

# CEE Comments on PG&E Draft Business Plan

**Commenter Name:** Ross Nakasone

**Affiliation:** COALITION FOR ENERGY EFFICIENCY (CEE).

The Coalition for Energy Efficiency is a coalition of environmental, energy, labor, disadvantaged community, and consumer organizations working together to review and reach consensus on energy efficiency incentive policy issues. These comments represent the consensus comments of the following members of the coalition: (1) BlueGreen Alliance, (2) Sierra Club California, (3) The Greenlining Institute, (4) California Community Colleges Chancellor’s Office, (5) Joint Committee on Energy and Environmental Policy, (6) Operating and Stationary Engineers, locals 39 and 501, (7) Avery Energy Enterprise, (8) International Brotherhood of Electrical Workers, California Inside Locals, (9) the California Labor Federation, (10) Western States Council of Sheet Metal, Air, Rail and Transportation Workers, (11) California State Pipe Trades Council, (12) National Electrical Contractors Association (California), (13) Carol Zabin, Chair of the Don Vial Center for Employment in the Green Economy; and (14) Center for Sustainable Energy.

**Program Administrator to receive feedback:** PG&E

**Date:** November 21, 2016

<b>Commenter:</b> Coalition for Energy Efficiency (CEE): (1) BlueGreen Alliance, (2) Sierra Club California, (3) The Greenlining Institute, (4) California Community Colleges Chancellor’s Office, (5) Joint Committee on Energy and Environmental Policy, (6) Operating and Stationary Engineers, locals 39 and 501, (7) Avery Energy Enterprise, (8) International Brotherhood of Electrical Workers, California Inside Locals, (9) the California Labor Federation, (10) Western States Council of Sheet Metal, Air, Rail and Transportation Workers, (11) California State Pipe Trades Council, (12) National Electrical Contractors Association (California), (13) Carol Zabin, Chair of the Don Vial Center for Employment in the Green Economy; and (14) Center for Sustainable Energy.					
Comment Number	PA(s)	Sector	Page #	Comment	Supporting Guidance Documents
CEE-1	PG&E	Global Comments Applicable to All Chapters		<p><b>Observations</b></p> <p>The Business Plan fails to address (or even identify) all the issues set forth in the applicable guidance decisions and raised by the CAEECC stakeholder process. (See e.g., D.15-10-028 at p. 47). In addition, numerous sections of the Business Plans are either cursory in nature, incomplete or entirely blank.</p> <p>As a result, the draft Business Plan is lacking in sufficient detail or content to allow for meaningful stakeholder input on a number of key issues. Examples of issues missing from the Business Plan include:</p> <ol style="list-style-type: none"> <li>1. Business Plan fails to identify strategies to address the issue of poor workforce and installation quality resulting in underperforming energy efficiency measures and stranded savings opportunities. (See Guidance Decision D.16-08-019 at p. 63, fn.</li> </ol>	

				<p>24.)</p> <ol style="list-style-type: none"> <li>2. Business Plan fails to address the recommendations for increasing the demand for skilled workers set forth in the 2014 University of California, Berkeley, Donald Vial Center for Employment in the Green Economy (UCB-DVC) report, “<i>Workforce Issues and Energy Efficiency Programs: A Plan for California’s Utilities.</i>” (See D.14-10-046 at p. 102.)</li> <li>3. Business Plan fails to identify goals, strategies or approaches to incorporate workforce diversity and inclusion goals into the contractor selection process. (D.12-11-015, <i>Decision Approving 2013-2014 Energy Efficiency Programs and Budgets</i>, at p. 84 (ordering IOUs to develop approaches to incorporate workforce diversity and inclusion goals into their third-party contractor selection process; see Guidance Decision D.16-08-019 at p. 63, fn. 24 (affirming continued applicability of prior workforce orders).)</li> <li>4. Business Plan ignores Decision’s recommendation to track measure installation quality over time as a metric. (D.15-10-028 at p. 52.)</li> <li>5. Business Plan fails to include transition plans to demonstrate the minimum level of third party delivery required by the Guidance decision. (Guidance Decision D.16-08-019 at p. 74.)</li> <li>6. The Business Plan fails to identify which strategies will be coordinated statewide or regionally and who will be the lead administrators. (Guidance Decision D.16-08-019 at p. 102-103; D.15-10-028 at p. 47.)</li> <li>7. Business Plan fails to identify at least four downstream programs to be piloted on a statewide basis, including proposed lead administrator and other program details. (Guidance Decision D.16-08-019 at p. 111.)</li> <li>8. Business Plan fails to describe how collection strategies are embedded in the design of the program or intervention to ensure ease of reporting and near term feedback, and how performance will be analyzed during deployment. (D.15-10-028 at p. 47-48.)</li> <li>9. The Business Plan fails to identify or address inherent free ridership concerns with incentive programs. (See CEE-3).</li> <li>10. Business Plan fails to respond to prior comments and input provided by the CEE, including the CEE’s comments on the Draft Business Plan Chapters.</li> <li>11. Business Plan fails to describe the stakeholder process that will be associated with implementation plan preparation and fails to provide a proposal for oversight. (D.15-10-0208, at p. 64; D.16-08-019 at p. 75.)</li> </ol> <p><b>Recommended Action</b></p> <ul style="list-style-type: none"> <li>• Provide CAEECC stakeholders opportunity to review and comment on these missing details prior to submitting Business Plans to Commission.</li> </ul>	
CEE-2	PG&E	Global Comments		<p><b>Observations</b></p> <p>The Business Plan needs to be amended to address the workforce quality issues set forth in</p>	<b>CONSISTENCY WITH GOALS</b>

		<p><i>Applicable to All Chapters</i></p>	<p>the applicable guidance decisions and raised by the CAEECC stakeholder process. The Business Plan addresses worker education and training (“WE&amp;T”) programs, but fails to address workforce qualification standards for installers of incentive measures. This is inconsistent with the Commission’s Long-Term Energy Efficiency Strategic Plan and conflicts with prior decisions directing the IOUs to develop and implement a comprehensive approach to ensure that energy efficiency measures are installed correctly by engaging a trained, skilled and diverse workforce. It also conflicts with the goals and strategies of the Existing Building Energy Efficiency Action Plan. and it fails to to describe how it would incorporate the U.C. Berkeley Donald Vial Center report, <i>Workforce Issues and Energy Efficiency Programs, A Guidance Plan for California Utilities</i>. (Zabin, et al, Donald Vial Center on Employment in the Green Economy, <i>Workforce Issues and Energy Efficiency Programs, A Guidance Plan for California Utilities</i> (2014) (“UCB-DVC Report”).) The Business Plans should be amended to direct the implementation plans to include clear and detailed descriptions of how incentive programs will ensure energy efficiency measures are installed by a trained, skilled and diverse workforce, and amended to include actual metrics to assess the achievement of these goals.</p> <p>The Rolling Portfolio Guidance Decision articulated the importance of using “the limited ratepayer funds under our purview in the most targeted and effective way possible, to induce even more energy efficiency than we have in the past, especially in light of SB 350’s goal of doubling the amount of energy efficiency in the economy.” (Guidance Decision D.16-08-019 at p. 23.) The Coalition strongly agrees with this concept. Ratepayer funds, however, are not effectively targeted and used where they fund poor quality installation of energy efficiency measures. Education and training programs alone will not effectively address the lost energy savings and safety risks associated with poorly installed energy efficiency measures without a corresponding requirement, incentive or inducement to actually hire installers who have received the appropriate workforce education and training.</p> <p>The need for Business Plan policy on workforce engagement issues is well-documented by prior commission studies and decisions. (Zabin, et al, Donald Vial Center on Employment in the Green Economy, <i>Workforce Issues and Energy Efficiency Programs, A Guidance Plan for California Utilities</i> (2014) (“UCB-DVC Report”) Appendix 2B.) At the same time, contractors who invest in a higher skilled workforce that is more effective in producing energy savings are not being cultivated or rewarded.</p> <p>The PA energy efficiency incentive programs do not include rigorous contractor or workforce standards. As a result, program analyses have consistently found that actual savings are substantially below projected savings, resulting in a persistent and significant gap between reported and evaluated savings across the PA energy efficiency incentive portfolios. (UCB-DVC Report at pp. 32-34 and Appendix 2B.) As noted in the Decision, “system planners need reasonable assurance that the energy efficiency assumed in the forecast is real</p>	<p><b>AND GUIDANCE:</b> In order to address energy efficiency losses from poor quality installation, the 2016 Existing Building Energy Efficiency Action Plan Update adds a goal to “ensure that a certified, high performing workforce will be engaged to deliver energy efficiency retrofits, thereby transforming efficiency incentive work from a low-cost bidder framework to a lowest-cost qualified bidder framework.” (2016 Action Plan Update at p. 52.) To achieve these goals, the Action Plan expressly recommends that PAs incorporate contractor and workforce standards into the energy efficiency program requirements. (2016 Action Plan Update at p. 49.)</p>
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The current Business Plan chapters, however, do not even include any of the preliminary strategies contained in the IOU’s February 23, 2015 Tier 2 advice letter. The February 23, 2015 Tier 2 advice letter, which was required to describe which UCB-DVC Report recommendations would be initiated in 2015, committed to designing incentive programs that would implement the following preliminary steps:

- The advice letter stated that the IOUs would begin adopting “skill certification requirements for advanced lighting controls and HVAC Quality Installation and Quality Maintenance and other available skill standards and certification guidance.”
- The advice letter stated that the IOUs would “initiate” implementation of the recommendation to require CALCTP certification for all ratepayer-subsidized advanced lighting control system.
- The advice letter stated that the IOU’s 2015 ratepayer funded energy efficiency activities would include adopting a responsible contractor policy for contractors that work directly with the IOUs.
- The advice letter stated that the IOU’s 2015 activities would include establishing prevailing wage and targeted hire goals for contractors that are preselected by the IOUs or have a direct contracting relationship with the IOUs.

We note that as part of the CAEECC process, stakeholders asked the IOUs to report on how they complied with these 2015 implementation commitments. Stakeholders never received a response.

The Business Plan chapters need to address how the IOUs will incorporate these recommendations in more detail than provided in the 2015 process, with clear timelines and metrics for determining success. The metrics should include clear goals for the percentage of incentives verified to have been installed by a skilled and trained workforce. Without clear metrics for workforce quality, the Commission is unlikely to see any meaningful progress on this long-standing and as yet unfulfilled goal.

**Recommended Action**

The Coalition recommends that the following Problem Statements, Barriers, Desired Outcomes, Intervention Strategies and Metrics be added to the Commercial, Residential, Public Sector, Industrial, and Cross-Cutting WE&T chapters of the Business Plan:

that these prior directives remain valid and that the Commission expects upcoming business plans and program designs to address the issue of ensuring and continuously improving workforce and installation quality for energy efficiency measures. (D. 16-08-019 at pp. 63, 92.)

The proposed metrics are consistent with D.15-10-028, which encourages tracking measure installation quality over time as a metric. (D.15-10-028 at p. 52.)

**PROBLEM:** Ratepayer money is being spent on projects that do not achieve optimal energy saving by subsidizing contractors that do not employ adequately trained and skilled workers. The resulting poor workmanship and equipment installations produce energy savings substantially below incentive program saving estimates. The lost energy savings are locked in for the lifetime of the underperforming retrofit.

**MARKET BARRIER:**

The WE&T objective of creating the kind of skilled and trained workforce necessary to support the state’s energy efficiency goals is being undermined by incentive programs that reward contractors that employ untrained and unqualified workers rather than workers that have the proper training and skills necessary to perform the work required to ensure proper installation or maintenance, and achieve maximum energy savings. Incentives are provided to low cost contractors without any regard to their investment in skilled and trained workers. This creates an economic disincentive for contractors to invest in worker training and employ qualified workers, since the cost of those investments puts them at a competitive disadvantage with other contractors that hire workers at poverty wages and do not invest in training or offer apprenticeship opportunities for their employees.

**DESIRED OUTCOMES:**

- Reduce lost energy savings opportunities that are stranded in buildings when energy efficiency construction work is not properly performed.
- Create a demand for a skilled and trained workforce.
- Reward contractors that invest in a skilled and trained workforce to ensure quality installations that are safe and achieve energy saving goals.

**INTERVENTION STRATEGIES**

Move energy efficiency work from a lowest cost bidder framework to lowest price responsible and qualified bidder framework, and require or incentivize the engagement of a trained and skilled workforce to ensure quality installations that achieve energy saving goals.

(1) Include in the Business Plan direction that ensures the Implementation plans shall identify how energy efficiency outcomes may be improved by imposing skill and trained workforce requirements.

(2) For each midstream and downstream program, identify and incorporate program requirements and standards designed to foster the use of a skilled and trained workforce in the installation of efficiency measures and the performance of energy efficiency construction work under the program. Such program requirements and standards shall be based on the recommendations set forth in the 2014 University of California, Berkeley, Donald Vial Center for Employment in the Green Economy (UCB-DVC) report, “*Workforce Issues and Energy Efficiency Programs: A Plan for California’s Utilities.*”

These recommendations include: (1) workforce skill certification requirements, such as CALCTP certification for advanced lighting projects; (2) prevailing wage requirements for certain projects – so that contractors will be selected based on competency and not just price; and (3) skilled workforce prequalification requirements based on requiring jobsite workers to be comprised of a certain percentage of journey persons or apprentices from a registered apprenticeship program. Where available, the Commission should adopt specific skills certification requirements in conjunction with quality assessment activities for contractors and technicians working on ratepayer-subsidized energy efficiency projects. These certifications should include:

- Advanced lighting controls equipment: require California Advanced Lighting Controls Training Program (CALCTP) firm certification for contractors on all projects.
- Whole House Upgrade: require BPI firm accreditation for all Advanced Path Whole House projects.
- HVAC Quality Installation and Quality Maintenance
  - Require graduation from a state-certified apprenticeship program, a 2-year degree in HVAC, or proof of comparable training and experience for jobsite HVAC technicians.
  - Require certification from the Testing, Adjusting and Balancing Bureau (TABB) for relevant work.

Where necessary to prevent disruption in workforce availability, certifications should be phased in by requiring an annually increasing percentage of the incentive programs participants to comply with the certification requirements.

(3) Link all midstream and downstream incentives to completion of permit inspection and title 24 compliance documentation to ensure more consistent energy efficiency outcomes.

(4) Link upstream HVAC equipment incentives to completion of permit inspection and title 24 compliance documentation to ensure more consistent energy efficiency outcomes.

(5) Support SB 1414 efforts to establish a system to track central heating and air cooling equipment sales and installations in the state to verify compliance with permitting, inspection and testing requirements.

**METRICS/TIMELINE**  
*Metric:* Percentage of incentives verified to have been installed by a skilled and trained workforce. Verification should be based on compliance with one of the DVC recommendations for increasing engagement of skilled and trained workforce.

			<p><u>Short-Term Actions:</u></p> <ul style="list-style-type: none"> <li>• Require ratepayer-subsidized advanced lighting control systems to be installed by CALCTP-certified technicians. (See February 23, 2015 Tier 2 advice letter)</li> <li>• Adopt skill certification or training and experience requirements for HVAC Quality Installation and Quality Maintenance. (See February 23, 2015 Tier 2 advice letter)</li> <li>• Require that 30% of midstream and downstream incentive funds be installed by a verified skilled and trained workforce. Verification shall be based on compliance with one or more of the DVC recommendations for increasing engagement of a skilled and trained workforce.</li> <li>• Establish prevailing wage and targeted hire goals for contractors that are preselected by the IOUs or have a direct contracting relationship with the IOUs. (See February 23, 2015 Tier 2 advice letter)</li> <li>• Identify all program areas where energy efficiency outcomes would likely be improved by imposing skill and trained workforce requirements</li> <li>• Support development of HVAC equipment sales registry as recommended by SB 1414.</li> </ul> <p><u>Mid-Term Actions:</u></p> <ul style="list-style-type: none"> <li>• Require that 50% of midstream and downstream incentive funds be installed by a verified skilled and trained workforce. Verification shall be based on compliance with one or more of the DVC recommendations for increasing engagement of a skilled and trained workforce.</li> <li>• Support use of HVAC equipment sales registry.</li> <li>• Identify strategies to incorporate skilled and trained workforce requirements into upstream incentives.</li> </ul> <p><u>Long-Term Actions:</u></p> <ul style="list-style-type: none"> <li>• Require 100% of midstream and downstream incentive funds be installed by a verified skilled and trained workforce. Verification shall be based on compliance with one or more of the DVC recommendations for increasing engagement of a skilled and trained workforce.</li> <li>• Implement strategies to incorporate skilled and trained workforce requirements into upstream incentives.</li> </ul>	
CEE-3	PG&E	Global Comments Applicable to All Chapters	<p><b>Observations</b></p> <p>In its November 4, 2015 white paper on the implementation of the new AB 802 to-code baseline for “High Opportunity Programs or Projects” CPUC staff warned repeatedly of the increased risk of free-ridership concerns with the new baseline. Free Ridership is a concern because if an energy efficiency measure would have been installed in a privately-owned building even without the incentive, then the public receives no benefit from the expenditure</p>	

of ratepayer funds. The Business Plan, however, fails to identify free ridership as a potential barrier to achieving real energy saving gains and fails to propose any strategies for addressing this issue. This is an issue that affects all sectors, with the possible exception of public sector projects – and has been expressly raised as a concern by CPUC staff.

It is difficult to accurately assess what role an incentive has in any private party decision to install an energy efficiency measure, but the free ridership concern is particularly heightened in to-code projects. For example, a commercial customer installing a new HVAC unit must comply with title 20 and any title 24 requirements and thus would have to meet to-code requirements even without the incentive. Incentives to exceed code are less prone to free ridership issues since exceeding code is entirely voluntary.

### **Recommended Action**

The Coalition recommends that the following Problem Statements, Barriers, Desired Outcomes, Intervention Strategies and Metrics be added to the Commercial, Residential, Public Sector, Industrial, and Cross-Cutting WE&T chapters of the Business Plan:

**PROBLEM:** Free Ridership – If energy efficiency measures would have been installed in a privately-owned building even without the incentive, then the public receives no benefit from the expenditure of ratepayer funds. Free ridership concerns are heightened in to-code projects. For example, a commercial customer installing a new HVAC unit must comply with title 20 and any title 24 requirements and thus would have to meet to-code requirements even without the incentive. Incentives to exceed code are less prone to free ridership issues since exceeding code is entirely voluntary.

#### **MARKET BARRIER:**

It is difficult to accurately assess what role an incentive has in private party decision to install an energy efficiency measure.

#### **DESIRED OUTCOMES:**

Minimize free ridership concerns with to-code incentives

#### **INTERVENTION STRATEGIES**

1. Direct majority of to-code incentive funds to public sector, low-income sector, or to targeted business sectors that have been identified as resistant to upgrade energy efficiency systems.
2. Offset free ridership concerns by linking to-code incentives to the use of a skilled and trained workforce to ensure better energy efficiency outcomes than non-incentive to-code work.
3. Offset free ridership concerns by linking to-code incentives to completion of permit

				inspection and title-24 compliance documentation to ensure better energy efficiency outcomes than non-incentive to-code work.	
CEE-4	PG&E	Residential, Commercial, Public, Industrial, and Agricultural Sectors. Specifically, the following sections:  1. Trends and Challenges 2. State Policy goals 3. Leveraging Cross-cutting Resources 4. Partners and Commitment to Coordination 5. Metrics and EM&V Considerations  Cross-cutting Sector: WE&T		<p><b>Observations</b></p> <p>PG&amp;E’s draft BP sections for all of its sectors (as identified in the third column) should be amended to include a discussion of how it will actually make advancements towards making EE jobs and WE&amp;T actually accessible to low income and disadvantaged community (hereinafter, “target communities”) workforce, rather than simply making them available. Advocates have repeatedly heard from program administrators such as PG&amp;E that their jobs and training are available to everyone, yet they are not able to show proof that ratepayer-funded EE programs actually include workers from the target communities.</p> <p>The 2008 Long-Term Energy Efficiency Strategic Plan includes a goal to “ensure that minority, low-income and disadvantaged communities fully participate in training and education programs at all levels of the demand-side management (DSM) and energy efficiency industry.” (Strategic Plan at p. 70.) The Decision Approving 2013-2014 Energy Efficiency Programs and Budgets (D.12-11-015, at p. 84) ordered the PAs to develop approaches to incorporate workforce diversity and inclusion goals into their third-party contractor selection process. (See also Guidance Decision at p. 63, fn. 24 affirming continued applicability of prior workforce orders.) PG&amp;E’s BP sector chapters, especially its Cross-cutting Sector for WE&amp;T fail to identify how it will link the state’s workforce diversity and inclusion goals into their programs.</p> <p><b>Recommended Actions</b></p> <ol style="list-style-type: none"> <li>The Coalition recommends revising its Sector Chapters’ sections, identified in the third column, in a way that incorporates workforce inclusion in its overarching goals, strategies, and approaches and how such strategies and approaches will lead to greater workforce inclusion of workers from the target communities.</li> </ol> <p>Example: <i>See Residential Sector, section titled “PG&amp;E and State Policy Goals” pg. 46.</i> PG&amp;E has a table that describes the “Policy Driver” (legislation), “Guidance Given” (statute language), and “PG&amp;E’s support for the Policy” (PG&amp;E’s high level objectives). PG&amp;E includes SB 350 as one of the policy drivers that it is planning to address. SB 350 has a mandate that requires the CEC to coordinate with IOUs’ ratepayer programs in order to provide workforce development and job training for residents of disadvantaged communities. While we appreciate that PG&amp;E included a short discussion on how it plans to support SB 350’s policy of doubling energy efficiency by addressing barriers for low income customers to access weatherization services, the Coalition urges PG&amp;E to revise this section to describe how it plans to work or coordinate with the CEC in achieving this particular SB 350 mandate.</p>	<p><i>Long Term Strategic Plan:</i> The 2008 Long Term Energy Efficiency Strategic Plan includes a goal to “ensure that minority, low-income and disadvantaged communities fully participate in training and education programs at all levels of the demand-side management (DSM) and energy efficiency industry.”</p> <p><i>CPUC Decisions:</i> D.12-11-015, Decision Approving 2013-2014 Energy Efficiency Programs and Budgets, at p. 84 (ordering IOUs to develop approaches to incorporate workforce diversity and inclusion goals into their third-party contractor selection process). Identify performance</p>

				<p>2. The Coalition recommends revising its Cross-Cutting WE&amp;T chapters of the Business Plan to reflect the following ammendments/language recommendation:</p> <p><b>PROBLEM:</b> Incentives Provide Limited Opportunities to Disadvantaged Workers</p> <p><b>MARKET BARRIER:</b> Contractors lack sufficient economic incentive to participate in programs that provide good-paying career opportunities to workers from disadvantaged communities.</p> <p><b>DESIRED OUTCOMES:</b> Ensure that minority, low-income and disadvantaged communities are participants in the energy efficiency industry created by utility energy efficiency programs.</p> <p><b>INTERVENTION STRATEGIES</b></p> <ol style="list-style-type: none"> <li>a. Incorporate workforce diversity and inclusion goals into the contractor selection process.</li> <li>b. Set disadvantaged/local hire targets for contractors and subcontractors;</li> <li>c. Support pre-apprenticeship programs that successfully place workers in state-certified apprenticeship and other programs with a proven track record of placing disadvantaged workers into career track training and jobs;</li> <li>d. Create better alignment with the state-certified apprenticeship programs, where relevant and support for California’s main training and education institutions, including community colleges and the state-certified apprenticeship system; and</li> <li>e. Leverage government and other programs that serve the MUSH (municipal, university, school and hospital) sector, which can model innovations in linking job training and job opportunities for disadvantaged workers.</li> </ol> <p><b>METRICS/TIMELINE</b> <i>Metric:</i> Percentage of incentives verified to have been installed by contractors that have demonstrated a commitment to provide middle class career pathways to workers from disadvantaged communities.</p>	<p>metrics for non-resource programs. (D.15-10-028 at p. 52.)</p> <p><i>SB 350:</i> SB 350 calls for coordination between the Energy Commission and the CPUC in developing energy efficiency programs including workforce development and job training for disadvantaged communities.</p>
CEE-4a	PG&E	Cross-Cutting Workforce Education and Training	Goals on p. 2 Strategi	<p><b>Observations</b> In Section A, PG&amp;E identifies four overarching approaches to achieving its WE&amp;T goal “to provide California’s energy workforce with the knowledge and skills it needs to meet</p>	<p><i>Long Term Strategic Plan:</i> The 2008 Long Term Energy Efficiency</p>

		<p>es on pp. 12-14</p> <p>Metrics on pp. 18-19</p>	<p>California’s energy efficiency goals.” Unfortunately, these approaches do not expressly call out workforce development and job training for residents in disadvantaged communities.</p> <p>In Section F, PG&amp;E identifies three core intervention strategies including, Partnerships for Core Education and Career Readiness. However, there is no strategy directly addressing workforce development and job training for residents in disadvantaged communities.</p> <p>In Section K (Metrics) and Table 6, PG&amp;E recognizes the value of partners beyond its Energy Centers. However, in the “Minority, low income and disadvantaged communities” subsection of partners, the Business Plan seems to limit minority, low income and disadvantaged community coordination to the Low Income Energy Efficiency (ESAP?) training.</p> <p>The 2008 Long-Term Energy Efficiency Strategic Plan includes a goal to “ensure that minority, low-income and disadvantaged communities fully participate in training and education programs at all levels of the demand-side management (DSM) and energy efficiency industry.” (Strategic Plan at p. 70.) The Decision Approving 2013-2014 Energy Efficiency Programs and Budgets (D.12-11-015, at p. 84) ordered the PAs to develop approaches to incorporate workforce diversity and inclusion goals into their third-party contractor selection process. (See also Guidance Decision at p. 63, fn. 24 affirming continued applicability of prior workforce orders.) And SB 350 requires “workforce development and job training for residents in disadvantaged communities, including veterans, at-risk youth, and members of the state and local community conservation corps.”</p> <p><b>Recommended Actions</b></p> <p>The Coalition recommends that Section A of the Business Plan include an additional overarching approach addressing disadvantaged communities: “5. Provide meaningful career opportunities to minority, low-income and disadvantaged workers.”</p> <p>The Coalition recommends that Section F include an intervention strategy to “Build the program infrastructure needed to provide successful pathways that lead to meaningful career opportunities to minority, low-income and disadvantaged workers.” While the barrier in Table 4 (Intervention 2) is partially addressed by this new recommended intervention strategy, the Coalition would recommend an additional barrier that “PG&amp;E’s existing WE&amp;T initiatives struggle to identify, recruit, train and place large number of workers from minority, low-income and disadvantaged communities.”</p> <p>To advance this strategy and address these barriers, the Coalition recommends refining the example tactic on DACs to read, “Collaborate with workforce development organizations such as community based organizations and pre-/apprenticeship programs with a demonstrated track record of success in recruiting, training and placing disadvantaged</p>	<p>Strategic Plan includes a goal to “ensure that minority, low-income and disadvantaged communities fully participate in training and education programs at all levels of the demand-side management (DSM) and energy efficiency industry.”</p> <p><i>CPUC Decisions:</i> D.12-11-015, Decision Approving 2013-2014 Energy Efficiency Programs and Budgets, at p. 84 (ordering IOUs to develop approaches to incorporate workforce diversity and inclusion goals into their third-party contractor selection process). Identify performance metrics for non-resource programs. (D.15-10-028 at p. 52.)</p> <p><i>SB 350:</i> SB 350</p>
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			<p>workers in good jobs.”</p> <p>As part of this tactic, the Coalition would recommend that this collaboration link directly to workforce inclusion strategies for minority, low-income and disadvantaged workers. Workforce education and training for disadvantaged workers must create a pipeline that leads to job placement and retention in family-sustaining jobs the EE sectors. The Coalition believes that training that fails to lead to good jobs does not constitute full participation for disadvantage communities in California’s energy efficiency industry.</p> <p>The Coalition would recommend for Section K (Metrics) that WE&amp;T coordination for minority, low-income and disadvantaged communities not be limited to just low-income energy efficiency programs. Instead, PG&amp;E should focus on community based organizations (CBOs) with demonstrated track records of trust with target communities and success in recruiting, training and placing minority, low-income and disadvantaged workers into good jobs, and on organizations that run pre-/apprenticeship programs. And support coordination of these CBOs and pre-/apprenticeship organizations with energy efficiency programs through training and direct hiring of minority, low-income and disadvantaged workers.</p>	<p>calls for coordination between the Energy Commission and the CPUC in developing energy efficiency programs including workforce development and job training for disadvantaged communities.</p>
CEE-5	PG&E	Global Comments Applicable to All Chapters	<p><b>Observations</b></p> <p>The Business Plan needs to identify more specific and more effective strategies for improving enforcement of and compliance with permit and code requirements. While the Business Plan recognizes that lack of compliance is a pervasive problem, it fails to identify meaningful solutions or strategies. Final inspection and permit closure is critical to ensure compliance with Title 24 functional testing requirements that are intended to increase the likelihood that newly installed systems function properly and provide the energy efficiency assumed by code compliance. Inspection requirements are also critical to ensure occupant health and safety.</p> <p>The lack of compliance with permit, inspection and compliance documentation requirements is undermining energy efficiency efforts. Contractors that fail to pull permits are more likely to be unlicensed, use low wage, untrained workers, and to skip acceptance testing or commissioning of systems. As a result, this work is likely to be installed poorly and to be less energy efficient. The Existing Building Energy Efficiency Action Plan thus states that “Addressing the application, compliance and enforcement of building standards in existing buildings is a high priority” and calls for improving retrofit compliance with permitting and code requirements to 90 percent by 2020.</p> <p>The Business Plan needs to set forth specific and effective strategies to meet the Action Plan’s goals. This starts with ensuring that all ratepayer-subsidized energy efficiency measures comply with final inspection and permit closure requirements. Incentives should</p>	<p>Existing Buildings Energy Efficiency Action Plan at p. 10: “Addressing the application, compliance and enforcement of building standards in existing buildings is a high priority.” See also discussion on p. 13 and milestone goal on p. 25 (“By 2018, establish baseline code compliance rate for residential HVAC replacements. By 2021, improve compliance to 80 percent.” “By 2020, retrofit</p>

not be used to subsidize projects that fail to comply with permit inspection and title 24 compliance documentation requirements. The recent adoption of SB 1414 now requires this for all incentives provided to customers or contractors for the purchase or installation of HVAC systems. The same performance and safety concerns apply to other energy efficiency measures as well. Lighting, plumbing, roofing and other existing building retrofit work are also often performed without complying with permitting, safety inspection or Title 24 compliance documentation requirements. For example, a review of CALCTP’s 2016 annual acceptance test report to the CEC reveals that, in some California jurisdictions, contractors are not complying with Title 24 lighting control acceptance test requirements at all.

Ratepayer-funds should not be used to subsidize poorly performing and potentially unsafe retrofits that fail to comply with state and local requirements for permit closure. Requiring a customer to email, mail or fax a copy of the permit closure documentation is not burdensome, will not delay project completions and does not require customers to do anything that they are not already required by law to do. This simple and straightforward requirement is an inexpensive and effective method to increase the actual energy savings achieved from incentives and to reduce the illusory paper savings that these incentive programs are currently claiming.

Permit closure requirements, however, are limited in the scope of their effectiveness. This strategy will not address the vast majority of HVAC retrofits that are installed without incentives or permits. To address this pervasive market problem, SB 1414 recommends development of an HVAC equipment sale registry that can be used to track HVAC sales to ensure that permit requirements are being followed for all HVAC installations. The Business Plans should include a strategy to support development of this registry.

### **Recommended Action**

The Business Plans should add the following Problems, Barriers, Goals and Strategies to their Codes and Standards Chapter.

**PROBLEM:** The lack of compliance with permit, inspection and compliance documentation requirements is undermining energy efficiency efforts. The vast majority of existing building energy efficiency system retrofits do not comply with permit, inspection or Title 24 compliance documentation requirements. For residential HVAC retrofits, industry experts have estimated that around 90% of installations do not comply with permit or inspection requirements. Contractors that fail to secure permits are more likely to be unlicensed, use cheap untrained workers, and to skip acceptance testing or commissioning of systems. As a result, this work is likely to be installed poorly and to be less energy efficient. Current energy efficiency incentive programs, however, are poorly aligned with permit, inspection and Title 24 compliance documentation requirements. Owners and contractors can purchase energy efficiency equipment and receive energy efficiency incentives without

compliance with the Building Energy Efficiency Standards is at 90 percent and is achieved at lower cost.” pp. 52-53).

			<p>demonstrating compliance with permit, inspection and Title 24 compliance documentation requirements. Providing incentives to unlawful installations encourages and exacerbates permit and code compliance problems.</p> <p>Inspection is critical to protect public health and safety and to improve energy saving outcomes. Improper installation of hot water, HVAC, or lighting control systems can lead to gas leaks, carbon monoxide poisoning, electrical shock and fire risk, poor indoor air quality, seismic safety risks, water leaks and mold risk. Moreover, final inspection includes confirmation that ducts have been tested for leaks, lighting controls have passed acceptance testing and all other functional performance or acceptance tests required under Title 24 have been performed.</p> <p><b>MARKET BARRIER:</b>  Owners and contractors can purchase energy efficiency equipment and receive energy efficiency incentives without demonstrating compliance with permit, inspection and Title 24 compliance documentation requirements. Providing incentives to unlawful installations encourages and exacerbates permit and code compliance problems.</p> <p><b>DESIRED OUTCOMES/GOAL:</b>  Incentive programs should be aligned with and support permit and code enforcement measures. Strategies should be adopted to meet the Title 24 compliance and enforcement goals of the Existing Buildings Energy Efficiency Action Plan.</p> <p><b>INTERVENTION STRATEGIES</b></p> <ol style="list-style-type: none"> <li>(1) Link midstream and downstream incentives to completion of permit inspection and title 24 compliance documentation to ensure more consistent energy efficiency outcomes.</li> <li>(2) Link upstream HVAC equipment incentives to completion of permit inspection and title 24 compliance documentation to ensure more consistent energy efficiency outcomes.</li> <li>(3) Support SB 1414 efforts to establish a system to track central heating and air cooling equipment sales and installations in the state to verify compliance with permitting, inspection and testing requirements.</li> </ol> <p><b>METRICS:</b> Metrics should be adopted to be consistent with the Existing Buildings Energy Efficiency Action Plan milestone goals: (1) “By 2018, establish baseline code compliance rate for residential HVAC replacements. By 2021, improve compliance to 80 percent.” and (2) “By 2020, retrofit compliance with the Building Energy Efficiency Standards is at 90 percent and is achieved at lower cost.”</p>	
CEE-6	PG&E	Global Comments	<b>Observations</b>	

		<p><i>Applicable to All Chapters</i></p>	<p>The draft Business Plan fails to set forth the process for oversight and stakeholder involvement in implementation plans and the procurement process. Because the historic public and commission review process for implementation plans has been eliminated, the business plans need to address what new process will be provided to (a) provide stakeholder input and Commission oversight on how PAs structure their specific incentive programs and procurement process to ensure consistency with Commission guidance and state policy; and (b) provide stakeholder input and Commission oversight in the assessment of the effectiveness of the PAs’ portfolios.</p> <p>The 2015 Decision on Rolling Portfolio Mechanics states that “there will be a stakeholder process associated with implementation plan preparation” and that this “should be the first forum for addressing any aspect of the implementation plans.” (D.15-10-028 at p. 64.) While the Decision states that a Motion for Implementation Plan Dispute Resolution may be filed if there is alleged non-compliance with Commission or Commission Staff direction, this procedure “may only be invoked after informal attempts to resolve disputes have been exhausted.”</p> <p>The Coalition has serious concerns with the lack of Commission oversight of the implementation plans and with the elimination of the implementation protest process in favor of more burdensome, post-hoc formal dispute process. For one, the grounds for filing a dispute may be more limited than the grounds for filing a protest. In addition, changing policy decisions after they have been adopted is inherently more difficult and costly than resolving policy disputes during the adoption process. The Coalition agrees with the 2015 Decision on Rolling Portfolio Mechanics, when it cautions that “a stakeholder process, even with Commission Staff participation, is not necessarily an adequate substitute for Commission review of an application or advice letter.” (D.15-10-028 at p. 44.)</p> <p>Within the framework of the Decision on Rolling Portfolio Mechanics, the Business Plans need to set forth in detail the stakeholder process associated with implementation plan preparation, including how to informally resolve stakeholder disputes.</p> <p>The Guidance Decision expressly encourages the development of a process that included procurement review groups and/or independent evaluators. It further called for the IOUs to work with stakeholders to bring forward a workable proposal for such oversight as part of the business plans. (Guidance Decision D.16-08-019 at p. 75.)</p> <p>The Coalition supports the concept of an independent evaluator. The Energy Division is already authorized to hire an Independent Evaluator. D. 05-01-055 authorizes the Energy Division, as Chair of the PRG, to hire an independent consultant to be paid for out of energy efficiency program funds (D. 05-01-055, page 105). The use of an Independent Evaluator in reviewing the IOUs’ entire competitive bidding process should be an essential element of the</p>	
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improved energy efficiency portfolio structure adopted by the Commission. This is especially true in light of the increased amount of portfolio bidding ordered in the Decision. The Business Plan should set forth whether or not an independent evaluator will be utilized and the justification for that decision.

### **Recommended Action**

Consistent with the applicable Guidance decisions, the Business Plans should set forth in detail the stakeholder process associated with implementation plan preparation, including the continued role of the CAEECC and how to informally exhaust stakeholder disputes. Without a clear and effective informal process, the Commission’s burdensome, post-hoc dispute procedure will be required for even minor disputes.

The Business Plans should add a section on Implementation that describes the following:

#### **Annual Budget Authority Advice Letters**

- Advice letters to justify annual budget, consistent with business plans and the implementation plans.
  - How have program changes or administrative activities changed the budget?
  - How have new contracts changed the role of the administrator, and the associated budget?

#### **Implementation of Business Plans**

- Meaningful oversight of procurement process
  - Utilization of Independent Evaluator reporting to Energy Division with regular stakeholder meetings to review bidding plans, RFPs, bid evaluations, and final selection. Non-financially interested stakeholders would participate.
  - PAs to submit proposed contracts to CPUC for approval. Benefits include:
    - Stakeholder process should reduce party protests, or at least expedite the protest period (no need for extensive data requests).
    - CPUC approval reduces PA and implementer community uncertainty about contracts.
- Regular status updates at CAEECC of PA activities using Business Plans as review point, as described in D.15-10-028. These updates would include activities such as:
  - Examination of PA achievements vs. metrics
    - Implementation of Commission’s direction to put programs out to bid
    - Achievement of savings vs spending
    - Identification of additional needed programs/RFPs, and modifications to existing programs/contracts.
  - Conduct annual reviews of PA activities to assess overall program

				<p>consistency with state energy goals and policies and to identify any changes that may be necessary to Business Plans, implementation plans, budgets or programs to comply with changes or updates to state energy goals and policies.</p> <ul style="list-style-type: none"> <li>▪ PA's to prepare annual report demonstrating performance.</li> <li>▪ Stakeholders and staff review report and assess program consistency.</li> <li>▪ Staff may request any additional information needed for assessment.</li> <li>▪ PA's must propose any necessary amendments to Business Plans, implementation plans, budgets or programs to address issues identified by the annual review.</li> </ul> <p><b>Implementation Plan Review Process</b></p> <ul style="list-style-type: none"> <li>• Implementation plans should be aligned with terms of signed contracts (e.g., pay-for-performance) with implementers and provide metrics that roll up to the metrics in the business plans.</li> <li>• Implementation plans should be developed with early stakeholder input in a process similar to the use of the CAEECC in the Business Plan adoption process. <ul style="list-style-type: none"> <li>○ Stakeholders and staff should be consulted early on for input on general proposal design and its consistency with Business Plan requirements and applicable state guidance documents and decisions.</li> <li>○ Stakeholders and staff should have an opportunity to review and comment on Implementation Plans before they are finalized. PAs must provide response to any written comments.</li> </ul> </li> </ul> <p>The Business Plans should also set forth the scope of Independent Evaluator review and the process for such review. An Independent Evaluator should perform the following functions, in conjunction with the Peer Review Group (PRG) whose advisory role is described in D.05-01-055:</p> <ol style="list-style-type: none"> <li>1. Review how IOUs structure their bids to ensure consistency with Commission guidance and state policy, including proposed budgets, prequalification requirements, scopes of work, performance and M&amp;V requirements, target TRC and PAC, evaluation criteria and each criterion's respective weight, and RFP distribution lists to be used.</li> <li>2. Review the results of the IOUs' evaluation processes (e.g., how many parties responded to each bid, what was the range of scoring results, disqualified respondents, etc.).</li> <li>3. Assist the PRG in its assessment of the effectiveness of the IOUs' portfolios.</li> </ol>	
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CEE-7	PG&E	Global Comments Applicable to All Chapters	<p><b>Observations (re EM&amp;V)</b></p> <p>The Coalition supports requiring statewide programs and third party programs to measure and verify the actual performance-based energy savings of ratepayer-funded projects except for small projects where measurement and verification may not be economical. Such a requirement would be consistent with Assembly Bill 802’s direction to begin measuring incentive savings by looking at “meter-based performance.” If programs are not required to verify that persistent energy savings have actually been achieved, there is little incentive to design these programs in a manner that ensures quality installation.</p> <p>The Business Plan, however, fails to set forth clear guidance or standards for when incentive programs would be required to include meter-based verification. The Business Plan should also set forth clear metrics for transitioning to greater meter-based verification of incentive programs. Monitoring and verification based on actually achieved energy savings” is a critical strategy for addressing the gap between assumed and actually achieved savings from energy efficiency retrofit projects. If large-scale and medium-scale existing building energy efficiency programs are not required to verify that persistent energy savings have actually been achieved, there is little incentive to design these programs in a manner that ensures quality installation.</p> <p>The need for actual performance-based energy savings is well documented. Currently, the vast majority of utility incentives are based upon assumed or “deemed” savings instead of actual savings. Numerous studies have shown that a significant portion of these “deemed savings” are not real or don’t fully materialize due to poor quality work. Studies have found that the gap between energy efficiency programs’ expected savings and the savings actually realized when evaluated has been as much as 51% and 63% of reported savings. (See Zabin, et al, Donald Vial Center on Employment in the Green Economy, <i>Workforce Issues and Energy Efficiency Programs, A Guidance Plan for California Utilities</i> (2014) [“DVC Guidance Plan”] at pp. 32-34 and Appendix 2B (citing and summarizing studies on energy savings outcomes).</p> <p>Measuring actual performance-based energy savings is also superior to calculations based on models because this is how customers measure project success and are assured that they are</p>

				<p>getting their money’s worth from undertaking retrofit projects. One reason why today many customers undertake solar projects with their limited capital dollars, instead of much more efficient energy efficiency projects, is that solar energy reductions and cost savings take place with respect to actual, metered usage, not a hoped-for baseline.</p> <p><b>Recommended Actions:</b></p> <p>The Business Plan should set forth clear guidance or standards for when incentive programs would be required to include meter-based verification. The Business Plan should also set forth clear metrics for transitioning to greater meter-based verification of incentive programs. The goals should be for incentive programs to be verifiable by meter-based performance as follows:</p> <ul style="list-style-type: none"> <li>• 25% of incentive programs by January, 2018</li> <li>• 50% of incentive programs by January, 2019</li> <li>• 75% of incentive programs by January, 2020</li> </ul>	
CEE-8	PG&E	<i>Global Comments on Statewide Admin Applicable to All Chapters</i>		<p><b>Observations</b></p> <p>The Coalition supports the Commission’s move towards statewide administration of upstream and midstream programs. This shift is a move in the right direction to improve customer participation and access, reduce transaction costs for customers and market actors, and increase in energy efficiency savings. The Coalition supports this effort and agrees that this transition will reduce portfolio overhead by eliminating redundant capacity and can potentially provide a bridge to more collaboration with the California Energy Commission (Energy Commission), California Air Resources Board (ARB), and public and municipal utilities. We further support the Commission’s decision to allow non-utility PAs to lead statewide programs.</p> <p>However, this transition to statewide programs alone will not result in market transformation, as required by Senate Bill (SB) 350, which the Commission identifies as a primary goal of statewide programs. Market transformation is an intervention approach that will require additional changes to the Commission’s policy framework. We look forward to discussing these necessary changes, and the role of market transformation within the EE portfolio, in Phase III of this proceeding.</p>	
CEE-9	PG&E	WE&T - General Comments on Chapter		<p><b>Observations</b></p> <p>The Business Plan needs to establish a clear framework for WE&amp;T implementation that enables tangible assessment of return on ratepayer funds and ensures timely progress in the IOUs’ contribution to the Long-Term Energy Efficiency Strategic Plan goal for a qualified and fully engaged workforce by 2020.</p> <p>The use of “short”, “medium”, and “long” time horizons do not support the urgency required for meeting the Strategic Plan 2020 workforce goals since only twelve or fewer quarters remain before the Strategic Plan goal of a qualified and fully engaged workforce must be</p>	

reached (presumably by the beginning of 2020).

At this point in the planning cycle, specific initiatives need to be defined in enough detail to allow meaningful measurement of progress to be determined at the end of each quarter. The argument against a quarter-by-quarter timeline, of course, is that this level of detail is found in the Program Implementation Plan. But this argument is not appropriate because of the urgency of the 2020 mandate and lag time between the business plan and the first Program Implementation Plan.

Insufficient data are cited to support the proposed interventions, which creates a weak foundation for the proposed strategies. Generic data from AEE are not granular enough to inform course offerings or proposed partnerships. Most occupations outlined in the “Fastest Growing Occupations” table have little energy efficiency content, and do not represent those fields most critical to meeting the CSEEP workforce goal: HVAC, building operations, facility management, lighting and lighting controls, refrigeration, and building automation/control systems. While there is an apparent need for skills-building among architects and engineers – a major strength of the ETCs - insufficient evidence is presented to support the current Energy Training Center focus. No evidence is cited for the need to train project managers, and trades site supervisors and superintendents, which are singled out from among all the occupations in the business plan.

In addition, there is no common strategy for meeting the Strategic Plan workforce goal, neither among the IOUs nor with the larger body of stakeholders and market actors. Outcomes are not specified over the life of the business plan. No meaningful framework and timeline exists for achieving these outcomes in the current draft business plan.

The IOU approach to data-driven prioritization training is done without adequate input from training institutions, workforce development providers, market actors, or other stakeholders. This creates suboptimal use of ratepayer funds and limits the amount of leverage that these funds can apply to achieve stronger outcomes from other funding sources.

Intervention strategies are far too general as a framework or timeline for meaningful Program Implementation Plans. Additionally, these Intervention Strategies do not map specifically to either the Strategic Plan’s 2020 engaged workforce goal or to the 2016 Existing Building Energy Efficiency Action Plan draft, which creates concerns that these requirements are not a significant consideration in the business plan.

**Recommended Actions:**

The business plan must be specific enough for meaningful evaluation to be made for each Program Implementation Plan. At a minimum, quantifiable outcomes should be specified for each intervention on a quarterly basis leading up to 2020, with annual milestones for the rest of business plan cycle.

The coalition strongly supports Business Plan language that leads to increased IOU collaboration with the state's major training institutions and that leverages the IOUs expertise to improve the energy efficiency content of the these institutions' curricula for the major occupations that impact the use of energy in buildings, industry, etc. This means allocating resources for training to help the Energy Centers develop targeted support for the California Community Colleges, Registered Apprenticeship programs, State Universities, through the mechanisms outlined in the Don Vial Guidance document. In addition it requires allocating resources for training of disadvantaged workers by requiring the IOUs to work with training programs that have a track record of training and placing disadvantaged workers in career track jobs or advanced training paths in higher education institutions. The DVC guidance document suggested an immediate collaboration with the California Workforce Development Board which funds a successful pre-apprenticeship programs housed in community based organizations and community colleges through their Prop. 39 training program.

Acquiring better data and analysis to prioritize training efforts is referenced as part of Intervention Strategy 1. A sharp departure from current IOU data analysis is needed to make this an effective strategy. Deep collaboration with training institutions and workforce development providers on data analysis is essential to properly focus on occupations with the greatest potential impact and best use of funds across the entire workforce landscape. It is also necessary to move beyond counting the number of class attendees to outcomes for both the workforce (i.e. placement in career track jobs) and for improving the performance of energy efficiency installations in the field.

The Business Plan should commit to partnering with the state's workforce development entities – the California Workforce Development Board, the California Community Colleges, Registered Apprenticeship programs, State Universities, Community Based Organizations, etc. – to identify and remove workforce barriers to achieving Senate Bill 350 mandates. This partnership should leverage multiple funding streams in addressing regional needs for increasing access to education and training, promoting equity, building new workforce competencies, and reducing workforce supply/demand gaps via an integrated statewide strategy that is specifically responsive to Senate Bill 350. This partnership will work in close collaboration with the current IOU-managed training centers that continue to provide valuable training classes to various market actors. The Coalition strongly supports continued funding for the WE&T training programs by IOU energy centers, but thinks these funds should support partnerships with and funding opportunities for apprenticeship programs and community colleges.

Intervention Strategies should be consistent with the recommendations and time frames set forth in the 2016 Existing Building Energy Efficiency Action Plan draft. These planning and implementation horizons should be stipulated in terms of quarters since only twelve or fewer quarters remain before the Strategic Plan goal of achieving a qualified and fully engaged

			<p>workforce by 2020 must be reached.</p> <p>At this point in the planning cycle, specific initiatives need to be defined in enough detail to allow meaningful measurement of progress to be determined at the end of each quarter.</p>	
CEE-10	PG&E	WE&T - General Comments on Chapter	<p><b>Observations</b></p> <p>PG&amp;E’s definition of WE&amp;T and related strategies need to be clarified and amplified. WE&amp;T refers to a broad expanse of workforce activities in parts of this business plan, including many stakeholders and market actors. In other places, the term seems to refer only to its Energy Training Center. Over time, WE&amp;T has become synonymous with internally-driven IOU activities that are not well integrated with initiatives by other participants in energy efficiency workforce development. While the Coalition strongly supports continuing the role of the Energy Training Centers, the WE&amp;T plan needs to be aligned with all participants in energy efficiency workforce development.</p> <p>This lack of clarity results in metrics that measure only the outcomes from attendance in Energy Training Center training programs. Even those metrics are very “soft”. Use of the WE&amp;T context also obscures the larger workforce challenge stated as part of the vision on page 1: “[b]y 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.” The “curriculum transformation” metrics are also vague and lack substance</p> <p>Barriers are created in achieving the Strategic Plan goals by the way the Business Plan outlines the WE&amp;T mission. The lack of specific strategies for alignment their training institutions and workforce development providers constrains participation – and therefore progress. The WE&amp;T Goals should be focused not just on PG&amp;E’s unique role as a siloed WE&amp;T provider, but also its role as an active and fully engaged contributor to the larger industry workforce alignment challenge.</p> <p>The WE&amp;T strategies should document specific parameters for supporting other training institutions and workforce development providers with whom they propose to partner.</p> <p><b>Recommended Actions:</b></p> <p>WE&amp;T is an appropriate descriptor of what PG&amp;E does internally. In describing its participation with other training institutions and workforce development providers in achieving Strategic Plan goals, PG&amp;E should use a different terminology: Energy Efficiency Workforce Alignment. A definition of this terminology can be found in the current draft of the 2016 Existing Buildings Energy Efficiency Action Plan.</p> <p>More importantly, this new terminology needs to be expressed in ways that clearly outline</p>	

				<p>PG&amp;E’s role in collaboration with other training institutions and workforce development providers. See the recommendations above, and in the Don Vial Guidance document.</p> <p>WE&amp;T metrics need to be more specific and quantifiable. Metrics base on the raw number of persons trained should be avoided because they fail to assess training outcomes. Similarly, metrics based solely on curriculum transformation also fail to assess the impact or success of the new curriculum. Metrics should be developed in collaboration with other training institutions and workforce providers to quantify PG&amp;E’s contribution to standard metrics that are tracked in the rest of the EE workforce landscape.</p>	
CEE-11	PG&E	WE&T - General Comments on Chapter		<p><b>Observations (re WE&amp;T)</b></p> <p>Goals should be crafted to ensure continued support for current WE&amp;T funding but programs should be reconfigured in accordance with the recommendations of the Don Vial Center Guidance Plan.</p> <p><b>Recommended Actions:</b></p> <p>Business Plans should include goals to ensure that WE&amp;T programs are adequately funded to both support effective current WE&amp;T programs (e.g., lighting control installer training and certification, building operator professionals training and certification, community college stackable sustainable energy training and credentials, and to support development of new WE&amp;T programs (e.g., training and certification for installers of automated demand response systems, electrical vehicle charging infrastructure, microgrids, energy storage, and expansion of community college stackable sustainable energy training and credentials). Funding for these specific trainings should be carried out as collaborative programs with the state’s main training institutions of the apprenticeship programs, community colleges, community based organizations, and state universities.</p>	
CEE-12	PG&E	WE&T	Table 1	<p><b>Observations (re WE&amp;T)</b></p> <p>This table currently implies that PG&amp;E’s will modify Energy Training Center programs through input from employers whose employees participate in Energy Training Center programs. A shift is needed to portray PG&amp;E’s role in an integrated approach to Energy Efficiency Workforce Alignment, within which PG&amp;E is one participant among many contributing to the goal of “[b]y 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.”</p> <p><b>Recommended Actions:</b></p> <p>PG&amp;E should be very specific in this table and in other parts of the narrative about the role of PG&amp;E, not just in the context of its own Energy Training Center, but also its role in partnering with the rest of the state’s workforce development entities – the California Workforce Development Board, the California Community Colleges, Apprenticeship programs, State Universities, Community Based Organizations, etc.</p>	

CEE-13	PG&E	WE&T	Table 4	<p><b>Observations (re WE&amp;T)</b>  While this intervention strategy generally suggests Energy Efficiency Workforce Alignment, it is currently projected as a medium and long-term activity. With SB 350 doubling current energy efficiency goals, partnerships to achieve them are urgently needed. Many of these partnerships are already in the formative stage and should be accelerated and labelled “Short Term.”</p> <p><b>Recommended Actions:</b>  Accelerate the timeline for these activities to “short term” Intervention Strategies should be consistent with the time frames set forth in the Strategic Plan and the 2016 Existing Building Energy Efficiency Action Plan draft. Instead of short-, mid-, or long-term, timeframes should be set forth in terms of quarters since only twelve or fewer quarters remain before the Strategic Plan goal of achieving a qualified and fully engaged workforce by 2020 must be reached.</p> <p>Because of the short planning cycle, specific initiatives need to be defined in enough detail to allow meaningful measurement of progress to be determined at the end of each quarter.</p>	
CEE-14	PG&E	WE&T	Table 4	<p><b>Observations (re WE&amp;T)</b>  Additional clarifications are also necessary for this section.</p> <p><b>Recommended Actions:</b></p> <ul style="list-style-type: none"> <li>• Define “most appropriate” organizations that PG&amp;E will collaborate with and on what basis that collaboration will occur. This statement is vague and provides no indication of what, if any, changes are planned.</li> <li>• The discussion of disadvantaged communities lacks specificity and requires more clarification. At a minimum, it needs to outline the basis for programs in this space. Greater urgency is needed in serving these populations. By the time this business plan goes into effect, approximately three years will have passed since the Don Vial Center’s Guidance Document was published which recommended significant upgrades to the IOUs’ workforce strategy for disadvantaged populations.</li> <li>• Integrated planning efforts are fundamental to Energy Efficiency Workforce Alignment, so specificity in this section is essential to progress toward the Strategic Plan workforce goals. The role of PG&amp;E needs to be clarified. Does “continuing to hold stakeholder engagement forums” mean that PG&amp;E plans to hold these forums with the same frequency that CAEEC is meeting? Or is the intent to continue with pre-CAEECC meetings which happened on an infrequent ad hoc basis that lacked sufficient continuity and purposefulness in achieving the CSEEP goals? Section should be aligned with the recommendations of the Don Vial Center Guidance document.</li> </ul>	

CEE-15	PG&E	Cross-Cutting: Codes and Standards Chapter	Page 1	<p><b>Observations (re Codes and Standards)</b></p> <p>The Coalition supports PG&amp;E’s vision that codes and standards should be designed and implemented to ensure consistency with California’s broader statewide energy, environmental, public health and safety goals, including energy efficiency, demand reduction, renewable energy, onsite generation, grid connectivity, demand response, energy storage capacity, ZNE buildings, water efficiency, and alternative fuels vehicles. The Coalition recommends adopting the following strategies to achieve this goal.</p> <p><b>Recommended Action</b></p> <ul style="list-style-type: none"> <li>• The Business Plan should include language to ensure that the Implementation Plans shall assess consistency with SB 350, Existing Building Energy Efficiency Action Plan and other California energy goals and strategies.</li> <li>• Conduct annual reviews to assess overall incentive program consistency with state energy goals.</li> <li>• Evaluate and identify barriers impeding the adoption of automated demand response capabilities in existing buildings. Align incentive and Codes and Standards programs with efforts to address these barriers.</li> <li>• Where multiple code compliance pathways exist, ensure programs incentivize code compliance pathways that are compatible with automated demand response capabilities.</li> </ul>	D.16-08-019 at p. 47 (requiring consistency with SB 350 Goals).
CEE-16	PG&E	Cross-Cutting: Codes and Standards Chapter	Page 2	<p><b>Observations (re Codes and Standards Compliance)</b></p> <p>Coalition supports emphasizing actions to support compliance. Stronger codes must be coupled with stronger compliance and enforcement efforts. See Global Comment CEE-5.</p> <p><b>Recommended Action</b></p> <p>See Global Comment CEE-5.</p>	
CEE-17	PG&E	Cross-Cutting: Codes and Standards Chapter	Pages 2, 26	<p><b>Observations (re Codes and Standards Compliance)</b></p> <p>Coalition supports emphasizing actions to support compliance. Stronger codes must be coupled with stronger compliance and enforcement efforts. However, Coalition is unclear on what PG&amp;E means by its goal of “improving compliance margins for selected, high importance codes and standards.” This goal is vague. Is PG&amp;E suggesting that compliance is not important for some codes and standards? What is the definition of “high importance codes and standards”? Are they Codes and Standards that protects health and safety? Are they Title 24 energy efficiency compliance verification requirements such as acceptance testing?</p> <p><b>Recommended Action</b></p> <p>Delete modifier “selected, high importance.” See also Global Comment CEE-5.</p>	
CEE-18	PG&E	Cross-Cutting: Codes and	Pages 5,6	<p><b>Observations (re Codes and Standards Compliance)</b></p> <p>Coalition supports development of electronic repository – but to be useful, repository needs</p>	

		Standards Chapter		<p>to be able to identify the huge portion of retrofits that are installed as part of the underground economy. This section should be amended to expressly support funding of an HVAC equipment sales registry consistent with the recommendations of SB 1414.</p> <p><b>Recommended Action</b></p> <p>This section should be amended to expressly support funding of an HVAC equipment sales registry consistent with the recommendations of SB 1414. See also Global Comment CEE-5.</p>	
CEE-19	PG&E	Cross-Cutting: Codes and Standards Chapter	Pages 5,6	<p><b>Observations (re Codes and Standards Compliance)</b></p> <p>Proposed compliance activities are insufficient to address compliance issues because they consist almost entirely of educational activities. Education activities alone do not ensure compliance. Lack of compliance is largely a matter of financial advantages and poor enforcement strategies. The best way for incentive programs to improve compliance is to link compliance with the receipt of incentives and to track equipment sales. PG&amp;E fails to explain how the proposed education activities will resolve compliance issues if incentives will still be provided to projects that violate code requirements.</p> <p><b>Recommended Action</b></p> <p>Business Plan should identify strategies to allow more effective enforcement and to ensure that incentive programs do not support and exacerbate code compliance issues. See Global Comment CEE-5.</p>	
CEE-20	PG&E	Cross-Cutting: Codes and Standards Chapter	Page 17	<p><b>Observations (re Consistency with State Energy Goals)</b></p> <p>Coalition supports goal to “Proactively enhance regulations to include DR requirements, grid connectivity, etc. and enable the plug and play grid.” In addition to evaluating codes and standards for consistency with SB 350, the Business Plans should assess overall incentive program consistency with state energy goals.</p> <p><b>Recommended Action</b></p> <p>The Coalition recommends adopting the following strategies to achieve this goal.</p> <ul style="list-style-type: none"> <li>• The Business Plan should include language to ensure that the Implementation Plans shall assess consistency with SB 350, Existing Building Energy Efficiency Action Plan and other California energy goals and strategies.</li> <li>• Conduct annual reviews to assess overall incentive program consistency with state energy goals.</li> <li>• Evaluate and identify barriers impeding the adoption of automated demand response capabilities in existing buildings. Align incentive and Codes and Standards programs with efforts to address these barriers.</li> <li>• Where multiple code compliance pathways exist, ensure programs incentivize code compliance pathways that are compatible with automated demand response capabilities.</li> <li>• Change references to “Demand Response” to “Automated Demand Response” to distinguish from unconnected demand response controls that do not provide grid management capabilities.</li> </ul>	D.16-08-019 at p. 47 (requiring consistency with SB 350 Goals).

CEE-21	PG&E	Cross-Cutting: Codes and Standards Chapter	Page 25	<p><b>Observations (re Missing Sections)</b> Key sections are missing from draft, precluding meaningful review or comment by the CAEECC stakeholders: e.g., Section G Statewide Administration and Transition Timeline and Section H Solicitation Strategies.</p> <p><b>Recommended Action</b> Provide CAEECC stakeholders an opportunity to review and comment on these sections prior to submitting Business Plans to Commission.</p>	
CEE-22	PG&E	Cross-Cutting: Codes and Standards Chapter	Page 28	<p><b>Observations (re Code Compliance)</b> Coalition disagrees with statement that “Anecdotal evidence on code compliance is often discussed but actual measurements of code compliance are minimal, especially with HVAC measures and NR lighting retrofits.” Numerous studies and reports identify this as a significant issue and are summarize in Appendix 2B in the UCB-DVC report. Studies have found that actual energy efficiency savings from incentive programs are as little as 51% of expected savings when evaluated post-installation. (UCB-DVC Report at pp. 32-34 and Appendix 2B.) This gap is most prevalent in replacement HVAC systems. The efficiency of heating and air conditioning equipment is highly dependent on the quality of its installation. (Ibid.) A study for the California Energy Commission reported that up to 85% of replacement HVAC systems were installed or designed incorrectly, resulting in substantial unrealized energy savings. (Ibid.)</p> <p>Similar gaps between expected savings and realized savings have also been found in installations of lighting control systems. One post-installation evaluation found that automatic day-lighting controls failed to perform as expected in 7 out of 7 tests, and occupancy sensors failed to perform as expected in 2 out of 3 tests. All of the failures were due to design, installation, or calibration issues. (Ibid.) In contrast, when lighting controls were installed by technicians who had obtained lighting control installation training and certification from CALCTP, IOU-funded studies found significant energy savings and increased cost effectiveness. (Ibid, at p. 47.) Evidence from six pilot studies demonstrates not only increased energy savings, but also actual customer cost savings in the range of 10-30 % for the installation of advanced lighting controls by a CALCTP-certified contractor versus a non-certified contractor. (Ibid, citing 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).</p> <p><b>Recommended Action</b> Delete statement.</p>	

CEE-23	PG&E	Commercial	pp. 4, 18, 19	<p><b>Observations (re Missing Issues)</b>  This chapter fails to identify key barriers, strategies and interventions to address: (1) Lost/stranded energy savings from poor installation; (2) stranded savings from shallow retrofits that make deeper retrofits less likely; (3) free ridership, and (4) low levels of permit and code compliance and enforcement. See General Comments CEE-2, CEE-3, CEE-4, CEE-5.</p> <p><b>Recommended Action</b>  See Global Comments CEE-1, CEE-2, CEE-3, CEE-4, CEE-5.</p>	
CEE-24	PG&E	Commercial Residential Public Sector Industrial	p. 17 p. 29 p. 26 p. 24	<p><b>Observations (re SB 1414 Compliance)</b>  PG&amp;E states that it will “collect proof of permit closure before paying rebates or incentives for all <i>downstream</i> central air conditioning or heat pumps and their related fans, in accordance with SB 1414.” (Emphasis provided.) This proposal is inconsistent with the requirements of SB 1414, which are not limited to downstream incentives. SB 1414 states that “if a customer or contractor is the recipient of a rebate or incentive offered by a public utility for the purchase or installation of central air-conditioning or a heat pump, and their related fans, the public utility shall provide the rebate or incentive only if the customer or contractor provides proof of permit closure.”</p> <p><b>Recommended Actions:</b>  Edit sentence to track language of SB 1414: “PG&amp;E will also collect proof of permit closure before paying rebates or incentives paid to customers or contractors for the purchase or installation of central air-conditioning or a heat pump, and their related fan, in accordance with SB 1414.”</p>	
CEE-25	PG&E	Commercial	p. 38	<p><b>Observations (re Workforce Standards)</b>  Workforce Standards. Observation: Coalition supports commitment to “detail workforce standard requirements in each Implementation Plan.” However, Business Plan fails to identify the barrier that this strategy is intended to address: i.e., high incidences of poor installation outcomes are resulting in stranded energy saving opportunities, reducing cost-effectiveness of programs The Coalition is concerned that implementation of this strategy will lack priority or focus without clearly setting forth its purpose, i.e. capturing the energy efficiency saving opportunities lost by poor quality work. The Business Plan needs to identify barriers this strategy is intended to address in order to ensure it is implemented in a way that actually addresses the barrier. In addition, more specific strategies need to be adopted in the Business Plan to provide guidance to the implementation plans. See Global Comment CEE-2.</p> <p><b>Recommended Action</b>  See Global Comment CEE-2.</p>	
CEE-26	PG&E	Commercial	p. 39	<p><b>Observations (re Missing Issues)</b></p>	

				WE&T Section should address workforce engagement and opportunities for disadvantaged workers; Codes and Standards Section should also address enforcement and compliance. <b>Recommended Action</b> See Global Comments CEE-2, CEE-3, CEE-4, CEE-5.	
CEE-27	PG&E	Residential	p. 20	<b>Observations (re Workforce Standards)</b> Agree with statement that “Workforce training must align with overcoming barriers to achieve state policy goals” (Citing “California Existing Buildings Energy Efficiency Action Plan: October 2016,” p. 1.) Alignment of workforce training with incentive programs is needed to address poor installation outcomes that are resulting in substantially lower actual energy savings than expected. However, it is unclear on what basis PG&E is assuming the proposed interventions will address the issue highlighted in the California Existing Buildings Energy Efficiency Action Plan or are consistent with the strategies recommended in the Action Plan. The 2016 Existing Building Energy Efficiency Action Plan Update adds a goal to “ensure that a certified, high performing workforce will be engaged to deliver energy efficiency retrofits, thereby transforming efficiency incentive work from a low-cost bidder framework to a lowest-cost qualified bidder framework.” (2016 Action Plan Update at p. 52.) To achieve this goal, the Action Plan expressly recommends that PAs incorporate contractor and workforce standards into the energy efficiency program requirements. (2016 Action Plan Update at p. 49.) The strategies should be updated to ensure consistency with the Action Plan guidance. See Global Comment CEE-2. <b>Recommended Action</b> See Global Comment CEE-2.	
CEE-28	PG&E	Residential	p. 20	<b>Observations (re Code Compliance)</b> Barrier discussion should identify widespread avoidance of permit and code requirements as a key barrier. <b>Recommended Action</b> See Global Comment CEE-5.	
CEE-29	PG&E	Residential	p. 21	<b>Observations (re Missing Issues)</b> Proposed Strategic Interventions fail to address poor installation outcomes; code compliance, workforce engagement, free ridership, and opportunities for disadvantaged workers. See Global Comments CEE-2, CEE-3, CEE-4, CEE-5. <b>Recommended Action</b> See Global Comments CEE-2, CEE-3, CEE-4, CEE-5.	
CEE-30	PG&E	Residential	p. 54	<b>Observations (re Missing Issues)</b> Table 2 lacks meaningful goals, intervention strategies or metrics to address poor installation outcomes; code compliance, workforce engagement, free ridership, and opportunities for	

				disadvantaged workers. See Global Comments CEE-2, CEE-3, CEE-4, CEE-5. <b>Recommended Action</b> See Global Comments CEE-2, CEE-3, CEE-4, CEE-5.	
CEE-31	PG&E	Residential	p. 63	<b>Observations (re Missing Issues)</b> Appendix A Stakeholder Feedback does not include Coalition comments raised and submitted during the CAEECC process, including comments on the draft chapters.	
CEE-32	PG&E	Residential	p. 78	<b>Observations (re Code Compliance)</b> The Comprehensive HVAC discussion correctly notes that HVAC programs have historically underperformed and have not been cost effective due to stranded savings when residential HVAC systems are poorly installed. However, the discussion ignores direct solutions to this issue that have been recommended in studies and stakeholders yet continuously avoided or ignored by the IOUs. Contrary to the assumption in the first paragraph of this report, there are solutions available to this issue. The real problem has been lack of support by the IOUs to try these solutions. See Global Comments CEE-2, CEE-3, CEE-4, CEE-5.  <b>Recommended Actions:</b> <ul style="list-style-type: none"> <li>• The solution to poor code compliance is twofold. <ul style="list-style-type: none"> <li>○ At the incentive level – IOUs must require HVAC equipment whose sale, purchase or installation has been subsidized to provide proof of code and permit compliance. Stakeholders have been recommending this for years, but it has taken the adoption of SB 1414 to get the PAs to agree to this requirement.</li> <li>○ However, the above requirement alone will not have sufficient spillover effects to address the widespread prevalence of unpermitted systems being installed by unqualified workers. The only meaningful proposal that has been made to address broader market compliance is SB 1414’s direction to explore creation of a registry to track HVAC equipment sales to ensure that that they are installed lawfully and in compliance with code and permit requirements. The Business Plans should include measures to support the creation of such a registry.</li> </ul> </li> <li>• Permit compliance alone, however, does not resolve poor installation outcomes. That is why the CPUC has also directed the PAs to commission the DVC study to identify ways to increase installation outcomes through different strategies to ensure the engagement of a skilled and trained workforce. The DVC study identified a number of pathways for increasing the engagement of a skilled and trained workforce that have yet to be implemented by the IOUs.</li> </ul> See also Global Comments CEE-2, CEE-5.	
CEE-33	PG&E	Residential	p. 78	<b>Observations: (re Code Compliance and Installation</b>	

				<p><b>Quality)</b></p> <p>The Coalition agrees that lack of enforcement has resulted in a significant percentage of California HVAC contractors operating without a license and the vast majority of HVAC installations violating permit requirements. The Coalition agrees that these issues result in both stranded energy savings and create safety, health and comfort concerns for customers. The Coalition also agrees that permit compliance alone will not sufficiently address the loss of energy savings from poorly installed HVAC systems. Studies show that even permitted residential HVAC jobs are usually poorly installed and fails to achieve expected energy savings. However, the Coalition objects to statement that the “link between permitting and code compliance is tenuous.” While the report states that its study data is preliminary in nature and too small and limited in population to support any definitive conclusions, it does not state that the link between permitting and code compliance is “tenuous.” To the contrary, that report finds that the unpermitted projects may, on average, perform significantly worse than permitted projects. The raw data itself, showed a difference of 7 percentage points for electric HVAC installations and a difference of 15 percentage points for, the more common, gas-powered HVAC installations. However, the limited nature of the data evaluated created a confidence bound that was so large, the study couldn’t rule out the possibility of the actual gap being either much larger or non-existent.</p> <p><b>Recommended Action:</b></p> <p>Coalition recommends changing the sentence from</p> <ul style="list-style-type: none"> <li>• “A link between permitting and code compliance is tenuous and even permitted jobs often fall well short of code compliance”</li> </ul> <p>to</p> <ul style="list-style-type: none"> <li>• “Permit compliance is not sufficient on its own to ensure better installation outcomes. For example, the recent DNV GL Res HVAC Retrofit Study Phase 1 found that even permitted jobs often fall well short of code compliance. Accordingly, permit compliance strategies need to be aligned with other strategies to ensure that when permits are pulled, better code compliance and installation outcomes result.”</li> </ul>	
CEE-34	PG&E	Residential	p. 79	<p><b>Observations: (re Installation Quality)</b></p> <p>Coalition disagrees with statement that “Currently, there is no reliable method to assess savings for quality installation. Data on standard installation practices are sparse, in part because it is difficult to track and sample non-permitted installations.” This statement is misleading. Numerous studies exist showing the energy savings gap that poor installation outcomes create in HVAC installations. These studies are summarized in Appendix 2B of the UCB-DVC report. These studies have found that actual energy efficiency savings from incentive programs are as little as 51% of expected savings when evaluated post-installation. (UCB-DVC Report at pp. 32-34 and Appendix 2B.) This gap is most prevalent in</p>	

				<p>replacement HVAC systems. The efficiency of heating and air conditioning equipment is highly dependent on the quality of its installation. (Ibid.) A study for the California Energy Commission reported that up to 85% of replacement HVAC systems were installed or designed incorrectly, resulting in substantial unrealized energy savings. (Ibid.)</p> <p>Similar gaps between expected savings and realized savings have also been found in installations of lighting control systems. One post-installation evaluation found that automatic day-lighting controls failed to perform as expected in 7 out of 7 tests, and occupancy sensors failed to perform as expected in 2 out of 3 tests. All of the failures were due to design, installation, or calibration issues. (Ibid.) In contrast, when lighting controls were installed by technicians who had obtained lighting control installation training and certification from CALCTP, IOU-funded studies found significant energy savings and increased cost effectiveness. (Ibid, at p. 47.) Evidence from six pilot studies demonstrates not only increased energy savings, but also actual customer cost savings in the range of 10-30 % for the installation of advanced lighting controls by a CALCTP-certified contractor versus a non-certified contractor. (Ibid, citing 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). See Global Comments CEE-2, CEE-5.</p> <p><b>Recommended Action:</b></p> <p>The following sentence should be stricken: ““Currently, there is no reliable method to assess savings for quality installation. Data on standard installation practices are sparse, in part because it is difficult to track and sample non-permitted installations.” This section should be amended to cite the studies summarized in Appendix 2B of the UCB-DVC report and to adopt the Guidance Decision’s recommendation to track measure installation quality over time as a metric. (D.15-10-028 at p. 52.) The problem with tracking and assessing the performance of non-permitted installations should be addressed through support of the SB 1414 recommended registry for HVAC equipment purchases. Without such a system, this particular barrier will likely remain unabated. See Global Comments CEE-2, CEE-5.</p>	
CEE-35	PG&E	Residential	p. 80	<p><b>Observations (re Workforce Quality)</b></p> <p>This section states that it “outlines a step-by-step approach to transition residential HVAC programs into a robust suite of offerings that addresses each major market and program barrier.” However, none of the proposals address the issues and barriers discussed on the prior pages (78-79). After identifying high failure rates for job performance even on routine tasks and finding that <i>most HVAC technicians lack of even basic skill knowledge</i>, the</p>	

				<p>proposals fail to address workforce quality standards at all.</p> <p><b>Recommended Action:</b> Section should be amended to set forth strategies to ensure HVAC systems are installed by a skilled and trained workforce. See Global Comment CEE-2 for specific recommendations.</p>	
CEE-36	PG&E	Public Sector	p. 8	<p><b>Observations (re Public Sector Budget)</b></p> <p>The draft document does not provide any indication of the sector level budget. The coalition supports a significant budget increase for public sector incentives. Public sector buildings consume approximately 35% of commercial electricity use and 40% of commercial gas use, yet have been chronically underfunded over the years. They thus present a high opportunity for energy savings even by just bringing them up to current code standards. Furthermore, public sector projects have fewer free ridership issues and provide ancillary benefits to ratepayers by reducing operational costs for public services.</p> <p>Public Sector projects also allow coordination and leveraging of other funding streams, such as Proposition 39 for schools, or local school bonds to design and implement deep energy reduction strategies. Currently Proposition 39 funds are spread so thin, that many of the energy efficient retrofits identified in the Proposition 39 energy analysis end up having to be greatly scaled back due to funding constraints. But since the energy analysis and retrofit needs have already been established for many school districts pursuant to Proposition 39, these occupancies are already primed to take advantage of incentive programs stemming from the AB 802 proceedings.</p> <p>Public Sector projects are also more likely to hire skilled and trained workers due to prevailing wage requirements and local public contracting prequalification requirements. This results in greater certainty of energy efficiency outcomes than residential and commercial sectors. In addition, increasing the market for contractors who use a skilled and trained workforce will have spillover effect on non-public sector projects because a contractor who invests in a skilled and trained workforce for public projects will have same workforce available for private projects.</p> <p>An emphasis on public sector projects would also be consistent with prior Commission decisions. For example, the Commission’s 2012 Guidance Decision expressly directed the IOUs to emphasize the MUSH (municipal, utility, schools and hostpitals) customer sub-sector. (D.12-11-015.)</p> <p><b>Recommended Action:</b></p> <p>The Coalition recommends that at least 40% of incentive funds that use the AB 802 existing condition baseline be directed to renovate public sector buildings (i.e., state, county, municipal, university, schools, and hospitals) or low-income housing projects.</p> <p>The Public Sector chapter should also be amended to include a description of the advantages</p>	D.12-11-015, <i>Decision Approving 2013-2014 Energy Efficiency Programs and Budgets.</i>

				that public sector incentives have over other sectors – such as lower free ridership concerns, ancillary ratepayer benefits and increased investment in skilled and trained workforce. A description of these benefits is necessary to assess and support overall budget recommendations.	
CEE-37	PG&E	Public Sector	p. 15, 18, 39-40.	<p><b>Observations (re Workforce Quality and Disadvantaged Workers)</b></p> <p>The Public Sector’s discussion of barriers, goals, strategies and metrics fails to address poor quality installation and workforce opportunities for disadvantaged workers. Poor quality installation resulting in below expected savings is an issue that spans all sectors. Public Sector expenditures represent a significant portion of the billions of dollars a year in ratepayer money and should be leveraged to create opportunities for disadvantaged workers. Workforce quality and opportunity should be addressed here.</p> <p><b>Recommended Action:</b></p> <p>Most public sector actors do not have expertise to determine what workforce standards they should be requiring when hiring. Workforce standards and strategies should be identified to ensure that energy efficiency measures are installed by a skilled and trained workforce. See Global Comment CEE-2 for specific recommendations.</p>	
CEE-38	PG&E	WE&T	12	<p><b>Observations (re WE&amp;T)</b></p> <p>Description of WE&amp;T challenges and barriers should include the lack of economic incentive for contractors to invest in worker training due to the lack of workforce quality standards.</p> <p><b>Recommended Action:</b></p> <p>Under Challenges add: “Lowest price bidding framework without minimum workforce quality standards can create economic disincentive to invest in worker training”.</p>	