of the Southern California Regional Network (SoCalRen) provides training and technical assistance for DBE/WBE contractors to work in a prevailing wage environment, including OSHA/safety training, wage certification and monitoring/compliance training, local hire support, bonding, and access to and engagement as union signatories.</td>
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<td>Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)</td>
<td>ii. LA DWP’s utility pre-craft worker program starts trainees at $16/hour.</td>
<td>Have concerns: Some IOU staff, one equity group (Brightline Defense), and contractors are concerned. A wage floor could increase cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. ESAP contractors have concerns that they will be expected to bear burden of wage floor without overall program budget increase. Cost of collecting and reporting data.</td>
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<td>ii. Higher wages typically contribute to higher skill development, and better outcomes.</td>
<td>iii. Higher wages typically contribute to higher skill development, and better outcomes.</td>
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<td>F. Improve job opportunities created by efficiency investments:</td>
<td>California Labor Code requires prevailing wages and apprenticeship utilization on public capital projects. Contrary to this general</td>
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<td>Align the requirements of ratepayer- or IOU-funded efficiency investments in public sector buildings with the prevailing wage and apprenticeship standards of California public works projects.</td>
<td>public policy, it exempts “work done directly by any public utility company pursuant to order of the Public Utilities Commission or another public authority.” Cal. Lab. Code Sec. 1720(a)(1).</td>
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<td>G. Consolidate all incentives and efficiency programs that target the municipal/government, university, school, or hospital sectors into a comprehensive MUSH program. Introduce an inclusion requirement in the MUSH program:</td>
<td>Energy Upgrade California and Sierra Nevada Energy Works. Programs in San Francisco, Portland and Seattle utilities. PLAs with targeted hire requirements at LA-METRO, LAUSD, CRA/LA, LACCD.</td>
<td>Support:</td>
<td>Gather more data on MUSH programs to build out recommendations. Test detailed recommendations at non-residential EE stakeholder meeting in January.</td>
<td>Agree</td>
<td>SoCalRen serves as a workforce development pilot organized specifically to support this unique MUSH market.</td>
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<tr>
<td>1. Bundle programs to create scale for contractors.</td>
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<td>Have concerns: IOU staff have expressed concern that increased coordination and adoption of “new” policies along multiple programs will delay implementation of these practices. IOU staff express concern over the cost of compliance with targeted hiring programs may make participation unprofitable. Requirement that customers use contractors off pre-qualified list may discourage participation. Fear that Disadvantaged Workers may not have the skills necessary to perform the work. Contractors may not have sufficient work to add new hires to meet DW targeted hire requirement.</td>
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<td>2. Focus MUSH incentives on deep retrofits and whole building programs.</td>
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<td>3. Increase allocation for this program to at least $100 million.</td>
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<td>4. Apply aspects of Energy Upgrade California as a model framework:</td>
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<td>a. Establish pre-qualified list of contractors.</td>
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<td>b. Require MUSH incentive recipients to work with IOU-designated contractors.</td>
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<td>5. Restrict contractor participation to increase market share and positive outcomes for participating contractors:</td>
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<td>a. Require competitive application process to reward contractors that meet or exceed worker skill standards, Disadvantaged Worker hiring goals, and wage floors.</td>
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<td>b. Require competitive application process to reward contractors that meet or exceed worker skill standards, Disadvantaged Worker hiring goals, and wage floors.</td>
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<td>6. Open list to new contractors on a restricted timeline (e.g. every 2 years).</td>
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<td>H. Establish training bridge program to link residential EE</td>
<td>Power Pathways, CCCO Career Advancement Academies, Pre-apprenticeship collaborations</td>
<td>Support: Education and labor stakeholders</td>
<td></td>
<td>Disagree with Comments</td>
<td>Funding for this should be included as part of a collaborative/comprehensive regional workforce planning process which by design focuses on developing career ladders/scaffolds (pipeline planning).</td>
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<td>workers to non-residential EE jobs.</td>
<td>such as SF City Build, IBEW Local 11 and LATTC</td>
<td>Have concerns: Some stakeholders have indicated concerns with the viability of ESAP workers entering in bridge programs; some ESAP contractors indicate there are viable career pathways within ESAP employers.</td>
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<tr>
<td>I. Strengthen ESAP and MIDI as entry point to a higher skilled, higher-paid career in commercial and industrial EE:</td>
<td>I. Interviews and EE Decision indicate expansion of MIDI program.</td>
<td>Support: Some equity advocates were interested in learning more about the details of the recommendation to determine their support.</td>
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<td>1. The IOUs should apply the wage floor and workforce reporting requirements to MIDI as the program is developed.</td>
<td>ii. The level of skills required for residential ESAP and MIDI programs are similar: lower and thus more suited to an entry-level position. However, on the job, ESAP and MIDI installers gain valuable experience in both soft and hard skills, preparing them to move up the ladder.</td>
<td>Have concerns: One equity group (Brightline Defense) and IOU staff expressed concern over a wage floor increasing the cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. Contractors were concerned over the wage floor: Will contractors be expected to bear burden of wage floor without overall program budget increase? They are also concerned about the cost of collecting and reporting data.</td>
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<tr>
<td>2. Education and workforce development partners should articulate career ladder and opportunities for advancement to ESAP and MIDI workforce.</td>
<td>iii. The contractors who run the ESAP programs tend to hire from the local, low-income community, making it a natural entry point for a more diverse workforce. However, it should not be an end point for low-income workers.</td>
<td>Test $16/wage floor with Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
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<td>As part of the regional strategy and the need to consider how to assist DBE/WBE in increasing their effectiveness and capacity under this higher quality standard, skill and market conditions.</td>
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STRATEGIC GOAL 3: INTEGRATING WORKFORCE EFFORTS WITH RESOURCE PROGRAMS

There is substantial evidence that improper equipment installation, operation, and maintenance lowers the realized energy savings of energy efficient measures and most likely explains some of the differences between ex ante savings estimates and ex post evaluations. Specific sources include the 2011 WE&T Needs Assessment, where results from case studies for several distinct market sectors are reported, an extensive annotated bibliography that will form an appendix to the guidance plan, and recent interviews with current and former IOU staff, subject matter experts, and industry professionals, which were conducted for this project. This evidence spans complex advanced lighting and HVAC systems as well as installations of simpler energy efficiency equipment.

The extent to which improper equipment installation, operation, and maintenance reduces the energy outcomes for California’s Demand Side Management (DSM) programs is unknown. While specific studies have investigated the extent of poor installations for specific technologies (e.g., HVAC, advanced lighting, building construction), comparable data across measures and programs are not collected for California’s DSM programs that could systematically determine where poor work quality may be reducing energy savings.

Workers can acquire, through training and on-the-job experience, the necessary skills to perform high quality work, but training alone is not a sufficient condition to ensure high quality work. The market must also demand quality work. The IOU DSM programs have introduced various program requirements to ensure high quality work, ranging from contractor licensing requirements to quality assurance programs to customer information; however, these are minimal compared to the much more robust workforce and related standards found in many other sectors in the economy, including in segments of the building and construction industry, the key industry for energy efficiency investments. The current process for program planning, approval, and implementation does not specifically reward the IOUs for ensuring high work quality nor penalize them when energy savings are left on the table due to improper installation, operation, or maintenance of energy efficiency measures. The common response to poor work quality continues to be support for training, but the return on these investments—for both ratepayers and the trainees—is limited without greater demand for work quality.

The following recommendations 1) suggest a series of process improvements to better understand and incorporate the impacts of work quality on energy goals and 2) suggest workforce standards for IOUs to incorporate into the management of EE programs that will both reduce the risk of inaccurate savings estimates due to work quality, and more qualified contractors to participate in DSM programs.

Recommendations

Process Improvements: First, we recommend a series of process improvements to create a stronger incentive structure to ensure proper installation and maintenance of energy efficiency measures. The existing program development, approval, implementation, and evaluation processes neither reward nor penalize the IOUs for their influence over work quality and its impact on energy savings. Assumptions about the installation and performance of energy efficiency equipment are based on technical specifications and engineering assessments, and fail to account for the impact of worker skills and performance on equipment performance (and energy savings). Often, equipment is assumed to be installed correctly and in-service, without either specifying the level of technician skill required or verifying quality in the field to substantiate those claims.

The CPUC applies discounts (“haircuts”) to the IOU-claimed energy savings to avoid over-estimating, but these reductions do not isolate the effects of different program requirements or workforce standards. Since the IOUs perceive that stricter program requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily adopt higher standards, unless there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear incentive if they evaluated performance in real time, but they mostly are limited to detecting fraudulent behavior. Real-time across the board inspections are costly and increase transaction costs and program friction for customers. Finally, the program implementation and evaluation cycles are not conducive to providing timely feedback on effective program requirements, and as stated above, impact evaluations do not document or isolate work quality problems.

Our recommended process improvements address the shortcomings of the current quality assurance and discount process, and call for the identification of minimum contractor requirements and quality standards in DSM programs that will both reduce the risk of large gaps between ex ante estimates and savings left on the table due to installation problems for custom measures. These recommendations will reduce the risk of large gaps between ex ante estimates and ex post evaluations for deemed measures and savings left on the table due to installation problems for custom measures.

Workforce Standards: Second, we recommend several different types of contractor and workforce standards designed to screen out less qualified contractors and create an environment to encourage participation by high performing contractors in energy efficiency work. Workforce standards refer to interventions that shift the competitive environment toward higher performance. Workforce standards are a quality control mechanism that can reduce the need for more expensive post-installation quality assurance activities.

The lack of available information on work quality and its impact on the portfolio should not be used as an excuse to delay adopting workforce standards, many of which are “no regrets” or “do-no-harm” approaches with multiple co-benefits, including deeper retrofits. Because different standards can have the same effects in the labor market, there is some flexibility in how standards can be applied to different programs. For example, establishing a wage requirement can have the same effect as a skill requirement because if all contractors have to pay higher wages, contractors who have invested in higher skilled workers will be able to more effectively compete in the market. Similarly, policies to contract with high performing contractors will result in the use of skilled workers as effectively as establishing specific skill standards for workers for each program or technology. Each of these types of standards acts to support higher quality contractors, and screen out or improve the performance of lower quality contractors.

In making recommendations, we mapped the resource programs by delivery mechanisms, target market, and technology in order to identify the simplest approach given the existing program structure. Given the range of technologies currently offered and the ever-changing technological environment, it is very difficult to establish and maintain, not to mention enforce, appropriate specific worker skill standards for every measure and program in the IOU portfolio. When there is widespread industry agreement for particular skill standards, they are effective ways for a bar for participating technicians and contractors. In the absence of agreed upon skill standards, contractor qualifications or wage standards would be simpler approaches to improve performance and work quality.

10 For custom projects, which represent a large percentage of the savings in recent portfolios, customers lose rebates (and IOUs lose savings credit) when equipment is not functioning for any number of reasons, including low-quality installation. The new Efficiency Savings and Performance Incentive (ESPI) creates a mechanism that encourages IOUs to manage EE programs in a way that ensure actual savings meet or exceed estimates (for deemed measures with a high degree of uncertainty).

13 For example CALCTP for advanced lighting controls or DOE Task Analysis for different energy efficiency jobs.
In our exploration and evaluation of different standards, we also identified a new model for addressing and improving contractor performance. The "best value" Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS) gradually improve performance by giving vendors or contractors more responsibility in defining quality work by reporting their efforts and their results. Because all contractors are invited to identify metrics, measure, and report their performance and added value, high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve. This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.
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| A. Process Improvements: Implement changes through program design, implementation, approval, and evaluation process to create stronger incentives for high quality work. | - In emerging technology demonstration projects, the most qualified firms and workers are selected to install new equipment or measures. ETCC reports currently do not consider the skill of the workers necessary for proper installation, and do not inform program requirements for the types of contractors that should participate to ensure quality. 
- Work papers often assume 100% correct installation without identifying the conditions necessary to ensure that is the case. 
- By bundling work quality problems with technology failures, customer behavior, and other variables (installation rates and gross realization rates), we cannot know what the specific impact of different workforce interventions are. 
- Current QA and inspection processes are intended to reduce fraudulent behavior and do not identify faulty installation. It is standard best practice that inspectors have a higher level of technical skill than installers, and current QA processes do not consider the technical skill of the inspection team. 
- Currently, there is a “three-strikes” rule for fraudulent behavior. 
- The ESPI mechanism uses a combination of ex ante estimates and ex post evaluations to determine shareholder incentive for IOUs, but custom project savings are confirmed shortly after installation, not accounting for failures down the road due. | Support: PRG support for eliminating three-strikes rule for fraudulent behavior. 
Solicit stakeholder feedback on these recommendations | Determine which programs can accommodate pay-for-performance requirements. 
Define “fraudulent behavior” | Agree |

1. Identify and document contractor competencies and markets and worker skills/credentials for field demonstration projects
2. In developing program plans, consider and document alternative approaches for addressing workforce issues (e.g. mix of certification requirements, training opportunities, and quality assurance/verification). Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings.
3. Program Implementation Plans should specify how program requirements will increase the demand for quality installations. Initial plans should consider alternative scenarios prior to selecting a specific approach. This could replace the current WE&T integration section of PIP templates.
4. Develop a discount (haircut) to isolate the effects of work quality to apply to energy savings calculations. When measures are first introduced, inspections of performance should be used to establish the equivalent of a measure-specific “gross realization rate” and “installation rate”. Once measure-specific rates are
5. Quality Assurance processes (Inspection and Verification) should focus more on quality of installation. Highly skilled technicians should be assigned to inspect installations at beginning of program and then randomly throughout programs.

6. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on quality.

7. Institute zero-tolerance policy for fraudulent behavior (for Trade Professionals, Customers, and other Contractors), with a three-year exclusion from participating in ratepayer funded programs.

8. Pay-for-performance requirements: Withhold fully crediting the IOUs and some portion of incentive payments until inspections confirm that equipment is properly installed and operational over the course of its effective useful life (or other meaningful period of time).
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<th>B. Workforce Standards: Change the competitive environment to attract high performing contractors and screen out or improve the performance of lower-qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.</th>
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<td>2. Require BPI firm accreditation (rather than individual certification) for all Whole House retrofit projects.</td>
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<td>3. Require at least NATE certification for all projects involving residential HVAC measures. For commercial HVAC programs, require completion of a registered apprenticeship program OR US Star OR an associate’s degree in HVAC and a NATE certification OR Industry Competency Exam (ICE) and NATE certification.</td>
<td>3. Require at least NATE certification for all projects involving residential HVAC measures. For commercial HVAC programs, require completion of a registered apprenticeship program OR US Star OR an associate’s degree in HVAC and a NATE certification OR Industry Competency Exam (ICE) and NATE certification.</td>
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<td>4. Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility.</td>
<td>4. Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility.</td>
</tr>
<tr>
<td>i. ALL contractors and subcontractors working on projects with total costs $500 or more: proof of proper licensing, bonding, &amp; workers compensation and building permit signed off by building inspector, if required by law.</td>
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<tr>
<td>ii. MUSH properties, non-residential properties that are either 50,000+ square feet or</td>
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**CALCTP** is the industry recognized standard for advanced lighting control systems. Title 24 requires CALCTP for acceptance testing.

Energy Upgrade CA requires that one person on staff has BPI certification. With BPI firm accreditation, rigorous quality assurance is built into BPI accreditation processes.

Persistent documented problems related to performance in HVAC programs.

Documented challenges of properly installing advanced lighting control systems.

ESAP wages range from $12/hour to high $20x/hour.

**Support:**

- Stakeholders comment that standards are necessary, but not effective without verification and enforcement.
- Widespread stakeholder support for CALCTP requirement
- Widespread contractor support for BPI standard, (except HVAC)
- PRG group thinks Responsible Contractor Policies are considered extremely effective strategies to improve work quality in the construction trades

**Have Concerns:**

- IOUs are unclear about new Title 24 regulations regarding advanced lighting controls—does Title 24 apply to equipment or integrated systems? Industry experts claim that Title 24 does not require the installation of integrated advanced lighting systems—only the component parts. New Title 24 standards will affect structure of IOU incentives.

**Determine the project size threshold(s) for different Responsible Contractor requirements ($50K or $100K? $1 million?)**

**Determine project type (building types) for Responsible Contractor requirements and how to tier requirements for projects of different scales.**

**Solicit stakeholder feedback of specific recommendations.**

**Develop/invest in specialized training and support programs to maintain a commitment to small, minority, women, veteran and disadvantaged businesses.**

See E-Contractor Academy that supports the SoCalRen as one such model of market development.
have total construction costs of $50,000+, and residential properties that have 4+ stories: 3rd party administrators, ESCOs, & contractors that perform the work must pre-qualify themselves and any sub-contractors using a more detailed pre-qualification process. This should include the criteria for all contractors (4i):

a. a list of at least 3 similar past projects & references
b. 60% of workforce comprised of journey-persons who completed a registered apprenticeship program in California, or are currently enrolled in such a program.
c. Require 20% of jobsite electrical workers should be OSHA 10-hour General Industry Safety and Health Certified.
d. Require at least one jobsite electrical worker should be OSHA 30-hour General Industry Safety and Health Certified.
e. Require that any electrician working on indoor or outdoor lighting controls be a California Advanced Lighting Controls Training Program — CALCTP certified contractor and or electrician.
f. Contractor should have a documented history of full compliance to state, health, safety and work standards.
g. In addition, the contractor’s performance over time should be tracked in PIRMS.

iii. Consolidate MUSH incentives into more streamlined programs
| 5. | Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years) |
| 6. | Develop an online project & payroll reporting system for contractors to input information. IOUs should utilize a 3rd party contact/labor compliance company or perform compliance in-house to ensure that goals are being met with positive and negative consequences to enforce requirements. |

**C. “Best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS): Pilot new model of procurement and contract management that invites contractors to identify metrics, measure, and report their performance and added-value. The effect being that high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve.**

| 1. Pilot PIPS/PIRMS in the HVAC QI and QM programs. As participating contractors report on their maintenance activities, customer satisfaction, actual energy savings, and other metrics of performance, it will become clear which contractors are meeting or exceeding program goals. |
| This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards. |

| Clarify how this model could work in HVAC QI and QM and for new solicitation processes. Solicit stakeholder feedback |
| Agree with comments | Build in support structures for smaller contractors to compete in high quality performance environments. The collaborative, regional model proposed – ala the workforce pilot of SoCalRen – provides an example of how the inclusion of business assistance organizations, labor unions, and others in the collaborative effort to build out this market opportunity for small businesses. |
2. Pilot PIPS/FRM/S for new program solicitations to ensure best value. When used for solicitations, vendor selection is based on five filters: Past Performance Information, Project Capability (technical risk, ability to manage non-technical risk, value added, financial milestones), Interviews of key personnel, Prioritizing vendors (identify best value), and Cost verification (make sure best value is within cost range). Although PIPS/FRM/S can be used to manage projects, it will work most effectively when it is used for contractor selection as well.
Recommendations for Strategic Goal #4 (Supporting Sector Strategies) and Strategic Goal #5 (Stakeholder Involvement) are currently being developed.

**STRATEGIC GOAL 6: EVALUATION OF WORKFORCE EDUCATION AND TRAINING PROGRAM**

Evaluation, measurement, and verification (EM&V) studies for the IOU energy efficiency and other demand-side management programs serve a number of functions, including supporting development and refinement of programs, verifying prior savings, and supporting the determination of shareholder incentives. These studies are driven in large part by the primary objective of these programs – resource acquisition, but they also address market transformation and other objectives.

Prior EM&V studies have not systematically addressed the skills and other characteristics of workers and contractors responsible for the installation and maintenance of energy efficiency measures and systems or the impact of these characteristics on performance. At present, a limited set of contractor characterization studies are in the planning phase. In addition the EM&V studies have not addressed the extent to which variations in work quality explain differences between ex ante and ex post energy savings.

The EM&V studies focused on the WE&T programs (e.g., trainings and other educational programs offered by IOUs, partnerships between the IOUs and educational institutions and community-based organizations) have not focused on skills acquisition and its impact on energy savings, but rather mostly on DSM investment decisions by end-users or increased DSM sales by contractors. As a general rule, data collected from participants in IOU offered trainings are not designed to support assessments of programs focused on skills development. Methods for assessing the contribution of IOUs to the outcomes of partnerships with educational institutions and community-based organizations have not been developed either.

The implications of the limited attention to work quality and workforce characteristics is significant, particularly as the goals for IOU energy efficiency programs are both increased and broadened. The lack of studies on the characteristics of contractors and workers and on the extent to which work quality affects energy savings limits the extent to which the benefits of workforce initiatives can be evaluated. The lack of information on the benefits of workforce initiatives means that opportunities for increasing the cost-effectiveness of energy efficiency programs relative to renewable and traditional generation resources are necessarily overlooked. Moreover, assessments of how the IOU programs affect the broader set of objectives, including market transformation and inclusion of disadvantaged workers, are also hampered.

As a consequence and as described in more detail below, the recommendations include explicit incorporation of work quality and workforce characteristics in market assessments, process evaluations, and impact evaluations. Additional feedback will be solicited from stakeholders in the short-term. For the long-term, additional EM&V studies to address work quality and workforce characteristics are proposed.
### SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

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<tr>
<td><strong>A. Modify market assessments (e.g., workpapers for DEER and non-DEER measures; Potential, Goals, and Target studies; sector-specific market characterizations) to address work quality and workforce characteristics:</strong></td>
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<td>1. Explicitly address skill requirements and other resources required for assumed energy savings of energy efficiency measures.</td>
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<td>2. Investigate and report demand for workers with identified skills (e.g., wages, benefits, working conditions and career ladders; certifications and licensing requirements; availability of skilled workers in local labor markets; education and training programs available to workers)</td>
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<td><strong>B. Develop and adopt EM&amp;V protocols for workforce and labor market data collection</strong></td>
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<td>Protocols are to be developed to be applicable to all EM&amp;V components, including market assessments, process evaluations, and impact evaluations</td>
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<td>Limited data are presently available on the characteristics of workers participating in ESA and IOU energy efficiency programs. These data are essential in order to better understand the skills of workers and contractors responsible for installation and maintenance of energy efficiency measures, to consider relationship of work quality to skills of workers conducting work, and to assess influence of IOU programs on achievement of the State's workforce objectives.</td>
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<td><strong>C. Explicitly consider contractor and worker</strong></td>
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<td>Work quality issues are now</td>
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<td>characteristics and their impact on work quality as part of impact evaluations for specific resource programs</td>
<td>being addressed as part of selected programs, additional attention regarding the measurement of work quality and the underlying factors responsible for variations in work quality is required. Strategies to promote work quality, including certification requirements for workers and contractors, should also be part of evaluation. ii. Specific resource programs to consider include: Advanced Lighting Programs and CALCTP Certification, Residential HVAC Quality Installation/Quality Maintenance, Non-residential HVAC Quality Installation/Quality Maintenance, and new construction programs</td>
<td>Have concerns: Emphasize importance of clearly defining quality for pilots for on-going studies, including CEC and potential IOU studies comparing CALCTP and non-CALCTP projects. Longer-term: Select programs where work quality is expected or known to be an issue (e.g., programs with complex measures and systems, where quality is costly to identify, and where incentives for quality are weak. Develop plans for explicitly addressing work quality.</td>
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<td>D. Modify program theory and logic models, program tracking systems, program performance metrics (PPMs), and process evaluations for adopted recommendations from SG_1, SG_2, and SG_3.</td>
<td>While Guidance Document will provide some suggestions on how to revise key EM&amp;V program elements, these suggestions need to be more fully developed with stakeholder input for those recommendations that are adopted.</td>
<td>Support: Consistent with CPUC direction. Have concerns: Short-term: Stakeholder feedback on how best to evaluate proposed recommendations. Long-term: Incorporate revisions for adopted recommendations into Program Implementation Plans and EM&amp;V plans.</td>
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<td>E. For IOU workforce education and training programs, develop and test methodologies for assessing implications of IOU initiatives related to skills development and partnerships on resource acquisition and other broader objectives for energy efficiency</td>
<td>The IOU WE&amp;T programs and the associated impact evaluations have focused on &quot;market building&quot; activities. An increased emphasis on skills development and on partnerships (SG_1 recommendations) with core educational institutions and community organizations will require adoption of new approaches to EM&amp;V. While the IOUs have various on-going efforts related to skills development and partnerships, assessments of the benefits of these initiatives (i.e., skills development and partnerships) to the IOU ratepayers are needed if additional</td>
<td>Support: Have concerns: Short-term: Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships. Identify programs and EM&amp;V approach where significant IOU resources are allocated currently to skills development and partnerships.</td>
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## SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

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<td>resources are to be allocated to these activities.</td>
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<td>Long-Term: Develop and implement pilot projects to test how best to assess the benefits of these initiatives to IOU ratepayers</td>
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Recommendations for Strategic Goal #7 (Evaluation of Web Portal) are currently being developed.
February 11, 2014

Ms. Carol Zabin  
Chair, Berkeley Don Vial Center on Employment in the Green Economy  
2521 Channing Way #5555  
Berkeley, CA 94720  
zabin@berkeley.edu

Re: Statewide Workforce Education & Training (WE&T) Strategic Planning project

Dear Carol,

My company, Hangtown Electric, Inc., recently received an update of the Stakeholder Feedback Webinar for the Statewide Workforce Education & Training (WE&T) which took place on January 30, 2014. I would like to share my thoughts on the framework of the contractor standards that was outlined on this call:

1. **Initial Recommendations:** Hangtown Electric, Inc. strongly supports UC Berkeley Don Vial Center’s initial recommendations for how the utilities should operate their workforce education and training program. Experience has proven that energy savings is directly related to the education, training, experience and competence of the contractor performing the work.

2. **Contractor Standards:** We actively work in the energy efficiency and renewable energy market. However, we want to make sure that we can fairly compete based on the best value we can deliver to customers. All of our apprentices have completed a rigorous, privately funded, five year apprenticeship program. Many apprentices have also completed an additional intensive training in areas like advanced lighting controls, solar installations, electric vehicle equipment installations, energy auditing, etc. We know that this training results in increased savings and return on investment for the customer. However, it is easy for our competitors to hire temporary, inexperienced labor and underbid us. While a lower price can seem appealing, it ultimately results in untrained electricians completing energy measures that don’t achieve their specified savings.

3. **Prequalified Contractors:** Contractors should be pre-qualified to perform work under these programs, and the pre-qualification should include proper licensing, bonding, workers compensation, good safety records, utilization of registered apprentices, and demonstrated abilities to perform the work.

4. **Third Party Certifications:** Having well-trained workers can greatly contribute to an energy efficiency project being done on-time, safely, and with the highest quality standards. This leads to more satisfied customers and maximal energy savings. This is why we support third party certifications for workers, such as the California Department of Industrial Relations Electrician Certification Program and the California Advanced Lighting Controls Training Program (CALCTP).
5. **Fair Wages:** Fair wages for well-trained workers will ultimately help Hangtown Electric, Inc. to be safer, more efficient, and generate more value for the customer. That is why we support the requirement of prevailing wages for municipal, university, school, and hospital (MUSH) projects. We also support a living wage floor for all other projects.

6. **Meeting Codes:** At a minimum, all work that is performed should be properly permitted, inspected, and meet the new Title 24 Green Building Codes so that customers can enjoy the benefits of knowing these are in compliance with existing rules and regulations.

7. **Compliance:** Construction is an industry that is subject to many informal and illegal practices due to the transient and short-term nature of the work. In order to ensure a fair competitive environment for contractors who choose to follow the rules, a stronger compliance system to measure whether contractors are properly installing the energy efficiency measures as well as following the workforce standards is necessary.

Sincerely,

Johnnie R Smith  
V.P., Hangtown Electric, Inc.
STRATEGIC GOAL 1: WORKFORCE EDUCATION AND TRAINING PROGRAM MODIFICATION

The IOUs' dedicate most of their WE&T resources for growing the market for energy efficiency services rather than skills-building for the workforce who carries out the work, and the current structure of their programs is not well-suited to improve the DSM skills and knowledge of large numbers of workers in the key occupations that impact energy efficiency outcomes. By increasing the emphasis on skills development, the WE&T programs can better meet the CLEESP's vision that “By 2020, California's workforce is trained and fully engaged to provide the human capital necessary to achieve California’s economic energy efficiency and demand-side management potential.”

Most of the IOUs’ WE&T resources are dedicated to very short, stand-alone, free classes open to any interested person. Most participants are either end-users (building managers or home owners who are potential buyers of energy efficiency services) or contractors and professionals in managerial positions (sellers of energy efficiency services). The offerings are not effective at reaching workers in the key EE/DSM occupations or at developing workers' skills:

- Most current offerings do not involve the state’s core education and training institutions for the key EE/DSM occupations, thus missing an opportunity to incorporate DSM content into the main period of training that workers in key occupations go through. These are: UC/CSUs for professionals, and apprenticeship and community colleges for the trades.
- Most current offerings do not adhere to best practices for skill-building training. Best practices include clear prerequisites and learning outcomes for each class, classes that are sequenced and build upon each other, competency testing at class completion, tied to recognized, stackable credentials, hands-on learning, and for incumbent workers, a clear commitment and involvement by their employers.
- The 2010-2012 WE&T process evaluation by ODC found that the Centergies classes heavily emphasize information about technologies, rather than skill-based outcomes.
- Due to the course structure and content delivery style, ODC concluded that participation in Centergies training does not guarantee that participants will have obtained the skills necessary to carry out high-quality work.

Recommendations

We recommend the IOUs direct a significant portion of WE&T resources to EE/DSM skill-building activities for the critical occupations. Our recommended approach would affect occupational transformation on a broad scale by leveraging the state’s core accredited education and training institutions, and promoting the identification of clear certifications and skill standards.

The IOUs should substantially increase WE&T resources for workforce development (e.g. to at least $80 million per three-year cycle), and then redesign this programming with increased participation and oversight from state workforce development experts. This process could be administered by the IOUs or by a 3rd party via RFP. An alternative approach would have the CPUC develop the necessary interagency agreement with the CA Labor and Workforce Development Agency to transfer administration of some or all of these activities to the CA Workforce Investment Board or a non-profit organization. This alternative would ensure closer cooperation between the energy, education and labor agencies.

We recommend developing comprehensive implementation plans to customize programming targeted to each of the three career pathways. These plans should align with and leverage the core education and training institutions (UC/CSU for professionals, CCC and state-certified apprenticeship for the trades). Each of the plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation. We offer more detailed recommendations on processes for prioritization and program delivery in our full guidance plan. We also present three “Phase 1” programs that can be initiated in 2014, which are low-hanging fruit that can serve as learning arenas for the new WE&T configuration.

Our proposal involves structured oversight from a governing board of key state workforce, education, and energy agencies, plus technical experts (e.g. the Lawrence Berkeley Lab). The governing council should appoint industry and subject-matter experts to an advisory group for each occupation, which will be responsible for identifying certifiables and skill standards.

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1 CLEESP, p 74.
2 2010-2012 WE&T Centergies Process Evaluation, ODC. Pages 12, 13
3 Ibid, p 14
4 This may require accelerated direction from the CPUC (e.g., Advice Letter process at a minimum)
## SUMMARY OF RECOMMENDATIONS:
### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<td>A. Allocate a significant amount of WE&amp;T dollars to targeted programs for workers’ skill-building:</td>
<td>Although the CLEESP mandates workforce education and training, most of the Centergies budget currently goes towards educating buyers and sellers of energy efficiency services, rather than skills development for workers involved in the design, installation, and maintenance of EE/DSM work. Most of the Connections budget goes to consumer education, not career development. Workforce development and market development require a different guiding strategy for programming, and distinct activities and delivery mechanisms. There is a need for increased efforts in the area of workforce development in order to carry out the CLEESP vision, which will require a significant increase in resources. Our recommended allocations represent the minimum amount that we believe would have a statewide impact on workforce development in each of the four categories (professionals, res trades, non-res trades and inclusion). We prioritize among the four categories based on the following criteria:</td>
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<td>1. We recommend that at least $80 million of WE&amp;T funds per three-year cycle go to workforce development in order to affect meaningful change in this arena.</td>
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<td>2. Within the $80m (per 3-year cycle) for workforce development, we propose the following allocation:</td>
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<td>• $20m for professionals</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Get stakeholder feedback on the quantity of $ to be allocated to workforce dev’t vs. market dev’t; e.g. how much $ is needed for different types of activities, and how to prioritize programming based on needs and opportunities.</td>
<td>AGREE, BUT SEE COMMENTS</td>
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<td>• $20m for non-residential trades</td>
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<td>• $20m for residential trades</td>
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<td>• $20m for inclusion</td>
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<td>Connections 9-12 career prep/awareness counts in inclusion. The rest is counted under market-building.</td>
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The CPUC is poised to consider a Rolling Portfolio review for the ratepayer-funded energy efficiency programs, whereby the CPUC would authorize long-term funding (e.g. 10-year funding cycle) for all programs and would entertain interim changes to program content and design on a fixed schedule or other not yet identified triggering events. What amount should be allocated for WE&T if long-term funding is adopted by the CPUC? What factors should be considered in allocating funding for WE&T programs, and program modification? An even funding split between professionals, non-residential trades, residential trades, and workforce inclusion efforts is nowhere justified in the report. Training funds allocation among industry sectors and WE&T goals should be in proportion to ratepayer expenditures on those sectors, the energy savings potential of the sector, or the number of projects the sector/training goal could generate.
## SUMMARY OF RECOMMENDATIONS:
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<td><strong>B. Redesign workforce skills development programming</strong></td>
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<td>1. Phase out short, stand-alone classes as a mechanism for skills-building program delivery (except classes designated for 20% dedicated to market development)</td>
<td>Current programming for workforce skills development is limited. Most programming in this area does not follow best practice for skills development and does not fully leverage the rich infrastructure of CA accredited education and training institutions. Short, open-door classes are still the primary program delivery mechanism, although this is not an effective skills-building strategy.</td>
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<td>2. Orient programming around partnerships with core accredited education and training institutions for each major occupation/career pathway: professionals; commercial trades workers, and residential trades workers</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group Have concerns: IOUs have concerns about how to get credit for energy savings from programs based on partnerships.</td>
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<td>Get stakeholder feedback on how to structure effective partnerships for each key institutional partnership. Discuss with stakeholders, IOUs and CPUC how to incorporate partnership-based activities with other IOU program objectives re: energy savings.</td>
<td>AGREE, BUT SEE COMMENTS</td>
<td>We strongly support the recommendation that the utilities orient programming around partnerships with core accredited and training institutions for each major occupation/career pathway.</td>
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| **C. Career pathway plans:** | | | | | |
| Design an implementation plan for each major career pathway (professional, commercial trades, residential trades) with the following elements: | | | | | |
| 1. Each of the 3 plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation (i.e. UC,CSU, and CCC for professionals; DAS and CCC for commercial trades; CCC for residential trades). | | | | | |
| 2. Governing council should appoint Industry and SME advisory group for each occupation, which will be responsible for identifying certifications and skill standards for each. | | | | | |
| 3. Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions. | | | | | |
| 4. Plan should determine key opportunities to | | | | | |

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<tr>
<td>1. Incorporate EE skills and knowledge at specific points in the career pathway for priority occupations. Key points in the career pathway are pipeline preparation, core post-secondary education, and incumbent worker training.</td>
<td>and consensus on certifications and skill standards for the critical occupations. iii. The IOUs have internal expertise on emerging technologies, and certain areas of quality problems (not always within the WE&amp;T staff, however). They do not have expertise on career pathways or workforce development strategies.</td>
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<td>2. Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms.</td>
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<td>3. Funds should support incorporation of EE specific knowledge and skills through support for curriculum development, train the trainer etc.</td>
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<td>4. Programming should leverage funding for classroom and other training from key institutions wherever possible.</td>
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<td>5. Programming should use sector strategy approach for incumbent worker training, based on commitments from multiple employers.</td>
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<td>6. In-house IOU skills training should be limited and reserved to cover gaps that partners can’t fill, with commitment to transfer courses to other training institutions over time.</td>
<td>and consensus on certifications and skill standards for the critical occupations. iii. The IOUs have internal expertise on emerging technologies, and certain areas of quality problems (not always within the WE&amp;T staff, however). They do not have expertise on career pathways or workforce development strategies.</td>
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<td>7. Governance and accountability:</td>
<td>i. Although some ad-hoc partnerships have been successful, there is a lack of internal capacity in the IOUs WE&amp;T programs to effectively develop broad-based partnerships with each of the state’s key training institutions for EE/DSM occupations.</td>
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<td>1. Plan must be approved first by governing board composed of key state workforce, education, and energy agencies, and technical experts</td>
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<td>2. CPUC should consider recommendations of governing board and approve final plan</td>
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<td>3. Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation</td>
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**COMMENTS**

*The Governing Board is proposed to comprise key state workforce and energy agencies and technical experts. It is imperative that the Governing Board also include representatives from each trade, as well as academic experts with experience in state building code energy section development, to ensure program accountability and efficacy.*
### SUMMARY OF RECOMMENDATIONS:
**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<td>AGREE We support a formalized role for the Labor Agency and CalWIB in WE&amp;T program development</td>
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**E. Phase 1 Programs**

We suggest the following programs that can be initiated in 2014 for each occupational group, which are low-hanging fruit that can serve as learning arenas for the new configuration:

1. **Professionals:** RFP to be let out to 4-year accredited architecture and engineering departments to incorporate energy efficiency skills and knowledge into their curricula for degree programs.
2. **Commercial trades:** Partnership/sector strategy with CA Division of Apprenticeship Standards to incorporate EE skills and knowledge into journey upgrade programs for key crafts.
3. **Residential trades:** Review and consolidate existing Community College partnerships around supporting skills-building best practices at Colleges.
4. **Inclusion:** RFP for Pilot Project Energy Efficiency Bridge Program in one region that leverages other investments and connects to apprenticeship.

**i.** The changes we propose are significant and will take time to fully implement. We offer the Phase 1 programs as concrete programs that can be carried out in the near-term as the larger framework is developed and put into place.

**ii.** We received clear feedback from professional 4-year programs about the huge potential value of an IOU-sponsored RFP to incorporate leading EE/DSM skills into curricula.

**iii.** DAS has already indicated its eagerness to participate in this type of partnership on EE/DSM skills.

**iv.** Our research indicates a number of productive relationships with local Colleges and community training institutions exist.

**v.** There are some examples of bridge programs that connect disadvantaged youth with pre-apprenticeship.

**Support:**

- CA DAS supports the apprenticeship proposal;
- UC Berkeley architecture department is a strong supporter of the professional proposal.

**Have concerns: None?**

**F. Administrator:**

Administrator should have the capacity and willingness to manage and staff the plan outlined above.

**Option 1.** IOUs manage and staff guidance plan, or issue an RFP for a 3rd party implementer.

**Option 2.** CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization.

Although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development partnerships with the state’s core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative administration of the workforce development portion of WE&T would be more effective.

**Option 1.** Support:

- Most IOU WE&T staff would like to retain primary ownership over the funds. Several expressed a desire/willingness to include more workforce partners in the program design process we’ve described.

**Concerns:**

- some of the stakeholder advisory group expressed concern about the IOUs’ capacity to effectively execute the type of partnership structure we describe.

**Option 2.** Explore the pluses and minuses of each option, soliciting stakeholder feedback and adding detail to each proposal.
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<td>retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&amp;T portfolio overall.</td>
<td>Option 2 Support: Members of the stakeholder advisory group (including the state labor agencies) liked the idea of a more systematic, collaborative tie between the WE&amp;T programs and the state’s other primary workforce development and education agencies, and the potential it presents for program alignment and fund leveraging. Concern: Most IOU WE&amp;T staff are wary of relinquishing ownership to an outside entity. Some stakeholders and IOUs expressed concern that there isn’t currently a clear choice of a non-profit to lead the Option 2 effort. Several noted issues that may arise around maintaining CPUC oversight over ratepayer funds.</td>
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STRATEGIC GOAL 2: INCLUSION FOR DISADVANTAGED WORKERS

Currently, the substantial and diverse investments being made by the IOUs in the energy efficiency and DSM programs do not include interventions to support the creation of middle-class career pathways for low-income communities, communities of color and other disadvantaged populations. While these investments offer a promising opportunity to build middle-class career pathways for low-income people and jobseekers with barriers to employment ("disadvantaged workers"), there are several barriers in place that prohibit the IOUs from achieving the California Long Term Energy Efficiency’s Strategic Plan goal of increasing “participation from within minority, low income and disadvantaged communities in achieving California’s economic energy efficiency potential” 5:

- The work of investor-owned utilities in California was not historically seen as public investments akin to government public works projects, and thus the public policy direction of requiring inclusive hiring policies and family-supporting wages applied to publicly-funded capital projects has only been recently considered by the CPUC.
- The IOUs do not currently have clear authority and direction to allocate resources to proven practices that increase minority, low-income, and disadvantaged worker participation in public works and energy efficiency projects.
- The IOUs currently lack of a working definition of "disadvantaged worker" and lack clear performance metrics or program goals by which to measure progress in hiring these workers.
- Current data collection methods do not provide a comprehensive picture on the demographic profile of the workforce being employed to carry out EE/DSM programs by occupation or job category, nor do they collect detailed data on compensation structures and wages by occupation and job category. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect this data.
- The IOUs currently lack clearly articulated pathways for disadvantaged workers to advance along a career ladder as they gain more experience, training and skills. An effective ecosystem of agencies and organizations (including low income weatherization providers, community based organizations, community colleges, local and state workforce investment boards, utility workforce development staff, labor unions and contractors) can create a pipeline of ready and able workers through effective recruitment, training and placement of disadvantaged workers.
- The IOUs currently lack the contracting and procurement tools need to shape incentives or requirements for contractors to hire trained and ready workers from disadvantaged communities. Contracts for higher-paid, higher-skill work (such as EE work in schools, universities and hospitals), tend to be smaller and do not always require deep, complex retrofits, which may prevent contractors from bringing on hired and ready workers from disadvantaged communities.

Integrating procurement and contracting ("demand-side") strategies with recruitment, screening, skills development, training, wrap-around services and credentialing ("supply-side") strategies is essential to achieving the full scope of California’s EE goals.

Recommendations

The CPUC should direct IOUs to measure and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals. The CPUC’s direction should have clear metrics and performance standards to meet these goals.

We propose a two track strategy. First, the IOUs should ensure the quality of jobs created by EE investments. We recommend that the IOUs set a wage floor for the ESAP, Direct Install, and Third Party programs, since these program implementers and contractors have direct contracting or subcontracting relationships with the IOUs. Second, we recommend that the IOUs launch a pilot MUSH market program that includes a targeted hire program. This MUSH sector program can follow the standards used in public works construction, where targeted hire programs, tied to apprenticeship, have been very successful in many local governments in California and nationally.

Data collection efforts are necessary to support these goals. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect workforce data to evaluate job quality and the demographic profile of workers. We recommend that this be done through an on-line workforce reporting system (such as Elations or LCP Tracker); these systems are inexpensive and have been used by many awarding agencies in the state. In addition, the IOUs should adopt a definition of disadvantaged worker and apply it meaningfully and consistently across all EE programs. This definition can then be used to design inclusion programs, and to track and measure results. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria 6); and/or b) an individual who is a resident of a high unemployment zip code in her/his county 7. The IOUs should also institute data collection as

Once a definition is set, the IOUs should set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs. We recommend a conservative initial goal (such as 15% of new entry level job openings in IOU supported EE/DSM work) in order to ensure success and acceptance by both IOUs and contractors. This goal can be increased over time as programs and contractors and IOU staff become familiar with them. The results of these goals can be tracked by the workforce reporting system and made publicly available, as a scorecard, similar to that used in General Order 156 which has been successful for promoting diversity in procurement. Contractors meeting goals should receive additional points in the next round of program procurement.

In order to ensure that workers are trained and ready to perform higher skill work, we also recommend funding for pre-apprenticeship training programs that will provide disadvantaged workers the skills, training and abilities needed to be successful in entry-level MUSH and large commercial EE and utility employment. This funding should be released in the form of an RFP, and should encourage the mobility of ESAP and other residential workers into higher wage higher skilled jobs in the MUSH sector.

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5 Page 74
6 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.
7 The unemployment rate is 150% of the median unemployment rate for the county.
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<tr>
<td>A. Prioritize creation of good-paying jobs and workforce diversity as key IOU goals along with efficiency outcomes:</td>
<td>Successful workforce inclusion programs have established goal setting and monitoring in order to improve outcomes. In order for the IOUs to have the authority to direct resources towards these efforts, they need direction from the CPUC.</td>
<td>Support: Some equity groups, including those in the Stakeholder Advisory Group, support this recommendation.</td>
<td>Set stakeholder feedback on language of proposed CPUC direction.</td>
<td>AGREE, BUT SEE COMMENTS</td>
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<td></td>
<td>General Order 156 is an example of the IOUs' ability to create a new program and achieve diversity goals in response to specific CPUC direction.</td>
<td>Have concerns: IOUs are concerned that the promotion of job creation and workforce diversity in EE/DSM programs cannot be resourced using ratepayer funds.</td>
<td></td>
<td>GO 156 and D12-11-005 already authorize and/or require the utilities to promote, measure and report on quality job creation and workforce diversity. Additional directives are not necessary. However, the WE&amp;T Consultant should address whether stakeholder participation and enforcement mechanisms could better guide program development efforts.</td>
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<tr>
<td>B. Define Disadvantaged Worker meaningfully and consistently:</td>
<td>Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring.</td>
<td>Support: Some equity groups support this recommendation.</td>
<td>Test revised definition with Stakeholder Advisory Group.</td>
<td>AGREE</td>
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<td></td>
<td>i. Many existing public works programs have developed similar definitions of Disadvantaged Worker. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility.</td>
<td>Have concerns: IOU staff and ESA contractors expressed concern whether experienced ESAP workers should be included in this definition to reinforce ESAP as an entry point to EE/DSM careers for disadvantaged workers. (ESAP dropped from definition as a result of stakeholder consultation.)</td>
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<td>ii. The combination of these two sets of criteria have proved in other programs to identify an adequate number of individuals who most need employment opportunity and who are capable of developing the necessary skills to do good work.</td>
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<td>iii. IOU staff and ESA contractors expressed concern whether experienced ESAP workers should be included in this definition to reinforce ESAP as an entry point to EE/DSM careers for disadvantaged workers. (ESAP dropped from definition as a result of stakeholder consultation.)</td>
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<tr>
<td>C. Set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</td>
<td>Models from other successful programs.</td>
<td>Support: Some equity groups support this recommendation.</td>
<td>Develop an initial goal in consultation with key stakeholders.</td>
<td>AGREE</td>
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<td></td>
<td>Current lack of specific goal.</td>
<td>Have concerns: IOU staff, contractors, and members of the Stakeholder Advisory Group expressed the following concerns: How will the goal be set? Will goal apply across the board to all EE/DSM programs? Will each program need to meet the goal or will utilities be allowed to achieve goal by averaging results across programs, e.g. ESAP compensates for lack of inclusion elsewhere? Desire for voluntary goal vs. desire for penalties in the event goal is not achieved. How will efforts to drive inclusion affect cost-effectiveness? Will CPUC adjust</td>
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<td>Successful experience from G.O. 156.</td>
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8 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

9 The unemployment rate is 150% of the median unemployment rate for the county.
## SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<tr>
<td>2. This goal can be increased over time as the programs are developed and participants become more familiar with them.</td>
<td>cost-effectiveness requirements to reflect inclusion goal?</td>
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<td>Test detailed reporting recommendations with stakeholders.</td>
<td>AGREE</td>
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<td><strong>D. Institute a required, electronic workforce reporting system for EE/DSM contractors to capture information:</strong></td>
<td>Successful equity and inclusion programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements.</td>
<td>Support: Labor groups familiar with reporting data support this recommendation. Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concern over the potential cost of reporting data. IOU staff have expressed concern over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.</td>
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<tr>
<td>1. Require monthly reports using LCP tracker or some other established program that works with payroll companies.</td>
<td>Support: Labor groups familiar with reporting data support this recommendation. Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concern over the potential cost of reporting data. IOU staff have expressed concern over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
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<td>2. Include the following data points:</td>
<td>i. Hours worked ii. Rate of pay iii. Disadvantaged status, zip code of residence iv. Race, ethnicity, and gender v. Trade/occupation level g. Certifications held</td>
<td>Successful equity and inclusion programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements.</td>
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<tr>
<td>3. Make the reports publicly available.</td>
<td>Support: Labor groups familiar with reporting data support this recommendation. Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concern over the potential cost of reporting data. IOU staff have expressed concern over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
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<tr>
<td>4. Contractors who achieve or exceed goals will receive compliance points in next round of procurement.</td>
<td>Support: Labor groups familiar with reporting data support this recommendation. Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concern over the potential cost of reporting data. IOU staff have expressed concern over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
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<td><strong>E. Ensure baseline quality of jobs created by efficiency investments:</strong></td>
<td>Support: Labor groups familiar with reporting data support this recommendation. Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concern over the potential cost of reporting data. IOU staff have expressed concern over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
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<td>Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)</td>
<td>Interviews indicate ESAP wages range from $12/hour to high $20s/hour. LA DWP’s utility pre-craft worker program starts trainees at $16/hour. Higher wages typically contribute to higher skill development, and better outcomes.</td>
<td>Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs. Have concerns: Some IOU staff, one equity group (Brightline Defense), and contractors are concerned. A wage floor could increase cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. ESAP contractors have concerns that they will be expected to bear burden of wage floor without overall program budget increase. Cost of collecting and reporting data.</td>
<td>Get feedback on $16 wage floor from Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
<td>AGREE, BUT SEE COMMENTS</td>
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<td>ii. LA DWP’s utility pre-craft worker program starts trainees at $16/hour.</td>
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<td>iii. Higher wages typically contribute to higher skill development, and better outcomes.</td>
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<td><strong>F. Improve job opportunities created by created by efficiency investments:</strong></td>
<td>Interviews indicate ESAP wages range from $12/hour to high $20s/hour. LA DWP’s utility pre-craft worker program starts trainees at $16/hour. Higher wages typically contribute to higher skill development, and better outcomes.</td>
<td>Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs. Have concerns: Some IOU staff, one equity group (Brightline Defense), and contractors are concerned. A wage floor could increase cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. ESAP contractors have concerns that they will be expected to bear burden of wage floor without overall program budget increase. Cost of collecting and reporting data.</td>
<td>Get feedback on $16 wage floor from Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
<td>AGREE</td>
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<td>California Labor Code requires prevailing wages and apprenticeship utilization on public capital projects. Contrary to this general</td>
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<tr>
<td>Align the requirements of ratepayer- or IOU-funded efficiency investments in public sector buildings with the prevailing wage and apprenticeship standards of California public works projects.</td>
<td>public policy, it exempts “work done directly by any public utility company pursuant to order of the Public Utilities Commission or other public authority.” Cal. Lab. Code Sec. 1720(a)(1).</td>
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<td>G. Consolidate all incentives and efficiency programs that target the municipal/government, university, school, or hospital sectors into a comprehensive MUSH program. Introduce an inclusion requirement in the MUSH program:</td>
<td>Energy Upgrade California and Sierra Nevada Energy Works. Programs in San Francisco, Portland and Seattle utilities; PLAs with targeted hire requirements at LA-METRO, LAUSD, CRA/LA, LACCD.</td>
<td>Support: Have concerns: IOU staff have expressed concern that increased coordination and adoption of “new” policies along multiple programs will delay implementation of these practices. IOU staff express concern over the cost of compliance with targeted hiring programs may make reduce cost-effectiveness of MUSH programs. Requirement that customers use contractors off pre-qualified list may discourage participation. Fear that Disadvantaged Workers may not have the skills necessary to perform the work. Contractors may not have sufficient work to add new hires to meet DW targeted hire requirement.</td>
<td>Gather more data on MUSH programs to build out recommendations. Test detailed recommendations at non-residential EE stakeholder meeting in January.</td>
<td>AGREE, BUT SEE COMMENTS</td>
<td>The CPUC is going to consider consolidating programs to create fewer funding categories to allow IOUs greater flexibility in shifting funding among programs (e.g., merging lighting with commercial, etc.). The team should provide a recommendation on whether a separate MUSH funding category is necessary to effectuate the intent of the exert consultant’s team.</td>
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<td>1. Bundle programs to create scale for contractors.</td>
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<td>2. Focus MUSH incentives on deep retrofits and whole building programs.</td>
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<td>3. Increase allocation for this program to at least $100 million.</td>
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<td>4. Apply aspects of Energy Upgrade California as a model framework:</td>
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<td>a. Establish pre-qualified list of contractors.</td>
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<td>b. Require MUSH incentive recipients to work with IOU-designated contractors.</td>
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<td>5. Restrict contractor participation to increase market share and positive outcomes for participating contractors:</td>
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<tr>
<td>a. Require competitive application process to reward contractors that meet or exceed worker skill standards, Disadvantaged Worker hiring goals, and wage floors.</td>
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<td>6. Open list to new contractors on a restricted timeline (e.g. every 2 years).</td>
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<td>H. Establish training bridge program to link residential EE</td>
<td>Power Pathways, CCCO Career Advancement Academies, Pre-apprenticeship collaborations</td>
<td>Support: Education and labor stakeholders</td>
<td>AGREE, BUT SEE COMMENTS</td>
<td></td>
<td>The consultant team should provide more specificity in the criteria for the RFP, implementor expertise and program content</td>
</tr>
</tbody>
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## SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<tr>
<td>workers to non-residential EE jobs.</td>
<td>such as SF City Build, IBEW Local 11 and LATTC</td>
<td>Have concerns: Some stakeholders have indicated concerns with the viability of ESAP workers entering in bridge programs; some ESAP contractors indicate there are viable career pathways within ESAP employers.</td>
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<tr>
<td>I. Strengthen ESAP and MIDI as entry point to a higher skilled, higher-paid career in commercial and industrial EE:</td>
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<tr>
<td>1. The IOUs should apply the wage floor and workforce reporting requirements to MIDI as the program is developed.</td>
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<td>2. Education and workforce development partners should articulate career ladder and opportunities for advancement to ESAP and MIDI workforce.</td>
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<td>i. Interviews and EE Decision indicate expansion of MIDI program.</td>
<td>Support: Some equity advocates were interested in learning more about the details of the recommendation to determine their support.</td>
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<td>ii. The level of skills required for residential ESAP and MIDI programs are similar: lower and thus more suited to an entry-level position. However, on the job, ESAP and MIDI installers gain valuable experience in both soft and hard skills, preparing them to move up the ladder.</td>
<td>Have concerns: One equity group (Brightline Defense) and IOU staff expressed concern over a wage floor increasing the cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. Contractors were concerned over the wage floor: Will contractors be expected to bear burden of wage floor without overall program budget increase? They are also concerned about the cost of collecting and reporting data.</td>
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<td>iii. The contractors who run the ESAP programs tend to hire from the local, low-income community, making it a natural entry point for a more diverse workforce. However, it should not be an end point for low-income workers.</td>
<td>Test $16/wage floor with Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
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STRATEGIC GOAL 3: INTEGRATING WORKFORCE EFFORTS WITH RESOURCE PROGRAMS

There is substantial evidence that improper equipment installation, operation, and maintenance lowers the realized energy savings of energy efficient measures and most likely explains some of the differences between ex ante savings estimates and ex post evaluations. Specific sources include the 2011 WE&T Needs Assessment, where results from case studies for several distinct market sectors are reported, an extensive annotated bibliography that will form an appendix to the guidance plan, and recent interviews with current and former IOU staff, subject matter experts, and industry professionals, which were conducted for this project. This evidence spans complex advanced lighting and HVAC systems as well as installations of simpler energy efficiency equipment.

The extent to which improper equipment installation, operation, and maintenance reduces the energy outcomes for California’s Demand Side Management (DSM) programs is unknown. While specific studies have investigated the extent of poor installations for specific technologies (e.g., HVAC, advanced lighting, building construction), comparable data across measures and programs are not collected for California’s DSM programs that could systematically determine where poor work quality may be reducing energy savings.

Workers can acquire, through training and on-the-job experience, the necessary skills to perform high quality work, but training alone is not a sufficient condition to ensure high quality work. The market must also demand quality work. The IOU DSM programs have introduced various program requirements to ensure high quality work, ranging from contractor licensing requirements to quality assurance programs to customer information; however, these are minimal compared to the much more robust workforce and related standards found in many other sectors in the economy, including in segments of the building and construction industry, the key industry for energy efficiency investments. The current process for program planning, approval, and implementation does not specifically reward the IOUs for ensuring high work quality nor penalize them when energy savings are left on the table due to improper installation, operation, or maintenance of energy efficiency measures. The common response to poor work quality continues to be support for training and on-the-job experience, as well as increased communications, customer and IOU teams, that includes referrals to the IOU for further corrective action.

The following recommendations 1) suggest a series of process improvements to better understand and incorporate the impacts of work quality on energy goals and 2) suggest workforce standards for IOUs to incorporate into the management of EE programs that will both reduce the risk of inaccurate savings estimates due to work quality, and encourage higher performing and more qualified contractors to participate in DSM programs.

Recommendations

Process Improvements: First, we recommend a series of process improvements to create a stronger incentive structure to ensure proper installation and maintenance of energy efficiency measures. The existing program development, approval, implementation, and evaluation processes neither reward nor penalize the IOUs for their influence over work quality and its impact on energy savings. Assumptions about the installation and performance of energy efficiency equipment are based on technical specifications and engineering assessments, and fail to account for the impact of worker skills and performance on equipment performance (and energy savings). Often, equipment is assumed to be installed correctly and in-service, without either specifying the level of technician skill required or verifying quality in the field to substantiate those claims.

The CPUC applies discounts (“haircuts”) to the IOU-claimed energy savings to avoid over-estimating, but these reductions do not isolate the effects of different program requirements or workforce standards. Since the IOUs perceive that stricter program requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily adopt higher standards, unless there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear incentive if they evaluated performance in real-time, but they mostly are limited to catching fraudulent behavior. Real-time across the board inspections are costly and increase transaction costs and program friction for customer. Finally, the program implementation and evaluation cycles are not conducive to providing timely feedback on effective program requirements, and as stated above, impact evaluations do not document or isolate work quality problems.

Our recommended process improvements address the shortcomings of the current quality assurance and discount process, and call for the identification of minimum contractor requirements to avoid over-estimating and allow for more accurate reporting of performance.

Workforce Standards: Second, we recommend several different types of contractor and workforce standards designed to screen out less qualified contractors and create an environment to encourage participation by high performing contractors in energy efficiency work. Workforce standards refer to interventions that shift the competitive environment toward higher performance. Workforce standards are a quality control mechanism that can reduce the need for more expensive post-installation quality assurance activities.

The lack of available information on work quality and its impact on the portfolio should not be used as an excuse to delay adopting workforce standards, many of which are “no regrets” or “do-no-harm” approaches with multiple co-benefits, including deeper retrofits. Because different standards can have the same effects in the labor market, there is some flexibility in how standards can be applied to different programs. For example, establishing a wage requirement can have the same effect as a skill requirement because if all contractors have to pay higher wages, contractors who have invested in higher skilled workers will be able to more effectively compete in the market. Similarly, policies to contract with high performing contractors will result in the use of skilled workers as effectively as establishing specific skill standards for workers for each program or technology. Each of these types of standards acts to support higher quality contractors, and screen out or improve the performance of lower quality contractors.

In making recommendations, we mapped the resource programs by delivery mechanisms, target market, and technology in order to identify the simplest approach given the existing program structure. Given the range of technologies currently offered and the ever-changing technological environment, it is very difficult to establish and maintain, not to mention enforce, appropriate specific worker skill standards for every measure and program in the IOU portfolio. When there is widespread industry agreement for particular skill standards, they are effective ways for establishing a bar for participating technicians and contractors. In the absence of agreed upon skill standards, contractor qualifications or wage IOUs would be simpler approaches to improve performance and work quality.

11 For example CALCTP for advanced lighting controls or DOE Task Analysis for different energy efficiency jobs.

12 For custom projects, which represent a large percentage of the savings in recent portfolios, customers lose rebates (and IOUs lose savings credit) when equipment is not functioning for any number of reasons, including low-quality installation. The new Efficiency Savings and Performance Incentive (ESPI) creates a mechanism that encourages IOUs to manage EE programs in a way that ensure actual savings meet or exceed estimates (for deemed measures with a high degree of uncertainty).
In our exploration and evaluation of different standards, we also identified a new model for addressing and improving contractor performance. The "best value" Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS) gradually improve performance by giving vendors or contractors more responsibility in defining quality work by reporting their efforts and their results. Because all contractors are invited to identify metrics, measure, and report their performance and added-value, high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve. This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.
### Recommendation A. Process improvements:

**Implement changes through program design, implementation, approval, and evaluation process to create stronger incentives for high quality work.**

1. **Identify and document contractor competencies and market costs and worker skills/credentials for field demonstration projects.**

2. **In developing program plans, consider and document alternative approaches for addressing workforce issues (e.g., mix of certification requirements, training opportunities, and quality assurance/verification).** Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings.

3. **Program Implementation Plans should specify how program requirements will increase the demand for quality installations.** Initial plans should consider alternative scenarios prior to selecting a specific approach. This could replace the current WE&T integration section of PIP templates.

4. **Develop a discount (haircut) to isolate the effects of work quality to apply to energy savings calculations.** When measures are first introduced, inspections of performance should be used to establish the equivalent of a measure-specific “gross realization rate” and “installation rate.” Once measure-specific rates are.

**Recommendation A.2 --** We strongly support the above recommendation, as well as the recommendation that 100% measure performance should not be assumed, but be based on average performance of a random sampling of projects measured by a neutral third-party.

*The WE&T Consultant should also consider available models for funding quality assurance and verifications processes, such as contractor fee assessments as a condition of program participation.*

We support the recommendation for a third-party to do energy savings & GHG reduction, as well as labor & contract compliance. This could be done through one, or two separate RFPs (i.e. the same 3rd party group, two separate groups, or one general 3rd party group that sub-contracts to other groups according to expertise on the above topics).

There should not be assumed 100% performance for measures installed, or across the board “haircut.” Instead, the energy performance and quality assurance should be based on average performance of a random sample of projects & should be measured by a neutral 3rd party.

**CPUC should require that IOUs hire a 3rd party group to do energy savings & GHG reduction, as well as labor & contract compliance. This could be done through one, or two separate RFPs, (i.e. the same 3rd party group, two separate groups, or one general 3rd party group that sub-contracts to other groups according to expertise on the above topics).**

The RFP for the 3rd party compliance group should include clear qualifications and expertise such a group should have.
established, samples should be used to modify rates. IOU credit should be based on results of those quality inspections.

5. Quality Assurance processes (Inspection and Verification) should focus more on quality of installation. Highly skilled technicians should be assigned to inspect installations at beginning of program and then randomly throughout programs.

6. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on quality.

7. Institute zero-tolerance policy for fraudulent behavior (for Trade Professionals, Customers, and other Contractors), with a three-year exclusion from participating in ratepayer funded programs.

8. Pay-for-performance requirements: Withhold fully crediting the IOUs and some portion of incentive payments until inspections confirm that equipment is properly installed and operational over the course of its effective useful life (or other meaningful period of time).

For projects where the total project cost is $500 or more, IOUs must require that the installed measures in a building meet existing building code before they pay out the incentive. This means that there is a verification process to prove the installation was permitted and passed inspection before the incentive is paid. Re. rec. #7: The three year exclusion should be based on ownership and management team individuals, not just company names. Banned firms often just change their inc. and or DBA to quickly re-enter programs.
B. Workforce Standards: Change the competitive environment to attract high performing contractors and screen out or improve the performance of lower qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.

1. Require CALCTP certification for contractors and technicians on all projects involving advanced lighting controls.

2. Require BPI firm accreditation (rather than individual certification) for all Whole House retrofit projects.

3. Require at least NATE certification for all projects involving residential HVAC measures. For commercial HVAC programs, require completion of a registered apprenticeship program OR US Star OR an associate’s degree in HVAC and a NATE certification OR Industry Competency Exam (ICE) and NATE certification.

4. Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility.

   i. ALL contractors and subcontractors working on projects with total costs $500 or more: proof of proper licensing, bonding, & workers compensation and building permit signed off by building inspector, if required by law.

   ii. MUSH properties, non-residential properties that are either 50,000+ square feet or lower-qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.

   Require at least NATE certification for all non-residential work and residential projects with total costs $500 or more, the utilities require that the installed measures in a building meet existing building code before they pay out the incentive, through inspector’s verification. This means that there is a verification process to prove the installation was permitted and passed inspection before the incentive is paid. This requirement would help ensure that programs are in compliance with existing law (SB 454).

   We support recommendation for tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility with the following:

   i. 50% of workers on jobsites in the last 3 years OSHA 10-hour General Industry Safety and Health Certified;

   ii. 10% workers on jobsites in the last 3 years been OSHA 30-hour General Industry Safety and Health Certified;

   iii. In the last three years, at least 30% of apprentices used on your jobsites completed 3,500 or more on the job training hours;

   iv. In the last three years, at least 70% of the journey-level workers on your jobsites graduated from a California-approved apprenticeship program;

   v. 30% of construction workers hired from zip codes that include targeted workers and communities;

   vi. Firm complied with local hire/disadvantages hire requirements in all public works contracts, if the firm has performed such work; and

   vii. Firm funds continuing education and training for workers.

   For all projects where the total project cost is $500 or more, the utilities must require that the installed measures in a building meet existing building code before they pay out the incentive, through inspector’s verification. This means that there is a verification process to prove the installation was permitted and passed inspection before the incentive is paid. This requirement would help ensure that programs are in compliance with existing law (SB 454).

   We support recommendation for tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility with the following recommendations.

Support: Stakeholders comment that standards are necessary, but not effective without verification and enforcement. Widespread stakeholder support for CALCTP requirement

Determine the project size threshold(s) for different Responsible Contractor requirements ($50K or $100K? $1 million? $1 million is much too high; Many EE projects are in the tens of thousands and subcontractor portions are a fraction of that.

Determine project type (building types) for Responsible Contractor requirements and how to tier requirements for projects of different scales.

Have Concerns:

IOUs are unclear about new Title 24 regulations regarding advanced lighting controls—does Title 24 apply to equipment or integrated systems? Industry experts claim that Title 24 does not require the installation of integrated advanced lighting systems—only the component parts. New Title 24 standards will affect structure of IOU incentives.

CALCTP is the industry recognized standard for advanced lighting control systems. Title 24 requires CALCTP. See above: authorized by the state to train and certify HVAC technicians required by 2013 Title 24.

Energy Upgrade CA requires that one person on staff has BPI certification. With BPI firm accreditation, rigorous quality assurance is built into BPI accreditation processes.

Persistent documented problems related to performance in HVAC programs.

Documented challenges of properly installing advanced lighting control systems.

ESAP wages range from $12/hour to high $100/hour.

Recommendations B.1-6: The WE&T Consultant recommends implementation of specific contractor workforce standards and development of responsible contractor policy. We strongly support the recommendations and offer the following comments.

We recommend that the final report provide a graphical representation of where such standards could attached along incentive delivery mechanisms, depending on whether the program is a core or third-party program, whether the contractor or customer is the incentive recipient, etc.

In addition, we recommend that all non-residential work and residential work performed on building with 4+ stories, not just MUSH properties over a certain size, be subject to the following standards:

i. 50% of workers on jobsites in the last 3 years OSHA 10-hour General Industry Safety and Health Certified;

ii. 10% workers on jobsites in the last 3 years been OSHA 30-hour General Industry Safety and Health Certified;

iii. In the last three years, at least 30% of apprentices used on your jobsites completed 3,500 or more on the job training hours;

iv. In the last three years, at least 70% of the journey-level workers on your jobsites graduated from a California-approved apprenticeship program;

v. 30% of construction workers hired from zip codes that include targeted workers and communities;

vi. Firm complied with local hire/disadvantages hire requirements in all public works contracts, if the firm has performed such work; and

vii. Firm funds continuing education and training for workers.
have total construction costs of $50,000+, and residential properties that have 4+ stories: 3rd party administrators, ESCOs, & contractors that perform the work must pre-qualify themselves and any sub-contractors using a more detailed pre-qualification process. This should include the criteria for all contractors (4i):

a. a list of at least 3 similar past projects & references
b. 60% of workforce comprised of journey-persons who completed a registered apprenticeship program in California, or are currently enrolled in such a program.

c. Require 20% of jobsite electrical workers should be OSHA 10-hour General Industry Safety and Health Certified.
d. Require at least one jobsite electrical worker should be OSHA 30-hour General Industry Safety and Health Certified.
e. Require that any electrician working on indoor or outdoor lighting controls be a California Advanced Lighting Controls Training Program – CALCTP certified contractor and or electrician.
f. Contractor should have a documented history of full compliance to state, health, safety and work standards.
g. In addition, the contractor’s performance over time should be tracked in PIRMS.

iii. Consolidate MUSH incentives into more streamlined programs

modifications. The contractor standards already described in the Draft Recommendations SG3 (B) (4) can be used as the starting point for the standards.

The development of such a policy could be done through formal rulemaking within the context of the current general energy efficiency rulemaking proceeding.

2013 Title 24 does not require lighting controls systems - only the component parts.
OSHA training standards should apply to all workers on the project, not just electricians.
4. For MUSH projects, in addition to requirements in 4i and 4ii, require payment of prevailing wages. For MUSH projects with total construction costs $1,000,000+, include targeted hiring requirements.

5. Establish wage floor [compensation standard] requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16). Increases to this wage floor should be indexed to a 6 craft average of prevailing wage rates. Workers who are currently enrolled in a California-approved apprenticeship program can be paid lower than this rate.

6. Develop an online project & payroll reporting system for contractors to input information. IOUs should utilize a 3rd party contact/labor compliance company or perform compliance in-house to ensure that goals are being met with positive and negative consequences to enforce requirements.

C. “Best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS): Pilot new model of procurement and contract management that invites contractors to identify metrics, measure, and report their performance and added-value, the effect being that high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve.

1. Pilot PIPS/PIRMS in the HVAC QI and QM programs. As participating contractors report on their maintenance activities, customer satisfaction, actual performance will be measured against agreed upon requirements. This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.

2. Clarify how this model could work in HVAC QI and QM and for new solicitation processes. Solicit stakeholder feedback.

AGREE

The Trust strongly supports PIPs and PIRMS system as models for contractor selection.
energy savings, and other metrics of performance, it will become clear which contractors are meeting or exceeding program goals.

2. Pilot PIPS/PIRMS for new program solicitations to ensure best value. When used for solicitations, vendor selection is based on five filters: Past Performance Information, Project Capability (technical risk, ability to manage non-technical risk, value added, financial milestones), Interviews of key personnel, Prioritizing vendors (identify best value), and Cost verification (make sure best value is within cost range). Although PIPS/PIRMS can be used to manage projects, it will work most effectively when it is used for contractor selection as well.
Recommendations for Strategic Goal #4 (Supporting Sector Strategies) and Strategic Goal #5 (Stakeholder Involvement) are currently being developed.

**STRATEGIC GOAL 6: EVALUATION OF WORKFORCE EDUCATION AND TRAINING PROGRAM**

Evaluation, measurement, and verification (EM&V) studies for the IOU energy efficiency and other demand-side management programs serve a number of functions, including supporting development and refinement of programs, verifying prior savings, and supporting the determination of shareholder incentives. These studies are driven in large part by the primary objective of these programs – resource acquisition, but they also address market transformation and other objectives.

Prior EM&V studies have not systematically addressed the skills and other characteristics of workers and contractors responsible for the installation and maintenance of energy efficiency measures and systems or the impact of these characteristics on performance. At present, a limited set of contractor characterization studies are in the planning phase. In addition the EM&V studies have not addressed the extent to which variations in work quality explain differences between ex ante and ex post energy savings.

The EM&V studies focused on the WE&T programs (e.g., trainings and other educational programs offered by IOUs, partnerships between the IOUs and educational institutions and community-based organizations) have not focused on skills acquisition and its impact on energy savings, but rather mostly on DSM investment decisions by end-users or increased DSM sales by contractors. As a general rule, data collected from participants in IOU offered trainings are not designed to support assessments of programs focused on skills development. Methods for assessing the contribution of IOUs to the outcomes of partnerships with educational institutions and community-based organizations have not been developed either.

The implications of the limited attention to work quality and workforce characteristics is significant, particularly as the goals for IOU energy efficiency programs are both increased and broadened. The lack of studies on the characteristics of contractors and workers and on the extent to which work quality affects energy savings limits the extent to which the benefits of workforce initiatives can be evaluated. The lack of information of the benefits of workforce initiatives means that opportunities for increasing the cost-effectiveness of energy efficiency programs relative to renewable and traditional generation resources are necessarily overlooked. Moreover, assessments of how the IOU programs affect the broader set of objectives, including market transformation and inclusion of disadvantaged workers, are also hampered.

As a consequence and as described in more detail below, the recommendations include explicit incorporation of work quality and workforce characteristics in market assessments, process evaluations, and impact evaluations. Additional feedback will be solicited from stakeholders in the short-term. For the long-term, additional EM&V studies to address work quality and workforce characteristics are proposed.
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<th>Recommendation</th>
<th>Rationale and Evidence Supporting Recommendation</th>
<th>Stakeholder Feedback</th>
<th>Next Steps</th>
<th>Comments</th>
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<td>A. Modify market assessments (e.g., work papers for DEER and non-DEER measures; Potential, Goals, and Target studies; sector-specific market characterizations) to address work quality and workforce characteristics:</td>
<td>i. The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Support: Have concerns:</td>
<td>Short-term: Obtain stakeholder feedback on recommendation and develop cost estimates.</td>
<td>AGREE, BUT SEE COMMENTS</td>
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<td>ii. Essential data for relevant labor markets (e.g., certifications, availability of skilled workers in local labor markets; education and training programs available to workers)</td>
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<td>Long-term: Modify requirements for work paper and for Emerging Technology reports Prepare work plan with support of energy and labor agencies and academic experts for proposed studies Pilot/demonstrate level of detail required for specifying skill requirements and other key data.</td>
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<td>For ease of reference, we recommend that the final report contain a clear statement of the WE&amp;T Consultant’s key findings along with the supporting documentation and references. In particular, key findings for Strategic Goals 3 and 6 are not readily identifiable in the current version of the draft report. The consultant should identify the measures and types of installations for which skill standards should be identified in DEER, as some measures likely do not require specialized expertise. Recommendation 2 is unclear. What is meant by “investigate demand”?</td>
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<td>B. Develop and adopt EM&amp;V protocols for workforce and labor market data collection</td>
<td>Protocols are to be developed to be applicable to all EM&amp;V components, including market assessments, process evaluations, and impact evaluations. Note that the 2013-2014 EM&amp;V Plan does address this topic but the detailed work plan is currently under development and extent of efforts in this area and efforts in this area are expected to be constrained by limited resources. Limited data are presently available on the characteristics of workers participating in ESA and IOU energy efficiency programs. These data are essential in order to better understand the skills of workers and contractors responsible for installation and maintenance of energy efficiency measures, to consider relationship of work quality to skills of workers conducting work, and to assess influence of IOU programs on achievement of the State’s workforce objectives.</td>
<td>Support: Consistent with prior CPUC Decisions Have concerns: ODC reported potential barriers of collecting data from contractors including company privacy, willingness to share private company data, and concerns with contractor response rates.</td>
<td>Short-term: Closely follow on-going activities for 2013-2014 program cycle; provide comments and recommend that study consultants reach out to experts knowledgeable of state and federal labor force data collection Long-term: Commit additional resources to expand upon on-going study to increase emphasis on defining rationale for data collection, on design and testing of questionnaires and program tracking systems, and on including experts in the workforce data collection area.</td>
<td>AGREE</td>
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<td>C. Explicitly consider contractor and worker</td>
<td>While work quality issues are now</td>
<td>Support:</td>
<td>Short-term:</td>
<td>AGREE</td>
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**SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs**

**POSITION**

(Choose 1: Agree, Disagree, Disagree with Comments)
### SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

<table>
<thead>
<tr>
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<td>characteristics and their impact on work quality as part of impact evaluations for specific resource programs</td>
<td>being addressed as part of selected programs, additional attention regarding the measurement of work quality and the underlying factors responsible for variations in work quality is required. Strategies to promote work quality, including certification requirements for workers and contractors, should also be part of evaluation.</td>
<td>Have concerns: Emphasize importance of clearly defining quality for pilots for on-going studies, including CEC and potential IOU studies comparing CALCTP and non-CALCTP projects.</td>
<td><strong>Disagree</strong></td>
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<td>ii. Specific resource programs to consider include: Advanced Lighting Programs and CALCTP Certification, Residential HVAC Quality Installation/Quality Maintenance, Non-residential HVAC Quality Installation/Quality Maintenance, and new construction programs</td>
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<td>D.</td>
<td>Modify program theory and logic models, program tracking systems, program performance metrics (PPMs), and process evaluations for adopted recommendations from SG_1, SG_2, and SG_3.</td>
<td>While Guidance Document will provide some suggestions on how to revise key EM&amp;V program elements, these suggestions need to be more fully developed with stakeholder input for those recommendations that are adopted.</td>
<td>Support: Consistent with CPUC direction</td>
<td>Short-term: Stakeholder feedback on how best to evaluate proposed recommendations</td>
<td><strong>AGREE</strong></td>
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<td>Have concerns: Incorporate revisions for adopted recommendations into Program Implementation Plans and EM&amp;V plans</td>
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<td>E.</td>
<td>For IOU workforce education and training programs, develop and test methodologies for assessing implications of IOU initiatives related to skills development and partnerships on resource acquisition and other broader objectives for energy efficiency</td>
<td>The IOU WE&amp;T programs and the associated impact evaluations have focused on “market building” activities. An increased emphasis on skills development and on partnerships (SG_1 recommendations) with core educational institutions and community organizations will require adoption of new approaches to EM&amp;V. While the IOUs have various on-going efforts related to skills development and partnerships, assessments of the benefits of these initiatives (i.e., skills development and partnerships) to the IOU ratepayers are needed if additional</td>
<td>Support: Have concerns: Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships. Identify programs and EM&amp;V approach where significant IOU resources are allocated currently to skills development and partnerships</td>
<td>Short-term: Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships. Identify programs and EM&amp;V approach where significant IOU resources are allocated currently to skills development and partnerships</td>
<td><strong>AGREE</strong></td>
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<td>resources are to be allocated to these activities.</td>
<td>Long-Term: Develop and implement pilot projects to test how best to assess the benefits of these initiatives to IOU ratepayers</td>
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Recommendations for Strategic Goal #7 (Evaluation of Web Portal) are currently being developed.
Submitted by: David De La Torre
January 30, 2014

Laborers’ International Union of North America (LIUNA or Laborers) submits the following comments on the WE&T Consultant’s Planning Draft Guidance Document and Recommendations. We agree with the prioritization of good-paying jobs and workforce diversity, and think more can be done beyond GO 156 and D 12-11-005 in order to create quality job creation and workforce diversity. We believe that there are potentially good recommendations in this document, much of which need further detail on how to create career pathways for our working members.

1. Training

We agree with other comments requesting further detail of how the money is spent within each of the 4 areas. We agree with the Division of Apprenticeship Standards (DAS) that in the non-residential trades allocation, the funds be directed to increase and enhance the skills of skilled trades workers already possessing basic skills and experience. We also concur with DAS on establishing certain pre-requisites for class registration – so that learning can occur from a similar starting point, creating a more quickly and readily deployable skilled workforce. To this end, we support the recommendation that the utilities orient programming around partnerships with core accredited and training institutions for each major occupation/career pathway.

2. The Governing Board

The creation of a Governing Board is intriguing, but more detail is needed before supporting such a structure given the statutory requirements that may govern such an advisory body. The make-up of the Governing Board must also be inclusive of a broad set of stakeholders. We join the Trust and IBEW Local 18 in urging the inclusion of representatives of each trade, and we would propose at least two additional seats for equity groups to represent community partners in workforce development, such as Brightline Defense Project. These equity group voices will be critical in ensuring that the apprenticeship pipeline be built so that our communities are set up for success in the building construction trades.

3. Wage Floor

We agree that additional standards are key to promote work quality, career development, and equity in the ratepayer-funded programs, but disagree that a wage floor of $16 an hour should be established as the state rate. As DAS and Brightline Defense Project have noted, appropriate wage rates may vary from area to area throughout the state. The provision of health and welfare benefits should also be considered and encouraged for any floor. For instance, in the Laborers Agreement that covers Northern California, Rate
A (for the nine Bay Area counties) establishes a higher wage rate than $16 for Group 4 Classification used for energy efficiency installation. It is $20 an hour plus benefits. Rate B, covering Northern California outside the Bay Area, is $19 plus benefits. Consequently, such a wage floor of $16 may unintentionally create a race to the bottom and undermine the goal of higher skills for energy efficiency installation work.

4. **Targeted Hiring Percentage**

For now, we agree with many of the comments that the proposed targeting hiring percentage by the Consultant seems low. Before endorsing a particular percentage, we would like to see how this percentage was established. Moreover, it should be specified that targeting percentages must achieved within each trade so that the overall percentage does not fall upon certain crafts to fulfill.

5. **Ideal Contractor Standards**

With some modifications, we generally agree with the contractor workforce standards proposed by the Trust and IBEW Local 18 under Strategic Goal 3-B. We would like to reduce the apprenticeship hour requirements to 2,000 hours. We would also ask for clarity on why percentages for workforce standards are linked to the last 3 years.
WE&T Statewide Strategic Planning Consultant

DRAFT summary recommendations

January 9, 2014

Lead Researcher:
Dr. Carol Zabin, UC Berkeley Donald Vial Center

*Not for public dissemination*

Comments from Jim Hussey, President of Marina Mechanical
STRATEGIC GOAL 1: WORKFORCE EDUCATION AND TRAINING PROGRAM MODIFICATION

The IOUs’ dedicate most of their WE&T resources for growing the market for energy efficiency services rather than skills-building for the work force who carries out the work, and the current structure of their programs is not well-suited to improve the DSM skills and knowledge of large numbers of workers in the key occupations that impact energy efficiency outcomes. By increasing the emphasis on skills development, the WE&T programs can better meet the CLEESP’s vision that “By 2020, California’s workforce is trained and fully engaged to provide the human capital necessary to achieve California’s economic energy efficiency and demand-side management potential.”¹

Most of the IOUs’ WE&T resources are dedicated to very short, stand-alone, free classes open to any interested person. Most participants are either end-users (building managers or home owners who are potential buyers of energy efficiency services) or contractors and professionals in managerial positions (sellers of energy efficiency services). The offerings are not effective at reaching workers in the key EE/DSM occupations or at developing workers’ skills:

- Most current offerings do not involve the state’s core education and training institutions for the key EE/DSM occupations, thus missing an opportunity to incorporate DSM content into the main period of training that workers in key occupations go through. These are: UC/CSUs for professionals, and apprenticeship and community colleges for the trades.
- Most current offerings do not adhere to best practices for skill-building training. Best practices include clear prerequisites and learning outcomes for each class, classes that are sequenced and build upon each other, competency testing at class completion, tied to recognized, stackable credentials, hands-on learning, and for incumbent workers, a clear commitment and involvement by their employers.
- The 2010-2012 WE&T process evaluation by ODC found that the Centergies classes heavily emphasize information about technologies, rather than skill-based outcomes.²
- Due to the course structure and content delivery style, ODC concluded that participation in Centergies training does not guarantee that participants will have obtained the skills necessary to carry out high-quality work.³

Recommendations

1 CLEESP, p 74.
2 2010-2012 WE&T Centergies Process Evaluation, ODC. Pages 12, 13
3 Ibid, p 14

Comment [JH1]: Employers still control the time and resources a technician may use / apply to a given project. Employer commitment needs to include selling the project for enough$ to allow the technician adequate time to do a proper installation.
We recommend the IOUs direct a significant portion of WE&T resources to EE/DSM skill-building activities for the critical occupations. Our recommended approach would affect occupational transformation on a broad scale by leveraging the state's core accredited education and training institutions, and promoting the identification of clear certifications and skill standards.

The IOUs should substantially increase WE&T resources for workforce development (e.g. to at least $80 million per three-year cycle), and then redesign this programming with increased participation and oversight from state workforce development experts. This process could be administered by the IOUs or by a 3rd party via RFP. An alternative approach would have the CPUC develop the necessary interagency agreement to with the CA Labor and Workforce Development Agency to transfer administration of some or all of these activities to the CA Workforce Investment Board or a non-profit organization. This alternative would ensure closer cooperation between the energy, education and labor agencies.

We recommend developing comprehensive implementation plans to customize programming targeted to each of the three career pathways. These plans should align with and leverage the core education and training institutions (UC/CSU for professionals, CCC and state-certified apprenticeship for the trades). Each of the plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation. We offer more detailed recommendations on processes for prioritization and program delivery in our full guidance plan. We also present three “Phase 1” programs that can be initiated in 2014, which are low-hanging fruit that can serve as learning arenas for the new WE&T configuration.4

Our proposal involves structured oversight from a governing board of key state workforce, education, and energy agencies, plus technical experts (e.g. the Lawrence Berkeley Lab). The governing council should appoint industry and subject-matter experts to an advisory group for each occupation, which will be responsible for identifying certifications and skill standards.

---

4 This may require accelerated direction from the CPUC (e.g., Advice Letter process at a minimum)

Comment [JH2]: Certificates are important, but must be credible. There should be limits on the number of certificates, high standards for those issuing certificates, and review / approval of the process used to award (and revoke) certificates. I am worried the market will be flooded with so many certificates that the consumer will place no value on them.
**SUMMARY OF RECOMMENDATIONS:**
**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<tr>
<td>A. Allocate a significant amount of WE&amp;T dollars to targeted programs for workers’ skill-building:</td>
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<td>1. We recommend that at least $80 million of WE&amp;T funds per three-year cycle go to workforce development in order to affect meaningful change in this arena.</td>
<td>Although the CLEESP mandates workforce education and training, most of the Centergies budget currently goes towards educating buyers and sellers of energy efficiency services, rather than skills development for workers involved in the design, installation, and maintenance of EE/DSM work. Most of the Connections budget goes to consumer education, not career development.</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group&lt;br&gt;<strong>Have concerns:</strong> IOUs do not want to lower budget to current programs</td>
<td>Get stakeholder feedback on the quantity of $ to be allocated to workforce dev’t vs. market dev’t; e.g. how much $ is needed for different types of activities, and how to prioritize programming based on needs and opportunities.</td>
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<td>2. Within the $80m (per 3-year cycle) for workforce development, we propose the following allocation:</td>
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<td>• $20m for professionals&lt;br&gt;• $20m for non-residential trades&lt;br&gt;• $20m for residential trades&lt;br&gt;• $20m for inclusion</td>
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<tr>
<td>Connections 9-12 career prep/awareness counts in inclusion. The rest is counted under market-building.</td>
<td>resources. Our recommended allocations represent the minimum amount that we believe would have a statewide impact on workforce development in each of the four categories (professionals, res trades, non-res trades and inclusion). We prioritize among the four categories based on the following criteria: i. Estimated program costs based on preliminary recommendations and stakeholder feedback; ii. Ability to leverage other funds (state and/or employer) iii. Importance in the CLEESP iv. Share of occupations from the NA</td>
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<td><strong>B. Redesign workforce skills development programming</strong></td>
<td>Current programming for workforce skills development is limited. Most programming in this area does not follow best practice for skills development and does not fully leverage the rich infrastructure of CA accredited education and training institutions. Short, open-door classes are still the primary program delivery mechanism, although this is not an effective</td>
<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Get stakeholder feedback on how to structure effective partnerships for each key institutional partnership. Discuss with stakeholders, IOUs and CPUC how to incorporate partnership-</td>
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<td>major occupation/career pathway: professionals; commercial trades workers, and residential trades workers</td>
<td>skills-building strategy. Partnerships with apprenticeships have been extremely limited so far.</td>
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<td>based activities with other IOU program objectives re: energy savings.</td>
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**C. Career pathway plans:**
Design an implementation plan for each major career pathway (professional, commercial trades, residential trades) with the following elements:

1. Each of the 3 plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation (i.e. UC, CSU, and CCC for professionals; DAS and CCC for commercial trades; CCC for residential trades).

2. Governing council should appoint Industry and SME advisory group for each occupation, which will be responsible for identifying.

Support: State workforce development agency and education institution leaders; Stakeholder advisory group

Have concerns: IOUs have concerns about how to get credit for energy savings from programs based on partnerships.

Get stakeholder feedback on priority activities and delivery mechanisms for each career pathway plan.

Get stakeholder feedback on how to structure the process for determining certifications and skill standards for each occupation.
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<td>certifications and skill standards for each.</td>
<td>skills-building programming.</td>
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<td>3. Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions.</td>
<td>ii. There is a widely acknowledged lack of clarity and consensus on certifications and skill standards for the critical occupations.</td>
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<td>4. Plan should determine key opportunities to incorporate EE skills and knowledge at specific points in the career pathway for priority occupations. Key points in the career pathway are pipeline preparation, core post-secondary education, and incumbent worker training.</td>
<td>iii. The IOUs have internal expertise on emerging technologies, and certain areas of quality problems (not always within the WE&amp;T staff, however). They do not have expertise on career pathways or workforce development strategies.</td>
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<td>5. Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms.</td>
<td>iv. Budget constraints are a concern to the IOUs WE&amp;T programs, as well as many training providers. Leveraging existing resources and infrastructure can increase programs’</td>
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<td>6. Funds should support incorporation of EE specific knowledge and</td>
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<td>7. Programming should leverage funding for classroom and other training from key institutions wherever possible.</td>
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<td>8. Programming should use sector strategy approach for incumbent worker training, based on commitments from multiple employers.</td>
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<td>9. In-house IOU skills training should be limited and reserved to cover gaps that partners can't fill, with commitment to transfer courses to other training institutions over time.</td>
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#### D. Governance and accountability:

1. Plan must be approved first by governing board composed of key state workforce, education, and energy stakeholders: Although some ad-hoc partnerships have been successful, there is a lack of internal capacity in the IOUs' WE&T programs to support: State workforce development agency and education institution leaders; Stakeholder advisory group | | Get stakeholder feedback on governance structure. | |
### SUMMARY OF RECOMMENDATIONS:
**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<td>agencies, and technical experts</td>
<td>effectively develop broad-based partnerships with each of the state’s key training institutions for EE/DSM occupations.</td>
<td>Have concerns: IOUs are concerned about burdensome oversight and loss of control of the program direction.</td>
<td>with CPUC and other state workforce education and energy agencies. Get feedback on logic model and PPMs, and evaluation structure for measuring impact on energy savings and market transformation.</td>
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<td>2. CPUC should consider recommendations of governing board and approve final plan</td>
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<td>3. Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation</td>
<td>ii. Most of the prior IOU-led attempts to bring stakeholders together for WE&amp;T planning and consensus-building around standards have been contentious; e.g. the HVAC Sector Strategy.</td>
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<td></td>
<td>iii. The CPUC’s WE&amp;T Task Force is a public forum for input on the IOUs’ programs, but not an adequate forum for program development.</td>
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#### E. Phase 1 Programs

We suggest the following programs that can be initiated in 2014 for each occupational group, which are low-hanging fruit that can serve as

| Support: | Write up the three specific proposals for stakeholder feedback and input. |
|----------------|---------------------------------|-----------------|------------|
| CA DAS supports the apprenticeship proposal; UC Berkeley architecture department is a strong supporter of the | | | |
## SUMMARY OF RECOMMENDATIONS:
**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<td>Learning arenas for the new configuration:</td>
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<tr>
<td>1. Professionals: RFP to be let out to 4 year accredited architecture and engineering departments to incorporate energy efficiency skills and knowledge into their curricula for degree programs</td>
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<td>2. Commercial trades:</td>
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<td>Partnership/sector strategy with CA Division of Apprenticeship Standards to incorporate EE skills and knowledge into journey upgrade programs for key crafts</td>
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<td>3. Residential trades: Review and consolidate existing Community College partnerships</td>
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### Position

- **POSITION**: Professional proposal.
- **COMMENTS**: Have concerns: None?

### Comments

- It is clear feedback from professional 4 year programs about the huge potential value of an IOU-sponsored RFP to incorporate leading EE/DSM skills into curricula.
- DAS has already indicated its eagerness to participate in this type of partnership on EE/DSM skills.
- Our research indicates a number of productive relationships with local Colleges and community training institutions exist.
- There are some examples of bridge programs that professional proposal.

### Commenter

- None?
### SUMMARY OF RECOMMENDATIONS:
**STRATEGIC GOAL 1, Workforce Education and Training Program Modification**

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<td>around supporting skills-building best practices at Colleges</td>
<td>connect disadvantaged youth with pre-apprenticeship</td>
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<td>4. Inclusion: RFP for Pilot Project Energy Efficiency Bridge Program in one region that leverages other investments and connects to apprenticeship.</td>
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<tr>
<td><strong>F. Administrator:</strong> Administrator should have the capacity and willingness to manage and staff the plan outlined above:</td>
<td>Although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development partnerships with the state’s core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative</td>
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<td>Option 1. IOUs manage and staff guidance plan, or issue an RFP for a 3rd party implementer.</td>
<td>Option 1. Support: Most IOU WE&amp;T staff would like to retain primary ownership over the funds. Several expressed a desire/willingness to include more workforce partners in the program design process we’ve described.</td>
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<td>Option 2. CPUC works with California Labor and Workforce Development Agency to transfer administration to the</td>
<td>Concerns: some of the stakeholder advisory group expressed concern about the IOUs’ capacity to</td>
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<td>explore the pluses and minuses of each option, soliciting stakeholder feedback and adding detail to each proposal.</td>
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<td>CA Workforce Investment Board or non-profit organization. The content of the recommendations are the same in either case, and both could still include IOU participation in program development, or best-practice IOU-led offerings such as the retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&amp;T portfolio overall.</td>
<td>Administration of the workforce development portion of WE&amp;T would be more effective.</td>
<td>Effectively execute the type of partnership structure we describe.</td>
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<td><strong>Option 2</strong> Support: Members of the stakeholder advisory group (including the state labor agencies) liked the idea of a more systematic, collaborative tie between the WE&amp;T programs and the state’s other primary workforce development and education agencies, and the potential it presents for program alignment and fund leveraging. <strong>Concern:</strong> Most IOU WE&amp;T staff are wary of relinquishing ownership to an outside entity. Some stakeholders and IOUs expressed concern that there isn’t currently a clear choice of a non-profit to lead the Option 2 effort. Several</td>
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**COMMENTS**

**POSITION**

**COMMENTS**

**COMMENTER**
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<td></td>
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<td>noted issues that may arise around maintaining CPUC oversight over ratepayer funds.</td>
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WE&T Statewide Strategic Planning – DRAFT summary recommendations, January 2014
STRATEGIC GOAL 2: INCLUSION FOR DISADVANTAGED WORKERS

Currently, the substantial and diverse investments being made by the IOUs in the energy efficiency and DSM programs do not include interventions to support the creation of middle-class career pathways for low-income communities, communities of color and other disadvantaged populations. While these investments offer a promising opportunity to build middle-class career pathways for low-income people and jobseekers with barriers to employment (“disadvantaged workers”), there are several barriers in place that prohibit the IOUs from achieving the California Long Term Energy Efficiency’s Strategic Plan goal of increasing “participation from within minority, low income and disadvantaged communities in achieving California’s economic energy efficiency potential”:

- The work of investor-owned utilities in California was not historically seen as public investments akin to government public works projects, and thus the public policy direction of requiring inclusive hiring policies and family-supporting wages applied to publicly-funded capital projects has only been recently considered by the CPUC.

- The IOUs do not currently have clear authority and direction to allocate resources to proven practices that increase minority, low-income, and disadvantaged worker participation in public works and energy efficiency projects.

- The IOUs currently lack a working definition of “disadvantaged worker” and lack clear performance metrics or program goals by which to measure progress in hiring these workers.

- Current data collection methods do not provide a comprehensive picture on the demographic profile of the workforce being employed to carry out EE/DSM programs by occupation or job category, nor do they collect detailed data on compensation structures and wages by occupation and job category. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect this data.

- The IOUs currently lack clearly articulated pathways for disadvantaged workers to advance along a career ladder as they gain more experience, training and skills. An effective ecosystem of agencies and organizations (including: low income weatherization providers, community based organizations, community colleges, local and state workforce investment boards, utility workforce development staff, labor unions and contractors) can create a pipeline of ready and able workers through effective recruitment, training and placement of disadvantaged workers.

- The IOUs currently lack the contracting and procurement tools need to shape incentives or requirements for contractors to hire trained and ready workers from disadvantaged communities.
communities. Contracts for higher-paid, higher-skill work (such as EE work in schools, universities and hospitals), tend to be smaller and do not always require deep, complex retrofits, which may prevent contractors from bringing on hired and ready workers from disadvantaged communities.

Integrating procurement and contracting (“demand-side”) strategies with recruitment, screening, skills development, training, wrap-around services and credentialing (“supply-side”) strategies is essential to achieving the full scope of California’s EE goals.

Our proposal:

The CPUC should direct IOUs to measure and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals. The CPUC’s direction should have clear metrics and performance standards to meet these goals.

We propose a two track strategy. First, the IOUs should ensure the quality of jobs created by EE investments. We recommend that the IOUs set a wage floor for the ESAP, Direct Install, and Third Party programs, since these program implementers and contractors have direct contracting or subcontracting relationships with the IOUs. Second, we recommend that the IOUs launch a pilot MUSH market program that includes a targeted hire program. This MUSH sector program can follow the standards used in public works construction, where targeted hire programs, tied to apprenticeship, have been very successful in many local governments in California and nationally.

Data collection efforts are necessary to support these goals. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect workforce data to evaluate job quality and the demographic profile of workers. We recommend that this be done through an on-line workforce reporting system (such as Elations or LCP Tracker); these systems are inexpensive and have been used by many awarding agencies in the state. In addition, the IOUs should adopt a definition of disadvantaged worker and apply it meaningfully and consistently across all EE programs. This definition can then be used to design inclusion programs, and to track and measure results. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria); and/or b) an individual who is a resident of a high unemployment zip code in her/his county. The IOUs should also institute data collection as

Once a definition is set, the IOUs should set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs. We recommend a conservative initial goal (such

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6 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

7 The unemployment rate is 150% of the median unemployment rate for the county.
as 15% of new entry level job openings in IOU supported EE/DSM work) in order to ensure success and acceptance by both IOUs and contractors. This goal can be increased over time as programs are developed and contractors and IOU staff become familiar with them. The results of these goals can be tracked by the workforce reporting system and made publicly available, as a scorecard, similar to that used in General Order 156 which has been successful for promoting diversity in procurement. Contractors meeting goals should receive additional points in the next round of program procurement.

In order to ensure that workers are trained and ready to perform higher skill work, we also recommend funding for pre-apprenticeship training programs that will provide disadvantaged workers the skills, training and abilities needed to be successful in entry-level MUSH and large commercial EE and utility employment. This funding should be released in the form of an RFP, and should encourage the mobility of ESAP and other residential workers into higher wage higher skilled jobs in the MUSH sector.
## SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<tr>
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<th>Stakeholder Concerns/Controversy</th>
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<tbody>
<tr>
<td><strong>A.</strong> Prioritize creation of good-paying jobs and workforce diversity as key IOU goals along with efficiency outcomes:</td>
<td>Successful workforce inclusion programs have established goal setting and monitoring in order to improve outcomes. In order for the IOUs to have the authority to direct resources towards these efforts, they need direction from the CPUC. General Order 156 is an example of the IOUs’ ability to create a new program and achieve diversity goals in response to specific CPUC direction.</td>
<td>Support: Some equity groups, including those in the Stakeholder Advisory Group, support this recommendation. Have concerns: IOUs are concerned that the promotion of job creation and workforce diversity in EE/DSM programs cannot be resourced using ratepayer funds.</td>
<td>Get stakeholder feedback on language of proposed CPUC direction.</td>
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</table>

**B.** Define Disadvantaged Worker meaningfully and consistently:

1. The CPUC should set a common definition of “Disadvantaged Worker” that will be used by all IOUs in designing inclusion programs and tracking and reporting results.
2. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria.

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<thead>
<tr>
<th>What</th>
<th>Support</th>
<th>Have concerns</th>
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<tbody>
<tr>
<td>i. Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring.</td>
<td>Some equity groups support this recommendation.</td>
<td>IOU staff and ESA contractors expressed concern whether experienced ESAP workers should be included in this definition to reinforce ESAP as an entry point to EE/DSM careers for disadvantaged workers. (ESAP dropped from</td>
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<tr>
<td>criteria (see footnote for criteria(^8)); and/or b) an individual who is a resident of a high unemployment zip code in her/his county(^9).</td>
<td>proved in other programs to identify an adequate number of individuals who most need employment opportunity and who are capable of developing the necessary skills to do good work.</td>
<td>definition as a result of stakeholder consultation.)</td>
</tr>
<tr>
<td><strong>C. Set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</strong></td>
<td>Models from other successful programs. Current lack of specific goal. Successful experience from G.O. 156.</td>
<td>Support: Some equity groups support this recommendation.</td>
</tr>
<tr>
<td>1. Because this is a new effort for the IOUs and many of their contractors, we recommend that the initial goal be conservative in order to ensure success and acceptance. We suggest an initial goal of 15% of EE/DSM work, measured in worker hours, for Disadvantaged Worker participation.</td>
<td></td>
<td>Have concerns: IOU staff, contractors, and members of the Stakeholder Advisory Group expressed the following concerns: How will the goal be set? Will goal apply across the board to all EE/DSM programs? Will each program need to meet the goal or will utilities be allowed to achieve goal by averaging results across programs, e.g. ESAP compensates for</td>
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<td>2. This goal can be increased over time as the programs are developed and participants become more familiar with them.</td>
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\(^8\) Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

\(^9\) The unemployment rate is 150% of the median unemployment rate for the county.
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<tr>
<td>D. Institute a required, electronic workforce reporting system for EE/DSM contractors to capture information:</td>
<td>Successful equity and inclusion programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements.</td>
<td>Lack of inclusion elsewhere? Desire for voluntary goal vs. desire for penalties in the event goal is not achieved. How will efforts to drive inclusion affect cost-effectiveness? Will CPUC adjust cost-effectiveness requirements to reflect inclusion goal?</td>
<td>Test detailed reporting recommendations with stakeholders.</td>
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<td>1. Require monthly reports using LCP tracker or some other established program that works with payroll companies.</td>
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<td>2. Include the following data points:</td>
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<td>Support: Labor groups familiar with reporting data support this recommendation.</td>
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<tr>
<td>a. Hours worked</td>
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<td>Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concerned over the potential cost of reporting data. IOU staff have expressed concerned over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.</td>
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<td>b. Rate of pay</td>
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<td>c. Disadvantaged status, zip code of residence</td>
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<td>d. Race, ethnicity, and gender</td>
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<td>e. Trade/occupation</td>
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<td>f. Journey/apprentice</td>
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<tr>
<td>3. Make the reports publicly available.</td>
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<td>4. Contractors who achieve or exceed goals will receive compliance points in next round of procurement.</td>
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<td>E. Ensure baseline quality of jobs created by efficiency investments:</td>
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<td>Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)</td>
<td>i. Interviews indicate ESAP wages range from $12/hour to high $20s/hour. ii. LA DWP’s utility pre-craft worker program starts trainees at $16/hour. iii. Higher wages typically contribute to higher skill development, and better outcomes.</td>
<td>Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs. Have concerns: Some IOU staff, one equity group (Brightline Defense), and contractors are concerned. A wage floor could increase cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. ESAP contractors</td>
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<td>Get feedback on $16/wage floor from Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
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<tr>
<td>F. Improve job opportunities created by created by efficiency investments;</td>
<td>California Labor Code requires prevailing wages and apprenticeship utilization on public capital projects. Contrary to this general public policy, it exempts “work done directly by any public utility company pursuant to order of the Public Utilities Commission or other public authority.” Cal. Lab. Code Sec. 1720(a)(1).</td>
<td>have concerns that they will be expected to bear burden of wage floor without overall program budget increase. Cost of collecting and reporting data.</td>
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<tr>
<td>G. Consolidate all incentives and efficiency programs that target the municipal/government, university, school, or hospital sectors into a comprehensive MUSH program. Introduce an inclusion requirement in the MUSH program;</td>
<td>Energy Upgrade California and Sierra Nevada Energy Works. Programs in San Francisco, Portland and Seattle utilities. PLAs with targeted hire requirements at LA-METRO, LAUSD, CRA/LA, LACCD.</td>
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<tr>
<td>1. Bundle programs to create scale for contractors.</td>
<td>Support:</td>
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<tr>
<td>2. Focus MUSH incentives on deep retrofits and whole</td>
<td>Have concerns: IOU staff have expressed concern that increased coordination and adoption of “new” policies along multiple programs will may delay implementation of these practices. IOU staff express concern over the cost of compliance with</td>
<td>Gather more data on MUSH programs to build out recommendations. Test detailed recommendations at non-residential EE stakeholder meeting in January.</td>
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<tr>
<td>3. Increase allocation for this program to at least $100 million.</td>
<td></td>
<td>targeted hiring programs may make reduce cost-effectiveness of MUSH programs. Requirement that customers use contractors off pre-qualified list may discourage participation. Fear that Disadvantaged Workers may not have the skills necessary to perform the work. Contractors may not have sufficient work to add new hires to meet DW targeted hire requirement.</td>
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<td>4. Apply aspects of Energy Upgrade California as a model framework:</td>
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<tr>
<td>a. Establish pre-qualified list of contractors.</td>
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<td>b. Require MUSH incentive recipients to work with IOU-designated contractors.</td>
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<td>5. Restrict contractor participation to increase market share and positive outcomes for participating contractors:</td>
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<tr>
<td>a. Require competitive application process to reward contractors that meet or exceed worker skill standards, Disadvantaged Worker hiring goals, and wage floors.</td>
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<td>6. Open list to new contractors on a restricted timeline (e.g. every 2 years).</td>
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<td>H. Establish training bridge program to link residential</td>
<td>Power Pathways, CCCO Career Advancement Academies, Pre-Support: Education</td>
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<tr>
<td>EE workers to non-residential EE jobs.</td>
<td>Release an RFP for creation of a pre-apprenticeship training program that will provide disadvantaged workers the skills, training and abilities needed to bridge between residential EE workers and non-residential EE employment opportunities and provide access to entry-level non-residential EE and utility employment.</td>
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<tr>
<td>I. Strengthen ESAP and MIDI as entry point to a higher skilled, higher-paid career in commercial and industrial EE:</td>
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<tr>
<td>1. The IOUs should apply the wage floor and workforce reporting requirements to MIDI as the program is developed.</td>
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<tr>
<td>2. Education and workforce development partners should articulate career ladder and opportunities for advancement to ESAP and MIDI workforce.</td>
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<tr>
<td>i. Interviews and EE Decision indicate expansion of MIDI program.</td>
<td>Support: Some equity advocates were interested in learning more about the details of the recommendation to determine their support.</td>
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<tr>
<td>ii. The level of skills required for residential ESAP and MIDI programs are similar: lower and thus more suited to an entry-level position. However, on the job, ESAP and MIDI installers gain valuable experience in both soft and hard skills, preparing them to move up the ladder.</td>
<td>Have concerns: One equity group (Brightline Defense) and IOU staff expressed concern over a wage floor increasing the cost of program and reduce number of installations. Wage floor could lower cost-</td>
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<td>iii. The contractors who run the ESAP programs tend to hire from the local, low-</td>
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<td>labor stakeholders</td>
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<tr>
<td>Have concerns: Some stakeholders have indicated concerns with the viability of ESAP workers entering in bridge programs; some ESAP contractors indicate there are viable career pathways within ESAP employers.</td>
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**Testing $16/wage floor with Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.**
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<td>income community, making it a natural entry point for a more diverse workforce. However, it should not be an end point for low-income workers.</td>
<td>effectiveness below goal. Contractors were concerned over the wage floor: Will contractors be expected to bear burden of wage floor without overall program budget increase? They are also concerned about the cost of collecting and reporting data.</td>
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STRATEGIC GOAL 3: INTEGRATING WORKFORCE EFFORTS WITH RESOURCE PROGRAMS

There is substantial evidence that improper equipment installation, operation, and maintenance lowers the realized energy savings of energy efficient measures and most likely explains some of the differences between ex ante savings estimates and ex post evaluations. Specific sources include the 2011 WE&T Needs Assessment, where results from case studies for several distinct market sectors are reported, an extensive annotated bibliography that will form an appendix to the guidance plan, and recent interviews with current and former IOU staff, subject matter experts, and industry professionals, which were conducted for this project. This evidence spans complex advanced lighting and HVAC systems as well as installations of simpler energy efficiency equipment.

The extent to which improper equipment installation, operation, and maintenance reduces the energy outcomes for California’s Demand Side Management (DSM) programs is unknown. While specific studies have investigated the extent of poor installations for specific technologies (e.g., HVAC, advanced lighting, building construction), comparable data across measures and programs are not collected for California’s DSM programs that could systematically determine where poor work quality may be reducing energy savings.

Workers can acquire, through training and on-the-job experience, the necessary skills to perform high quality work, but training alone is not a sufficient condition to ensure high quality work. The market must also demand quality work. The IOU DSM programs have introduced various program requirements to ensure high quality work, ranging from contractor licensing requirements to quality assurance programs to customer information; however, these are minimal compared to the much more robust workforce and related standards found in many other sectors in the economy, including in segments of the building and construction industry, the key industry for energy efficiency investments. The current process for program planning, approval, and implementation does not specifically reward the IOUs for ensuring high work quality nor penalize them when energy savings are left on the table due to improper installation, operation, or maintenance of energy efficiency measures. The common response to poor work quality continues to be support for training, but the return on these investments—for both ratepayers and the trainees—is limited without greater demand for work quality.

The following recommendations 1) suggest a series of process improvements to better understand and incorporate the impacts of work quality on energy goals and 2) suggest

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10 For custom projects, which represent a large percentage of the savings in recent portfolios, customers lose rebates (and IOUs lose savings credit) when equipment is not functioning for any number of reasons, including low-quality installation. The new Efficiency Savings and Performance Incentive (ESPI) creates a mechanism that encourages IOUs to manage EE programs in a way that ensure actual savings meet or exceed estimates (for deemed measures with a high degree of uncertainty).
workforce standards for IOUs to incorporate into the management of EE programs that will both reduce the risk of inaccurate savings estimates due to work quality, and encourage higher performing and more qualified contractors to participate in DSM programs.

**Recommendations**

**Process Improvements:** First, we recommend a series of process improvements to create a stronger incentive structure to ensure proper installation and maintenance of energy efficiency measures.

The existing program development, approval, implementation, and evaluation processes neither reward nor penalize the IOUs for their influence over work quality and its impact on energy savings. Assumptions about the installation and performance of energy efficiency equipment are based on technical specifications and engineering assessments, and fail to account for the impact of worker skills and performance on equipment performance (and energy savings). Often, equipment is assumed to be installed correctly and in-service, without either specifying the level of technician skill required or verifying quality in the field to substantiate those claims.

The CPUC applies discounts (“haircuts”) to the IOU-claimed energy savings to avoid over-estimating, but these reductions do not isolate the effects of different program requirements or workforce standards. Since the IOUs perceive that stricter program requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily adopt higher standards, unless there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear incentive if they evaluated performance in real time, but they mostly are limited to catching fraudulent behavior. Real-time across the board inspections are costly and increase transaction costs and program friction for customer. Finally, the program implementation and evaluation cycles are not conducive to providing timely feedback on effective program requirements, and as stated above, impact evaluations do not document or isolate work quality problems.

Our recommended process improvements address the shortcomings of the current quality assurance and discount process, and call for the identification of minimum contractor requirements and worker skills/credentials needed to carry out work correctly up front. These recommendations will reduce the risk of large gaps between ex ante estimates and ex post evaluations for deemed measures and savings left on the table due to installation problems for custom measures.

**Workforce Standards:** Second, we recommend several different types of contractor and workforce standards designed to screen out less qualified contractors and create an environment to encourage participation by high performing contractors in energy efficiency work. Workforce standards refer to interventions that shift the competitive environment toward higher performance. Workforce standards are a quality control mechanism that can reduce the need for more expensive post-installation quality assurance activities.
The lack of available information on work quality and its impact on the portfolio should not be used as an excuse to delay adopting workforce standards, many of which are “no regrets” or “do-no-harm” approaches with multiple co-benefits, including deeper retrofits. Because different standards can have the same effects in the labor market, there is some flexibility in how standards can be applied to different programs. For example, establishing a wage requirement can have the same effect as a skill requirement because if all contractors have to pay higher wages, contractors who have invested in higher skilled workers will be able to more effectively compete in the market. Similarly, policies to contract with high performing contractors will result in the use of skilled workers as effectively as establishing specific skill standards for workers for each program or technology. Each of these types of standards acts to support higher quality contractors, and screen out or improve the performance of lower quality contractors.

In making recommendations, we mapped the resource programs by delivery mechanisms, target market, and technology in order to identify the simplest approach given the existing program structure. Given the range of technologies currently offered and the ever-changing technological environment, it is very difficult to establish and maintain, not to mention enforce, appropriate specific worker skill standards for every measure and program in the IOU portfolio. When there is widespread industry agreement for particular skill standards, they are effective ways for establishing a bar for participating technicians and contractors. In the absence of agreed upon skill standards, contractor qualifications or wage standards would be simpler approaches to improve performance and work quality.

In our exploration and evaluation of different standards, we also identified a new model for addressing and improving contractor performance. The “best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS) gradually improve performance by giving vendors or contractors more responsibility in defining quality work by reporting their efforts and their results. Because all contractors are invited to identify metrics, measure, and report their performance and added-value, high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve. This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.

Comment [JH3]: Strongly recommend hiring Dr. Kashawaghi or adopting his processes. Specifically consumer feedback loops. Contractors ability to continue program participation or participate in future programs is tied the the feedback rating from end user clients. SELF MONITORING WILL NOT SUCCEED

11 For example CALCTP for advanced lighting controls or DOE Task Analysis for different energy efficiency jobs.
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<td><strong>A. Process Improvements:</strong> Implement changes through program design, implementation, approval, and evaluation process to create stronger incentives for high quality work.</td>
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<tr>
<td>1. Identify and document contractor competencies and markets and worker skills/credentials for field demonstration projects.</td>
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<td>2. In developing program plans, consider and document alternative approaches for addressing workforce issues (e.g. mix of certification requirements, training opportunities, and quality assurance/verification). Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings.</td>
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<td></td>
<td>i. In emerging technology demonstration projects, the most qualified firms and workers are selected to install new equipment or measures. ETCC reports currently do not consider the skill of the workers necessary for proper installation, and do not inform program requirements for the types of contractors that should participate to ensure quality.</td>
<td>Support: PRG support for eliminating three-strikes rule for fraudulent behavior. Widespread concern (from PRG) that work quality is not addressed systematically in existing processes and unanimous support for adjusting program processes to account for work quality. Unanimous agreement that process improvements are a necessary, but not sufficient, condition to address work quality; standards are also critical.</td>
<td>Determine which programs can accommodate pay-for-performance requirements. Solicit stakeholder feedback on these recommendations.</td>
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<td>ii. Work papers often assume 100% correct installation without identifying the conditions necessary to ensure that is the case.</td>
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<td>iii. By bundling work quality problems with technology failures, customer behavior, and other variables (installation rates and gross realization rates), we cannot know what the specific impact of different workforce interventions are.</td>
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<td>iv. Current QA and inspection processes are intended to reduce</td>
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<td></td>
<td>Contractor groups</td>
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3. **Program Implementation**

Plans should specify how program requirements will increase the demand for quality installations. Initial plans should consider alternative scenarios prior to selecting a specific approach. This could replace the current WE&T integration section of PIP templates.

4. **Develop a discount (haircut) to isolate the effects of work quality to apply to energy savings calculations.** When measures are first introduced, inspections of performance should be used to establish the equivalent of a measure-specific “gross realization rate” and “installation rate”. Once measure-specific rates are established, samples should be used to modify rates. IOU credit should be based on results of those quality inspections.

5. **Quality Assurance processes (Inspection and Verification) should focus more on quality of fraudulent behavior and do not identify faulty installation.** It is standard best practice that inspectors have a higher level of technical skill than installers, and current QA processes do not consider the technical skill of the inspection team.

(v.) Currently, there is a “three-strikes” rule for fraudulent behavior.

(vi.) The ESPI mechanism uses a combination of ex ante estimates and ex post evaluations to determine shareholder incentive for IOUs, but custom project savings are confirmed shortly after installation, not accounting for failures down the road due.

(written comments on EUC) want QA to be educational rather than punitive, incorporating mentorship.

IOU staff point out the high cost of rigorous QA.

IOUs are concerned about program “friction” for customers.
installation. Highly skilled technicians should be assigned to inspect installations at beginning of program and then randomly throughout programs.

6. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on quality.

7. Institute zero-tolerance policy for fraudulent behavior (for Trade Professionals, Customers, and other Contractors), with a three-year exclusion from participating in ratepayer funded programs.

8. Pay-for-performance requirements: Withhold fully crediting the IOUs and some portion of incentive payments until inspections confirm that equipment is properly installed and operational over the course of its effective useful life (or other meaningful period of time)

B. Workforce Standards: **CALCTP is the industry**

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<th>Support:</th>
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<td><strong>CALCTP is the industry</strong></td>
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**WE&T Statewide Strategic Planning – DRAFT summary recommendations, January 2014**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Stakeholder Concerns</th>
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<tr>
<td>Change the competitive environment to attract high performing contractors and screen out or improve the performance of lower-qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.</td>
<td>Stakeholders comment that standards are necessary, but not effective without verification and enforcement.</td>
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<tr>
<td>1. Require CALCTP certification for contractors and technicians on all projects involving advanced lighting controls.</td>
<td>Widespread stakeholder support for CALCTP certification.</td>
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<td>2. Require BPI firm accreditation (rather than individual certification) for all Whole House retrofit projects.</td>
<td>Persistent documented problems related to performance in HVAC programs.</td>
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<tr>
<td>3. Require at least NATE certification for all projects involving residential HVAC measures. For commercial HVAC programs, require completion of a registered apprenticeship program OR US Star OR an associate’s degree in recognized standard for advanced lighting control systems. Title 24 requires CALCTP for acceptance testing.</td>
<td>Widespread contractor support for BPI standard, (except HVAC)</td>
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<td>PRG group thinks Responsible Contractor Policies are considered extremely effective strategies to improve work quality in the construction trades.</td>
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<td>Have Concerns: IOUs are unclear about new Title 24 regulations regarding advanced lighting controls—does Title 24 apply to equipment or integrated systems? Industry experts claim that Title 24 does not require the installation of integrated advanced lighting systems—only the component parts. New project size threshold(s) for different Responsible Contractor requirements ($50K or $100K? $1 million?)</td>
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<td>Determine project type (building types) for Responsible Contractor requirements and how to tier requirements for projects of different scales.</td>
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<td>Solicit stakeholder feedback of specific recommendations.</td>
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**Energy Upgrade CA requires that one person on staff has BPI certification. With BPI firm accreditation, rigorous quality assurance is built into BPI accreditation processes.**

**ESAP wages range from $12/hour to high $20s/hour.**

**Persistent documented problems related to performance in HVAC programs.**

**Documented challenges of properly installing advanced lighting control systems.**

**Title 24 requires CALCTP for acceptance testing.**
4. Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility.

i. ALL contractors and subcontractors working on projects with total costs $500 or more: proof of proper licensing, bonding, & workers compensation and building permit signed off by building inspector, if required by law.

ii. MUSH properties, non-residential properties that are either 50,000+ square feet or have total construction costs of $50,000+, and residential properties that have 4+ stories: 3rd party

Title 24 standards will affect structure of IOU incentives.
Administrators, ESCOs, & contractors that perform the work must pre-qualify themselves and any sub-contractors using a more detailed pre-qualification process. This should include the criteria for all contractors (4i):

- a. A list of at least 3 similar past projects & references
- b. 60% of workforce comprised of journey-persons who completed a registered apprenticeship program in California, or are currently enrolled in such a program.
- c. Require 20% of jobsite electrical workers should be OSHA 10-hour General Industry Safety and Health Certified.
- d. Require at least one jobsite electrical worker should be OSHA 30-hour General Industry Safety and Health Certified.
Certified.

e. Require that any electrician working on indoor or outdoor lighting controls be a California Advanced Lighting Controls Training Program – CALCTP certified contractor and/or electrician.

f. Contractor should have a documented history of full compliance to state, health, safety and work standards.

g. In addition, the contractor's performance over time should be tracked in PIRMS.

iii. Consolidate MUSH incentives into more streamlined programs & for MUSH projects, in addition to requirements in 4i and 4ii, require payment of prevailing wages. For MUSH project
with total construction costs $1,000,000+, include targeted hiring requirements.

5. Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)

6. Develop an online project & payroll reporting system for contractors to input information. IOUs should utilize a 3rd party contact/labor compliance company or perform compliance in-house to ensure that goals are being met with positive and negative consequences to enforce requirements.

C. “Best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS): Pilot new model of procurement and contract management

| C. “Best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS): Pilot new model of procurement and contract management | This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards. | Clarify how this model could work in HVAC QI and QM and for new solicitation processes. Solicit stakeholder feedback |
that invites contractors to identify metrics, measure, and report their performance and added-value, the effect being that high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve.

1. Pilot PIPS/PIRMS in the HVAC QI and QM programs. As participating contractors report on their maintenance activities, customer satisfaction, actual energy savings, and other metrics of performance, it will become clear which contractors are meeting or exceeding program goals.

2. Pilot PIPS/PIRMS for new program solicitations to ensure best value. When used for solicitations, vendor selection is based on five filters: Past Performance Information, Project Capability (technical risk, ability to
manage non-technical risk, value added, financial milestones), Interviews of key personnel, Prioritizing vendors (identify best value), and Cost verification (make sure best value is within cost range). Although PIPS/PIRMS can be used to manage projects, it will work most effectively when it is used for contractor selection as well.

**STRATEGIC GOAL 4: SECTOR STRATEGIES**

Placeholder.

**STRATEGIC GOAL 5: STAKEHOLDER ENGAGEMENT**

Placeholder (stakeholder engagement in-progress).
STRATEGIC GOAL 6: EVALUATION OF WORKFORCE EDUCATION AND TRAINING PROGRAM

Evaluation, measurement, and verification (EM&V) studies for the IOU energy efficiency and other demand-side management programs serve a number of functions, including supporting development and refinement of programs, verifying prior savings, and supporting the determination of shareholder incentives. These studies are driven in large part by the primary objective of these programs – resource acquisition, but they also address market transformation and other objectives.

Prior EM&V studies have not systematically addressed the skills and other characteristics of workers and contractors responsible for the installation and maintenance of energy efficiency measures and systems or the impact of these characteristics on performance. At present, a limited set of contractor characterization studies are in the planning phase. In addition the EM&V studies have not addressed the extent to which variations in work quality explain differences between ex ante and ex post energy savings.

The EM&V studies focused on the WE&T programs (e.g., trainings and other educational programs offered by IOUs, partnerships between the IOUs and educational institutions and community-based organizations) have not focused on skills acquisition and its impact on energy savings, but rather mostly on DSM investment decisions by end-users or increased DSM sales by contractors. As a general rule, data collected from participants in IOU offered trainings are not designed to support assessments of programs focused on skills development. Methods for assessing the contribution of IOUs to the outcomes of partnerships with educational institutions and community-based organizations have not been developed either.

The implications of the limited attention to work quality and workforce characteristics is significant, particularly as the goals for IOU energy efficiency programs are both increased and broadened. The lack of studies on the characteristics of contractors and workers and on the extent to which work quality affects energy savings limits the extent to which the benefits of workforce initiatives can be evaluated. The lack of information of the benefits of workforce initiatives means that opportunities for increasing the cost-effectiveness of energy efficiency programs relative to renewable and traditional generation resources are necessarily overlooked. Moreover, assessments of how the IOU programs affect the broader set of objectives, including market transformation and inclusion of disadvantaged workers, are also hampered.

As a consequence and as described in more detail below, the recommendations include explicit incorporation of work quality and workforce characteristics in market assessments, process evaluations, and impact evaluations. Additional feedback will be solicited from stakeholders in the short-term. For the long-term, additional EM&V studies to address work quality and workforce characteristics are proposed.
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<tr>
<td>A. Modify market assessments (e.g., work papers for DEER and non-DEER measures; Potential, Goals, and Target studies; sector-specific market characterizations) to address work quality and workforce characteristics:</td>
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<tr>
<td>1. Explicitly address skill requirements and other resources required for assumed energy savings of energy efficiency measures.</td>
<td>i. The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Support: Have concerns:</td>
<td>Short-term: Obtain stakeholder feedback on recommendation and develop cost estimates. Long-term: Modify requirements for work papers and for Emerging Technology reports Prepare work plan with support of energy and labor agencies and academic experts for proposed studies. Pilot/demonstrate level of detail required for specifying skill requirements and other key data.</td>
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<td>for workers with identified skills (e.g., wages, benefits, working conditions and career ladders; certifications and licensing requirements; availability of skilled workers in local labor markets; education and training programs available to workers)</td>
<td>markets (e.g., certifications, availability of skilled workers) are not available for program design and implementation. In addition, emerging technology reports do not routinely document skill requirements and work quality issues (e.g., call backs) associated with demonstrations. Without these data, program administrators must rely largely on anecdotal information and general impressions when assessing the potential benefits of certification requirements and</td>
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SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

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<tr>
<td>B. Develop and adopt EM&amp;V protocols for workforce and labor market data collection</td>
<td>Protocols are to be developed to be applicable to all EM&amp;V components, including market assessments, process evaluations, and impact evaluations. Note that the 2013-2014 EM&amp;V Plan does address this topic but the detailed</td>
<td>Limited data are presently available on the characteristics of workers participating in ESA and IOU energy efficiency programs. These data are essential in order to better understand the skills of workers and contractors responsible for installation and maintenance of energy efficiency measures, to consider relationship of work quality to skills of workers conducting work, and to assess influence of IOU programs on achievement of the State’s workforce objectives. Support: Consistent with prior CPUC Decisions Have concerns: ODC reported potential barriers of collecting data from contractors including company privacy, willingness to share private company data, and concerns with contractor response rates.</td>
<td>Short-term: Closely follow on-going activities for 2013-2014 program cycle; provide comments and recommend that study consultants reach out to experts knowledgeable of state and federal labor force data collection. Long-term: Commit additional resources to expand upon on-going study to increase emphasis on defining rationale for data collection, on design and testing of questionnaires and program tracking systems, and on including experts in the workforce data collection area.</td>
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### SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

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<td>work plan is currently under development and extent of efforts in this area and efforts in this area are expected to be constrained by limited resources.</td>
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C. Explicitly consider contractor and worker characteristics and their impact on work quality as part of impact evaluations for specific resource programs

i. While work quality issues are now being addressed as part of selected programs, additional attention regarding the measurement of work quality and the underlying factors responsible for variations in work quality is required. Strategies to promote work

Support: Have concerns:

Short-term: Emphasize importance of clearly defining quality for pilots for on-going studies, including CEC and potential IOU studies comparing CALCTP and non-CALCTP projects.

Longer-term: Select programs where work quality is expected or known to be an issue (e.g., programs with complex measures and systems, where quality is costly to identify, and where incentives for quality are weak.)
### SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

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<td><strong>D.</strong> Modify program theory and logic models, program tracking</td>
<td>While Guidance Document will provide some suggestions on how to revise key EM&amp;V program elements,</td>
<td>Support: Consistent with CPUC direction Have concerns:</td>
<td>Short-term: Stakeholder feedback on how best to evaluate proposed</td>
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<td>quality, including certification requirements for workers and contractors, should also be part of evaluation.</td>
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<td>Develop and implements plans for explicitly addressing work quality</td>
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<td>systems, program performance metrics (PPMs), and process evaluations for adopted recommendations from SG_1, SG_2, and SG_3.</td>
<td>these suggestions need to be more fully developed with stakeholder input for those recommendations that are adopted.</td>
<td></td>
<td>recommendations</td>
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<td><strong>E.</strong> For IOU workforce education and training programs, develop and test methodologies for assessing implications of IOU initiatives related to skills development and partnerships on resource acquisition and other broader</td>
<td>The IOU WE&amp;T programs and the associated impact evaluations have focused on “market building” activities. An increased emphasis on skills development and on partnerships (SG_1 recommendations) with core educational institutions and community organizations will require adoption of new approaches to EM&amp;V. While the</td>
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<td>Long-Term: Incorporate revisions for adopted recommendations into Program Implementation Plans and EM&amp;V plans</td>
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<td><strong>Support: Have concerns:</strong></td>
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<td>Short-term: Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships. Identify programs and EM&amp;V approach where significant IOU resources are allocated currently to skills development and partnerships</td>
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<td>Long-Term: Develop and implement pilot projects to test how best to assess the benefits</td>
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### SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

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<td>objectives for energy efficiency</td>
<td>IOUs have various ongoing efforts related to skills development and partnerships, assessments of the benefits of these initiatives (i.e., skills development and partnerships) to the IOU ratepayers are needed if additional resources are to be allocated to these activities.</td>
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<td>of these initiatives to IOU ratepayers</td>
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### STRATEGIC GOAL 7. WEB PORTAL

Placeholder.
I. Introduction and Summary

The Natural Resources Defense Council ("NRDC") appreciates the opportunity to offer these comments on the draft summary recommendations for investor owned utility workforce, education, and training (WE&T) programs as outlined by the UC Berkeley Donald Vial Center Consultant group ("Consultants") on January 10, 2014 and presented to the Workforce Advisory Group on January 22, 2014. NRDC is a nonprofit membership organization with a long-standing interest in minimizing the societal costs of the reliable energy services that Californians demand. We represent our nearly 80,000 California members’ interests in receiving affordable energy services and reducing the environmental impact of California’s energy consumption.

NRDC supports the effort to better align customer funded programs to the California Public Utilities Commission (CPUC) workforce, education, and training goals. We agree that recommendations should be delineated by target audience (i.e., CPUC or IOU), by priority, and by timeframe (e.g., short term vs. long term). In addition, we offer the following recommendations summarized below:

1. Provide recommendations for the Municipal, University, School, and Hospital (MUSH) sector in terms of current program category restrictions in addition to the preferred long term approach.
2. Include a discussion of alternative pathways to achieve increased wages for workers.
3. Recommend the establishment of a taskforce to explore data needs as well as evaluation, measurement, and verification issues related to WE&T.

II. Discussion

1. Provide recommendations for the Municipal, University, School, and Hospital (MUSH) sector in terms of current program category restrictions in addition to the long term preferred approach.

NRDC agrees that a targeted focus on the MUSH sector will help meet the needs of the unique markets in that sector and reach economies of scale beyond what is currently occurring with the standard (or custom) offerings available through the statewide commercial program.
However, given the current restrictions on program funds as allocated by statewide program categories,\(^1\) we suggest modifying the proposed recommendation to focus on developing an additional program offering or specific target (e.g., percentage of funding allocation or kWh target) within the current program categories rather than creating an entire new statewide program. Alternatively, the final recommendation could include a two-part recommendation: one that addresses the near term (i.e., considering the current funding allocation restrictions) and one that addresses the longer term (i.e., what would be the ideal approach for MUSH program design and delivery irrespective of the current policy constraints).

2. **Include a discussion of alternative pathways to achieve increased wages for workers.**

   NRDC understands the rationale for including a wage-floor recommendation to ensure efficiency projects that are receiving customer funding have workers that are receiving a good level of pay. However, as noted in the Advisory Group meeting, establishing a wage floor does not necessarily ensure that the quality of installations will improve. In addition, it is unclear how the establishment of a wage floor will interact with the current cost-effectiveness methodology and energy savings goals (e.g., how would the increased wage floor increase the cost of the projects, what would the expected increase in savings be, how might this policy potentially reduce the number of projects that be completed, and would that hamper the ability of implementers to meet energy saving goals).

   NRDC suggests that the final recommendation include data that illustrates the clear connection between increased wages and increased energy savings. This could potentially offset the concern that such a policy modification would have undue burden on the implementers and possibly result in fewer projects being completed as budget allocations would likely remain unchanged. If such data is not available, NRDC suggests that the recommendations focus on alternative options to ensure jobs that receive customer funds are leading to good paying jobs (e.g., pre-qualifications, identified standards required by workers, etc.).

3. **Recommend the establishment of a taskforce to explore data needs as well as evaluation, measurement, and verification issues related to WE&T.**

---

\(^1\) There are currently 13 funding “buckets” as defined by the statewide program categories. Residential, Commercial, Agricultural, Industrial, WE&T, Lighting, Codes & Standards, Emerging Technology, Integrated demand side management, Financing, ME&O, Third-party, and Government partnerships. Fund shifting among the buckets is available but limited and can result in restricting funds.
NRDC agrees that data collection and well-planned and executed evaluation studies are critical to build the knowledge base to support and to design successful WE&T programs. Since the issues surrounding data collection and evaluation, measurement, and verification (EM&V) studies are quite complex, NRDC suggests that instead of specific EM&V recommendations, the Consultants should propose the establishment of a short term taskforce to sift through the logistical challenges of the current process and best determine where data and EM&V needs are best addressed.

During the next few years, it is anticipated that the current utility reporting requirements will be re-evaluated and workpapers and evaluation efforts will be better prioritized and streamlined. The proposed taskforce could tap into those processes and recommend additional approaches, if needed to ensure the needs of the WE&T goals are met. Within this recommendation, Consultants could include a list of key questions and key stakeholders and/or agencies that would need to be involved to ensure successful implementation.

III. Conclusion

Thank you for the opportunity to comment and for considering our recommendations. NRDC looks forward to continuing to work with the CPUC, Consultants, utilities, and stakeholders to identify opportunities to best align customer programs with CPUC WE&T goals.
February 5, 2014


As an electrical contractor, my organization is interested in the energy efficiency and renewable energy market, and we want to ensure that we are able to compete based on the best value for our customers. Our goal is to ensure that installations are done safely and correctly to maximize energy savings. We believe strongly that contractors should be prequalified to perform this work, including proper licensing, bonding, workers’ compensation, a good safety record, utilization of registered apprentices, and a demonstrated ability to perform the work. A highly skilled and trained workforce is essential to quality installations and safety, which in turn leads to customer satisfaction and maximum energy savings. We also support third party certifications for contractors and workers, including the Department of Industrial Relations Electrician Certification Program and the California Advance Lighting Controls Training Program (CALCTP).

We further believe in payment of fair wages and benefits to ensure economic vitality.

At a minimum, all work that is performed should be properly permitted, inspected, and meet the new Title 24 requirements so that our customers are confident that we are in compliance with existing rules and regulations.

The construction industry is subject to informal and illegal practices due to transient and short-term nature of the work. In order to ensure a fair and competitive environment for contractors who choose to abide by California’s rules and regulations, a stronger compliance and enforcement system to measure whether contractors are properly installing energy efficiency measures as well as following workforce standards is critical.

We strongly support the UC Berkeley Don Vial Center on Employment in the Green Economy in their efforts to develop recommendations and implementation plans on how the utilities should operate their workforce education & training program.

Sincerely,
David Smith
President
Smith and Sons Electric
WE&T Statewide Strategic Planning Consultant

**DRAFT summary recommendations**

January 10, 2014

Lead Researcher:
Dr. Carol Zabin, UC Berkeley Donald Vial Center

*Not for public dissemination*

Comments from The Greenlining Institute
STRATEGIC GOAL 1: WORKFORCE EDUCATION AND TRAINING PROGRAM MODIFICATION

The IOUs’ dedicate most of their WE&T resources for growing the market for energy efficiency services rather than skills-building for the work force who carries out the work, and the current structure of their programs is not well-suited to improve the DSM skills and knowledge of large numbers of workers in the key occupations that impact energy efficiency outcomes. By increasing the emphasis on skills development, the WE&T programs can better meet the CLEESP’s vision that “By 2020, California’s workforce is trained and fully engaged to provide the human capital necessary to achieve California’s economic energy efficiency and demand-side management potential.”

Most of the IOUs’ WE&T resources are dedicated to very short, stand-alone, free classes open to any interested person. Most participants are either end-users (building managers or home owners who are potential buyers of energy efficiency services) or contractors and professionals in managerial positions (sellers of energy efficiency services). The offerings are not effective at reaching workers in the key EE/DSM occupations or at developing workers’ skills:

- Most current offerings do not involve the state’s core education and training institutions for the key EE/DSM occupations, thus missing an opportunity to incorporate DSM content into the main period of training that workers in key occupations go through.
- Most current offerings do not adhere to best practices for skill-building training. Best practices include clear prerequisites and learning outcomes for each class, classes that are sequenced and build upon each other, competency testing at class completion, tied to recognized, stackable credentials, hands-on learning, and for incumbent workers, a clear commitment and involvement by their employers.
- The 2010-2012 WE&T process evaluation by ODC found that the Centergies classes heavily emphasize information about technologies, rather than skill-based outcomes.
- Due to the course structure and content delivery style, ODC concluded that participation in Centergies training does not guarantee that participants will have obtained the skills necessary to carry out high-quality work.

Recommendations

We recommend the IOUs direct a significant portion of WE&T resources to EE/DSM skill-building activities for the critical occupations. Our recommended approach would affect occupational transformation on a broad scale by leveraging the state’s core accredited education and training institutions, and promoting the identification of clear certifications and skill standards.

The IOUs should substantially increase WE&T resources for workforce development (e.g. to at least $80 million per three-year cycle), and then redesign this programming with increased participation and oversight from state workforce development experts. This process could be administered by the IOUs or by a 3rd party via RFP. An alternative approach would have the CPUC develop the necessary interagency agreement to with the CA Labor and Workforce Development Agency to transfer administration of some or all of these activities to the CA Workforce Investment Board or a non-profit organization. This alternative would ensure closer cooperation between the energy, education and labor agencies.

We recommend developing comprehensive implementation plans to customize programming targeted to each of the three career pathways. These plans should align with and leverage the core education and training institutions (UC/CSU for professionals, CCC and state-certified apprenticeship for the trades). Each of the plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation. We offer more detailed recommendations on processes for prioritization and program delivery in our full guidance plan. We also present three “Phase 1” programs that can be initiated in 2014, which are low-hanging fruit that can serve as learning arenas for the new WE&T configuration.

Our proposal involves structured oversight from a governing board of key state workforce, education, and energy agencies, plus technical experts (e.g. the Lawrence Berkeley Lab). The governing council should appoint industry and subject-matter experts to an advisory group for each occupation, which will be responsible for identifying certification paths and skill standards.

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1 CLEESP, p 74.
2 2010-2012 WE&T Centergies Process Evaluation, ODC. Pages 12, 13
3 Ibid, p 14
4 This may require accelerated direction from the CPUC (e.g., Advice Letter process at a minimum)
## SUMMARY OF RECOMMENDATIONS:
### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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| **A. Allocate a significant amount of WE&T dollars to targeted programs for workers' skill-building:** | Although the CLEESP mandates workforce education and training, most of the Centergies budget currently goes towards educating buyers and sellers of energy efficiency services, rather than skills development for workers involved in the design, installation, and maintenance of EE/DSM work. Most of the Connections budget goes to consumer education, not career development. Workforce development and market development require a different guiding strategy for programming, and distinct activities and delivery mechanisms. There is a need for increased efforts in the area of workforce development in order to carry out the CLEESP vision, which will require a significant increase in resources. Our recommended allocations represent the minimum amount that we believe would have a statewide impact on workforce development in each of the four categories (professionals, res trades, non-res trades and inclusion). We prioritize among the four categories based on the following criteria:  
  i. Estimated program costs based on preliminary recommendations and stakeholder feedback;  
  ii. Ability to leverage other funds (state and/or employer)  
  iii. Importance in the CLEESP  
  iv. Share of occupations | Stakeholder: State workforce development agency and education institution leaders; Stakeholder advisory group  
Have concerns: IOUs do not want to lower budget to current programs | Get stakeholder feedback on the quantity of $ to be allocated to workforce dev’t vs. market dev’t, e.g. how much $ is needed for different types of activities, and how to prioritize programming based on needs and opportunities. | Please see comments under SG2.  
Criteria for funding needs to be fleshed out. |
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<td></td>
<td>from the NA projections (4:1 trades:prof; 1:1 rec:non-res)</td>
<td>v. Key role of specifiers and designers</td>
<td></td>
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<td></td>
<td>vi. Where are there work quality problems?</td>
<td>vii. Where are their key new emerging technologies that require new skills for critical occupations?</td>
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<tr>
<td>B. Redesign workforce skills development programming</td>
<td>Current programming for workforce skills development is limited. Most programming in this area does not follow best practice for skills development and does not fully leverage the rich infrastructure of CA accredited education and training institutions. Short, open-door classes are still the primary program delivery mechanism, although this is not an effective skills-building strategy. Partnerships with apprenticeships have been extremely limited so far.</td>
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<tr>
<td>1. Phase out short, stand-alone classes as a mechanism for skills-building program delivery (except classes designated for 20% dedicated to market development)</td>
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<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Get stakeholder feedback on how to structure effective partnerships for each key institutional partnership.</td>
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<td>2. Orient programming around partnerships with core accredited education and training institutions for each major occupation/career pathway: professionals; commercial trades workers, and residential trades workers.</td>
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<td>Have concerns: IOUs have concerns about how to get credit for energy savings from programs based on partnerships.</td>
<td>Discuss with stakeholders, IOUs and CPUC how to incorporate partnership-based activities with other IOU program objectives re: energy savings.</td>
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<tr>
<td>C. Career pathway plans:</td>
<td>Design an implementation plan for each major career pathway (professional, commercial trades, residential trades) with the following elements:</td>
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<td>Support: State workforce development agency and education institution leaders; Stakeholder advisory group</td>
<td>Get stakeholder feedback on priority activities and delivery mechanisms for each career pathway plan.</td>
</tr>
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<td>1. Each of the 3 plans should be led by a state-wide staff person with understanding of and credibility within the key institution for each occupation (i.e. UC,CSU, and CCC for professionals; DAS and CCC for commercial trades; CCC for residential trades).</td>
<td></td>
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<td>Have concerns: IOUs have concerns about how to get credit for energy savings from programs based on partnerships.</td>
<td>Get stakeholder feedback on how to structure the process for determining certifications and skill standards for each occupation.</td>
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<td>2. Governing council should appoint Industry and SME advisory group for each occupation, which will be responsible for identifying certifications and skill standards for each.</td>
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<td>3. Plan should determine priority opportunities for training based on emerging technologies and areas of work quality problems, as well as gaps in training in main institutions.</td>
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<td>4. Plan should determine key opportunities to</td>
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<tr>
<td>1. Incorporate EE skills and knowledge at specific points in the career pathway for priority occupations. Key points in the career pathway are pipeline preparation, core post-secondary education, and incumbent worker training.</td>
<td>and consensus on certifications and skill standards for the critical occupations.</td>
<td>iii. The IOUs have internal expertise on emerging technologies, and certain areas of quality problems (not always within the WE&amp;T staff, however). They do not have expertise on career pathways or workforce development strategies.</td>
<td>i. Get stakeholder feedback on governance structure.</td>
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<tr>
<td>2. Funds should be allocated wherever possible to existing training programs linked to state-recognized credentials, via RFPs or other funding mechanisms.</td>
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<td>iv. Budget constraints are a concern to the IOUs WE&amp;T programs, as well as many training providers. Leveraging existing resources and infrastructure can increase programs’ impact.</td>
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<td>3. Funds should support incorporation of EE specific knowledge and skills through support for curriculum development, train the trainer etc.</td>
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<td>v. Significant employer commitment to training programs increases their effectiveness.</td>
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<td>4. Programming should leverage funding for classroom and other training from key institutions wherever possible.</td>
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<td>vi. Linking or embedding training initiatives with long-term career pathways, in particular core occupational training institutions, also increases their effectiveness.</td>
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<td>5. Programming should use sector strategy approach for incumbent worker training, based on commitments from multiple employers.</td>
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<td>6. In-house IOU skills training should be limited and reserved to cover gaps that partners can’t fill, with commitment to transfer courses to other training institutions over time.</td>
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5. Governance and accountability: 1. Plan must be approved first by governing board composed of key state workforce, education, and energy agencies, and technical experts 2. CPUC should consider recommendations of governing board and approve final plan 3. Logic model should be followed that provides evaluation framework, including PPMs, for measuring the impact of skill development on immediate energy savings and market transformation 4. Although some ad-hoc partnerships have been successful, there is a lack of internal capacity in the IOUs WE&T programs to effectively develop broad-based partnerships with each of the state’s key training institutions for EE/DSM occupations. | i. Most of the prior IOU-led attempts to bring stakeholders together for WE&T planning and consensus-building around standards have been contentious, e.g. the HVAC Sector Strategy. ii. The CPUC’s WE&T Task Support: State workforce development agency and education institution leaders; Stakeholder advisory group Have concerns: IOUs are concerned about burdensome oversight and loss of control of the program direction. | ii. Get stakeholder feedback on governance structure. Discuss governing board with CPUC and other state workforce education and energy agencies. Get feedback on logic model and PPMs, and evaluation structure for measuring impact on energy savings and market transformation. | Support in concept. | | |

**COMMENTS**

It is clear that a body is needed to provide advice, oversight, and statewide coordination over IOU WE&T programming. This would also allow for greater leveraging and partnership with programming and resources beyond IOU programming. This is supported by previous Commission decisions acknowledging that WE&T is not within the core competency of either the CPUC or the IOUs. The CPUC should retain proper oversight over ratepayer funds, which could be achieved with a direct seat on such a body, or using a structure similar to the way the CPUC coordinates with CAETFA on financing issues, and ultimate approval of programming and budgets. It would be ideal for this to be an official State body with some level of binding authority. Legal Division would need to undertake analysis of the legal requirements pertaining to the various types of advisory bodies within the CPUC purview.
## SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<td><strong>E. Phase 1 Programs</strong></td>
<td>Force is a public forum for input on the IOUs’ programs, but not an adequate forum for program development.</td>
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<td><strong>We suggest the following programs that can be initiated in 2014 for each occupational group, which are low-hanging fruit that can serve as learning arenas for the new configuration:</strong></td>
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<tr>
<td>1. <strong>Professionals:</strong> RFP to be let out to 4 year accredited architecture and engineering departments to incorporate energy efficiency skills and knowledge into their curricula for degree programs</td>
<td>The changes we propose are significant and will take time to fully implement. We offer the Phase 1 programs as concrete programs that can be carried out in the near-term as the larger framework is developed and put into place.</td>
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<td>2. <strong>Commercial trades:</strong> Partnership/sector strategy with CA Division of Apprenticeship Standards to incorporate EE skills and knowledge into journey upgrade programs for key crafts.</td>
<td>We received clear feedback from professional 4 year programs about the huge potential value of an IOU-sponsored RFP to incorporate leading EE/DSM skills into curricula.</td>
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<td>3. <strong>Residential trades:</strong> Review and consolidate existing Community College partnerships around supporting skills-building best practices at Colleges</td>
<td>DAS has already indicated its eagerness to participate in this type of partnership on EE/DSM skills.</td>
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<td>4. <strong>Inclusion:</strong> RFP for Pilot Project Energy Efficiency Bridge Program in one region that leverages other investments and connects to apprenticeship.</td>
<td>Our research indicates a number of productive relationships with local Colleges and community training institutions exist.</td>
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<td><strong>F. Administrator:</strong></td>
<td>Although the IOUs have experience convening industry and training entities on EE/DSM issues, they have been unsuccessful in developing broad workforce development partnerships with the state’s core training institutions to reach targeted occupations and stages along the career pathways. Because of this, there is reason to question whether alternative administration of the workforce development portion of WE&amp;T would be more effective.</td>
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<td><strong>Administrator should have the capacity and willingness to manage and staff the plan outlined above.</strong></td>
<td>Explore the pluses and minuses of each option, soliciting stakeholder feedback and adding detail to each proposal.</td>
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<td><strong>Option 1. IOUs manage and staff guidance plan, or issue an RFP for a 3rd party implementer.</strong></td>
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<td><strong>Option 2. CPUC works with California Labor and Workforce Development Agency to transfer administration to the CA Workforce Investment Board or non-profit organization.</strong></td>
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<td>The content of the recommendations are the same in either case, and both could still include IOU participation in program development, or best practice IOU-led offerings such as the</td>
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<td><strong>Support:</strong> CA DAS supports the apprenticeship proposal; UC Berkeley architecture department is a strong supporter of the professional proposal.</td>
<td>Write up the three specific proposals for stakeholder feedback and input.</td>
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<td><strong>Have concerns: None?</strong></td>
<td>Please see comments under SG2.</td>
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## SUMMARY OF RECOMMENDATIONS:

### STRATEGIC GOAL 1, Workforce Education and Training Program Modification

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<td>retrocommissioning series. The primary difference between the options is the ownership and core staffing of the skill-building portion of the WE&amp;T portfolio overall.</td>
<td>Option 2 Support: Members of the stakeholder advisory group (including the state labor agencies) liked the idea of a more systematic, collaborative tie between the WE&amp;T programs and the state’s other primary workforce development and education agencies, and the potential it presents for program alignment and fund leveraging. Concern: Most IOU WE&amp;T staff are wary of relinquishing ownership to an outside entity. Some stakeholders and IOUs expressed concern that there isn’t currently a clear choice of a non-profit to lead the Option 2 effort. Several noted issues that may arise around maintaining CPUC oversight over ratepayer funds.</td>
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STRATEGIC GOAL 2: INCLUSION FOR DISADVANTAGED WORKERS

Currently, the substantial and diverse investments being made by the IOUs in the energy efficiency and DSM programs do not include interventions to support the creation of middle-class career pathways for low-income communities, communities of color and other disadvantaged populations. While these investments offer a promising opportunity to build middle-class career pathways for low-income people and jobseekers with barriers to employment ("disadvantaged workers"), there are several barriers in place that prohibit the IOUs from achieving the California Long Term Energy Efficiency’s Strategic Plan goal of increasing “participation from within minority, low income and disadvantaged communities in achieving California’s economic energy efficiency potential”:

- The work of investor-owned utilities in California was not historically seen as public investments akin to government public works projects, and thus the public policy direction of requiring inclusive hiring policies and family-supporting wages applied to publicly-funded capital projects has only been recently considered by the CPUC.
- The IOUs do not currently have clear authority and direction to allocate resources to proven practices that increase minority, low-income, and disadvantaged worker participation in public works and energy efficiency projects.
- The IOUs currently lack of a working definition of "disadvantaged worker" and lack clear performance metrics or program goals by which to measure progress in hiring these workers.
- Current data collection methods do not provide a comprehensive picture on the demographic profile of the workforce being employed to carry out EE/DSM programs by occupation or job category, nor do they collect detailed data on compensation structures and wages by occupation and job category. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect this data.
- The IOUs currently lack clearly articulated pathways for disadvantaged workers to advance along a career ladder as they gain more experience, training and skills. An effective ecosystem of agencies and organizations (including low income weatherization providers, community based organizations, community colleges, local and state workforce investment boards, utility workforce development staff, labor unions and contractors) can create a pipeline of ready and able workers through effective recruitment, training and placement of disadvantaged workers.
- The IOUs currently lack the contracting and procurement tools need to shape incentives or requirements for contractors to hire trained and ready workers from disadvantaged communities. Contracts for higher-paid, higher-skill work (such as EE work in schools, universities and hospitals), tend to be smaller and do not always require deep, complex retrofits, which may prevent contractors from bringing on hired and ready workers from disadvantaged communities.

Integrating procurement and contracting ("demand-side") strategies with recruitment, screening, skills development, training, wrap-around services and credentialing ("supply-side") strategies is essential to achieving the full scope of California’s EE goals.

Recommendations

The CPUC should direct IOUs to measure and report quality job creation and workforce diversity so that they can allocate appropriate administrative and program resources to achieve inclusion goals. The CPUC’s direction should have clear metrics and performance standards to meet these goals.

We propose a two track strategy. First, the IOUs should ensure the quality of jobs created by EE investments. We recommend that the IOUs set a wage floor for the ESAP, Direct Install, and Third Party programs, since these program implementers and contractors have direct contracting or subcontracting relationships with the IOUs. Second, we recommend that the IOUs launch a pilot MUSH market program that includes a targeted hire program. This MUSH sector program can follow the standards used in public works construction, where targeted hire programs, tied to apprenticeship, have been very successful in many local governments in California and nationally.

Data collection efforts are necessary to support these goals. Decisions 12-08-044 and 12-11-05 direct the IOUs to collect workforce data to evaluate job quality and the demographic profile of workers. We recommend that this be done through an on-line workforce reporting system (such as Elations or LCP Tracker); these systems are inexpensive and have been used by many awarding agencies in the state. In addition, the IOUs should adopt a definition of disadvantaged worker and apply it meaningfully and consistently across all EE programs. This definition can then be used to design inclusion programs, and to track and measure results. We suggest that a Disadvantaged Worker be designated as: a) an individual who meets Disadvantaged Worker criteria (see footnote for criteria 1); and/or b) an individual who is a resident of a high unemployment zip code in her/his county 2. The IOUs should also institute data collection as

Once a definition is set, the IOUs should set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs. We recommend a conservative initial goal (such as 15% of new entry level job openings in IOU supported EE/DSM work) in order to ensure success and acceptance by both IOUs and contractors. This goal can be increased over time as programs are developed and contractors and IOU staff become familiar with them. The results of these goals can be tracked by the workforce reporting system and made publicly available, as a scorecard, similar to that used in General Order 156 which has been successful for promoting diversity in procurement. Contractors meeting goals should receive additional points in the next round of program procurement.

In order to ensure that workers are trained and ready to perform higher skill work, we also recommend funding for pre-apprenticeship training programs that will provide disadvantaged workers the skills, training and abilities needed to be successful in entry-level MUSH and large commercial EE and utility employment. This funding should be released in the form of an RFP, and should encourage the mobility of ESAP and other residential workers into higher wage higher skilled jobs in the MUSH sector.

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1 Page 74
2 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

3 The unemployment rate is 150% of the median unemployment rate for the county.
### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<td>A. Prioritize creation of good-paying jobs and workforce diversity as key IOU goals along with efficiency outcomes:</td>
<td>Successful workforce inclusion programs have established goal setting and monitoring in order to improve outcomes. In order for the IOUs to have the authority to direct resources towards these efforts, they need direction from the CPUC. General Order 156 is an example of the IOUs' ability to create a new program and achieve diversity goals in response to specific CPUC direction.</td>
<td>Support: Some equity groups, including those in the Stakeholder Advisory Group, support this recommendation.</td>
<td>Get stakeholder feedback on language of proposed CPUC direction.</td>
<td>Agree</td>
<td>The creation of good paying jobs and workforce diversity is consistent with the EESP and Commission policy. To effectively manage efforts in fulfillment of these goals, a formalized system to promote, measure, and report on progress is essential. Despite previous Commission directives encouraging action on these issues, it may be helpful for the Commission to issue additional explicit directives to the IOUs to provide additional confidence when submitting proposals for allocating program resources. In the meantime, the IOUs should exhibit leadership in this area and put meaningful effort into proactively adopting elements these recommendations, seeking Commission approval as needed. It would be helpful to clearly identify what the IOUs are able (as opposed to ordered) to do currently and what additional action/guidance is believed to be needed from the CPUC.</td>
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<tr>
<td>B. Define Disadvantaged Worker meaningfully and consistently:</td>
<td>i. Current lack of common definition used by all IOUs for tracking inclusion efforts in training and hiring. ii. Many existing public works programs have developed similar definitions of Disadvantaged Worker. Using like criteria will leverage statewide efforts to build a greater pool of eligible workers and create more opportunity for their upward mobility. iii. The combination of these two sets of criteria have proved in other programs to identify an adequate number of individuals who most need employment opportunity and who are capable of developing the necessary skills to do good work.</td>
<td>Support: Some equity groups support this recommendation.</td>
<td>Test revised definition with Stakeholder Advisory Group.</td>
<td>Mostly Agree</td>
<td>Regarding definition a). These definitions of disadvantaged workers and workers with barriers to employment are fairly standard and are used widely. Maintaining consistency with public works definitions will serve the ultimate goals of this initiative by leveraging training resources, projects in related sectors, and economies of scale to create the maximum number of jobs in disadvantaged communities. In recognition of stakeholder concerns we support dropping the ESAP public works goal for purposes of defining disadvantaged workers. Previous Commission decisions (ESAP for example) have identified ESAP workers as a readily identifiable pool for workers for workforce equity purposes. As such, the IOUs and the Commission should still ensure that ESAP workers can tap into career pathways towards higher paying work and upward mobility. Regarding definition b), There should be an evaluation of whether there is a risk that residents in high unemployment zip codes that are not disadvantaged can be counted as disadvantaged, thereby undermining the public policy goal of this initiative. For example, Alameda county has relatively low unemployment yet has pockets of extreme poverty. The adopted definition should ensure we are targeting the workers with barriers to employment.</td>
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<tr>
<td>C. Set a specific minimum workforce participation goal for Disadvantaged Workers in EE/DSM programs:</td>
<td>Models from other successful programs. Current lack of specific goal. Successful experience from G.O. 156.</td>
<td>Support: Some equity groups support this recommendation.</td>
<td>Develop an initial goal in consultation with key stakeholders.</td>
<td>Agree</td>
<td>Goal setting and accountability at all levels of IOU management is critical to making a meaningful difference in workforce diversity. Executive level buy-in and accountability is one of the primary reasons that supplier diversity efforts have been successful. When the IOUs set concrete goals, they have been successful at meeting them. We support initially conservative targets identified in collaboration with stakeholders. We would support an initial goal of at least 20%. It is very important that an explicit schedule for ramping up is developed. We have anecdotal evidence that ESAP has relatively high level of diversity. The point here is to provide career opportunities in the mainstream EE portfolio, which we suspect to be largely lacking in diversity. As such, we support considering ESAP diversity data separately from other EE investments, while tracking and reporting both. Reporting should be disaggregated by sector and program so that the CPUC and stakeholders can understand trends.</td>
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6 Disadvantaged Worker criteria: household income is below 50% of Area Median Income (AMI); individual is receiving public assistance; homeless; lacking a GED or high school diploma; involvement with the criminal justice system; custodial single parent; chronically unemployed; emancipated from foster care system; veteran; limited English proficiency.

7 The unemployment rate is 150% of the median unemployment rate for the county.
### SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 2, INCLUSION

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<tr>
<td>2. This goal can be increased over time as the programs are developed and participants become more familiar with them.</td>
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<td>cost-effectiveness requirements to reflect inclusion goal?</td>
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<td>D. Institute a required, electronic workforce reporting system for EE/DSM contractors to capture information:</td>
<td>Successful equity and inclusion programs mandate regular, transparent reporting of data by contractors to track programs and adjust program elements.</td>
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<tr>
<td>1. Require monthly reports using LCP tracker or some other established program that works with payroll companies.</td>
<td>Support: Labor groups familiar with reporting data support this recommendation.</td>
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<tr>
<td>2. Include the following data points:</td>
<td>Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concerns over the potential cost of reporting data. IOU staff have expressed concern over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.</td>
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<td>a. Hours worked</td>
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<td>b. Rate of pay</td>
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<td>c. Disadvantaged status, zip code of residence</td>
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<td>d. Race, ethnicity, and gender</td>
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<td>e. Trade/occupation level</td>
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<td>f. Journey/apprentice level</td>
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<td>g. Certifications held</td>
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<td>3. Make the reports publicly available.</td>
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<td>4. Contractors who achieve or exceed goals will receive compliance points in next round of procurement.</td>
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### E. Ensure baseline quality of jobs created by efficiency investments:

Establish wage floor (compensation standard) requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years):

- Interviews indicate ESAP wages range from $12/hour to high $20s/hour.
- LA DWP’s utility pre-craft worker program starts trainees at $16/hour.
- Higher wages typically contribute to higher skill development, and better outcomes.

- Interviews indicate ESAP wages range from $12/hour to high $20s/hour.
- LA DWP’s utility pre-craft worker program starts trainees at $16/hour.
- Higher wages typically contribute to higher skill development, and better outcomes.

Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs.

Have concerns: Some IOU staff, one equity group (Brightline Defense), and contractors are concerned. A wage floor could increase cost of program and reduce number of installations. Wage floor could lower cost-effectiveness below goal. ESAP contractors have concerns that they will be expected to bear burden of wage floor without overall program budget increase. Cost of collecting and reporting data.

Set feedback on $16/wage floor from Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.

Mostly Agree.

- Interviews indicate ESAP wages range from $12/hour to high $20s/hour.
- LA DWP’s utility pre-craft worker program starts trainees at $16/hour.
- Higher wages typically contribute to higher skill development, and better outcomes.

Support: Some equity groups on the Stakeholder Advisory Group (Greenlining) support the concept of a wage floor so long as ESAP contractors are permitted to adjust budgets and cost-effectiveness ratios to accommodate potential increased costs.

Have concerns: IOU staff and contractors unfamiliar with reporting have expressed concerns over the potential cost of reporting data. IOU staff have expressed concern over lack of direction from CPUC regarding importance of inclusion vis-à-vis cost-effectiveness trade-off.

Test detailed reporting recommendations with stakeholders.

Agree, strongly disagree with concerns.

Several Commission decisions and directives have repeatedly emphasized the need for workforce data. This is no longer up for debate. The IOUs and contractors can do this correctly using inexpensive, off-the-shelf products like LCP Tracker. This has been done successfully in many jurisdictions and is critical for the implementation of the other policies under SG2.
<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Data Supporting Recommendation</th>
<th>Stakeholder Concerns/Controversy</th>
<th>Next Steps</th>
<th>POSITION (Choose 1: Agree, Disagree, Disagree with Comments)</th>
<th>COMMENTS</th>
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<tr>
<td>F. Improve job opportunities created by created by efficiency investments:</td>
<td>Align the requirements of ratepayer- or IOU-funded efficiency investments in public sector buildings with the prevailing wage and apprenticeship standards of California public works projects.</td>
<td>California Labor Code requires prevailing wages and apprenticeship utilization on public capital projects. Contrary to this general public policy, it exempts “work done directly by any public utility company pursuant to order of the Public Utilities Commission or other public authority.” [Cal. Lab. Code Sec. 1720(c)(1)].</td>
<td></td>
<td>Agree</td>
<td>Ratepayer funded DSM upgrades to public buildings should be considered public works projects.</td>
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<td>G. Consolidate all incentives and efficiency programs that target the municipal/government, university, school, or hospital sectors into a comprehensive MUSH program. Introduce an inclusion requirement in the MUSH program:</td>
<td>Energy Upgrade California and Sierra Nevada Energy Works. Programs in San Francisco, Portland and Seattle utilities. PLAs with targeted hire requirements at LA-METRO, LAUSD, CRA/LA, LACCD.</td>
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<td>Mostly support. Disagree with concerns.</td>
<td>The MUSH sector is an ideal part of the portfolio to implement targeted hiring and related policies due to the scale and direct contractual relationship with implementers. There is a great deal of precedent from other jurisdictions supporting best value contracting and targeted hiring. Past performance can be used to reward high-performing contractors when subsequent contracts are awarded. In addition to setting concrete goals and requirements, first-source hiring language can easily be integrated into contracts and is already being included in SDG&amp;E contracts. While we agree that high performing contractors should be rewarded, we have some concerns that only opening the list every two years will unduly exclude worthy and otherwise qualified entrants, particularly WMDVE firms. There should be adequate support and resources to enable minority owned firms to get prequalified, which further supports the CPUC’s GO156 goals. No evidence has been presented that targeted hiring increases overall costs. The public sector is very familiar with PLAs and would not be discouraged, especially in light of their public mission and state EE goals for public buildings. In concert with a more effective WE&amp;T portfolio and partnerships, this program can over time generate demand for disadvantaged workers that are appropriately skilled. Recommendations 1-3 should increase the scale of projects and over time the demand for new hires. Goals should initially be modest as recommended above and bridge training programs should be in place to upgrade worker skills as they move up into the career ladder.</td>
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<td><strong>Disadvantaged Worker hiring goals, and wage floors.</strong></td>
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<td><strong>6.</strong> Open list to new contractors on a restricted timeline (e.g. every 2 years).</td>
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<td><strong>H.</strong> Establish training bridge program to link residential EE workers to non-residential EE jobs.</td>
<td>Power Pathways, CCCO Career Advancement Academies, Pre-apprenticeship collaborations such as SF City Build, BEW Local 11 and LATTCC</td>
<td>Support: Education and labor stakeholders</td>
<td>Support in concept. Partially disagree with concerns.</td>
<td>We hope that an appropriately designed bridge program would provide the requisite skills and certifications to enable disadvantaged workers to on-ramp and upgrade into sectors like MUSH. Would be ideal in partnership with entities (non-profit, academic, labor) with experience in serving disadvantaged workers. The final report should be explicit as to the definition of a “pre-apprenticeship” program, including what relationships with the trades must exist, what curriculum is appropriate, and how graduates will be matched with apprenticeship programs upon graduation. Even if there are some viable career pathways within ESAP, ESAP workers should have every opportunity to upgrade their skills and move up career ladders. Conceivably this would create new entry level opportunities for new entrants to the pipeline. Remaining questions: What is the role of non-profit training providers with experience serving disadvantaged workers? What scale will pilot be? How many workers will be targeted for training and placement? What geography? What is the pathway from bridge program to residential and commercial work?</td>
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<td><strong>1.</strong> Strengthen ESAP and MIDI as entry point to a higher skilled, higher-paid career in commercial and industrial EE:</td>
<td>i. Interviews and EE Decision indicate expansion of MIDI program. ii. The level of skills required for residential ESAP and MIDI programs are similar: lower and thus more suited to an entry-level position. However, on the job, ESAP and MIDI installers gain valuable experience in both soft and hard skills, preparing them to move up the ladder. iii. The contractors who run the ESAP programs tend to hire from the local, low-income community, making it a natural entry point for a more diverse workforce. However, it should not be an end point for low-income workers.</td>
<td>Support: Some equity advocates were interested in learning more about the details of the recommendation to determine their support. Have concerns: Some stakeholders have indicated concerns with the viability of ESAP workers entering in bridge programs; some ESAP contractors indicate there are viable career pathways within ESAP employers.</td>
<td>Test $16/wage floor with Stakeholder Advisory Group and request specific comments and data on program impacts. Provide specific information to stakeholders on LCP Tracker.</td>
<td>Support in concept. See previous comments.</td>
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STRATEGIC GOAL 3: INTEGRATING WORKFORCE EFFORTS WITH RESOURCE PROGRAMS

There is substantial evidence that improper equipment installation, operation, and maintenance lowers the realized energy savings of energy efficient measures and most likely explains some of the differences between ex ante savings estimates and ex post evaluations. Specific sources include the 2011 WE&T Needs Assessment, where results from case studies for several distinct market sectors are reported, an extensive annotated bibliography that will form an appendix to the guidance plan, and recent interviews with current and former IOU staff, subject matter experts, and industry professionals, which were conducted for this project. This evidence spans complex advanced lighting and HVAC systems as well as installations of simpler energy efficiency equipment.

The extent to which improper equipment installation, operation, and maintenance reduces the energy outcomes for California’s Demand Side Management (DSM) programs is unknown. While specific studies have investigated the extent of poor installations for specific technologies (e.g., HVAC, advanced lighting, building construction), comparable data across measures and programs are not collected for California’s DSM programs that could systematically determine where poor work quality may be reducing energy savings.

Workers can acquire, through training and on-the-job experience, the necessary skills to perform high quality work, but training alone is not a sufficient condition to ensure high quality work. The market must also demand quality work. The IOU DSM programs have introduced various program requirements to ensure high quality work, ranging from contractor licensing requirements to quality assurance programs to customer information; however, these are minimal compared to the much more robust workforce and related standards found in many other sectors in the economy, including in segments of the building and construction industry, the key industry for energy efficiency investments. The current process for program planning, approval, and implementation does not specifically reward the IOUs for ensuring high quality work nor penalize them when energy savings are left on the table due to improper installation, operation, or maintenance of energy efficiency measures.16 The common response to poor work quality continues to be support for training, but the return on these investments—for both ratepayers and the trainees—is limited without greater demand for work quality.

The following recommendations 1) suggest a series of process improvements to better understand and incorporate the impacts of poor quality on energy goals and 2) suggest workforce standards for IOUs to incorporate into the management of EE programs that will both reduce the risk of inaccurate savings estimates due to work quality, and encourage higher performing and more qualified contractors to participate in DSM programs.

Recommendations

Process Improvements: First, we recommend a series of process improvements to create a stronger incentive structure to ensure proper installation and maintenance of energy efficiency measures.

The existing program development, approval, implementation, and evaluation processes neither reward nor penalize the IOUs for their influence over work quality and its impact on energy savings. Assumptions about the installation and performance of energy efficiency equipment are based on technical specifications and engineering assessments, and fail to account for the impact of worker skills and performance on equipment performance (and energy savings). Often, equipment is assumed to be installed correctly and in-service, without either specifying the level of technician skill required or verifying quality in the field to substantiate those claims.

The CPUC applies discounts (“haircuts”) to the IOU-claimed energy savings to avoid over-estimating, but these reductions do not isolate the effects of different program requirements or workforce standards. Since the IOUs perceive that stricter program requirements will negatively impact participation or cost effectiveness, there is little reason for them to voluntarily adopt higher standards, unless there are other issues at stake (safety, customer satisfaction, etc.). Quality assurance processes could provide a clear incentive if they evaluated performance in real time, but they mostly are limited to catching fraudulent behavior. Real-time across the board inspections are costly and increase transaction costs and program friction for customer. Finally, the program implementation and evaluation cycles are not conducive to providing timely feedback on effective program requirements, and as stated above, impact evaluations do not document or isolate work quality problems.

Our recommended process improvements address the shortcomings of the current quality assurance and discount process, and call for the identification of minimum contractor requirements and worker skills/credentials needed to carry out work correctly up front. These recommendations will reduce the risk of large gaps between ex ante estimates and ex post evaluations for deemed measures and savings left on the table due to installation problems for custom measures.

Workforce Standards: Second, we recommend several different types of contractor and workforce standards designed to screen out less qualified contractors and create an environment to encourage participation by high performing contractors in energy efficiency work. Workforce standards refer to interventions that shift the competitive environment toward higher quality. Workforce standards are a quality control mechanism that can reduce the need for more expensive post-installation quality assurance activities.

The lack of available information on work quality and its impact on the portfolio should not be used as an excuse to delay adopting workforce standards, many of which are “no regrets” or “do-no-harm” approaches with multiple co-benefits, including deeper retrofits. Because different standards can have the same effects in the labor market, there is some flexibility in how standards can be applied to different programs. For example, establishing a wage requirement can have the same effect as a skill requirement because if all contractors have to pay higher wages, contractors who have invested in higher skilled workers will be able to more effectively compete in the market. Similarly, policies to contract with high performing contractors will result in the use of skilled workers as effectively as establishing specific skill standards for workers for each program or technology. Each of these types of standards acts to support higher quality contractors, and screen out or improve the performance of lower quality contractors.

In making recommendations, we mapped the resource programs by delivery mechanisms, target market, and technology in order to identify the simplest approach given the existing program structure. Given the range of technologies currently offered and the ever-changing technological environment, it is very difficult to establish and maintain, not to mention enforce, appropriate specific worker skill standards for every measure and program in the IOU portfolio. When there is widespread industry agreement for particular skill standards,14 they are effective ways for establishing a bar for participating technicians and contractors. In the absence of agreed upon skill standards, contractor qualifications or wage standards would be simpler approaches to improve performance and work quality.

16 For custom projects, which represent a large percentage of the savings in recent portfolios, customers lose rebates (and IOUs lose savings credit) when equipment is not functioning for any number of reasons, including low-quality installation. The New Efficiency Savings and Performance Incentive (ESPI) creates a mechanism that encourages IOUs to manage EE programs in a way that ensure actual savings meet or exceed estimates (for deemed measures with a high degree of uncertainty).

14 For example CALCTP for advanced lighting controls or DOE Task Analysis for different energy efficiency jobs.
In our exploration and evaluation of different standards, we also identified a new model for addressing and improving contractor performance. The “best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS) gradually improve performance by giving vendors or contractors more responsibility in defining quality work by reporting their efforts and their results. Because all contractors are invited to identify metrics, measure, and report their performance and added-value, high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve. This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.
## SUMMARY OF RECOMMENDATIONS: STRATEGIC GOAL 3, RESOURCE PROGRAM INTEGRATION

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Data Supporting Recommendation</th>
<th>Concerns/Controversy</th>
<th>Next Steps</th>
<th>COMMENTS</th>
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<tr>
<td><strong>A. Process Improvements:</strong></td>
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<tr>
<td>Implement changes through program design, implementation, approval, and evaluation process to create stronger incentives for high quality work.</td>
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<td>1. Identify and document contractor competencies and markets and worker skills/credentials for field demonstration projects.</td>
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<td>2. In developing program plans, consider and document alternative approaches for addressing workforce issues (e.g. mix of certification requirements, training opportunities, and quality assurance/verification. Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings.</td>
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<td>3. Program Implementation Plans should specify how program requirements will increase the demand for quality installations. Initial plans should consider alternative scenarios prior to selecting a specific approach. This could replace the current WE&amp;T integration section of PIP templates.</td>
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<td>4. Develop a discount (haircut) to isolate the effects of work quality to apply to energy savings calculations. When measures are first introduced, inspections of performance should be used to establish the equivalent of a measure-specific “gross realization rate” and “installation rate”. Once measure-specific rates are</td>
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<td><strong>Support:</strong></td>
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<td>PRG support for eliminating three-strikes rule for fraudulent behavior.</td>
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<td>Widespread concern (from PRG) that work quality is not addressed systematically in existing processes and unanimous support for adjusting program processes to account for work quality. Unanimous agreement that process improvements are a necessary, but not sufficient, condition to address work quality; standards are also critical.</td>
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<td><strong>Have Concerns:</strong></td>
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<td>IOUs point out that work quality can be difficult to define and measure.</td>
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<td>IOU and ED staff are concerned that the benefits of isolating and measuring work quality issues may not exceed the costs of doing so.</td>
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<td>Contractor groups (written comments on EUC) want QA to be educational rather than punitive, incorporating mentorship.</td>
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<td>IOU staff point out the high cost of rigorous QA</td>
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<td>IOUs are concerned about program “friction” for customers</td>
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<td>Determine which programs can accommodate pay-for-performance requirements. Solicit stakeholder feedback on these recommendations Define “Fraudulent behavior”</td>
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established, samples should be used to modify rates. IOU credit should be based on results of those quality inspections.

5. Quality Assurance processes (Inspection and Verification) should focus more on quality of installation. Highly skilled technicians should be assigned to inspect installations at beginning of program and then randomly throughout programs.

6. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on quality.

7. Institute zero-tolerance policy for fraudulent behavior (for Trade Professionals, Customers, and other Contractors), with a three-year exclusion from participating in ratepayer funded programs.

8. Pay-for-performance requirements: Withhold fully crediting the IOUs and some portion of incentive payments until inspections confirm that equipment is properly installed and operational over the course of its effective useful life (or other meaningful period of time)
### B. Workforce Standards

Change the competitive environment to attract high performing contractors and screen out or improve the performance of lower qualified contractors. Use workforce standards as a quality control mechanism to reduce the need for more expensive post-inspection quality assurance activities.

1. Require CALCTP certification for contractors and technicians on all projects involving advanced lighting controls.
2. Require BPI firm accreditation (rather than individual certification) for all Whole House retrofit projects.
3. Require at least NATE certification for all projects involving residential HVAC measures. For commercial HVAC programs, require completion of a registered apprenticeship program or US Star or an associate's degree in HVAC and a NATE certification OR Industry Competency Exam (ICE) and NATE certification.
4. Establish different tiers of Responsible Contractor Policy, depending on project size or type (or contract size in the case of third party programs) requiring and verifying that firms (contractors and subcontractors) meet pre-established, clearly defined, minimum standards relating to contractor responsibility:
   - i. ALL contractors and subcontractors working on projects with total costs $500 or more: proof of proper licensing, bonding, & workers’ compensation and building permit signed off by building inspector, if required by law.
   - ii. MUSH properties, non-residential properties that are either 50,000+ square feet or

| Support: | Stakeholders comment that standards are necessary, but not effective without verification and enforcement. |
| Determine the project size threshold(s) for different Responsible Contractor requirements ($50K or $100K? $1 million?) |
| Widespread stakeholder support for CALCTP requirement |
| Widespread contractor support for BPI standard, (except HVAC) |
| PRG group thinks Responsible Contractor Policies are considered extremely effective strategies to improve work quality in the construction trades |

| Have Concerns: |
| IOUs are unclear about new Title 24 regulations regarding advanced lighting controls—does Title 24 apply to equipment or integrated systems? Industry experts claim that Title 24 does not require the installation of integrated advanced lighting systems—only the component parts. New Title 24 standards will affect structure of IOU incentives. |
| Determine project type (building types) for Responsible Contractor requirements and how to tier requirements for projects of different scales. |
| Solicit stakeholder feedback of specific recommendations. |

**CALCTP** is the industry recognized standard for advanced lighting control systems. **Title 24** requires CALCTP for acceptance testing. **Energy Upgrade CA** requires that one person on staff has BPI certification. With BPI firm accreditation, rigorous quality assurance is built in to BPI accreditation processes. Persistent documented problems related to performance in HVAC programs.

**Documented challenges of properly installing advanced lighting control systems.**

**ESAP** wages range from $12/hour to high $20s/hour.
have total construction costs of $50,000+, and residential properties that have 4+ stories: third party administrators, ESCOs, & contractors that perform the work must pre-qualify themselves and any sub-contractors using a more detailed pre-qualification process. This should include the criteria for all contractors [4]:

a. a list of at least 3 similar past projects & references

b. 60% of workforce comprised of journey-persons who completed a registered apprenticeship program in California, or are currently enrolled in such a program.

c. Require 20% of jobsite electrical workers should be OSHA 10-hour General Industry Safety and Health Certified.

d. Require at least one jobsite electrical worker should be OSHA 30-hour General Industry Safety and Health Certified.

e. Require that any electrician working on indoor or outdoor lighting controls be a California Advanced Lighting Controls Training Program – CALCTP certified contractor and/or electrician.

f. Contractor should have a documented history of full compliance to state, health, safety and work standards.

In addition, the contractor’s performance over time should be tracked in PIRMS.

iii. Consolidate MUSH incentives into more streamlined programs
5. Establish wage floor [compensation standard] requiring that ESA and Direct Install (small commercial and residential) are paid a living wage (we suggest a wage floor of $16 indexed to inflation for future years)

6. Develop an online project & payroll reporting system for contractors to input information. IOUs should utilize a 3rd party contact/labor compliance company or perform compliance in-house to ensure that goals are being met with positive and negative consequences to enforce requirements.

C. **“Best value” Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS)**: Pilot new model of procurement and contract management that invites contractors to identify metrics, measure, and report their performance and added-value, the effect being that high performing contractors differentiate themselves and more effectively compete in the marketplace on quality rather than low-cost, while lower-performing contractors are driven to improve.

1. Pilot PIPS/PIRMS in the HVAC QI and QM programs. As participating contractors report on their maintenance activities, customer satisfaction, actual energy savings, and other metrics of performance, it will become clear which contractors are meeting or exceeding program goals.

This model has been used in over 1600 projects across 41 industries and offers a promising approach to improve work quality across the IOU portfolio without increasing costs or arbitrarily selecting standards.

Clarify how this model could work in HVAC QI and QM and for new solicitation processes.

Solicit stakeholder feedback

Support

We support institutionalizing practices and processes that support best value contracting.
2. Pilot PIPS/PIRMS for new program solicitations to ensure best value. When used for solicitations, vendor selection is based on five filters: Past Performance Information, Project Capability (technical risk, ability to manage non-technical risk, value added, financial milestones), Interviews of key personnel, Prioritizing vendors (identify best value), and Cost verification (make sure best value is within cost range). Although PIPS/PIRMS can be used to manage projects, it will work most effectively when it is used for contractor selection as well.
Recommendations for Strategic Goal #4 (Supporting Sector Strategies) and Strategic Goal #5 (Stakeholder Involvement) are currently being developed.

### STRATEGIC GOAL 6: EVALUATION OF WORKFORCE EDUCATION AND TRAINING PROGRAM

Evaluation, measurement, and verification (EM&V) studies for the IOU energy efficiency and other demand-side management programs serve a number of functions, including supporting development and refinement of programs, verifying prior savings, and supporting the determination of shareholder incentives. These studies are driven in large part by the primary objective of these programs – resource acquisition, but they also address market transformation and other objectives.

Prior EM&V studies have not systematically addressed the skills and other characteristics of workers and contractors responsible for the installation and maintenance of energy efficiency measures and systems or the impact of these characteristics on performance. At present, a limited set of contractor characterization studies are in the planning phase. In addition the EM&V studies have not addressed the extent to which variations in work quality explain differences between ex ante and ex post energy savings.

The EM&V studies focused on the WE&T programs (e.g., trainings and other educational programs offered by IOUs, partnerships between the IOUs and educational institutions and community-based organizations) have not focused on skills acquisition and its impact on energy savings, but rather mostly on DSM investment decisions by end-users or increased DSM sales by contractors. As a general rule, data collected from participants in IOU offered trainings are not designed to support assessments of programs focused on skills development. Methods for assessing the contribution of IOUs to the outcomes of partnerships with educational institutions and community-based organizations have not been developed either.

The implications of the limited attention to work quality and workforce characteristics is significant, particularly as the goals for IOU energy efficiency programs are both increased and broadened. The lack of studies on the characteristics of contractors and workers and on the extent to which work quality affects energy savings limits the extent to which the outcomes of workforce initiatives can be evaluated. The lack of information of the benefits of workforce initiatives means that opportunities for increasing the cost-effectiveness of energy efficiency programs relative to renewable and traditional generation resources are necessarily overlooked. Moreover, assessments of how the IOU programs affect the broader set of objectives, including market transformation and inclusion of disadvantaged workers, are also hampered.

As a consequence and as described in more detail below, the recommendations include explicit incorporation of work quality and workforce characteristics in market assessments, process evaluations, and impact evaluations. Additional feedback will be solicited from stakeholders in the short-term. For the long-term, additional EM&V studies to address work quality and workforce characteristics are proposed.
<table>
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<tr>
<th>Recommendation</th>
<th>Rationale and Evidence Supporting Recommendation</th>
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<th>Next Steps</th>
<th>POSITION (Choose 1: Agree, Disagree, Disagree with Comments)</th>
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<tr>
<td>A. Modify market assessments (e.g., work papers for DEER and non-DEER measures; Potential, Goals, and Target studies; sector-specific market characterizations) to address work quality and workforce characteristics:</td>
<td>1. The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Support:</td>
<td>Short-term: Obtain stakeholder feedback on recommendation and develop cost estimates.</td>
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<td>i. The estimates of ex ante savings frequently assume 100 percent of measures and systems are installed and maintained correctly. However, the skills and additional resources required to achieve these assumed savings are not specified. As a consequence, the potential increases in savings resulting from improved work quality are not readily incorporated in program designs and in program assessments.</td>
<td>Have concerns:</td>
<td>Long-term: Modify requirements for work papers and for Emerging Technology reports Prepare work plan with support of energy and labor agencies and academic experts for proposed studies. Pilot/demonstrate level of detail required for specifying skill requirements and other key data.</td>
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<td>ii. Essential data for relevant labor markets (e.g., certifications, availability of skilled workers in local labor markets; education and training programs available to workers)</td>
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<td>B. Develop and adopt EM&amp;V protocols for workforce and labor market data collection Protocols are to be developed to be applicable to all EM&amp;V components, including market assessments, process evaluations, and impact evaluations</td>
<td>Limited data are presently available on the characteristics of workers participating in ESA and IOU energy efficiency programs. These data are essential in order to better understand the skills of workers and contractors responsible for installation and maintenance of energy efficiency measures, to consider relationship of work quality to skills of workers conducting work, and to assess influence of IOU programs on achievement of the State's workforce objectives.</td>
<td>Support: Consistent with prior CPUC Decisions Have concerns: ODC reported potential barriers of collecting data from contractors including company privacy, willingness to share private company data, and concerns with contractor response rates.</td>
<td>Short-term: Closely follow on-going activities for 2013-2014 program cycle; provide comments and recommend that study consultants reach out to experts knowledgeable of state and federal labor force data collection Long-term: Commit additional resources to expand upon on-going study to increase emphasis on defining rationale for data collection, on design and testing of questionnaires and program tracking systems, and on including experts in the workforce data collection area.</td>
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<td>C. Explicitly consider contractor and worker</td>
<td>While work quality issues are now</td>
<td>Support:</td>
<td>Short-term:</td>
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<td>Recommendation</td>
<td>Rationale and Evidence Supporting Recommendation</td>
<td>Stakeholder Feedback</td>
<td>Next Steps</td>
<td>POSITION (Choose 1: Agree, Disagree, Disagree with Comments)</td>
<td>COMMENT</td>
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<td>characteristics and their impact on work quality as part of impact evaluations for specific resource programs</td>
<td>being addressed as part of selected programs, additional attention regarding the measurement of work quality and the underlying factors responsible for variations in work quality is required. Strategies to promote work quality, including certification requirements for workers and contractors, should also be part of evaluation.</td>
<td>Have concerns:</td>
<td>Emphasize importance of clearly defining quality for pilots for on-going studies, including CEC and potential IOU studies comparing CALCTP and non-CALCTP projects.</td>
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<td>ii. Specific resource programs to consider include: Advanced Lighting Programs and CALCTP Certification, Residential HVAC Quality Installation/Quality Maintenance, Non-residential HVAC Quality Installation/Quality Maintenance, and new construction programs</td>
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<td>Longer-term: Select programs where work quality is expected or known to be an issue (e.g., programs with complex measures and systems, where quality is costly to identify, and where incentives for quality are weak. Develop and implements plans for explicitly addressing work quality</td>
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<td>D. Modify program theory and logic models, program tracking systems, program performance metrics (PPMs), and process evaluations for adopted recommendations from SG_1, SG_2, and SG_3.</td>
<td>While Guidance Document will provide some suggestions on how to revise key EM&amp;V program elements, these suggestions need to be more fully developed with stakeholder input for those recommendations that are adopted.</td>
<td>Support: Consistent with CPUC direction</td>
<td>Short-term: Stakeholder feedback on how best to evaluate proposed recommendations</td>
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<td>Have concerns:</td>
<td>Long-term: Incorporate revisions for adopted recommendations into Program Implementation Plans and EM&amp;V plans</td>
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<td>E. For IOU workforce education and training programs, develop and test methodologies for assessing implications of IOU initiatives related to skills development and partnerships on resource acquisition and other broader objectives for energy efficiency</td>
<td>The IOU WE&amp;T programs and the associated impact evaluations have focused on “market building” activities. An increased emphasis on skills development and on partnerships (SG_1 recommendations) with core educational institutions and community organizations will require adoption of new approaches to EM&amp;V. While the IOUs have various on-going efforts related to skills development and partnerships, assessments of the benefits of these initiatives (i.e., skills development and partnerships) to the IOU ratepayers are needed if additional</td>
<td>Support: Have concerns:</td>
<td>Short-term: Solicit stakeholder input on how best to estimate the incremental benefits to ratepayers from more comprehensive partnerships. Identify programs and EM&amp;V approach where significant IOU resources are allocated currently to skills development and partnerships</td>
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## SUMMARY OF RECOMMENDATIONS: Strategic Goal 6, Evaluation of Workforce Education and Training Programs

<table>
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<tr>
<th>Recommendation</th>
<th>Rationale and Evidence Supporting Recommendation</th>
<th>Stakeholder Feedback</th>
<th>Next Steps</th>
<th>POSITION (Choose 1: Agree, Disagree, Disagree with Comments)</th>
<th>COMMENT</th>
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- **Rationale and Evidence Supporting Recommendation**
  - Long-Term: Develop and implement pilot projects to test how best to assess the benefits of these initiatives to IOU ratepayers

- **Stakeholder Feedback**
  - Stakeholder feedback is to be allocated to these activities.

- **Next Steps**
  - Long-Term: Develop and implement pilot projects to test how best to assess the benefits of these initiatives to IOU ratepayers

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**Comments**

Recommendations for Strategic Goal #7 (Evaluation of Web Portal) are currently being developed.
MEMORANDUM

Responses from Carol Zabin of the UC Berkeley Donald Vial Center are highlighted in yellow.

DATE: March 13, 2014
TO: Carol Zabin
FROM: Energy Division
RE: Comments on WE&T Guidance Plan Recommendations Developed by Don Vial per D.12-11-015

Energy Division staff and management have reviewed the most recent draft of the WE&T guidance plan. We submit the following comments and feedback for discussion at the Energy Division Management meeting on Tuesday, March 18th.

General Feedback

- The document proposes several budget amounts that are somewhat arbitrary and not particularly useful; the CPUC’s allocation of specific budget amounts are a matter of due process based on initial program implementation plans submitted by the utilities and in consideration of overall program portfolio objectives and cost-effectiveness calculations. The guidance document would be more useful if it honed in on specific recommendations focused on IOU actions to support key Needs Assessment recommendations and provided in depth, targeted descriptions for how the IOUs can implement them rather than identify specific budget amounts that should be allocated. The budgets currently proposed are not clearly supported with rationalized justification.

  We agree with this comment. We plan to focus on specific recommendations and give a sense of the scale needed, rather than a specific budget amount.

- D.12-11-015 directed the IOUs to “hire an expert entity to help design a comprehensive approach to the WE&T issues inherent in the energy efficiency portfolios.” The effort should be focused on “design(ing) a comprehensive approach, with stakeholder consultation, for workforce development efforts to be launched in the 2015 portfolios.” This language suggests the guidance plan should be focused on how the IOUs can improve WE&T efforts within their energy efficiency portfolios. Currently the guidance plan has an equal if not more number of recommendations focused on higher level policy recommendations directed to the CPUC. While potentially useful for future considerations, these recommendations seem to detract from the original intent of the CPUC’s direction resulting in a broad set of recommendations that affect higher level
policy direction but are not as specific or in-depth as they could have been if the appropriate scope were maintained on how the IOUs could improve.

**We should discuss this in meeting.**

- The guidance document does not appear to provide a clear bridge between previous Needs Assessment recommendations for the IOUs. It should include a focus on identifying what the shortfalls are in knowledge and skills needed to achieve better EE outcomes and where the gaps are in California’s current WE&T infrastructure (institutions, curriculum, or partnerships agreements with employers and how the IOUs could integrate their WE&T efforts within the existing infrastructure of training and workforce development to help address gaps.

- For each recommendation the guidance document should describe:
  - A demonstrated problem
  - A clear basis for points of intervention
  - A rationale for ratepayer funds to be used to fix certain problems
  - And how the IOU WE&T efforts can be best utilized and incorporated into existing frameworks

**We agree that the next draft should explicitly address the 4 bullets and are rewriting to do that. We can discuss your views on weaknesses in the draft in the meeting.**

**Specific Feedback**

- The document recommends the IOUs phase out providing the “short class framework” the energy centers have provided historically over the past 20 years. The document claims these kinds of classes “can work for high-level autonomous professionals like architects and engineers who can fit these classes into their continuing education requirements—although it isn’t clear why ratepayer funds should subsidize these classes when they could be funded by participant fees. The short class, open-access structure does not generally work for incumbent workers whose employers must be committed to training in order for it to be put to use”, but makes a poor case that these types of “market building” classes do not also serve a purpose in the larger scheme of useful WE&T activities and should not be included in the IOU’s WE&T portfolio plans. (p. 17).

**This is a misunderstanding. We are not recommending a discontinuation of market-building classes, but rather a separation of market-building education and skills building programs because overall, they require different strategies and have different goals.**

- Throughout the guidance document the CCILMCT comments and the Needs Assessment are used as references to support various recommendations. Carol Zabin was also the primary author of these documents which were should not be considered independent from the current guidance plan effort. This fact should be clearly indicated in the introduction of the guidance plan in order to support transparency and full disclosure.
This is incorrect. Elizabeth Klebaner, one of the CCILMCT lawyers, was primary author of the CCILMT comments. The CCILMCT and other stakeholders used the Needs Assessment extensively in their comments, showing that the recommendations are in line with the views of their specific constituencies. In the Guidance draft, we quoted these comments because they represent constituencies that are parties to the proceeding.

We can of course acknowledge that had a contract with CCILMCT for a period, as well as authored the Needs Assessment.

- The document focuses on creating “an alternative administrator for the workforce skill-building portfolio as an option to be considered by the CPUC” and that “the CWIB has indicated that it is willing to be the administrator of these funds.” The document correctly states that this framework would “require(s) working through legal complexities in order to retain ultimate CPUC authority as required by law” yet does not include any kind of legal analysis as to the feasibility of this recommendation.

We should discuss this in ED meeting.

- The document does not include any K – 12 recommendations despite past CPUC directives to include “every level of education in IOU WE&T efforts”. The IOUs have included career awareness activities within their statewide WE&T efforts which have been identified in the academic community as an appropriate WE&T activity for this educational level (K-12). The IOUs developed a short list of areas for feedback on this topic they would like to see in the guidance plan mostly utilizing low cost, secondary research. Despite this targeted request, K – 12 still was not included. When questioned by ED staff as to why this area was left off, lack of consultant expertise in this area as well as lack of funding was claimed.

This is incorrect. We discussed the 9-12 programs (see pages 24-30) and highlighted their shortfalls for skills-building/career technical education. We recommended including 9-12 programs in the RFP. We did not discuss k-8 as this was not in the original approved scope of work, and was not in the subcontracting agreements that were already in place when the request for substantial new work on k-8 was received. We will add to the 9-12 discussion in the next draft.

- The document references D.12-05-015 ordering paragraph #11 which stated that “any and all” WE&T Needs Assessment recommendations should be implemented by the IOUs (p. 6) despite past clarification with the consultant that this was a typographical error in the Decision which did not assume that the IOUs would initiate all the recommendations in the Needs Assessment. Continuing to emphasize incorrect dicta in newly published documents promotes public confusion and erroneous information.
This is my mistake. Jessie wasn’t privy to this past clarification and I did not catch it in this draft. It will be removed in next draft.

- The guidance document recommendations include some specific recommendations to implement a wage floor for the ESA Program but the document is lacking when it comes to providing input for specifically how to implement this recommendation. The report assumes that ESA can simply absorb these wage increases (budget-wise) and result in tiny budget increases, if any increases at all. But again, there is no specific guidance or supporting references for what the wage floor should be or how this action might impact the program. Some key questions remain:
  - Will the IOUs separate wages from the installed measure costs? Is this a new line item in ESA budgets?
  - How do the IOUs institute these wages for existing, “rollover” contracts or direct award contracts that are currently underway?
  - How will this impact the cost-effectiveness of measures?

These types of questions will probably need to be vetted through a procedural manner (i.e. the CPUC will have make a decision on this).

We will address these issues in the next draft to the extent possible with available info.

Useful Recommendations:

- The document provides some useful input on how to improve the IOUs sector strategy efforts (p. 108) but could potentially include more specific examples to help communicate to the IOUs how (and even “where”) to be more successful in their sector strategy efforts.

- The document seems to include all adult educational levels and pathways including community colleges (p. 18) but does not include K – 12 education levels (see concern above).

It does address 9-12 and see above comments on k-8

- The document provides some potentially useful recommendations for the IOUs regarding what kinds of RFPs and related criteria that should be included in these RFPs in order to address specific WE&T areas, however, this process relies on the existence of a governing board to review and approve bids of which there are concerns (see concern above).

We should discuss in ED meeting
• Many of the EM&V related recommendations, while potentially out of scope, are useful in informing current EM&V roadmap efforts aimed at quantifying WE&T related actions.

We disagree with the suggestion that the EM&V recommendations are “out of scope.” We believe that the recommendations are consistent with the direction provided by the Commission in D.12-11-015 “...to develop a comprehensive approach to workforce, education, and training for the energy efficiency programs.” As discussed in the Needs Assessment, a comprehensive approach necessarily includes attention to both the supply of energy efficiency workers as well as the demand for energy efficiency workers. Moreover, “energy efficiency programs” are not restricted to the programs funded under WE&T. We also note that one cannot assess the benefits of supply-side initiatives (i.e., initiatives to supply workers with the appropriate energy efficiency skills) without consideration of the demand for these workers. Consistent with this view, these recommendations are not limited to the educational and training programs funded under the heading WE&T.
Comments from Pacific Gas & Electric Company on Draft 1 of the Guidance Plan

Responses from Carol Zabin of the UC Berkeley Donald Vial Center are highlighted in yellow.

General Areas of Support
- Promoting workforce development and on-going shift toward skills-building instruction.
- Supporting inclusion efforts.
- Increasing collaboration with external stakeholders in a more formal way.
- Supporting workforce standards.
- Implementing process improvements and increasing work quality.

General Feedback (some duplicative from previous comments)
- More stakeholder discussion and feedback is needed before any commitments can be made around implementation. All key stakeholders impacted need to be part of those discussions.
- All recommendations need to be actionable, i.e., to fit within the regulatory framework in which the programs currently operate. If they’re not currently actionable, PG&E suggests removing them from the report or clearly stating what analysis is needed in order to make them actionable.
- PG&E is not commenting on issues under the auspices of the CPUC as this effort is to provide the IOUs recommendations on how to improve our WE&T programs.
- Please ensure draft two has the following:
  - Specific references for all claims.
  - Interview citations, listed by individual, title and date; if anonymous, state so.
  - Methodology utilized in preparing report.
  - Estimated implementation lead times for the proposed recommendations.
  - An explanation of what success looks like for each of the recommendations.
  - Minimal duplicative content.
  - An executive summary.
  - Clarification of the CPUC’s historic definition of WE&T.
  - A clearer delineation between the various oversight groups recommended along with an understanding of any inter-functioning between them.
  - Utilizing DVC’s previous work as supporting documentation should be made transparent.

We tried to address all of these. There may still be a few missing citations and a bit of repetition which we will catch in the next draft.

Strategic Goal 1: Forecasting Market Needs to Create Career Pathways and Improve Candidate Placement

These comments apply directly to the recommendations.
- PG&E understands that Phase 2 of the OIR will include stakeholder collaboration. We look forward to developing a comprehensive and consistent stakeholder collaboration process that will work across all of our programs.
- Properly designed and funded RFPs can add value to rounding out the WE&T portfolio. However, multi-year RFPs do not meet the current regulatory environment/cycle.

We changed our timeline and phase one programs to reflect our understanding of the current regulatory environment.
- Regarding phasing out “short, stand-alone classes;” class length should be determined by content, demand, and delivery. If content and skills are covered sufficiently through a short class format, those classes should continue. PG&E will continue to improve stand-alone classes toward skills building for needed skills in the incumbent workforce as well as job development, and energy efficiency workforce needs forecast.
We changed the language so that the length of classes is not the key issue, rather it is the set of characteristics including open access, stand-alone, focus on information delivery about a particular technology, no prerequisites for participants, and no clear learning outcomes or competency testing, that lowers the effectiveness of classes for workforce skill building. See Chapter 3

_These comments apply to text in the Full Report/Appendix outside of the specific recommendations._

- Regarding the recommendations’ focus on trades;
  - PG&E agrees that well-trained trades workers can have a very positive impact on the quality of the overall EE workforce.
  - Activities directed at market actors like building owners is a positive and should be addressed. Such informed market actors initiate projects (create the “demand”) that require skilled trades workers.

We have added a section on market building programs to both clarify their value and provide recommendations on how they can improve. See Chapter 3

- Opinion Dynamics WE&T program evaluation identified professionals as having the highest potential impact on energy savings through education and training efforts. IOU audience focus needs to be balanced across various professions and trades.

The ODC WE&T impact evaluation only looked at the impact of Centergies on end user investment decisions and compared the impact of market actors and end users, using engineering estimates to estimate energy savings. Since market actors reach more customers, they concluded that market actor education would have more impact on investment decisions than end user education. Because their methodology relied on the engineering assumptions, ODC said that field verification of these conclusions would be necessary to validate this conclusion.

In any case, this is a different issue than the issue of skills building and where the IOUs can get the most bang for the buck in training investments. There is no evidence that professionals are more important and have a greater impact. We agree with you that design professionals and specifiers have a key role, bigger than the 1/6 of the workforce, because inefficient design can’t be changed by the most highly skilled tradespeople. But this is a logical deduction, not based on evaluation. In our priority setting process and our suggested phase 1 programs, we give higher priority to professional workers than their proportion in the workforce.

- As a company, PG&E is a recognized leader in workforce development through its PowerPathway™ program. The PG&E WE&T Program will benefit from partnering with the PowerPathway™ team and with external organizations that have this expertise.

**Strategic Goal 2: Increasing Support for Disadvantaged Workers**

_These comments apply directly to the recommendations._

- PG&E agrees that a link to contract sourcing is an effective strategy to influence industry practices. Diversity of workforce can be used as a factor influencing contract scoring based on having flexibility to adjust the weighting based on the program or sector or to include it as part of our existing diverse spend category, however, any weighting should be evidence based.
- Further insight on the definition of “workforce diversity” is needed. This is not specified in the draft.

We provide a definition of what would qualify as points in a workforce diversity procurement policy in Chapter 2.

- PG&E is open to the definition of disadvantaged worker presented and will need to collaborate with a broader set of stakeholders in order to adopt.
- PG&E is open to adding First Source language to EE contracts and will need to collaborate with a broader set of stakeholders in order to adopt.
- PG&E recommends a study be conducted to understand and assess program impacts of recommendations regarding wage floor, targeting hiring, etc. The study should include impact to savings, cost, participation, etc.
We have provided a transparent back of the envelope calculation of the effect of a 14$ wage floor on ESA program costs and cited literature on other sectors. Our estimation suggests a 1-2% increase based on the rough data we have. Cost increases are much less than expected because of the relatively small labor costs as a percentage of total costs, and the fact that some contractors already comply. See chapter 2.

- Some GCPs have expressed concerns over the cost of compliance with targeted hiring programs.
- Clarity on wage floors is needed regarding whether this would be for all workers (including office, clerical, scheduling, and other non-EE-skilled labor). What about less-technically skilled labor (outreach workers, energy assessors). How would wages be graded?

We are suggested the wage floor on all workers working on IOU contracts, excluding those providing general work for a firm that has multiple contracts.

- PG&E is interested in developing an inclusion sector strategy and will collaborate with others to do so.
- PG&E does not believe aggregating Municipal, University, School and Hospital segments would best meet the individual needs of our customers. Each segment has unique needs and wants and PG&E has developed tailored programs as a result.

We dropped this recommendation.

- PG&E does not support the recommendation that we require all contractors and subcontractors employed on EE/DSM projects to use an electronic certified payroll reporting and labor compliance system to report specified jobs and workforce data.

These comments apply to text in the Full Report/Appendix outside of the specific recommendations.

- Pg 43, appendix: data collection framework
  - This framework makes the assumption that low wage jobs leads to low quality work, and points to ESAP (in other parts of the document) as a low wage job. However, the quality of ESAP is very high, as seen through high pass rates and other assessments. Therefore, it should not always be assumed that low quality work is a result of a low wage job.
  - PG&E agrees that enabling opportunities for continued advancement within a career trajectory is worth pursuing for those interested. However, we do not agree with the notion that ESAP opportunities are at the bottom of the proverbial totem pole and just a “pass-through” job. At their own accord, many ESAP workers have happily remained in their position for years.
  - PG&E is open to polling for certifications/licenses as long as ESAP contractors were supportive.
  - Data collection for the next ESAP filing is currently being discussed.

- Pg 60, full report: The installing general contractor is not typically hired by the IOU, but by the building owner. It will be difficult for the IOUs to enforce contractual requirements with a GC when both parties are not in a contractual relationship

Our recommendations do not require a contractual relationship, they are program requirements that the IOUs can verify as a condition of giving out rebates or incentives. See Chapter 2.

- Smaller contractors may not use a certified payroll system. This would constitute an extra expense for the program, decreasing energy savings and potential program cost effectiveness.

We did not talk to any contractor who writes their own checks; this is very rare. Any payroll service can be integrated into the on-line jobs data software currently on the market. Certified simply means that the contractor certifies that they are accurately reporting their payroll.

- Pg 64, full report: Participants in training programs that are homeless will not have utility bills or zip code data. Will these same individuals self-identify as chronically unemployed, homeless, having some prior interaction with the criminal justice system, or being a veteran, a disabled veteran, or on welfare? Collecting specific data on students including income, English proficiency and connection to public assistance is an area of high sensitivity.

Simply relying on zipcode can not only exclude the homeless but also be a less refined screen. That is why we use the two prong definition which can create a more refined screen when data is available on characteristics of high sensitivity. Usually this data is available only if the IOUs partner with organizations that serve people with these characteristics, such as a local WIB or CBO.
Don Vial Center (DVC) WE&T Contract
DVC Recommendations – First Draft
PG&E Feedback

- Pg 66, full report: Having the IOUs fund the annual cost of an electronic reporting system and at least one full-time program administrator to manage the system will increase the overhead of administrating programs and subsequently impact cost effectiveness.

We do not think a full-time administrator is necessary. This was taken from research for Prop. 39, which has almost 2000 awarding agencies (school districts) and the possibility of multiple contractors for each. The ESAP program has 39 contractors and one awarding agency, and therefore we think it will be require significantly less work than suggested in the 1st draft.

Strategic Goal 3: Integrating WE&T and the Resource Programs
These comments apply directly to the recommendations.

- PG&E is open to incorporating workforce standards into program requirements and recommends focusing a responsible contractor policy on programs that utilize participating contractors or have direct contractual relationships with contractors. PG&E would like to better understand the impacts for both program participants and administrators, including; the costs associated with collecting and verifying this information for energy efficiency product offerings.

We are unable given limited resources in this contract to provide specific cost data on verification. However, the skill certificaitons can be verified through certification websites, and several of the responsible contractor requirements are also verifiable on line.

- PG&E shares DVC’s concerns surrounding inadequately trained individuals in the building trades and professions. The studies cited in the report however do not reference work quality as a primary factor for EE gaps.

We do not say that it is the primary factor; we cannot know this because data is not collected. Given the significant problem of work quality cited in the studies, and the high EE targets, we present the argument for standards as one way to realize more cost effective energy savings. See Chapter 2.

- PG&E recommends a phased approach to understand the impact to energy savings as increased documentation requirements are seen as a barrier to participation for contractors as they add cost and administrative burden to enrollment. This is particularly true for participating contractors who are not guaranteed work or payment for participation, and for smaller firms with limited administrative support. As such, an unintended consequence of over burdening the participants may be a decrease in program participation hindering the state from meeting energy efficiency goals. PG&E recommends collaborating with a broader set of stakeholders.

An unintended consequence of low requirements is that higher quality contractors may not want to participate in IOU programs. See Chapter 2.

- Large customers will want to work with the contractors they are comfortable working with regardless of program requirements. In our experience, it is in the customer’s capability and interest to work with contractors who perform quality work.

Large customers are also often interested in providing community benefits and look to others for solutions and infrastructure that can help them show their communities that they are providing good jobs and job access to community members. This can be a selling point. See chapter 2.

- PG&E supports the utilization of appropriate industry supported third party skill certification requirements for programs identified as having moderate and high complexity. PG&E does not agree with overly prescriptive definitions of what these requirements should be for any given program as industry certifications are constantly evolving. We also believe that prior to requiring a certificate, we should consider costs and the prevalence in target regions.

See Decision tree that takes these factors into consideration in Chapter 2.

- BPI certified individuals are a centerpiece of Whole House contractor requirements, ensuring both quality and safety. PG&E believes requiring firm accreditation at this time would be detrimental to the program goals and success. We believe accreditation should be an aspirational goal for participants supported by program intervention to increase the number of accredited firms.
HVAC installation and maintenance programs already track, monitor and report on the work quality performed under these programs. PG&E recommends improving these tools rather than creating a new system. We will also continue to work with industry expert groups, such as the Western HVAC Performance Alliance, to determine if there are certifications that meet the program’s quality needs.

In this draft we have suggested more stringent contractor and worker requirements rather than a specific new system.

- Requiring a blanket requirement for certification training would need to consider:
  - Non-union contractors need to have access to the certification training. There is anecdotal evidence that this is not the case.
  - Some companies have in-house maintenance staff that would not necessarily go through certification since they just support one or two buildings.

Our recommendations are limited to end users who use contractors. We are not addressing in-house staff.

- PG&E agrees that skill standards, such as CALCTP, are useful for our programs and believe that flexibility by offering alternative pathways is in the best interest of our customers – for example, if a contractor is specifically trained on a specific manufacturing solution, that should be deemed allowable.

We agree that there can be alternative certifications, as in Title 24 acceptance testing. However, these should map to skill standards and have the credibility and rigor as suggested by the DOE approved certification process.

- Quality issues are paramount in PG&E’s program administration. PG&E is committed to adopting continuous improvement in this area.

These comments apply to text in the Full Report outside of the specific recommendations.

- Pg 73, full report: The current EE market is significantly different than the 1980s solar water heating market.

- Pg 75, full report: “The IOUs have developed some training requirements for contractors for a statewide HVAC QM program, but these are much less stringent than the worker certification requirements proposed by some industry participants.” It’s not clear who is being referred to here or what certifications are being proposed. The IOUs training requirements for Residential and Commercial HVAC QM are based on ANSI/ACCA 4 QM and ANSI/ASHRAE/ACCA Standard 180 (respectively). The IOU programs, including training, have been reviewed and have received support from each of these organizations as well as the WHPA.

These are technical standards, not skill standards. See Chapter 2. In the next draft we will see if we can reveal who the interviewees.

- Pg 84, full report: Whole House measures: PG&E is committed to continually evaluating and improving the safety and quality of installations performed under all its programs, including EUC Home Upgrade. The survey referenced was performed on a small sample of early program upgrades in one utility region, and while that information was used to inform high-level training improvements across the state, the report is still preliminary and should not be extrapolated broadly.

- Pg 86-87, full report: PG&E believes that there is insufficient data based on the single 1990’s study to support work quality as the primary cause for all ex post gaps cited in the report.

This is an incorrect interpretation of our argument.

- Pg 86-90, full report: PG&E supports responsible contractor language and certifications where cost effective.

- Pg 95 PG&E appreciates the recognition of our efforts with the Sierra Business Council. According to our Government and Community Partnerships 2010-2012 data and the 2012 Joint Annual Report, SNEW ranks 14th out of 23 Partnerships for cost effectiveness. PG&E believes that these results are promising and indicate a need for further investigation before large scale implementation.

Strategic Goal 4: Supporting Sector Strategies

These comments apply directly to the recommendations.
• PG&E is open to exploring new ways to make progress with the HVAC Sector Strategy.
• PG&E agrees that skill standards, such as CALCTP, are useful for our programs and believe that flexibility by offering alternative pathways is in the best interest of our customers – for example, if a contractor is specifically trained on a specific manufacturing solution, that should be deemed allowable.

See above
• With regards to the Energy Workforce sector strategy (EWSS), PG&E has made good progress on the EWSS collaborating with outside partners including the Community College Chancellor’s Office. PG&E prefers continuing to lead this sector strategy, with support from qualified SMEs and partners. PG&E is open to exploring the RFP concept for portions of the EWSS sector strategy.

Our recommendations include a role for the IOUs as administrators of the RFP, including encouraging the formation of partnerships to apply for the funds, development of RFPs and review of applications, technical assistance to applicants, participation where appropriate by IOU SMEs, etc.

• With regard to the Existing Building Commissioning (EBCx) efforts, PG&E is open to developing a specialized bridge training program for DAS journeymen. PG&E can also explore ways to replicate the program to expand its reach.
• DVC needs to provide recommended changes to the IOUs’ sector strategy overview and process document (SS document). Clarification and specification is needed regarding the definition of employer commitment. Draft two needs to include reference to the IOUs’ sector strategy overview and process document where applicable in the recommendations. The SS document should be part of the appendix.

The SS document will be in the next draft. My apologies for running out of time on this. Employer commitment necessarily varies by sector. We cannot expect the residential contractors to provide an equal level of employer co-funding of training as the commercial sector. We can however, through an RFP process, set a minimum commitment and rank projects by the type and level of commitment that the applicants propose.

Strategic Goal 5: WE&T Stakeholder Engagement
These comments apply directly to the recommendations.
• PG&E understands that Phase 2 of the OIR will include stakeholder collaboration. We look forward to developing a comprehensive and consistent stakeholder collaboration process that will work across all of our programs.
• PG&E agrees that the WE&T taskforce is an appropriate forum for input from a wide range of stakeholders on WE&T program development.
• Utilizing existing methods to report progress on DVC recommendations is preferred by PG&E, e.g., Program Performance Metrics and other annual reporting.

Strategic Goal 6: Evaluation and Success Metrics
These comments apply directly to the recommendations.
• A repeat of the full Needs Assessment study may not be necessary. More focused assessments on distinct critical sectors such as electricians, HVAC and lighting may be more useful and cost-effective.

Agreed
• Creating a policy taskforce to address integration of workforce considerations in ex ante program review is worth exploring, however, it may come with some efficiency losses. Modifying the process the IOUs already have in place for ex ante program review should be considered as an alternative.
• PG&E supports the data collection recommendation as ODC is going to explore this in the WE&T work order with the CPUC. Wages and benefits data may be difficult to collect due to confidentiality and over-surveying in general. The Market Study PCG is currently exploring approaches to improve coordination and systemization of upstream data collection. One method being explored includes an ongoing contractor panel, divided by market segment. Understanding where to collect data will also need to be explored (training centers, program, etc).

We provide recommendations on the workforce and contractor data that should be collected in Chapter 4.
Many programs are already tracking work quality through QA and QC. Proper enforcement may be difficult in situations where the IOUs don’t have direct relationships with contractors.

Any program development should take place following the identification of targets. The IOUs may be able to ask Navigant to conduct a follow-up study on MUSH specifically. Additionally, a study should take place to identify program impacts resulting from any aggregation.

PG&E supports the process evaluation recommendation. It is important however, not to do them too early so that people have time to experience the results. 2016 is a recommended timeframe for conducting a process evaluation.

Strategic Goal 7: Evaluation of the Need for a Statewide WE&T Web Portal

*These comments apply directly to the recommendations.*

*PG&E is open to the recommendation of leveraging existing portals rather than to develop something new. We will need to collaborate with a broader set of stakeholders to determine the feasibility of these recommendations.*
San Diego Gas & Electric Company (SDG&E) appreciates the work the UC Berkeley Donald Vial Center (DVC) has done to produce a draft Guidance Plan for the Statewide Workforce Education and Training (WE&T) program. SDG&E supports efforts to create a skilled workforce that will help California achieve its energy efficiency potential and climate change goals. Comments on DVC’s first draft of the Guidance Plan are presented below.

A. Workforce Education & Training Program Modification

The draft Guidance Plan describes the importance of enhancing workforce skills training and suggests the issuance of Requests for Proposals (RFPs) as the primary method for achieving this. SDG&E supports skills development training and has, in fact, expanded this aspect of its WE&T program. In the first quarter of 2014, approximately 55% of Centergies training courses were part of industry-recognized skills-building certification programs or included Continuing Education Units to support credential maintenance.

To optimize program results, training funds should be directed to activities that have the greatest impact on energy efficiency (EE) savings, not just where trainings needs exist. Before RFPs are released, it would be important to understand first the occupations as well as the point along the training pipeline the greatest opportunities for energy savings lie. That way, cost-effective and targeted RFPs can be developed for maximum EE benefit.

We addressed this in the priority setting process section xxxxx

Additionally, SDG&E considers facility managers and contractors important segments of the EE workforce. “Market-building” courses deliver training to these occupations, providing the skills needed to create the business case and win approval for EE projects, select “best fit” EE technologies, and manage maintenance post-installation. The professional effectiveness of these market actors benefits EE as well as subsequent job creation, making their placement in WE&T appropriate.

We agree with this comments and addressed it by acknowledging and clarifying the role of the market-building portfolio and providing some specific suggestions for the programs directed at facility managers and contractors.

B. Program Administration and Governance

The draft Guidance Plan provides recommendations for program governance and administration. SDG&E believes that the Commission currently has a variety of new
administration structures that are in its infancy. SDG&E recommends that before another third party administration and governance structure for WE&T be recommended, evaluation of these non-IOU administration structures should be conducted to determine its strengths and weaknesses.

We modified our recommendation on this: We now are recommending that the IOUs convene an advisory body (PAG or PRG) to advise them on the skills building portfolio. We are also recommending to state-policy makers that the CEC convene a steering committee to consider skill certifications and priority training investments and to consider another administrator if the IOUs are not able to develop their skills-building program. See chapter 3 supply side, 3.x

C. Need for Public Comment

Several recommendations impact EE market actors, particularly contractor companies who will be responsible for hiring workers. These recommendations include minimum wage floors, definition of disadvantaged worker, and OSHA specifications. It is imperative that the public be afforded the opportunity to provide their comments and feedback on these recommendations as they potentially impact their business costs.

We did not address this specifically in the guidance plan but the regulatory process provides a forum for this and the IOUs can create other forums.

D. Evaluation of WE&T Programs

WE&T utility programs were never intended to become ratepayer-funded full-course curriculum offerings that would persist over a long period of time. Historically, educational institutions and trade unions evolve and develop long term programs, certifications and degree programs that meet the current demand in the workforce. For example, computer science/engineering degrees were non-existent until the computer age took off such that universities, colleges, and K-12 schools provide computer-specific training and degrees. Environmental Science/Engineering were not major areas of interest and were usually found as special topics in the Biological Sciences departments. Today, many students are entering specific Environmental degree programs. Similarly, the market demand for EE training should drive the natural evolution of Energy Efficiency “science” degrees and careers, if there is a strong sustained interest with economic benefits for students. With this in mind, SDG&E recommends that the Guidance Plan provide a timeline when the market place will naturally provide these trainings/degrees/certificate programs in educational institutions, similar to the “off-ramping of EE programs” once market transformation has taken place. To that end, it is important to have some measureable metrics that will indicate when this has occurred.

We think it is unrealistic to assume that a natural evolution will lead to energy efficiency science degrees. We think energy efficiency will always be mostly embedded in the main occupations that affect energy use in homes, commercial buildings, industry and agriculture. There will be an on-going need to improve the EE-specific knowledge and skills of architects or

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1 Regional Energy Networks (REN), Community Choice Aggregators (CCA), and Statewide Marketing Education and Outreach assigned to California Center for Sustainable Energy (CCSE).
HVAC technicians, because their work can lead to buildings that use less energy, even if these workers are not EE workers who are trained in EE specific training programs.

We hope to see the development of strong skill certifications in this marketplace, that can include EE or add EE training to other credentials. When there is demand for these in the marketplace, the training infrastructure is likely to respond quickly. A key metric would be % of industry requiring a specific skill certification.
Southern California Edison Company (SCE) Comments on the
Guidance Plan for a Comprehensive Approach to Workforce in Energy Efficiency
and Demand Side Management Programs (Guidance Plan, February 14, 2014 Draft)

Introduction

The Don Vial Center (DVC) completed the California Workforce Education & Training Needs Assessment for Energy Efficiency, Distributed Generation, and Demand Response in 2011. As noted in the Executive Summary of the 2011 Needs Assessment¹,

“The WE&T Needs Assessment is a statewide study and includes all policies and programs within the scope just described, not only those under the jurisdiction of the CPUC or implemented by the IOUs. In addition, the recommendations for workforce strategies are not limited to those that can be carried out only by the CPUC or the utilities, but rather are aimed at all entities with the capacity to effectuate the needed changes.”

The guidance plan (February 14, 2014 draft) provides a more narrow focus on CPUC / IOU funded and administered WE&T activities. Californians invest approximately $100 billion annually in K-12, community colleges, California State University, and the University of California. In addition, many participants including but not limited to private universities, employee funded training, and labor-sponsored skills and apprentice training spend significant funds on WE&T activities.²

SCE appreciates the opportunity to provide comments on the guidance plan and appreciates the perspective offered by DVC in its review of utility workforce, education, and training (WE&T) efforts and how they interact with efforts to create a skilled and vibrant workforce. SCE appreciates that the DVC guidance plan incorporates some revisions based on comments provided by SCE and other parties in response to the initial draft recommendations.³

SCE has a long history through its’ energy education centers supporting efforts to create a skilled workforce that will help California achieve high quality installations and retrofits that facilitate achievement of EE and climate change goals. SCE will continue to focus toward skill-building and increased collaboration with workforce partners and employers. Additional stakeholder input from all affected parties will be vital as the CPUC moves forward in considering which elements of the guidance plan to implement. SCE looks forward in 2014 and 2015 to working in consultation with stakeholders to accommodate the implementation of recommendations such as pathways development and sector strategies engagements within the program funding and guidance parameters established by the CPUC.

¹ Page viii.
² The CPUC authorized nearly $18 million in funding to be administered by SCE for WE&T efforts in 2013 and 2014, an annual amount approximating .009% of the $100 billion in funding for the public institutions noted above. The available funding from other participants to support the guidance plan strategic objectives is unknown.
Strategic Goal 1: Workforce Education and Training Program Modification

SCE supports continued IOU administration of the WE&T portfolio

The guidance plan calls for a dedicated skill-building portfolio with distinct goals, programmatic activities, and a distinct budget for market-building offerings. SCE has already worked toward this guidance and has shifted more focus from market-building to skill-building activities since the 2011 needs assessment. In 2013, approximately 55% of training resources offered through SCE’s Centergies program were directed toward skill-building activities. With this in mind, market-building activities remain an important goal of IOU WE&T efforts that capitalize on unique opportunities to influence decision toward EE investments that will create demand for installations and related job creation. SCE supports retaining some funding for market-building that can help inform decision makers on opportunities to reduce operating costs, increase efficiency, and initiate the investment decisions that will drive demand for skilled Californians to complete the installations.

The guidance plan maintains the IOUs are missing opportunities to impact all phases of career pathways and suggest issuance of RFPs for skill-building activities with clearly established criteria for ensuring best practices and regional collaboration among workforce partners and employers. SCE is willing to work with interested stakeholders to develop RFPs to facilitate this recommendation.

The guidance plan recommends establishment of a separate governing board to oversee the RFP development and prioritize workforce initiatives, and recommends the CPUC consider transferring the skill-building portion of WE&T to the California Workforce Investment Board (CWIB). DVC notes pros and cons to this option and acknowledges that while WE&T is not a core competency of the IOUs, the CWIB and other workforce organizations generally do not have expertise in EE and DSM.

SCE opposes the creation of an independent governing board to oversee the RFP development and other ascribed activities throughout the strategic plan. SCE will seek valuable stakeholder input from workforce partners and employers in an advisory capacity to facilitate the development of appropriate scope and content of the RFPs. SCE opposes transferring the skill-building portion of WE&T to the CWIB. SCE is in the best position to provide program administration of these activities and has a long standing commitment to workforce development. The guidance plan offers valuable insight into the IOU WE&T activities. While SCE acknowledges opportunities to improve the effectiveness of its WE&T offerings, the guidance plan did not include an assessment of other stakeholder performance and progress in achieving goals set forward in the Needs Assessment. Without an expanded analysis of the capabilities possessed by other parties and their success in facilitating workforce development, a transfer of CPUC oversight and IOU accountability to the California Workforce Investment Board or any other unidentified entity is premature. Moreover, CPUC oversight and IOU accountability are essential.

4 Care will be necessary to ensure the structure and size of the panel do not create an unwieldy and inefficient process for obtaining input.

SCE Comments on 1st Draft WE&T Guidance Plan – March 10, 2014 2
to ensure ratepayer investments in WE&T are contributing to achievement of EE goals.\(^5\) SCE looks forward to receiving additional stakeholder feedback on Strategic Goal 1.\(^6\)

We modified our recommendation on this: We now are recommending that the IOUs convene an advisory body (PAG or PRG) to advise them on the skills building portfolio. We are also recommending to state-policy makers that the CEC convene a steering committee to consider skill certifications and priority training investments and to consider another administrator if the IOUs are not able to develop their skills-building program. See chapter 3 supply side, 3.x

**Strategic Goal 2: Labor Demand and Supply for Inclusion**

SCE supports inclusion strategies that can lead to meaningful improvements in program delivery and quality

Strategic Goal 2 focuses on meeting the inclusion goal within the California Long-Term Energy Efficiency Strategic Plan. Specific elements include data tracking of contractors and employees to obtain better information on compensation schemes and training pertaining to installation quality. The guidance plan further recommends:

- Add “diversity of workforce” as a factor in ranking proposals by third party contractors in all EE and DSM solicitations.
- Adopt “First Source” language into all EE/DSM contracts to create a formal link between training for disadvantaged workers and job opportunities through EE/DSM programs.
- Establish a wage floor for ESA and Direct Install programs.
- Target the municipal, university, school, and hospital (MUSH) sector for deeper retrofits through greater incentives, bundling of projects, apprenticeship standards, and targeted hire requirements, which together can provide meaningful job and training opportunities for disadvantaged workers.

SCE supports efforts to increase opportunities for disadvantaged workers to access employment in energy efficiency programs. SCE’s Energy Savings Assistance Program (ESA) has an established track record of contracting directly with service providers including community-based organizations (CBOs) that are knowledgeable about ESA’s program requirements and are successful in recruiting employees

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\(^5\) IOUs and CPUC are legally required to and best suited for governance and accountability for overall WE&T goals, training, and curriculum development that is ratepayer funded, based on their familiarity with DSM policies, strategies, programs, market based trends, and other key market drivers that will affect the implementation of WE&T program strategies.

\(^6\) Under stakeholder feedback for Strategic Goal 1 on page 43 of the report, DVC states, “Energy Division requested more information on the current workforce skill-building budgets, which the IOUs have not yet been able to provide.” SCE did not receive such a request from Energy Division. This sentence needs to be revised or deleted in the next draft.
within the communities they serve to facilitate delivery of services at no cost to eligible customers. Rather than encouraging a least-cost competitive bid process, SCE has created a sustainable relationship that negotiates continued participation and performance in the program in order to protect and strengthen the current network of CBOs delivering services on SCE’s behalf. This sustained relationship has created growth opportunities for employees within participating CBOs. Quality assurance is built into the program through a rigorous inspection process with careful tracking of pass-rates by contractor. SCE notes that per CPUC and state policy, the EE portfolio must meet specified cost effectiveness criteria. ESA also is evaluated not only from the perspective of addressing health, safety, and comfort, but from achieving energy and bill savings for participating customers. While the “diversity of workforce”, “first source” language, and wage floors, may lead to improvements in the workforce and installation quality that can be observed and measured over time, these objectives must be considered within the context of the CPUC’s rules and guidance for designing cost-effective programs.

Our analysis suggests that a reasonable wage floor will add very little to program costs. Data is currently not available to make robust estimates, but using conservative assumptions based on available data, we suggest that a reasonable wage floor of $14 or $15 dollars per hour would add at most 1-2% to ESA program costs, while providing substantial benefits to those workers earning less. See Chapter 2.

As indicated in SCE’s January 24, 2014 comments on the draft recommendations, consolidating MUSH activities into a single program exceeds the scope of the WE&T strategic assessment and intrudes into program design in a manner that likely would be counterproductive. SCE appreciates DVC’s recent clarification that their current recommendation is to “Aggregate projects to create scale”, and not consolidate the MUSH program offerings. In light of this clarification, SCE requests the next draft makes it clear that the “program consolidation” recommendation is no longer under consideration. MUSH programs’ current design facilitates effective communications with specific sectors and obtains buy-in from a diverse group of decision makers at state agencies, regional and local governments, local and state education institutions, and hospitals. This design has led to increased participation and energy savings by cities, counties, Regional Energy Networks, k-12, CSU, UC, and hospitals. The recommendation of developing a one-size-fits-all strategy for these segments in order to test the premise that increased energy savings can be delivered through increased scale was likely to reduce stakeholder involvement and energy savings from the programs. Even without consolidation of MUSH programs, some MUSH contracts will be larger than others to incorporate larger retrofits by larger agencies. In such circumstances, SCE believes it may be feasible to consider some of the “responsible contractor policy” recommendations described in Strategic Goal 3 for larger contracts. SCE notes customers will be in the best position to determine if aggregating projects creates sufficient benefits of scale to offset any disruptions in their contracting practices. SCE further notes that smaller procurements may improve the opportunity for smaller firms to meet capitalization requirements and

7 A recommendation by DVC in its January 2014 matrix under Strategic Goal #2 is, “Consolidate all incentives and efficiency programs that target the municipal/government, university, school, or hospital sectors into a comprehensive MUSH program. Introduce an inclusion requirement in the MUSH program” and to “Bundle programs to create scale for contractors.” Moreover, page 59 of the February 14, 2014 draft includes the heading, “BUNDLE PROGRAMS AND INCENTIVES SERVING MUSH CUSTOMERS.”
serve in a prime role, potentially creating opportunities for women, minority, disabled veteran business enterprises (WMDVBE) to serve as prime contractors.

We have modified this recommendation.

Strategic Goal 3: Integrate Workforce Efforts with Resource Programs

SCE supports collaborative efforts with the CPUC and other stakeholders to increase energy savings through improved job quality

SCE appreciates the refinement to recommendations for Strategic Goal 3 in comparison to the January 2014 draft recommendations. SCE is willing to work with interested parties to develop optimal approaches for improving installation quality and has gained some valuable experience through its solar programs that can help inform these efforts. Moreover, the contractor tiered responsibility approach, according to contract dollar value, merits further evaluation and does not require consolidating the MUSH program offerings.

Strategic Goal 3 focuses on workforce standards and program R&D, design and other elements to address quality installation and positively impact the realization of energy savings.

Regarding the former, as indicated above, SCE believes it may be feasible to consider elements of the “responsible contractor policy”.

The guidance plan recommends that work papers identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings. The guidance plan further recommends information on measure costs should explicitly address the time required as well as the specific skills required to achieve the assumed savings. More specifically, if, as is the case for many deemed measures, energy use and savings estimates are based on assumptions of 100% correct installation, the work papers should document the contractor competency and worker skills needed consistent with those assumptions.

The recommended enhancements to the work paper process may not be an optimal means to drive higher installation quality. SCE notes it will be difficult to develop clear and useful installation standards for some measures. For example, delivery of whole building or system level measures is relatively complex and involves multiple trades with varying existing conditions to address. For example, when offered through an IOU driven program, some measures, such as refrigerant charge adjustment, more readily lend themselves to specific installation standards. Other measures, such as upstream lighting, would not be appropriate to address in work papers as the actual installation is done by customers and/or vendors that would likely never see the work paper.

While some measure requirements have explicit skills and associated level of effort, it is unclear if specific minimum labor times and related costs can be assigned. Time and cost is usually based upon experience. Developing simple labor time and skills requirements may not achieve desired results of improved installation quality, although the use of typical labor times for projecting costs to perform this
level of effort could be appropriate. Lastly, incorporating skills sets into work papers may require
updates to the cost study and Database for Energy Efficient Resources (DEER) costing methods.

We agree that further work is needed to identify appropriate enhancements to the work paper process.
We therefore recommend further study through a task force. See Chapter 3.

Strategic Goal 4: Sector Strategies

SCE continues to support sector strategies and is willing to work with parties to address potential barriers

Strategic Goal 4 focuses on assisting the IOUs to implement sector strategies in a way that best contributes to energy efficiency and related workforce goals and specific CPUC directives. SCE is willing to work with interested stakeholders to obtain input for development of RFPs to facilitate the recommended sector strategies as also described under Strategic Goal 1.

The guidance plan recommends the IOUs launch a state-wide incentive program that requires CALCTP certification for participating contractors. The IOUs were ordered to collect data to demonstrate the effectiveness of certified versus non-certified contractors, specifically for HVAC and CALCTP in D.12-05-015. Currently, SCE is working on (1) sustainable office trial program that will compare and contrast CALCTP versus non-CALCTP contractors and (2) a corresponding M&E study to analyze the results. Further, SCE was asked by the CPUC’s Energy Division (ED) to conduct a training assessment study to compare and contrast certification effectiveness of CALCTP versus other lighting control trainings. The guidance plan does not clearly prescribe the extent of the proposed requirement for CALCTP certification. Would the requirement apply to ALL jobs through building energy code, for utility incentives, or for the ability to call it a “CALCTP-Certified” advanced lighting control system?

We recommend that IOU incentives for advanced lighting controls require the CALCTP certification, and present the rationale in Chapter 2.

Depending on the extent of the requirement, the rigor for quantifiable savings data will vary. Utilities agree and fully support the CALCTP, but are required to quantify increased savings or persistence of savings if incentives are involved. There are also baseline considerations as a part of the savings equation since Title 24 also requires controls. If aspects such as these are not resolved, utility incentives are limited, causing difficulty in the implementation of the requirements listed here. Parties are exploring the provision of increased incentives for CALCTP installations. It is important to recognize that demonstrating significant incremental energy savings above and beyond savings achieved through existing programs may be a challenge, given the Title 24 code environment (given some design requirements assume high quality installation) and the existing baseline for lighting installations. Furthermore, it is important to ensure that implementing incentives for CALCTP training will not result in reduced savings estimates for existing incentive programs. Despite these challenges, SCE is committed to effectively completing the Trial Study and incorporating the results into our future incentive programs.
To accomplish some of the guidance plan objectives for lighting and HVAC, among other sectors, the CPUC and other stakeholders will need to revise processes that are not within the control of the IOUs.

The current ex-ante review process is managed by ED. The DEER is a CPUC managed database designed to provide estimates of energy and peak demand savings values, measure costs, free ridership, and effective useful life all within one data source. CPUC required DEER is a primary source of cost data used in work papers. DEER costing methods adjust costs by measure installation type and climate zone, but do not currently incorporate skills sets into this approach and as such would need to be changed to meet the proposed recommendations.

Strategic Goal 5: Post Contract Stakeholder Engagement

SCE agrees ongoing stakeholder engagement will facilitate achievement of WE&T goals

SCE concurs that future stakeholder engagement will help ensure attainment of objectives described in the guidance plan. Stakeholder engagement is described within the context of certain recommendations discussed in Strategic Goal 1 that SCE does not support. 8

Strategic Goal 6: EM&V Plan for Guidance Plan Recommendations

SCE agrees many of the guidance plan recommendations can be incorporated in EM&V plans

SCE provides comments on specific recommendations within Strategic Goal 6:

Periodically update the WE&T Needs Assessment

SCE agrees and further recommends that the scope of this update be limited to trades that are relevant to EE/IDSM. It makes sense to include analysis of job demand by occupation for EE/IDSM sector as well as develop an inventory of available education and training programs serving the EE/IDSM sector.

Reform ex ante review to address workforce quality interventions

Workforce quality is already somewhat embedded into the ex-ante review process managed by the ED. To strengthen this work, a systematic definition for “job quality” is necessary. It also is important to carefully delineate the responsibility of customers, manufacturers, retailers/distributors, contractors and utilities in the process of improving “job quality”. SCE is working closely with ED to improve Quality Assurance and Quality Control (QA/QC) process through efforts such as rigorous pre-inspection and post-inspection. To support contractors, the IOUs have designed ongoing contractor training and mentoring initiatives to provide real-time support. The IOUs support the “high road” approach by

8 As described above, SCE opposes the creation of an independent governing board to oversee the RFP development and other ascribed activities throughout the strategic plan and SCE opposes transferring the skill-building portion of WE&T to the CWIB.
sponsoring certification trainings such as Building Owner Certification, BPI certification, CALCTP Certification, HVAC Quality Installation (QI), etc. Finally, SCE believes in the importance of impact evaluation assessment, but to improve “job quality”, it might be more important to strengthen process evaluation so we can improve these processes prior to impact evaluation assessments.

We are defining “work quality “as work performed in accordance with the technical specifications of the technology or measure involved. Job quality is a measure of wages, benefits, career opportunities etc. We do not use the term workforce quality.

We agree that process evaluations are essential (see chapter 4 EM&V and appendices). We also agree that further work is needed to identify appropriate enhancements to the work paper process. We therefore recommend further study through a task force. See Chapter 4 EM&V.

Develop tracking systems and data on job and work quality (e.g. wages, benefits, working conditions)

(1) Job Quality: The current program QA/QC process and reporting can provide insights to job quality and work quality.

(2) Individual Work Quality: Additional study design is needed to collect data on individual contractor wage, benefits and working condition, etc. The IOUs and ED are discussing study methods that would involve “contractor panel tracking” to support longitudinal data collection efforts. ED and the IOUs are developing a study plan to collect “work quality” data in 2013-2014, as a part of the WE&T M&E study roadmap.

For customer installed measures, customers (or their agents with technical knowledge) have a vested interest and are better able to assess and ensure installation quality than the IOUs which run programs and do not typically install measures, except for contracted direct install measures. The QA/QC processes also provide a platform to first offer remedial training and mentoring services to support program qualified contractors. If corrective actions are not possible, then the utility program QA/QC processes could limit program participation by non-performing contractors.

See Chapter 4 for our recommendations on collection of data.

Track work quality including in programs where there is not a direct contracting relationship between the IOU and the contractor

For non-program contractors: (market level)

SCE is not positioned to collect employee data in programs where the contractual relationship is with the customer rather than SCE. While SCE recognizes the importance of job quality and workforce skill building, equipment manufacturers must specify and enforce quality standards. Likewise, it is also important for responsible contractors to seek and embrace the necessary skills and qualification to properly perform the required work. The IOUs EE/IDSM programs are designed to support the EE/IDSM
market with healthy interactions with the customers, manufacturers, distributors/retailers and installation contractors. SCE is willing to initiate a contractor market characterization study to investigate contractor’s job quality at the market level for specific applications (i.e., lighting control, HVAC, comprehensive deep energy retrofit, etc.)

We agree that contractor market characterization studies are critical to inform resource program design, including specific requirements for contractors and workers. See chapter 4 for our suggestions on the key workforce data for contractor market characterization studies.

Identify potential, goals, and targets for the MUSH sector

SCE opposes consolidation of existing MUSH programs into a single program. SCE is willing to work with ED to initiate a follow-up study to the ongoing EE potential study to focus on the MUSH sector, subject to funding availability.

We dropped the MUSH consolidation recommendation.

Conduct comprehensive process evaluations that assess guidance plan recommendations

SCE will continue to support ongoing process evaluation and program improvement processes that can address factors leading to installation quality.

See process evaluation recommendation in Chapter 4 EM&V and appendix.

Modify impact evaluations to address DVC recommendations

Impact evaluations are managed by ED. SCE supports the inclusion of job quality in impact evaluations. SCE recommends a study to properly define job quality and necessary data collection protocol so this can be a systematic effort.

We have preliminary recommendations on key workforce data that helps define job quality and its relationship to quality of work. Resources did not permit a full analysis of data collection protocols and we agree that this would be valuable

Strategic Goal 7: Recommendation for Development of a WE&T Web Portal

SCE agrees with the recommendation not to proceed with the WE&T web portal

The guidance plan recommends the IOUs not develop a WE&T job matching or training web portal because job matching services do not tend to be well-aligned with the goals of EE/DSM WE&T programs, and are not effective in bridging the gap between labor supply and demand. SCE accepts the guidance plan recommendation.
**STRATEGIC GOAL 1: Forecasting Market Needs to Create Career Pathways and Improve Candidate Placement**

**Scope of Strategic Goal 1**

The scope of SG1 includes “Forecasting Market Needs to Create Career Pathways and Improve Candidate Placement and Advancement.” DVC responds to this goal in the following ways:

- Targeting the most effective and efficient use of IOU resources, DVC identifies components of a balanced WE&T portfolio that reflect the IOUs’ dual roles in meeting both energy and workforce goals.
- Using the above criteria, DVC makes recommendations to modify IOU WE&T programs.
- Identifies and tracks critical occupations and assesses gaps in KSAs, certifications and training programs.
- Identifies opportunities for the IOUs to more effectively leverage state, federal and private WE&T investments.

**Recommendations for Strategic Goal 1**

*Full Report: pages 12 - 46  
Appendices: pages 2 - 14*

DVC recommends that the IOUs substantially increase their WE&T resources for programs specifically targeted at workforce skill-building, and that they redesign this programming with increased participation and oversight from state workforce development experts. By leveraging the state’s core accredited education and training institutions, promoting the identification and use of clear certifications and skill standards, and ensuring employer commitment to hiring and using trained workers, DVC expects that this restructuring of programs will have greater impact on both energy savings and jobs.

A. The IOUs should develop a “skills-building portfolio” that has distinct goals, programmatic activities and budget which is separate from the IOUs’ “market-building portfolio.” The budget for the skills-building portfolio should be $60 million for a three-year cycle (note, Full Report mistakenly references $70 million).

B. The skills-building portfolio should be implemented through two coordinated statewide RFPs, with regional distribution of training funds. The IOUs should phase-out ratepayer support for short, stand-alone classes for their skills-building program. Other IOU-based skill training could continue, but should be transitioned into applications for the RFPs. DVC recommends two RFPS because their distinct goals require distinct RFP development and review committees with specific expertise.

1. **RFP #1 should address skill-building that contributes directly to energy savings.** It should include funds for:
   i. Sector strategies targeted at incumbent workers, built on regional partnerships, specific commitments from employers to co-fund training and use new skills in the field, and leveraging of other funding sources.
   ii. Core education and training institutions (4-year colleges, community colleges and state-certified apprenticeship programs) to incorporate EE/DSM skills into credentialed programs for professionals and trades workers.

2. **RFP #2 should be dedicated to skills-building activities that support the development of career pathways for workers from disadvantaged communities.** It should include funds for:
   i. The inclusion of workers from disadvantaged communities, through training and placement into living-wage, career-track jobs in the key EE/DSM occupations.
   ii. Regional partnerships of employers, community colleges, workforce investment boards (WIBs), labor and CBOs that leverage WIB and other funding sources.
iii. Core 9-12 education institutions (California Partnership Academies, Linked Learning, High Schools, Regional Occupation Programs) to incorporate EE/DSM skills into standards-aligned curriculum and to articulate curriculum with post-secondary education and employment opportunities.

iv. Curriculum development and implementation, faculty training, industry engagement, work based learning and articulation efforts.

C. Both RFPs should be guided by a priority-setting process that includes:
   1. Periodic updating of data analysis on job projections and priority occupations.
   2. KSA development based on input from subject-matter experts (SMEs) on the skill needs for emerging technologies and underperforming technologies.
   3. Input from industry and training institutions on the capacity of the existing workforce.

D. The CPUC should establish a governing board to oversee the development of the WE&T skills-building portfolio, subject to final CPUC approval. The Governing Board should:
   1. Include California’s energy, workforce, and education agencies, in addition to SMEs from the national labs and the UC/CSU Energy Research Centers.
   2. Appoint technical skills panels for each major building system to identify priority KSAs needed for emerging technologies and underperforming technologies.
   3. Advise staff selection to develop the RFPs, and participate in RFP development, and ranking of proposals. We recommend one staff person each to oversee programming related to the professional, non-residential trades, residential trades, and inclusion.

E. The CPUC should consider working with the California Labor and Workforce Development Agency to transfer the workforce skills-building portion of WE&T to the CA Workforce Investment Board.

F. The IOUs should begin transitioning the WE&T portfolio to align with DVC’s recommendations in 2014 with three phase one programs:
   1. Integrate EE/DSM into the core curricula for architects. Dedicate up to $15 million over three years to enhance EE/DSM content in core curricula and for professional development.
   2. EE/DSM best practices review and upgrade for apprenticeships in the key trades. Dedicate up to $15 million over three years to enhance and verify EE/DSM skills in the state-certified apprenticeship system, via a partnership between the Community College Chancellor’s Office of Apprenticeship, the California Division of Apprenticeship Standards and the IOUs.
   3. MUSH sector bridge pre-apprenticeship program for disadvantaged workers. Dedicate up to $12 million dollars for a three-year inclusion sector strategy administered through an RFP to prepare entry-level EE workers or job seekers with minimal skills and low wages for opportunities into higher skilled and higher wage employment.

Ownership and Timing
IOUs:
1. Begin the phase one programs outlined in this plan in 2014.
2. Convene the governing board and work with them to initiate the skill-building portfolio to begin in 2015:
   a. Establish budget (with CPUC guidance as necessary).
   b. Identify appropriate technical advisory groups.
   c. Establish priority setting process that guides the development and review of the RFP.
   d. Hire staff to staff to oversee programming for the professional, non-residential trades, residential trades, and inclusion.
3. Following the convening of the governing board, along with technical advisory and staffing appointments, staff should begin drafting RFPs to be implemented in 2015 with the funding that is not allocated to the Phase 1 RFPs. (Subject to CPUC clarification of the timing of the next program cycle.)

4. Conduct a thorough review of the Centergies offerings and submit findings to the WE&T stakeholder advisory board (and/or the new governing board), via advice letter process, within the next six months:
   a. Identify which programs are skill-building vs. market-building;
   b. Identify stand-alone courses intended to build worker skills that will be phased out or funded by participant fees or other funding;
   c. Identify best practices among existing skill building programs to be grandfathered in to the next portfolio, subject to review and approval by the stakeholder advisory group;
   d. For any programs that are not identified as best practices (but are not strictly stand-alone courses), the IOUs should consider phasing out, or developing a modified program delivery structure to submit as a proposal within the skills-building RFPs in the next cycle.

**CPUC:**

1. Direct the IOUs to allocate at least $60 million of WE&T funds per three-year cycle, or $100 million for five years, to workforce development / skill-building in the key occupations.
2. Direct the IOUs to allocate 20% of their workforce development budget to skill building efforts dedicated to promoting inclusion for disadvantaged workers.
3. Direct that the workforce skills development portfolio be executed via an RFP for energy savings and an RFP for inclusion.
4. Issue guidance about the WE&T resources that the IOUs should direct toward market-building.
5. Establish a governing board to oversee the development of the WE&T skill-building portfolio, subject to final CPUC approval, as described in D. May require review from legal division prior to direction. Requires approval and cooperation from other parties and agencies named to the governing board.
6. Offer direction that the WE&T task force is an appropriate forum for input from a wide range of stakeholders on program development (as opposed to a vehicle for engaging the state’s workforce and education agencies).
7. Consider working with the California Labor and Workforce Development Agency to transfer the workforce skill-building portion of WE&T to the CA Workforce Investment Board.

**Feedback Guidelines:**

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- Comments should include any data corrections, as needed.
- For additional information or reference documents related to each recommendation, please refer to the full report as well as the appendices. Relevant page references have been provided above.
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<tr>
<td>SoCalGas</td>
<td>SG1.A</td>
<td>UC Berkeley Don Vial Center (DVC) has provided draft recommendations that, in concept, represent a significant paradigm shift in the implementation, structure, strategy or deployment of resources. SoCalGas applauds the spirit of the DVC’s intent to use the timeframe and budget to produce a more comprehensive or broadly reaching range of recommendations, as opposed to focusing on narrow scope of guidance on improving the statewide IOU WE&amp;T Programs. The IOUs are currently able to provide customers with a balanced “skills-building” training</td>
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in complement to “market-building” training. Implementing a mostly skills-building portfolio, as described by DVC of $60 million for a three-year cycle among the IOUs, would likely preclude SoCalGas from providing customers with hands-on equipment demonstrations, on-demand technical workshops, tactical diagnostic training, and a growing number of industry certification preparation courses. The draft recommendations convey an optimistic view of benefits of a skills-building focused portfolio without data or other evidence that may guide implementers whether to make such changes.

We suggested ways to address budget constraints: by following state rules on provision of food and beverages, by using on-line videos to lower costs and amplify reach of Centergies market building classes, and by recommending that the IOUs charge a fee for classes unless there are specific economic barriers to participation. See xx

We provide substantial evidence from the workforce development literature about the current shortcomings of the Centergies programs for the purposes of workforce skills building. See xx

SoCalGas SG1.B SoCalGas is willing to explore other alternatives to offering skills-building courses in a cost effective way. As currently authorized, the IOUs do provide a good and balanced level of training. The statewide IOUs provided DVC with data showing a split of 55% and 45% between “market-building” and “skills-building” training, as defined by DVC. Considering some of the other suggestions within the proposed draft recommendations, SoCalGas believes it would be more prudent at this stage to further leverage benefits of “skills-building” within the confines of “market-building”, or energy efficiency specific skills training. Perhaps an enhanced “skills-building” curriculum could be applied on a narrower, key, regional occupation to evaluate impacts.

See above

SoCalGas SG1.C SoCalGas, along with the other IOUs began assessing the merits of many of the stand-alone courses after the 2011 Needs Assessment study, modifying course content, instruction, and overall portfolio mix toward a greater balance of “skills-building” offerings. DVC and the IOUs recognize the benefits of retaining many stand-alone courses for the introductory, continuing education and very specific tactical learning lessons that upgrade the skills and effectiveness of an energy efficiency workforce.

See above

SoCalGas SG1.D SoCalGas, along with the other IOUs, are best situated to administer coordination of energy efficiency funding intended to provide customers with energy efficiency training and services. We do not see establishing governing board, which could be costly and burdensome, as prudent to oversee coordination and commitment among stakeholders.

We modified our recommendation on this: We now are recommending that the IOUs convene an advisory body (PAG or PRG) to advise them on the skills building portfolio. We are also recommending to state-policy makers that the CEC
| SoCalGas | SG1.E | SoCalGas does not see merit in transferring WE&T funding away from IOU administration. The IOU Statewide WE&T Programs are implemented in compliment with core educational institutions, occupational apprenticeship and vocational training, and provide certification courses to prepare the workforce for advanced and higher level skills, as well as continuing education unit (CEU) courses to keep the workforce current and qualified to provide quality workmanship. Agencies such as the CLWDA (California Workforce and Labor Development Agency) and CAWIB (California Workforce Investment Board) offer unique programs and services that provide on-ramps into a range of meaningful jobs and careers. While the draft recommendations emphasize the significance of workforce skills-building, IOU energy efficiency ratepayer funds must clearly demonstrate benefits in serving the marketplace and delivering energy efficiency savings. See above |
| SoCalGas | SG1.F | The IOUs recognize the intent of the Consultant’s recommendations, however we have authorized programs in place for 2014 and changes of this magnitude should be considered in a future regulatory proceeding. Until that time, IOUs can explore promising ideas identified in the report. Agreed |

### STRATEGIC GOAL 2: Increasing Support for Disadvantaged Workers

**Scope of Strategic Goal 2**

Ensure California’s low income, disadvantaged and minority workers fully participate in the workforce benefits created by the IOUs’ EE investments.

**Context**

California’s substantial investments in energy efficiency and demand side programs offer a promising opportunity to build middle-class career pathways for low income people and job seekers with barriers to employment (“disadvantaged workers”). DVC notes that two-thirds of the direct jobs generated by the IOUs’ EE/DSM programs are in the construction trades and believes that construction trades provide a critical pathway to middle-skill and middle-income jobs. However, disadvantaged workers often face multiple barriers to employment that need to be addressed through a carefully aligned pipeline of recruitment, screening, skills development, training, wrap-around services and credentialing. DVC suggests that the promised economic opportunities are unlikely to benefit disadvantaged jobseekers unless the IOUs incorporate strategies that promote targeted hiring, ensure living wage jobs, support upward mobility and enforce fair labor standards.

The California Public Utility Commission’s directives to the IOUs on the specific objectives and strategies associated with the IOUs’ workforce inclusion goal have thus far not been precise. Given this, DVC’s approach to Strategic Goal 2 is both to articulate the policy decisions that can clarify specific workforce inclusion goals and to provide a menu of options on how to effectively implement strategies to achieve these goals.

**Recommendations for Strategic Goal 2**

*Full Report: pages 47-72*
A. Demand-side workforce diversity program: Create a workforce diversity program that encompasses training connected to family-supporting career pathways for a diverse EE and DSM workforce. Include four program elements:
   1. Add “diversity of workforce” as a factor in ranking proposals by third party contractors in all EE and DSM solicitations (up to 20% of total points).
   2. Adopt “First Source” language into all EE/DSM contracts to create a formal link between training for disadvantaged workers and job opportunities through EE/DSM programs (see below for language).

   Example of First Source language being used by Sempra: The COMPANY is interested in developing linkages between employment opportunities and trained workers in energy efficiency. In the event that new job opportunities arise as a result of this SOW, Contractor shall provide advanced notice of job or internship opportunities and the skills required for those positions to COMPANY or COMPANY’s designee. Advanced notice should be provided at least two weeks before the job or internship opportunity is listed publicly. These opportunities may be shared with organizations that provide EE workforce training.

   3. Establish a wage floor for ESA, 3P (when contract looks like Direct Install), and Direct Install programs (note, Full Report inconsistently applies this to 3P).
   4. Target the municipal, university, school and hospital (MUSH) sector for deeper retrofits through greater incentives, bundling of projects, apprenticeship standards, and targeted hire requirements that together can provide meaningful job and training opportunities for disadvantaged workers.

B. Implement an inclusion sector strategy consisting of regional pre-apprenticeship bridge programs that can prepare workers for entry level jobs in the MUSH program recommendation as well as in other jobs.

C. Foundational activities are needed to support the recommended interventions:
   1. A clear directive by the CPUC for the IOUs to validate their efforts to address inclusion.
   2. The adoption of a definition of “Disadvantaged Worker,” should be based on both residence in a high unemployment zip code and meeting specific criteria of disadvantage.
   3. On-going data collection on job quality, workforce diversity, and hiring of disadvantaged workers, to create a baseline and measure progress over time.
      i. Require contractors to use an electronic certified payroll reporting system for reporting hiring data.
      ii. Assess outcomes annually.

Ownership and Timing

IOU Near-term Actions
1. Define “Disadvantaged Worker” meaningfully and consistently.
2. Adopt common “First Source” contracting language and include in all EE/DSM contracts in contract renewals and the upcoming contracting cycle.
3. Aggregate projects for MUSH customers and include workforce requirements as outlined above in a third-party solicitation for a general contractor.
4. Establish an online reporting system for all EE/DSM contractors and make summary reports available to the public.

IOU Longer-term Actions
1. Implement a wage floor in ESA and Direct Install contracts.
2. Add “diversity of workforce” as a factor in ranking third party contractors in all EE and DSM solicitations.
3. Develop more comprehensive funding and financing packages for MUSH customers, with a goal of 100% financing.
4. Establish a Training Bridge Program to connect lower-skilled EE workers to higher-skilled EE jobs.
5. Publish annual scorecard.

**CPUC Actions**
1. Explicitly direct the IOUs to promote measure and report family-supporting job creation and workforce diversity outcomes using the program elements recommended in this guidance document.
2. Allocate more funding for MUSH activity.
3. Increase ESA and Direct Install program budgets where wage floors are instituted to mitigate potential cost.

**Feedback Guidelines:**
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<td>SoCalGas</td>
<td>SG2.A.1</td>
<td>SoCalGas does not believe this recommendation is in scope and focused on the relevant purpose of the engagement to deliver guidance on enhancements to the statewide IOU WE&amp;T Programs. SoCalGas requests removal of recommendations that are out of scope. This draft recommendation represents a significant paradigm shift in the implementation, structure, strategy and deployment of energy efficiency resources. SoCalGas’ sourcing considers criteria such as diversity in ownership which are relatively easier to verify than ‘diversity of workforce’. Similar to defining ‘disadvantaged worker’, zeroing in on what constitutes diversity within a workforce would require considerations beyond only the WE&amp;T Program. See approved Scope of Work</td>
</tr>
<tr>
<td>SoCalGas</td>
<td>SG2.B</td>
<td>SoCalGas has adopted “first source” language for Energy Efficiency third-party programs with input and support of the DVC consultant team.</td>
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**STRATEGIC GOAL 3: Integrating WE&T and the Resource Programs**

**Context**
DVC suggests there is substantial evidence of improper equipment installation and maintenance as well as building construction practices that are inconsistent with best practices and technical specifications. They go on to suggest that work quality is not explicitly addressed in the planning, approval, implementation, and evaluation of ratepayer
funded energy efficiency programs nor are skills or resources identified to ensure quality throughout this process. According to DVC, the overall result is that the IOUs are leaving a significant amount of energy savings on the table.

**Scope of Strategic Goal 3**

SG3 focuses on quality issues and presents a set of interventions to address them. *(The focus is on EE programs although the recommendations apply to DR and DG where incentives are offered.)* In considering how best to address the work quality issue in the design of the EE and DSM resource programs, DVC focused on the extent to which integrating workforce efforts with resource programs can improve the cost-effectiveness of these programs through improved work quality. They aim to answer the following questions:

- What specific standards could be applied to which programs or categories of programs in the EE/DSM portfolio, recognizing a one-size-fits-all solution is not feasible?
- What are other solutions or interventions that can address the quality problem, either singularly or in combination with standards?
- How important is the work quality problem? What research exists that documents problems with improper installation, operation, and maintenance of energy efficiency measures, technologies, materials or systems?
- Does the current process of planning, approval, implementation, and evaluation of resource programs sufficiently encourage the IOUs to ensure the quality of work of contractors participating in their programs? Can customers ensure quality?
- What evidence exists on the costs and benefits of skill certifications and other contractor and worker standards?

**Recommendations for Strategic Goal 3**

*Full Report: pages 73-107*  
*Appendices: pages 49-65*

Recommendations focus on the introduction of workforce standards and on changes in the processes used to plan and implement IOU resource programs. DVC believes that the evidence and rationale presented on the extent of quality problems, the value of standards in the construction sector, and the difficulties to measure the impact of standards in a “but for” environment, supports a recommendation to introduce workforce standards in IOU resource programs without delay.

A. Incorporate workforce standards into program requirements: change the competitive environment to attract high-performing contractors and to screen out or improve the performance of lower-qualified contractors. *(Note, some stakeholders are pushing for stronger standards than what’s articulated here.)*

1. Adopt three tiers of a Responsible Contractor Policy for use across all resource programs. Require, verify and enforce that all firms and subcontractors meet pre-established, clearly defined minimum standards.
   1.1 Tier 1: All EE/DSM resource programs – all sectors and sizes
      i. Licenses: The firm and its employees must all have valid, effective licenses, registrations or certificates required by federal, state, county, or local law, including, but not limited to, licenses, registrations or certificates required to do business in the designated locale and perform the work it seeks to perform.
      ii. Bonding and Insurance: The firm meets the bonding requirements as required by law or contract specifications and any insurance requirements, as required by applicable law or contract specifications, including general liability insurance, workers compensation insurance and unemployment insurance.
iii. Wage and Labor Laws: The firm pays current wage rates and benefits as required by law. No labor law violations recorded by the state Department of Industrial Relations (DIR).

iv. Permits: The firm has complied with all applicable permitting requirements.

1.2 Tier 2: All individual projects with total costs ≥ $100,000 or all firms with IOU EE/DSM contracts or subcontracts larger than a total of $1,000,000, in addition to the requirements in Tier 1.

i. Trained workforce: 60% of jobsite workforce comprised of journey-persons who completed a registered apprenticeship program in California or are currently enrolled in such a program, or provide other proof of skilled workforce.

ii. OSHA: 60% of jobsite workers should be OSHA 10-hour General Industry Safety and Health Certified and at least one jobsite worker should be OSHA 30-hour General Industry Safety and Health Certified.

iii. History of Performance: (a) documented history of full compliance to state, health, safety and work standards and (b) list of three similar past projects and references for three projects.

1.3 Tier 3: Projects in the Municipal, University, Schools, and Hospitals (MUSH) sector with individual projects or aggregated projects ≥ $250,000, in addition to the requirements in Tiers 1 and 2.

i. Prevailing Wage: The firm will pay all craft employees that it employs on the project the current prevailing wage rates

ii. Apprentices: The firm has participated in a state-registered Apprenticeship Program for the past three years, and shall continue to participate in such program for the duration of the project.

iii. Targeted Hire: 15% of total project work hours to be performed by disadvantaged workers.

iv. First Source: The firm will notify pre-apprenticeship bridge program of upcoming job postings.

B. Adopt third party skill certification requirements and/or work quality assessments across all programs as outlined in Figure 3.3 “Decision Tree” and following the guiding principles below.

1. For tasks for which there is widespread industry consensus on appropriate third party certification, make that certification required for participation in EE/DSM program incentives.

ii. Require CALCTP firm certification for contractors on all projects involving advanced lighting controls.

ii. Require BPI firm accreditation for all Whole House retrofit projects (advanced and basic).

iii. When possible, utilize DOE/NREL Job Task Analysis as a proxy for industry consensus to screen third party certifications for requirement in resource program participation

iv. For tasks for which there is no well-defined third party certification, program administrators should work with partners to document Knowledge, Skills, and Abilities (KSAs) for those tasks, using DOE/NREL Job Task Analysis. IOUs should work with partners to incorporate these KSAs in appropriate training programs.

v. For tasks for which there is no widespread industry consensus on appropriate third party certification, IOUs should either invest in work quality assessments that include in-progress job monitoring and/or rigorous functional performance assessments of completed work OR adopt the contract management tool called Performance Information Risk Management System (PIRMS) to promote work quality. DVC suggested piloting the use of PIRMS in the HVAC Quality Installation and Quality Management programs.
vi. Develop an in-house system or hire third party entity to manage verification and enforcement of the skill certification requirements.

C. Implement changes throughout the resource program R&D, design, implementation, approval and evaluation processes: better track variables affecting work quality and create stronger incentives for high quality work.

1. For emerging technologies and new measures tested in field demonstration projects, identify and document contractor competencies and worker skills/credentials as a basis for considering program
requirements. Problems with initial installations and how problems were resolved should be consistently documented in reports posted for these demonstration projects.

2. Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings. Information on measure costs should explicitly address the time required as well as the specific skills required to achieve the assumed savings. More specifically, if, as is the case for many deemed measures, energy use and savings estimates are based on assumptions of 100% correct installation, the work papers should document the contractor competency and worker skills needed consistent with those assumptions.

3. Modify Program Implementation Plans (PIPs) to specify how program requirements will increase the demand for and ensure quality installations. Initial plans should consider the projected benefits and costs of alternative interventions (e.g. certification requirements, training opportunities, and quality assurance/verification) prior to developing a plan, which includes one or more of the identified approaches. This could replace the current “WE&T integration” section of PIP templates.

4. Information from 1-3 above should be part of the documentation reviewed by the WE&T advisory committee and staff as they prioritize WE&T investments. The results should be summarized and documented in presentations and/or reports as judged appropriate.

D. Review and modify quality assurance processes to place greater emphasis on work quality.

1. Quality Assurance processes (post-installation inspection and verification) should focus on quality of installation, not only counting the number of “widgets” installed. Highly skilled technicians or certified inspectors should be assigned to inspect most installations at beginning of program and then randomly throughout programs.

2. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on work quality.

3. Where work quality has been identified as an issue, follow-up studies should be conducted in determining how work quality is affecting the expected useful life of long-lived measures.

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<td>SoCalGas</td>
<td>SG3.A</td>
<td>SoCalGas does not believe this recommendation is in scope and focused on the relevant purpose of the engagement to deliver guidance on enhancements to the statewide IOU WE&amp;T Programs. SoCalGas requests removal of recommendations that are out of scope. This recommendation requires considerations beyond only the WE&amp;T Programs. See approved Scope of Work SG3</td>
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<tr>
<td>SoCalGas</td>
<td>SG3.B</td>
<td>Given the desire to have the most qualified contractors, technicians and other professionals deployed and providing a high-level of performance to customers, IOUs have embraced third-party certification as criteria for participation in</td>
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several programs. SoCalGas, however, believes the complexities of large scale projects require further examination, requiring considerations beyond only the WE&T Programs to ensure development and/or acceptance of the widest range of certifications that do not limit customer access to the largest potential workforce pool.

See Chapter 2 for the evidence we present that provides the rationale for our recommendations. There is no evidence that the recommendations we make would lower customer participation or reduce the number of participating contractors, although it may change which contractors choose to participate.

SoCalGas does not believe this recommendation is in scope and focused on the narrow purpose of the engagement to deliver guidance on enhancements to the statewide IOU WE&T Programs. SoCalGas requests removal of recommendations that are out of scope. Recommendations on a) determining how contractor competencies and worker skills through involvement in ETP projects, b) contractor requirements and worker skills needed for installation and/or maintenance of measures, c) PIPs including more specification on program design and requirements would require considerations beyond only the WE&T Program.

See approved scope of work for SG3.

SoCalGas does not believe this recommendation is in scope and focused on the relevant purpose of the engagement to deliver guidance on enhancements to the statewide IOU WE&T Programs. SoCalGas requests removal of recommendations that are out of scope. Inspecting work quality as a requirement in the post-assessment requires consideration beyond only the WE&T Program.

See approved scope of work for SG3.

STRATEGIC GOAL 4: Supporting Sector Strategies

Context
Sector strategies are industry partnerships of employers, training and education institutions, labor and community stakeholders, and other stakeholders who come together to plan and implement training programs. Sector strategies are considered a best practice approach to workforce development and are designed to meet the needs of employers for skilled workers, while benefitting workers through placement in career-track jobs and career advancement opportunities. Returns are particularly high for both workers and employers in apprenticeship, which is an institutionalized form of sector strategies, usually regulated by the state with on-going commitments of industry funding.

The main factor leading to the success of sector strategies compared to other types of workforce development projects is the involvement of employers, not only in identifying skill gaps but also in committing to co-fund training of incumbent workers and/or to hire graduates of training programs.

Scope of Strategic Goal 4
SG4 focuses on assisting the IOUs to implement sector strategies in a way that best contributes to energy efficiency and related workforce goals and specific CPUC directives.

Recommendations for Strategic Goal 4
Full Report: pages: 108-120
Recommendations are designed to strengthen current IOU efforts while providing a plan that allows other groups with current capacity and greater expertise to play a more significant role in sector strategy implementation.

DVC recommends that the IOUs develop a competitive solicitation process for two types of sector strategies, as described in SG1: one for upgrading the EE/DSM skills of incumbent workers, and one to promote inclusion of disadvantaged workers into living-wage, career-track jobs.

Specific recommendations about the sector strategies to date include:
A. CALCTP: The IOUs should launch a statewide incentive program that requires CALCTP certification for participating contractors.
B. HVAC sector strategy: The IOUs should not lead this sector strategy, but rather encourage the HVAC industry to apply for funding from RFP # 1 (for incumbent workers).
C. RxC: The RxC effort should be reconceived and should be built on a partnership with the two Stationary Engineers apprenticeship programs in California, for apprenticeship and journey upgrade training.
D. EWSS: The EWSS should be folded into the recommended RFP process. Specific partnerships that have been started will be eligible to apply for funding through the RFP. The identification of key stakeholders, SME, and educational partners, will inform both the formation of the technical skills panels and will jumpstart good sector strategy projects that can apply for funding.

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| SoCalGas | SG4                                                                     | SoCalGas is engaged with the on-going HVAC sector strategy effort and view this approach as a model that can be used for pursuing portfolio changes for upgrading the EE/DSM skills of incumbent workers and inclusion of disadvantaged workers. Engagement on living-wage, career-track jobs requires broader consideration beyond only the WE&T Program. 
**See our analysis of the HVAC sector strategy in Appendix** |

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13
STRATEGIC GOAL 5: WE&T Stakeholder Engagement

Context
WE&T programs have utilized various stakeholder groups in the past, including the CPUC-mandated WE&T Taskforce. However, the recommendations provided by DVC will require a large shift in how WE&T is approached, with whom the IOUs partner, etc. As such, new stakeholder groups are required.

Scope of Strategic Goal 5
SG5 includes the development of a participatory stakeholder process. DVC is tasked with developing a post-contract stakeholder engagement plan that will effectively support the guidance and implementation of the recommendations in their Guidance Plan, avoiding any duplication of efforts currently under way by existing working groups.

Recommendations for Strategic Goal 5
Full Report: pages: 120-122
Appendices: pages: not addressed
A. Create a transitional Peer Review Group (PRG): Just before the end of the contract term, DVC recommends that the current project Advisory Group nominate members to form a transitional WE&T Guidance Plan PRG to oversee implementation and progress towards the Guidance Plan’s strategic goals (Advisory Group members may remain part of the group). PRG membership should be finalized in consultation with the IOUs. Once created, the PRG can elect co-chairs, who will be primarily responsible for reporting out to other existing working groups. The PRG should provide updates every six months to the existing WE&T Task Force as well as other working groups such as the IOU sector strategy working groups, the Labor Agency, the CPUC and others.

B. Develop a Governing Board: As described in SG1, DVC is recommending that the CPUC establish a governing board to oversee the IOUs’ workforce skills-building portfolio and offer informal approval and advice to the CPUC. Then, once established, DVC is suggesting the PRG be dissolved. The governing board can also monitor and provide expertise, advice and resources on the other guidance recommendations. The Governing Board should be the permanent structure for substantive input, advice and oversight of WE&T issues and be comprised of high-level representatives of the following agencies and institutions:
- CA Workforce Investment Board
- CA Division of Apprenticeship Standards
- Employment Training Panel
- CA Community Colleges Chancellor’s Office
- University of CA / CA State University
- CA Department of Education
- CA Energy Commission
- CA Public Utilities Commission (Commission will approve final portfolio)
- National Laboratories
- UC/CSU Energy Centers
- U.S. Department of Energy
- Workforce Development experts from non-profits (like Career Ladders Project or the California Edge Campaign)
- Labor
- Low income advocacy organizations
- High-level designees from statewide IOU team

C. Reconvene the WE&T task force to provide a forum for broader stakeholder input beyond the Governing/Advisory Board: DVC suggests that the task force is an appropriate forum for input from a wide
range of stakeholders on program development. DVC recommends bi-annual reporting to the WE&T task force, in which the IOUs and PRG (and later Governing Board) provide updates on the implementation of the Guidance Plan recommendations and solicit feedback on WE&T-related issues.

D. Develop a scorecard: DVC suggests that a focused reporting scorecard, made publicly available and shared widely with stakeholders, can drive performance and increase accountability among parties – both throughout the PRG process as well as the longer-term Governing Board. The scorecard should track the strategic goals, metrics by which to evaluate each goal, and a point system showing progress on each of the goals.

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| SoCalGas   | SG5.A & SG5.B                                                           | SoCalGas, along with the other IOUs, are best situated to administer coordination of energy efficiency funding intended to provide customers with energy efficiency training and services. There are possible working group arrangements that are common methods for receiving stakeholder input.   

**We modified our recommendation on this: We now are recommending that the IOUs convene an advisory body (PAG or PRG) to advise them on the skills building portfolio. We are also recommending to state-policy makers that the CEC convene a steering committee to consider skill certifications and priority training investments and to consider another administrator if the IOUs are not able to develop their skills-building program. See chapter 3 supply side, 3.x** |
| SoCalGas   | SG5.C                                                                   | Exploiting the WE&T Taskforce might be a convenient mechanism for expanding member and participation to a wider range of stakeholders to offer input on program development, progress updates on WE&T program implementation, as well as solicit feedback on WE&T-related issues. However, duplicative purposes and roles should be avoided.  

**See Chapter 4** |
| SoCalGas   | SCG.D                                                                   | Existing PPMs (Program Performance Metrics) are the current method for the IOUs to be scored. Additional information could be considered as part of the PPM process that is a publicly reported item.  

**See Chapter 4.** |
STRATEGIC GOAL 6: Evaluation and Success Metrics

Context
DVC suggests that despite the influence of workers and contractors on energy savings and other outcomes, EM&V studies for all but the WE&T programs have not systematically addressed workforce issues. They state that EM&V studies routinely do not consider the costs and benefits of various approaches for addressing improper installations and maintenance where they are known to exist. Additionally, WE&T EM&V studies have not focused on outcomes such as skills building, work quality outcomes, or job placement and career advancement for workers.

DVC suggests that a comprehensive strategy to develop the workforce needed to achieve California’s EE/DSM potential needs to address all of these issues.

Scope of Strategic Goal 6
SG6 focuses on outlining an EM&V plan for DVC’s recommendations. The focus is limited to EE programs, but many of the recommendations for proposed approaches and studies are applicable to DR and DG programs as well. All of the recommendations are designed to further the explicit considerations of work quality and job quality.

The recommendations are guided by the five core objectives for EM&V outlined by the Commission in 2009 as part of the approval of the EE portfolios for the 2010-2012 program cycle and reconfirmed for the 2013-2014 program cycle.

- **Savings Measurement and Verification**, which serves the fundamental purpose of developing estimates of reliable load impacts delivered through ratepayer-funded efficiency efforts,
- **Program Evaluations**, which serves a key role in providing feedback for the purposes of improving program performance leading to “mid-course” corrections, and includes the evaluation of program-specific measures, such as program performance metrics and process evaluations,
- **Market Assessments**, which are used to set baselines for strategic design and improvement and to inform estimates of remaining program potential,
- **Policy and planning support**, which supports overarching studies and advisory roles and has included the potential and goals studies, maintenance of the DEER database, and various other tasks to support the Commission’s oversight role, and
- **Financial and Management audits**, which are designed to ensure the efficient and effective expenditures of ratepayer funds within the IOUs EE portfolios.

The proposed EM&V plan for the DVC recommendations identifies four types of EM&V studies: impact, process, market and policy and planning support. It includes proposed metrics for judging success, researchable questions, and makes recommendations for addressing the researchable questions.

Recommendations for Strategic Goal 6
*Full Report: pages: 123-140*
*Appendices: pages: 66-76*

A. Update the WE&T Needs Assessment on a periodic basis: DVC suggests updating the WE&T Needs Assessment periodically, using a simplified methodology for job projections, (e.g. every 5-7 years). The update should incorporate new information into existing projections on job demand by occupation for the EE sector, the inventories of available education and training programs serving the EE sector in California, and other special topics (e.g., case studies of specific market sectors).
B. Reform ex ante program review to address workforce quality interventions: Support a Policy Taskforce (or possibly a subgroup of a larger taskforce) to address integration of workforce considerations in ex ante program review. The purpose of the taskforce is to address how best to modify existing approaches to allow for the explicit consideration of skill requirements for assumed savings, of the contribution of mandated standards to improve quality, and other potential interventions designed to both reduce installation costs and increase energy savings associated with specific measures, programs, and portfolios.

C. Collect data for job quality and work quality: Develop data tracking systems that provide for the collection of data on job quality (e.g. wages, benefits, working conditions).

D. Develop tracking of work quality (e.g., proper installation and maintenance) for EE programs, including in programs where there is not a direct contracting relationship between the IOU and the contractor.

E. Identify potential, goals and targets for the MUSH sector.

F. Conduct comprehensive process evaluations: Assess how DVC’s recommendations have been reviewed, incorporated in program design and implemented.

G. Modify impact evaluations to address DVC recommendations.

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<tr>
<td>SoCalGas</td>
<td>SG6</td>
<td>With the exception for Item D, SoCalGas supports the general intent of the draft recommendations in SG6. SoCalGas does not, however, have the ability to track work quality where there is NOT a direct contracting relationship with the contractor.</td>
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The 2008 Strategic Plan and the 2011 update proposed developing a WE&T web portal linked to a more comprehensive statewide website. As described in the 2011 Strategic Plan, “The web portal will include links to various demand-side management (DSM) related training programs and will allow for a single point of communication. The portal will also serve as a repository for all demand-side management and energy efficiency training, educational conferences, and career opportunities.”

Charged with assessing the various options for creating a WE&T web portal, in response to the Strategic Plan direction, the 2011 Needs Assessment evaluated a range of employment information systems, in order to recommend a potential solution to the mismatch or “gaps” in labor demand and supply for the energy efficiency sectors. In reviewing both internet job boards and full service programs that incorporate on-site services, the Needs Assessment ultimately cautioned against investing this type of web portal because their benefits do not align well with WE&T objectives or IOU strengths.

**Scope of Strategic Goal 7**

SG7 includes guidance on how to approach online implementation of a statewide web portal, in response to Strategic Plan direction.

**Recommendations for Strategic Goal 7**

*Full Report: pages: 142-144*

*Appendices: pages: not addressed*

A. Do not develop a WE&T job matching or training web portal as job matching services do not tend to be well-aligned with the goals of EE/DSM WE&T programs and are not effective in bridging the gap between labor supply and demand. This is also an extremely complex task and would be effective only as part of a larger effort to support career counseling and other career support activities.

B. Use the Energy Design Resources (EDR) website to list all IOU WE&T programs: The EDR website has recently begun to list all the WE&T classes along with other learning resources for architects and other designers. It has also recently expanded to offer software tools for analysis, as well as online and live trainings. EDR carries the potential to be a connecting hub for a greater scope of EE incentives and rebates with training and education resources.

C. Integrate the ETCC website (Emerging Technology Coordinating Council) into the statewide web portal: Information on demonstration projects, market and technology assessments and other emerging technology projects can be helpful to those looking at the frontier of training needs. Additionally, as recommended in SG3, documenting the skill and credentials of contractors and workers involved in demonstration projects can be helpful to program design, determining workforce standard requirements for programs, or documenting KSAs. This information might be more easily accessed and widely used if provided through a centralized website.

D. Post recommended WE&T RFPs on the statewide web portal (see SG1): If integrated effectively into the statewide Energy Upgrade California website, these opportunities can be more widely distributed to new potential partners.

E. Integrate solicitation and proposal review website into the statewide portal: Consider utilizing options other than PEPMA for posting and managing solicitations such as the PIPs or PIRM as recommended in SG3.

F. Include existing contractor or participation requirements for statewide programs on the web portal: Since program requirements, eligibility and contractor or customer responsibilities are related to work quality and ultimately realized energy savings, making this information available and accessible in an easy-to-navigate central location is important.
G. Use the web portal to report progress on inclusion and other WE&T goals.

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<tr>
<td>SoCalGas</td>
<td>SC7</td>
<td>SoCalGas agrees with DVC’s suggested non-use of a web-portal pertinent to WE&amp;T. DVC suggested uses for web-portal may be reasonable, but require considerations beyond the boundary of the WE&amp;T Program.</td>
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Comments from Brightline Defense Project on Draft 1 of the Guidance Plan

**STRATEGIC GOAL 1: Forecasting Market Needs to Create Career Pathways and Improve Candidate Placement**

**Scope of Strategic Goal 1**

The scope of SG1 includes “Forecasting Market Needs to Create Career Pathways and Improve Candidate Placement and Advancement.” DVC responds to this goal in the following ways:

- Targeting the most effective and efficient use of IOU resources, DVC identifies components of a balanced WE&T portfolio that reflect the IOUs’ dual roles in meeting both energy and workforce goals.
- Using the above criteria, DVC makes recommendations to modify IOU WE&T programs.
- Identifies and tracks critical occupations and assesses gaps in KSAs, certifications and training programs.
- Identifies opportunities for the IOUs to more effectively leverage state, federal and private WE&T investments.

**Recommendations for Strategic Goal 1**

*Full Report: pages 12 - 46*

*Appendices: pages 2 - 14*

DVC recommends that the IOUs substantially increase their WE&T resources for programs specifically targeted at workforce skill-building, and that they redesign this programming with increased participation and oversight from state workforce development experts. By leveraging the state’s core accredited education and training institutions, promoting the identification and use of clear certifications and skill standards, and ensuring employer commitment to hiring and using trained workers, DVC expects that this restructuring of programs will have greater impact on both energy savings and jobs.

**A.** The IOUs should develop a “skills-building portfolio” that has distinct goals, programmatic activities and budget which is separate from the IOUs’ “market-building portfolio.” The budget for the skills-building portfolio should be $60 million for a three-year cycle (note, Full Report mistakenly references $70 million).

**B.** The skills-building portfolio should be implemented through two coordinated statewide RFPs, with regional distribution of training funds. The IOUs should phase-out ratepayer support for short, stand-alone classes for their skills-building program. Other IOU-based skill training could continue, but should be transitioned into applications for the RFPs. DVC recommends two RFPS because their distinct goals require distinct RFP development and review committees with specific expertise.

1. **RFP #1** should address skill-building that contributes directly to energy savings. It should include funds for:
   i. Sector strategies targeted at incumbent workers, built on regional partnerships, specific commitments from employers to co-fund training and use new skills in the field, and leveraging of other funding sources.
   ii. Core education and training institutions (4-year colleges, community colleges and state-certified apprenticeship programs) to incorporate EE/DSM skills into credentialed programs for professionals and trades workers.

2. **RFP #2** should be dedicated to skills-building activities that support the development of career pathways for workers from disadvantaged communities. It should include funds for:
   i. The inclusion of workers from disadvantaged communities, through training and placement into living-wage, career-track jobs in the key EE/DSM occupations.
   ii. Regional partnerships of employers, community colleges, workforce investment boards (WIBs), labor and CBOs that leverage WIB and other funding sources.
iii. Core 9-12 education institutions (California Partnership Academies, Linked Learning, High Schools, Regional Occupation Programs) to incorporate EE/DSM skills into standards-aligned curriculum and to articulate curriculum with post-secondary education and employment opportunities.

iv. Curriculum development and implementation, faculty training, industry engagement, work based learning and articulation efforts.

C. Both RFPs should be guided by a priority-setting process that includes:
   1. Periodic updating of data analysis on job projections and priority occupations.
   2. KSA development based on input from subject-matter experts (SMEs) on the skill needs for emerging technologies and underperforming technologies.
   3. Input from industry and training institutions on the capacity of the existing workforce.

D. The CPUC should establish a governing board to oversee the development of the WE&T skills-building portfolio, subject to final CPUC approval. The Governing Board should:
   1. Include California’s energy, workforce, and education agencies, in addition to SMEs from the national labs and the UC/CSU Energy Research Centers.
   2. Appoint technical skills panels for each major building system to identify priority KSAs needed for emerging technologies and underperforming technologies.
   3. Advise staff selection to develop the RFPs, and participate in RFP development, and ranking of proposals. We recommend one staff person each to oversee programming related to the professional, non-residential trades, residential trades, and inclusion.

E. The CPUC should consider working with the California Labor and Workforce Development Agency to transfer the workforce skills-building portion of WE&T to the CA Workforce Investment Board.

F. The IOUs should begin transitioning the WE&T portfolio to align with DVC’s recommendations in 2014 with three phase one programs:
   1. Integrate EE/DSM into the core curricula for architects. Dedicate up to $15 million over three years to enhance EE/DSM content in core curricula and for professional development.
   2. EE/DSM best practices review and upgrade for apprenticeships in the key trades. Dedicate up to $15 million over three years to enhance and verify EE/DSM skills in the state-certified apprenticeship system, via a partnership between the Community College Chancellor’s Office of Apprenticeship, the California Division of Apprenticeship Standards and the IOUs.
   3. MUSH sector bridge pre-apprenticeship program for disadvantaged workers. Dedicate up to $12 million dollars for a three-year inclusion sector strategy administered through an RFP to prepare entry-level EE workers or job seekers with minimal skills and low wages for opportunities into higher skilled and higher wage employment.

Ownership and Timing

IOUs:
1. Begin the phase one programs outlined in this plan in 2014.
2. Convene the governing board and work with them to initiate the skill-building portfolio to begin in 2015:
   a. Establish budget (with CPUC guidance as necessary).
   b. Identify appropriate technical advisory groups.
   c. Establish priority setting process that guides the development and review of the RFP.
   d. Hire staff to staff to oversee programming for the professional, non-residential trades, residential trades, and inclusion.
3. Following the convening of the governing board, along with technical advisory and staffing appointments, staff should begin drafting RFPs to be implemented in 2015 with the funding that is not allocated to the Phase 1 RFPs. *(Subject to CPUC clarification of the timing of the next program cycle.)*

4. Conduct a thorough review of the Centergies offerings and submit findings to the WE&T stakeholder advisory board (and/or the new governing board), via advice letter process, within the next six months:
   a. Identify which programs are skill-building vs. market-building;
   b. Identify stand-alone courses intended to build worker skills that will be phased out or funded by participant fees or other funding;
   c. Identify best practices among existing skill building programs to be grandfathered in to the next portfolio, subject to review and approval by the stakeholder advisory group;
   d. For any programs that are not identified as best practices (but are not strictly stand-alone courses), the IOUs should consider phasing out, or developing a modified program delivery structure to submit as a proposal within the skills-building RFPs in the next cycle.

**CPUC:**

1. Direct the IOUs to allocate at least $60 million of WE&T funds per three-year cycle, or $100 million for five years, to workforce development / skill-building in the key occupations.
2. Direct the IOUs to allocate 20% of their workforce development budget to skill building efforts dedicated to promoting inclusion for disadvantaged workers.
3. Direct that the workforce skills development portfolio be executed via an RFP for energy savings and an RFP for inclusion.
4. Issue guidance about the WE&T resources that the IOUs should direct toward market-building.
5. Establish a governing board to oversee the development of the WE&T skill-building portfolio, subject to final CPUC approval, as described in D. May require review from legal division prior to direction. Requires approval and cooperation from other parties and agencies named to the governing board.
6. Offer direction that the WE&T task force is an appropriate forum for input from a wide range of stakeholders on program development (as opposed to a vehicle for engaging the state’s workforce and education agencies).
7. Consider working with the California Labor and Workforce Development Agency to transfer the workforce skill-building portion of WE&T to the CA Workforce Investment Board.

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STRATEGIC GOAL 2: Increasing Support for Disadvantaged Workers

Scope of Strategic Goal 2
Ensure California’s low income, disadvantaged and minority workers fully participate in the workforce benefits created by the IOUs’ EE investments.

Context
California’s substantial investments in energy efficiency and demand side programs offer a promising opportunity to build middle-class career pathways for low income people and job seekers with barriers to employment (“disadvantaged workers”). DVC notes that two-thirds of the direct jobs generated by the IOUs’ EE/DSM programs are in the construction trades and believes that construction trades provide a critical pathway to middle-skill and middle-income jobs. However, disadvantaged workers often face multiple barriers to employment that need to be addressed through a carefully aligned pipeline of recruitment, screening, skills development, training, wrap-around services and credentialing. DVC suggests that the promised economic opportunities are unlikely to benefit disadvantaged jobseekers unless the IOUs incorporate strategies that promote targeted hiring, ensure living wage jobs, support upward mobility and enforce fair labor standards.

The California Public Utility Commission’s directives to the IOUs on the specific objectives and strategies associated with the IOUs’ workforce inclusion goal have thus far not been precise. Given this, DVC’s approach to Strategic Goal 2 is both to articulate the policy decisions that can clarify specific workforce inclusion goals and to provide a menu of options on how to effectively implement strategies to achieve these goals.

Recommendations for Strategic Goal 2
Full Report: pages 47-72
Appendices: pages 15-49

A. Demand-side workforce diversity program: Create a workforce diversity program that encompasses training connected to family-supporting career pathways for a diverse EE and DSM workforce. Include four program elements:

1. Add “diversity of workforce” as a factor in ranking proposals by third party contractors in all EE and DSM solicitations (up to 20% of total points).
2. Adopt “First Source” language into all EE/DSM contracts to create a formal link between training for disadvantaged workers and job opportunities through EE/DSM programs (see below for language).

Example of First Source language being used by Sempra: The COMPANY is interested in developing linkages between employment opportunities and trained workers in energy efficiency. In the event that new job opportunities arise as a result of this SOW, Contractor shall provide advanced notice of job or internship opportunities and the skills required for those positions to COMPANY or COMPANY’s designee. Advanced notice should be provided at least two weeks before the job or internship opportunity is listed publicly. These opportunities may be shared with organizations that provide EE workforce training.

3. Establish a wage floor for ESA, 3P (when contract looks like Direct Install), and Direct Install programs (note, Full Report inconsistently applies this to 3P).
4. Target the municipal, university, school and hospital (MUSH) sector for deeper retrofits through greater incentives, bundling of projects, apprenticeship standards, and targeted hire requirements that together can provide meaningful job and training opportunities for disadvantaged workers.
B. Implement an inclusion sector strategy consisting of regional pre-apprenticeship bridge programs that can prepare workers for entry level jobs in the MUSH program recommendation as well as in other jobs.

C. Foundational activities are needed to support the recommended interventions:
   1. A clear directive by the CPUC for the IOUs to validate their efforts to address inclusion.
   2. The adoption of a definition of “Disadvantaged Worker,” should be based on both residence in a high unemployment zip code and meeting specific criteria of disadvantage.
   3. On-going data collection on job quality, workforce diversity, and hiring of disadvantaged workers, to create a baseline and measure progress over time.
      i. Require contractors to use an electronic certified payroll reporting system for reporting hiring data.
      ii. Assess outcomes annually.

Ownership and Timing

IOU Near-term Actions
1. Define “Disadvantaged Worker” meaningfully and consistently.
2. Adopt common “First Source” contracting language and include in all EE/DSM contracts in contract renewals and the upcoming contracting cycle.
3. Aggregate projects for MUSH customers and include workforce requirements as outlined above in a third-party solicitation for a general contractor.
4. Establish an online reporting system for all EE/DSM contractors and make summary reports available to the public.

IOU Longer-term Actions
1. Implement a wage floor in ESA and Direct Install contracts.
2. Add “diversity of workforce” as a factor in ranking third party contractors in all EE and DSM solicitations
3. Develop more comprehensive funding and financing packages for MUSH customers, with a goal of 100% financing.
4. Establish a Training Bridge Program to connect lower-skilled EE workers to higher-skilled EE jobs.
5. Publish annual scorecard.

CPUC Actions
1. Explicitly direct the IOUs to promote, measure and report family-supporting job creation and workforce diversity outcomes using the program elements recommended in this guidance document.
2. Allocate more funding for MUSH activity.
3. Increase ESA and Direct Install program budgets where wage floors are instituted to mitigate potential cost.

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This “first source” language only constitutes a notification requirement, and coupled with a low hiring target, this language has often led to disappointing job placement numbers for disadvantaged workers. The wording of the last line is particularly problematic: “These opportunities may be shared with organizations that provide EE workforce training.” Community-based organizations that provide EE workforce training are the key point of access for many hard-to-reach populations. The language “may be shared” should be changed to “shall be shared.”

We would also like to see more data and thoughts around this piece.

Continued stakeholder consultation is necessary to establish a region-specific wage floor to reflect varied costs of living throughout the state.

As the Consultant points out, Increasing ESA and Direct Install program budgets seems to be key in mitigating potential costs of implementing wage floors.

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**STRATEGIC GOAL 3: Integrating WE&T and the Resource Programs**

**Context**
DVC suggests there is substantial evidence of improper equipment installation and maintenance as well as building construction practices that are inconsistent with best practices and technical specifications. They go on to suggest that work quality is not explicitly addressed in the planning, approval, implementation, and evaluation of ratepayer funded energy efficiency programs nor are skills or resources identified to ensure quality throughout this process. According to DVC, the overall result is that the IOUs are leaving a significant amount of energy savings on the table.

**Scope of Strategic Goal 3**
SG3 focuses on quality issues and presents a set of interventions to address them. *(The focus is on EE programs although the recommendations apply to DR and DG where incentives are offered.)* In considering how best to address the work quality issue in the design of the EE and DSM resource programs, DVC focused on the extent to which integrating workforce efforts with resource programs can improve the cost-effectiveness of these programs through improved work quality. They aim to answer the following questions:

- What specific standards could be applied to which programs or categories of programs in the EE/DSM portfolio, recognizing a one-size-fits-all solution is not feasible?
- What are other solutions or interventions that can address the quality problem, either singularly or in combination with standards?
- How important is the work quality problem? What research exists that documents problems with improper installation, operation, and maintenance of energy efficiency measures, technologies, materials or systems?
- Does the current process of planning, approval, implementation, and evaluation of resource programs sufficiently encourage the IOUs to ensure the quality of work of contractors participating in their programs? Can customers ensure quality?
• What evidence exists on the costs and benefits of skill certifications and other contractor and worker standards?

Recommendations for Strategic Goal 3

Full Report: pages 73-107
Appendices: pages 49-65

Recommendations focus on the introduction of workforce standards and on changes in the processes used to plan and implement IOU resource programs. DVC believes that the evidence and rationale presented on the extent of quality problems, the value of standards in the construction sector, and the difficulties to measure the impact of standards in a “but for” environment, supports a recommendation to introduce workforce standards in IOU resource programs without delay.

A. Incorporate workforce standards into program requirements: change the competitive environment to attract high-performing contractors and to screen out or improve the performance of lower-qualified contractors. (Note, some stakeholders are pushing for stronger standards than what’s articulated here.)

1. Adopt three tiers of a Responsible Contractor Policy for use across all resource programs. Require, verify and enforce that all firms and subcontractors meet pre-established, clearly defined minimum standards.

1.1 Tier 1: All EE/DSM resource programs — all sectors and sizes
   i. Licenses: The firm and its employees must all have valid, effective licenses, registrations or certificates required by federal, state, county, or local law, including, but not limited to, licenses, registrations or certificates required to do business in the designated locale and perform the work it seeks to perform.
   ii. Bonding and Insurance: The firm meets the bonding requirements as required by law or contract specifications and any insurance requirements, as required by applicable law or contract specifications, including general liability insurance, workers compensation insurance and unemployment insurance.
   iii. Wage and Labor Laws: The firm pays current wage rates and benefits as required by law. No labor law violations recorded by the state Department of Industrial Relations (DIR).
   iv. Permits: The firm has complied with all applicable permitting requirements.

1.2 Tier 2: All individual projects with total costs > $100,000 or all firms with IOU EE/DSM contracts or subcontracts larger than a total of $1,000,000, in addition to the requirements in Tier 1.
   i. Trained workforce: 60% of jobsite workforce comprised of journey-persons who completed a registered apprenticeship program in California or are currently enrolled in such a program, or provide other proof of skilled workforce.
   ii. OSHA: 60% of jobsite workers should be OSHA 10-hour General Industry Safety and Health Certified and at least one jobsite worker should be OSHA 30-hour General Industry Safety and Health Certified.
   iii. History of Performance: (a) documented history of full compliance to state, health, safety and work standards and (b) list of three similar past projects and references for three projects.

1.3 Tier 3: Projects in the Municipal, University, Schools, and Hospitals (MUSH) sector with individual projects or aggregated projects > $250,000, in addition to the requirements in Tiers 1 and 2.
   i. Prevailing Wage: The firm will pay all craft employees that it employs on the project the current prevailing wage rates.
ii. Apprentices: The firm has participated in a state-registered Apprenticeship Program for the past three years, and shall continue to participate in such program for the duration of the project.

iii. Targeted Hire: 15% of total project work hours to be performed by disadvantaged workers.

iv. First Source: The firm will notify pre-apprenticeship bridge program of upcoming job postings.

B. Adopt third party skill certification requirements and/or work quality assessments across all programs as outlined in Figure 3.3 “Decision Tree” and following the guiding principles below.

1. For tasks for which there is widespread industry consensus on appropriate third party certification, make that certification required for participation in EE/DSM program incentives.
   i. Require CALCTP firm certification for contractors on all projects involving advanced lighting controls.
   ii. Require BPI firm accreditation for all Whole House retrofit projects (advanced and basic).
   iii. When possible, utilize DOE/NREL Job Task Analysis as a proxy for industry consensus to screen third party certifications for requirement in resource program participation
   iv. For tasks for which there is no well-defined third party certification, program administrators should work with partners to document Knowledge, Skills, and Abilities (KSAs) for those tasks, using DOE/NREL Job Task Analysis. IOUs should work with partners to incorporate these KSAs in appropriate training programs.
   v. For tasks for which there is no widespread industry consensus on appropriate third party certification, IOUs should either invest in work quality assessments that include in-progress job monitoring and/or rigorous functional performance assessments of completed work OR adopt the contract management tool called Performance Information Risk Management System (PIRMS) to promote work quality. DVC suggested piloting the use of PIRMS in the HVAC Quality Installation and Quality Management programs.
   vi. Develop an in-house system or hire third party entity to manage verification and enforcement of the skill certification requirements.
C. Implement changes throughout the resource program R&D, design, implementation, approval and evaluation processes: better track variables affecting work quality and create stronger incentives for high quality work.

1. For emerging technologies and new measures tested in field demonstration projects, identify and document contractor competencies and worker skills/credentials as a basis for considering program requirements. Problems with initial installations and how problems were resolved should be consistently documented in reports posted for these demonstration projects.

2. Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings. Information on measure costs should explicitly address the time required as well as the specific skills required to achieve the assumed savings. More specifically, if, as is the case for many deemed measures, energy use and savings estimates are based on assumptions of 100% correct installation, the work papers should document the contractor competency and worker skills needed consistent with those assumptions.

3. Modify Program Implementation Plans (PIPs) to specify how program requirements will increase the demand for and ensure quality installations. Initial plans should consider the projected benefits and costs of alternative interventions (e.g. certification requirements, training opportunities, and quality assurance/verification) prior to developing a plan, which includes one or more of the identified approaches. This could replace the current “WE&T integration” section of PIP templates.

4. Information from 1-3 above should be part of the documentation reviewed by the WE&T advisory committee and staff as they prioritize WE&T investments. The results should be summarized and documented in presentations and/or reports as judged appropriate.

D. Review and modify quality assurance processes to place greater emphasis on work quality.

1. Quality Assurance processes (post-installation inspection and verification) should focus on quality of installation, not only counting the number of “widgets” installed. Highly skilled technicians or
certified inspectors should be assigned to inspect most installations at beginning of program and then randomly throughout programs.
2. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on work quality.
3. Where work quality has been identified as an issue, follow-up studies should be conducted in determining how work quality is affecting the expected useful life of long-lived measures.

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| BDP  | A1 (1.3 Tier 3)                                                         | A 15% targeted hire requirement again seems low – compared to estimates that in the appendices that show projects reaching well above 20% and sometimes over 50%.

Additionally, the percentage should not be for all project work hours, but rather each trade should meet the minimum hiring target. |

STRATEGIC GOAL 4: Supporting Sector Strategies

Context
Sector strategies are industry partnerships of employers, training and education institutions, labor and community stakeholders, and other stakeholders who come together to plan and implement training programs. Sector strategies are considered a best practice approach to workforce development and are designed to meet the needs of employers for skilled workers, while benefitting workers through placement in career-track jobs and career advancement opportunities. Returns are particularly high for both workers and employers in apprenticeship, which is an institutionalized form of sector strategies, usually regulated by the state with on-going commitments of industry funding.

The main factor leading to the success of sector strategies compared to other types of workforce development projects is the involvement of employers, not only in identifying skill gaps but also in committing to co-fund training of incumbent workers and/or to hire graduates of training programs.

Scope of Strategic Goal 4
SG4 focuses on assisting the IOUs to implement sector strategies in a way that best contributes to energy efficiency and related workforce goals and specific CPUC directives.

**Recommendations for Strategic Goal 4**

*Full Report: pages: 108-120*

*Appendices: pages: not addressed*

Recommendations are designed to strengthen current IOU efforts while providing a plan that allows other groups with current capacity and greater expertise to play a more significant role in sector strategy implementation.

DVC recommends that the IOUs develop a competitive solicitation process for two types of sector strategies, as described in SG1: one for upgrading the EE/DSM skills of incumbent workers, and one to promote inclusion of disadvantaged workers into living-wage, career-track jobs.

Specific recommendations about the sector strategies to date include:

A. **CALCTP:** The IOUs should launch a statewide incentive program that requires CALCTP certification for participating contractors.

B. **HVAC sector strategy:** The IOUs should not lead this sector strategy, but rather encourage the HVAC industry to apply for funding from RFP #1 (for incumbent workers).

C. **RxC:** The RxC effort should be reconceived and should be built on a partnership with the two Stationary Engineers apprenticeship programs in California, for apprenticeship and journey upgrade training.

D. **EWSS:** The EWSS should be folded into the recommended RFP process. Specific partnerships that have been started will be eligible to apply for funding through the RFP. The identification of key stakeholders, SME, and educational partners, will inform both the formation of the technical skills panels and will jumpstart good sector strategy projects that can apply for funding.

**Feedback**

*Guidelines:*

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STRATEGIC GOAL 5: WE&T Stakeholder Engagement

Context
WE&T programs have utilized various stakeholder groups in the past, including the CPUC-mandated WE&T Taskforce. However, the recommendations provided by DVC will require a large shift in how WE&T is approached, with whom the IOUs partner, etc. As such, new stakeholder groups are required.

Scope of Strategic Goal 5
SG5 includes the development of a participatory stakeholder process. DVC is tasked with developing a post-contract stakeholder engagement plan that will effectively support the guidance and implementation of the recommendations in their Guidance Plan, avoiding any duplication of efforts currently under way by existing working groups.

Recommendations for Strategic Goal 5
Full Report: pages: 120-122
Appendices: pages: not addressed

A. Create a transitional Peer Review Group (PRG): Just before the end of the contract term, DVC recommends that the current project Advisory Group nominate members to form a transitional WE&T Guidance Plan PRG to oversee implementation and progress towards the Guidance Plan’s strategic goals (Advisory Group members may remain part of the group). PRG membership should be finalized in consultation with the IOUs. Once created, the PRG can elect co-chairs, who will be primarily responsible for reporting out to other existing working groups. The PRG should provide updates every six months to the existing WE&T Task Force as well as other working groups such as the IOU sector strategy working groups, the Labor Agency, the CPUC and others.

B. Develop a Governing Board: As described in SG1, DVC is recommending that the CPUC establish a governing board to oversee the IOUs’ workforce skills-building portfolio and offer informal approval and advice to the CPUC. Then, once established, DVC is suggesting the PRG be dissolved. The governing board can also monitor and provide expertise, advice and resources on the other guidance recommendations. The Governing Board should be the permanent structure for substantive input, advice and oversight of WE&T issues and be comprised of high-level representatives of the following agencies and institutions:
- CA Workforce Investment Board
- CA Division of Apprenticeship Standards
- Employment Training Panel
- CA Community Colleges Chancellor’s Office
- University of CA / CA State University
- CA Department of Education
- CA Energy Commission
- CA Public Utilities Commission (Commission will approve final portfolio)
- National Laboratories
- UC/CSU Energy Centers
- U.S. Department of Energy
- Workforce Development experts from non-profits (like Career Ladders Project or the California Edge Campaign)
- Labor
- Low income advocacy organizations
- High-level designees from statewide IOU team

C. Reconvene the WE&T task force to provide a forum for broader stakeholder input beyond the Governing/Advisory Board: DVC suggests that the task force is an appropriate forum for input from a wide
range of stakeholders on program development. DVC recommends bi-annual reporting to the WE&T task force, in which the IOUs and PRG (and later Governing Board) provide updates on the implementation of the Guidance Plan recommendations and solicit feedback on WE&T-related issues.

D. Develop a scorecard: DVC suggests that a focused reporting scorecard, made publicly available and shared widely with stakeholders, can drive performance and increase accountability among parties – both throughout the PRG process as well as the longer-term Governing Board. The scorecard should track the strategic goals, metrics by which to evaluate each goal, and a point system showing progress on each of the goals.

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**STRATEGIC GOAL 6: Evaluation and Success Metrics**

**Context**

DVC suggests that despite the influence of workers and contractors on energy savings and other outcomes, EM&V studies for all but the WE&T programs have not systematically addressed workforce issues. They state that EM&V studies routinely do not consider the costs and benefits of various approaches for addressing improper installations and maintenance where they are known to exist. Additionally, WE&T EM&V studies have not focused on outcomes such as skills building, work quality outcomes, or job placement and career advancement for workers.

DVC suggests that a comprehensive strategy to develop the workforce needed to achieve California’s EE/DSM potential needs to address all of these issues.

**Scope of Strategic Goal 6**

SG6 focuses on outlining an EM&V plan for DVC’s recommendations. The focus is limited to EE programs, but many of the recommendations for proposed approaches and studies are applicable to DR and DG programs as well. All of the recommendations are designed to further the explicit considerations of work quality and job quality.
The recommendations are guided by the five core objectives for EM&V outlined by the Commission in 2009 as part of the approval of the EE portfolios for the 2010-2012 program cycle and reconfirmed for the 2013-2014 program cycle.

- **Savings Measurement and Verification**, which serves the fundamental purpose of developing estimates of reliable load impacts delivered through ratepayer-funded efficiency efforts,
- **Program Evaluations**, which serves a key role in providing feedback for the purposes of improving program performance leading to “mid-course” corrections, and includes the evaluation of program-specific measures, such as program performance metrics and process evaluations,
- **Market Assessments**, which are used to set baselines for strategic design and improvement and to inform estimates of remaining program potential,
- **Policy and planning support**, which supports overarching studies and advisory roles and has included the potential and goals studies, maintenance of the DEER database, and various other tasks to support the Commission’s oversight role, and
- **Financial and Management audits**, which are designed to ensure the efficient and effective expenditures of ratepayer funds within the IOUs EE portfolios.

The proposed EM&V plan for the DVC recommendations identifies four types of EM&V studies: impact, process, market and policy and planning support. It includes proposed metrics for judging success, researchable questions, and makes recommendations for addressing the researchable questions.

**Recommendations for Strategic Goal 6**

**Full Report: pages: 123-140**
**Appendices: pages: 66-76**

A. **Update the WE&T Needs Assessment on a periodic basis:** DVC suggests updating the WE&T Needs Assessment periodically, using a simplified methodology for job projections, (e.g. every 5-7 years). The update should incorporate new information into existing projections on job demand by occupation for the EE sector, the inventories of available education and training programs serving the EE sector in California, and other special topics (e.g., case studies of specific market sectors).

B. **Reform ex ante program review to address workforce quality interventions:** Support a Policy Taskforce (or possibly a subgroup of a larger taskforce) to address integration of workforce considerations in ex ante program review. The purpose of the taskforce is to address how best to modify existing approaches to allow for the explicit consideration of skill requirements for assumed savings, of the contribution of mandated standards to improve quality, and other potential interventions designed to both reduce installation costs and increase energy savings associated with specific measures, programs, and portfolios.

C. **Collect data for job quality and work quality:** Develop data tracking systems that provide for the collection of data on job quality (e.g. wages, benefits, working conditions).

D. **Develop tracking of work quality (e.g., proper installation and maintenance) for EE programs,** including in programs where there is not a direct contracting relationship between the IOU and the contractor.

E. **Identify potential, goals and targets for the MUSH sector.**

F. **Conduct comprehensive process evaluations:** Assess how DVC’s recommendations have been reviewed, incorporated in program design and implemented.

G. **Modify impact evaluations to address DVC recommendations.**
STRATEGIC GOAL 7: Evaluation of the Need for a Statewide WE&T Web Portal

**Context**
The 2008 Strategic Plan and the 2011 update proposed developing a WE&T web portal linked to a more comprehensive statewide website. As described in the 2011 Strategic Plan, “The web portal will include links to various demand-side management (DSM) related training programs and will allow for a single point of communication. The portal will also serve as a repository for all demand-side management and energy efficiency training, educational conferences, and career opportunities.”

Charged with assessing the various options for creating a WE&T web portal, in response to the Strategic Plan direction, the 2011 Needs Assessment evaluated a range of employment information systems, in order to recommend a potential solution to the mismatch or “gaps” in labor demand and supply for the energy efficiency sectors. In reviewing both internet job boards and full service programs that incorporate on-site services, the Needs Assessment ultimately cautioned against investing this type of web portal because their benefits do not align well with WE&T objectives or IOU strengths.

**Scope of Strategic Goal 7**
SG7 includes guidance on how to approach online implementation of a statewide web portal, in response to Strategic Plan direction.

**Recommendations for Strategic Goal 7**
*Full Report: pages: 142-144*
*Appendices: pages: not addressed*
A. Do not develop a WE&T job matching or training web portal as job matching services do not tend to be well-aligned with the goals of EE/DSM WE&T programs and are not effective in bridging the gap between labor supply and demand. This is also an extremely complex task and would be effective only as part of a larger effort to support career counseling and other career support activities.
B. Use the Energy Design Resources (EDR) website to list all IOU WE&T programs: The EDR website has recently begun to list all the WE&T classes along with other learning resources for architects and other designers. It has also recently expanded to offer software tools for analysis, as well as online and live trainings. EDR carries the potential to be a connecting hub for a greater scope of EE incentives and rebates with training and education resources.

C. Integrate the ETCC website (Emerging Technology Coordinating Council) into the statewide web portal: Information on demonstration projects, market and technology assessments and other emerging technology projects can be helpful to those looking at the frontier of training needs. Additionally, as recommended in SG3, documenting the skill and credentials of contractors and workers involved in demonstration projects can be helpful to program design, determining workforce standard requirements for programs, or documenting KSAs. This information might be more easily accessed and widely used if provided through a centralized website.

D. Post recommended WE&T RFPs on the statewide web portal (see SG1): If integrated effectively into the statewide Energy Upgrade California website, these opportunities can be more widely distributed to new potential partners.

E. Integrate solicitation and proposal review website into the statewide portal: Consider utilizing options other than PEPMA for posting and managing solicitations such as the PIPs or PIRMs as recommended in SG3.

F. Include existing contractor or participation requirements for statewide programs on the web portal: Since program requirements, eligibility and contractor or customer responsibilities are related to work quality and ultimately realized energy savings, making this information available and accessible in an easy-to-navigate central location is important.

G. Use the web portal to report progress on inclusion and other WE&T goals.

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STRATEGIC GOAL 1: Forecasting Market Needs to Create Career Pathways and Improve Candidate Placement

Scope of Strategic Goal 1
The scope of SG1 includes “Forecasting Market Needs to Create Career Pathways and Improve Candidate Placement and Advancement.” DVC responds to this goal in the following ways:

- Targeting the most effective and efficient use of IOU resources, DVC identifies components of a balanced WE&T portfolio that reflect the IOUs’ dual roles in meeting both energy and workforce goals.
- Using the above criteria, DVC makes recommendations to modify IOU WE&T programs.
- Identifies and tracks critical occupations and assesses gaps in KSAs, certifications and training programs.
- Identifies opportunities for the IOUs to more effectively leverage state, federal and private WE&T investments.

Recommendations for Strategic Goal 1

Full Report: pages 12 - 46
Appendices: pages 2 - 14

DVC recommends that the IOUs substantially increase their WE&T resources for programs specifically targeted at workforce skill-building, and that they redesign this programming with increased participation and oversight from state workforce development experts. By leveraging the state’s core accredited education and training institutions, promoting the identification and use of clear certifications and skill standards, and ensuring employer commitment to hiring and using trained workers, DVC expects that this restructuring of programs will have greater impact on both energy savings and jobs.

A. The IOUs should develop a “skills-building portfolio” that has distinct goals, programmatic activities and budget which is separate from the IOUs’ “market-building portfolio.” The budget for the skills-building portfolio should be $60 million for a three-year cycle (note, Full Report mistakenly references $70 million).

B. The skills-building portfolio should be implemented through two coordinated statewide RFPs, with regional distribution of training funds. The IOUs should phase-out ratepayer support for short, stand-alone classes for their skills-building program. Other IOU-based skill training could continue, but should be transitioned into applications for the RFPs. DVC recommends two RFPS because their distinct goals require distinct RFP development and review committees with specific expertise.

1. RFP #1 should address skill-building that contributes directly to energy savings. It should include funds for:
   i. Sector strategies targeted at incumbent workers, built on regional partnerships, specific commitments from employers to co-fund training and use new skills in the field, and leveraging of other funding sources.
   ii. Core education and training institutions (4-year colleges, community colleges and state-certified apprenticeship programs) to incorporate EE/DSM skills into credentialed programs for professionals and trades workers.

2. RFP #2 should be dedicated to skills-building activities that support the development of career pathways for workers from disadvantaged communities. It should include funds for:
   i. The inclusion of workers from disadvantaged communities, through training and placement into living-wage, career-track jobs in the key EE/DSM occupations.
   ii. Regional partnerships of employers, community colleges, workforce investment boards (WIBs), labor and CBOs that leverage WIB and other funding sources.
iii. Core 9-12 education institutions (California Partnership Academies, Linked Learning, High Schools, Regional Occupation Programs) to incorporate EE/DSM skills into standards-aligned curriculum and to articulate curriculum with post-secondary education and employment opportunities.

iv. Curriculum development and implementation, faculty training, industry engagement, work based learning and articulation efforts.

C. Both RFPs should be guided by a priority-setting process that includes:
   1. Periodic updating of data analysis on job projections and priority occupations.
   2. KSA development based on input from subject-matter experts (SMEs) on the skill needs for emerging technologies and underperforming technologies.
   3. Input from industry and training institutions on the capacity of the existing workforce.

D. The CPUC should establish a governing board to oversee the development of the WE&T skills-building portfolio, subject to final CPUC approval. The Governing Board should:
   1. Include California’s energy, workforce, and education agencies, in addition to SMEs from the national labs and the UC/CSU Energy Research Centers.
   2. Appoint technical skills panels for each major building system to identify priority KSAs needed for emerging technologies and underperforming technologies.
   3. Advise staff selection to develop the RFPs, and participate in RFP development, and ranking of proposals. We recommend one staff person each to oversee programming related to the professional, non-residential trades, residential trades, and inclusion.

E. The CPUC should consider working with the California Labor and Workforce Development Agency to transfer the workforce skills-building portion of WE&T to the CA Workforce Investment Board.

F. The IOUs should begin transitioning the WE&T portfolio to align with DVC’s recommendations in 2014 with three phase one programs:
   1. Integrate EE/DSM into the core curricula for architects. Dedicate up to $15 million over three years to enhance EE/DSM content in core curricula and for professional development.
   2. EE/DSM best practices review and upgrade for apprenticeships in the key trades. Dedicate up to $15 million over three years to enhance and verify EE/DSM skills in the state-certified apprenticeship system, via a partnership between the Community College Chancellor’s Office of Apprenticeship, the California Division of Apprenticeship Standards and the IOUs.
   3. MUSH sector bridge pre-apprenticeship program for disadvantaged workers. Dedicate up to $12 million dollars for a three-year inclusion sector strategy administered through an RFP to prepare entry-level EE workers or job seekers with minimal skills and low wages for opportunities into higher skilled and higher wage employment.

Ownership and Timing
IOUs:
1. Begin the phase one programs outlined in this plan in 2014.
2. Convene the governing board and work with them to initiate the skill-building portfolio to begin in 2015:
   a. Establish budget (with CPUC guidance as necessary).
   b. Identify appropriate technical advisory groups.
   c. Establish priority setting process that guides the development and review of the RFP.
   d. Hire staff to staff to oversee programming for the professional, non-residential trades, residential trades, and inclusion.
3. Following the convening of the governing board, along with technical advisory and staffing appointments, staff should begin drafting RFPs to be implemented in 2015 with the funding that is not allocated to the Phase 1 RFPs. *(Subject to CPUC clarification of the timing of the next program cycle.)*

4. Conduct a thorough review of the Centergies offerings and submit findings to the WE&T stakeholder advisory board (and/or the new governing board), via advice letter process, within the next six months:
   a. Identify which programs are skill-building vs. market-building;
   b. Identify stand-alone courses intended to build worker skills that will be phased out or funded by participant fees or other funding;
   c. Identify best practices among existing skill building programs to be grandfathered in to the next portfolio, subject to review and approval by the stakeholder advisory group;
   d. For any programs that are not identified as best practices (but are not strictly stand-alone courses), the IOUs should consider phasing out, or developing a modified program delivery structure to submit as a proposal within the skills-building RFPs in the next cycle.

**CPUC:**

1. Direct the IOUs to allocate at least $60 million of WE&T funds per three-year cycle, or $100 million for five years, to workforce development / skill-building in the key occupations.
2. Direct the IOUs to allocate 20% of their workforce development budget to skill building efforts dedicated to promoting inclusion for disadvantaged workers.
3. Direct that the workforce skills development portfolio be executed via an RFP for energy savings and an RFP for inclusion.
4. Issue guidance about the WE&T resources that the IOUs should direct toward market-building.
5. Establish a governing board to oversee the development of the WE&T skill-building portfolio, subject to final CPUC approval, as described in D. May require review from legal division prior to direction. Requires approval and cooperation from other parties and agencies named to the governing board.
6. Offer direction that the WE&T task force is an appropriate forum for input from a wide range of stakeholders on program development (as opposed to a vehicle for engaging the state’s workforce and education agencies).
7. Consider working with the California Labor and Workforce Development Agency to transfer the workforce skill-building portion of WE&T to the CA Workforce Investment Board.

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<td>The RFP criteria should require employer participation in training program development, such as labor-management associations. This requirement would help ensure that ratepayer-funds are directed to training programs that lead to on-the-job training and career path opportunities.</td>
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STRATEGIC GOAL 2: Increasing Support for Disadvantaged Workers

Scope of Strategic Goal 2
Ensure California’s low income, disadvantaged and minority workers fully participate in the workforce benefits created by the IOUs’ EE investments.

Context
California’s substantial investments in energy efficiency and demand side programs offer a promising opportunity to build middle-class career pathways for low income people and job seekers with barriers to employment (“disadvantaged workers”). DVC notes that two-thirds of the direct jobs generated by the IOUs’ EE/DSM programs are in the construction trades and believes that construction trades provide a critical pathway to middle-skill and middle-income jobs. However, disadvantaged workers often face multiple barriers to employment that need to be addressed through a carefully aligned pipeline of recruitment, screening, skills development, training, wrap-around services and credentialing. DVC suggests that the promised economic opportunities are unlikely to benefit disadvantaged jobseekers unless the IOUs incorporate strategies that promote targeted hiring, ensure living wage jobs, support upward mobility and enforce fair labor standards.

The California Public Utility Commission’s directives to the IOUs on the specific objectives and strategies associated with the IOUs’ workforce inclusion goal have thus far not been precise. Given this, DVC’s approach to Strategic Goal 2 is both to articulate the policy decisions that can clarify specific workforce inclusion goals and to provide a menu of options on how to effectively implement strategies to achieve these goals.

Recommendations for Strategic Goal 2

Full Report: pages 47-72
Appendices: pages 15-49

A. Demand-side workforce diversity program: Create a workforce diversity program that encompasses training connected to family-supporting career pathways for a diverse EE and DSM workforce. Include four program elements:

1. Add “diversity of workforce” as a factor in ranking proposals by third party contractors in all EE and DSM solicitations (up to 20% of total points).

2. Adopt “First Source” language into all EE/DSM contracts to create a formal link between training for disadvantaged workers and job opportunities through EE/DSM programs (see below for language).

Example of First Source language being used by Sempra: The COMPANY is interested in developing linkages between employment opportunities and trained workers in energy efficiency. In the event that new job opportunities arise as a result of this SOW, Contractor shall provide advanced notice of job or internship opportunities and the skills required for those positions to COMPANY or COMPANY’s designee. Advanced notice should be provided at least two weeks before the job or internship opportunity is listed publicly. These opportunities may be shared with organizations that provide EE workforce training.

3. Establish a wage floor for ESA, 3P (when contract looks like Direct Install), and Direct Install programs (note, Full Report inconsistently applies this to 3P).
4. Target the municipal, university, school and hospital (MUSH) sector for deeper retrofits through greater incentives, bundling of projects, apprenticeship standards, and targeted hire requirements that together can provide meaningful job and training opportunities for disadvantaged workers.

B. Implement an inclusion sector strategy consisting of regional pre-apprenticeship bridge programs that can prepare workers for entry level jobs in the MUSH program recommendation as well as in other jobs.

C. Foundational activities are needed to support the recommended interventions:
   1. A clear directive by the CPUC for the IOUs to validate their efforts to address inclusion.
   2. The adoption of a definition of “Disadvantaged Worker,” should be based on both residence in a high unemployment zip code and meeting specific criteria of disadvantage.
   3. On-going data collection on job quality, workforce diversity, and hiring of disadvantaged workers, to create a baseline and measure progress over time.
      i. Require contractors to use an electronic certified payroll reporting system for reporting hiring data.
      ii. Assess outcomes annually.

Ownership and Timing

IOU Near-term Actions
1. Define “Disadvantaged Worker” meaningfully and consistently.
2. Adopt common “First Source” contracting language and include in all EE/DSM contracts in contract renewals and the upcoming contracting cycle.
3. Aggregate projects for MUSH customers and include workforce requirements as outlined above in a third-party solicitation for a general contractor.
4. Establish an online reporting system for all EE/DSM contractors and make summary reports available to the public.

IOU Longer-term Actions
1. Implement a wage floor in ESA and Direct Install contracts.
2. Add “diversity of workforce” as a factor in ranking third party contractors in all EE and DSM solicitations
3. Develop more comprehensive funding and financing packages for MUSH customers, with a goal of 100% financing.
4. Establish a Training Bridge Program to connect lower-skilled EE workers to higher-skilled EE jobs.
5. Publish annual scorecard.

CPUC Actions
1. Explicitly direct the IOUs to promote, measure and report family-supporting job creation and workforce diversity outcomes using the program elements recommended in this guidance document.
2. Allocate more funding for MUSH activity.
3. Increase ESA and Direct Install program budgets where wage floors are instituted to mitigate potential cost.

Feedback
Guidelines:
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5
STRATEGIC GOAL 3: Integrating WE&T and the Resource Programs

Context
DVC suggests there is substantial evidence of improper equipment installation and maintenance as well as building construction practices that are inconsistent with best practices and technical specifications. They go on to suggest that work quality is not explicitly addressed in the planning, approval, implementation, and evaluation of ratepayer funded energy efficiency programs nor are skills or resources identified to ensure quality throughout this process. According to DVC, the overall result is that the IOUs are leaving a significant amount of energy savings on the table.

Scope of Strategic Goal 3
SG3 focuses on quality issues and presents a set of interventions to address them. (The focus is on EE programs although the recommendations apply to DR and DG where incentives are offered.) In considering how best to address the work quality issue in the design of the EE and DSM resource programs, DVC focused on the extent to which integrating workforce efforts with resource programs can improve the cost-effectiveness of these programs through improved work quality. They aim to answer the following questions:

- What specific standards could be applied to which programs or categories of programs in the EE/DSM portfolio, recognizing a one-size-fits-all solution is not feasible?
- What are other solutions or interventions that can address the quality problem, either singularly or in combination with standards?
- How important is the work quality problem? What research exists that documents problems with improper installation, operation, and maintenance of energy efficiency measures, technologies, materials or systems?
- Does the current process of planning, approval, implementation, and evaluation of resource programs sufficiently encourage the IOUs to ensure the quality of work of contractors participating in their programs? Can customers ensure quality?
- What evidence exists on the costs and benefits of skill certifications and other contractor and worker standards?

Recommendations for Strategic Goal 3
Full Report: pages 73-107
Appendices: pages 49-65

Recommendations focus on the introduction of workforce standards and on changes in the processes used to plan and implement IOU resource programs. DVC believes that the evidence and rationale presented on the extent of quality problems, the value of standards in the construction sector, and the difficulties to measure the impact of...
Incorporate workforce standards into program requirements: change the competitive environment to attract high-performing contractors and to screen out or improve the performance of lower-qualified contractors. (Note, some stakeholders are pushing for stronger standards than what’s articulated here.)

1. Adopt three tiers of a Responsible Contractor Policy for use across all resource programs. Require, verify and enforce that all firms and subcontractors meet pre-established, clearly defined minimum standards.

1.1 Tier 1: All EE/DSM resource programs – all sectors and sizes
   i. Licenses: The firm and its employees must all have valid, effective licenses, registrations or certificates required by federal, state, county, or local law, including, but not limited to, licenses, registrations or certificates required to do business in the designated locale and perform the work it seeks to perform.
   ii. Bonding and Insurance: The firm meets the bonding requirements as required by law or contract specifications and any insurance requirements, as required by applicable law or contract specifications, including general liability insurance, workers compensation insurance and unemployment insurance.
   iii. Wage and Labor Laws: The firm pays current wage rates and benefits as required by law. No labor law violations recorded by the state Department of Industrial Relations (DIR).
   iv. Permits: The firm has complied with all applicable permitting requirements.

1.2 Tier 2: All individual projects with total costs > $100,000 or all firms with IOU EE/DSM contracts or subcontracts larger than a total of $1,000,000, in addition to the requirements in Tier 1.
   i. Trained workforce: 60% of jobsite workforce comprised of journey-persons who completed a registered apprenticeship program in California or are currently enrolled in such a program, or provide other proof of skilled workforce.
   ii. OSHA: 60% of jobsite workers should be OSHA 10-hour General Industry Safety and Health Certified and at least one jobsite worker should be OSHA 30-hour General Industry Safety and Health Certified.
   iii. History of Performance: (a) documented history of full compliance to state, health, safety and work standards and (b) list of three similar past projects and references for three projects.

1.3 Tier 3: Projects in the Municipal, University, Schools, and Hospitals (MUSH) sector with individual projects or aggregated projects ≥ $250,000, in addition to the requirements in Tiers 1 and 2.
   i. Prevailing Wage: The firm will pay all craft employees that it employs on the project the current prevailing wage rates
   ii. Apprentices: The firm has participated in a state-registered Apprenticeship Program for the past three years, and shall continue to participate in such program for the duration of the project.
   iii. Targeted Hire: 15% of total project work hours to be performed by disadvantaged workers.
   iv. First Source: The firm will notify pre-apprenticeship bridge program of upcoming job postings.

B. Adopt third party skill certification requirements and/or work quality assessments across all programs as outlined in Figure 3.3 “Decision Tree” and following the guiding principles below.
1. For tasks for which there is widespread industry consensus on appropriate third party certification, make that certification required for participation in EE/DSM program incentives.
   i. Require CALCTP firm certification for contractors on all projects involving advanced lighting controls.
   ii. Require BPI firm accreditation for all Whole House retrofit projects (advanced and basic).
   iii. When possible, utilize DOE/NREL Job Task Analysis as a proxy for industry consensus to screen third party certifications for requirement in resource program participation.
   iv. For tasks for which there is no well-defined third party certification, program administrators should work with partners to document Knowledge, Skills, and Abilities (KSAs) for those tasks, using DOE/NREL Job Task Analysis. IOUs should work with partners to incorporate these KSAs in appropriate training programs.
   v. For tasks for which there is no widespread industry consensus on appropriate third party certification, IOUs should either invest in work quality assessments that include in-progress job monitoring and/or rigorous functional performance assessments of completed work OR adopt the contract management tool called Performance Information Risk Management System (PIRMS) to promote work quality. DVC suggested piloting the use of PIRMS in the HVAC Quality Installation and Quality Management programs.
   vi. Develop an in-house system or hire third party entity to manage verification and enforcement of the skill certification requirements.
C. Implement changes throughout the resource program R&D, design, implementation, approval and evaluation processes: better track variables affecting work quality and create stronger incentives for high quality work.

1. For emerging technologies and new measures tested in field demonstration projects, identify and document contractor competencies and worker skills/credentials as a basis for considering program requirements. Problems with initial installations and how problems were resolved should be consistently documented in reports posted for these demonstration projects.

2. Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings. Information on measure costs should explicitly address the time required as well as the specific skills required to achieve the assumed savings. More specifically, if, as is the case for many deemed measures, energy use and savings estimates are based on assumptions of 100% correct installation, the work papers should document the contractor competency and worker skills needed consistent with those assumptions.

3. Modify Program Implementation Plans (PIPs) to specify how program requirements will increase the demand for and ensure quality installations. Initial plans should consider the projected benefits and costs of alternative interventions (e.g. certification requirements, training opportunities, and quality assurance/verification) prior to developing a plan, which includes one or more of the identified approaches. This could replace the current “WE&T integration” section of PIP templates.

4. Information from 1-3 above should be part of the documentation reviewed by the WE&T advisory committee and staff as they prioritize WE&T investments. The results should be summarized and documented in presentations and/or reports as judged appropriate.

D. Review and modify quality assurance processes to place greater emphasis on work quality.

1. Quality Assurance processes (post-installation inspection and verification) should focus on quality of installation, not only counting the number of “widgets” installed. Highly skilled technicians or certified inspectors should be assigned to inspect most installations at beginning of program and then randomly throughout programs.
2. Results of quality assurance activities should be tracked by both contractor and measure, to contribute to better data on work quality.
3. Where work quality has been identified as an issue, follow-up studies should be conducted in determining how work quality is affecting the expected useful life of long-lived measures.

Feedback Guidelines:

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| CCILMCT    | A.1                                                                   | pp. 77-78. Adequate health and safety training requirements should apply whether or not a project meets a minimum monetary threshold. Therefore, we recommend that the OSHA standards recommended for Tier 2, as well as history of safety performance also apply to Tier 1 projects. In addition, we recommend that all non-residential work and residential work performed on buildings with 4+ stories, not just MUSH properties over a certain size, be subject to the following standards:

i. 50% of workers on jobsites in the last 3 years OSHA 10-hour General Industry Safety and Health Certified;

ii. 10% workers on jobsites in the last 3 years been OSHA 30-hour General Industry Safety and Health Certified;

iii. In the last three years, at least 30% of apprentices used on your jobsites completed 3,500 or more on the job training hours;

iv. In the last three years, at least 70% of the journey-level workers on your jobsite graduated from a California-approved apprenticeship program;

v. 30% of construction workers hired from zip codes that include targeted workers and communities;

vi. Firm complied with local hire/disadvantages hire requirements in all public works contracts, if the firm has performed such work; and

vii. Firm funds continuing education and training for workers. |

| CCILMCT    | A.1                                                                   | The Trust previously commented: |
For projects where the total project cost is $500 or more, IOUs should require that the installed measures in a building meet existing building code before they pay out the incentive. This means that there is a verification process to prove the installation was permitted and passed inspection before the incentive is paid.

The WE&T Consultant should also consider available models for funding quality assurance and verification processes, such as contractor fee assessments as a condition of program participation. The additional expense on compliance measures is justified by the savings that could be achieved if incentives measures are performing to customer and program administrator expectations.

The WE&T Consultant should consider the feasibility of having third-party do energy savings & GHG reduction verification, as well as labor & contract compliance. This could be done through one, or two separate RFPs (i.e. the same 3rd party group, two separate groups, or one general 3rd party group that subcontracts to other groups according to expertise on the above topics). The RFP for the 3rd party compliance group should include clear qualifications and expertise such a group should have.

Please include a summary of the research on best value of PIPs/PIRMS.

Please expand upon the study’s findings, with concrete examples of cost savings and added value.

**Context**

Sector strategies are industry partnerships of employers, training and education institutions, labor and community stakeholders, and other stakeholders who come together to plan and implement training programs. Sector strategies are considered a best practice approach to workforce development and are designed to meet the needs of employers for skilled workers, while benefitting workers through placement in career-track jobs and career advancement opportunities. Returns are particularly high for both workers and employers in apprenticeship, which is an institutionalized form of sector strategies, usually regulated by the state with on-going commitments of industry funding.
The main factor leading to the success of sector strategies compared to other types of workforce development projects is the involvement of employers, not only in identifying skill gaps but also in committing to co-fund training of incumbent workers and/or to hire graduates of training programs.

**Scope of Strategic Goal 4**
SG4 focuses on assisting the IOUs to implement sector strategies in a way that best contributes to energy efficiency and related workforce goals and specific CPUC directives.

**Recommendations for Strategic Goal 4**
*Full Report: pages: 108-120*  
*Appendices: pages: not addressed*

Recommendations are designed to strengthen current IOU efforts while providing a plan that allows other groups with current capacity and greater expertise to play a more significant role in sector strategy implementation.

DVC recommends that the IOUs develop a competitive solicitation process for two types of sector strategies, as described in SG1: one for upgrading the EE/DSM skills of incumbent workers, and one to promote inclusion of disadvantaged workers into living-wage, career-track jobs.

Specific recommendations about the sector strategies to date include:
A. CALCTP: The IOUs should launch a statewide incentive program that requires CALCTP certification for participating contractors.
B. HVAC sector strategy: The IOUs should not lead this sector strategy, but rather encourage the HVAC industry to apply for funding from RFP #1 (for incumbent workers).
C. RxC: The RxC effort should be reconceived and should be built on a partnership with the two Stationary Engineers apprenticeship programs in California, for apprenticeship and journey upgrade training.
D. EWSS: The EWSS should be folded into the recommended RFP process. Specific partnerships that have been started will be eligible to apply for funding through the RFP. The identification of key stakeholders, SME, and educational partners, will inform both the formation of the technical skills panels and will jumpstart good sector strategy projects that can apply for funding.

**Feedback**

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STRATEGIC GOAL 5: WE&T Stakeholder Engagement

Context
WE&T programs have utilized various stakeholder groups in the past, including the CPUC-mandated WE&T Taskforce. However, the recommendations provided by DVC will require a large shift in how WE&T is approached, with whom the IOUs partner, etc. As such, new stakeholder groups are required.

Scope of Strategic Goal 5
SG5 includes the development of a participatory stakeholder process. DVC is tasked with developing a post-contract stakeholder engagement plan that will effectively support the guidance and implementation of the recommendations in their Guidance Plan, avoiding any duplication of efforts currently under way by existing working groups.

Recommendations for Strategic Goal 5
Full Report: pages: 120-122
Appendices: pages: not addressed
A. Create a transitional Peer Review Group (PRG): Just before the end of the contract term, DVC recommends that the current project Advisory Group nominate members to form a transitional WE&T Guidance Plan PRG to oversee implementation and progress towards the Guidance Plan’s strategic goals (Advisory Group members may remain part of the group). PRG membership should be finalized in consultation with the IOUs. Once created, the PRG can elect co-chairs, who will be primarily responsible for reporting out to other existing working groups. The PRG should provide updates every six months to the existing WE&T Task Force as well as other working groups such as the IOU sector strategy working groups, the Labor Agency, the CPUC and others.

B. Develop a Governing Board: As described in SG1, DVC is recommending that the CPUC establish a governing board to oversee the IOUs’ workforce skills-building portfolio and offer informal approval and advice to the CPUC. Then, once established, DVC is suggesting the PRG be dissolved. The governing board can also monitor and provide expertise, advice and resources on the other guidance recommendations. The Governing Board should be the permanent structure for substantive input, advice and oversight of WE&T issues and be comprised of high-level representatives of the following agencies and institutions:
   - CA Workforce Investment Board
   - CA Division of Apprenticeship Standards
   - Employment Training Panel
   - CA Community Colleges Chancellor’s Office
   - University of CA / CA State University
   - CA Department of Education
   - CA Energy Commission
   - CA Public Utilities Commission (Commission will approve final portfolio)
   - National Laboratories
   - UC/CSU Energy Centers
   - U.S. Department of Energy
   - Workforce Development experts from non-profits (like Career Ladders Project or the California Edge Campaign)
   - Labor
C. Reconvene the WE&T task force to provide a forum for broader stakeholder input beyond the Governing/Advisory Board: DVC suggests that the task force is an appropriate forum for input from a wide range of stakeholders on program development. DVC recommends bi-annual reporting to the WE&T task force, in which the IOUs and PRG (and later Governing Board) provide updates on the implementation of the Guidance Plan recommendations and solicit feedback on WE&T-related issues.

D. Develop a scorecard: DVC suggests that a focused reporting scorecard, made publicly available and shared widely with stakeholders, can drive performance and increase accountability among parties – both throughout the PRG process as well as the longer-term Governing Board. The scorecard should track the strategic goals, metrics by which to evaluate each goal, and a point system showing progress on each of the goals.

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**STRATEGIC GOAL 6: Evaluation and Success Metrics**

**Context**

DVC suggests that despite the influence of workers and contractors on energy savings and other outcomes, EM&V studies for all but the WE&T programs have not systematically addressed workforce issues. They state that EM&V studies routinely do not consider the costs and benefits of various approaches for addressing improper installations and maintenance where they are known to exist. Additionally, WE&T EM&V studies have not focused on outcomes such as skills building, work quality outcomes, or job placement and career advancement for workers.

DVC suggests that a comprehensive strategy to develop the workforce needed to achieve California's EE/DSM potential needs to address all of these issues.

**Scope of Strategic Goal 6**
SG6 focuses on outlining an EM&V plan for DVC’s recommendations. The focus is limited to EE programs, but many of the recommendations for proposed approaches and studies are applicable to DR and DG programs as well. All of the recommendations are designed to further the explicit considerations of work quality and job quality.

The recommendations are guided by the five core objectives for EM&V outlined by the Commission in 2009 as part of the approval of the EE portfolios for the 2010-2012 program cycle and reconfirmed for the 2013-2014 program cycle.

- **Savings Measurement and Verification**, which serves the fundamental purpose of developing estimates of reliable load impacts delivered through ratepayer-funded efficiency efforts,
- **Program Evaluations**, which serves a key role in providing feedback for the purposes of improving program performance leading to “mid-course” corrections, and includes the evaluation of program-specific measures, such as program performance metrics and process evaluations,
- **Market Assessments**, which are used to set baselines for strategic design and improvement and to inform estimates of remaining program potential,
- **Policy and planning support**, which supports overarching studies and advisory roles and has included the potential and goals studies, maintenance of the DEER database, and various other tasks to support the Commission’s oversight role, and
- **Financial and Management audits**, which are designed to ensure the efficient and effective expenditures of ratepayer funds within the IOUs EE portfolios.

The proposed EM&V plan for the DVC recommendations identifies four types of EM&V studies: impact, process, market and policy and planning support. It includes proposed metrics for judging success, researchable questions, and makes recommendations for addressing the researchable questions.

### Recommendations for Strategic Goal 6

**Full Report: pages: 123-140**  
**Appendices: pages: 66-76**

A. Update the WE&T Needs Assessment on a periodic basis: DVC suggests updating the WE&T Needs Assessment periodically, using a simplified methodology for job projections, (e.g. every 5-7 years). The update should incorporate new information into existing projections on job demand by occupation for the EE sector, the inventories of available education and training programs serving the EE sector in California, and other special topics (e.g., case studies of specific market sectors).

B. Reform ex ante program review to address workforce quality interventions: Support a Policy Taskforce (or possibly a subgroup of a larger taskforce) to address integration of workforce considerations in ex ante program review. The purpose of the taskforce is to address how best to modify existing approaches to allow for the explicit consideration of skill requirements for assumed savings, of the contribution of mandated standards to improve quality, and other potential interventions designed to both reduce installation costs and increase energy savings associated with specific measures, programs, and portfolios.

C. Collect data for job quality and work quality: Develop data tracking systems that provide for the collection of data on job quality (e.g. wages, benefits, working conditions).

D. Develop tracking of work quality (e.g., proper installation and maintenance) for EE programs, including in programs where there is not a direct contracting relationship between the IOU and the contractor.

E. Identify potential, goals and targets for the MUSH sector.
F. Conduct comprehensive process evaluations: Assess how DVC’s recommendations have been reviewed, incorporated in program design and implemented.

G. Modify impact evaluations to address DVC recommendations.

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STRATEGIC GOAL 7: Evaluation of the Need for a Statewide WE&T Web Portal

Context
The 2008 Strategic Plan and the 2011 update proposed developing a WE&T web portal linked to a more comprehensive statewide website. As described in the 2011 Strategic Plan, “The web portal will include links to various demand-side management (DSM) related training programs and will allow for a single point of communication. The portal will also serve as a repository for all demand-side management and energy efficiency training, educational conferences, and career opportunities.”

Charged with assessing the various options for creating a WE&T web portal, in response to the Strategic Plan direction, the 2011 Needs Assessment evaluated a range of employment information systems, in order to recommend a potential solution to the mismatch or “gaps” in labor demand and supply for the energy efficiency sectors. In reviewing both internet job boards and full service programs that incorporate on-site services, the Needs Assessment ultimately cautioned against investing this type of web portal because their benefits do not align well with WE&T objectives or IOU strengths.

Scope of Strategic Goal 7
SG7 includes guidance on how to approach online implementation of a statewide web portal, in response to Strategic Plan direction.

Recommendations for Strategic Goal 7
Full Report: pages: 142-144
A. Do not develop a WE&T job matching or training web portal as job matching services do not tend to be well-aligned with the goals of EE/DSM WE&T programs and are not effective in bridging the gap between labor supply and demand. This is also an extremely complex task and would be effective only as part of a larger effort to support career counseling and other career support activities.

B. Use the Energy Design Resources (EDR) website to list all IOU WE&T programs: The EDR website has recently begun to list all the WE&T classes along with other learning resources for architects and other designers. It has also recently expanded to offer software tools for analysis, as well as online and live trainings. EDR carries the potential to be a connecting hub for a greater scope of EE incentives and rebates with training and education resources.

C. Integrate the ETCC website (Emerging Technology Coordinating Council) into the statewide web portal: Information on demonstration projects, market and technology assessments and other emerging technology projects can be helpful to those looking at the frontier of training needs. Additionally, as recommended in SG3, documenting the skill and credentials of contractors and workers involved in demonstration projects can be helpful to program design, determining workforce standard requirements for programs, or documenting KSAs. This information might be more easily accessed and widely used if provided through a centralized website.

D. Post recommended WE&T RFPs on the statewide web portal (see SG1): If integrated effectively into the statewide Energy Upgrade California website, these opportunities can be more widely distributed to new potential partners.

E. Integrate solicitation and proposal review website into the statewide portal: Consider utilizing options other than PEPMA for posting and managing solicitations such as the PIPs or PIRMs as recommended in SG3.

F. Include existing contractor or participation requirements for statewide programs on the web portal: Since program requirements, eligibility and contractor or customer responsibilities are related to work quality and ultimately realized energy savings, making this information available and accessible in an easy-to-navigate central location is important.

G. Use the web portal to report progress on inclusion and other WE&T goals.

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Comments from the Laborers’ International Union of North America (LiUNA!) on Draft 1 of the Guidance Plan

From: David De La Torre [mailto:davidliuna261@gmail.com]
Sent: Monday, March 03, 2014 4:42 PM
To: L1Sb@pge.com; zabin@berkeley.edu
Subject: Re: LiUNA! response

All,

Below you will find additional comments that I would like to include with the initial comments I provided last Friday.

Addendum:

Strategic Goal 2

A1. We believe that stronger First Source example language exists. While understanding that this is just an example and that program is not developed, we might want to leave room to clarify the organizations to be notified. At minimum, there should be a requirement that companies to work from a CPUC-established list of workforce trainers.

A3. Wage floor: We would still like more specificity on how this is established.

B. “Regional pre-apprenticeship bridge programs”— I can’t recall seeing anywhere in the document indicating that there will be specified standards for pre-apprenticeship programs to be included in any formal network established by the programs being developed. We may want flexibility and control, but again, more detail will be helpful.

Strategic Goal 3

(IOU Longer-term Actions) 4. There is sometimes an assumption that Laborers’ installation/air sealing work is a “dead-end” job and workers should be graduated to glorious plumber or sheet metal worker. Any bridge program with this goal must acknowledge the skill advances built into union apprenticeship programs, including LIUNA.

1.1 Tier 1.

- Licenses: We would like to make sure there is not a move to broaden licensing requirements in the EE field beyond existing HVAC. Notwithstanding my comment on BPI below, we should make sure the default standards for work like air sealing is BPI accreditation.

- An additional note of caution on potential conflicts between BPI Accreditation—or more likely BPI Certification—and union apprenticeship/training. As you know, Accreditation requires employing BPI Cert staff. A Building Analyst is one, but they usually require more depending on the job. We don’t want to allow contractors to use the
BPI standards for accreditation as a way to force skilled union workers off a job if they lack a BPI Certification for “Leakage Control Installer” for instance. You may just want to be specific about resolving training standard conflicts in favor (or at least not to the disadvantage) of union programs—assuming there is a good faith effort on both sides, of course.

The Responsible Contractor section overall is very strong. A $250,000 threshold for prevailing wage seems reasonable and tiering the standards is a good way to keep small firms in the industry from revolting. It would help to know how many projects—and how much of the total expected work—will fall under the $100,000 threshold and how much over $250k.

**LIUNA COMMENTS:**

Strategic Goal 1

A1. When discussing these annual funds, the anticipated goal of job creation should also be annually estimated. This will ensure that the "skills building portfolio" does not have a priority over energy efficiency and actual job creation. Additionally, will the Building Trades Core Curriculum be a part of the skills building portfolio?

D2 – Broad trade representation should be included on the Governing Board to ensure trades are not arbitrarily designated as “non-residential” or “residential.”

F2 – On Page 38 of the Full Report, we appreciate the reference to the Laborers as a “key trade.” We also believe that construction work in part be allocated to existing training / apprenticeship programs that have a track record, and that Laborers have been a skilled construction trade with the necessary EE/DSM skills.

Strategic Goal 2

A2 - We would generally like to see more focus on utilizing existing hiring halls and certified training and job placement programs as tried and true skilled employment processes for reaching disadvantaged workers. As necessary, there should also be more description on how the trades (training, contractors) may insert themselves into the ESA 3p job training/ placement world.

Strategic Goal 3

A1 – We believe that RCP needs to be properly staffed for random audits and compliance, with penalties, removal, barring language, etc. for failure to comply. A1.3 ii - Additionally, reporting of apprenticeship numbers should include graduation and/or completion stats for apprenticeships.

A1.3 iii - Each trade/craft should be responsible for meeting its individual requirement of 15%, which seems to be a low percentage itself. A cumulative requirement of 15% from all trades may lead to certain crafts bearing a disproportionate burden of the requirement.

B1 ii - **This should be inclusive of existing training programs administered by Labor-Management trusts and Laborers’ standards, which are credited for national accreditation.**

B1 v – We would like find more information on PIRMS based on the following questions: who administers PIRMS? Is PIRMS training available to all? What is the cost to participate in PIRMS?
Strategic Goal 5
Questions remain on the Governing Board: Who appoints PRG and governing board? What will they have actionable authority to do other than submit a report? Will these meetings/ records be transparent and open to the public?

Strategic Goal 6
Success should be based on how many jobs were created and how many people from the targeted communities have been indentured into the construction trades.
Comments from the Natural Resources Defense Council (NRDC) on Draft 1 of the Guidance Plan

STRATEGIC GOAL 1: Forecasting Market Needs to Create Career Pathways and Improve Candidate Placement

Scope of Strategic Goal 1
The scope of SG1 includes “Forecasting Market Needs to Create Career Pathways and Improve Candidate Placement and Advancement.” DVC responds to this goal in the following ways:

- Targeting the most effective and efficient use of IOU resources, DVC identifies components of a balanced WE&T portfolio that reflect the IOUs’ dual roles in meeting both energy and workforce goals.
- Using the above criteria, DVC makes recommendations to modify IOU WE&T programs.
- Identifies and tracks critical occupations and assesses gaps in KSAs, certifications and training programs.
- Identifies opportunities for the IOUs to more effectively leverage state, federal and private WE&T investments.

Recommendations for Strategic Goal 1

Full Report: pages 12 - 46
Appendices: pages 2 - 14

DVC recommends that the IOUs substantially increase their WE&T resources for programs specifically targeted at workforce skill-building, and that they redesign this programming with increased participation and oversight from state workforce development experts. By leveraging the state’s core accredited education and training institutions, promoting the identification and use of clear certifications and skill standards, and ensuring employer commitment to hiring and using trained workers, DVC expects that this restructuring of programs will have greater impact on both energy savings and jobs.

A. The IOUs should develop a “skills-building portfolio” that has distinct goals, programmatic activities and budget which is separate from the IOUs’ “market-building portfolio.” The budget for the skills-building portfolio should be $60 million for a three-year cycle (note, Full Report mistakenly references $70 million).

B. The skills-building portfolio should be implemented through two coordinated statewide RFPs, with regional distribution of training funds. The IOUs should phase-out ratepayer support for short, stand-alone classes for their skills-building program. Other IOU-based skill training could continue, but should be transitioned into applications for the RFPs. DVC recommends two RFPS because their distinct goals require distinct RFP development and review committees with specific expertise.

1. RFP #1 should address skill-building that contributes directly to energy savings. It should include funds for:
   i. Sector strategies targeted at incumbent workers, built on regional partnerships, specific commitments from employers to co-fund training and use new skills in the field, and leveraging of other funding sources.
   ii. Core education and training institutions (4-year colleges, community colleges and state-certified apprenticeship programs) to incorporate EE/DSM skills into credentialed programs for professionals and trades workers.

2. RFP #2 should be dedicated to skills-building activities that support the development of career pathways for workers from disadvantaged communities. It should include funds for:
   i. The inclusion of workers from disadvantaged communities, through training and placement into living-wage, career-track jobs in the key EE/DSM occupations.
   ii. Regional partnerships of employers, community colleges, workforce investment boards (WIBs), labor and CBOs that leverage WIB and other funding sources.
   iii. Core 9-12 education institutions (California Partnership Academies, Linked Learning, High Schools, Regional Occupation Programs) to incorporate EE/DSM skills into standards-aligned
curriculum and to articulate curriculum with post-secondary education and employment opportunities.

iv. Curriculum development and implementation, faculty training, industry engagement, work based learning and articulation efforts.

C. Both RFPs should be guided by a priority-setting process that includes:
   1. Periodic updating of data analysis on job projections and priority occupations.
   2. KSA development based on input from subject-matter experts (SMEs) on the skill needs for emerging technologies and underperforming technologies.
   3. Input from industry and training institutions on the capacity of the existing workforce.

D. The CPUC should establish a governing board to oversee the development of the WE&T skills-building portfolio, subject to final CPUC approval. The Governing Board should:
   1. Include California’s energy, workforce, and education agencies, in addition to SMEs from the national labs and the UC/CSU Energy Research Centers.
   2. Appoint technical skills panels for each major building system to identify priority KSAs needed for emerging technologies and underperforming technologies.
   3. Advise staff selection to develop the RFPs, and participate in RFP development, and ranking of proposals. We recommend one staff person each to oversee programming related to the professional, non-residential trades, residential trades, and inclusion.

E. The CPUC should consider working with the California Labor and Workforce Development Agency to transfer the workforce skills-building portion of WE&T to the CA Workforce Investment Board.

F. The IOUs should begin transitioning the WE&T portfolio to align with DVC’s recommendations in 2014 with three phase one programs:
   1. Integrate EE/DSM into the core curricula for architects. Dedicate up to $15 million over three years to enhance EE/DSM content in core curricula and for professional development.
   2. EE/DSM best practices review and upgrade for apprenticeships in the key trades. Dedicate up to $15 million over three years to enhance and verify EE/DSM skills in the state-certified apprenticeship system, via a partnership between the Community College Chancellor’s Office of Apprenticeship, the California Division of Apprenticeship Standards and the IOUs.
   3. MUSH sector bridge pre-apprenticeship program for disadvantaged workers. Dedicate up to $12 million dollars for a three-year inclusion sector strategy administered through an RFP to prepare entry-level EE workers or job seekers with minimal skills and low wages for opportunities into higher skilled and higher wage employment.

Ownership and Timing

IOUs:
   1. Begin the phase one programs outlined in this plan in 2014.
   2. Convene the governing board and work with them to initiate the skill-building portfolio to begin in 2015:
      a. Establish budget (with CPUC guidance as necessary).
      b. Identify appropriate technical advisory groups.
      c. Establish priority setting process that guides the development and review of the RFP.
      d. Hire staff to staff to oversee programming for the professional, non-residential trades, residential trades, and inclusion.
   3. Following the convening of the governing board, along with technical advisory and staffing appointments, staff should begin drafting RFPs to be implemented in 2015 with the funding that is not allocated to the Phase 1 RFPs. (Subject to CPUC clarification of the timing of the next program cycle.)
4. Conduct a thorough review of the Centergies offerings and submit findings to the WE&T stakeholder advisory board (and/or the new governing board), via advice letter process, within the next six months:
   a. Identify which programs are skill-building vs. market-building;
   b. Identify stand-alone courses intended to build worker skills that will be phased out or funded by participant fees or other funding;
   c. Identify best practices among existing skill building programs to be grandfathered in to the next portfolio, subject to review and approval by the stakeholder advisory group;
   d. For any programs that are not identified as best practices (but are not strictly stand-alone courses), the IOUs should consider phasing out, or developing a modified program delivery structure to submit as a proposal within the skills-building RFPs in the next cycle.

CPUC:
1. Direct the IOUs to allocate at least $60 million of WE&T funds per three-year cycle, or $100 million for five years, to workforce development / skill-building in the key occupations.
2. Direct the IOUs to allocate 20% of their workforce development budget to skill building efforts dedicated to promoting inclusion for disadvantaged workers.
3. Direct that the workforce skills development portfolio be executed via an RFP for energy savings and an RFP for inclusion.
4. Issue guidance about the WE&T resources that the IOUs should direct toward market-building.
5. Establish a governing board to oversee the development of the WE&T skill-building portfolio, subject to final CPUC approval, as described in D. May require review from legal division prior to direction. Requires approval and cooperation from other parties and agencies named to the governing board.
6. Offer direction that the WE&T task force is an appropriate forum for input from a wide range of stakeholders on program development (as opposed to a vehicle for engaging the state’s workforce and education agencies).
7. Consider working with the California Labor and Workforce Development Agency to transfer the workforce skill-building portion of WE&T to the CA Workforce Investment Board.

Feedback Guidelines:
- Please include the above recommendation letter/number to which your comments apply.
- Comments should include any data corrections, as needed.
- For additional information or reference documents related to each recommendation, please refer to the full report as well as the appendices. Relevant page references have been provided above.
- Please add rows, as needed.

<table>
<thead>
<tr>
<th>Name</th>
<th>Recommendation (please include the letter to which your comments apply)</th>
<th>Comments</th>
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<tbody>
<tr>
<td>A&amp; B</td>
<td>Suggest modifying the language regarding the various RFPs on p.29 to be clearer as described in the overview of the recommendation on p.18-19 (e.g., use A. and B. to describe the subcomponents as it is a bit hard to discern the strategy as currently described on p. 29).</td>
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<td>Also, sometimes seems like 3 RFPs, especially given the picture on p.30.</td>
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<td>These RFPs have the potential to be quite massive, I only skimmed so perhaps the RFPs would go out only for the top priority issues, with others to follow as time/funding permits?</td>
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<td>Recommend spelling out acronyms in table on p.31</td>
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<td>Uncertain how these RFPs differ and/or would be aligned with the RFPs suggested on p.36 for recommendation F (more on that below)</td>
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• Suggest modifying the approach to be more of a steering committee vs. an autonomous decision making body, which holds various potentially legal complications.

• Recommend laying out the goals of the board clearly in this section first and then determining the best structure to meet those goals.

By my read, the goal of the board appears to be two-fold. At the onset, it is to ensure: (a) the RFP is strategic and written by knowledgeable entities (in this case a new staff person), (b) the right agencies and organizations are part of the process, (c) sufficient criteria are developed to assess bids, and (d) the best bidder is awarded the contract.

Then the goal shifts and is to: (a) approve performance outcomes (which I assume means assess how the RFP is being implemented), (b) appoint technical skills panels to aid in the implementation of the various components of the RFP, once the priorities are determined by this body, and (c) “identify and recommend skill certifications.” (or perhaps this is a function even before the RFP is written? It is unclear based on the order of the list of functions on p.34)

• Assuming my interpretation is somewhat accurate, the first section of the advisory committee’s role seems akin to the Peer Review Group functions, which can help design the RFP and criteria, as well as ensure the best bidder is chosen based on those criteria. No new structure would need to be developed, but a new PRG with the appropriate people would need to be convened.

• If this is the case, it is unclear how adding another staff member or two would be beneficial vs. allowing the utilities to score RFPs based on the PRG’s criteria as they currently do, perhaps with a few select additional experts added to the review team/process. The PRG would also have access to the full bids, which would enable them to agree with or challenge the IOU rankings (similar to how it was done for both the Market Transformation consultant and the WE&T consultant).

• For the latter goals, overseeing the implementation of the RFPs, perhaps the IOUs should hire an expert consultant to play that function (which is what you might have meant by ‘staff’). The steering committee/advisory board would be similar to the yet-to-be-utilized market transformation (MT) subcommittee, which will oversee the implementation of the MT project based on the scope (which the market transformation PRG had a role in developing). The IOUs are still in charge of ensuring the work products are completed per the contract, but the subcommittee is charged with reviewing work products/milestones along the way to ensure the implementation is going as expected and recommending any course corrections as needed.

• The CPUC would remain the “teeth” in any such process to ensure all is going as intended and would have the right to modify the process if the parties were not participating with good faith and earnest effort.
| E | Suggest that the CPUC or an expert consultant cultivate a partnership between the IOUs and the CA Labor and Workforce Development Agency vs. debate which entity should be the administrator, since as noted on p.35 neither by itself would suffice. This is more than suggest the IOUs forge a partnership as was done before. This would require a consultant (or current CPUC or IOU staff member) that is familiar with both groups to determine the best course of action to achieve a partnership. Such a consultant could help devise the most reasonable division of labor, what appropriate roles and responsibilities would be on both sides, and any other components of a successful partnership. Then this consultant would help the two sides work to establish a co-working relationship/effort to help implement the joint goals of workforce skills building. |
| F | Please clarify the difference between the former RFP idea vs. as described in this section. I understand that these are priorities that have already been determined, so wouldn’t the process work similarly as in this section after the advisory group determined the additional priority needs?  
I suggest the RFPs identified in this section follow the PRG process (as described briefly above) both to ensure the RFPs are conducted as anticipated and to build confidence in this structure in the event it serves to carry out the goals and functions of the advisory board, at least in part. If it does not, then perhaps pursuing a more extensive advisory approach would be worthwhile. |
| Stakeholder feedback | The stakeholder feedback letters don’t match the recommendations  
It’s unclear if all the bullets are intended to be what stakeholders agreed with (e.g., section C seems to first be a summary of the recommendation) |
<table>
<thead>
<tr>
<th>ED Comment on Draft WE&amp;T Guidance Document from Don Vial</th>
<th>Don Vial Pre-Meeting Response</th>
<th>Agreed Upon Strategy to Address ED Comments (Post-Meeting)</th>
<th>ED Comment of Draft 2 Response to Initial ED Comments (first column)</th>
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<tr>
<td>The document proposes several budget amounts that are somewhat arbitrary and not particularly useful; the CPUC’s allocation of specific budget amounts are a matter of due process based on initial program implementation plans submitted by the utilities and in consideration of overall program portfolio objectives and cost-effectiveness calculations. The guidance document would be more useful if it honed in on specific recommendations focused on IOU actions to support key Needs Assessment recommendations and provided in depth, targeted descriptions for how the IOUs can implement them rather than identify specific budget amounts that should be allocated. The budgets currently proposed are not clearly supported with rationalized justification.</td>
<td>We agree with this comment. We plan to focus on specific recommendations and give a sense of the scale needed, rather than a specific budget amount.</td>
<td>Don Vial will remove recommendations for specific budget allocations currently included throughout the document and instead include references to similar WE&amp;T efforts and related budget amounts as a way to emphasize potential budget ramifications for IOU efforts. Where possible include potential sources of non-ratepayer funds that could be used to support joint efforts.</td>
<td>Footnote 151 still includes a specific recommendation for IOU budgets and describes a methodology for coming up with the figure. Additionally on p. 77 a statement reads “Currently, the IOUs dedicate 45 percent of their budget to skills building and 55 percent to market-building programs”, yet provides no reference for these percentages. Please remove footnote 151 and provide reference for statement on p. 77.</td>
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<td>D.12-11-015 directed the IOUs to “hire an expert entity to help design a comprehensive approach to the WE&amp;T issues inherent in the energy efficiency portfolios.” The effort should be focused on “design(ing) a comprehensive approach, with stakeholder consultation, for workforce development efforts to be launched in the 2015 portfolios.” This language suggests the guidance plan should be focused on how the IOUs can improve WE&amp;T efforts within their energy efficiency portfolios. Currently the guidance plan has an equal if not more number of recommendations focused on higher level policy</td>
<td>We should discuss this in meeting.</td>
<td>Don Vial will highlight recommended IOU actions and roles by either 1) restructuring the document to categorize relevant sections and issue (i.e. regulatory environment, market environment, IOU WE&amp;T Actions, etc.) and/or 2) pull out all high level policy related recommendations (non-IOU recommendations) and include in an appendix that can be referred to as needed</td>
<td>Draft 2 was altered but not to address ED comments. It is still very unclear which recommendations are for the CPUC and which for the IOUs. For example, the section that discusses requiring a wage floor, targeted hire, inclusionary practices, apprenticeships, etc. (p. 45 – 47) is non-specific with regard to who should initiate these strategies. The appendices</td>
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recommendations directed to the CPUC. While potentially useful for future considerations, these recommendations seem to detract from the original intent of the CPUC’s direction resulting in a broad set of recommendations that affect higher level policy direction but are not as specific or in-depth as they could have been if the appropriate scope were maintained on how the IOUs could improve.

The main goal is to ensure the document clearly identifies more near-term IOU actions and related actionable recommendations while still describing high level policy changes that might support better IOU WE&T efforts over the longer term.

The guidance document does not appear to provide a clear bridge between previous Needs Assessment recommendations for the IOUs. It should include a focus on identifying what the shortfalls are in knowledge and skills needed to achieve better EE outcomes and where the gaps are in California’s current WE&T infrastructure (institutions, curriculum, etc.).

We agree that the next draft should explicitly address the 4 bullets and are rewriting to do that. We can discuss your views on weaknesses in the recommendations throughout the document. See comment below for additional suggestions for how to improve the document along these lines. See Don Vial comment to the left.

The RFP process recommended in the document, does not satisfy the purpose of the document in providing recommendations to the IOUs on how THEY can improve their WE&T activities. All this recommendation does is suggest other entities be funded to pursue WE&T activities on behalf of the IOUs. This is not satisfying the purpose of the document and decision directive.

are almost as long as the document and are still not clear about what entity should initiate what recommendations. This needs to be clarified in the final document. Also, the relevant portions of the appendix are not reference in the main document so it is hard to link the two documents together for full context. They should be more clearly linked.

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or partnerships agreements with employers and how the IOUs could integrate their WE&T efforts within the existing infrastructure of training and workforce development to help address gaps.

For each recommendation the guidance document should describe:

- A demonstrated problem
- A clear basis for points of intervention
- A rationale for ratepayer funds to be used to fix certain problems
- And how the IOU WE&T efforts can be best utilized and incorporated into existing frameworks

The document recommends the IOUs phase out providing the “short class framework” the energy centers have provided historically over the past 20 years. The document claims these kinds of classes “can work for high-level autonomous professionals like architects and engineers who can fit these classes into their continuing education requirements—although it isn’t clear why ratepayer funds should subsidize these classes when they could be funded by participant fees. The short class, open-access structure does not generally work for incumbent workers whose employers must be committed to training in order for it to be put to use”, but makes a poor case that these types of “market building” classes do not also serve a purpose in the larger scheme of useful WE&T activities and should not be

| This is a misunderstanding. We are not recommending a discontinuation of market-building classes, but rather a separation of market-building education and skills building programs because overall, they require different strategies and have different goals. | The document will clarify the difference between the terms “short class framework” and “market building” classes. In providing this clarification, the document will provide for a description for the role of the “short class framework” in skills building as well as provide recommendations for how the “short class framework” can be improved upon to include more elements of skills building. | The document does provide some useful high level recommendations for how the IOUs can improve their market and skills building classes. These would be more useful if they were more specific by providing recommendations for “how” to implement recommendations not just “what” to initiate. For example, p. 74 includes a recommendation to “adopt a process for prioritizing activities based on needs and opportunities to impact energy savings and workforce inclusion. |

| draft in the meeting. | | |
Included in the IOU’s WE&T portfolio plans. (p. 17).

Throughout the guidance document the CCILMCT comments and the Needs Assessment are used as references to support various recommendations. Carol Zabin was also the primary author of these documents which should not be considered independent from the current guidance plan effort. This fact should be clearly indicated in the introduction of the guidance plan in order to support transparency and full disclosure.

This is incorrect. Elizabeth Klebaner, one of the CCILMCT lawyers, was primary author of the CCILMT comments. The CCILMCT and other stakeholders used the Needs Assessment extensively in their comments, showing that the recommendations are in line with the views of their specific constituencies. In the Guidance draft, we quoted these comments because they represent constituencies that are parties to the proceeding.

We can of course acknowledge that I had a contract with CCILMCT for a period, as well as authored the Needs Assessment.

There was an acknowledgement that there might be a perception of potential conflict of interest which may not in reality exist. For this reason Carol’s role was examined in the past year by CPUC legal staff when considering current and future EM&V projects that Carol might participate in. For this reason better disclosure is needed in the document on what Carol’s role was in developing CCILMCT comments and her role in developing the Needs Assessment.

There is one notation on p. 6 of the document that Don Vial developed the Needs Assessment; “The Needs Assessment, carried out by the UC Berkeley Donald Vial Center on Employment in the Green Economy, included in-depth analyses of the projected supply and demand for EE work in California.” This reference should be explicit about the fact that Don Vial is also the primary author of the Guidance Document. See recommended addition in red: “The Needs Assessment, carried out by the UC Berkeley Donald Vial Center on Employment in the Green Economy, also the author of this guidance document, included in-depth analyses of the projected supply and demand for EE work in California.” This should be described again on p. 69 where the document describes in detail what the NA recommendations
| The document focuses on creating “an alternative administrator for the workforce skill-building portfolio as an option to be considered by the CPUC” and that “the CWIB has indicated that it is willing to be the administrator of these funds.” The document correctly states that this framework would “require(s) working through legal complexities in order to retain ultimate CPUC authority as required by law” yet does not include any kind of legal analysis as to the feasibility of this recommendation. | We should discuss this in ED meeting. | Jaclyn and I met separately with Don Vial on this issue clarifying the legal requirements of Bagley Keene Rules and when it applies. We discussed different advisory group frameworks including Project Review Groups (PRGs) used to consider and rate contractor bids in response to RFPs as well as Project Advisory Groups that are convened by Energy Division to help provide input on evaluation projects although future PRGs and PAGs may become subject to Bagley Keene rules depending on purpose and participation of these groups. We pointed out that the IOUs can also convene similar groups that do not need to abide by Bagley Keene if no Commissioners participate in these groups. Don Vial will consider these different advisory group frameworks. This description appears on p. 81 and is very confusing since four different terms are used to describe an external advisory group; 1) RFP Review Group, 2) governing board, 3) steering committee, 4) PAG. Some clarification is needed in this section. The document appears to also be recommending the CEC initiate a workforce steering committee (p. 90). This is a new recommendation. Has the CEC been made aware of this recommendation? Do they need to be looped into the discussion? The document should also indicate that the CPUC is currently in the process of defining roles and responsibilities of PAGs which may end up being different than what is envisioned in the document. |
The document does not include any K – 12 recommendations despite past CPUC directives to include “every level of education in IOU WE&T efforts”. The IOUs have included career awareness activities within their statewide WE&T efforts which have been identified in the academic community as an appropriate WE&T activity for this educational level (K-12). The IOUs developed a short list of areas for feedback on this topic they would like to see in the guidance plan mostly utilizing low cost, secondary research. Despite this targeted request, K – 12 still was not included. When questioned by ED staff as to why this area was left off, lack of consultant expertise in this area as well as lack of funding was claimed.

This is incorrect. We discussed the 9-12 programs (see pages 24-30) and highlighted their shortfalls for skills-building/career technical education. We recommended including 9-12 programs in the RFP. We did not discuss k-8 as this was not in the original approved scope of work, and was not in the subcontracting agreements that were already in place when the IOUs should provide more money to relevant agencies for curriculum development and implementation, faculty training, industry engagement, work based learning, and articulation efforts yet did not provide the IOUs with any input on how they can better address K – 12 WE&T objectives within their existing K – 12 efforts. Don Vial will provide more input.

While K – 8 career awareness is not included in the document, 9 – 12 grade was identified as an area in which the IOUs should provide more money to relevant agencies for curriculum development and implementation, faculty training, industry engagement, work based learning, and articulation efforts yet did not provide the IOUs with any input on how they can better address K – 12 WE&T objectives within their existing K – 12 efforts. Don Vial will provide more input.

The document includes additional language that makes more of a distinction between K – 8 and 9 – 12 efforts but still does not include an recommendations to the IOUs about what they can do to improve their WE&T related efforts for this level, other than provide funding in an RFP to a third party to pursue WE&T related efforts. The document makes no mention of career awareness strategies the IOUs can implement which are
**Request for substantial new work on k-8 was received. We will add to the 9-12 discussion in the next draft.**

**along these lines at least for grades 9 – 12. K – 8 is considered a gap in the recommendations and will be addressed via alternative evaluation efforts.**

**applicable to all k – 12 grades and recognized extensively in the academic community.**

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The document references D.12-05-015 ordering paragraph #11 which stated that “any and all” WE&T Needs Assessment recommendations should be implemented by the IOUs (p. 6) despite past clarification with the consultant that this was a typographical error in the Decision which did not assume that the IOUs would initiate all the recommendations in the Needs Assessment. Continuing to emphasize incorrect dicta in newly published documents promotes public confusion and erroneous information.

**This is my mistake. Jessie wasn’t privy to this past clarification and I did not catch it in this draft. It will be removed in next draft.**

**See Don Vial comment to the left.**

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The guidance document recommendations include some specific recommendations to implement a wage floor for the ESA Program but the document is lacking when it comes to providing input for specifically how to implement this recommendation. The report assumes that ESA can simply absorb these wage increases (budget-wise) and result in tiny budget increases, if any increases at all. But again, there is no specific guidance or supporting references for what the wage floor should be or how this action might impact the program. Some key questions remain:

- Will the IOUs separate wages from the installed measure costs? Is this a new line item in ESA budgets?

**We will address these issues in the next draft to the extent possible with available info.**

**See Don Vial comment to the left**

Copied from comment above:

For example, p. 74 includes a recommendation to “adopt a process for prioritizing activities based on needs and opportunities to impact energy savings and workforce inclusion goals”, but never gets explicit about how the IOUs should do this.
- How do the IOUs institute these wages for existing, “rollover” contracts or direct award contracts that are currently underway?
- How will this impact the cost-effectiveness of measures?
These types of questions will probably need to be vetted through a procedural manner (i.e. the CPUC will have make a decision on this).

The document provides some potentially useful recommendations for the IOUs regarding what kinds of RFPs and related criteria that should be included in these RFPs in order to address specific WE&T areas, however, this process relies on the existence of a governing board to review and approve bids of which there are concerns (see concern above).

Many of the EM&V related recommendations, while potentially out of scope, are useful in informing current EM&V roadmap efforts aimed at quantifying WE&T related actions.

| We disagree with the suggestion that the EM&V recommendations are “out of scope.” We believe that the recommendations are consistent with the direction provided by the Commission | Don Vial will expand upon its initial recommendation for the IOUs to develop an evaluation plan that was not fully described in the current draft document. References to higher level policy recommendations will be | The current draft provides some additional bullets for what kinds of issues should be in the IOU’s EM&V plan (p. 99), but does not go far enough. There appear to be some cut and pasted sections after this that may or may not be

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**Energy Division, CPUC - Comments on Draft 2 of the WE&T Guidance Plan**
in D.12-11-015 “...to develop a comprehensive approach to workforce, education, and training for the energy efficiency programs.” As discussed in the Needs Assessment, a comprehensive approach necessarily includes attention to both the supply of energy efficiency workers as well as the demand for energy efficiency workers. Moreover, “energy efficiency programs” are not restricted to the programs funded under WE&T. We also note that one cannot assess the benefits of supply-side initiatives (i.e., initiatives to supply workers with the appropriate energy efficiency skills) without consideration of the demand for these workers. Consistent with this view, these recommendations are not limited to the educational and training programs funded under the heading described in the restructured document per the outcome identified above under the 2\textsuperscript{nd} bullet in the “General Comments” section. related to the EM&V plan but they are too disjointed to tell. Not enough context and linkage is provided. This recommendation should be further flushed out.
| WE&T. |   |   |
Comments from Pacific Gas & Electric Company on Draft 2 of the Guidance Plan

Pacific Gas and Electric (PG&E) appreciates the Don Vial Center (DVC) efforts in developing draft two of the guidance plan. The document has addressed some of our input and there is a large opportunity for DVC to further share its expertise with the IOUs with the guidance document.

Decision 12-11-015 stated;
“Therefore, we require the IOUs, during this transition portfolio, to hire an expert entity to help design a comprehensive approach to the WE&T issues inherent in the energy efficiency portfolios. ... In their compliance filings, the utilities should propose a contract of at least $500,000 in budget, to design a comprehensive approach, with stakeholder consultation, for workforce development efforts to be launched in the 2015 portfolios.” Pg.90

Draft two does not meet this expectation as stated by both PG&E and Decision 12-11-015. PG&E has discussed our expectation for DVC to assist the IOUs by providing expert guidance on how to implement a workforce development program on multiple occasions via verbal and written communication. While we cannot speak on behalf of non-IOU stakeholders we are aware that many support our position that draft two is lacking in many areas. PG&E is an expert with a long history of workforce, education and training with our PowerPathway program as well as energy efficiency program. PG&E acknowledges that we can improve our workforce knowledge and efforts in energy efficiency programs and DVC has the expertise to assist in this area.

PG&E is hopeful that DVC will heed PG&E’s comments and that DVC will seize the opportunity to assist the IOUs in creating an impactful workforce development plan that supports the current regulatory framework, including the Energy Efficiency Order Instituting Rulemaking (OIR) for 2015 which directs the IOUs’ 2015 efforts to be a continuation of 2014 efforts.1

PG&E is exploring workforce inclusion items such as first source language starting with our 3P/GP Direct Install programs in 2015. We will build a workforce roadmap based on broader external and internal stakeholder input as well as learnings from a smaller scale implementation that aligns with the regulatory framework to understand the impacts to our portfolio (including; program participation, budgets, energy savings, and cost effectiveness) versus doing a full-scale rollout. In addition, PG&E will incorporate additional workforce inclusion items in our 2015 ESA filing. The parameters are dependent on the specificity with which items are defined and determined in the final guidance plan; if the guidance plan recommendations are not detailed or specific enough to implement, then PG&E will work with interested stakeholders through the relevant CPUC proceedings to interpret, define and incorporate them into our program plans, in such a way to ensure our programs remain successful.

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1 In R.13-11-005, the Commission stated “This [R.13-11-005] rulemaking may radically change the structure and budget cycles of energy efficiency programs. The Commission does not find it prudent for administrators to spend time and resources planning for programs that may not fit into a new structure” and anticipated that PA’s 2015 portfolios would largely carry forward 2013-2014 programs and budgets, with consideration of select portfolio changes.

Further, the Scoping Memo states “R.13-11-005 generally contemplates continuation through 2015 of the energy efficiency portfolios approved for 2013-14. (Scoping Memo, p. 2)
PG&E’s general feedback in provided below and specific feedback is provided via “comments” in the draft two documents attached.

**General Areas of Support**
- Promoting workforce development and on-going shift toward skills-building instruction.
- Supporting inclusion efforts.
- Increasing collaboration with external stakeholders in a more formal way.
- Supporting workforce standards.
- Implementing process improvements and increasing work quality.

**General Feedback** *(many duplicative from previous comments; these are not in priority order)*
- Overall the document is burdensome to the reader. PG&E believes the document would be more useful to all audiences if the following are addressed;
  - Remove duplicative content. As an example, DVC repeatedly states throughout the document why they have been called upon to provide workforce expertise and we believe this can be sufficiently addressed in the Introduction section. Please streamline the recommendations in the final guidance plan and shorten the overall document as it’s possible to do so.
  - List all recommendations by audience (i.e., IOUs, CPUC, CEC) in separate recommendation sections for each audience. It is hard to find the actual recommendations. Please move all recommendations into a separate section of the plan and provide any and all section references for further details. This should include recommendations made in draft two which may not be found in the recommendations section.
  - Address grammatical errors. PG&E is not commenting on all grammatical errors, typos, missing words/sections, missing references, etc., although has found these to be rampant throughout draft two. Please ensure proper grammar is utilized and that there are no typos, missing words or references, etc., in the final guidance plan.
- As PG&E, the IOUs and the Energy Division have been regularly stating, all recommendations need to be actionable, i.e., to fit within the regulatory framework in which the programs currently operate. If they’re not currently actionable, please remove them from the report or clearly state what analysis is needed in order to make them actionable. From PG&E’s estimation, many of the recommendations fit within this category.
  - The 2015 EE OIR has directed the IOUs’ efforts to be an extension of 2014 efforts. The final guidance plan should recognize that 2015 is an extension year with flat budgets. 2014 is about partnership building and identifying implementation opportunities; 2015 is about continued partnership building, implementation and writing 2016 Program Implementation Plans (PIP), and; 2016 is about PIP implementation.
  - Draft two recommendations do not provide the level of detail required to implement, nor does the draft address impacts to program participation, budgets, energy savings, and cost effectiveness regarding the implementation of the recommendations. Any impacts to these items will impede PG&E’s ability to meet obligations as stated in our 2015 filing.
- “Success” still hasn’t been adequately defined for most of the recommendations. Please specify the tangible metrics illustrative of success for each of the recommendations. “Issuing an RFP” is not a measure of success. What is the intended outcome of the RFP and what is the roadmap to get us to that outcome? Who are the partners critical to that outcome?
• PG&E did not specifically comment on the executive summary. Comments provided are also applicable to the executive summary.
• PG&E does not offer comments on recommendations that are repetitive more than once. Lack of comments should not imply endorsement.
• Draft two spends a significant amount of time restating problems as opposed to identifying solutions. Please rectify this in the final plan. The document will be significantly shorter as a result.
• Proper citations are still lacking. Please follow proper and formal citation protocol. For example; stating the “Needs Assessment” without more specifics is insufficient.
  o PG&E has found a pattern of inappropriate citing, e.g., “report not found,” “quote misinterpreted,” “selective inclusion of text,” etc. While we’ve looked closely at the references in the full report, we did not have the time to do this for the appendices. Please re-review and ensure all references are factual and unbiased.
• Whenever the Needs Assessment is referenced, please be upfront that it was authored by DVC.
• If a statement is DVC’s opinion, please be transparent by stating so. In PG&E’s estimation, this will require a very large percentage of the text to be accompanied by such a disclaimer.
• Please ensure all sections are numbered.
• Draft two makes many assumptions about jobs that need to be filled. What are those jobs and what specific skills are required? Which organizations are providing training where PG&E can infuse its energy efficiency expertise?
• Please keep comments relevant to energy efficiency and to the IOUs’ regulated environment. E.g., please do not reference examples that have nothing to do with the EE environment so have limited relevance.
• More stakeholder discussion and feedback is needed before any commitments can be made around implementation. All key stakeholders impacted need to be part of those discussions.
• PG&E is not commenting on issues under the auspices of the CPUC as this effort is to provide the IOUs recommendations on how to improve our WE&T programs.
• Please ensure the final guidance plan has the following:
  o Estimated implementation lead times for the proposed recommendations.
  o Minimal duplicative content.
  o A glossary of terms.
  o An executive summary which is directly aligned to the guidance plan (and included in the guidance plan). Draft two’s executive summary includes text that is not found in the full report.
  o Budget figures only when drawing comparisons to best practices.
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APPENDICES TO CHAPTER 2

2.A REQUIREMENTS FOR RESOURCE PROGRAMS

Draft in progress

2.B EVIDENCE OF WORK QUALITY AFFECTING ENERGY SAVINGS

Numerous studies have documented a critical “gap” between energy efficiency programs’ expected savings and the savings actually realized when evaluated. This gap in savings has grown over the past few cycles of energy efficiency programs in California. In 2009, the most recent program cycle for which there is complete data on reported vs. evaluated savings, evaluated MW savings were between 51% and 63% of reported savings.\(^1\)

At the measure level, a recent evaluation of four CA IOU program evaluations documented similar gaps in savings in 129 commercial, public buildings, and industrial projects conducted from 2006-2008. The program evaluator reported realization rates by measure type, finding average realization rates of 40%-105% depending on the measure, with 9 of 12 categories of measures below 90%.\(^2\)

Evaluation studies seek to verify that energy efficient technologies were installed and are producing savings and that the savings are directly attributable to the program intervention. These and other “gap” studies do not generally disaggregate data in a way that can separate quality concerns from other reasons for a gap in savings, like improper baseline selection and erroneous assumptions in engineering models. Some studies do suggest that the quality of installation directly leads to gaps in savings.\(^3,4\) In their 2006-2008 evaluation report, Energy Division attributed this growing gap to slow incorporation of evaluated savings estimates into next-cycle project estimates, and to possible diminishing returns in incremental benefits due to a rising baseline efficiency level amongst consumers.\(^5\) These studies underscore the importance of investigating all the reasons, including work quality, for this gap in order to identify effective ways of closing the gap.

Although there is no portfolio-wide assessment of the scale of the quality problem, numerous studies have specifically documented the negative impact of poor quality work in key sectors such as residential and commercial HVAC, commercial lighting, weatherization, and residential “whole house” measures, which account for most of the energy use in buildings. The literature also describes the breakdown of

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3 Ibid.
the solar water heater technology diffusion efforts of the 1980s, which failed as a direct result of challenges with poor quality installation. Many believe poor quality installations stopped the adoption of this technology for a generation. Poor quality work can derail market transformation and technology diffusion efforts for decades.

### HVAC

The issue of poor quality installation is particularly dramatic in the small commercial and residential HVAC sector. A study for the California Energy Commission reported that 30 to 50 percent of new HVAC systems and up to 85 percent of replacement systems were installed incorrectly, resulting in substantial unrealized energy savings. The study also found that failing to ensure quality installations or maintenance of cooling systems resulted in a 20 to 30 percent increase in the peak electricity needed by such systems.\(^6\) These in-field results are consistent with laboratory tests, which demonstrate that installation and maintenance faults in the HVAC sector can reduce expected energy efficiency performance by more than 76 percent.\(^7\)

The industry has recognized the issue of quality installation as well. A draft report from the Workforce Education and Training Subcommittee of the HVAC Quality Installation/Quality Maintenance Committee of the Western HVAC Performance Alliance, an organization established in 2009 to provide input to the IOUs in support of energy efficiency goals, concluded that “poor installation techniques and improper design have profoundly negative effects on the equipment operation and cancel out the benefits of the Seasonal Energy Efficiency Ratio (SEER) ratings or efficiency.”\(^8\) Similarly, the working group of HVAC industry professionals convened by the CEC to draft the Strategic Plan to Reduce the Energy Impact of Air Conditioners found that increases in the energy efficiency of air conditioners would not significantly increase energy savings unless quality control problems were addressed.\(^9\)

These quality control challenges led to lower-than-expected savings results in the 2006-2009 HVAC installation and maintenance programs in California.\(^10,11\) As a result, the California Public Utilities Commission’s Energy Division has recognized that poor installation quality is a primary barrier to the realization of energy efficiency savings in the HVAC sector. They have dedicated Evaluation Measurement & Verification resources to better understand the scope of these issues in the 2013-2014

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\(^8\) WE&T Subcommittee of the HVAC QI/QM Committee of WHPA, WE&T Working Group Draft Reports, April 2012, p. 6


program cycle, including contractor surveys and field observations. Research from one of these field studies found that technicians participating in a Commercial HVAC Quality Maintenance program “lack tools, training, and procedures to correctly identify faults and perform repairs to achieve energy savings,” with 92% of technicians exhibiting these types of issues. Field observations found gaps in knowledge of how to diagnose faults and implement repairs to save energy, and found that technicians often do not test, diagnose, or repair all of the deficiencies in a system. Significantly, the report states that the “programs assume there are no significant industry issues with respect to technicians achieving the performance baseline and improving energy efficiency,” indicating possible overestimation of savings achieved by programs where quality issues are a factor.

Installation quality affects the energy use of HVAC systems. In the commercial HVAC industry, up to 40 percent of energy costs can be saved by sizing equipment properly and selecting equipment with high efficiency ratings, compared to conventional installations. Energy efficient installation practices such as proper duct installation and sealing can result in energy savings up to 11 percent. A properly commissioned HVAC system can use up to 20 percent less energy by correcting installation and operation problems, and optimizing system controls. Similarly, a CEC working group of HVAC industry professionals estimated that higher quality installation and maintenance of commonly installed air-conditioning equipment could save up to 1,100 Megawatts by 2020.

It is also significant to note that the IOUs have invested more than 10 million dollars in HVAC technician training over the last several program cycles. In fact, the 2010 impact evaluation of the IOU WE&T programs estimates that 44% of HVAC market actors in the state of California (usually defined to include contractors, architects, design specialists) have participated in IOU energy center classes. As stated earlier, training alone is not enough to insure work quality improvements.

**LIGHTING AND LIGHTING CONTROLS**

Research and expert interviews provide evidence that improper installation of advanced lighting control systems has undermined their widespread adoption in the market. According to one lighting subject matter expert, “the anecdotal data overwhelmingly shows that poor quality installation is a widespread

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14 Guidelines for Energy-Efficient Commercial Unitary HVAC Systems, prepared for Consortium for Energy Efficiency, revised Jan 2001, p. 2; see citation 15b
15 *Ibid*, see citation 6b
16 *Ibid*, see citation 18
problem in the lighting sector”. An evaluation of Title 24 acceptance testing effectiveness found that automatic daylighting controls failed in 7 out of 7 tests, and occupancy sensors failed in 2 out of 3 tests. All of the failures were due to design, installation, or calibration issues. A study of the commercial lighting sector demonstrates that when properly installed, lighting controls reduce commercial buildings’ energy use for lighting by 24–38%, but that only 30% of the market uses these advanced controls. They attribute this to the relative shortage of general electricians with the skills and certifications needed to properly install advanced lighting controls in California.

The California IOUs validated this finding in a recent response to Energy Division questions, where they noted that “over the years, IOU incentive programs for lighting controls have had relatively low participation rates, in large part due to the poor performance of the control systems which has been linked to substandard installation, inadequate commissioning, and lack of proper maintenance. As a result of the poor performance, many customers were not willing to invest in the systems — even with an incentive.” Interviews with IOU staff for this project reiterated this finding.

WEATHERIZATION

Office of Inspector General audit reports of the Weatherization Assistance Program, funded through the Department of Energy and implemented at the state and local level by community action agencies, identified issues with “the poor quality of weatherization services, inspections, and re-inspections.” In Michigan, more than 1/3 of the 412 homes weatherized required “call backs” to address faulty workmanship even after final inspection. They note that “the importance of identifying underperforming contractors and commonly recurring problems cannot be overstated.” Similar challenges were documented in California (Orange County), Illinois, Ohio, New York, Tennessee, Missouri, and West Virginia.

19 Interview with Doug Avery (February 20, 2013)
22 A. 12-07-001-04. SCE WE&T Program Implementation Plan, 23 May 2013, pgs 384-386
WHOLE HOUSE MEASURES

Recent evidence suggests work quality issues in the whole house sector as well, including safety and energy performance gaps. An interim evaluation of the Energy Upgrade California (EUC) program found frequent safety issues and recommended that future iterations of the program provide ongoing safety training to contractors. They noted that correct installation of insulation, CAZ (combustion appliance zone) testing, carbon monoxide testing, and identification of possible asbestos in ducts were areas missed by contractors. The evaluation also found inaccurate assessment of insulation coverage and quality, poor specification of insulation R-values, problems with air-sealing, and inaccurate duct leakage testing.

SOLAR WATER HEATERS

An historical example, solar water heater (SWH) policies in California, illustrates the deleterious long-term effects of poor quality installation. A number of studies document the history of the ‘CPUC Demonstration Project’ effort to push for wider adoption of this technology in the 1970s and 1980s, finding that the poor quality of SWH installations was largely responsible for the collapse of the industry for the next two decades, with sales dropping from $1 billion per year in 1982 to $30 million per year in the late 2000s. The CPUC Demonstration Project corresponded with well-publicized “abusive sales and marketing techniques” by some installers, like excessively high bids and “lifetime warranty” gimmicks that guaranteed service for the lifetime of the company, not the system. Anecdotal claims suggest that about one-half of SWH systems were not functioning within five years, and market data demonstrates that the SWH industry in California has yet to recover. The failure of this technology diffusion effort

is well known within the industry and can guide new market transformation efforts on the importance of high quality workmanship early in a new market launch.\textsuperscript{35}

**BUILDING CODE COMPLIANCE**

Work quality issues are also found in new residential and commercial construction. There is a well-documented history of non-compliance with building codes in both sectors, which occurs when workers do not build in accordance with the code as adopted. Evidence from the past 30 years suggests that building code compliance rates vary widely, with a recent literature review suggesting that compliance rates range from “0% for residential buildings in New York to a high of 100% for residential buildings in Oregon.”\textsuperscript{36} A key barrier to code compliance is the lack of knowledge from designers, builders, and construction workers regarding the most recent codes and how to implement them. Proper installation of equipment is buttressed by “acceptance testing” in codes like California’s Title 24, which helps to ensure that building systems are functioning in conformance with the code. A recent site evaluation of eight contractors found that approximately half the acceptance tests could not be performed without a moderate or substantial level of coaching, and that the contractor’s knowledge of the tests exceeded their actual ability to perform the tests.\textsuperscript{37} Problems with code compliance pose a particular challenge for IOU resource programs, in which incentives for energy efficiency must only be given for technologies or practices that exceed currents codes and standards. This points to a need for higher workforce standards within the resource programs, both for installers and for inspectors, than are required by code.

**2.C IMPACT OF STANDARDS ON PROGRAM PROJECT COSTS AND PARTICIPATION RATES**

To the concern shared by the IOUs and some ratepayer advocates about workforce standards imposing higher costs than benefits to their programs, there are simply not enough examples on the use of workforce standards in the energy efficiency sector to evaluate their impacts. Moreover, we have not found robust research methodologies that can evaluate standards in the abstract, before they are applied in the field and can be assessed under real world market conditions.

However, there is ample research on the impacts of workforce standards in public works construction and on best value contracting across a wide range of construction project types. Because California state

\textsuperscript{35} Hack, Sebastian, 2006. *International Experiences with the Promotion of Solar Water Heaters (SWH) on Household-level*, Prepared for Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH.
\textsuperscript{37} Tyler, Matthew, John Farley and Eliot Crowe. Evaluation of Title 24 Acceptance Testing Enforcement and Effectiveness. September 2011. PECI.
and federal law requires several types of standards (skill and job standards, prevailing wage standards, and contractor prequalification) for work funded by government dollars for public works construction, we can call upon this research as a close substitute for research that specifically addresses EE/DSM. Given the particularly stringent labor standards required in public works, this research also provides an outer bound on the impacts on participation rates and costs.

**COSTS**

Significant research has investigated the impacts of public works standards on construction costs. This includes studies on the impact of project labor agreements (which include apprenticeship standards, contractor pre-qualification standards and prevailing wages) and studies on the impact of prevailing wages by themselves. These studies compare the costs of construction with and without standards, using large data sets of construction projects and controlling for other factors that affect costs. The vast majority of the studies find no statistically significant difference in the costs between projects with and without standards. For example, comprehensive research on the impact of project labor agreements on school construction costs in Massachusetts concluded that there was considerable evidence that project labor agreements did not impact costs. Another study on project labor agreements in New York State found no evidence of increased construction costs and identified direct and indirect cost savings potentially attributable to project labor agreements.

The Economic Policy Institute (EPI) completed a comprehensive literature review on the costs of prevailing wage in 2008, and found no evidence of a cost impact associated with the implementation of standards. The two studies that did find higher costs associated with prevailing wage failed to account for the variation in building size and project complexity. The EPI study suggested a number of reasons why a compensation standard like prevailing wage does not result in higher costs. These reasons include:

- Labor costs are not the dominant costs in government construction contracts. Even including benefits and payroll taxes, labor costs are roughly 20 to 30 percent of construction contracts, according to the Census of Construction. For example, if labor costs are 25 percent of total costs and prevailing wage rules raise wages by 10 percent, the impact on contract costs would be no more than 2.5 percent. Thus, even if there is an increase in contract costs, it is likely to be small.

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38 PLA study cites
40 Kotler, Fred B. (March 2009). Project Labor Agreements in New York State: In the Public Interest. Cornell University School of Industrial and Labor Relations.
• Higher wage costs might be offset through “factor substitution,” i.e., the substitution of more expensive labor with, say, less-expensive materials, which shows that worker wages are only one of the avenues contractors can use to win project bids.

• Higher wages might be offset by a rise in productivity. Prevailing wages can attract better-skilled, more productive workers, or firms may rely on higher managerial productivity or invest in labor-saving technologies to offset higher labor costs43.

• Contractors not subject to prevailing wage laws might retain the money they save in wages as higher profits rather than passing the savings on to the government. Alternatively, contractors paying prevailing wages might absorb the higher wage costs, paying for them out of their profits rather than passing them on.44

Arizona State University’s Performance Based Information Research Group has tracked hundreds of projects across 41 industries that have used their best value contracting tools PIPS and PIRMS, and finds consistent cost savings and added value over traditional delivery models.45

ESTABLISH A WAGE FLOOR FOR ESAP, DIRECT INSTALL, AND THIRD PARTY PROGRAMS

Compensation standards are commonly used in to ensure a living standard for workers but also have a positive effect on productivity and quality. The best practices document in Appendix 2A provides a detailed summary of various compensation standards utilized in energy efficiency programs throughout California and in other states. Relevant examples include:

• The Sierra Nevada Energy Watch, an energy efficiency joint-program with PG&E and the Sierra Business Council, required that contractors pay their electricians $35/hr and apprentices $17/hr.46

• Trainees of the Los Angeles Department of Water & Power’s (LADWP) Utility Pre-Craft Trainee Program earn an hourly wage of $16 per hour plus benefits.47


44 Belman and Voos cite an unpublished 1990 study for the Arizona District Council of Carpenters. The authors of the report found that, of the $271,000 to $350,000 saved in wages and benefits, only $100,000 was passed on to the contracting agency.


46 The prevailing wage rate is the basic hourly rate paid on public works projects to a majority of workers engaged in a particular craft, classification or type of work within the locality and in the nearest labor market area (if a majority of such workers are paid at a single rate). (Source: http://www.dir.ca.gov/OPRL/FAQ_PrevailingWage.html)

47 http://laborcenter.berkeley.edu/greenjobs/training_future13.pdf
Workers participating in Portland, Oregon’s Clean Energy Works Program pilot program earned not less than 180% of the state’s minimum wage. The Community Power Works Program in Seattle instituted a tiered wage system comprised of a base rate of $21.50 per hour (plus $2.50 in wages or benefits), and a lower rate of $15.50 per hour, plus $2.50 in wages and benefits.

Stakeholders have expressed concern over whether or not the IOUs can set wage standards for the EE/DSM programs. The CPUC regularly considers wages for utility construction employees in its General Rate Proceedings, and can thus set standards for contract workers as well. Recently, Decision 12-011-051 addressed a Total Compensation Study, which is used by the CPUC to determine a level of compensation that will “ensure that ratepayers are not burdened with paying compensation levels beyond that which is necessary for [a utility] to provide safe and reliable service at reasonable rates.”

The CPUC should focus initial efforts for establishing a wage floor on the ESAP and Direct Install programs, as they are programs in which the IOUs have a direct contracting relationship with the contractor, and because anecdotal evidence suggests that these jobs tend to be lower paid. The wage floor should apply upon a worker’s satisfactory completion of training, and should include an additional amount for health and welfare benefits if not provided by the employer or incorporated into the wage standard. The wage floor should vary by region, as there are variations in the cost of living throughout the state.

As one standard to consider, the California Budget Project releases wage calculations that take into account the minimum costs needed for a household of a particular size to be self-sufficient (including the cost of healthcare) in each county in the state. Below is an example of potential hourly wage floors by family size. The hourly wage for a single adult with no children is likely most comparable to current ESAP wages, but is not, by definition, a “family-supporting” wage. Whatever scale is chosen should be reviewed regularly and adjusted for inflation.

Table 2C.1: California Budget Project Wage Calculations, Based on County and Family Size

<table>
<thead>
<tr>
<th>County</th>
<th>Single adult, no children</th>
<th>2 adult earners + 2 children (hourly rate per adult)</th>
<th>1 adult earner + 1 adult non-earner + 2 children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles</td>
<td>$16.42</td>
<td>$20.89</td>
<td>$31.19</td>
</tr>
</tbody>
</table>

49 The California Budget Project is a nonprofit, non-partisan organization that engages in independent fiscal and policy analysis and public education with the goal of improving public policies affecting the economic and social well-being of low-and middle-income Californians.
50 Hourly wage calculated by taking annual total and dividing by 2,000 hours. Annual total includes health care costs.
The CPUC should also consider increasing program budgets to assist non-profit and small, minority, or women-owned contractors with any increased costs.

Contractors, firms, and other stakeholders who are accustomed to “business-as-usual” may argue that increasing wages will cut into already slim profit margins. The Don Vial Center economists calculated the costs to the ESA program of a $14-15 wage floor, and determined this would only raise program costs by 1-2%. See Appendix 2H for details. Additionally, Sierra Nevada Energy Watch, a PG&E Local Government Partnership implemented by the Sierra Business Council has required that contractors pay at least $17/hr to apprentices and $35/hr to licensed electricians. Even in its first three years, the program exceeded its savings goals, and maintained a high level of cost effectiveness.

### PARTICIPATION RATES

Similarly, studies show no adverse effects of prevailing wage requirements on participation rates. A recent study compared public works projects in five San Francisco Bay Area cities with and without prevailing wage laws, providing the first empirical evidence examining the effects of prevailing wage regulations on contractor participation and bidding behavior. The data show that the presence of prevailing wage regulations does not decrease the number of bidders nor alter the bidding behavior of contractors relative to the engineer’s estimate of the value of the project. Furthermore, the presence of prevailing wage regulations did not discourage the participation of non-union contractors nor reduce their chances of winning work in a heavily unionized area during a busy time period. The Sierra Nevada Energy Watch program indicated no apparent adverse effects of their workforce standards on participation rates. In fact, interest among local contractors has flourished, and Sierra Business Council staff believe they are able to attract and retain more reliable and higher performing contractors because of the wage requirements. Good contractors lead to happy customers, and customer participation has also appeared unimpeded by the higher wages.

### EVIDENCE ON THE IMPACT OF STANDARDS USED IN ENERGY EFFICIENCY PROGRAMS

In the absence of abundant studies on the costs and benefits of labor market standards focused specifically on energy efficiency work, the studies cited in the last section provide good indicators on the likely impacts would be because both public works and energy efficiency work is largely construction industry work.

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The reason there are few studies related to standards in energy efficiency delivery in particular is twofold. First, few energy efficiency programs have required job, skill, or contractor standards, and the rigorous studies cited require comparisons of projects with and without standards. Second this is an understudied area of research. Compared to research on technologies and consumer behavior, there is not much research on the impact of business and labor market characteristics on the energy savings gap. The empirical research on the costs and benefits of labor market standards in energy efficiency is fairly anecdotal and covers only a few of the many possible standards. Examples of research are outlined below.

In the HVAC sector, recognizing existing work quality problems, a CEC working group recommended increasing the fraction of technicians trained and certified from 10 percent (in 2008) to 100 percent by 2020. A preliminary NATE study shows that systems installed by certified technicians achieve 10 percent better field-adjusted energy efficiency compared to uncertified technicians.

Since standards are intended to lead to work done right the first time, standards can also reduce the cost of maintenance to the service provider. According to one study, projects performed by a NATE-certified HVAC contractor generate 12.9 percent fewer callbacks than projects performed by an uncertified contractor. Direct costs of a callback include dispatching a service vehicle, paying a technician, and purchasing materials. Indirect costs include the opportunity cost of missing out on a new job that would generate revenue and the damage done to a contractor’s reputation for poor quality work.

When maintenance is necessary, worker certification helps to ensure high quality work. A covert field study of 13 technicians performing maintenance duties observed that certified technicians performed more maintenance and service tasks than uncertified technicians, and executed them correctly more often.

In some cases, standards such as skill certification requirements can generate cost savings for employers and consumers. For example, the NATE study referenced above found that NATE-certified HVAC contractors cost 6.8 percent less than projects performed by an uncertified contractor due to higher billing efficiency by certified contractors.

Another example of a positive benefit-cost ratio for standards is presented in the case of the CALCTP training and certification program for advanced lighting controls in commercial buildings. Evidence from

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52 Cite new carl blumstein paper
56 Contractor & Technician Behavior Study, EMI, 9/14/12, p. 62, re: contractor and technician knowledge and use of ASHRAE/ACCA 180, ACCA 4 and 5 standards
six pilot studies indicates customer cost savings in the range of 10 to 30 percent for the installation of advanced lighting controls by a CALCTP-certified contractor versus a non-certified contractor.\footnote{Office of the Future Landmark Square Pilot Results (Design and Engineering Services, SCE, October 2010; Office of the Future 25% Solution Assessment (Emerging Technology Solutions, December 2010); Advanced Office Lighting Systems (Energy Research and Development, SMUD); High Efficiency Office, Low Ambient/Task Lighting Pilot Project (Large Office) Heschong Mahone Group; Low Ambient/Task Lighting Pilot Project (Small Office) Emerging Technologies Associates; Advanced Lighting Controls System Assessment (Emerging Technology Associates)} Lower costs are attributed to CALCTP training, which enables more accurate bids, faster installation, and higher initial system performance as a result of greater familiarity and expertise with advanced lighting controls.\footnote{Brookfield Properties, SCE Engineering Services for Case Study} The IOUs seemed to agree with the value of CALCTP with this statement found in the Program Implementation Plans filed in July 2012, “because CALCTP training translates into high performance operation and maintenance, operational data on CALCTP installed systems, to date, indicates an extremely low rate of installation difficulties, callbacks, re-works, changes, etc.”\footnote{Southern California Edison, 2013-2014 Energy Efficiency Plans, July 2012, p.344}

Another example, in the IOU realm, is the Sierra Nevada Energy Watch (SNEW) program run by the Sierra Business Council and serving 14 counties of the Sierra Nevada region. SNEW is the only IOU program that we found that has a requirement that participating contractors pay a specific wage standard. In nine counties, SNEW hires local staff and local contractors to run an energy efficiency program for small businesses, local governments, special districts, and non-profits.\footnote{Southern California Edison, 2013-2014 Energy Efficiency Plans, July 2012, p.343} The program requires contractors to pay all employees a living wage of at least $35.00 per hour for licensed electricians and at least $17.00 per hour for apprentices for time spent on SNEW work.\footnote{Sierra Nevada Energy Watch Contractor Letter (February 26, 2010). This rate is based on prevailing wage tables for the five original SNEW counties (Alpine, Calaveras, Mariposa, Sierra, and Tuolumne) and “Inside Wireman, Technician” classification.} “The wage standard helped increase program effectiveness because it attracted solid, reliable contractors that delivered timely installations, fewer glitches, happier customers, and better partnerships in the community,” said former Director of Program Development Betony Jones.\footnote{Interview with Betony Jones, former Program Manager, Sierra Business Council (February 1, 2013)} The program offset higher wages by lowering other costs, such as ordering equipment directly from manufacturers, which also helped control quality and avoided double dipping into equipment incentive programs.\footnote{Ibid.}

While it is not possible to isolate the impact of this wage standard apart from overall program design, on energy savings or cost effectiveness, the SNEW program has been successful. In 2012 SNEW had a TRC of 1.55, ranking 5\textsuperscript{th} out of the 18 local government partnerships operating in the PG&E service area.\footnote{Fourth Quarter 2012 PG&E Government Partnership Report} The program also exceeded its energy savings goal in the 2010-2012 program cycle by 30 to 35 percent.

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\footnote{Office of the Future Landmark Square Pilot Results (Design and Engineering Services, SCE, October 2010; Office of the Future 25% Solution Assessment (Emerging Technology Solutions, December 2010); Advanced Office Lighting Systems (Energy Research and Development, SMUD); High Efficiency Office, Low Ambient/Task Lighting Pilot Project (Large Office) Heschong Mahone Group; Low Ambient/Task Lighting Pilot Project (Small Office) Emerging Technologies Associates; Advanced Lighting Controls System Assessment (Emerging Technology Associates)}

\footnote{Brookfield Properties, SCE Engineering Services for Case Study}

\footnote{Southern California Edison, 2013-2014 Energy Efficiency Plans, July 2012, p.343} and PG&E Reply Comments 9/21/12, Attachment B.

\footnote{Southern California Edison, 2013-2014 Energy Efficiency Plans, July 2012, p.344.}


\footnote{Sierra Nevada Energy Watch Contractor Letter (February 26, 2010). This rate is based on prevailing wage tables for the five original SNEW counties (Alpine, Calaveras, Mariposa, Sierra, and Tuolumne) and “Inside Wireman, Technician” classification.}

\footnote{Interview with Betony Jones, former Program Manager, Sierra Business Council (February 1, 2013)}

\footnote{Ibid.}

\footnote{Fourth Quarter 2012 PG&E Government Partnership Report}
According to Steve Frisch, Executive Director of the Sierra Business Council, the program’s biggest metric of success was expansion from five to nine counties in a hard-to-serve region of the state.68

The Seattle 2030 District-Community Power Works program incorporates standards through a partnership with Emerald Cities, an organization that establishes workforce standards and reporting requirements through Community Workforce Agreements developed with each grant recipient. Contractors and subcontractors must compensate workers at the Davis Bacon commercial prevailing wage rate for projects funded through the American Recovery and Reinvestment Act (ARRA). City and state business license requirements apply, along with insurance requirements. Contractors must also provide meaningful subcontracting opportunities for minority- and women-owned firms.69

In Seattle, standards did not increase the cost of the first project completed with a Community Workforce Agreement (CWA). The project exceeded the 15 percent goal for apprenticeship utilization, with over one-third of construction hours performed by apprentices at an average wage of $21.52 per hour.70 The balance was performed by journey level workers at an average wage of $37.42 per hour.71 The total construction labor represented only 10.6 percent of the total project cost, well below the average labor cost of 20 to 30 percent.72 According to Steve Gelb, Local Director of Emerald Cities Seattle, “the concern that CWAs increases the cost of projects is probably not true at all due to the use of apprentices”.73 New projects under the CWA will be completed soon, providing valuable data for comparison.

While the above research is not definitive on the impacts of workforce standards on program costs and participation rates, we found no credible, countervailing evidence that standards raise costs that are not offset by benefits. This does not imply that any standard, no matter how stringent, would bring benefits that outweigh costs, but it does suggest that the standards that have been adopted by public policy or in the market place have not presented the problems feared.

2.D CONTRACTOR REQUIREMENTS

Contractor Requirements

1. Licenses: The firm and its employees have all valid, effective licenses, registrations or certificates required by federal, state, county, or local law, including, but not limited to, licenses,
registrations or certificates required to: (a) do business in the designated locale; and (b) perform the work it seeks to perform.

2. Bonding and Insurance: The firm meets the bonding requirements as required by law or contract specifications and any insurance requirements, as required by applicable law or contract specifications, including general liability insurance, workers compensation insurance and unemployment insurance.

3. Wage and Labor Laws: The firm pays current wage rates and benefits as required by law. No labor law violations recorded by the state Department of Industrial Relations (DIR).

4. Permits: The firm has complied with all applicable permitting requirements.

Additional Pre-Qualification Requirements

1. Skilled workforce: 60% of jobsite workforce comprised of journey-persons who completed a registered apprenticeship program in California or are currently enrolled in such a program, or provide other proof of skilled workforce.\(^{74}\)

2. OSHA: 60% of jobsite workers should be OSHA 10-hour General Industry Safety and Health Certified and at least one jobsite worker should be OSHA 30-hour General Industry Safety and Health Certified

3. History of Performance: (a) documented history of full compliance to state, health, safety and work standards and (b) list of five similar past projects and references for five different projects

2.E RECOMMENDED IMPROVEMENTS TO PROGRAM CYCLE

1. **Emerging Technology**: For emerging technologies and new measures tested in field demonstration projects, identify and document contractor competencies and worker skills/credentials as a basis for considering program requirements. Problems with initial installations and how problems were resolved should be consistently documented in reports posted for these demonstration projects.

2. **Work Papers**: Require work papers to identify the minimum contractor requirements and worker skills needed for installation and/or maintenance of measures at a quality consistent with the assumed energy savings. Information on measure costs should explicitly address the time required as well as the specific skills required to achieve the assumed savings. More specifically, if, as is the case for many deemed measures, energy use and savings estimates are based on assumptions of 100% correct installation, the work papers should document the contractor competency and worker skills needed consistent with those assumptions.

3. **Program Implementation Plans**: Modify Program Implementation Plans (PIPs) to specify how program requirements will increase the demand for and ensure quality installations. Initial plans should consider the projected benefits and costs of alternative interventions (e.g. certification requirements, training opportunities, and quality assurance/verification) prior to developing a plan,

\(^{74}\) The IOUs should make this determination on the basis of explicit and transparent linked to the technical specifications of the particular measures involved.
which includes one or more of the identified approaches. This could replace the current “WE&T integration” section of PIP templates.

4. Information from di-iii above should be part of the documentation reviewed by the WE&T advisory committee and staff as they prioritize WE&T investments (see Supply-side recommendations). The results should be summarized and documented in presentations and/or reports as judged appropriate.

2.F EXAMPLES OF U.S. ENERGY EFFICIENCY PROGRAMS REQUIRING CERTIFICATION

Table 2F.1: Examples of U.S. Energy Efficiency Programs Requiring Certification

<table>
<thead>
<tr>
<th>Incentive Offering</th>
<th>Certification or Standard</th>
<th>Required by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Home Performance &amp; Financing</td>
<td>BPI Firm Accreditation (Building Performance Institute) BPI Building Analyst and RESNET HERS</td>
<td>NYSERDA; 75 SMUD; 76 Energy Upgrade CA</td>
</tr>
<tr>
<td>Residential New Construction</td>
<td>Pre-Qualification and ENERGY STAR Partner participation</td>
<td>NYSERDA 77</td>
</tr>
<tr>
<td>Solar</td>
<td>Solar NABCEP Certification (North American Board of Certified Energy Practitioners)</td>
<td>NYSERDA</td>
</tr>
<tr>
<td>Solar Thermal</td>
<td>Pre-Qualification based on: Solar Thermal NABCEP certification or nationally accredited Solar Thermal training or Solar Thermal training provided as part of an accredited apprentice training program or its equivalent and demonstration of experience in installing systems. All participating Eligible Installers must become NABCEP certified within two years of becoming an Eligible Installer.</td>
<td>NYSERDA</td>
</tr>
<tr>
<td>Advanced Lighting Controls</td>
<td>Certified Lighting Controls Acceptance Test Technician (CLCATT) or CALCTP-AT</td>
<td>California Energy Commission Title 24 - Acceptance Testing for</td>
</tr>
</tbody>
</table>

2.G BEST PRACTICES FOR WORKFORCE INCLUSION

OVERVIEW

This memo describes current IOU practice in promoting inclusion in its contracting processes (“demand side”) and also outlines examples of inclusionary practices at other agencies and organizations.

Inclusion has three aspects: a) ensuring that people from diverse and disadvantaged backgrounds have entry into jobs or contracting opportunities; b) ensuring that people from low-income and disadvantaged backgrounds have access to family-supporting wages; and c) ensuring that workers entering the field at the lowest rung have identified pathways to advancement. In each case, there are strategies that the IOUs can adopt to achieve successful outcomes.

Where diversity and a pathway to a family-supporting career are lacking as a result of market forces, a successful inclusionary strategy requires intervention on both sides of the hiring equation. On the “supply side,” diverse or disadvantaged jobseekers need to be reached out to and adequately prepared to meet the requirements of the job. This is the responsibility of community organizations, schools, and training programs. On the demand side, employers need to build in mechanisms that incentivize and/or require inclusionary hiring and sufficient wage floors in their own human resources practices and in the practices of their contractors and subcontractors.

The purpose of this memo is to identify programs that have been adopted by governmental and institutional organizations to achieve inclusion (in all three aspects) in projects with similar workforce and contracting needs to those of the California IOUs. A brief overview is offered below, and more detailed descriptions of each program are in the appendix.

CURRENT IOU PRACTICE IN ADDRESSING INCLUSION

The IOUs have several requirements and partnerships that address the issue of inclusion. General Order 156, Assembly Bill 1393, Sierra Nevada Energy Watch, and the Southern California Regional Energy Network are four such examples that we have identified.
General Order 156 requires the larger investor-owned utilities to increase contracting opportunities for woman-, minority-, and service-disabled veteran-owned businesses (WMDVBE) by setting procurement goals for contracts and monitoring and reporting on outcomes. Since the requirement was adopted in 1988, this program has been implemented very successfully by most of the IOUs, achieving 20% WMDVBE contracting in some cases. Assembly Bill 1393 establishes criteria for competitive bidding of contractor services to implement the Energy Savings Assistance Program. Among the criteria are considerations of the bidder’s ability to employ local residents, provide job training, and generally benefit the local low-income communities in which ESAP is deployed.

Both of these programs promote employment of a diverse workforce, as WMDVBEs and community-based organizations often hire women, people of color, and jobseekers with barriers to employment. However, they do not address the two aspects of inclusion related to family-supporting wages and access to career ladders; in fact, the ESAP jobs in particular are generally low-wage and low-skilled.

Recently, San Diego Gas and Electric and the Southern California Gas Company adopted “Job Creation” and “Source” language to insert in their third-party contracts. The contract clauses require contractors to self-report on the number of jobs created as a result of a contract with the utility and to notify the utility of upcoming job opportunities. Since this is a new initiative, the utilities do not yet have outcomes to report.

The Sierra Nevada Energy Watch program is a partnership between Pacific Gas and Electric and the Sierra Business Council serving Sierra Nevada communities in PG&E territory. The program developed many innovations, including local contracting and hiring, contractor training and capacity-building, a wage floor for workers, and centralized equipment purchasing, all of which built trust with customers and increased energy efficiency outcomes for projects in the program.

Currently, the County of Los Angeles is developing a pilot program to incorporate workforce inclusion and wage standards in its Regional Energy Network pilot program. The program design is still in early stages, but there are plans to include a community workforce agreement to mandate pipelines for local, disadvantaged workers to well-paying jobs created by the program.

MODELS AND BEST PRACTICES FROM OTHER ORGANIZATIONS

The models and best practices have been organized into categories according to the type of intervention that addresses the three aspects of inclusion described above.

A. INCLUSION REQUIREMENTS IN INDIVIDUAL CONTRACTS

Inclusion requirements in individual contracts ensure that a contractor receiving a certain level of funding from an organization opens jobs to workers from prioritized categories (“targeted workers”). The requirements are stated as contract terms. These kinds of requirements, often including a project labor agreement, are best suited for larger or bundled projects. Table 2G.1, below, shows the scale of work that triggers these requirements for different agencies.
### Table 2G.1: Comparison of Thresholds for Targeted Hire Requirements

<table>
<thead>
<tr>
<th>Program</th>
<th>Type of projects covered</th>
<th>Threshold to trigger targeted hire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Housing and Urban Development Act, Section 3</td>
<td>Housing construction, rehabilitation, or other public construction</td>
<td>Projects funded by Public and Indian Housing programs or by &gt;$200K of Housing and/or Community Development Assistance</td>
</tr>
<tr>
<td>California High Speed Rail</td>
<td>High speed rail construction</td>
<td>All construction contracted by the Authority (includes PLA&lt;sup&gt;79&lt;/sup&gt;)</td>
</tr>
<tr>
<td>San Francisco Local Hire Ordinance</td>
<td>Public works or improvement projects</td>
<td>Projects &gt; $400K</td>
</tr>
<tr>
<td>Richmond Local Employment Program&lt;sup&gt;80&lt;/sup&gt;</td>
<td>Public works or service contracts or city subsidy</td>
<td>Public works/service contracts/city subsidies of $100K+</td>
</tr>
<tr>
<td>Los Angeles Community Redevelopment Agency</td>
<td>Public improvements and private development projects</td>
<td>Contracts for public improvement of $500K+ (includes PLA); private development projects with at least $500K in CRA investment.</td>
</tr>
<tr>
<td>Los Angeles Public Works Department</td>
<td>Public works projects on a 5-year public infrastructure list or as designated by the Board</td>
<td>All projects (includes PLA)</td>
</tr>
<tr>
<td>Los Angeles Unified School District</td>
<td>New construction, rehabilitation, capital improvement</td>
<td>Prime multi-trade contracts &gt; $175,000; prime specialty contracts &gt; $20,000 (includes PSA)</td>
</tr>
<tr>
<td>Los Angeles County Metropolitan Transportation Authority</td>
<td>Transportation projects</td>
<td>Projects with a life-of-project value of $2.5M (includes PLA)</td>
</tr>
<tr>
<td>San Diego Unified School District Project Stabilization Agreement&lt;sup&gt;81&lt;/sup&gt;</td>
<td>Projects funded by Propositions S and Z</td>
<td>Projects of $1M+ (includes PSA)</td>
</tr>
<tr>
<td>RENEW Cleveland/Cuyahoga&lt;sup&gt;82&lt;/sup&gt;</td>
<td>Municipal building EE retrofits</td>
<td>RENEW contracts with over $10,000 estimated labor costs</td>
</tr>
<tr>
<td>GO 156 (diverse contractor procurement goals)</td>
<td>All procurement</td>
<td>To be implemented by all IOUs with gross annual revenues &gt; $25M</td>
</tr>
</tbody>
</table>

<sup>79</sup> Requiring a PLA (Project Labor Agreement) or PSA (Project Stabilization Agreement) usually triggers a higher threshold of application than targeted hire alone.


<sup>81</sup> See [http://www.sandi.net/page/1921](http://www.sandi.net/page/1921), accessed on 1/29/14

<sup>82</sup> See [http://renewretrofits.files.wordpress.com/2013/02/renew-high-road-standards-614131.pdf](http://renewretrofits.files.wordpress.com/2013/02/renew-high-road-standards-614131.pdf), accessed on 1/29/14
Typically, such a contract will require that a certain percentage of the construction work hours on a project be reserved for targeted workers. For example, the Los Angeles Community Careers policies require that 30-40% of the total project work hours and half of all apprentice hours be performed by people from high-unemployment or high-poverty zip codes. It also requires that 10% of the total hours be performed by jobseekers with barriers to employment such as being homeless or low-income. It is important that inclusion requirements are measured by work hours rather than by individuals hired because employers could resort to one-day hires to meet the percentages rather than actually filling significant work assignments with the targeted workers. The Los Angeles policies also set out specified actions for the contractors to perform in order to have the most likelihood of success in meeting targets, and to have a safe haven in case they fall short.

The California High-Speed Rail Community Workforce Agreement and San Francisco’s Local Hire Ordinance follow similar patterns. San Francisco’s First Source Ordinance is more akin to (but also more stringent than) SDG&E and SoCalGas’ “Source” requirement. In San Francisco’s case, certain development and public works projects require private contractors to make a good faith effort to hire employees referred by the city’s workforce development system.

At the federal level, the Section 3 program of the Housing and Urban Development Agency has been requiring targeted hiring and contracting goals of its housing program grantees since 1968. The requirements are implemented through the grantees' contracts with their contractors and subcontractors.

Oregon’s Clean Energy Works and Seattle’s Community Power Works are described below to illustrate a different approach to inclusion, but they too build connections to prioritized jobseekers into their contracts with energy efficiency providers.

**B. HOW INCLUSION IS DEFINED**

A threshold question when designing inclusion requirements is how to define the population or groups to be targeted for priority hiring. One category typically prioritized for inclusion is residence in a low-income or high-unemployment zip code, which is fairly easy to determine using state employment and census data. Some programs target participants in specific social service or training programs for priority hiring consideration.

Another way to identify low-income jobseekers is to use criteria employed for other, related purposes. For example, California’s Alternative Rates for Energy (CARE) Program gives low-income customers discount on their gas and electric bills. IOUs can easily track the cumulative number of CARE-eligible households by zip code in their service areas and prioritize jobs for individuals living in those areas.

Similarly, the California Communities Environmental Health Screening (CalEnviroScreen) Tool looks not just at income levels, but also aggregates types of pollution, environmental characteristics, as well as various socioeconomic factors, to create a more comprehensive “score” for every zip code in the state of California. The CalEnviroScreen tool will help the State to direct a portion of cap-and-trade revenue in projects that will benefit vulnerable communities, and the results are viewable by zip code through a
web portal on the Office of Environmental Health Hazard Assessment (OEHHA) website. Therefore, both CARE and CalEnviroScreen have the advantage of being a common metric with other goals.

Many inclusion programs also seek to increase opportunities for “disadvantaged workers,” which can include a number of criteria such as low income (measured as a percentage of HUD’s “Area Median Income”), low educational attainment, chronic unemployment, homelessness, having some prior interaction with the criminal justice system, or being a veteran, a disabled veteran, or on welfare. Energy efficiency jobs are particularly advantageous opportunities for disadvantaged workers because most of the barriers to employment this population faces are more easily overcome in construction than other career pathways.83

In surveys to its contractors regarding the baseline demographics of their workforce, SDG&E has adopted residence in a Title I zip code (low-income public school attendance area) as its current definition for disadvantaged worker.

Due to Proposition 209, it is not legal in California to give preference to minority or female jobseekers. However, many of the otherwise targeted categories include a high proportion of minorities and females, and many WMDVBEs targeted under General Order 156 employ minority and female workers.

C. INCLUSION AND WAGE THRESHOLDS AS A COMPONENT OF CONTRACTOR PREQUALIFICATION

A challenge in prioritizing jobs for low-income or disadvantaged workers is to find career opportunities that are not low-wage and dead-end. Without intervention, the low-skill, entry-level jobs primarily required in weatherization and residential energy efficiency are in fact very low-wage, with few identified opportunities for advancement.

Recognizing this challenge, the cities of Portland, Oregon and Seattle, Washington constructed residential efficiency programs that tied their goals of increased efficiency to goals of higher wages, better training, and more inclusion. The mechanism they used was a pre-qualified contractor list, whereby residential owners seeking subsidized efficiency retrofits were required to work with contractors on the list. In return for being on the list or for certain procurement advantages, the contractors had not only to prove up their technical qualifications and credentials but also to agree to pay prevailing wages and offer employee benefits. Because the contractors were thus guaranteed a steady stream of work, they could make the investments in workforce that met community goals and also achieved high efficiency outcomes.

Cleveland/Cuyahoga County has just launched a similar program for municipal energy efficiency retrofits.

D. PATHWAYS TO ADVANCEMENT

83 A criminal background can pose a barrier in efficiency retrofit work, but can in some cases be resolved through innovative approaches like those developed between PG&E and Rising Sun Energy Center.
One innovative program has constructed a pathway for workers from lower-wage, lower-skill residential retrofit work to higher-skill, higher-wage utility positions. The Los Angeles Department of Water and Power developed a "pre-craft utility worker" classification that allowed the utility to hire entry level candidates that had been through the equivalent of a pre-apprenticeship program to do direct install residential efficiency work. After a period of time and on-the-job experience, the workers have the opportunity to move into more advanced positions at the utility, with a leg up in the civil service application process. While this particular program is designed for a municipal utility, the concept of residential efficiency jobs as a training ground rather than an endpoint for workers is valuable and could be replicated in the private sector.

CONCLUSION

The examples here, as well as the IOUs’ own achievements in inclusion, show that targeted hiring and increased job quality are attainable within the scope of existing efficiency programs. In addition to adding value for the communities the IOUs serve, they add higher performance outcomes towards meeting efficiency targets. Programs in other states and other institutions have laid the groundwork by creating a model for successful implementation by the California IOUs.

For more detail on each of the programs, please see the following sections.
CURRENT IOU PRACTICES ADDRESSING JOBS CO-BENEFITS: INCLUSION AND JOB QUALITY STANDARDS

GENERAL ORDER 156

Adopted/Implemented: 1988

Applicability:
The rules are applicable to all gas, electric, and telephone utilities under the jurisdiction of the California Public Utilities Commission (CPUC) with gross annual revenues exceeding $25,000,000, and their Commission-regulated subsidiaries and affiliates.

Targeted Population:
- Women-owned businesses
- Minority-owned businesses
- Service-disabled veteran-owned businesses

Partners:
- The Administering Agency is the California State Department of General Services, Office of Small and Minority Business
- The clearinghouse is the Supplier Clearinghouse
  - CPUC-supervised entity whose primary purpose is to audit and verify the status of the businesses, and to establish and maintain a database of the businesses that is accessible to the CPUC and to participating utilities

Description of Program:
Under General Order 156, the CPUC required all investor-owned electric, gas, water and telecommunication utility companies with gross annual revenues in excess of $25 million and their regulated subsidiaries and affiliates, to develop and implement programs to increase the utilization of woman, minority, and service-disabled veteran owned businesses.

Key elements/best practices:
- Procurement goals are as follows:
  - 5% for women
  - 15% for minorities
  - 1.5% for service-disabled veterans
- Each utility is required to maintain staff to provide overall WMDVBE program direction and guidance, implement WMDVBE program requirements, and ensure that its employees with procurement responsibilities receive training in the implementation of its WMDVBE program.

Comment [RAM16]: Does DVC have evidence that these programs have resulted in better quality in the work performed? In other words, have there been two “wins”…inclusion and work quality?
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- Required outreach and subcontracting program to inform and recruit WMDVBEs to apply for procurement contracts.
- Suppliers’ good faith efforts to subcontract with WMDVBEs are a factor considered in the bid evaluation process.
- Each utility shall monitor and include in its annual report to the CPUC a summary of prime contractor progress in increasing the participation of WMDVBE subcontractors.
- Each utility shall include in its annual plan a description of future plans for encouraging both prime contractors and grantees to engage WMDVBE subcontractors in all procurement categories which provide subcontracting opportunities.
- Each utility shall make special efforts to increase utilization and encourage entry into the marketplace of WMDVBEs in product or service categories where there has been low utilization of WMDVBEs, such as legal and financial services, fuel procurement, and areas that are considered technical in nature.

Monitoring/Reporting/Outcomes:

- The CPUC provides an annual report to the Legislature on the progress of activities undertaken by each utility.
- The Greenlining Institute releases an annual report that grades the state’s utilities, telecoms, and cable companies based on their voluntarily reported supplier diversity statistics. The report includes rankings and a breakdown of spending by ethnic categories as well as across industrial categories for each company. The report concludes with recommendations for both the overall GO 156 program as well as each individual company.
- Contracting with minority based enterprises grew by $1 billion from 2010 to 2011.
- For the first time ever, six companies are spending at least 20% of their procurement dollars with minority based enterprises.
- Contracting with some types of businesses, such as professional and legal services, remain low.
- Companies that have been leaders in contracting with diverse businesses have seen their figures level off in terms of overall percentage.
- Companies that have traditionally ranked towards the bottom of the pack have increased their MBE contracting, bringing them much closer to the industry leaders.

SOCALGAS & SDG&E SOURCE AND JOB CREATION REPORTING REQUIREMENTS

Adopted/Implemented: January/February 2013

Applicability: Third-party energy-efficiency contractors

Targeted Population: Individuals referred by San Diego’s one-stop system.

Description of Program: San Diego Gas and Electric and the Southern California Gas Company have begun inserting “Source” and “Job Creation” reporting requirements in their contracts with energy efficiency contractors.
Key elements/best practices:

- The “Source” requirement requires advanced notice of job or internship opportunities with energy efficiency providers under contract to the two utilities. See language, below:

  SOURCE: The COMPANY is interested in developing linkages between employment opportunities and trained workers in energy efficiency. In the event that new job opportunities arise as a result of this SOW, Contractor shall provide advanced notice of job or internship opportunities to COMPANY or COMPANY’s designee. Advanced notice should be provided at least two weeks before the job or internship opportunity is listed publicly. These opportunities may be shared with organizations that provide EE workforce training.

- The “Job Creation” requirement

  JOB CREATION: The COMPANY is interested in understanding the job creation benefits that result from its energy efficiency programs. To that end, the Contractor shall track the number of new employees and job promotions that occur as a result of this SOW. Contractor shall provide this information to Company upon request and in its final report.

Monitoring/Reporting:

- Contractors self-report on both job creation and job opportunities.
- There is not yet any track record on job opportunities or job creation numbers

SIERRA NEVADA ENERGY WATCH (SNEW)

Adopted/Implemented: 2010

Targeted Population: Small and medium businesses (<200kW) through Direct Install; public facilities (No residential)

Partners:

- Pacific Gas & Electric Company
- Sierra Business Council

Description of Program:

Sierra Nevada Energy Watch is a partnership between PG&E and the Sierra Business Council dedicated to providing innovative energy efficiency solutions in 14 Sierra Nevada and northern Central Valley counties within PG&E territory. In 9 counties it serves through its in-house Direct Install program, SNEW hired local staff and contractors to implement the program for small and medium businesses, local governments, special districts and non-profits (under 200kW). The SNEW program specifically focuses
on geographic areas that were previously under-served by existing energy efficiency implementation programs.

This program focuses on local job development, training, and quality control, hiring from the communities it serves, which have unemployment rates ranging from 7% to 14%.

**Key elements/best practices:**

- **Network of 12 local contractors**
  - Builds relationships between customers and contractors
  - Creates trusted spokespeople for clean energy
  - Helps with understanding the local culture, but they also know and are known by local business owners.
  - Local point of contact for maintenance and service requests.
  - Since SNEW serves mostly small businesses, with an average project size of 29,000 kWh, bringing in contractors from the Bay Area or Central Valley would decrease the climate benefits of energy efficiency projects by 3-5%. Local contractors also allow the program to cost effectively serve much smaller businesses. The program has completed projects with annual savings as small as 600 kWh.

- **Hiring from local communities**

- **Requiring that contractors pay their electricians wages based on prevailing wage tables for the counties in which the work is being performed.**

- **Requiring that any apprentices (or anyone paid less than prevailing wages for electricians) be enrolled in a state-registered apprenticeship program.**
  - Maximizes the financial resources returning to and re-circulating in these counties.
  - Requires the program to look for cost savings elsewhere to stay affordable for customers and maintain overall cost effectiveness.
  - Because SNEW pays higher labor rates, customers have higher co-pays, which results in greater investment in, and commitment to, energy efficiency, and leads to market transformation. All customers pay at least 10% of their project cost. Since program inception, the average co-pay has been 28% of project cost. Co-pays are higher in the 2013-2014 cycle, averaging 46%, than they were in the previous program cycle (averaging 25%).

- **Provides contractor training and capacity building by bringing in equipment manufacturers to demonstrate proper installation and maintenance.** An electrical contractor on staff has provided training and mentoring for participating contractors.
  - Contractor training and mentorship allows for more comprehensive and complicated measures to be installed.
  - SNEW has achieved 20% of savings from refrigeration measures, 65% from lighting retrofits, 5% from other, and only 10% from screw in lighting. In the 2006-2008 program cycle, 9 of the 16 Energy Watch programs achieved 95% or more of their savings from lighting, and 6 of those achieved over half their savings from screw-in CFLs alone.
SBC staff conducts all the marketing, outreach, and follow-up to ensure consistency in program offerings and effectiveness. SBC matches contractors with customers based on customer location and needs. SBC staff assist with scheduling installations, check in during installations, and follow up with post-installation inspections to confirm that all the prescribed work was completed. This has given the program control over quality, reputation, and branding.

Monitoring/Reporting/Outcomes:

As of September 2013:

- Local businesses are saving $1.6 million annually
- Over $2.4 million has been invested in the local economy
- Cost-effectiveness is higher than for most other Energy Watch (Local Government Direct Install) programs. SBC’s TRC was 5th out of 18 other energy watch programs.
- Support for climate and energy policy has increased.
- 23 Municipal and community carbon inventories have been completed (out of 39 local governments that the program serves), and there are six climate or energy action plans under development.

SOUTHERN CALIFORNIA REGIONAL ENERGY NETWORK (SOCAL-REN), LA COUNTY PILOT


Partners:

- Los Angeles County
- Governance committee of representatives from the cities and counties served by the SoCalREN
- Emerald Cities
- Greenlining
- Building and Construction Trades Unions

Brief Description of Program:

The County of Los Angeles will execute a $30 million energy efficiency retrofit pilot project—to upgrade lighting and mechanical systems, and solar rooftop installations on its buildings—as part of the California Public Utility Commission’s Southern California Regional Energy Network (SoCalREN). SoCalREN is a local government regional energy network pilot program serving SCE and SCG service areas. The program will achieve greater energy savings by driving the development and implementation of local energy sustainability programs and providing local governments with technical assistance, financing and expertise to execute shelf ready energy efficiency retrofit projects.

Delivers three pilot subprograms: $63.7 million total: Energy Upgrade California: $30.8 million; Financing for Energy Projects: $15.2 million; and Southern California Regional Energy Center: $17.7 million. Upon implementing a successful pilot program, the County will seek to execute countywide energy efficiency projects valued at almost $1 billion.
The County pilot project will award contracts using a procurement strategy that promotes local, small contractor participation and an integrated workforce development strategy that stimulates the creation of local, highly skilled careers. To carry out these objectives, the County established a partnership with Emerald Cities Collaborative to implement the E Contractor Academy sponsored by Citibank and a workforce development strategy rooted in a direct pipeline to union apprenticeship.

Key elements/best practices:

- E-Contractor academy prepares small contractors to compete and perform energy efficiency retrofit projects for and within the County of Los Angeles and throughout California. The seven three-hour workshops cover the following topics:
  - Introduction to SoCalREN and Green Building Basics
  - How to Bid on Energy Efficiency Projects
  - Access to Capital and Bonding
  - Safety Program for Energy Efficiency Projects
  - Estimating & Bidding Principles
  - Labor Compliance (e.g. certified payroll), Project Labor Agreements (PLA), Community Workforce Agreements (CWAs) including local hire agreements, and how to benefit from becoming a Building Trades Signatory Contractor.
  - LCP Tracker and B2GNow user training
  - Access to Electrical & Mechanical certifications

- Project is planned to include a Community Workforce Agreement and a Project Labor Agreement to create a mechanism and requirement for inclusive hiring and good wages.

**CONTRACTUAL INCLUSION REQUIREMENTS**

**LOS ANGELES “COMMUNITY CAREERS” POLICIES**

**First Adopted:** 2008

**Applicability:**

- Redevelopment projects with public investment of $1 M+
- Redevelopment Agency public improvement projects of $500 K+
- City public works projects on a “Five-Year Public Infrastructure List”
- Port of LA projects on a “Five-Year Capital Improvement Program” list.
- Metro projects with a life-of-project value of $2.5 M+

**Targeted Populations:**
City or Impact Area residents in high-unemployment or high-poverty zip codes (e.g. zip codes with census tracts in which unemployment is in excess of 200% of the County rate, and/or 40% of the households live below the Federal poverty threshold)

- Metro: Economically disadvantaged areas nationally (zip codes with census tracts in which median annual household income is less than $40 K per year).

- “Disadvantaged Workers.” Criteria: household income below 50% of AMI, being homeless, receiving public assistance, lacking a GED or high school diploma, having a history of involvement with the justice system; being a single parent, suffering from chronic unemployment.

Partners:

- City of Los Angeles
- Former Community Redevelopment Agency of the City of Los Angeles
- Port of Los Angeles
- Metro
- WIA-funded one-stop centers
- Community Colleges
- Building and Construction Trades Council
- Community Organizations

Brief Description of Program: This program was first adopted by the LA City Community Redevelopment Agency and then adapted for the LA City Department of Public Works, Metro, and the Port of Los Angeles. The program requires developers and contractors who build projects with public funding to meet certain targeted hiring goals in construction jobs. It also requires developers and contractors to sign on to a pre-negotiated project labor agreement with the Building and Construction Trades Council.

Key Elements/Best Practices:

- Requires 30% of project work hours to be performed by targeted population (40% in the case of Metro), of which 10% must be disadvantaged workers.
- Requires full use of apprentices (20%), as permitted by the State Apprenticeship Council.
- Requires up to half of apprentice hours to be performed by targeted populations.
- Defines specific activities that contractors must follow to be in compliance if they do not meet targeted hiring percentages, including creating an employment hiring plan to meet goals.
- Requires hiring of intermediary (“Jobs Coordinator”) to facilitate relationships with employers, unions where applicable, and workforce development organizations.
- Effective and timely tracking of outcomes.
- Metro is the first transit agency in the nation to adopt such an agreement with national targeted hiring goals for federally funded projects with FTA approval.

Monitoring/Reporting:
Monitoring is done through certified payroll submissions, which are required for prevailing wage projects. Where certified payroll is submitted electronically, as in Los Angeles and San Francisco, reports can easily be run showing any combination of data that is collected, allowing immediate feedback to contractors who are not making good numbers while there is still time to adjust course. It is much more cumbersome and time-consuming to compile the data from paper payroll submissions. In addition, the data is a powerful tool for evaluation of the overall success of the project, and for predicting outcomes on future projects.

Capturing information on ethnicity, gender, and workers’ barriers to employment is usually done more personally, via an intermediary such as a jobs coordinator or community-based organization, in order to protect individuals’ privacy.

**CALIFORNIA HIGH SPEED RAIL AUTHORITY COMMUNITY BENEFITS AGREEMENT**

**Adopted/Implemented:** 2012

**Applicability:** All construction contracted by the California High Speed Rail Authority.

**Targeted Population (“National Targeted Workers”):**

- Individuals living within an Economically Disadvantaged Area in the United States (a zip code that includes a census tract or portion thereof in which the median annual household income is less than $40,000 per year)
- Individuals living within an Extremely Economically Disadvantaged Area in the United States (a zip code that includes a census tract or portion thereof in which the median annual household income is less than $32,000 per year)
- Disadvantaged workers living within an Economically Disadvantaged or Extremely Economically Disadvantaged Area in the United States and facing at least one of the following barriers:
  - Homeless;
  - Custodial single parent
  - Receiving public assistance
  - Lacking a GED or high school diploma
  - Having a criminal record or other involvement with the criminal justice system
  - Suffering from chronic unemployment

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84 The Los Angeles Public Works Department developed its own electronic system. San Francisco purchased a database developed by Elations Systems.
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- Emancipated from the foster care system
- Veteran
- Apprentice in a joint labor/management apprenticeship program with less than 15% of the hours required to graduate to journey level

Parties to Agreement:
- The California High-Speed Rail Authority
- Construction contractors, subcontractors, and employers
- State Building and Construction Council of California
- Individual local labor unions

Description of Program:
The program requires contractors for the high speed rail construction to meet certain targeted hiring goals in construction jobs. It also requires contractors to sign on to a pre-negotiated project labor agreement with the Building and Construction Trades Council. Because it is partially funded with Federal Transit Authority money, it is prohibited from requiring a geographically-targeted program that gives preference to residents of a particular state or states.

Key elements/best practices:
- Requires a minimum of 30% of all hours of Project Work to be performed by National Targeted Workers.
- Requires a minimum of 10% of all National Targeted Worker hours to be performed by Disadvantaged Workers.
- Includes a Project Labor Agreement that pre-negotiates dispute resolution procedures, prohibits strikes and lock-outs
- Prioritizes referral of qualified National Targeted Workers for available construction jobs
- Requires prime contractor to designate a qualified Jobs Coordinator to facilitate and implement the Targeted Hiring Requirements
- Permits a certain amount of “core employees” in addition to union-referred employees
- Contractors must document efforts to hire National Targeted Workers

Monitoring/Reporting: No process stated in Community Benefits Agreement

FIRST SOURCE HIRING AND LOCAL HIRE ORDINANCES, CITY OF SAN FRANCISCO

Adopted:
1998 (First Source)
2011 (Local Hire)
Applicability:

First Source:

- Any activity that requires discretionary action by the City’s Planning Commission related to a commercial activity over 25,000 square feet including conditional use and project authorization under San Francisco Planning Code Section 309 and office development under Planning Code Section 320, et sec.
- Any building permit application for a residential project over 10 units.
- City-issued public construction contracts in excess of $350,000.
- City contracts for goods and services in excess of $50,000.
- Leases of City property.
- Grants and loans issued by City departments in excess of $50,000.

Local Hire: Contracts for public work or improvement projects over $400,000.

Targeted Population:

- Economically disadvantaged San Francisco residents seeking employment through San Francisco’s Workforce Development System. (First Source)
- San Francisco Residents domiciled in the city for at least seven days prior to working on the project. (Local Hire)
- Disadvantaged worker: (i) resides in a census tract within the City with a rate of unemployment in excess of 150% of the City unemployment rate; or (ii) at the time of commencing work has a household income of less than 80% of the AMI, or (iii) faces or has overcome at least one of the following barriers to employment; being homeless; being a custodial single parent; receiving public assistance; lacking a GED or high school diploma; participation in a vocational English as a second language program; or having a criminal record or other involvement with the criminal justice system. (Local Hire)

Brief Description of Program:

The intent of both programs is to connect disadvantaged San Francisco residents with entry-level jobs that are generated by the City’s investment in contracts or public works; or by business activity that requires approval by the City’s Planning Department or permits by the Department of Building Inspection.

The First Source ordinance requires employers to give first consideration to and make a good faith effort to hire job candidates referred by the City’s workforce development system. The Local Hire ordinance requires public works contractors to meet targeted hiring minimums.

Key elements/best practices:

Local Hire:
• For the initial year, the mandatory participation level is 20% of all project hours within each trade performed by local residents, with no less than 10% of all project work hours within each trade performed by disadvantaged workers.
• The mandatory participation level will increase annually over seven years up to a mandatory participation level of 50% of project work hours within each trade performed by local residents, with no less than 25% of all project hours within each trade performed by disadvantaged workers.
• At least 50% of the project work hours performed by apprentices within each trade shall be performed by local residents, with no less than 25% of project work hours performed by apprentices within each trade to be performed by disadvantaged workers.
• If contractors cannot reach local hiring requirements on their own, they are required to request referrals through CityBuild (see below).
• Program contemplates financial and non-financial incentives for contractors and subcontractors who exceed local hiring requirements, including financial incentives that comply with applicable law and do not exceed one percent of the estimated cost of the contract.
• Program contemplates various consequences of noncompliance with the policy, including delay of building permits and/or progress payments and the authority to assess penalties against contractors that do not meet the local hiring requirements, with financial penalties to be used to support enforcement of the policy and workforce development initiatives.
• Offsite Hiring Credits

First Source:

• 50% of new hires – any worker who is not a member of Contractor’s “core” or “existing” workforce – must be referred by CityBuild (see below).
• Businesses or non-profits that qualify as First Source employers according to the definitions above are required to project the number of entry-level job openings they expect during the contract period and provide that information to the First Source Hiring Administration or their designee.
• First Source employers are required to post their entry-level openings with First Source and proactively work with First Source to accept and consider qualified candidates that are referred to these positions.
• While First Source does not require an employer to hire a specific candidate, it does require that employers make a good faith effort to hire referrals from San Francisco’s Workforce Development System.

CityBuild: The City centralizes public construction workforce training and placement under its CityBuild program, which aims to prepare local and disadvantaged resident jobseekers to meet the demands of the construction industry and its own First Source and Local Hire ordinances by providing comprehensive pre-apprenticeship and construction administration training to San Francisco Residents and by coordinating city-wide construction training and employment placement programs. CityBuild is a partnership between the City’s Office of Economic and Workforce Development, the construction building trades, City College San Francisco, and community-based organizations.

Monitoring/Reporting/Outcomes:
The City of San Francisco uses Elation Systems to allow contractors to input certified payroll and employee information online, which then allows the city’s compliance staff to run real-time reports on local hiring achievements or deficits.

Since 2006, CityBuild has facilitated over 1,300 job placements in over 250 projects throughout the City of San Francisco.

SECTION 3 OF THE HOUSING & URBAN DEVELOPMENT ACT OF 1968

Adopted: 1968

Applicability:

- All housing construction, rehabilitation, or other public construction funded by Public and Indian Housing programs
- All housing construction, rehabilitation, or other public construction funded by Housing and/or Community Development Assistance exceeding $200,000 combined from all sources in any one year.

Targeted Populations:

- Public housing residents
- Low- or very low-income individuals (typically established at 80 percent and 50 percent of the median income for each locality by household size) residing in the metropolitan area or non-metropolitan county where the Section 3 covered assistance is expended.
- Businesses owned by, employing, or subcontracting to public housing residents and low- or very-low income individuals.

Brief Description of Program:

The purpose of Section 3 to ensure that employment and other economic opportunities generated by certain HUD financial assistance for housing construction, rehabilitation, or other public construction shall, to the greatest extent feasible, be directed to low- and very low income persons, particularly those who are recipients of government assistance for housing, and to business concerns which provide economic opportunities to low- and very low-income persons. This may mean going a step beyond normal notification procedures for employment and contracting procedures by developing strategies that will specifically target Section 3 residents and businesses for these types of economic opportunities.

Key Elements/Best Practices:

- 30% of the aggregate number of new hires shall be targeted individuals, annually
- The recipient agency must act as a facilitator, connecting targeted individuals to training and employment opportunities.
- 10% of the total dollar amount of all Section 3 covered contracts for building trades work for maintenance, repair, modernization or development of public or Indian housing or building trades
work arising in connection with housing rehabilitation, housing construction and other public construction, shall be awarded to targeted businesses.

- 3% of the total dollar amount of all non-construction Section 3 covered contracts shall be awarded to targeted businesses

Monitoring/Reporting:

- Recipient agencies must document all actions taken to comply with the requirements of Section 3
- Recipient agencies must submit an online Annual Summary Report for all covered funding to the Office of Fair Housing and Equal Opportunity.
- If an agency fails to fully meet the Section 3 numerical goals, they must adequately document the efforts taken to meet the numerical goals

CONTRACTOR PREQUALIFICATION

CLEAN ENERGY WORKS PORTLAND/OREGON

Implemented: 2009

Targeted Population:

- Portland residents
- Trainees from designated training programs
- Disadvantaged or underrepresented people, including people of color, women and low-income residents
- Business owned by disadvantaged or underrepresented people, such as women-owned businesses or minority-owned businesses

Brief Description of Program: Clean Energy Works Portland (CEWP) was a pilot program to retrofit 470 Portland homes for energy efficiency. After the pilot phase, the City of Portland and the Energy Trust of Oregon scaled up the program as Clean Energy Works Oregon (CEWO).

Recognizing that a major barrier to retrofitting existing buildings is the up-front cost of the improvements, CEWP was designed to provide a simple financing solution to energy efficiency improvements while creating new jobs and making sure that economic opportunity would flow toward historically underserved populations: low-income people, women and people of color. In order to meet these goals, CEWP established a pool of “participating contractors” who were required to meet minimum criteria in the areas of skills, certification and also workforce hiring, as described in a “Community Workforce Agreement” (renamed “High Road Agreement”).

Using funds from the Energy Efficiency and Conservation Block Grant program and other city resources, the city capitalized a revolving loan fund to offer pilot participants low-interest, long-term financing for
home energy efficiency remodels. The pilot successfully attracted additional public and private investment, bringing the total loan portfolio to nearly $7 million.

CEWO provides a one-stop shop for whole-home energy upgrades in regions throughout the state. Participating contractors use marketing materials and messaging developed by CEWO to generate 35% to 40% of CEWO’s new leads for energy efficiency upgrades.

Key elements/best practices:

- Support for approved and emerging contractors (e.g., training and continuing education resources, business classes, business coaching, peer mentoring, access to working capital, engagement and outreach efforts targeting underrepresented and economically disadvantaged contractors).
- Portland General Electric, NW Natural and Pacific Power process CEWP loan payments as part of their routine customer billing process and transfer the funds to ShoreBank.
- Participating Contractors are required to be Energy Trust of Oregon trade allies, Home Performance with ENERGY STAR® qualified, and certified through the Building Performance Institute (BPI). All energy advisors are BPI certified.
- Participating Contractors are required or incentivized to comply with the following:
  - **Local Hire:** At least 80% of employees used in the CEWP pilot program must be Portland residents.
  - **Family-Supporting Jobs:** Workers participating in this pilot project will earn not less than 180% than state minimum wage.
  - **Health Insurance:** Employees hired under the CEWP pilot program will have access to affordable and adequate health insurance. The plan makes an effort to mitigate the burden on small contractors associated with providing health insurance to their employees.
  - **Designated Training Programs:** Employers must hire from approved training programs only, until they fill 50% of their positions. A pool of qualified training programs shall be identified to create pipelines to permanent jobs. Qualified training programs must provide weatherization training, have relationships with pre-apprenticeship programs, offer mentoring and demonstrate a track record of placing trainees into construction jobs.
  - **First Source:** Contractors will hire 100% of new workers/installer weatherization employees from designated training programs, until 50% of contractor’s total non-supervisory worker/installer weatherization employee work hours are performed by graduates of designated training programs.
  - **Diversity:** Disadvantaged or underrepresented people, including people of color, women and low-income residents will perform not less than 30% of the total trades and technical project hours in the pilot. Contractors should work with qualified training programs to meet this goal.
Business owned by disadvantaged or underrepresented people, such as women-owned businesses or minority-owned businesses make up not less than 20% of all dollars in the pilot project.

- Contractor scoring: The program awards points to Participating Contractors based on the benefits they provide to their workers; the diversity of their workforce; hiring practices, including hiring of union workers; and subcontractor practices. The program allocates applicant referrals to qualified contractors based on contractor scoring under the terms of the CWA – the more scoring points, the more audit assignments a contractor will receive.

- Resources for continuing education and certification are available to workers coming into the home performance industry and to those ready for opportunities for promotion and upward mobility through career pathways and entrepreneurship training.

Monitoring/Reporting/Outcomes:

- The program established a Stakeholder Evaluation and Implementation Committee composed of representatives from business, community-based organizations, organized labor, faith-based institutions and government oversaw CEWP’s implementation of the CWA.

- Contractors are required to submit quarterly reports on their workforce diversity, subcontracting, healthcare and other issues pertaining to the CWA.

- The CWA creates an Evaluation and Implementation Committee which is responsible for setting accountability strategies for non-compliance, evaluating progress toward standards, and further developing lists of qualified training providers.

- The CEWP pilot program accomplished the following:
  - Investment of more than $6 million (payments to contractors)
  - 584 low-interest loans for whole-home energy remodels
  - 20% or greater reduction in energy consumption in most homes
  - 1,400 metric tons of annual carbon emissions reductions
  - Employment for more than 400 workers, including 48 new hires in the construction trades
  - Average wages of nearly $20.34/hour
  - Provision of health insurance by nearly 80% of the participating contracting firms
  - 48% of the trade/technical hours worked by people of color (22% of Portland’s residents are people of color; the Community Workforce Agreement (CWA) goal was 30%)
  - A doubling of state and national rates of participation by women in construction
  - 23% of pilot dollars to minority-owned or women-owned small businesses (CWA goal was 20%)
  - Positive customer experiences: 94% of participants surveyed said they would recommend the program to friends or family
  - as of May 2012, CEWO reported nearly 60% of the more than 93,000 project work hours have been performed by women and minorities, and nearly half of all new hires have been woman and minorities. In addition, nearly 90% of the program’s prime contractors offer subsidized health insurance to their employees.

COMMUNITY POWER WORKS, SEATTLE, WASHINGTON
Adopted/Implemented: 2011

Targeted Population:

- Low-income individuals
- Veterans and current members of the National Guard and Reservists
- Individuals with barriers to employment, including
  - homelessness
  - being a custodial single parent
  - receiving public assistance
  - lacking a GED or high school diploma
  - having a criminal record or other involvement with the criminal justice system
  - being historically disenfranchised or disadvantaged by previous policies and practices and as a result being disproportionately represented in dropout rate, unemployment, lack of business ownership and criminal justice systems.

Brief Description of Program:

Community Power Works is a $100 million pilot program testing new models for energy efficiency for single-family and multi-family residences, small businesses, hospitals, and large commercial and municipal buildings.

In addition to meeting upgrade and investment goals, Community Power Works also intended to test new marketing, service delivery and financing mechanisms and increase homeowner demand for – and contractor capacity to deliver – high-quality comprehensive energy-efficiency upgrades.

The program aims to benefit the local economy by partnering with local contractors and small businesses. All home contractors are businesses with fewer than 50 employees and over one-third are women, minority, veteran, or employee-owned. 92% of participating contractors are from the Puget Sound region, which keeps most of the dollars spent in the local economy.

The program also includes a Community High-Road Agreement – a collaborative and flexible partnership involving the city, contractors, workforce training organizations, labor and community groups to assure quality services, build a skilled workforce, provide family-wage jobs and benefits, and offer career pathways for new hires and returning workers. By including high-road standards in its innovative home energy upgrade program, the program shows how smart green investments can grow local businesses, provide on-ramps to opportunity for low-income and historically underserved communities, and connect low-income or otherwise disadvantaged workers to good careers.

Key elements/best practices:

- All contractors that participate in Community Power Works have at least one employee on staff that is certified by the Building Performance Institute (BPI)
- Tiered wage system as compromise between prevailing wage and no wage standard:
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- A base rate of $21.50 per hour plus $2.50 in additional wages or benefits
- A lower rate of $15.50 per hour plus $2.50 in additional wages or benefits for new trainees, plus 80 hours of training, with the lower rate limited to one year
- Higher rates for specialized work

- Community High-Road Agreement stakeholder-defined program goals:
  - Maintain sustainability and consistency of job and sector growth and investment
  - Keep the program simple and predictable, especially for contractors
  - Maintain balance between creating jobs for entry-level targeted workers* and for the existing skilled workforce, so that at least 33 percent of technical work hours are performed by targeted workers
  - Achieve business participation rates of: 80 to 100 percent small business participation; at least 30 percent minority-owned business participation; at least 10 percent women-owned business participation; close to 10 percent local business participation; and increase opportunities for employee-owned and veteran-owned businesses
  - Ensure that contractors provide high-quality work
  - Ensure that program jobs lead to career pathways
  - Ensure that program jobs pay a family-supporting wage

Monitoring/Reporting/Outcomes:
- The program integrated wage and work reporting with the Energysavvy IT platform for electronic data capture including hiring outcomes.
- As of September 30, 2012, Community Power Works has completed 1,077 energy upgrades. An additional 352 projects have signed bids. The total investment in completed and signed projects is $29 million.
- As of September 30, 2012, more than 202 workers worked a total of 25,030 technical hours on Community Power Works for Home projects.
- Targeted workers provided 42% of technical hours. Diversity is greater in lower-paying classifications such as weatherization worker.
- A detailed review of compliance for all projects completed through August 2012 has found close to 100% compliance for reporting, wage payments, and meeting training and certification requirements. The few cases that were found to be non-compliant were traced back to data errors or miscommunications over appropriate worker classifications or wage rates that, when corrected, returned cases to compliance. CPW conducts random site visits to match reported data to contractor records.
RENEW provides financing and technical assistance for energy efficiency in municipal buildings. A joint effort of Emerald Cities Cleveland, Cuyahoga County Government, the Cleveland-Cuyahoga County Port Authority, and Public Finance & Energy Advisors LLC, RENEW finances 100% of energy conservation measures through Lease-Purchase agreements between the municipalities and the Port Authority. The Port Authority will issue Lease Revenue Bonds secured by the pool of municipal leases. Energy savings are guaranteed through an insurer.

The municipalities procure their own contractors to implement the energy efficiency measures and must agree to include RENEW High Road Contractor Standards in RFPs.

Key elements/best practices:

• Municipalities procure their own contractors but must agree to require RENEW’s high road standards in the contracts, except for contracts requiring less than $10,000 worth of labor costs.
• Contractor must maintain its primary office and the majority of its operations in Cuyahoga County.
• High road standards include licensing and experience qualifications and job and training quality qualifications. Job and training quality qualifications include:
  o No excessive violations of workplace laws in the past three years
  o The company provides at least 50% of the costs of health insurance coverage to workers performing construction work. (Mini-med and catastrophic-only plans do not qualify.)
  o The company provides a pension plan or retirement benefits to construction workers.
  o The company has an agreement with a State- or Federally-registered apprenticeship program and regularly employs apprentices. Small and MBE/WBE/VBE contractors are waived from some of the requirements.
  o High road standards apply to contractors of any tier unless otherwise waived.
  o Prime contractor must obtain a guarantee on the energy and water costs savings.
  o Each contractor must pay prevailing wages.
  o 50% of work hours under the RENEW contract must be performed by Targeted Workers.
  o All employees performing RENEW Pilot Program Work must be either a graduate of or enrolled in a State- or Federally-registered apprenticeship program or a Designated Training Program; or must have at least three years’ experience in that trade.

Monitoring/Reporting/Outcomes:

Program just launched.
PATHWAYS TO ADVANCEMENT

DEPARTMENT OF WATER AND POWER PRE-CRAFT UTILITY TRAINEE PROGRAM, LOS ANGELES, CA

Adopted/Implemented: 2012

Targeted Population:

Recruits for the UPCT program are dispatched from IBEW Local 18’s book of applicants and include workers from low-income and minority communities that have had less access to high-quality careers in the past or that lack the resources to qualify for civil service examinations directly.

Partners:

• LADWP
• IBEW Local 18
• Office of the Mayor
• Southeast LA WorkSource Center
• UCLA Labor Occupational Safety and Health Program
• Los Angeles Trade Technical College
• RePower LA Coalition

Brief Description of Program:

The Utility Pre-Craft Trainee program is a pre-apprenticeship training program that offers participants the chance to work full-time as weatherization installers while receiving substantial career-oriented training and preparing for civil service examinations that would qualify them for permanent employment and further training with LADWP.

Key elements/best practices:

• Serves the short-term and long-term needs of the utility, the trainees, and the union, while also furthering environmental and economic policy goals.
• Trainees are guaranteed a paycheck, provided with valuable skills training and mentorship, and have access to long-term career paths.
• The utility cultivates a pool of pre-screened, trained, and motivated entry-level workers that can feed into critical job classes.
• The union builds capacity to take on more energy efficiency work that might otherwise be contracted out to non-union providers.
• The Department of Water and Power and IBEW Local 18 developed the program and have taken the lead on coordinating and delivering training for UPCTs, but they also worked with the Mayor’s office to develop and leverage a number of important partnerships in implementation of the program. The South East Los Angeles County (SELAC) WorkSource Center, one of the state’s one-stop career
centers, has provided initial intake and work readiness screening for prospective trainees along with the UCLA Labor Occupational Safety and Health Program. Los Angeles Trade Technical College, a local community college with a large and well-established construction department, provided the initial weatherization training. The UPCT program has also received strong support from RePower LA, a broad coalition of environmentalists, low-income advocates, and labor, which sees this program as a central element of its ongoing campaign to both reduce the city's carbon footprint and create good jobs for local workers. In addition, RePower LA assists with outreach and coordination.

- Los Angeles Trade Technical College (LATTC) is the main technical training partner for the UPCT program. At the beginning of the program, LATTC provides 40 hours of training in technical skills, such as the use of hand tools, basic construction, and safety, as well as the specific weatherization training demanded by the federal Weatherization Assistance Program. Once they complete this training, UPCTs are eligible to become certified in weatherization through the California Department of Community Services and Development (CSD). Trainees can also earn college credit for the training they receive through LATTC.

Monitoring/Reporting/Outcomes:

- The Department’s recently adopted guiding principles include a commitment to leverage increasing energy efficiency investments to create high-quality jobs for the local workforce.
- Going forward, the utility has committed to sustaining the program through its general training and energy efficiency budgets. Advocates of the program estimate that if the program continues to be funded and expanded over the next five years, it could create about 750 UPCT positions as well as a number of new permanent jobs for journeymen and supervisors.


2. H CALCULATION OF ESAP WAGE FLOOR

Wage mandates have been shown to increase final costs by a significantly smaller factor than the wage increase itself. We performed a back-of-the-envelope calculation based on transparent assumptions about current ESAP worker wages, labor intensity in ESAP work and reduced employee turnover. This calculation estimates that ESAP costs will increase less than one percent if the wage floor is increased to $14 per hour and less than two percent for a $15 per hour wage floor. It is important to note that this is a rough, conservative estimate due to the limited availability of data and further research is needed in order to develop more accurate estimates.
The assumptions for these estimates are as follows. Labor costs account for roughly 20 to 30 percent of total construction costs, with the proportion somewhat lower for residential construction.\textsuperscript{85} For the purposes of our estimate, we use a mid-range estimate of 25 percent of total construction costs spent on labor. Most ESAP wages range between $12-16 per hour based on our research. Assuming a wage floor of $14 per hour and an average wage of $13 per hour for employers below the floor, the proposed wage increase would increase costs by 8 percent ($1/13 = 0.08) for the 50 percent of employers that we assume fall below the wage floor. Therefore, we estimate that ESAP costs would increase by one percent for a wage floor of $14 per hour ($0.25 \times 0.08 \times 0.50 = 0.01$).

Research on the impact of wage standards indicates that wage increases are absorbed in part through employer savings on turnover costs, increases in productivity, and accepting a lower profit margin. Based on a review of the literature, we estimate that 16 percent of the cost of raising wages would be offset by savings for employers through reduced turnover and other factors.\textsuperscript{86} Taking this into account, we find that ESAP costs would increase by less than one percent (0.84\%) for an ESAP wage floor of $14 per hour.\textsuperscript{87}

\section*{2.J RECOMMENDED CHANGES TO INVESTOR-OWNED UTILITIES WORKFORCE EDUCATION AND TRAINING DATA COLLECTION PRACTICES}

Our research has led us to conclude that the IOUs need to establish a more comprehensive approach to Workforce Education and Training (WE&T) data collection in order to produce useful baseline information on jobs and workforce. The IOUs’ current approach will not produce the data needed for rigorous analysis of the impact of workforce issues on energy savings and program performance that is valuable for program planning. Nor will the current approach provide useful workforce metrics to inform the CPUC’s interest in exploring how best to address the jobs co-benefits of energy efficiency investments, which are of great interest to a number of stakeholders.

\section*{CPUC GUIDANCE ON WE&T DATA COLLECTION PRACTICES}

\textsuperscript{85} U. S. Census Bureau, 2002 Economic Census: Construction. October 2005. See Tables 1 and 2. \url{https://www.census.gov/prod/ec02/ec0213sg1.pdf}


\textsuperscript{87} Assuming a wage floor of $15 per hour and an average wage of $13.50 per hour for employers below the floor, the proposed wage increase would increase costs by 11 percent (1.5/13.5 = 0.11) for the 75 percent of employers estimated to fall below the floor. This would result in a two percent ESAP cost increase for a wage floor of $15 per hour ($0.25 \times 0.11 \times 0.75 = 0.02$). Taking into account the assumption that 16 percent of the cost of raising wages would be offset by savings for employers through reduced employee turnover, we find that ESAP costs would increase by less than two percent (1.7\%) for a wage floor of $15 per hour.
Decisions issued by the CPUC instructed the IOUs to collect current data on jobs, workforce and other labor market characteristics for various energy efficiency programs. Decision 12-08-044 stated that the “IOUs should proactively collect, review, and act on” information related to workforce issues. This decision directed California’s four IOUs (Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company, and San Diego Gas and Electric Company) to collect and report workforce education and training (WE&T) data in seven areas for the ESAP by February 1, 2013. Decision 12-11-015 directed the IOUs to follow ESAP WE&T data collection protocols for all other energy efficiency programs during the 2013-14 program cycle until a more comprehensive approach is designed by an expert entity.

The discussion and orders in both the ESAP and the general EE proceeding emphasize that the purpose of data collection on workforce issues is to provide information that can improve program effectiveness. For both the ESA program and the general EE programs, baseline data on jobs and workforce is necessary to answer a set of analytical and research questions about the impact of different workforce management approaches, including but not limited to training, on the cost and performance of energy efficiency improvements. As an example of the kinds of questions that could be answered with better data, the California Workforce Education and Training Needs Assessment for Energy Efficiency, Distributed Generation, and Demand Response (Needs Assessment) presented anecdotal and qualitative evidence that low wages and high turnover negatively affect the quality of installations and the energy saved, but this cannot be systematically verified or quantified without basic data on both job and workforce characteristics and quality performance.


89 Decision 12-08-044 directed the IOUs to immediately begin collecting data in seven WE&T areas: (1) Contractor and subcontractor contract terms (competitive bid, direct award, etc.); (2) Contractor and subcontractor compensation schemes (hourly, piecemeal, salaried, etc.); (3) Number of inspection failures and the types of failures (including the number of enrolled customers later deemed ineligible, number of incorrectly assessed households and instances of measure installation inspection failures); (4) Level and type of IOU training (including lead safety training) and screening (including background check) these specific contractors have completed; (5) Customer feedback for these contractors, positive and negative; (6) Demographic data of the current ESA workforce, including minority, local, low income, disabled, displaced, and other disadvantaged communities; and (7) the IOU’s assessment of any other needs of the existing workforce to meet the current and future ESA Program demands.


An additional purpose of collecting workforce data is to document the job and workforce outcomes of ratepayer energy efficiency investments. These outcomes can be used as metrics for the jobs and workforce “co-benefits” of energy efficiency investments. They can also systematically document labor conditions to verify and ensure compliance with existing employment and labor laws. The CPUC has recognized the concerns of stakeholders that IOU investments should create good jobs with living wages, offer access to good jobs for disadvantaged workers, and build career ladders that include adequate starting wages and a career path that leads to higher skilled, higher paid work. The CPUC has not yet specified quantitative goals related to these co-benefits or specified how they should be weighed against other priorities. However, it has recognized the value of baseline workforce data as a first step that can identify opportunities as well as areas of concern.

Surveys or other data collection mechanisms must be designed with these overall purposes in mind. For addressing the goal of energy savings, workforce and jobs data will be inputs into research analysis related to program effectiveness. For the second goal related to co-benefits, workforce and jobs data will be helpful to the CPUC in understanding the current situation and measuring progress over time. Baseline data and periodic monitoring has been an effective tool in CPUC General Order 156, which promotes diversity in procurement, another potential co-benefit of ratepayer investments.

**REVIEW AND ASSESSMENT OF CURRENT WE&T DATA COLLECTION PRACTICES**

The IOUs implemented guidance from the CPUC, to date, by conducting two separate surveys requesting self-reported information: one for ESAP subcontractors and another for participating contractors in one of the many EE programs, the EUC program. The ESAP survey instrument was a spreadsheet template sent via email to ESAP subcontractors. The survey asked contractors questions regarding their entire workforce and did not ask for disaggregated data by job category or individual worker. The EUC program developed an online survey for participating contractors based on revised questions from the ESAP survey. The main revision in the EUC survey was that the IOUs asked EUC contractors for information broken down by employee job category.

Participation rates differed greatly between the two surveys due to differences in program structure. The ESAP is a fully subsidized program and ESAP contractors have a subcontracting relationship with the

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93 For example, see “Response of Intervenors Green For All and Brightline Defense Project to ALJ Kim’s First Set of Questions”, January 13, 2012, [http://docs.cpuc.ca.gov/PublishedDocs/EFILE/RESP/157920.PDF](http://docs.cpuc.ca.gov/PublishedDocs/EFILE/RESP/157920.PDF); “Reply Brief of Green For All and Brightline Defense Project”, February, 16, 2012, [http://docs.cpuc.ca.gov/PublishedDocs/EFILE/BRIEF/160136.PDF](http://docs.cpuc.ca.gov/PublishedDocs/EFILE/BRIEF/160136.PDF); “Green For All Written Opening Comments to the Proposed Decision”, May 24, 2012, pages 2-5, [http://docs.cpuc.ca.gov/PublishedDocs/EFILE/CM/168055.PDF](http://docs.cpuc.ca.gov/PublishedDocs/EFILE/CM/168055.PDF); “The Greenlining Institute’s Opening Comments on the Proposed Decision” May 24, 2012, pages 11-15, [http://docs.cpuc.ca.gov/PublishedDocs/EFILE/CM/167445.PDF](http://docs.cpuc.ca.gov/PublishedDocs/EFILE/CM/167445.PDF); “The Greenlining Institute’s Reply Comments on the Proposed Decision” May 30, 2012, pages 4-5, [http://docs.cpuc.ca.gov/PublishedDocs/EFILE/CM/168053.PDF](http://docs.cpuc.ca.gov/PublishedDocs/EFILE/CM/168053.PDF); “Brightline Defense Project and Green For All’s Reply to Opening Comments on the Proposed Decision”, May 30, 2012, [http://docs.cpuc.ca.gov/PublishedDocs/EFILE/CM/168127.PDF](http://docs.cpuc.ca.gov/PublishedDocs/EFILE/CM/168127.PDF).

94 Employee Job Type categories from the EUC survey were Management/Supervision, Office Work, Marketing, Installer, and Other.
The first problem with the IOUs recent efforts to collect WE&T data is that both surveys failed to include critical questions. A conspicuous oversight in both surveys is the lack of questions related to compensation, including hourly wage rates by job category, rates paid per unit and number of units per day, hours worked per week, and whether workers received benefits such as employer-provided health care. Both surveys included a question about household income that asked for the number of employees eligible for California Alternate Rates for Energy (CARE), a program that provides a monthly discount on energy bills for income-qualified households. This provides baseline data about whether ESAP workers belong to a low income household but does not supply any information about ESAP wage and compensation levels because CARE eligibility is based on total combined gross annual household income and the number of people in each household. Although CPUC direction did not specifically ask for data on wage and compensation levels, the Donald Vial Center agrees that a robust response to CPUC intent requires this data is necessary.

More generally, we think the IOUs CPUC should expand upon their CPUC’s directive for the IOUs to collect ESAP data in seven specific WE&T areas by incorporating these areas into a broader and more rigorous framework for WE&T data collection. Table 2J.1 suggests a new framework consisting of six WE&T issue areas and provides an overview of the data needed in these areas compared to the data collected to date. This is our preliminary assessment and needs refinement if the IOUs adopt a more comprehensive approach.

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95 Email from Charles Segerstrom, June 6, 2013.
96 A total of 57 responses were received out of 367 contractors surveyed. See “Preliminary Findings and Summary of the Joint Utilities’ Initial Data Collection Efforts Pertinent to Workforce Education and Training Initiatives as Directed in Ordering Paragraph 35 of Decision 12-11-015”, May 1, 2013, page 3.
97 For more information, see http://www.pge.com/care/
Table 2J.1: Suggested Framework for WE&T Issue Areas, Data Needed to Measure Progress, and Data Collected to Date

<table>
<thead>
<tr>
<th>WE&amp;T Issue Area</th>
<th>Data Needed to Measure Progress</th>
<th>Data Collected to Date</th>
</tr>
</thead>
</table>
| Job Quality                           | • Detailed data on wage and benefit rates, along with hours worked. This should include hourly earnings for workers paid by the unit. | • Both surveys collected data on compensation type (hourly, salary or per unit)<sup>98</sup>  
|                                       |                                                                                                | • Both surveys collected data on the number of CARE eligible employees<sup>99</sup>  
|                                       |                                                                                                | • EUC survey asked average hours worked per week by employee job type but did not include results in summary report to CPUC<sup>100</sup> |
| Workforce Diversity and Job Access for Disadvantaged Workers | • Detailed demographics and data on workforce by job category to see how targeted groups are represented throughout the full spectrum of jobs | • Both surveys collected demographics and other data on workforce (only EUC survey collected data by job category)<sup>101</sup> |
| Career Ladders                        | • Career trajectories over time                                                                 | none collected                                                                       |
| Training Investments                  | • Training completions  
|                                       | • Hiring rates from various                                                                | ESAP survey asked whether contractors were required to complete specified IOU trainings<sup>102</sup> |

<sup>98</sup> “Preliminary Findings and Summary of the Joint Utilities’ Initial Data Collection Efforts Pertinent to Workforce Education and Training Initiatives as Directed in Ordering Paragraph 35 of Decision 12-11-015”, May 1, 2013, page 9; and Southern California Edison, “Template for Collecting Energy Savings Assistance (ESA) Program Workforce Education and Training Data per D.12-08-044”, page 2. This corresponds to the following WE&T area for ESAP data collection as instructed by the CPUC in D.12-08-044: (2) Contractor and subcontractor compensation schemes (hourly, piecemeal, salaried, etc.).

<sup>99</sup> “Preliminary Findings and Summary of the Joint Utilities’ Initial Data Collection Efforts Pertinent to Workforce Education and Training Initiatives as Directed in Ordering Paragraph 35 of Decision 12-11-015”, May 1, 2013, page 10; and Southern California Edison, “Template for Collecting Energy Savings Assistance (ESA) Program Workforce Education and Training Data per D.12-08-044”, page 4. This corresponds to the following WE&T area for ESAP data collection as instructed by the CPUC in D.12-08-044: (6) Demographic data of the current ESA workforce, including minority, local, low income, disabled, displaced, and other disadvantaged communities.

<sup>100</sup> “Preliminary Findings and Summary of the Joint Utilities’ Initial Data Collection Efforts Pertinent to Workforce Education and Training Initiatives as Directed in Ordering Paragraph 35 of Decision 12-11-015”, May 1, 2013, pages 4 and 12.

<sup>101</sup> “Preliminary Findings and Summary of the Joint Utilities’ Initial Data Collection Efforts Pertinent to Workforce Education and Training Initiatives as Directed in Ordering Paragraph 35 of Decision 12-11-015”, May 1, 2013, pages 4, 10-11, 13; and Southern California Edison, “Template for Collecting Energy Savings Assistance (ESA) Program Workforce Education and Training Data per D.12-08-044”, pages 3-5. This corresponds to the following WE&T area for ESAP data collection as instructed by the CPUC in D.12-08-044: (6) Demographic data of the current ESA workforce, including minority, local, low income, disabled, displaced, and other disadvantaged communities.

<sup>102</sup> Southern California Edison, “Template for Collecting Energy Savings Assistance (ESA) Program Workforce Education and Training Data per D.12-08-044”, page 6. This corresponds to the following WE&T area for ESAP data.
### Training Programs
- Turnover rates
- Retention rates
- Worker certifications / licenses

### Quality of Work
- Inspection success/failure rates
- Call backs
- Other measures of quality

### Qualifications of Participating Contractors
- Contract terms (subcontractor, competitive bid, direct award)
- Inspection success/failure rates
- Contractor certifications / licenses
- Contractor investments in employee training

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103 “Preliminary Findings and Summary of the Joint Utilities’ Initial Data Collection Efforts Pertinent to Workforce Education and Training Initiatives as Directed in Ordering Paragraph 35 of Decision 12-11-015”, May 1, 2013, page 15. This corresponds to the following WE&T area for ESAP data collection as instructed by the CPUC in D.12-08-044: (4) Level and type of IOU training (including lead safety training) and screening (including background check) these specific contractors have completed.

104 See “Preliminary Findings and Summary of the Joint Utilities’ Initial Data Collection Efforts Pertinent to Workforce Education and Training Initiatives as Directed in Ordering Paragraph 35 of Decision 12-11-015”, May 1, 2013; pages 4 and 12.

105 The ESAP survey asked each subcontractor for the total number of current active employees holding the following certification/licenses: Home Improvement Salesperson Registration, Lead Safe Practices, Other. The EUC survey asked each participating contractor for the number of employees in 2012 by employee job type that held the following certifications or licenses: BPI Certified (non-BA), HERS II Rater, BPI Building Analyst, Other. See “Preliminary Findings and Summary of the Joint Utilities’ Initial Data Collection Efforts Pertinent to Workforce Education and Training Initiatives as Directed in Ordering Paragraph 35 of Decision 12-11-015”, May 1, 2013, page 14; and Southern California Edison, “Template for Collecting Energy Savings Assistance (ESA) Program Workforce Education and Training Data per D.12-08-044”, page 5.

106 Southern California Edison, “Template for Collecting Energy Savings Assistance (ESA) Program Workforce Education and Training Data per D.12-08-044”, page 1. This corresponds to the following WE&T areas for ESAP data collection as instructed by the CPUC in D.12-08-044: (1) Contractor and subcontractor contract terms (competitive bid, direct award, etc.); (3) Number of inspection failures and the types of failures (including the number of enrolled customers later deemed ineligible, number of incorrectly assessed households and instances of measure installation inspection failures); (5) Customer feedback for these contractors, positive and negative.
The second problem is that the WE&T survey design did not follow survey research design protocols. One simple example of the challenges that arise from inadequate attention to survey design is illustrated by the revisions that were made to the EUC survey when it was realized, after the fact, that there was insufficient detail about different job categories in the ESAP survey.

Finally, collecting data through self-reporting comes with a number of inherent risks. For example, respondents may estimate information rather than identifying a precise answer due to time constraints or lack of knowledge, among other factors, or different respondents may interpret questions differently. Some of these risks can be mitigated through careful testing of survey questions. However, there is also the possibility of misreporting if respondents perceive a risk in answering accurately. Labor economists specializing in low wage labor markets are especially cognizant of misreporting on data related to compliance, including critical areas addressed here such as wages. Data collection systems that rely on self-reporting, therefore, must include checks on self-reported data to ensure accuracy. One way to do this is to request that employers submit a sample of certified payroll records for workers employed by program subcontractors and participating contractors. Another potential avenue for checking self-reported data is through spot interviews of employees. Worker interviews, similar to employer surveys, require expertise and resources to design and develop a survey methodology and questions based on recognized protocols.

RECOMMENDED CHANGES TO WE&T DATA COLLECTION PRACTICES

1. Require Contractors to Use an Electronic Certified Payroll Reporting System for Reporting WE&T Data

The IOUs should require all contractors and subcontractors employed on EE/DSM projects to use an electronic certified payroll reporting system to report specified jobs and workforce data. Such systems are widely-used in the public works sector for tracking jobs and workforce data and monitoring compliance with labor laws. Our initial research identified improved survey design as a short-term option to produce better WE&T data but based on further research, we strongly recommend an electronic reporting system as the preferred method for collecting data. Electronic reporting systems present a lower burden for contractors due to an automated reporting process, provide for secure and confidential transfer of data, produce better quality and more comprehensive data based on certified payroll records, and are typically cheaper, compared to a survey.

The IOUs should fund the annual cost of the electronic reporting system, and solicit qualifications and bids from different systems to compare costs and services. In order to streamline reporting and minimize total costs, the IOUs should pool their funding to procure one reporting system that will be utilized by all of the IOUs across multiple programs. This bundling approach will entail lower costs than if each IOU were to contract separately with such a system and may provide leverage to negotiate an even lower price due to the potentially large volume of projects. Additional measures to streamline reporting and reduce costs include negotiating contracts with a payroll company for all contractors, as is done for some other bulk purchasing of materials. The IOUs should also collectively fund at least one
full-time program administrator (to be housed within one of the IOUs) to manage the set-up and oversight of the electronic certified payroll reporting system and process.

The IOUs could phase in the implementation of this approach beginning with programs that already collect WE&T data, such as the Energy Savings Assistance (ESA) program. The IOUs should collectively develop standard language for contract documents to instruct contractors and subcontractors to report jobs and workforce data according to standard requirements across all the IOUs. At minimum, the IOUs should require contractors and subcontractors employed on EE/DSM projects to submit electronic certified payroll records that contain the following information for each worker employed on a project:

- Job classification by trade or occupational category;
- Job classification by journey level or apprentice level;
- Rate of pay;
- Number of hours worked per week;
- Disadvantaged status, including zip code of residence;
- Race, ethnicity, and gender; and
- Certifications held.

The IOUs should produce monthly reports with summary level data provided by the electronic certified payroll reporting system. The reports should be publicly available on each IOU website and/or a centrally located page on the CPUC website. Data collection should also include a mechanism for annual review and public reporting. This could be similar to the requirements related to CPUC General Order 156, which provided guidelines for a supplier diversity program subject to annual reporting and review.\(^\text{107}\)

Submitting certified payroll data to an electronic certified payroll reporting system is a fairly straightforward and often automated process. For contractors that use a payroll company, an electronic certified payroll system can easily set up a web interface with the payroll company to facilitate the secure transfer of data. For contractors that use payroll software, most software programs can generate a certified payroll record report that can be imported into an electronic certified payroll system in Excel, PDF or another compatible format. The relatively small number of contractors that use software programs without this capability would have to manually enter data.

There are a variety of electronic systems that track and report jobs and workforce data. Systems available off-the-shelf include Elation Systems\(^\text{108}\), used by the City of San Francisco and other jurisdictions, and LCP Tracker\(^\text{109}\), used by a number of UC campuses and K-12 school districts, among others. Some agencies, such as the City of Los Angeles Bureau of Contract Administration\(^\text{110}\), have developed custom tracking and reporting systems. This approach generally requires more time and

\(^{107}\) For more information, see http://www.cpuc.ca.gov/puc/supplierdiversity/
\(^{108}\) For more information, see http://www.elationsys.com/elationsys/
\(^{109}\) For more information, see http://www.lcptracker.com/
\(^{110}\) For more information, see http://bca.lacity.org/index.cfm
resources than using an off-the-shelf system but also provides opportunities for customization and in-house data management and storage. The state Department of Industrial Relations (DIR) within the state Labor and Workforce Development Agency uses a custom system to collect certified payroll data for a portion of public works projects however, DIR will solicit bids to use an off-the-shelf system for implementing Proposition 39 jobs and workforce reporting requirements because upgrades to its current system are not yet complete.111

Table 2J.2 compares the two most widely-used, off-the-shelf systems: Elation Systems and LCP Tracker. Additional information is needed to estimate specific costs for utilizing these systems to track WE&T data for particular EE/DSM projects. Our initial research suggests that LCP Tracker would be the more cost-efficient option for tracking WE&T data for programs that include a large number of individual projects. In the case of the ESA program, for example, the cost to use LCP Tracker would be based on easily attainable information that the IOUs know upfront: the annual volume of work in dollars. Elations Systems may be less cost-efficient given the large number of projects with ESA program funds, and it is more difficult to accurately estimate the cost to the IOUs prior to project completion.

111 A portion of California public works projects are subject to Compliance Monitoring Unit (CMU) regulations which require that contractors submit certified payroll records (CPRs) via DIR’s Electronic Certified Payroll Record (eCPR) system within 30 days after the work has been performed. CMU regulations only apply to projects that contain state construction bond funding or when awarding bodies utilize certain design-bid statutes. DIR is working to upgrade its eCPR system to move from a PDF upload application to a more data-driven system allowing for comparison and analysis of data submitted.
Table 2J.2: Comparison of Elation Systems and LCP Tracker

<table>
<thead>
<tr>
<th></th>
<th>Elation Systems</th>
<th>LCP Tracker</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual Cost Structure (to be paid for by IOUs)</strong></td>
<td>Annual cost based on the number of independently bid projects</td>
<td>Annual cost based on total dollar value of multiple projects, plus an additional one-time upfront cost based on customized reporting needs</td>
</tr>
<tr>
<td><strong>Estimated Cost to IOUs for Contractor Training</strong></td>
<td>$300 per webinar; $800 for on-site training session</td>
<td>Included in cost above</td>
</tr>
<tr>
<td><strong>Estimated Cost to IOUs for Technical Assistance</strong></td>
<td>No additional cost</td>
<td>No additional cost</td>
</tr>
<tr>
<td><strong>Cost to Contractors to Use System</strong></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Generally best for:</strong></td>
<td>Programs with very few independently bid projects</td>
<td>Programs with multiple projects where the total annual investment is known upfront</td>
</tr>
</tbody>
</table>

The IOUs should also explore collaboration with the Division of Labor Standards Enforcement (DLSE) and the Employment Development Department (EDD) within the California Labor and Workforce Development Agency to monitor wage and earnings data through these agencies ongoing data collection and analysis practices. For example, the DLSE may be able to verify compliance of contractors participating in IOU programs with employment laws and regulations. The construction industry has been identified as one of the industries with the greatest rate of wage and hour violations, and DLSE is currently developing specific indicators and screens to identify violators. Employers are also required to report employee earnings data to the EDD, and it is worth exploring whether or not this data could be accessed in a way that would be useful for IOU and CPUC goals.

Inter-agency efforts currently underway to identify labor violations may offer lessons for collaboration and an avenue for partnership. The Labor Enforcement Task Force112 (LETF), for example, is a joint effort between state agencies to ensure that workers receive proper payment of wages and are provided a safe work environment; ensure that the state receives all employment taxes, fees, and penalties due from employers; and eliminate unfair business competition by leveling the playing field. The LETF inter-agency collaboration includes the Department of Industrial Relations, the Employment Development Department, the Contractor’s State Licensing Board, the California Department of Insurance, the Board of Equalization, the Bureau of Automotive Repair, and the State Attorney General.

2. **Provide Staffing for Electronic Reporting System Set-Up and Oversight**

The IOUs should collectively fund at least one full-time program administrator (to be housed within one of the IOUs) to manage the set-up and oversight of the electronic certified payroll reporting system and process. There is a significant amount of upfront work necessary to oversee system set up, establish procedures and coordinate with the IOUs, contractors, subcontractors and system procured for...
reporting. The IOUs should hire or assign an experienced professional with a specific skill set needed for this work, including technical knowledge and experience with the construction industry (including construction terminology, principles and project delivery methods); technical knowledge and experience with labor compliance systems; knowledge of California Labor Code rules and regulations; and experience using electronic certified payroll systems for a high volume of projects. While more work will be needed on the front end, ongoing oversight is also necessary to ensure a successful system that provides good quality, comprehensive data. The specific staffing levels to ensure successful reporting will vary depending on the volume of programs and projects utilizing the electronic reporting system.

Among other responsibilities, the program administrator(s) will:

- Interface and coordinate with IOUs, contractors and subcontractors (e.g. add new users to the system by generating IDs and passwords);
- Establish procedures for contractors and subcontractors to report specified jobs and workforce data;
- Establish procedures for IOUs to check and validate data reported by contractors and subcontractors;
- Interface and coordinate with the provider of the electronic certified payroll system (e.g. coordinate training and technical assistance for contractors and subcontractors to be delivered by electronic certified payroll system; work with developers to design customized reports that will produce good quality data); and
- Interface and coordinate with IOU staff and/or consultants responsible for data analysis, evaluation and preparation of reports (e.g. generate and compile electronic certified payroll system reports for periodic review and in-depth analysis and evaluation).

3. **Evaluate WE&T Data Annually**

The IOUs should fund an annual evaluation process for WE&T data, to be conducted by IOU staff or an outside consultant, and develop a stakeholder engagement plan to involve interested parties in the evaluation process. Evaluation activities should include, but are not limited to, an analysis of raw data provided by the electronic certified payroll system and a comparison of WE&T outcomes within and across EE/DSM programs for all IOUs.

The IOUs should develop a common scorecard or similar evaluation tool to compare detailed outcomes including wages, job classifications, apprentice- and journey-level hours, total job hours, and demographic and other data as previously described. Additional research is necessary to evaluate options for and develop a common scorecard or similar tool. Report categories and indicators should be standardized for comparison across different programs and IOUs, and be determined in consultation with the CPUC. Annual evaluation reports and materials, such as scorecards and supplemental narrative reports, should be publicly available on each IOU website and/or a centrally located page on the CPUC website.
If the IOUs do not act collectively to develop and implement a common scorecard, the CPUC could develop statewide WE&T goals and direct the IOUs to develop a common scorecard to measure, report and compare ongoing progress toward these goals. The CPUC could require that the IOUs submit the scorecard on an annual basis to report and measure progress toward specified WE&T goals. The scorecard could be available for public review, which may provide further incentive for the IOUs to target data collection efforts to effectively measure and demonstrate progress.
3 A SECTOR STRATEGIES

PROBLEM STATEMENT

The objective of Strategic Goal #4 from the Scope of Work to assist the IOUs to implement “sector strategies” in a way that best contributes to achieving their energy efficiency and related workforce goals and specific CPUC directives.

The IOUs have devoted considerable effort and made important strides in initiating and developing sector strategies, including PGE’s Energy Workforce Sector Strategy and the statewide non-residential HVAC sector strategy. They have successfully convened industry players and educational institutions, have led these efforts in an open and transparent way, and continue to move forward. However, initiatives have not been consistent across the state, and a number of challenges have arisen. These challenges include differing definitions and interpretations of the goals of the CPUC directives regarding sector strategies, a lack of consensus among industry players about the best way forward, a lack of specific commitments from employers, and unfamiliarity among IOU staff with the range of implementation tools and strategies that sector strategy practitioners have developed in other industries. In addition, we note that the IOUs, though they have not yet done so, do have an opportunity to develop a sector strategy approach for the inclusion of disadvantaged workers.

WHY SECTOR STRATEGIES?

Sector strategies are industry partnerships of employers, training and education institutions, labor and community stakeholders, and others who come together to plan and implement training programs. Sector strategies are considered a best practice approach to workforce development and are designed to meet the needs of employers for skilled workers, while benefitting workers through placement in career-track jobs and career advancement opportunities.

Evidence from the workforce development evaluation literature confirms sector strategies as a successful approach to workforce development for both incumbent and entry level workers. Workers participating in sector strategies have gained employment, experienced increases in wages, and have had better career trajectories than control groups. Studies also show positive returns to their investment in training through increases in productivity; and voluntary on-going employer investments in training indicate that they see value. Returns are particularly high for both workers and employers in apprenticeship, which is an institutionalized form of sector strategies, usually regulated by the state.
with on-going commitments of industry funding\textsuperscript{116}. The main factor leading to the success of sector strategies compared to other types of workforce development projects is the involvement of employers, not only in identifying skill gaps but also in committing to co-fund training of incumbent workers and/or to hire graduates of training programs.\textsuperscript{117}

There is currently a significant opportunity for the IOUs to collaborate with other state workforce and education agencies, who have ramped up their efforts to align funding using a sector strategy approach. The sector strategy approach has been adopted in the California Workforce Investment Board (CWIB) Strategic Plan\textsuperscript{118}, which sets strategic direction for all of the state’s workforce development programs. The Community Colleges Chancellor’s Office has developed the Sector Navigator Initiative,\textsuperscript{119} to realign priorities and funding. The state-certified apprenticeship system and the Employment Training Panel, whose programs already embed deep employer commitment and a sector strategy approach, are also actively engaged with the CWIB and the Community Colleges in aligning their efforts to collectively support sector strategies\textsuperscript{120}.

\textbf{REGULATORY BACKGROUND AND PROGRESS TO DATE}

The Needs Assessment recommended that IOU WE&T programs adopt the sector strategy framework for their WE&T programs. The Needs Assessment argued for this approach for two main reasons: first, the sector strategy approach can effectively engage employers in the building and construction industries, who have the capacity to impact the use of energy in buildings, in industry, and in agriculture; and second, the approach can leverage other training funding sources to provide training for workers already employed or with high probability of employment after training.

In their October 2011 Advice Letter\textsuperscript{121} responding to the Needs Assessment, the IOUs agreed to develop and initiate Sector Strategies, and test and refine the sector strategy approach as needed for the IOU context.\textsuperscript{122}

The CPUC’s Guidance Decision\textsuperscript{123} addressed sector strategies as well. It recognized the value of sector strategies not only to address the “supply-push” for training construction workers with EE skills (i.e. by supporting EE skills training), but also the “demand-pull,” to create the demand for skilled workers by requiring firms who participate in resource programs to use workers with certain skill certifications or

\textsuperscript{116} Cite from NA from U texas, EU literature
\textsuperscript{117} Cite RFF,
\textsuperscript{118} See http://www.cwib.ca.gov/plans_policies_state_plans.htm
\textsuperscript{119} http://extranet.cccco.edu/Divisions/WorkforceandEconDev/WEDRFAs.aspx
\textsuperscript{120} Interviews with state workforce officials
\textsuperscript{121} Additional Supplemental Joint Filing: 2010-2012 Statewide Workforce Education and Training (WE&T) Program Modifications based on Findings of WE&T Needs Assessment. October 24, 2011.
\textsuperscript{122} Advice Letter p 4 (see sg1 for cite)
providing a larger incentive for firms who do so. The CPUC directed the IOUs specifically to 1) support the California Advanced Lighting Controls Training Program (CALCTP)\(^{124}\); 2) develop a sector strategy for the non-residential HVAC industry based on the CALCTP model, and 3) to initiate sector strategies in other sectors, also using CALCTP as a model.

The IOUs have begun to develop sector strategies, but their efforts remain incipient. PG&E has led this effort by convening the statewide HVAC sector strategy and launching an umbrella effort entitled the Energy Workforce Sector Strategy (EWSS) for their territory. The other IOUs have followed PG&E’s lead but their participation has been largely limited to supporting the state wide HVAC effort and continuing to offer CALCTP classes at their Energy Centers.

In general, interviews with the other IOUs revealed confusion about the definition and purpose of sector strategies. For example, when asked by the CPUC to report on a specific funding allocation for sector strategies in their 2013-2014 the IOUs responded that they “do not see Sector Strategy efforts as mutually exclusive of current WE&T Centersies implementation strategy. IOUs will support sector strategies as a way of restructuring portions of their programs to focus on specific audiences”\(^{125}\). The IOUs are now working on a definition of “sector strategies” that more closely corresponds to the widespread use of the term in the workforce world, which will help them distinguish these activities from their current class offerings\(^{126}\).

PGE’s has made an important investment in its EWSS, working through a consultant that also works with the community college Sector Navigator program. However, the statewide HVAC sector strategy is currently stalled, and the IOUs’ support for CALCTP is limited to offering classes at the Energy Centers.

Our recommendations are designed to strengthen current IOU efforts, while providing a plan that allows other groups with current capacity and greater expertise to play a more significant role in sector strategy implementation.

**SCOPE OF WORK**

The scope of work for this chapter is to review the IOUs’ efforts to develop sector strategies and to provide recommendations on opportunities to strengthen this area of their work. Using interviews and review of IOU materials documenting sector initiatives, we present an analysis of current sector strategies, including progress each sector strategy has made, obstacles and challenges, and lessons from CALCTP and other sector strategies that identify areas for improvement.

**RECOMMENDATIONS**

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\(^{124}\) [https://www.calctp.org/](https://www.calctp.org/)

\(^{125}\) PGE 2012-2013-2014 Energy Efficiency Portfolio Program Implementation Plan WE&T Attachment 1, p. 118.

\(^{126}\) Attach SS document as appendix
We recommend that the IOUs develop a competitive solicitation process for two types of sector strategies, as described in SG 1: one for upgrading the EE/DSM skills of incumbent workers, and one to promote inclusion of disadvantaged workers into living-wage, career-track jobs. We describe these proposals in greater detail in SG1.

We have presented the rationale for our recommendations for using a competitive solicitation process (RFP) for sector strategies in SG1. This is a tried and true method used currently by the state Workforce Investment Board, the Community College Chancellor’s Office, the U.S. Department of Labor (DOL) and other sector strategy funders. We believe an RFP process is advantageous because it helps bring in partners with core competency in workforce development, it provides better opportunities for leveraging other workforce dollars by requiring matching funds, and it allows for the voluntary coming together of a group of employers who see a value proposition in the sector strategy. It has been found to be especially effective as a strategy to support the inclusion of disadvantaged workers127.

We also have specific recommendations about the sector strategies to date. These include:

**CALCTP:** The IOUs should launch a state-wide incentive program that requires CALCTP certification for participating contractors.

**HVAC sector strategy:** The IOUs should not lead this sector strategy, but rather encourage the HVAC industry to apply for funding from RFP # 1.

**EBCx:** The EBCx effort should be reconceived and should be built on a partnership with the two Stationary Engineers apprenticeship programs in California, for apprenticeship and journey upgrade training.

**EWSS:** The EWSS has initiated a process of identification of key stakeholders, research, priority-setting, and scanning for opportunities that can easily be folded into the RFP process that we recommend. Specific partnership that have been started will be eligible to apply for funding through the RFP. The identification of key stakeholders, subject matter experts and educational partners will inform both the formation of the technical skills panels and jumpstart good sector strategy projects that can apply for funding.

**CALIFORNIA ADVANCED LIGHTING CONTROLS TRAINING PROGRAM**

The CALCTP program provides an example of a successful sector strategy leading to the development of incumbent worker training and third party certification. It involves strong industry buy-in, leveraging of industry and public workforce training dollars, and strong prerequisites for worker participation in training to enhance the skills of the incumbent electrical workforce. This project was initiated by SCE’s Design and Engineering Services Group whose primary objective is to promote emerging technologies. CALCTP was initiated as a specific response to installation quality issues in the Advanced Lighting

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127 Needs Assessment, Aspen Fdn., etc
Controls sector. SCE along with the UC Davis California Lighting Technology Center (CLTC) and other subject matter experts had identified workforce issues and skill shortages as a major barrier to market adoption of this set of technologies and controls.

The initiative began with a stakeholder meeting with manufacturers, subject-matter experts (SMEs), and contractors (including both union and non-union contractors) to discuss the reasons for low take-up of advanced lighting controls and possible solutions. Stakeholder feedback validated SCE and CLTC’s hypothesis that upgrading the skills of incumbent workers was necessary for successful installations, which in turn would improve market uptake. The initiative was launched, with SCE taking the lead on funding the curriculum\(^{128}\), which was developed by an industry expert with on-going input from a technical advisory group of SMEs from the IOUs, the national labs and the UC Davis CLTC.

SCE asked for industry participation from contractors who would make commitment to use the training. The International Brotherhood of Electrical Workers and National Electrical Contractors Association (IBEW–NECA) stepped up as a full partner, offering its joint apprenticeship program infrastructure and invested heavily in the effort, including donating its training centers for curriculum testing, paying its instructors for the alpha and beta testing of the curricula, supplying grant writers who were able to secure a $5 million dollar federal Department of Labor grant and several other outside funds, and paying journey electricians to take the training.

The training is currently offered at the NECA-IBEW’s 21 joint apprenticeship and training centers (JATCs), 7 community colleges with Advanced Transportation Technology and Energy programs, and 3 IOU Energy Training Centers, making it widely available to all state certified General Electricians. Curriculum is updated on an annual basis.

As of February, 2014, CALCTP has trained 2,538 electricians, including 2,222 who have attained a CALCTP third-party certification. Ninety contractors have attained CALCTP firm certification which requires business and systems course work for management in addition to certification of the electrician employees, and 250 more contractors are in the process of getting certified.

CALCTP has become a nationally recognized model for improving work quality in a key energy efficiency sector and provides a guide for workforce planning for other emerging technologies and measures such as retro-commissioning, new energy storage technologies, and other integrated demand-side management initiatives. This program also illustrates the benefits of collaboration between the IOUs, the University of California, and networks of licensed contractors who have a proven commitment to investing in comprehensive skills training. It has drawn on the existing strengths of each of the partners, taking advantage of the technical expertise of CLTC and the existing training infrastructure at IBEW-NECA, as well as the Design and Engineering Services Group at SCE.

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**CRITICAL COMPONENTS THAT MAKE CALCTP A MODEL SECTOR STRATEGY FOR INCUMBENT WORKER SKILL UPGRADES**

\(^{128}\) SCE continues to own its intellectual property rights, which it licenses to others

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The following key components are necessary for the development of successful sector strategies for incumbent workers in the EE/DSM context, and were present in the development of CALCTP. We describe how CALCTP incorporated them.

1. **Identification of workforce skill issues as a key factor that can propel market transformation**

   Subject matter experts identified installation problems as a key issue in their research on market adoption, evidenced by the fact that advanced lighting control systems were often overridden by building occupants when they didn’t work. The link to workforce skill gaps was underscored when even contractors chosen by the manufacturers installed the systems incorrectly. The first sector strategy stakeholder convening, where manufacturers, contractors, SMEs, facilities managers and others were present, validated the hypothesis that upgrading skills could help expand market adoption.

2. **Specific employer commitment and co-funding**

   At the first sector strategy stakeholder convening SCE and CLTC invited the electrical contractor community and asked for support for the project. NECA stepped forward and became the industry co-lead, and invested several hundred thousand dollars in the project, including the costs of curriculum testing, instructor training, grant writing for public training funds, and other investments. The fact that NECA represents contractors who already make a substantial investment in training through their participation in a state-certified apprenticeship program meant that they could build on their very robust training infrastructure. It also meant that members were already in the segment of the market that values high skills, and they already had the mechanisms in place to create, test and then deploy new curricula. Furthermore, NECA contractors were already self-organized as a multi-employer association who could make investment decisions on behalf of their members. As part of the state apprenticeship system, NECA was also well-positioned to both be aware of and successfully apply for public training funds. This is a big advantage for the IOUs and the CPUC, as it leverages substantial private industry funding for training. NECA/IBEW’s investment was essential for launching the initiative; without industry validation and initial support SCE could not justify the investment and the curricula could never have been made available to the community colleges and the IOU training centers.

3. **Adequate market demand**

   Sector strategies are predicated on the voluntary participation by employers who are unlikely to commit resources or use the training unless they see a value proposition, i.e. higher productivity or growth in sales. Since training alone cannot drive market expansion, verifying market demand is critical.
In the case of CALCTP, industry’s willingness to invest was predicated on SCE’s signal that they were considering a new incentive program that would either require CALCTP certification or provide a higher rebate to customers who hire a CALCTP certified electrician. Shifting incentives towards certified workers creates a value proposition for investing in quality installations with verified energy savings. As it was conceived, the CALCTP partnership enabled planning for workforce training and new utility programming to be done simultaneously and in a complementary fashion, rather than addressing workforce issues after the fact. This could enable energy program designers to build in upfront quality assurance mechanisms that get to the root of market related issues and training gaps.

We note that this incentive program is still under consideration five years later. NECA made a risky investment in the hopes that they could participate in a growing market, and the lack of follow-through by the IOUs has put the value of this investment in doubt.

4. **Rigorous KSA identification and curricula development based on SME direction, including identification of base-line skills and training pre-requisites**

The involvement of key SMEs with expertise in EE/DSM technologies and systems is essential for successful sector strategies that can contribute to the state’s EE/DSM goal. This is more critical in the EE/DSM sectors where ratepayer funds are meant to drive changes that the industry has not yet embraced, than in other sectors, where employers may already have enough knowledge about needed learning outcomes. While industry validation is also critical, SMEs must be in a leadership role for the curriculum development process if sector strategies are to serve the policy goal of market transformation.

In addition, ratepayer investment in training can get the most bang for its buck when it builds on the skills of trades workers who have already achieved a high level of skills and experience. Establishing clear pre-requisites for participation so that learning can occur from a similar starting point can create a readily deployable skilled workforce. Due to the advanced level of the skills taught, CALCTP not only requires an electrical licensure as a prerequisite for its program, but also mandates online prerequisites provided by lighting controls manufacturers.

5. **Certification based on 3rd party competency testing**

Certifications that are industry-recognized, test for competency, and are verified by an independent third party, can help create clarity in the market, generating benefits for employers, workers, trainers, government regulators, and customers. A recognized system of portable, stackable credentials can lower employer hiring costs, help guarantee a standard
quality of work, signal content to training providers, and reward workers’ training investments with upward mobility.\textsuperscript{129}

CALCTP incorporates a new certification that builds on an electrician’s license and other advanced training. Trainees earn the certification upon completion of the training and must demonstrate competency through testing.\textsuperscript{130} If an advanced lighting incentive program is launched that includes a link to CALCTP, it will reinforce the importance of this certification and create demand in the market.

Many are recognizing the importance of developing a robust certification system, in particular in energy-efficiency-related sectors. The Department of Energy (DOE) and the National Institute of Building Science, along with stakeholders, are currently in the process of developing voluntary national guidelines for commercial building workforce training and certification program as part of the Better Buildings Workforce Guidelines initiative.\textsuperscript{131} DOE led a similar effort in the residential sector in 2012.\textsuperscript{132} The Department of Labor has also been supporting strong 3\textsuperscript{rd} party certifications.

### IOU Sector Strategies Progress to Date

This section provides a summary of the progress the IOUs have made in initiating sector strategies since the CPUC’s May 2012 Guidance Decision direction to support their development. We review the state-wide efforts to support CALCTP and the HVAC sector strategy, PG&E’s Energy Workforce Sector Strategy, and the WE&T classes that most closely align with a sector strategy approach.

Much of the analysis and detailed recommendations are provided in SG 1. Here we present more detailed information about IOU sector strategies that also helps explain the rationale for our recommended approach. We first present an analysis of CALCTP, since both the Needs Assessment and the Guidance Decision called it out as an example of a successful sector strategy, and there is general consensus from stakeholders that it is a good model for an incumbent worker sector strategy. We then identify points of commonality and difference between CALCTP and the more recent IOU efforts, and identify the core elements that allowed CALCTP to overcome challenges.

### Support for CALCTP

The IOUs were directed to provide on-going support for CALCTP in the 2013-2014 program period. In their PIPs, the IOUs committed to continue supporting CALCTP trainings and to “explore the

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\textsuperscript{129} White, S., L. Dresser, J. Rogers (2010). Greener Skills: How Credentials Create Value in the Clean Energy Economy. Center on Wisconsin Strategy, (p.4); Needs Assessment p 125

\textsuperscript{130} https://www.calctp.org/become-certified


opportunity” to provide an augmented advanced lighting incentive to customers using a CALCTP-certified electrician. The IOUs have offered CALCTP training sessions through the Energy Centers but have not yet created an incentive program that includes CALCTP. That is, the IOUs have supported the supply of a CALCTP-trained workforce by offering trainings, but have not created the demand for that workforce by linking this certification to incentive programs. Until an incentive program that includes a requirement that CALCTP certified contractors be used, trainings can continue but are unlikely to have a significant impact on the market at large.

HVAC SECTOR STRATEGY

The May 2012 Guidance Decision ordered the IOUs to include in their 2013-2014 applications to “test the sector strategy approach for the non-residential HVAC sector.” The PIPs included a commitment to continue the HVAC sector strategy that they launched in 2012. As stated in the PIP, “the IOUs have collaborated on a statewide memorandum of understanding with the California Division Apprenticeship Standards, which will provide a framework for partnership with labor, trade and professional organizations that resembles the existing CALCTP program.”

At present, the HVAC sector strategy has not produced results and is at a standstill. Although the California Division of Apprenticeship Standards (DAS) spent considerable time developing an implementation plan and gained agreement from key apprenticeship programs for the collaboration, the IOUs never agreed to an MOU. The IOUs wanted the collaboration with the DAS to include all industry players and institutions. The DAS proposed a customized solution for the programs it regulates so that the collaboration could start with a voluntary commitment by employers involved and could be an enhancement of their current level of training. The DAS and their apprenticeship partners felt that a broader collaboration with employers outside the system would not be feasible because of the vast difference in baseline competency levels, the unique funding mechanisms and other specific features of apprenticeship. Although DAS and apprenticeship program participants were not opposed to the IOUs developing other partnerships with other HVAC industry groups, they did not believe an all-inclusive program was feasible or worth their investment. The MOU was never signed.

At the same time that the IOUs and DAS were exploring a partnership, the PGE WE&T team also took the lead for the statewide commercial HVAC sector strategy that was part of the CPUC Guidance Decision. This effort brought together a large variety of stakeholders in the HVAC industry, including the Western HVAC Performance Alliance, a broad industry grouping financed by the IOUs. Stakeholder participants included union and non-union contractors, representatives of trade organizations such as IHACI and ACCA; educational institutions, CBO training organizations, sheetmetal and plumbers/pipemakers’ unions and apprenticeship programs; and CPUC and IOU staff. Although all identified work quality as a central concern, this stakeholder process did not lead to consensus about an approach to training, identification of appropriate certifications, or a process to determine skill and competency requirements.
for the IOU commercial HVAC incentive programs. Two competing approaches were discussed: the non-union participants and the IOUs favored a specific focus on a skills and quality issues associated with single technology, economizers; the union contractors and apprenticeships, DAS and some other stakeholders favored an approach emphasizing a broader skill set, and holistic approach to the full range of quality issues in HVAC installation and maintenance. The IOUs called for an online survey response to determine the approach, and the economizer proposal won the most votes from participants. However, the IOUs later withdrew their support for the focus on economizers because of on-going technical issues, and the stakeholder sector strategy process has been on hold.

The discussion on work quality and resource program training requirements is being continued in the context of the HVAC commercial QM programs, with the CPUC engaging in an in-depth EM&V process focused on quality issues in the HVAC sector. Recent reports show persistent quality problems in the QM program, including in the use of economizers, rooted in program design and technicians’ skills.

The HVAC sector’s complexity is widely acknowledged and there are multiple reasons that an HVAC sector strategy would face challenges. While we cannot provide either a full analysis of the dynamics of this sector strategy nor a comprehensive solution, we make two observations that distinguish the CALCTP approach from the HVAC approach. First, the CALCTP project had a very strong and committed industry partner from the beginning, that brought together multiple contractors, was willing to make specific investments in training their incumbent workers and had a training delivery infrastructure in place. Second, the KSA identification and curricula development process was carried out by subject matters experts, and while there was industry input, control remained in the hands of technical experts rather than those with economic interests in the outcomes. The fact that a specific set of employers came to the table, and they brought workers who shared a common baseline skill level, provided the curricula developers with a clear, and high-level starting line from which they could enhance skills. In the case of the HVAC, the IOUs did not want to choose one industry partner, and did not ask for the kind of commitment that occurred in CALCTP. The lack of these two necessary components contributed to the inability of the HVAC sector strategy to move forward.

An RFP process may provide a more successful approach. A strategic procurement process can clearly outline activities and outcomes, and allows for a transparent assessment of the level of commitment by employers, and involvement of subject matter experts, among other things.

PGE’s EWSS

In 2012 PG&E launched their umbrella “Energy Workforce Sector Strategy” (eesectorstrategy.com/), hiring a non-profit organization called Workforce Incubator to carry out this work on their behalf. The EWSS was launched in 2012 with investment in background research and a series of convenings that has cultivated a stakeholder community of over 100 industry and educational partners. The EWSS takes a broad and comprehensive approach to sector strategies. Through the stakeholder advisory council, the

EWSS has built a network of community colleges and universities, and is supporting a process to identify critical EE/DSM skills via a skills panel. It also has created a web portal with training resources for students and a list of training programs from which employers may seek to hire graduates.

This is a new effort and is building the knowledge-base of participants, creating and expanding networks, and opening doors to new strategic opportunities specific to energy efficiency. It helped support a new CSU East Bay certificate program in Integrated Energy Solutions that has not yet been launched. It has engaged in regional stakeholder convenings in Sacramento and Modesto to identify priorities and scan for opportunities.

It has also led to several concrete accomplishments:

- An 8 hour business development course for professionals and contractors to help them sell end-users on energy efficiency investments in the commercial building sector
- A partnership with SF City College (now on hold due to internal issues at the college) for commercial energy auditor program
- A “train-the trainer” program on Title 24 to engage faculty in consistent integration of content across community colleges in the PG&E territory.

These efforts represent an important investment in sector strategies, although it is too early to assess their outcomes. One missing piece is the clear commitment by a group of employers for a specific project; we believe the RFP we recommend can facilitate this component.

The process of identifying key stakeholders, conducting research on jobs and occupations, setting priorities, and scanning for opportunities all can thrive within the RFP process that we recommend. Specific partnerships that have already begun will be eligible to apply for funding through the RFP. EWSS’s identification of key stakeholders, subject matter experts and educational partners will inform both the formation of our recommended technical skills panels and help jumpstart new sector strategy projects that can apply for funding.

**RETROCOMMISSIONING AND BOC**

The IOUs have also identified already existing programs that may fit the definition of sector strategy even though they weren’t conceived under this framework. Although not all programs identified by the IOUs as pre-existing sector strategies qualify as such, two PG&E programs in particular include some of the critical best-practice features of a sector strategy: the Existing Building Commissioning (EBCx) workshop series and the Building Operator Certification (BOC) program. The main feature of these two programs that mark them as best practices is the commitment by employers to co-fund the training for their employees, and to support the trained workers in making changes in the way they carry out their work. Both of these programs require the involvement of the end-users who put forth their buildings as hands-on learning sites and test cases for workers.
The Building Operator Certification is a national program that offers a basic level of skills training and accreditation for facility operators/managers. It includes competency-based training and certification, and employer commitment to send their workers to the series of training sessions. BOC includes two levels of certification, which operators earn by attending training and completing examinations and project assignments and in their facilities.\textsuperscript{136}

PG&E Pacific Energy Center’s Existing Building Commissioning (EBCx) workshop series involves a more advanced level of training on building operation, using monthly workshops over the course of a year, that “expose participants to the planning, decision-making and diagnostic aspects of commissioning by actively working on a real facility.”\textsuperscript{137} Students apply what they learn directly to the buildings that they work on, completing all planning, analysis, and decision-making under the supervision of commissioning experts.\textsuperscript{138}

Both of these programs include several of the critical components of successful sector strategies. Employers have a significant investment because of the worker time and building resources that they commit over the course of the training. Both programs also involve rigorous, SME-informed curricula; pre-requisites for participation; long-term series of hands-on training sessions; and competency testing. BOC also involves an industry-recognized certification. Each has demonstrated significant impacts on energy savings as well.\textsuperscript{139}

One element that could improve BOC and EBCx is to develop partnership with high-road industry associations and apprenticeship programs for building operators, in particular the stationary engineers. The two stationary engineers’ local unions in California represent about 27,000 incumbent building operators and are thus a prime candidate for partnerships for training. Although the BOC trains at a much lower level than the stationary engineers’ apprenticeship program, the EBCx curricula may provide some areas of potential skill enhancements. No programmatic partnership has been developed, but PG&E indicated that this is something they would be interested in doing.

\section*{NO SECTOR STRATEGIES FOR INCLUSION}

Currently the IOUs have not launched any sector strategies in this area. We describe this recommendation, and our proposed “phase one” bridge program to pre-apprenticeship, in detail in Chapter 3.

\begin{itemize}
\item \textsuperscript{136} PIPS p 44
\item \textsuperscript{137} Stroupe, ACEEE paper
\item \textsuperscript{138} Stroupe, ACEEE paper
\item \textsuperscript{139} Impact eval appendix d, interviews with PG&E staff.
\end{itemize}
3. B LOGIC MODEL WITH SKILLS BUILDING FOR THE STATEWIDE WE&T CENTERGIES AND CONNECTIONS SUBPROGRAMS

Logic Model for the Statewide WE&T Centergies and Connections Sub-Programs

**Role**

**Market building**
- Tools lending library
- Demonstrations and consultations
- Stand-alone classes on programs and new measures
- Consumer awareness and career education programs

**Skills Building**
- Skills Upgrade w/Sector Strategies
- Skills Core
- Skills Pipeline w/Sector Strategies
- Support and fund sector strategies for DSM skills upgrade for incumbent workers: 1) KSAs, certification and curricula development and 2) incumbent worker training
- Support / fund community colleges, 4-year colleges, and state-approved apprenticeship to upgrade EE content
- Support and fund sector strategies to train and place disadvantaged workers (e.g., pre-apprenticeship bridge programs)

**Activities**

**Outputs**

**Short Term Outcomes**
- Decisions to invest in DSM measures and systems
- Decision to "sell" DSM programs
- Increase awareness of DSM measures, systems and programs and career opportunities
- Skills applied in field leading to improved quality for EE/DSM
- Next generation of EE workforce trained and credentialed
- Disadvantaged workers complete program with skills and support for job placement and further training

**Mid Term Outcomes**
- Growth in participation in EE/DSM of employers with skilled EE/DR workforce
- Workers in key occupations have skill set that includes EE/DSM
- More disadvantaged workers on career paths and in career track jobs

**Long Term Outcomes**
- Increased energy savings (kWh and peak demand); market transformation
- Workforce development, equity and inclusion goals
- Workers in key occupations have skill set that includes EE/DSM
- More disadvantaged workers on career paths and in career track jobs

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3.C FUNDING SOURCES AND PARTNERS FOR IOU SKILL-BUILDING PROJECTS

Key workforce stakeholders such as the Division of Apprenticeship Standards (DAS), California Community Colleges (CCC), University of California (UC), the Employment Training Panel (ETP), and the California Workforce Investment Board (CWIB) are engaged and interested in partnering with the IOUs to partner and have verbally committed to aligning resources to promote improved energy efficiency education.

These partners will engage with the WE&T goals in the following ways:

- Representatives from each organization will participate in the WE&T Steering Committee and will provide their time and expertise to the group as leverage. Representatives may also commit their institutions resources to targeted projects and RFP’s aligned with the career pathways implementation plans.
- Within the implementation plans, organizations may be enlisted as critical partners in RFP development and deployment, including the potential braiding of funds in the RFP offering.
- Institutions and organizations responding to RFPs at the local and regional level will be required to submit leveraged resources from funding outside of the IOUs.

The following is a list of statewide investments that intersect with the work of the IOU WE&T programs. These investments, in the form of grants, organizations and initiatives, are sampling of what could be leveraged with WE&T investments in energy efficiency training.

**Employment Training Panel (ETP):** ETP is a business and labor-supported state agency that funds the costs of vocational training. ETP is governed by an 8 member Panel. ETP is funded by a tax on employers, collected alongside the Unemployment Insurance tax. Focus = Incumbent workers skills upgrade, unemployed, some funding to pre-apprenticeship programs (to increase retention).

Eligible training agencies include:

- Community College or Community College District;
- University or University foundations;
- Adult School;
- Regional Occupational Program; and
- Private training agency with at least a two year history of providing training and placement services to the public, and appropriate certification

**POTENTIAL CONNECTION TO WE&T PROPOSAL:** ETP funds could be accessed to either fund training for unemployed/dislocated workers and upgrade skills (EE-related) for workers in specific companies or industries.

**California Clean Energy Jobs Act (Proposition 39):** The California Clean Energy Jobs Act allocates revenue to local education agencies to support energy efficiency and alternative energy projects, along
with related improvements and repairs that contribute to reduced operating costs and improved health and safety conditions in public schools.

Funding period: 2013-2018  Amount:  $ 2.75 billion

The California Energy Commission is working with a number of key stakeholders to implement the California Clean Energy Jobs Act (Proposition 39):

- California Department of Education
- California Community Colleges Chancellor’s Office
- California Department of Finance
- California Public Utilities Commission
- California Workforce Investment Board
- California Conservation Corps

**POTENTIAL CONNECTION TO WE&T PROPOSAL: PROP 39 initiatives are naturally aligned with the WE&T Guidance Plan recommendations to focus on energy efficiency career pathways and the MUSH sector.**

Alignment and overlap of funds involve the development of bridge/pathway programs as part of funding to K-12 and community colleges.

**AB 86 CDE Career Pathways Trust**  $250 million  2014-2016

Establish regional consortia of K-12 and community college districts for “the purpose of developing regional plans to better serve the educational needs of adults”. Included in the list of target areas: A) Short-term career technical programs with high employment potential and B) Programs for apprentices.

**POTENTIAL CONNECTION TO WE&T PROPOSAL:** Clearly, there is great potential here if K-12/college districts can specify EE, Green Jobs, or even Utilities/Construction as possible pathways to be develop. Also, since there is language re: supporting “programs for apprentices”, the coupling of these two areas could lead to funding of pre-apprentice programs – both at the high school and community college level

**Career Advancement Academies (CAA)**  SB1070 / CA Community College Chancellor’s Office. Designed to establish pipelines to college and high wages careers for young adults facing multiple barriers to post-secondary education. In place since 2007, served 27 college sites, $31 million funding by CCCCCO to date. The California Community College Career Advancement Academy (CAA) Phase III grant cycle will award up to $6 million in SB 1070 (Steinberg) Career Technical Education Pathways Program funding over three years, including $4 million FY 13-14 budget, with potential renewal of up to a total $2+ million for FY 14-15. These renewal grants will aim to both scale and institutionalize CAAs and their key elements under four previously-funded regional consortia

**POTENTIAL CONNECTION TO WE&T PROPOSAL:** 2014-2017 funding focuses on supporting existing CAA sites to expand range of CAA impact by engaging additional local college districts and expanding
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pathways; therefore, funding could be available for development of bridge/pathway programs in WE&T-related areas – including pre-apprentice programs (like DVC, a CAA program)

State and Local Workforce Boards (WIB) WIBS can provide both training and wrap-around support services for unemployed and disadvantaged workers.

California Community College Linked Learning Initiative + AB 790 CCLLI is funded by Irvine Foundation. Regranting of $1.65 million by Career Ladders Project. Focus = extending the benefits of high school-based linked learning academies to post-secondary education + strengthening the high school and community college connections to improve student success in college and career training. AB 790 expands the number of CA Linked Learning sites by 20, but provides no additional funding

POTENTIAL CONNECTION TO WE&T PROPOSAL: Possible support of HS academy -Community College pathways in Green Construction, EE, Utilities, perhaps Pre-apprenticeship. Could be additional support or collaboration with IOU Connections Program

Federal Workforce Development Funds

Perkins Funds - The intent of Perkins dollars is to support the development of new programs or to strengthen existing CTE programs. Program of Study can include HS-CC transition. This is a potential funding source, but some work would need to be done to connect with EE-related pathways.

US Department of Labor (DOL) – There are several local and regional consortias in California that have received Trade Adjustment Act grants and Workforce Innovation Fund grants. As determined an a project specific basis, these federal funds can be leveraged for energy efficiency education, regional collaboration and career pathways.

Veterans – There are various funding streams (DOL + Veterans Administration) to serve training needs of returning veterans that can be connected with IOU training investments.

RATIONALE:

Problem: As described earlier, the IOU’s possess extensive expertise in energy efficiency, but are not equipped to provide comprehensive training. Additionally, the funding is limited and the existing deployment of instruction and partnership only serves a small fraction of the demand side energy efficiency workforce. Instruction is provided to individuals and entities that sign up in open classes; who may or may not have requisite competencies and pre-requisites to get full value from the courses. Partnerships are generally done in an ad hoc basis, based on personal relationships, and often have positive results, but do not achieve outcomes at scale. There is potential to further the IOU investment by strategic partnerships.

Justification for our approach: The value of partner aligning with core institutions is three fold:
injecting targeted funds into core institutions will help move entire professions towards energy efficiency;
leveraging non-IOU investments to promote energy savings will extend the reach and influence of rate payer funds; and
engaging accredited core workforce institutions ensures energy efficiency best practices are taught in adherence to education best practices: sequenced, standards-based curriculum with clear learning outcomes aligned with industry needs.

Advantages:

• Working with core institutions to alter training that serves the vast majority of the EEDSM workforce will further the reach and influence of the IOU WE&T program.
• Leveraging workforce dollars will draw more funds into supporting energy efficiency education and training.
• Aligning resources with existing state investments will eliminate a waste of resources and redundant investments.
• The resultant education and training will focus on skills building throughout a career pathway, and adhere to workforce training best practices.
• Partnership will work toward system-wide impact: drastically expanding the scale of integration of EE-DSM into core professions such as electricians, HVAC, architects, engineers and many others.

Disadvantages:

• There will be an initial start up investment of time and staffing to coordinate these various agencies and negotiate leveraged terms.
• Developing metrics to measure partnerships will be more qualitative initially.
• The successful implementation of leveraged collaboration will depend on the personal commitment and skills of the IOU staff and representatives from partner agencies.

### 3.D SKILL BUILDING RFP CRITERIA

#### 1. Criteria for WE&T Skill Building RFPs

<table>
<thead>
<tr>
<th>RFP Component</th>
<th>Energy Savings RFP Part A</th>
<th>Energy Savings RFP Part B</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFP</td>
<td>Sector strategies for incumbent workers</td>
<td>Partnerships with core postsecondary institutions</td>
</tr>
</tbody>
</table>
### Goals

Improve contractor performance through upgrading skills of incumbent workers in key occupations that have an impact on EE.

Incorporate EE skills and knowledge in credentialed post-secondary education and training institutions in occupations that have an impact on EE.

### Allowable Activities

- Training
- KSA, curricula development, and certification development
- Identification of KSAs
- Curriculum development
- Train the trainer for instructors
- Balance of grants based on priority occupations
- SME prioritization and identification of KSA gaps due to emerging technology, code compliance or other quality problems SMEs
- Balance of Distribution to credentialed partner institutions: 4 year and CCC for professional, apprenticeship and CCC for commercial, CCC for residential
- Prioritization and identification by SMEs of KSA gaps due to emerging technology, code compliance or other quality problems SMEs
- Regional balance for program reach

### Criteria for overall portfolio balance

- Balance based on priority occupations from job projections
- SME prioritization and identification of KSA gaps due to emerging technology, code compliance or other quality problems SMEs
- Regional balance for distribution of training funds

### Requirements for successful proposals

- Evidence of need for training or curricula development
- Evidence of adequate demand for services that skills with contribute to
- Identification of relationship to existing credentials and curricula
- Specific co-funding, in-kind support and other commitments from set of participating employers
- Clear learning outcomes, based on skill enhancement from baseline, competency testing
- Leveraging of other workforce dollars
- Partnership with accredited training institution
- Evidence of need for training or curricula development
- Identification of relationship to existing credentials and curricula
- Specific co-funding and other commitments from participating institutions
- Clear learning outcomes, based on skill enhancement from baseline, competency testing
- Leveraging of other public dollars
### Ranking criteria

- Amount of leveraged funds from employers and other sources
- Use of industry recognized credentials
- Skill enhancement of already skilled workers
- Performance of participating employers
- Regional partnerships with key stakeholders, including employers, end users (to ensure adequate demand)
- Evidence of incorporation into required course work for credential
- Evidence of strong placement rates for students attaining credential

### Outcome Metrics

- # of workers trained
- # of workers with industry recognized credential
- Improvements in EE work quality
- Increase in EE investments with documented improvements in work quality
- Additions of EE content to core curricula
- First year reach: # of students in credentialed programs receiving expanded EE curricula
- Five year projected reach: # of students over five years receiving expanded EE curricula
- Additions of EE content to core curricula
- First year reach: # of students in credentialed programs receiving expanded EE curricula
- Five year projected reach: # of students over five years receiving expanded EE curricula

### Who reviews and selects RFPs?

- WE&T steering committee, with TSP input
- WE&T steering committee, with TSP input

### Geographic locus

- Preference for statewide focus or reach for KSA, curricula and certification development
- Regional distribution of training funds.
- Regional distribution for training
- Preference for state wide reach for curriculum development, Id or validation of credentials

### 2. Inclusion skill-building priority setting

<table>
<thead>
<tr>
<th>RFP</th>
<th>Inclusion RFP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RFP Component</strong></td>
<td>Training, support services and job placement services for workers from disadvantaged communities</td>
</tr>
<tr>
<td><strong>Goals</strong></td>
<td>Placement of disadvantaged workers into employment or post-secondary education that ladders to family-sustaining wages</td>
</tr>
</tbody>
</table>
| **Allowable Activities** | • Training & Curriculum Development  
• Recruitment  
• Coordination/Collaboration |
| **Criteria for overall portfolio balance** | • Regional balance for distribution of training funds  
• Grants awarded to proposals to maximize the number of placements of disadvantaged workers in career-track jobs. |

Comment [RAM31]: Define TSP

Comment [RAM32]: Where is the energy efficiency component to this RFP?
Requirements for successful proposals

- Evidence of need in target populations
- Evidence of sustained regional partnerships that provide multiple services
- Evidence of commitment of participating employers to consider hiring graduates
- Evidence of living wage floors and pathways up
- Clear learning outcomes, based on skill enhancement and competency development
- Incorporation of work-based learning
- Leveraging of other workforce dollars, including wrap around support services

Ranking criteria

- Amount of leveraged funds
- Strength of commitment of participating employers to consider hiring graduates of training programs
- Evidence of partners who can supply all elements needed for program success including assessment, wrap around services, job placement services, post placement mentoring.

Outcome Metrics

- # participants trained
- # participants completing program with industry-recognized credential
- # positive outcomes (job placement, enrollment in post-secondary ed.)

Who reviews and selects RFPs?

WE&T steering committee

Geographic locus

Regional distribution of funds

3.E JOB PROJECTIONS FROM THE 2011 WE&T NEEDS ASSESSMENT

Occupational Groups Affected by Energy Efficiency Related Investment and Estimated Percentage of Workforce

Note: This table only reflects the direct jobs created that impact energy savings. We do not include general administrative jobs from this table.

<table>
<thead>
<tr>
<th>Occupational Group</th>
<th>SOC</th>
<th>Occupation Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Systems</td>
<td>47-2073</td>
<td>Operating Engineers and Other Construction Equipment Operators</td>
</tr>
<tr>
<td>(Construction)</td>
<td></td>
<td>Electricians</td>
</tr>
</tbody>
</table>

Comment [RAM33]: Lots of jobs provided. It would be helpful to have these ranked. Where should the IOUs start?


---

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<table>
<thead>
<tr>
<th>Trades: 21% of Total Direct New Workers by 2020</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>47-211</td>
<td>Plumbers, Pipefitters, and Steamfitters</td>
</tr>
<tr>
<td>47-2152</td>
<td></td>
</tr>
<tr>
<td>47-2211</td>
<td>Sheet Metal Workers</td>
</tr>
<tr>
<td>47-3013</td>
<td>Helpers—Electricians</td>
</tr>
<tr>
<td>47-3015</td>
<td>Helpers—Pipelayers, Plumbers, Pipefitters, and Steamfitters</td>
</tr>
<tr>
<td>47-4021</td>
<td>Elevator Installers and Repairers</td>
</tr>
<tr>
<td>49-1011</td>
<td>First-Line Supervisors/Managers of Mechanics, Installers, and Repairers</td>
</tr>
<tr>
<td>49-2098</td>
<td>Security and Fire Alarm Systems Installers</td>
</tr>
<tr>
<td>49-9021</td>
<td>Heating, Air Conditioning, and Refrigeration Mechanics and Installers</td>
</tr>
<tr>
<td>49-9042</td>
<td>Maintenance and Repair Workers, General</td>
</tr>
<tr>
<td>49-9052</td>
<td>Telecommunications Line Installers and Repairers</td>
</tr>
<tr>
<td>49-9098</td>
<td>Helpers—Installation, Maintenance, and Repair Workers</td>
</tr>
<tr>
<td></td>
<td>Solar Photovoltaic Panel Installers and Technicians</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Envelope (Construction Trades): 50% of Total Direct New Workers by 2020</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>47-1011</td>
<td>First-Line Sup/Mgrs of Construction Trades and Extraction Workers</td>
</tr>
<tr>
<td>47-2031</td>
<td>Carpenters</td>
</tr>
<tr>
<td>47-2051</td>
<td>Cement Masons and Concrete Finishers</td>
</tr>
<tr>
<td>47-2061</td>
<td>Construction Laborers</td>
</tr>
<tr>
<td>47-2081</td>
<td>Drywall and Ceiling Tile Installers</td>
</tr>
<tr>
<td>47-3012</td>
<td>Helpers—Carpenters</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Envelope (Performance Trades): 2% of Total Direct New Workers by 2020</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>47-4011</td>
<td>Construction and Building Inspectors</td>
</tr>
<tr>
<td></td>
<td>Energy Auditors</td>
</tr>
<tr>
<td></td>
<td>Building Performance or Retrofitting Specialists</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Architecture and Engineering: 6% of Total Direct New Workers by 2020</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-1011</td>
<td>Architects, Except Landscape and Naval</td>
</tr>
<tr>
<td>17-1022</td>
<td>Surveyors</td>
</tr>
</tbody>
</table>
### 2014 WE&T Guidance Plan – Appendices

<table>
<thead>
<tr>
<th>17-2051</th>
<th>Civil Engineers</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-2061</td>
<td>Computer Hardware Engineers</td>
</tr>
<tr>
<td>17-2071</td>
<td>Electrical Engineers</td>
</tr>
<tr>
<td>17-2072</td>
<td>Electronics Engineers, Except Computer</td>
</tr>
<tr>
<td>17-2112</td>
<td>Industrial Engineers</td>
</tr>
<tr>
<td>17-2141</td>
<td>Mechanical Engineers</td>
</tr>
<tr>
<td>17-2199</td>
<td>Engineers, All Other</td>
</tr>
<tr>
<td>17-3011</td>
<td>Architectural and Civil Drafters</td>
</tr>
<tr>
<td>17-3013</td>
<td>Mechanical Drafters</td>
</tr>
<tr>
<td>17-3022</td>
<td>Civil Engineering Technicians</td>
</tr>
<tr>
<td>17-3023</td>
<td>Electrical and Electronic Engineering Technicians</td>
</tr>
</tbody>
</table>

#### Administration (Sales-Related): 7% of Total Direct New Workers by 2020

<table>
<thead>
<tr>
<th>13-1051</th>
<th>Cost Estimators</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-3021</td>
<td>Market Research Analysts</td>
</tr>
<tr>
<td>27-3031</td>
<td>Public Relations Specialists</td>
</tr>
<tr>
<td>41-1012</td>
<td>First-Line Supervisors/Managers of Non-Retail Sales Workers</td>
</tr>
<tr>
<td>41-3099</td>
<td>Sales Representatives, Services, All Other</td>
</tr>
<tr>
<td>41-4011</td>
<td>Sales Reps, Wholesale &amp; Manuf., Technical &amp; Scientific Products</td>
</tr>
<tr>
<td>41-4012</td>
<td>Sales Reps, Wholesale &amp; Manuf., Exc. Technical &amp; Scientific Products</td>
</tr>
<tr>
<td>41-9011</td>
<td>Demonstrators and Product Promoters</td>
</tr>
<tr>
<td>41-9031</td>
<td>Sales Engineers</td>
</tr>
<tr>
<td>43-4051</td>
<td>Customer Service Representatives</td>
</tr>
</tbody>
</table>

#### Management (Blue-Collar): 11% of Total Direct New

<table>
<thead>
<tr>
<th>Nov-51</th>
<th>Industrial Production Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov-21</td>
<td>Construction Managers</td>
</tr>
<tr>
<td>Nov-41</td>
<td>Engineering Managers</td>
</tr>
</tbody>
</table>
### 2014 WE&T Guidance Plan – Appendices

<table>
<thead>
<tr>
<th>Workers by 2020</th>
<th>Occupational Group</th>
<th>Total Direct New Workers by 2020 (Net of 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov-41</td>
<td>Property, Real Estate, and Community Association Managers</td>
<td></td>
</tr>
<tr>
<td>11-1021</td>
<td>General and Operations Managers</td>
<td></td>
</tr>
<tr>
<td>Nov-21</td>
<td>Marketing Managers</td>
<td></td>
</tr>
<tr>
<td>Nov-22</td>
<td>Sales Managers</td>
<td></td>
</tr>
<tr>
<td>Nov-21</td>
<td>Computer and Information Systems Managers</td>
<td></td>
</tr>
<tr>
<td>Nov-31</td>
<td>Financial Managers</td>
<td></td>
</tr>
<tr>
<td>Nov-61</td>
<td>Purchasing Managers</td>
<td></td>
</tr>
<tr>
<td>Nov-99</td>
<td>Managers, All Other</td>
<td></td>
</tr>
<tr>
<td>11-1011</td>
<td>Chief Executives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sustainability Program Coordinators/Managers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Purchasing Managers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Managers, All Other</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chief Executives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>First-Line Supervisors/Managers of Production and Operating Workers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water and Liquid Waste Treatment Plant and System Operators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inspectors, Testers, Sorters, Samplers, and Weighers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Semiconductor Processors</td>
<td></td>
</tr>
</tbody>
</table>

### Table: Energy Efficiency Incremental Worker Training Projections, Medium Scenario, by Occupational Group

<table>
<thead>
<tr>
<th>Occupational Group</th>
<th>Total Direct New Workers by 2020 (Net of 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration (Sales-Related)</td>
<td>7%</td>
</tr>
<tr>
<td>Architecture and Engineering</td>
<td>6%</td>
</tr>
<tr>
<td>Building Envelope (Construction Trades)</td>
<td>50%</td>
</tr>
<tr>
<td>Building Envelope (Performance Trades)</td>
<td>2%</td>
</tr>
</tbody>
</table>

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3. F METHODOLOGY

We developed our guidance based on the Needs Assessment and other research, and an examination of the changes that the IOUs have made to their WE&T program in light of the Needs Assessment, CPUC direction, and stakeholder input.

Our research included interviews with IOU WE&T and resource program staff, state workforce and education agencies, high-level representatives and trainers from the major education and training institutions, industry associations, employers, and other experts and stakeholders. We carried out site visits to at least one training center for each IOU, and worked closely with WE&T program leads to better understand their existing programs as well as the changes they are currently developing.

Our findings in this section are based on interviews carried out for this research, findings from the Needs Assessment, and our involvement in the implementation of the HVAC sector strategy, including our experience as a contractor for the California Labor Agency and its Division of Apprenticeship Standards.

The new research conducted for this guidance document focused on architecture as a lens through which to understand the IOUs interaction with other stakeholders in the design community as well as the core 4 year and graduate architecture training programs. We also carried out a more limited number of interviews in the residential and non-residential trades, in order to bring our previous research and observations up to date.

3. G KSA PROCESS

We recommend the IOUs play an integral part in supporting and/or facilitating the ongoing process to define the knowledge, skills and abilities (KSAs) needed to optimize energy efficiency demand side management. We propose a methodology that can be used to track critical occupations, leverage the input from subject matter experts (SMEs) to define standards, and work with core training and education institutions to implement KSAs in to new or existing credentials and curriculum.

COMPONENTS:

There are two primary components to the KSA process recommendation: the overall process and KSA Inventory Form.
The following describes the overall process to determine and implement KSAs for energy efficiency:

1. Identify Priority Occupations: using relevant workforce market data, identify which occupations are significant contributors to implementing energy efficiency measures. The 2011 Needs Assessment inventories occupations are serves as a reasonable starting place, with updates every five to seven years.

2. Identify existing Department of Energy resources and recommendations on specific skills standards.

3. Convene Technical Skills Panels focused on different areas of building systems to identify and gain consensus around key standards for a particular building systems area. Standards conversations should be organized between (a) existing quality of installation and (b) implementation of new technology. The TSP should be limited to industry subject matter experts from the CEC, Utilities, National Labs, leading employers, and leading faculty from Universities and Colleges.

4. Gain consensus around key standards relevant to the particular business system.

5. Work with key subject matter experts and leading employers to develop occupation specific KSAs to address existing quality issues or new technology.

6. In partnership with credentialing organizations, Community Colleges, Apprenticeships, and other key training and education institutions, perform a gap analysis using the KSA Inventory Form (see below) to identify existing curriculum and credential specifications, and determine:
   a. If the KSAs needed already exist within the existing curriculum and credentialing structure.
   b. If they do not, then identify whether a new credential must be created, or whether KSAs can be integrated into existing credentials and curriculum.

7. Educators and credentialing organizations develop new credentials and curriculum, or adapt existing curriculum and credentials to incorporate the new KSAs. It is important to note that the development should include clear guidelines around pre-requisites and competencies needed for the credential.

8. The standards, KSAs, curriculum and credential is then reviewed by the Statewide WE&T Governing Body for adoption.

9. Curriculum and credentials based on the KSAs are integrated into the WE&T implementation plans.

The gap analysis and subsequent determination of credentials and curriculum can utilize the KSA Inventory Form, built from the High Impact Pathways© model. The form provides an organizing strategy to demonstrate the relationships and gaps between EE-related occupations, KSAs, certificates and available curriculum. The process could involve:

- Identifying the KSAs for occupations at various levels of a career pathway (entry, mid and advanced)
- Inventory competencies an individual would need in order to learn new KSAs
- Inventory existing credentials, both for the occupation and specific to EE-DSM, that would include KSAs. Identify relationships and gaps in credentialing.
- Inventory curriculum/training/education that relates to KSA’s, including necessary pre-requisites, work experience

---

(Cite?)
Inventory the occupation-specific outcomes and any changes in job categories or wages.

RATIONALE:

Usually Knowledge Skills and Abilities are driven by core industry leaders, using a standard set of competency models and tools established to optimize worker performance and quality for a given profession. There are no national skills standards for EE, and quality and new technology standards, in this case, are not driven by industry leaders in the core professions. Public agencies such as the Department of Energy and California Energy Commission have a vested interest in climate change mitigation measures, but have little investment in workforce knowledge and education. There is a distinctive lack of leadership and clear process to identify KSAs, inventory related curriculum and credentials to meet California’s existing and emergent EE needs.

Justification for our approach:

The KSA process is largely based on the CALCTP model, which is widely touted as a successful implementation of a new energy efficiency technology into an existing industry occupation. Elements of other models such as those used by Community College Career Technical Education (CTE) programs, and the US Department of Labor Competency Models. Each of these alone does not present a clear path toward identifying KSAs.

The College CTE model is designed to meet local employer needs, ladder to industry-recognized credentials, and ideally, be designed in a sequenced stackable manner that allows for multiple entry and exit points. Key skills and abilities are identified in partnership with the employer and based on industry-wide standards; but the model is not ideal alone when the industry has not already defined the KSAs.

The Department of Labor competency models\(^\text{143}\) provide a strong foundation for understanding core competencies and their relationship to technical and occupation-specific competencies – identifying foundational competencies that cut across multiple aspects of EE – but does not provide the depth and specifics that would be required to assess and develop KSAs and resulting credentials and curriculum.

Advantages:

- The methodology incorporates elements from multiple models: CALCTP, DOL competency models, CC CTE, and High Impact Pathways ©
- The methodology is reliant on an objective body (Technical Advisory Committees) to set standards
- The methodology is collaborative and ensures input from key stakeholders
- The methodology is adaptable and customizable

Disadvantages:

- It may be challenging for the IOU’s to identify and limit input to leading subject matter experts; parties with conflicting interests may influence the standards identification process.
- It is not clear whether the IOUs have the capacity and/or the standing to convene parties to implement the methodology.
- It is not clear whether the WE&T program is best suited to facilitate this process.

KSA inventory forms

Table 3G.1. Template

<table>
<thead>
<tr>
<th>TARGET OCCUPATION: ____________________________</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Project &amp; Anticipated Outcome/Job/Wages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Competencies*</td>
<td>Key Skills &amp; Abilities (Technical) for EE</td>
<td>Industry Recognized Credential (General)</td>
<td>Industry Recognized Credential (EE)</td>
<td>Pre-requisites?</td>
<td>Training/ Education</td>
</tr>
<tr>
<td>ADV (Cert, AS, BS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MID (Cert &amp; AS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTRY (Cert)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRIDGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 3G.2. Residential home performance KSA example

<table>
<thead>
<tr>
<th>Pre-requisites?</th>
<th>Training/ Education</th>
<th>Competencies*</th>
<th>Key Skills &amp; Abilities (Technical) for EE</th>
<th>Industry Recognized Credential (General)</th>
<th>Industry Recognized Credential (EE)</th>
<th>Work Experience</th>
<th>Outcome/ Job/ Wages</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV (Cert, AS, BS)</td>
<td>Business Administration</td>
<td>Business Owner</td>
<td>PMI PMP</td>
<td>Business Owner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MID (Cert &amp; AS)</td>
<td>Construction Management</td>
<td>Project Manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Entrepreneurship</td>
<td>Crew Lead</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Building Performance Analyst</td>
<td></td>
<td>BPI Analyst</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MID HVAC</td>
<td>Heating, AC and Heat Pump</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electricity/ Electronics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carpentry</td>
<td></td>
<td>BPI Envelope Prof</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTRY (Cert)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRIDGE</td>
<td>Bridge Program (MCC-type tech skills or building science, contextualized math, English, Counseling + Workbased Learning)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Academic Competencies, Personal Effectiveness Competencies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Building Science Principles, MCC, Air Sealing, etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Entry into Apprenticeship or Certificate Program; Entry Level Installer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low Income Weatherization Training</td>
<td>Low Income Employee - $?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

http://www.bpi.org/professionals_entry_level.aspx
Table 3G.3. Architecture KSA example

<table>
<thead>
<tr>
<th>Level</th>
<th>Pre-requisites?</th>
<th>Training/ Education</th>
<th>Key Skills &amp; Abilities (Technical) for EE</th>
<th>Industry Recognized Credential (General)</th>
<th>Industry Recognized Credential (EE)</th>
<th>Work Experience</th>
<th>Outcome/ Job/ Wages</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV</td>
<td></td>
<td>Training/ Education</td>
<td>Competencies*</td>
<td>Key Skills &amp; Abilities (Technical) for EE</td>
<td>Industry Recognized Credential (General)</td>
<td>Industry Recognized Credential (EE)</td>
<td>Work Experience</td>
</tr>
<tr>
<td>(Cert, AS, BS)</td>
<td>math, English, etc etc</td>
<td>Architecture</td>
<td>License</td>
<td>LEED AP</td>
<td></td>
<td>Entry into Apprenticeship or Certificate Program</td>
<td></td>
</tr>
<tr>
<td>MID</td>
<td></td>
<td>Training/ Education</td>
<td>Competencies*</td>
<td>Key Skills &amp; Abilities (Technical) for EE</td>
<td>Industry Recognized Credential (General)</td>
<td>Industry Recognized Credential (EE)</td>
<td>Work Experience</td>
</tr>
<tr>
<td>(Cert &amp; AS)</td>
<td>Architecture</td>
<td>Technology</td>
<td>Drafting</td>
<td>Building Science?</td>
<td></td>
<td>Entry into Apprenticeship or Certificate Program</td>
<td></td>
</tr>
<tr>
<td>ENTRY</td>
<td></td>
<td>Training/ Education</td>
<td>Competencies*</td>
<td>Key Skills &amp; Abilities (Technical) for EE</td>
<td>Industry Recognized Credential (General)</td>
<td>Industry Recognized Credential (EE)</td>
<td>Work Experience</td>
</tr>
<tr>
<td>(Cert)</td>
<td>Bridge Program (MCC-type tech skills, contextualized math, English, Counseling + Workbased Learning)</td>
<td>Academic Competencies, Personal Effectiveness Competencies</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Entry into Apprenticeship or Certificate Program</td>
<td></td>
</tr>
<tr>
<td>BRIDGE</td>
<td>Low Income Weatherization Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.H PHASE 1 WE&T SKILL BUILDING PROGRAMS

Here we offer high-level guidance and justification for two of our proposed phase one skill building WE&T programs, and more detailed guidance on the third, which addresses inclusion for disadvantaged workers.

1. ENHANCING EE CONTENT IN CORE CURRICULA FOR ARCHITECTS AND ENGINEERS.

We recommend that the IOUs issue an RFP for the state’s accredited architecture and engineering schools to review and enhance the EE content in their core curricula, and to offer faculty development on these topics. The RFPs should be developed and administered by the IOU subject matter experts (SMEs) for architecture, with input from outside SMEs as needed.

Components:

1. The IOU will consult with the SMEs and leadership from the state’s architecture and engineering schools to assess needs for EE content upgrade, and discuss options for structuring the RFP and criteria.
2. The IOUs will develop the criteria and administer an RFP for public, accredited architecture and engineering schools in California to upgrade core curricula and train instructors to incorporate enhanced EE.
3. Architecture and engineering departments will respond to the RFP describing:
   a. Deficiencies in the current EE curriculum;
   b. Proposed curriculum development and training strategy to overcome these gaps (e.g. summer intensive, studio course, physical tools or learning laboratory, co-teaching with engineering departments, partnerships with firms or other outside experts, or some combination of the above);
   c. Faculty development plan;
   d. Partners, in particular faculty from architecture/engineering departments, and/or local architecture and engineering firms;
4. In addition a detailed description of the above program elements, the RFPs should include:
   a. A detailed description of the programs’ expected impact, including an estimate of the scale energy savings related to proposed interventions;
   b. Budget and timeline with clear deliverables and objectives that can be accomplished by the end of 2015 and a detailed explanation of matching funds; and
   c. Other sources of funding that could be used to sustain and expand the programs after 2015.

Rationale:

Architects and engineers are the primary professional occupations that affect energy use in buildings. There is a significant need to upgrade EE content in the architects’ core curriculum. This need was recognized in the Strategic Plan and confirmed in our interviews with IOU program staff, architectural firms, the American Institute of Architects, and university architecture departments. According to the experts we interviewed, current education and training for architects is lacking sufficient information on building science and energy efficient design to help meet California’s ambitious EE goals.
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Improving the alignment of core training for architects with core training for the engineers that work on building systems is a key strategy for improving the EE knowledge of both sets of professionals. It can also enhance their ability to communicate and collaborate across discipline to address energy-related issues in building design and specification.

The RFP outlined here is a straightforward way to begin addressing this need in 2014. The IOUs are well-positioned to convene stakeholders and develop an RFP for architecture and engineering EE curriculum upgrades and faculty development. The IOUs have significant programming for architects and engineers but have not yet partnered with any of the state’s core training programs. However they do have the internal capacity to do so, including internal subject matter experts, relationships with relevant industry groups, and current classes for incumbent workers, including continuing education classes.

We suggest an RFP process to tap the creative energy of entrepreneurial faculty in accredited architecture and engineering schools who can innovate from within to promote an institutional shift. RFPs are a common way for university faculty to incorporate innovation, and can work better than direct outreach from the IOUs to the universities. The RFP should require significant matching funds and commitment to integrate curricula into course work required for degree completion. The level of funding for these activities should depend on the quality and scale of impact of the proposals submitted.

2. EE BEST PRACTICES REVIEW AND UPGRADE FOR APPRENTICESHIPS IN THE KEY TRADES.

We recommend that the IOUs facilitate a partnership between the Community College Chancellor’s (CCC) Office of Apprenticeship, the California Division of Apprenticeship Standards (DAS), to enhance and verify EE skills in the core curricula for key energy-related trades in the state-certified apprenticeship system. IOU SMEs may be appropriate to consult in reviewing curricula. The agencies should then issue RFPs for local apprenticeships and CC affiliates to deploy curriculum upgrade, journey upgrade for incumbent workers, and train-the-trainer.

Components:

1. IOUs will identify critical installer/technician EE KSAs, and apprenticeship leads will review key trade curricula for the presence of these KSAs, in consultation with SMEs. If enhancements for EE best practices are identified, DAS and the CCC will develop a strategy for developing and deploying new material.
   a. DAS and the CCC will identify any certifications that correspond to the new KSAs, if any, and/or develop a trade-specific EE upgrade certificate that builds from the state’s basic journey upgrade certificate.
   b. Update MITC/Green MITC if necessary, via the typical DAS processes.144
2. DAS/CCC will issue RFPs for regional partnerships of JATCs and their CC affiliates to:
   a. Draft and integrate the new content into apprenticeship curricula at local JATCs.
   b. Develop the content into a journey upgrade-specific course.

Comment [RAM35]: These RFP recommendations assume that there are workers focused on energy efficiency. That’s not the case. A carpenter, for example, has to master many skills and EE is part of his/her overall training. Again, since the IOUs are EE experts, we should be either reviewing curricula and/or hiring consultants to go out and tune up curricula. Then the IOUs could fund those tune-ups, train trainers, offer classes, etc.

144 The California Apprenticeship Council approves Minimum Industry Training Criteria (MITC) for each trade as well, and in 2011 they approved the incorporation of green MITC. However, the MITC are fairly general categories of skill sets, rather than detailed curricula.
c. Carry out training for apprenticeship and journey upgrade instructors via the local Community College partner.
d. Fund journey upgrade instructors’ time.

3. In addition a detailed description of the above program elements, the RFPs should include:
   a. A detailed description of the programs’ expected impact, including an estimate of the scale of energy savings related to proposed interventions;
   b. Budget and timeline with clear deliverables and objectives that can be accomplished by the end of 2015 and a detailed explanation of matching funds; and
   c. Other sources of funding that could be used to sustain and expand the programs after 2015.

Rationale:

The building trades make up around two-thirds of the workforce that is called upon to execute EE work. The key trades that impact energy savings include Electricians, Sheet Metal Workers, Plumbers/Pipefitters, Stationary Engineers, Carpenters and Laborers. As we note elsewhere in this document, apprenticeship is the state’s most valuable asset for training the bulk of the EE workforce, and the IOUs have severely neglected this core resource in their WE&T programs to date, representing a huge missed opportunity to impact energy savings through training.

The CCC Office of Apprenticeship and DAS are ready to partner with the IOUs. The CCC Office of Apprenticeship Standards is responsible for the required “related and supplemental” classroom learning for all state-certified apprenticeship programs and DAS regulates the programs including each trade’s Minimum Industry Training Criteria (MITC). As central coordinating bodies they can engage key industry representatives and individual apprenticeship programs, and work through the existing curricula and training standards review process at a state-wide level with the participating trades. They will work with subject matter experts convened by the IOUs (including internal IOU staff), to identify opportunities for enhancing current curricula to incorporate EE. They can also work with the IOUs to administer an RFP that individual apprenticeship programs can apply to once KSA enhancement are identified, to pay for faculty development and training at the local level.

In the Guidance Decision for 2-13-2014, the Commission directed the IOUs to work with apprenticeship, based on the model of CALCTP. The IOUs and DAS attempted to develop an MOU to carry out the work, but the parties could not agree to satisfactory terms and the partnership stalled in early 2013. Since then, the IOUs have begun to explore collaboration with individual apprenticeship programs, such as PG&E’s recent work with the Bay Area Sheet Metal Workers to develop journey upgrade training on demand response. However the IOUs have not attempted to reinitiate a statewide effort with DAS and the CCCs, which we believe would increase the efficiency, scale, and co-funding by industry. DAS and the CCC are ready and eager to execute the work originally outlined in the MOU, and are willing to lead the effort.

3. INCLUSION SECTOR STRATEGY: PRE-APPRENTICE BRIDGE PROGRAM

We recommend the IOUs issue an RFP for an inclusion sector strategy. The RFP should target funding for pre-apprenticeship bridge programs that prepare entry-level EE workers or job seekers for opportunities to advance into higher skilled and higher wage employment in MUSH sector EE work, other building trades jobs, and/or further training.

The purpose of this pre-apprenticeship bridge program is to prepare and place disadvantaged jobseekers into good jobs with significant potential for advancement in long-term pathways in EE-related careers, in particular the construction trades. This recommendation is directly linked to our proposed interventions to create job opportunities for disadvantaged workers through demand-side mechanisms, discussed on page X.

Due to the IOUs’ particular lack of expertise on workforce inclusion strategies and stated desire for additional guidance in this area, we present more detailed program components below.

Components:

The IOUs should develop and administer the RFP in partnership with and experts on the state’s workforce system, in particular resources and best practices for serving disadvantaged workers. This may also involve agencies and organizations contributing braided funding to the effort. We recommend modeling this RFP on the CWIB’s Proposition 39 solicitation.146

Program components should incorporate elements of successful programs such as the Career Advancement Academies, Pre-Apprenticeship, and Multi-Craft Core Curriculum. These include:

a. Regional Collaboration

An RFP will support existing regional collaborations or incentivize new collaborations of employers, unions, educational organizations, community organizations and workforce organizations to work together in a regional capacity. The RFP will require organizations to:

- Align regionally and locally to create social infrastructure and agreements that facilitate connections for disadvantaged workers and seamless ascension of career ladder for participant
- Articulate training and certifications between organizations
- Articulate employer commitments to consider hiring workers who successfully complete the Bridge Program.
- Choose partners based on a standard set of criteria that maximizes opportunities for advancement along the career ladder:
  - Educational institutions with strong career technical programs connected to industry-recognized credentials
  - Apprenticeship programs with projected openings and commitment to place disadvantaged workers
  - Strong industry support and placement of graduates

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- Strong understanding of community needs and established pipelines for recruitment of target populations
- A willingness to articulate curriculum across organizations and institutions, create viable career pathways and opportunities to achieve stackable credentials
- The leverage of cash and in-kind funding

b. Assessment and Recruitment

Recruitment of bridge program cohorts should adhere to the following guidelines:

- Open recruitment targeted to specific candidate pool:
  - Low Income Energy Efficiency workers
  - WIB One Stop in-school and out of school youth
  - Community based organizations graduates
  - Community college students
  - Priority given for residents that meet definition of disadvantaged worker
- Pre-screening of candidates would include:
  - Math and English basic skills
  - An interview to determine a measure of core competencies such as motivation, professionalism, and a willingness to learn
  - Assessment of the need for wrap around services (and should not be a consideration for acceptance into the program, but rather a determination of need)
- Employers and apprenticeship coordinators can and should assist with developing pre-screening criteria and implementation of a cohort recruitment

Academics

This portion could be leveraged with existing funding opportunities. Basic components of the curriculum should include:

- Contextualized basic skills (math and English)
- Academic counseling
- Contextualized career counseling
- Technical skills as designed by apprenticeship programs, industry advisors and employers
- Work based learning
- Result in a industry-based credential relevant to the pathway

The program should demonstrate the following best practices:

- Understanding competencies and skills driven by employer needs
- Understands competencies and needs of disadvantaged workers
- Design of career pathways with multiple entry and exit points, with earned credentials at each exit point
- Strategies to accelerate student learning of skills and competencies such as:
  - the cohort model (usually approximately 25 students/cohort)
  - contextualized teaching and learning
  - experiential learning
  - an emphasis on career skills
  - counseling and wrap around services
  - a practitioner community of practice

Comment [RAM41]: All these need to be tied to energy efficiency. IOUs are not core training institutions, but rather curricula “upgraders” with EE.
Courses scheduled and timed to accommodate working students such as afternoon/evening program
- If ESAP employers are involved, incorporate the desired skills and competencies desired for ESAP workers to advance within their organization
- Ensure employer involvement in curriculum design without the breach of intellectual property concerns

d. Wrap Around Support Services

Wrap around services are critical to removing barriers for disadvantaged populations, providing unencumbered opportunities to progress beyond entry level employment. This portion could be leveraged with existing funding from the Workforce Investment Act. Example services to students include:
- Transportation
- Child Care
- Career Counseling
- Access to housing and food
- Financial coaching
- Expungement services and alignment with criminal justice system

e. Advancement Pathways

The primary advancement pathway involves entry level, low skilled residential energy efficiency and construction workers to enter family-sustaining employment in the non-residential energy efficiency and construction sector.

Employers would be incentivized to participate in targeted hire via the project labor agreement process.
Bridge program graduates would:
- get priority interviews for the next Apprenticeship class, or
- be directly hired by a MUSH contractor, who would co-fund the apprenticeship.

Programs should be designed to maximize alternative advancement pathways, providing options to all successful completers of programs. Pathways include:
- Placement in a state-certified apprenticeship program in the construction trades or in a utility job.
- Continuing education to earn career technical education (CTE) certificate or degree (Electrical, HVAC, etc) at an accredited institution, with ultimate job placement with a contractor
- Continuing education to earn general education units towards an AS-T degree

f. RFP Process

It may be beneficial to implement an RFP in a two phase process: (1) A planning grant or process for regional collaborations to demonstrate intention and interest and (2) An implementation grant and collaboration possibly co-designed with the funding agencies.

Given there is not enough funding to meet the needs of all low income energy efficiency workers in all regions of California, these RFP projects are considered pilots that should be designed to consider the following:
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- How can this be scaled?
- How can this be sustained without external funding?
- How can contractors view Colleges as viable feeders to Apprenticeship and employment?
- How can Colleges design programs/stackable credentials to accelerate student success for this industry
- What are the best ways to simultaneously build the market for demand side energy services and viable family-supporting career pathways

Rationale:

WE&T funding would be much better leveraged by supporting strategic partnerships among community based organizations, community colleges, local and state workforce investment boards, apprenticeship programs, labor unions and contractors and the IOUs themselves. These partnerships, taking the form of a sector strategy, can help broker and facilitate relationship building that would connect entry level workers with advanced skill development and higher wage employment opportunities and serve as a valuable recruitment tool for employers in the field.

The limited WE&T program funds allocated to supply side inclusion strategies and career pathway development would be more impactful when connected and leveraged with existing statewide investments and initiatives. Braiding funding will go farther to influence system-wide workforce infrastructure, will support the sustainability of efforts, and has the potential to accelerate positive outcomes for disadvantaged workers. We suggest WE&T funds be leveraged with existing state investments from the Employment Training Panel, Division of Apprenticeship Standards, California Workforce Investment Board, and specific funding such as the California Community Colleges Chancellor’s Office Career Advancement Academies, SB1070 funds, Proposition 39 and the California Career Pathways Trust. The RFP would encourage partnerships between the Community Colleges, Adult Schools, local Workforce Investment Board, community-based organizations, Building and Construction Trades and relevant employers.

There is precedence to invest in system-wide efforts, with a number of California programs successfully creating career ladders to higher wage jobs for disadvantaged communities, discussed on pages x-x. These programs span sectors, emphasize stackable credentials, and serve as effective models for EE inclusions strategies.

3.1 ADDITIONAL DETAIL ON STAKEHOLDER GROUPS

Statewide EE Workforce Steering Committee

The committee should include high-level representatives from the following groups:

- CA Workforce Investment Board
- CA Division of Apprenticeship Standards
- Employment Training Panel
The Steering Committee should be responsible for:

- Appointing technical skills panels;
- Determining appropriate skill standards and certifications for EE work;
- Overseeing tracking and evaluation of the costs and benefits of skill standards;
- Determining priorities for EE training investments; and
- Identifying areas to improve alignment and leveraging of training resources.

**Technical Skills Panels**

Technical Skills Panels, appointed by the steering committee should include representatives from the following, grouped by expertise in various building systems:

- technical experts from the IOUs emerging technology and new resource program groups,
- the national labs,
- CEC code compliance groups,
- the UC/CSU Energy Centers, and
- others, if appropriate.

The committees will be responsible for making recommendations about priority knowledge, skills and abilities (KSAs) needed for emerging technologies and underperforming technologies.

**Program Advisory Group**

This group involves leading advocates for environmental, labor, and low-income groups throughout the state, in addition to state agencies like the CWIB, DAS, and CCCCO. The state agencies may determine that their participation is less critical in this forum once a Statewide EE Workforce Steering Committee is established, as described in the Plan.

We suggest that the members of the PAG involved in the development of this Guidance Plan are an appropriate list of invitees to join the PAG for the Skill Building Portfolio. This includes representatives from the following organizations:

- Brightline Defense
- CA Community Colleges

Comment [RAM42]: Are there specific people we should reach out to?

Comment [RAM43]: A comprehensive WE&T PAG needs to include professionals. We don't agree that creating a wall between blue and white collar EE workers would benefit the IOUs.
Role of the PAG:

- Participate in the design of the RFPs for the skill building portfolio by establishing guiding principles and criteria for project selection;
- Vote to select the winning bids;
- Provide input on appropriate metrics of success;
- Determine whether it is necessary/appropriate for the IOUs to hire expert consultants to staff implementation;
- Provide ongoing input and feedback as needed throughout program implementation; and
- Offer feedback on program effectiveness upon completion.

The PAG should review the selection of technical consultants (or staff) to advise IOU staff in administering the RFPs. Staff/consultants should have expertise, experience and good working relationships with the core education and training institutions for each career pathway and inclusion initiatives. Staff will be responsible for:

- Drafting RFPs based on the steering committee and technical skills panel guidance,
- Recommending workforce skill-building priorities to the governing board for each occupational category,
- Overseeing the administration of the RFPs, including coordinating review processes.
- Supporting implementation, including helping to convene regional partnerships, identifying opportunities to leverage funds and/or align efforts, providing technical assistance to applicants and grant recipients, and carrying out field reviews.
Examples of “best practice” documents EM&V studies focused on energy include:


4.B RESEARCHABLE QUESTIONS AND EM&V STUDY TYPE

DEMAND-SIDE (EE PROGRAM) RECOMMENDATIONS

Based on the review of the program theory, recommendations, objectives, and proposed metrics, a set of researchable questions have been identified. For each researchable question, the appropriate type of EM&V study has been identified. The list of these questions is provided in Table 6X.

Table 4B.1: Researchable Questions and Study Types by Sets of Recommendations: EE Programs, Work Quality for Energy Outcomes

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<tr>
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<tbody>
<tr>
<td>Extent to which EE measures and systems are installed and maintained improperly</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Impact of improper installations on energy savings over the expected life of the equipment</td>
<td>X</td>
<td></td>
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<tr>
<td>Options for integrating the benefits of program interventions designed to improve quality into the CPUC-cost-effectiveness analysis methodology</td>
<td></td>
<td>X</td>
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<tr>
<td>For the inclusion of work quality in the design and implementation of specific programs, what improvements could be made, and what are the estimated costs and benefits of these improvements*</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Extent to which program designs explicitly address potential benefits and costs of introducing skill standards</td>
<td></td>
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<td>X</td>
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<tr>
<td>Response of market actors to the adoption of specific skill standards and recommended changes to mitigate expected (and observed) negative responses</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Impact of introduction of skills standards and other quality enhancing features on estimates of energy savings</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

Table 4B.2: Researchable Questions and Study Types by Sets of Recommendations: EE Programs, Work Opportunities for Disadvantaged

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<tr>
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<tbody>
<tr>
<td>Existing opportunities and barriers for disadvantaged workers in EE sector.</td>
<td>X</td>
<td></td>
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<tr>
<td>Legislative and regulatory support for addressing costs to society in developing and implementing EE programs</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Experience of introducing electronic workforce reporting systems for EE/DSM</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience with adopting common definition for “Disadvantaged Worker” (e.g., what barriers to adoption are found, what are costs to contractors and IOU administrator)</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Estimates of market potential for MUSH sector</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience with design and implementation of pilots and other initiatives adopting participation goals, wage floors, and target hiring requirements.</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implications of IOU program initiatives on opportunities for Disadvantaged Workers over short- and medium-term.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Influence IOU initiatives have on structure of EE labor markets and long-term objective of market transformation</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**SUPPLY-SIDE (SKILLS DEVELOPMENT) RECOMMENDATIONS**

The proposed outcomes and metric for the specific skill-building recommendations are provided in Table 6B.3.
<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Activity</th>
<th>Type</th>
<th>Outcomes</th>
<th>Metrics</th>
</tr>
</thead>
</table>
| Skills Building for Energy Savings (RFP#1)    | Skills Upgrade with Incumbent Workers Using Sector Strategies             | Short-Term   | • Training/curricula developed and deployed.  
• Certifications developed (or revised) as needed.  
• Instructors trained in new curricula  
• Incumbent workers participating in training and receiving certifications  
• Commitment of employer and trainer resources ($ and/or hours), for sector strategies  
• Trained and certified workers employed on EE projects | • Specific curricula (including train-the trainer) developed by program type for calendar year  
• For sector strategies, financial support and value of in-kind contributions for development of curricula by program type for calendar year  
• Hours of curricula developed by type of program by calendar year  
• Number of students enrolled in programs with curriculum for calendar year by program  
• Hours of instruction received by students directly related to EE by type of program  
• Number of students receiving certificates for programs incorporating curriculum by type of program and certificate  
• Hours of instruction received by students receiving certificates for program incorporating curriculum by type of program and certificate  
• New credentials developed, including specification of pre-requisites as needed (CALCTP provides model)  
• Existing curricula and associated credentials adapted to incorporate EE information  
• Hours of curricula developed by program by calendar year |
## Skills Building for Energy Savings (RFP#1)

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Activity</th>
<th>Type</th>
<th>Outcomes</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Skills Upgrade with Incumbent Workers Using Sector Strategies</td>
<td>Mid-Term</td>
<td>• Scale up training and certification.</td>
<td>• Number of workers employed in energy efficiency sector having attended programs with energy efficiency curricula by type of program and calendar year cohort</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Improvements in quality of work performed by contractors using trained and certified workers</td>
<td>• Number of workers employed in energy efficiency sector with certificate for program incorporating energy efficiency curriculums by type of program</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Increase in energy savings for EE projects</td>
<td>• List of IOU resource programs with ratepayer funding levels incorporating skills requirements based on KSAs developed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Adoption of skill standards and certifications for EE programs</td>
<td>• Percent of measures or systems installed by workers with certificate from program using energy efficiency curriculum at time certificate was issued program and measure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Percent of savings associated with measures or systems identified above</td>
</tr>
</tbody>
</table>

|                | Skills Upgrade with Incumbent Workers Using Sector Strategies | Long-Term   | • Employer investments in EE worker training and certifications                                                                       | • Dollars invested (including paid time to attend training) by year and type of program                                                                                                               |
|                |          |              | • Availability of workers with EE training and certifications                                                                              | • Number of workers with advanced EE skills and certifications employed in EE market                                                                                                                   |
|                |          |              | • Energy savings for EE projects                                                                                                         | • Indirect estimates of energy savings for EE projects by year                                                                                                                                       |
## 2014 WE&T Guidance Plan – Appendices

### Skills Building for Energy Savings (RFP#1)
- **Activity:** Improving EE curricula in core education and training institutions for professionals and trades
- **Type:** Short-Term
- **Outcomes:**
  - Training/curricula developed and deployed.
  - Instructor professional development deployed.
  - New certifications and/or credential modules developed if needed.
  - Incoming workers trained and certified.
  - Indirect energy savings from enhanced EE skills of incoming workers compared to traditional training, once applied on the job.
- **Metrics:**

<table>
<thead>
<tr>
<th>Recommendation</th>
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<tbody>
<tr>
<td>Skills Building for Energy Savings (RFP#1)</td>
</tr>
</tbody>
</table>

### Skills Building for Energy Savings (RFP#1)
- **Activity:** Improving EE curricula in core education and training institutions for professionals and trades
- **Type:** Mid-Term
- **Outcomes:**
  - Inclusion of EE skills in core curricula
  - Inclusion of EE skills in credential requirements.
  - Scale-up curricula development and training.
  - Improvements in quality of work and energy savings that relates to improvements in EE components of core curricula.
- **Metrics:**

<table>
<thead>
<tr>
<th>Recommendation</th>
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<tbody>
<tr>
<td>Skills Building for Energy Savings (RFP#1)</td>
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</tbody>
</table>
### Skills Building for Energy Savings (RFP#1)

- **Improving EE curricula in core education and training institutions for professionals and trades**

  **Outcomes**
  - Proliferation of EE skills throughout core training institutions
  - Increase in number of students/apprentices required to gain EE competency as part of their credentials for key occupations at core post-secondary institutions.
  - Increase in number of incoming professionals and skilled trades people with EE skills, resulting in greater energy savings.

  **Metrics**
  - 

### Skills Building for Inclusion (RFP#2)

- **Training and Placement of disadvantaged workers in living wage, career-track jobs with sector strategies**

  **Outcomes**
  - Pre-apprenticeship or other bridge program is developed and deployed.
  - Employer, trainer, and CBO resources committed.
  - Disadvantaged workers recruited, trained and placed in next level of training or employment.

  **Metrics**
  - Number of students from low-income, minority, and disadvantaged communities enrolled in programs incorporating curriculum for calendar year by type of program
  - Number and percent of participants in pre-apprenticeship program who obtain a passing grade for each of the courses associated with the program for given cohort (entered program during specified time period).
  - Number and percent of participants who return for subsequent semesters for multi-term program for given cohort.
  - Number and percent of participants
<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Activity</th>
<th>Type</th>
<th>Outcomes</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Skills Building for Inclusion (RFP#2)</td>
<td></td>
<td>- Number and percent of completers of pre-apprenticeship program who enroll in a postsecondary program on the pathway for given cohort.</td>
<td>who complete a bridge program for given cohort.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mid-Term</td>
<td>- Workers advance along long-term career paths in EE-related occupations, acquiring greater skills and higher wages at each stage.</td>
<td>- Number and percent who attained a high school diploma, G.E.D., or equivalency as part of pre-apprenticeship program.</td>
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<tr>
<td></td>
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<td></td>
<td>- More resource programs integrate targeted hiring and first source requirements.</td>
<td>- Number and percent who attain an occupational license.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Number and percent who are employed in an occupation related to the pre-apprenticeship program.</td>
</tr>
<tr>
<td></td>
<td>Skills Building for Inclusion (RFP#2)</td>
<td></td>
<td>- Increased long-term participation by disadvantaged workers in good careers in EE-related fields.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long-Term</td>
<td>- Disadvantaged workers and their communities benefit from improved opportunities and outcomes for workers via EE-related careers.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- EE industries benefit from the diverse perspectives brought by disadvantaged workers.</td>
<td></td>
</tr>
<tr>
<td>Recommendation</td>
<td>Activity</td>
<td>Type</td>
<td>Outcomes</td>
<td>Metrics</td>
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</tr>
<tr>
<td>Skills Building for Inclusion (RFP#2)</td>
<td>Improve EE skills in career technical education (CTE) curricula for core 9-12 educational institutions</td>
<td>Short-Term</td>
<td>• EE skills components developed and integrated into CTE curricula.</td>
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<td></td>
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<td></td>
<td>• Instructor professional development deployed.</td>
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<td></td>
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<td></td>
<td>• Employer resources (i.e. work-based learning) committed.</td>
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<td></td>
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<td></td>
<td>• Articulation agreements developed with post-secondary training.</td>
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<td></td>
<td></td>
<td></td>
<td>• Students trained and advanced to post-secondary training.</td>
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<tr>
<td></td>
<td></td>
<td>Mid-Term</td>
<td>• Students enter into long-term career paths in EE-related occupations.</td>
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<td></td>
<td></td>
<td></td>
<td>• Scale-up curricula development and training.</td>
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<td></td>
<td></td>
<td></td>
<td>• Inclusion of EE skills in more CTE.</td>
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<td></td>
<td></td>
<td></td>
<td>• Improved connections between CTE and postsecondary training for EE careers</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Long-Term</td>
<td>• Increased long-term participation by disadvantaged workers in post-secondary training, and good careers in EE-related fields.</td>
<td></td>
</tr>
<tr>
<td>Recommendation</td>
<td>Activity</td>
<td>Type</td>
<td>Outcomes</td>
<td>Metrics</td>
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<tr>
<td></td>
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<td></td>
<td>• Disadvantaged workers and their communities benefit from improved opportunities and outcomes for workers via EE-related careers.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• EE industries benefit from the diverse perspectives brought by disadvantaged workers.</td>
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</tbody>
</table>
Based on the program theory, outcomes, and metrics a set of researchable questions (or researchable topics) has been developed for each of the recommendations. Table 6B.4 and Table 6B.5 provide examples of these researchable questions for the two sets of recommendations along with the study type. The four study types correspond to EM&V objectives identified by the CPUC.

### Table 6B.4: Researchable Questions and Study Types by Sets of Recommendations: Skills Development, Energy Outcomes

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<tr>
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<tbody>
<tr>
<td>Estimates and projections of job demand by occupation for California’s EE sector occupations</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Education and training programs in California addressing EE and other DSM activities, including any gaps in capability to meet projected demand</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Penetration of EE curriculum in core institutions</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Restrictions on use of advisory board or other mechanisms to ensure workforce expertise continues to be considered in development of CPUC review of IOU EE programs</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>How specific training programs are designed and implemented and possible improvements to these processes to support objectives</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Experience with increased reliance on core institutions and on working with interagency advisory (or governance) boards</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Design and implementation of organization focused on development of KSAs</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Impact of ratepayer support for EE training program (effect of IOU support on short-term and long-term outcomes)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Impact of ratepayer support for development of KSAs (effect on standards developed for programs, on standards required by customers)</td>
<td></td>
<td></td>
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<td>X</td>
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### Table 6B.5: Researchable Questions and Study Types by Sets of Recommendations: Skills Development, Opportunities for the Disadvantaged

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<tbody>
<tr>
<td>Characteristics of job quality (wages, benefits, career ladders, safety conditions) in residential and non-residential EE sector for workers identified as disadvantaged relative to other workers</td>
<td>X</td>
<td></td>
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</tbody>
</table>
### Table 4B.5: Researchable Questions and Study Types by Sets of Recommendations: Skills Development, Opportunities for the Disadvantaged

<table>
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<tbody>
<tr>
<td>Selection process of contractor and partners, including role of advisory groups, issuance of RFP</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Design and implementation of pre-apprenticeship program, including statement of objectives, program tracking system, recruitment of participants, quality of program</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Short-term and long-term impacts following career pathway models</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>
Table 4B.6 presents specific metrics for our recommendations on work quality and energy outcomes.

<table>
<thead>
<tr>
<th>Type of Metrics</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills Short-Term Metrics</td>
<td>Energy savings per measure or system</td>
</tr>
<tr>
<td></td>
<td>Percent of customers reporting required callbacks by type of measure or system for prior year</td>
</tr>
<tr>
<td></td>
<td>Percent of measures or systems properly installed based on rigorous inspection by type of measure or system for prior year</td>
</tr>
<tr>
<td></td>
<td># of participating contractors and # of participating contractors with high inspection pass-rates</td>
</tr>
<tr>
<td></td>
<td>Cost of EE measure to customer</td>
</tr>
<tr>
<td>Mid-Term and Long-Term Metrics</td>
<td>Percent of measures or systems in operating condition one-year following project completion by type measure or system and specified time period</td>
</tr>
<tr>
<td></td>
<td>Energy savings estimates with adjustment for number of measures or systems properly installed</td>
</tr>
<tr>
<td>Mid-Term and Long-Term Metrics</td>
<td>Increase in number of workers classified as disadvantaged employed in EE sector in living wage jobs</td>
</tr>
<tr>
<td></td>
<td>Quality of jobs as defined by wages, benefits, working conditions, and career ladders in which workers classified as disadvantaged are employed</td>
</tr>
</tbody>
</table>

**Table 4B.6: EE Programs, Work Quality for Energy Outcomes: Metrics**
Southern California Edison Company (SCE) Comments on the

2nd Draft Guidance Plan for a Comprehensive Approach to Workforce in Energy Efficiency and Demand Side Management Programs

(April 8, 2014)

SCE appreciates the opportunity to provide comments on the Guidance Plan and accompanying documents, the executive summary, and appendices. Likewise, SCE appreciates that the draft Guidance Plan incorporates some key revisions in response to comments provided by SCE and other parties to prior draft Guidance Plan recommendations.\(^1\) As noted in Decision (D.)12-11-015\(^2\), SCE expects the final WE&T (Workforce, Education, and Training) Guidance Plan will influence the direction of WE&T in 2016 and beyond. Parties involved in 2016 WE&T and EE portfolio planning and delivery should, and will, have the opportunity to comment throughout this planning process on the specific merits of the WE&T Guidance Document in order to guide Commission direction that will determine which recommendations are adopted in order to facilitate achieving California’s EE goals.

Herein, SCE’s comments and feedback follow the same organization as the draft Guidance Plan.\(^4\) In addition, SCE is providing specific comments on a separate document (spreadsheet).

Section 2 – Demand-side Strategies

SCE is open to exploring the “responsible contractor policy” and “inclusion” recommendations

SCE is open to exploring some of the “responsible contractor policy” recommendations, that are in addition to measures SCE has already taken to increase the likelihood that HVAC and other equipment installations are completed in accordance with California laws. These measures include:

HVAC: (1) a self-reported confirmation checkbox for rebate applicants to confirm they have used a licensed contractor, as appropriate, and followed applicable permitting requirements for their installation and (2) HVAC Commercial Quality Maintenance and Third-Party Implemented program (such as Cool Schools) requirements of proper contractor licensing and certification.

---

\(^1\) Guidance Plan for a Comprehensive Approach to Workforce in Energy Efficiency and Demand Side Management Programs – Draft 2: 3/27/14, Donald Vial Center (DVC) on Employment in the Green Economy, UC Berkeley

\(^2\) SCE submitted comments in response to the 1\(^{st}\) Draft Guidance Plan on March 10, 2014.

\(^3\) D.12-11-015, Decision Approving 2013-2014 Energy Efficiency Programs and Budgets, issued November, 15, 2012. Page 90, “Therefore, we require the IOUs, during this transition portfolio, to hire an expert entity to help design a comprehensive approach to the WE&T issues inherent in the energy efficiency portfolios. ... In their compliance filings, the utilities should propose a contract of at least $500,000 in budget, to design a comprehensive approach, with stakeholder consultation, for workforce development efforts to be launched in the 2015 portfolios.”

\(^4\) SCE provides no comments on Section 1 - Introduction
For example, a Commercial Quality Maintenance level 2, full service technician is required to hold and maintain (1) a valid Refrigerant Transition and Recovery Certification, Type II or Universal, (2) an appropriate certification from recognized industry certification bodies such as those with ANSI 17024 recognition providing commercial HVACR certification (highly related to HVAC service and system maintenance), and (3) have a minimum of five years HVAC service experience. Moreover, credentials that are currently accepted by the program include, but are not limited to: UA HVACR S.T.A.R. – HVACR Service and/or Mastery, NATE Heat Pump Service.

Other Equipment Installations: Energy Upgrade California, which offers a variety of whole house measures, requires its participating contractors to hold and maintain: (1) a valid contractor’s license issued by the state’s licensing board or a valid HERS II Certification from a CEC approved HERS II provider, (2) all licenses and/or bonds required by the state or local jurisdictions for the specific services offered by the Contractor, (3) minimum of a Building Performance Institute (BPI) Building Analyst certification, and (4) have a minimum of two (2) years of documented work experience.

The proposed First Source approach and goals would need to complement General Order No. 156 (Supplier Diversity) as it focuses on the businesses or organizations themselves and not impose conflicting directives due to a focus on individual workers or employees. The DVC report includes examples of First Source activities that will prove to be useful as SCE reviews First Source opportunities.

SCE supports efforts to increase opportunities for disadvantaged workers to access employment in energy efficiency programs. SCE’s Energy Savings Assistance Program (ESA) has an established track record of contracting directly with service providers including community-based organizations (CBOs) that are knowledgeable about ESA’s program requirements and are successful in recruiting employees within the communities they serve to facilitate delivery of services at no cost to eligible customers. Rather than encouraging a least-cost competitive bid process, SCE has created a sustainable relationship that negotiates continued participation and performance in the program in order to protect and strengthen the current network of CBOs delivering services on SCE’s behalf. This sustained relationship has created growth opportunities for employees within participating CBOs. Quality assurance is built into the program through specified installation standards and a rigorous inspection process with careful tracking of pass-rates by contractor.

SCE notes that per CPUC and state policy, the EE portfolio must meet specified cost effectiveness criteria. ESA also is evaluated not only from the perspective of addressing health, safety, and comfort, but from achieving energy and bill savings for participating customers. While the “diversity of workforce”, “first source” language, and wage floors, may lead to improvements in the workforce and installation quality that can be observed and measured over time, these objectives must be considered within the context of the CPUC’s rules and guidance for designing cost-effective programs. DVC

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5 Eligible women-owned, minority-owned, and service-disabled veteran—owned businesses could be excluded from receiving contracts if first source policies are not carefully developed.
indicates conservative assumptions based on available data suggest that a wage floor of $14 or $15 dollars per hour would add at most 1-2% to ESA program costs, while providing substantial benefits to those workers earning less. SCE looks forward to receiving input from ESA Program contractors and notes it will be important to understand if wage floors would create unanticipated issues for contractors delivering other services. For example, some CBOs, in addition to non-energy-related services, also deliver energy efficiency improvements through the Low Income Home Energy Assistance Program administered by the California Department of Community Services and Development.

Section 3 – Recommendations for WE&T Program Modification

SCE supports continued IOU administration of the WE&T portfolio, including skills-building.

Skills-building portfolio: The draft Guidance Plan calls for a dedicated skill-building portfolio with distinct goals, programmatic activities, and a distinct budget for market-building offerings. Subsequent to the Needs Assessment, SCE initiated work towards this guidance, shifting approximately 55% of its budget to skill-building training courses that are industry-recognized skills-building certification programs since the 2011 needs assessment. In 2013, approximately 55% of training resources offered through SCE’s Centergies program were directed toward skill-building activities. SCE will seek valuable stakeholder input from workforce partners and employers in an advisory capacity to facilitate development of the scope and content of the skill building RFPs to facilitate energy savings and inclusion. The Guidance Document suggests that, “…the CPUC consider the option of moving administration of the WE&T skill building portfolio to the CWIB [California Workforce Investment Board], in particular if the IOUs demonstrate a lack of ability or will to successfully execute the Phase One programs we propose by 2015, and take other near-term actions we describe to improve program efficacy.” SCE opposes transferring the skill-building portion of WE&T to the CWIB for the following reasons. One reason is the Phase One recommendation and timeline do not reflect the CPUC’s directive to bridge 2013-2014 program activity through 2015. EE programs, including WE&T, are operating according to direction provided in D.12-05-015, and D.12-11-015. CPUC direction will be required if the IOUs are to redeploy resources that already have been approved for the 2012 – 2015 period.

Of greater importance, SCE is in the best position to provide program administration of these activities and has a long standing commitment to workforce development. Moreover, SCE is in the best position to most efficiently sustain and grow WE&T portfolio opportunities through its’ collaborative working relationships and existing infrastructure. The BPI and HVAC certification trainings are part of rebate programs qualification requirements, thus must stay linked to SCE’s EE program activities. In all, continued administration of DSM WE&T activities through SCE as the administrator provides the most

6 Statewide, the skills-building portfolio averages 45% of the total Centergies budget allocation.
7 Guidance Plan, page 92. Table 3.2 includes a timeline with milestones.
natural pathway to ensure both skill-building and market-building needs are delivered in a parallel and complementary manner.

While SCE acknowledges opportunities to improve the effectiveness of its WE&T offerings, the draft Guidance Plan did not include an assessment of other stakeholder performance and progress in achieving goals set forward in the Needs Assessment. Without an expanded analysis of the capabilities possessed by other parties and their success in facilitating workforce development, a transfer of CPUC oversight and IOU accountability to the California Workforce Investment Board or any other unidentified entity is premature. Moreover, CPUC oversight and IOU accountability are essential to ensure ratepayer investments in WE&T are contributing to achievement of EE goals.  

Market-building portfolio: SCE agrees with the recommendations to deepen partnerships with the statewide ME&O team to better inform both market building and skills building program design and better utilization of technology for distant learning purposes. On the latter, SCE and PG&E are taking steps in 2014-15 to pilot this delivery channel.

Ratepayers currently fund Centergies classes. The draft Guidance Plan recommends the IOUs charge for market building classes. At face value, this seems a valid recommendation — one often claimed to gain commitment (or as cited “have skin in the game”) from class participants. SCE tried this approach in the past, but the revenue collected was relatively small and required extensive operational and data collection procedures to ensure against double-recovery of expenses. If the intent of this recommendation is to “lower ratepayer costs”, SCE suggests a continued focus on lowering administrative overhead costs. Lastly, the draft Guidance Plan recommends the Energy Centers adopt California state government rules about expenditures on food, beverages, and travel. The basis for this recommendation is flawed and it should not be adopted.

Lastly, on the WE&T program modification recommendations, all non-IOU policy related recommendations need to be pull out to an appendix, per DVC memorandum to the CPUC’s Energy Division dated March 13, 2014.

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9 IOUs and CPUC are legally required to and best suited for governance and accountability for overall WE&T goals, training, and curriculum development that is ratepayer funded, based on their familiarity with DSM policies, strategies, programs, market based trends, and other key market drivers that will affect the implementation of WE&T program strategies.

10 On page 75 of the Guidance Plan, DVC estimates, “the IOU WE&T programs spend several million dollars a year on food and beverages for the participants in their programs.” For 2014, SCE plans to spend approximately $50K of WE&T Centergies funds on foodservice for WE&T workshops and seminars and is identifying opportunities to reduce these costs in 2015.
Section 4 – Supporting and Foundational Activities:

SCE believes the WE&T logic model is a useful resource for the next round of program updates. However, notes that quality of energy savings and increased energy savings are not identified within the logic model. Additionally, it appears the model lacks the inclusion and role of younger students (K-12), parents, and schools.

Further, in the draft Guidance Plan, work quality is used throughout to refer to proper installations, maintenance, and operations of measures and systems of measures.\textsuperscript{11} SCE agrees with the importance of proper installations, operations, and maintenance, but notes quantifiable success metrics for these criteria are far more difficult to define so they can be applied to SCE’s programs. Until there’s agreement on the definition of work quality, on how to inspect for this work quality, and how to measure and document different levels of work quality, this concept is not operational.

\textsuperscript{11} Guidance Plan, Footnote 169.
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<tr>
<td>Executive Summary</td>
<td>Section III, A (p. 9)</td>
<td>1. Inconsistency and 2. DVC Clarification</td>
<td>1. In section III A, it is stated “The IOUs should propose budgets and activities for each program.” However, in section III F, explicitly states a total dollar allocation of $15MM in RFPs be issued as an initial phase for transitioning program design in 2014-15. Further, in section III F, DVC states “The remainder of the funds should be reserved for the RFP process described in (B), which should be launched after the advisory board and skills panels are operational and priorities for the next cycle are identified.” Moreover, the Guidance Plan nor the Appendices make reference to dollar allocations to these RFPs. 2. DVC Clarification - SCE seeks clarification on what are the remaining “funds” referenced, as well as their funding source and dollar allocation.</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>Section VI, III (p. 13)</td>
<td>SCE Clarification</td>
<td>Workpaper development is done by the IOUs and assessments are done by the CPUC (current Guidance Plan language implies that the task force would be developing work papers and not the IOU engineering groups). Suggest that the proposed policy taskforce work with the California Technical Forum (currently being developed), to propose appropriate methods to quantify the effects of savings due to measure installation quality.</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>Section V, F (p. 9) also in Guidance Plan, Section 3.3.4, Table 3.2 (p. 94)</td>
<td>SCE Clarification</td>
<td>The budget and timing for Phase One is not feasible, as the IOUs will need to receive CPUC approval to make significant adjustments to their existing Program Implementation Plans and budgets.</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 1.1, 7th paragraph, last sentence (p. 7)</td>
<td>Inconsistency</td>
<td>DVC indicated that they would remove the language in the draft referencing “CPUC directed IOUs to address 'any and all' recommendations made in the Needs Assessment,” so we're assuming that this was inadvertently missed. Wanted to make sure you were aware of the statement in this area, so it could be removed.</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 2.2 section (multiple pages)</td>
<td>DVC Clarification</td>
<td>1. What are the recommendations for defining “work quality”? 2. How will wage floor be associated with “work quality”?</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 2.1.2.2.2, last paragraph, 1st sentence (p. 20)</td>
<td>Inconsistency</td>
<td>DVC states that &quot;In sum, the IOUs have not responded to the Needs Assessment demand-side recommendations.&quot; However they identify instances earlier in their report in which the IOUs have responded to the Needs Assessment recommendations. Specifically, in section 1.1, 7th paragraph (p.7), DVC states that &quot;the IOUs began making programmatic changes based on the Needs Assessment.&quot; And that, &quot;In response to the CPUC’s guidance, the IOUs proposed additional modifications to their 2013-14 EE program implementation plans (PIPs).&quot; DVC should correct their misstatement on page 20.</td>
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<tr>
<td>Guidance Plan</td>
<td>Section 2.1.2.2.2, last paragraph, 1st sentence (p. 20)</td>
<td>SCE Clarification</td>
<td>The Needs Assessment findings/recommendations require more than the IOUs involvement to implement. Specific to Centergies' program data tracking, a third party, independent consultant was retained for 2013-14 to investigate and determine whether the Energy Centers are consistent in collecting the right data to support a new program theory and logic inclusive of contributions to certification programs and reaching out to disadvantaged workers.</td>
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<tr>
<td>Guidance Plan</td>
<td>Section 2.2.1.1.1, 1st paragraph (p. 20)</td>
<td>SCE Clarification</td>
<td>SCE acknowledges there are many causes to limited energy savings, job quality being one of them. But, since not the only one, a solid understanding of the other causes and their impact would be required to effectively implement job quality.</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 2.2.1.1.1, 1st paragraph (p. 21)</td>
<td>SCE Clarification</td>
<td>Specific to CALCTP, at this time this certification only includes a post-testing process. As a result, the program's training implementation has an inherent limitation to provide the necessary data to demonstrate &quot;attribution&quot; to contractor effectiveness. The IOUs are exploring the impacts of CALCTP certification to see if it makes a difference and are currently in the process of finalizing a proposal with a third party, independent consultant to perform an Assessment of CALCTP Certification. This study is planned to be conducted in 2014. If it is determined that CALCTP certification does have a significant and positive impact on the quality of lighting control installations, the consultant will assess and weigh the likely impact of requiring CALCTP-certified installations in terms of issues identified in CPUC Decision 12-05-015: Skill Standards and Certifications, Section 2.2.1, including incremental customer cost, energy savings, and program participation rates.</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 2.2.2.1, 1st paragraph (p. 25)</td>
<td>SCE Clarification</td>
<td>Section implies that project measurement (metering) is &quot;occasionally&quot; done. It should note that non-residential customized projects require equipment operational verification, and for most customer retrofit projects, proper system operation, and subsequent savings is verified through M&amp;V.</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 2.2.3, Recommendations (p. 29)</td>
<td>DVC Clarification</td>
<td>1. Are certification and license requirements intended to be phased in over time? 2. Footnote #71 (2.a.) reference is missing.</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 2.2.4.1, 6th paragraph (p. 31)</td>
<td>DVC Clarification</td>
<td>Here and in other sections, is DVC suggesting apprenticeship is the pathway, the preferred pathway? The concern is that apprenticeships do not reflect the entire market and there are only so many &quot;seats&quot; in those programs. Is there a way to describe the quality characteristics being sought and be more inclusive of the other available industry available?</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 2.2.4.3, Figure 2.2 (p. 37)</td>
<td>SCE Clarification</td>
<td>Program Approval box -- should clarify that &quot;... Review of savings do not discount savings&quot; should state &quot;...do not always discount savings&quot;</td>
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<tr>
<td>Guidance</td>
<td>Section 2.3.1.1.2, Diversity of</td>
<td>SCE Clarification</td>
<td>SCE is concerned that the 'First Source' approach could create tension with CPUC General Order No. 156 Supplier Diversity, as it is possible that a qualified WMBE vendor may not meet the 'First Source' criteria.</td>
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<tr>
<td>Plan</td>
<td>Workforce (p. 51)</td>
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<tr>
<td>Guidance</td>
<td>Section 3.2.2, 7th bullet (p. 61)</td>
<td>SCE Clarification</td>
<td>PG&amp;E is not the only IOU working to develop sector strategies. For example, in early 2014, SCE took the statewide lead of the HVAC sector strategy. Nevertheless, the development of sector strategies is an IOU effort.</td>
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<td>Guidance</td>
<td>Section 3.2.4.3, 3rd paragraph (p. 67)</td>
<td>SCE Clarification</td>
<td>The HVAC Sector Strategy has had its challenges, but it is not stalled. As reported by PG&amp;E (who then held the lead role) in 2013, the IOUs met with members of Energy Division, Labor, and HVAC sector experts to explore specific opportunities in the commercial sector and selected a focus area. As new data regarding the savings potential of the ultimately chosen focus area (economizers), became available in late 2013, the sector strategy stakeholder team chose to reevaluate their focus area. This resulted in more robust engagement with the Western HVAC Performance Alliance (WHPA) as the team started the development of a consistent statewide Commercial Quality Maintenance training going forward into 2014.</td>
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<tr>
<td>Guidance</td>
<td>Section 3.3.1.1 (p. 75)</td>
<td>DVC Clarification</td>
<td>Will the Executive Summary make any mentions of the market-building recommendations?</td>
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| Guidance   | Section 3.3.1.1 (p. 76)          | DVC Clarification | Will DVC provide the necessary evidence to justify keeping the following statements in the final Guidance Plan? (particularly the underlined portions)  
“We estimate that the IOU WE&T programs spend several million dollars a year on food and beverages for the participants in their programs.” |
| Plan       |                                  |                |                                                                                                                                                                                                             |
| Guidance   | Section 3.3.1.1 (p. 76)          | SCE Clarification | For 2014, SCE plans to spend approximately only $50K of WE&T Centergies funds on foodservice for WE&T workshops and seminars. Furthermore, we’re currently in the process of identifying lower-cost foodservice options to reduce these costs for 2015.  
We agree that foodservice may not be an effective way to encourage participation (another false claim) in WE&T programs, the percentage of current expenditures relative to overall statewide spending is insignificant and should not be targeted in these recommendations. |
<p>| Plan       |                                  |                |                                                                                                                                                                                                             |
| Guidance   | Section 3.3.1.4, Role of PAG (p. 82) | Inconsistency | P. 83 quotes the CPUC on the role and function of a PAG -- referring to the PAG as an advisory group -- &quot;For the Program Choice and Portfolio Management functions...&quot;. However, on p. 82, The Role of the PAG section seems to imply that its role would go beyond the &quot;advisory&quot; role and move into &quot;decision making.&quot; |
| Plan       |                                  |                |                                                                                                                                                                                                             |
| Guidance   | Section 4.2.2, last paragraph (p. 100) | SCE Clarification | The SW WE&amp;T research roadmap for 2015 or 2016 and beyond includes research to help determine the extent to which, or even whether, the IOU programs are strengthening job opportunities. |
| Plan       |                                  |                |                                                                                                                                                                                                             |</p>
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<tr>
<td>Guidance Plan</td>
<td>Section 4.2.4, program monitoring (p. 101)</td>
<td>DVC Clarification</td>
<td>What does it mean to include &quot;program monitoring of the implementation of specific recommendations with recommendations for mid-course corrections; includes both program metrics and process evaluations&quot; in the EM&amp;V plan?</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 4.2.4, market assessments (p. 101)</td>
<td>SCE Clarification</td>
<td>The SW WE&amp;T research roadmap identifies a study to do this work, as a starting place.</td>
</tr>
<tr>
<td>Guidance Plan</td>
<td>Section 4.3.2.1 (p. 110)</td>
<td>DVC Clarification</td>
<td>SCE accepted the 1st draft Guidance Plan recommendation to move away from developing a new WE&amp;T website. It is unclear if the now suggested &quot;joint IOU web site, linked to the ME&amp;O and other relevant web sites, to communicate WE&amp;T activities AND PLANS&quot; is a private website for Guidance Plan stakeholders (e.g., PAG and Steering Committee members) or a public website with access for all.</td>
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<tr>
<td>Appendix</td>
<td>Section 2.E., #2 (p. 15)</td>
<td>SCE Clarification</td>
<td>Work papers should document the basis for the savings assumptions, including installation quality if this can be readily quantified. If there is existing data (usually from prior studies) that is based upon an installation standard in place, then it makes sense to document this in the work paper. It is not practical to estimate installation quality impacts from standards alone, unless there is some comparative study data from actual installation efforts.</td>
</tr>
<tr>
<td>Appendix</td>
<td>Section 2.E (p. 15)</td>
<td>SCE Clarification</td>
<td>Documenting required skills and timing is best left to the documents that relate to implementation, including contracts and/or program policy and procedure manuals.</td>
</tr>
<tr>
<td>Appendix</td>
<td>Section 2.E (p. 15)</td>
<td>SCE Clarification</td>
<td>Specifying required timing for a project, instead of performance based approaches could lead to inappropriate outcomes and is project dependent. Averages though could be used for forecasting efforts.</td>
</tr>
<tr>
<td>Appendix</td>
<td>Section 2.E (p. 15)</td>
<td>SCE Clarification</td>
<td>Requirements for quantifying costs based upon skill sets need to take into account available cost data (limited), and current CPUC policies (DEER). Both the lack of data and DEER requirements would need to be addressed in order to accommodate these types of recommendations.</td>
</tr>
<tr>
<td>Appendix</td>
<td>Section 2.E (p. 15)</td>
<td>SCE Clarification</td>
<td>It should be noted that many deemed measures count only incremental savings and cost (ROB) Currently for these measures, measure and base case installation costs typically cancel out. As such, if installation quality energy savings and cost impacts are to be quantified, then the approach needs to quantify both costs and impacted savings for both the base and measure cases and have supporting data for each.</td>
</tr>
<tr>
<td>Appendix</td>
<td>Section 2.1.1 Certified Payroll Reporting System (p. 47)</td>
<td>SCE Clarification</td>
<td>SCE would need to work with the commission and other parties to assess the cost and implications (including employee and contractor data confidentiality) of efforts to implement a contractor payroll reporting system.</td>
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<td>Appendix</td>
<td>Table 4.B.6 (p. 105)</td>
<td>SCE Clarification</td>
<td>Suggest rather than using energy savings/measure or project, use differential energy savings for measure or project when similar projects with and without enhanced worker skills requirements are implemented. The rationale is that there are numerous factors that impact savings, and the variable related to just installation quality needs to be isolated by study data.</td>
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April 8, 2014

To: Carol Zabin

From: Jim Caldwell on behalf of the California Community Colleges Chancellors’ Office

Subject: Comments on the March 27 Draft of the WE&T Guidance Plan

We agree with the following statements in the Draft WE&T Guidance Plan, offering comments for clarification as appropriate in italics:

- There is a need for ratepayer investment in ongoing training to develop and upgrade EE skills for workers in key occupations and to ensure they align with the ambitious direction of EE policy in California.

  *The Community Colleges will be pleased to help leverage ratepayer investments to upgrade energy efficiency skills for workers in key occupations and for students to complete pathways into those occupations.*

- The lack of targeting of classes for specific audiences [by the IOU training centers] with closely related needs and objectives undermines the effectiveness of the market building programs. Teachers are unable to build from a common base and address specific needs.

  *The Community Colleges will be pleased to support market-building programs with cohort-based training.*

- As a number of state workforce officials have noted, it makes sense for the IOUs to cultivate contractors who already employ highly trained workers and “top off” EE specific knowledge and skills, especially in sectors where quality problems have been noted.

  *The Community Colleges will be pleased to help expand the statewide footprint of IOU contractor training as required.*

- Best practices include clear prerequisites and learning outcomes for each class; classes that are sequenced and build upon each other; competency testing at class completion; links to recognized, stackable credentials; and hands-on learning.

  *The Community Colleges will be pleased to adopt IOU training programs, using best practices, for delivery to a statewide audience.*

- As the process evaluation pointed out, the offerings should focus more on improving the competency of workers who apply skills in the field, and employ more in-depth and hands-on learning opportunities. This is best achieved when participants have similar baseline skills.
The Community Colleges will be pleased to support skills-building programs with cohort-based training.

- Best practices in workforce development have emphasized the importance of specifying career pathways and customizing training for each specific pathway and phase in it. Working within these pathways provides the best opportunity for training the workforce with skills necessary to realize California’s energy goals.

  The Community Colleges will be pleased to work with the IOUs for integration of training center programs as onramps or advanced development within pathways and career lattices.

- Employer partnerships are critical elements of successful sector strategies because they ensure that new skills are relevant to the market, and that workers will be supported and rewarded for using these new skills on the job.

  The Community Colleges will be pleased to assist the IOUs in developing employer relationships that lead to successful sector strategies.

- One particular problem the IOUs face is that sector strategies require commitments from and voluntary collaborations among employers. This excludes employers who do not want to partner with competitors. In other arenas, this problem is solved by providing resources to voluntary regional consortia of employers and their educational partners who already work together or willingly come together in response to a funding opportunity.

  The Community Colleges will be pleased to assist in developing regional stakeholder consortia through its regionalized Doing What Matters structure, with leadership by the Energy Efficiency and Utilities Sector Navigator in support of the IOUs.

- Ensuring the return on ratepayer investment in training requires a clear, transparent process for determining program prioritization and making a judgment about critical needs.

  The Community Colleges are committed to transparent sector strategy development and execution with the IOUs and other educational institutions.

  Assessment of critical needs should result in programs that leverage the relative contributions to energy efficiency across the entire “efficacy chain” – integrating skills-building for decision-makers, “specifiers”, energy auditors, facilities managers, contractors, plan examiners and building inspectors, installers, and operations and maintenance workers into programs that address a particular market, technology, or related group of occupations.

  Failure to leverage key occupations across the efficacy chain risks training workers in programs which lack the transformative elements that lead to employment or to increased demand for higher energy efficiency skill levels.

- WE&T staff acknowledge that their programs would benefit from additional guidance about how to develop robust institutional partnerships and how to improve their skill-building offerings.
The Community Colleges will be pleased to assist the IOUs with such guidance.

- Collaborations with the core institutions that provide the main training grounds for the priority occupations … [have] a significant return on investment by ensuring that the future workforce starts their careers with a skill set that includes the latest EE knowledge and skills. Ratepayer WE&T investments with the core institutions collaborations should focus on curriculum development and training of instructors and require institutional funds for on-going training and instruction. This will impact the foundational knowledge of current and future generations of workers in the key occupations.

  The Community Colleges are committed to transferring energy efficiency expertise from the IOUs to faculty.

- Skills upgrading for incumbent workers that link to advanced, industry-recognized, skill certifications that build off core credentials whenever these exist. These efforts must involve significant employer commitment, to ensure that skills are immediately relevant and used, and that workers are supported in and rewarded for deploying these skills on the job.

  Industry-recognized credentials for energy efficiency abound in California, but in many cases lack the breadth of endorsement that serves students, employers, and incumbent workers. The need is for a coherent set of career lattices with statewide endorsement that support ongoing skills development and career progression along logical pathways. The Community Colleges will be pleased to continue and to adopt new skills-building programs that enable students and workers to earn credentials with broad industry endorsement. Its' system of Common Metrics and Accountability Standards tracks Community College success in aligning education and training with industry-recognized certifications, and measures student achievement of those certifications.

- A robust level of ratepayer investment in training is needed because on their own, the core training institutions, and employers in businesses executing work that affects energy use, may not prioritize energy efficiency skills and knowledge. Our recommendations leverage other funding. We cannot identify specific quantities from other workforce training funds because like ratepayer funds, other workforce funds have restrictions and rules governing its use. Because of this, braiding funding for specific training usually has to occur at the individual training program level.

  The Community Colleges, through the Sector Navigator, have prioritized energy efficiency skills and knowledge, consistently leveraging funds such as those available through the Workforce Investment System and the Employment Training Panel to offer training.

- The identification of critical EE skills must derive directly from technical specifications. There is an established process used in many fields to develop skill standards from technical specifications through an analysis of the key job tasks and associated skill needs.
The Community Colleges will be pleased to apply its proven Skills Panels and DACUM models in the translation of standards into curriculum requirements.

- We see distinctive opportunities to support and develop career pathways and influence energy markets within the K-12 space.

  The Community Colleges will be pleased to integrate IOU programs into its partnerships with K-12 systems and articulated career pathways for energy efficiency. A structure of Common Metrics and Accountability Standards is shared by the Community Colleges and K-12 systems, tracking momentum points that lead to student success.

- [The] IOUs should establish a Program Advisory Group (PAG) to advise them on the workforce skills-building portfolio. This advisory body can also monitor and provide expertise, advice and resources on the other guidance recommendations for Chapter 2. The PAG should be the permanent structure for substantive input, advice and oversight of IOUWE&T issues.

  The Community Colleges will be pleased to nominate appropriate representatives to the PAG, who if chosen would provide substantive expertise, advice, and resources in support of the IOUs’ WE&T programs.

- The CEC should convene a Statewide EE Workforce Steering Committee that involves the state agencies and experts on labor, education, and energy.

  In the event that this Steering Committee is established, the Community Colleges will be pleased to designate an appropriate representative to serve on it.
DAS and CWIB are pleased to offer comments of support on the second draft of the WE&T Guidance Plan. We have provided more detailed feedback on the first draft recommendations. Here we highlight a few overarching issues of greatest importance to our two agencies.

- DAS and the CWIB are pleased with the overall approach and substance of the WE&T Guidance Plan. We believe this Plan is both ambitious and pragmatic, and will help California be able to meet its goals for both energy savings and workforce development. The comprehensive approach to WE&T laid out in this Plan will foster greater collaboration and coordination between the state’s energy and workforce agencies and key institutions.

- DAS and the CWIB support the Plan’s recommendations for stronger demand-side workforce standards, in particular responsible contractor policies and workforce skill standards, described in Chapter 2. Skill standards are essential mechanisms for sending a clear signal to the training community to help them develop and align the content of their programs. These recommendations are critical for ensuring that work carried out in pursuit of California’s energy efficiency goals is completed by qualified contractors who invest in safe practices and quality work done by skilled workers.

- We support the consultant’s recommendation for a “skills building portfolio” for the IOUs’ WE&T investments on the supply side (Chapter 3). Workforce skills building is different than education for contractors and business owners. DAS and CWIB are especially supportive of the proposal to develop this portfolio using a competitive solicitation/procurement (RFP) process, with input from the state’s key workforce experts and agencies via an advisory entity. As stated in previous comments, we believe that many of the concerns with the current WE&T programs can be addressed and mitigated with a thoughtful, tailored, and strategic grant making/contracting process. A strategic procurement process is a practical solution with many benefits, including increasing competition among eligible and quality applicants, creating opportunities to leverage resources via matching funds, fostering collaboration among regionally-based workforce providers, and allowing for a transparent analysis of program/training provider effectiveness and performance.

- DAS and CWIB believe that the best use of ratepayer investments in training is to “top off” the energy efficiency-related skills for trained incumbent workers in the key occupations. The state’s apprenticeship and journey-level upgrade programs, done in concert with our partners in the community colleges, are the state’s most important vehicle for delivering this type of training timely and effectively, in a way that will also help workers advance in their careers.

- We also offer our support of the Plan’s recommendations to support inclusion for disadvantaged workers into good careers in energy efficiency-related fields, and the various components of the workforce diversity program described in Chapter 2.2.5.

- DAS and CWIB would be happy to serve on an advisory group and/or a statewide steering committee, as proposed in recommendations D and E in chapter 2.

- DAS and the Community Colleges Chancellors Office are pleased to partner with the IOUs on the Phase 1 proposal to work with key apprenticeship programs that impact energy use, to ensure that their curricula is updated with the most important energy efficiency skills and knowledge.
April 8, 2014

Dr. Carol Zabin
Donald Vial Center on
Employment in the Green Economy
2521 Channing Way # 5555
Berkeley, CA 94720-5555

Re: Comments on Draft #2 of Workforce Education & Training (WE&T) Guidance Document

Dear Dr. Zabin,

As a threshold matter, Greenlining greatly appreciates the work the authors have undertaken in advising California’s investor owned utilities (IOUs) and Public Utilities Commission (CPUC) on how ratepayers investment in WE&T programs can be realigned to support a high-road and inclusive energy efficiency (EE) portfolio. As the draft report acknowledges, California’s ratepayers provide the largest source of EE investment dollars and wield significant influence in the market. If properly designed, effective WE&T programming can provide a tremendous opportunity to advance California’s vision of a green collar economy that benefits all communities, including those suffering disproportionately from pollution and poverty. As such, we support the emphasis the draft report places on developing EE workforce diversity programs and practices that connect workers from disadvantaged communities to family supporting career pathways.

**Demand-Side Strategies**

At the outset, we agree that training alone is insufficient to accomplish the State’s goal of individuals from targeted communities “successfully advance[ing] themselves into rewarding careers in the energy services fields” and that demand-side interventions are needed to provide real opportunities for workers with barriers to employment. As such, we again reiterate that the IOUs must leverage their contractual relationships with contractors to address inclusion via best practices like targeted hiring, as set forth in the Draft Report and its appendices. We also agree
that ratepayer investments must provide a family supporting wage floor and upward mobility. As such, we agree that the IOUs must:

1. Create a workforce diversity program that encompasses training connected to family-supporting career pathways for a diverse EE workforce.
   a. Add “diversity of workforce” as a factor in ranking proposals by third-party contractors in all EE solicitations (see definition of workforce diversity below).
   b. Adopt “First Source” language into all EE contracts to create a formal link between training for disadvantaged workers and job opportunities through EE programs.
   c. Establish a wage floor for ESA, Direct Install, and selected third-party programs that have a pre-selected list of contractors.

We do take issue with the recommendation to “guide and encourage” entities with which the IOUs have direct contractual relationships. While we certainly support bringing these entities along in a collaborative fashion, the IOUs must do more than “guide and encourage,” and instead leverage the contracting process to directly drive change in the market by requiring the adoption apprenticeship standards, family supporting wages, and robust targeted hire policies. We agree that these recommendations apply with equal force to RENs and CCAs but note that in certain instances they are actually the administrators demonstrating leadership on this issue.

**Supply Side Strategies**

We agree that there is a “significant gap in the WE&T offerings is the lack of cohesive programming to target skill development for disadvantaged workers and significantly remove substantial barriers facing disadvantaged communities.” We are disappointed to hear that while IOU staff understands that this is a goal for WE&T, they have not established a program with clear objectives or strategies, as the Needs Assessment recommended and as CPUC Decisions have repeatedly emphasized. As such, we support the development and implementation of an inclusion sector strategy with clear pathways for disadvantaged workers to enter long-term, career-track jobs. This effort must include wrap-around support services for ongoing worker
success and robust linkages to demand-side placement strategies as outlined in the Demand Side strategies chapter.

**Foundational Activities**

The supporting and foundational activities outlined in the draft report are essential building blocks that enable any inclusion sector strategy to be successful, accountable, and transparent. With regard to workforce data collection, we are deeply troubled that the IOUs have not only failed to make any progress since they were first ordered to do so, but appear to be opposed to improving data collection in keeping with best practices and the spirit of the Commission’s directives. As such we agree that the IOUs must:

1. Adopt a definition of “Disadvantaged Worker,” which is based on meeting specific criteria of disadvantage as listed on page 48-49 of the Draft Report.
2. Collect on-going data on job quality, workforce diversity, hiring of disadvantaged workers, and the relative costs and benefits of inclusionary policies to create a baseline and measure progress over time.
3. Require contractors to use an electronic certified payroll reporting system for reporting hiring data.

We look forward to the completion of this guidance document and the coming discussion on the record to move forward the recommendations contained therein, as appropriate.

Sincerely,

[Signature]

Ryan Young
Legal Counsel