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**Pacific Gas and Electric Co. Comments on California's Existing Buildings
Energy Efficiency Action Plan**

Additional submitted attachment is included below.

April 21, 2015

**VIA E-MAIL DOCKET@ENERGY.
CA.GOV**California Energy Commission
Dockets Office, MS-4
Docket No. 15-IEPR-05
1516 Ninth Street
Sacramento, CA 95814-5512Re: Docket 15-IEPR-05: California's Existing Buildings Energy Efficiency Action Plan:
Comments of Pacific Gas and Electric Company**I. Introduction**

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the California Energy Commission's (CEC or Commission) Draft of California's Existing Buildings Energy Efficiency Action Plan (the Plan or Draft Action Plan)¹, pursuant to Assembly Bill (AB) 758, Skinner, Chapter 470, Statutes of 2009 (Pub. Res. Code § 25943). PG&E will submit additional comments relating to Strategy 1.2 (Building Benchmarking) and 2.1 (Data Drives Informed Decisions) on April 28, 2015.

Since the 1970s, PG&E has been a leader in energy efficiency and has worked closely with government, nonprofit, and private sector partners to design and implement programs and policies that allow Californians to do more with less energy. PG&E's energy efficiency portfolio includes a robust suite of rebates, incentives, services, and tools to target every customer segment with a comprehensive set of technologies through multiple delivery channels to help customers reduce energy usage and save money. These channels include utility staff, government partnerships, trade professionals, retailers, distributors, manufacturers, and other third-party providers. From 2010-2014, PG&E's energy efficiency programs helped customers avoid the release of more than 2,000,000 metric tons of carbon dioxide (CO₂), which is equal to the annual greenhouse gas emissions from nearly 460,000 passenger cars or more than 1,400,000 homes in PG&E's service territory.² PG&E is dedicated to helping California meet its energy efficiency

¹ Unless otherwise noted, all page references refer to:
California Energy Commission. (2015) Existing Buildings Draft Energy Efficiency Action Plan.
Sacramento, CA. Retrieved from <http://www.energy.ca.gov/ab758/>

² PG&E Customer Data Warehouse, 2010-2014 inclusive

goals in existing buildings and is already utilizing many of the approaches detailed in the Draft Action Plan to help make achievement of the goals a reality.

PG&E is pleased to see that the Draft Action Plan will utilize a wide array of tools and multiple pathways to achieve meaningful energy savings in the existing building stock. PG&E's current portfolio of program offerings is well positioned to support the strategies in the Draft Action Plan. PG&E looks forward to continued collaboration with the many stakeholders involved in this proceeding to ensure that the Plan is successful.

PG&E supports many elements of the Draft Action Plan. In particular, the strategies to expand energy efficiency in schools and state buildings, establish minimum building performance assessment tools, re-evaluate the Home Energy Ratings Systems and standardize commercial building energy asset rating approaches, and efforts to support local government action and community-based campaigns are commendable. Suggestions to streamline certain program efforts, including incentive calculations, savings verifications, and quality control procedures, also have merit. PG&E looks forward to working with California's regulatory agencies to advance these initiatives, through regulatory proceedings, the proposed Existing Building Efficiency Collaborative, and other stakeholder processes.

As the CEC acknowledges, key issues, including the "code-as-baseline" issue, merit further discussion, collaboration, and coordination to encourage customers to invest in energy efficiency in existing buildings. Incentives to encourage owners and occupants of the state's least efficient existing buildings to move these buildings up to and beyond current code levels will be essential to achieving the state's greenhouse gas emission reduction and energy efficiency goals, including those laid out by the Governor in his inaugural address.

PG&E also encourages the CEC to work to align its requirements for compliance with energy savings verification with those required by the CPUC for the investor-owned utilities' (IOUs') programs. This could minimize customer costs and reduce program inspection costs, which would allow more money for customer incentives.

Finally, PG&E recommends including more specific implementation details in the Draft Action Plan where possible. In particular, information on the expected resource commitments associated with each strategy would help stakeholders and policymakers better understand the costs needed to implement each, and would improve stakeholders' understanding of how to prioritize the strategies.

PG&E's detailed comments are generally structured to provide feedback on specific goals and strategies as set forth in the Draft Plan.

II. Energy Efficiency – Opportunities and Challenges

Chapters 2 and 3 of the Draft Plan address several overarching topics. PG&E commends the Commission for its thoughtful assessment of the "Sectors and Markets." In particular, the Plan

appropriately characterizes the opportunities and challenges inherent in the commercial sector.³ Among those topics raised by the CEC is the “code-as-baseline” issue (p. 7). PG&E agrees with the CEC’s characterization of this issue and notes that the difference in efficiency between existing buildings and new buildings constructed under more recent building codes grows larger with each new code cycle. Current policy leads to a large pool of stranded energy efficiency savings potential because, in nearly all cases, ratepayer-funded program administrators can only target energy savings attributable to the installation of equipment above current code levels. This limits the funding available for energy efficiency upgrades to inefficient buildings. PG&E recommends the CEC make this a key issue for exploration going forward, and encourages the CEC to collaborate and coordinate with the CPUC on this topic.

While PG&E agrees that there is potential on the whole building front (p. 16), methodologies for capturing and calculating savings in whole buildings are still under development. In late 2013, PG&E developed and launched the Commercial Whole Building (CWB) Demonstration as a proof of concept for a pay-for-performance program targeting deep energy savings in existing commercial buildings. The Demonstration relies on data science and actual energy consumption, weather and other data to validate customer savings, made possible by California’s broad deployment of smart meter technology. PG&E looks forward to sharing the lessons learned from this demonstration, and similar efforts, as a foundation for future whole building program offerings.

PG&E also encourages the Commission to identify market structure challenges to the large commercial market in addition to small and medium business challenges (p. 18).

Finally, PG&E notes that the water-energy nexus proceeding referenced on p. 37 is in progress (rather than in “planning”) as of 2014.

III. Foundational Goals and Strategies Are Generally Appropriate

In Chapter III, “Action Plan Strategies,” the Commission sets out the foundational strategies that provide the basis for the Plan. Below, PG&E offers input on specific Goals and Strategies.

A. GOAL 1. PROACTIVE AND INFORMED GOVERNMENT LEADERSHIP IN ENERGY EFFICIENCY

Strategy 1.1 State and School Buildings

PG&E recognizes the importance of the state and school building sector in achieving energy efficiency reductions in existing buildings. PG&E supports the Division of the State Architect (DSA) best-practices work mentioned on p. 42 and in Strategy 1.1.3 on p. 43. In a related

³ PG&E notes the Action Plan’s reference to the McGraw Hill 2011 Construction Survey, which estimated that the non-residential retrofit market would triple from 2011-15. PG&E encourages the CEC to gather more current data to ascertain if this prediction did, in fact, happen.

initiative, the CPUC and IOUs are leveraging Proposition 39 (Prop 39) funding to initiate the Prop 39 Zero Net Energy (ZNE) Schools Pilot, which aims to drive market transformation in the K-12 and community college existing buildings market. The IOUs, in close coordination with the CPUC, will also publish case studies on the Prop 39 ZNE Pilot demonstration projects. There will be 13-18 demonstration projects statewide between 2015-2017, with monitoring and evaluation taking place in 2018-2019. These demonstration projects are a good complement to the DSA design work because they are real-life examples of bringing California's existing public buildings to a ZNE level.

PG&E requests that the CEC clarify what is meant by the phrase on p. 43, Strategy 1.1.2 Clean Energy Jobs Act: "encourage spillover effects to other building sectors." Proposition 39 is a unique opportunity for public schools, but it will not exhaust their energy efficiency opportunities. Rather than move the focus of the program to other sectors, the state may consider continuing the program or introducing program criteria that encourages leveraging external funding or establishing more long-term investments like revolving loan funds.

Strategy 1.2 Nonresidential Benchmarking and Disclosure

PG&E will provide comments on this strategy on April 28, 2015, pursuant to Notice of Lead Commissioner Workshop on Strategies Related to Data for Improved Decisions in Existing Buildings Energy Efficiency Draft Action Plan, dated April 2, 2015.

Strategy 1.3 Minimum Standards for Building Performance Assessment Tools

PG&E agrees that ensuring accuracy of performance assessments and asset ratings is essential to enabling informed customer and market decision-making. However it is critical to differentiate the two types of energy modeling and help the market understand the use case for each. For example, asset ratings can be a useful tool to help inform buyers of the energy intensity of the building as part of their purchasing or leasing decision. It is important to take into account occupant behavior and building operations to help identify cost-effective measures to communicate to customers.

As discussed during the April 7 Workshop, PG&E, on behalf of the IOUs, led an effort to broaden the allowable software modeling tools in the Energy Upgrade California® Advanced Home Upgrade program. This CalTRACK/CalTEST effort was developed in conjunction with regional and national stakeholders, to better support the confidence in and adoption of residential performance assessment software with more persuasive reporting. The goals of this effort included increasing the accuracy of energy modeling, improving the functionality to enable contractor or rater sales processes, establishing a common data language (HPXML) and weather normalization process, and enabling better customer and market decision-making. PG&E encourages the CEC to build off of, or leverage, this effort to ensure consistency.

PG&E currently offers a "no-touch" energy assessment that is free to all customers and provides customers, through Customer Data Access, a secure way to share their usage data with third

party tool providers. It is important to distinguish this preference for sharing and to discourage the sharing of account login information, which contains additional sensitive data, to protect customers. PG&E is currently evaluating residential “no-touch” disaggregation tools and encourages the CEC to incorporate and leverage those findings to accelerate the adoption of eligible tools.

Finally, it is also important to note that the upgrade decision making process is not solely focused on energy savings. Any performance tool should enable a rater or contractor to describe the entire value proposition to customers, including other components such as comfort, water, and lighting quality.

Substrategy 1.3.2 Home Energy Rating System (HERS) II

PG&E notes that the 2016 timeline may be ambitious, but that this is an important effort and should be supported.

Substrategy 1.3.1 Minimum Standards for Smart Meter Data Analytics

PG&E notes that there is a process examining the disaggregation methodologies that is scheduled for completion in 2015. As a result, this timeline may be completed before 2017. PG&E also notes that effort in this arena should be done in conjunction with ongoing efforts to develop Smart Grid technology demonstration and deployment programs through the Electric Program Investment Charge (EPIC).

Strategy 1.4 Uniform Energy Asset Ratings to Compare Building Properties

PG&E applauds the Commission’s effort to re-evaluate the HERS II rating system. PG&E hopes to be part of the on-going discussion and encourage the Commission to weigh the need for pinpoint accuracy against the ease of use, cost, and accessibility of a tool. PG&E appreciates the Commission’s desire to assess and potentially leverage existing asset rating approaches that have been developed/adopted elsewhere. It also appreciates the CEC's effort to identify specifications for uniform rating methods that can then be integrated into market-facing tools. PG&E notes that existing offerings, such as the DOE’s Home Energy Score for residential use, provide a customer-centric comparison that would be consistent nationwide.

PG&E agrees with the need to clarify how green building rating systems relate to energy asset rating systems. PG&E supports efforts to standardize commercial building energy asset ratings approaches and hopes to actively participate in the development of such approaches.

Strategy 1.5 Building Efficiency Standards Development and Compliance

PG&E appreciates the Plan’s comprehensive approach on Title 24 Building Energy Standards (BES). BES are a key component of several strategies and provide excellent value. PG&E looks forward to working on AB 758 to continue advocacy efforts, simplify the BES, and provide education and training.

PG&E also encourages the CEC to work to align its requirements for compliance with energy savings verification with those required by the CPUC for the investor-owned utilities' (IOUs') programs. This could minimize customer costs and reduce program inspection costs, which would allow more money for customer incentives, or for investing towards reaching the goals of this Plan. Ideally, the compliance verification would collect the necessary data to ensure installation and performance of energy efficiency measures and there would be a streamlined way to share this data with Program Administrators for tracking.

As noted, “linking permit applications to utility and/or Regional Energy Network (REN) efficiency program options” is currently being piloted in programs such as the Residential HVAC Code Compliance effort. However this is a complex value chain, and as noted, gathering and verifying permitting data can be complex across jurisdictions. PG&E sees potentially greater opportunities through ensuring permitting as part of energy efficiency financing which has the ability to reach a greater population at lower costs.

PG&E agrees with the statement on p. 50 that "The gap between code compliance and existing buildings grows larger - as does the opportunity to harvest that savings potential." Being able to capture and claim the savings associated with existing conditions would maximize value in the eyes of the customer and allow the state to obtain greater savings. PG&E encourages the CEC to continue discussions with the CPUC as this topic is taken up in Phase III of the Energy Efficiency Rulemaking.⁴

Strategy 1.6 Plug-Load Efficiency

PG&E agrees that plug loads and appliances represent a growing opportunity for energy reductions as their prevalence continues to increase and their usage accounts for a larger percentage of customer usage (in part due to advancements in efficiency for other end uses). Additionally, PG&E agrees that a multi-pronged approach including working with manufacturers and enabling better customer decision-making is key. Other market actors, such as online and brick and mortar retailers and telecom service providers, are important and should be highlighted as well.

It is also important to realize that scale of influence helps bring national and international manufacturers into the conversation. This is why the IOUs helped to create the Western Regional Utility Network (WRUN) to increase the influence level to promote efficient products and specifications across 13 states.

PG&E recommends that the following two items be added to the list on p. 52:

⁴ Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues, R.13-11-005.

- Accept rebate programs to take a long-term view to support accelerated code development and induce sustained increases in the adoption of energy efficient technologies through changes in the market.
- Create a clear, approved long-term policy/protocol for evaluating Market Transformation programs to account for savings estimates with longer time frames and greater uncertainty than those for traditional resource acquisition programs.

Substrategy 1.6.3 Advocacy and Technical Support

PG&E is also supporting EPA for voluntary specification advancement and will be pursuing DOE advocacy through codes and standards.

Substrategy 1.6.5 Plug Load Management Programs

The Retail Plug Load Program is designed to satisfy this strategy, but there is the need for approved policy and evaluation to be focused on long-term market effects. There is policy change necessary to gain approval of this delivery mechanism (market transformation), as it is currently considered high risk due to the standards evaluation approaches for resource acquisition programs.

Substrategy 1.6.6 Specification Development

PG&E is focusing efforts in Retail Plug-Loan Portfolio (RPP) for retailers to request, stock and sell more efficient products.

Strategy 1.7 Local Government Leadership

PG&E supports numerous local government action and community-based campaigns in addition to our long-standing local government partnership programs. Our efforts include:

- a) Financial and data support to the five Northern California contestants of the Georgetown University Energy Prize (GUEP)⁵;
- b) Support of the Statewide Energy Efficiency Collaborative (SEEC), consisting of the four IOUs and LGC, Institute for Local Government (ILG), and ICLEI - Local Governments for Sustainability to drive local government climate and energy planning and action; and,
- c) Support of the Cool California contestants.

PG&E would welcome the opportunity to leverage its experience in this arena and further the goals of the Plan by being a participant in the planning task force for the Local Government Challenge Program.

⁵ www.guep.org

Substrategy 1.7.2 Local Government Partnerships

Local Government Partnerships currently plan around the Long-Term Energy Efficiency Strategic Plan local government chapter. PG&E agrees that the Strategic Plan could benefit from integration with this Draft Action Plan.

Substrategy 1.7.3 Leverage Other Efforts

PG&E provides energy data for local government planning efforts, including community-wide totals and segment-specific energy information and opportunity scores in some cases. PG&E agree that the information is interesting, but for it to be truly action-oriented, it should be paired with a state-approved calculator like that of the SEEC ClearPath California tool developed by ICLEI so that local governments can determine which portion of the overall energy efficiency opportunity is indeed within their regulatory control outside of general advocacy and outreach.

Strategy 1.8 Energy Efficiency as a Clean Distributed Energy Resource

PG&E will continue to monitor the SCE Preferred Resources Pilot. PG&E supports different alternatives for electric service chosen by PG&E's customers and seeks to provide customers with maximum flexibility, maximum choice in how they use energy, and ultimately maximize value. PG&E intends to use objective and transparent criteria to enable the identification of locations where distributed energy resources can provide local benefit to reduce costs and improve grid safety and reliability.

The Plan recommends evolving energy efficiency program portfolios to focus more explicitly on market transformation activities in the upgrade marketplace. PG&E agrees that well-defined and measured market transformation initiatives should become a bigger part of energy efficiency portfolios. In fact, as discussed above, PG&E is currently pursuing innovative market transformation approaches through the Retail Plug-load Portfolio effort and the evaluation of feasibility and creation of a roadmap for Home Upgrade market transformation. However it is important to have a clear policy framework to enable further exploration and that administrators perform due diligence to ensure selected markets are measureable and transformable.

Strategy 1.9 Leadership: Existing Building Efficiency Collaborative (EBEC)

PG&E agrees that coordination and alignment of efforts will be essential in helping all stakeholders work towards the goals. It welcomes the creation of the EBEC as described. Moreover, as the CEC finalizes the Action Plan, it will be important to ensure that the Plan's goals are consistent with, and in line with, the objectives, directives, and resources allocated to the IOUs from the CPUC. In turn, the CPUC should take into consideration the initiatives that come out of the Action Plan, and ensure sufficient funding is available for the IOUs to support incremental opportunities that are identified.

B. GOAL 2. DATA DRIVES INFORMED DECISIONS

Strategy 2.1 Modern, Accessible Data Resources

PG&E will comment on this strategy on April 28, pursuant to Notice of Lead Commissioner Workshop on Strategies Related to Data for Improved Decisions in Existing Buildings Energy Efficiency Draft Action Plan, dated April 2, 2015.

Strategy 2.2 Consumer-Focused Energy Efficiency

PG&E agrees that it is important to meet the customer where they are in their energy management journey, and to align programs around critical trigger points. PG&E recommends that the CEC coordinate with the CPUC and IOUs to understand and leverage the current pilot programs under CPUC's jurisdiction that cover several of the topics described in this section, including the EE Finance Pilots and several of the IOUs' IDEAA 365 programs.

Behavior and Operations

PG&E notes that the Green Button Connect Tool discussed on p. 64, where "Consumers will be able to view their usage, create action plans, and identify rates, rebates, appliances, contractors, and financing options that are the best for them," is expected to be available by April 2015.

PG&E notes, with regard to the discussion of disaggregation on p. 64, that disaggregation methodologies are in their infancy. PG&E welcomes and hopes to participate in further advancements in this space.

Targeted Programs

PG&E notes, with regard to the recommendation on p. 65 to prioritize high usage customers over lower usage customers: high usage is only one variable and should be used in conjunction with other variables, not as a standalone criterion. A high usage customer is not necessarily inefficient. PG&E recommends that program implementers compare like businesses or homes to identify high usage relative to other similar businesses or homes.

PG&E currently uses its customer segmentation and persona data to deliver highly targeted marketing and outreach campaigns, including, when relevant targeted messages by segment.

One recent example of PG&E's targeted segment marketing was highlighted as a best practice by Chartwell and has driven significant results. This campaign involved outreach to PG&E's Small Medium Business (SMB) customers as part of the On-Bill Financing Program.

The outcomes of that campaign included:

- 88% increase in SMB loans originated in 2014 versus 2013; 60% increase in the total number of loans originated;
- 24% increase in the dollar amount of loans originated in 2014 vs 2013; and

- OBF projects did 2 times the number of measures as non-OBF projects and saved 3 times the kWh (based on data from Energy Smart Grocer)

PG&E is currently conducting propensity modeling for EE Finance Pilots. PG&E is using internal data on Residential and SMB customers and correlating that with external data from the ratings agency to better understand how to target the Pilots.

Developing Cohorts for Stronger Engagement

PG&E is currently testing several of the cohort approaches described on p. 66, including through the Multifamily Upgrade Program, which allows renovations to common space and central systems with incremental improvements to units upon turnover or additional capital budget, and through the Waypoint Connect Program, which engages corporations that own or lease a large number of buildings. PG&E is also testing a new campaign model that integrates behavioral change strategies with tried and true approaches from PG&E's existing EE programs. This campaign leverages a highly collaborative community social marketing approach along with cohort engagements to share best practices across the community.

Strategic Energy Plans and Technical Support Energy Centers

PG&E currently runs three energy centers dedicated to educating a wide range of stakeholders on energy efficiency topics. PG&E recommends that the Commission examine the scope of these centers prior to launching new programs described on p. 67 as "virtual or physical energy support centers", in order to avoid duplication.

Typically, PG&E serves as an informational resource for contractors that have the qualifications set forth in the program requirements, but does not recommend one over another and does not endorse particular service providers. PG&E recommends the Commission not require Energy Centers to recommend particular contractors.

Substrategy 2.2.2 Expand Behavior Programs

PG&E would welcome an expansion of the definition of behavioral programs, but this would require CPUC policy support for the IOUs to participate. This issue is currently scheduled for Phase III of the EE OIR.⁶

Substrategy 2.2.3 Targeted Programs

PG&E is already providing targeted messaging based on segmentation; it would not have to wait until 2016 to implement this strategy.

⁶ Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues, R.13-11-005.

Substrategy 2.2.4 Building/Portfolio Cohorts

PG&E supports this proposal and is tracking progress and evaluating energy savings under its existing cohort program to determine how best to cost-effectively scale up and expand the program.

GOAL 3. BUILDING INDUSTRY DELIVERS INNOVATION AND PERFORMANCE

Strategy 3.1 Streamlined and Profitable Industry

PG&E agrees that to have a sustainable industry, beyond state or utility lead interventions and incentives, there must be profitable business models. PG&E supports innovative ways to incorporate new business models into the energy efficiency ecosystem. PG&E supports streamlining programs, particularly in incentive calculation, savings verification and quality control procedures. PG&E agrees that streamlining and simplification of requirements for participants is essential. PG&E is continuously seeking opportunities, such as point of sale and online, that offer streamlined customer experiences. PG&E has also streamlined more complex programs, such as Energy Upgrade California® Home Upgrade, to minimize the number of customer touch points while maintaining the collection of necessary data. There is often a combination of incentive program, permitting, and safety requirements that intersect and touch the customer at various points. Therefore, it is important to look at the entire eco-system when trying to address streamlining.

One way that PG&E has worked to address this Strategy is through its Trade Professional Alliance program. This program includes contractors, installers, consultants, distributors, and manufacturers that produce, stock, promote, install and sell energy-reducing products, equipment and services. A Trade Professional typically works with business customers to increase awareness and adoption of energy management initiatives. PG&E's Trade Professionals are required to take an energy efficiency programs training course to participate. In that training, Trade Professionals are given the tools to help educate customers on energy efficiency programs.

Substrategy 3.1.1 Sustainable and Effective Program Delivery

The CPUC has taken the first step towards "rolling program portfolios" through its Decision 14-10-046, in which it ordered "energy efficiency program funding ... be extended annually ... at the 2015 annually spending levels ... until the earlier of 2025 or when the Commission issues a superseding decision on funding levels." Phase 2 of the CPUC's energy efficiency rulemaking addresses issues regarding implementation of the rolling portfolios.

Strategy 3.2 Performance-Driven Value

PG&E supports the performance-based incentives. The pursuit and implementation of the CalTEST/CalTRACK initiative will allow the market to fully realize the benefits including increased modeling accuracy, performance feedback, decreased cost of evaluation, and more timely indicators of program health. Through CalTEST and CalTRACK, the ongoing measurement and verification of actual savings will enable regulated utilities and private market

financiers to invest in energy efficiency as a reliable, cost-effective resource with consistent returns, in keeping with Strategy 3.2 as well as Goals 2 and 5 of the Draft Action Plan. PG&E looks forward to continuing to work with the CPUC and CEC to develop and implement these efforts.

Strategy 3.3 High Performance Workforce and Education (WE&T)

Overall, PG&E is supportive of this Strategy and finds that it aligns well with existing plans and programs. PG&E has energy efficiency expertise as it relates to 1) how buildings are designed and operated, 2) energy efficiency incentive program design and management, and 3) WE&T program design and delivery. PG&E hopes to be part of the broader team that will ultimately set the path for the WE&T portion of the Action Plan.

PG&E agrees with the statement on p. 73 that the nexus of WE&T opportunities will be more successful if there is focused conversation among the industry as a whole. This will require discussion and alignment between disparate stakeholders. The IOUs have conducted outreach efforts through stakeholder engagement, but would welcome partnership and shared responsibility for funding and results.

PG&E currently has efforts underway with the California Division of Apprenticeship Standards (DAS) and Community Colleges to review existing building science educational content and provide technical advice. PG&E welcomes assistance in its 2015 efforts to begin incorporating building science into Architecture and Engineering curricula.

PG&E supports clear specifications for performance-oriented jobs. However, simply having qualified candidates available who understand and meet the requirements of a given job does not necessarily mean that employers will demand graduates for that given job areas. Market factors play a more significant role in deciding the employer demand.

PG&E appreciates and supports the need to address the wide range of players that make up the energy efficiency workforce, including designers, engineers, builders, technicians, commissioning agents, sales professionals, and building operators.

PG&E supports the efforts of DAS and has met with the DAS and representatives from California's Community Colleges in order to provide deeper and more substantial support in the required EE training areas. Current efforts in this area specifically identified the need for a greater number of apprenticeships.

KSA specifications integrated into curriculum

For over 30 years, PG&E has trained many of the knowledge, skills, and abilities (KSAs) described in the Plan. A large portion of these KSAs are already addressed in hands-on trainings through PG&E's energy centers' classes.

PG&E recognizes that there is room to grow in this area and has planned a systematic review of the KSAs in 2015. This will allow PG&E to identify opportunities to expand existing curricula, and adapt the content to California's climate and marketplace. PG&E is undertaking a similar approach to the HVAC curriculum currently offered in anticipation of the KSAs.

Utility efficiency programs to create demand for KSAs

PG&E is working with the other IOUs to lead efforts on many of the recommendations and has started efforts to reach out to a diverse set of stakeholders. PG&E has engaged with the DAS, the community colleges, and various Workforce Investment Boards (WIB)s. Further commitment and priority from all of these parties will be necessary to meet these goals.

Quality assurance delivered by practitioners

PG&E supports quality assurance. For this reason, PG&E's Codes and Standards program has provided expertise and advocacy for requiring commissioning (Acceptance Testing Technicians) of buildings by Title 24 Section 6 Energy Code, where market factors (building size, etc.) make the efforts cost effective.

Further efforts are needed to describe how having quality assurance certified staff members at larger organizations and cross-trained staff in smaller settings (as discussed on p. 74) will help achieve code and beyond savings. PG&E agrees that this is possible, but as written in this Draft Action Plan, it is unclear how this claim is substantiated beyond a policy position.

Specialty services become routine

PG&E has a longstanding RCx and Existing Building Training Program (EBCx – Existing Building Commissioning Training Series). EBCx is a year-long class that provides engineers, commissioning agents, and building operators the skills to diagnose and address opportunities for energy efficiency in commercial buildings. The program lead supports the Building Operators Training Certification Exam, with industry players on HVAC ATT training.

PG&E has current offerings in many of the areas described on p. 74. PG&E looks forward to working with external partners to continue improving efforts in these areas with shared responsibility for outcomes.

Workforce Issues and EE Programs: A Plan for California's Utilities

PG&E agrees with certain of the Donald Vial Center (DVC) recommendations listed on p. 74, and is leading statewide efforts to align IOU WE&T programs these high level recommendations.

PG&E disagrees with the recommendation that WE&T funds should be directed to organizations with core competencies in workforce training. However, PG&E supports additional funds being awarded to organizations with core competencies in workforce development; this can augment and align with the IOUs' WE&T efforts. PG&E also supports the IOUs administering funds to collaborate with organizations that have core competencies in workforce development.

Substrategies, Metrics & Timeframe

Because PG&E WE&T Program staff includes licensed engineers, licensed architects, energy efficiency adjunct professors, program managers, policy experts, and building science subject matter experts, PG&E requests to be included in each of these strategic efforts, not only the Retrocommissioning (RCx) component in Substrategy 3.3.6.

Strategy 3.4 Zero Net Energy Retrofits

PG&E generally agrees with Section 3.4 of the action plan addressing ZNE retrofit; however, PG&E also has additional suggestions. The three listed strategies for “scaling up” ZNE retrofits are as follows:

- Focusing program efforts on key building types
- Developing ZNE retrofit design tool kits
- Providing incentives and other financing mechanisms

For ZNE to succeed “at scale” in both new and existing buildings, PG&E believes more is needed: two additional concepts must become firmly established; strategies to establish these concepts in the marketplace are essential:

- ZNE buildings must be achievable for little to no incremental cost compared to comparable alternatives, and
- ZNE buildings must be perceived in the marketplace as superior places for their occupants across a wide range of building types (i.e., ZNE schools are better learning environments for students and teachers; ZNE office buildings are more comfortable and productive places for workers, etc.)

Program efforts should focus on these two points.

Although the Action Plan addresses existing buildings, there are many important lessons from the new construction market, and that a “deep retrofit”—compared to simple equipment replacement—has much in common with greenfield new construction from the perspective of design and engineering. Generally, any building—new or existing—needs to have a kBtu/sf consumption “footprint” in the range of approximately 16-22 to become a good ZNE candidate.

In new construction, it is now well-established that about 75% of the square footage representing common building types can be built to ZNE levels⁷. Typical new construction costs for common building types in the CA market range from +/- \$300 per square foot to upwards of \$1000 per square foot for the highly desirable high-rise towers in dense urban areas. Importantly, we are now seeing evidence that ZNE can be achieved for little-to-no incremental cost for new

⁷ ARUP, 2012

construction, despite this wide range: there is growing evidence that ZNE can be achieved within typical construction budgets for given building types in given geographical areas.

Overall costs, and the incremental cost of achieving ZNE, are more variable and less well understood for renovations than with greenfield new construction. Program efforts should be focused on understanding and reducing the incremental cost of ZNE through additional market study. PG&E sees this effort as needing to focus on improved integrated design practices and building value rather than on technology upgrades treated in isolation.

Adopting and integrating this concept into utility programs would represent a significant change in emphasis: rather than relying on utility incentives to “buy” otherwise wasted energy by paying customers to install more efficient, more expensive equipment, an emphasis on integrated design practice would focus on reducing building loads by having the building shell, the lighting system and the space conditioning system complement each other in an integrated fashion. We have seen ZNE buildings that cost no more than other similar buildings recently completed in the same area.⁸ Utility equipment incentives might still be useful, but design practice changes are far more important.

Value must also be addressed under both private and public ownership models. One private developer reports that the NPV of a recently renovated office space done at ZNE rather than with conventional practices added approximately \$70 per square foot, net, to the value of the building: a substantial figure in relation to the total building cost.

For public buildings, “increased market value” is not in play as a driving concept—such buildings are not built to lease or sell. There are examples of schools and other public building achieving ZNE at no incremental cost. The public receives a great asset that costs less to operate than competing facilities without paying more. Thus, “value” in the private sector is achieved and viewed differently than in the public sector—but is substantial in both cases.

For many years, IOUs have offered design assistance and training within their efficiency portfolios: however, overall budgets and levels effort have been small for such programs compared to the emphasis on incentive and rebate programs. Program performance metrics such as the total resource cost test (TRC) test compel IOUs to emphasize this approach. The assumption behind such programs is that incentives are used to “buy down” incremental cost. TRC-based approach depends upon efficiency costing more than standard performance. The issue of the appropriate cost-effectiveness metric will be examined by the CPUC in the energy efficiency rulemaking.

⁸ For example, application of these principles in a ZNE retrofit of 435 Indio Way in Sunnyvale, CA resulted in downsizing the building HVAC system from 75 tons to just 12 tons: an efficient 12 ton system is clearly less costly than any 75 ton system. Similarly, significant design assistance provided to the design team for the West Berkeley Public Library (under *Savings by Design*) is credited with enabling innovative design decisions which resulted in a ZNE building that costs no more than other similar libraries recently completed in the same area.

“At scale” ZNE renovation practices will require substantial collaboration among many market players, a point emphasized in the Action Plan. PG&E suggests here that two fundamental concepts should be developed and emphasized in IOU programs:

- ZNE buildings must be achievable for little to no incremental cost compared to comparable alternatives, and
- ZNE buildings must be perceived in the marketplace as superior places for their occupants across a wide range of building types

Hallmark program efforts would include:

- Greatly increased efforts, likely through EM&V, to understand, in detail, the wide array of motivations and value streams present across commercial markets
- An emphasis on multiple “proof of concept” ZNE building retrofits involving multiple developers, owners and occupants
- An emphasis on “at scale” activities through industry training, building code support and other such activities

D. GOAL 4. CALIFORNIANS RECOGNIZE AND BENEFIT FROM THE VALUE OF EFFICIENCY UPGRADES

Strategy 4.1 Real Estate Value

PG&E supports the Commission’s plan to engage with real estate industry, underwriters and financial agents to adopt property asset-related energy characteristics in building valuation and to integrate EE into all transactions. PG&E supports efforts to better incorporate building energy use into property valuations and hopes to be an active player in the development of these approaches.

Strategy 4.2 Marketing, Education, and Outreach

PG&E currently uses its customer segmentation and persona data to deliver highly targeted marketing and outreach campaigns, including, when relevant targeted messages by segment. PG&E refers to the successful example of targeted segment marketing discussed under Strategy 2.2.

PG&E requests clarification: p. 81 “ME&O for the residential and small business sectors should continue to be coordinated under Energy Upgrade California.” PG&E believes that this language should be revised to the following: “Statewide efforts for ME&O should continue to be coordinated under EUC. The local ME&O efforts should continue to be conducted under their respective brands.”

PG&E notes that the CPUC financing pilots referenced on p.82 have yet to fully launch, and that the “messaging and approach” for these pilots are still being developed. PG&E recommends reviewing the results of the messaging and approach used in these pilots before replicating those approaches on a broader scale.

E. GOAL 5. SOLUTIONS ARE ACCESSIBLE AND AFFORDABLE FOR ALL CALIFORNIANS

PG&E notes that there is high demand for clean energy project financing. There is also a large demand for capital for energy efficiency projects to help meet the state’s goals. PG&E is uniquely positioned to match available capital with capital needs.

PG&E is working to coordinate the existing EE infrastructure resources and the potential investors. PG&E helps customers to invest in smart energy projects, using strong contractors managed through a rigorous program that supports the customer throughout the project installation and beyond. In addition, Financial Partners are interested in working with PG&E due to its size, stability, energy expertise, and customer relationships.

PG&E agrees that the EE industry needs to recreate the success of the solar programs mentioned on p. 84. However, it should be noted that the lower interest rates were only one aspect of the solar project loans. In the solar space, products that meet customer needs and helped generate demand are the key drivers of uptake. When lenders see that there is a market and that there is significant customer demand, they tend to offer better financing options. Creating such demand in the energy efficiency space will be critical to replicating the successful solar programs mentioned here.

As discussed under Strategy 4.2 above, the PG&E Marketing Team has had great success in driving uptake in the OBF program for SMB customers. A particularly successful component of this program was the approach: start with customer needs, highlight the investment opportunity, and provide the financing to help the customer invest.

PG&E submits that the list of “Current Finance Products” on p.84 should include Property Assessed Clean Energy (PACE) offerings.

PG&E notes that the CPUC/CAEATFA (California Alternative Energy and Advanced Transportation Financing Authority) pilots referenced on p. 84 are currently scheduled to operate from 2015-2017.

PG&E notes that the Single Family Loan Program referenced on p. 84 is now called Residential Energy Efficiency Loan Program (REEL)². PG&E will test loan repayment via a line item bill charge.

² <http://www.treasurer.ca.gov/CAEATFA/cheef/index.asp>

PG&E agrees with the list item “utility incentives targeted to achieve efficiency levels beyond what markets now support” on p. 85. Rebates and incentives programs should ensure that they can provide incentives for measures that have longer payback because of significant capital outlay. Under current cost-effectiveness rules, such projects could be deemed not cost-effective enough to be incentivized. PG&E recommends that the CEC coordinate with the CPUC as cost-effectiveness tests of energy efficiency programs are discussed in the EE OIR, because potentially, utility ratepayer or other government funds and incentives will be needed to motivate and support comprehensive building improvements with long-term paybacks.

Strategy 5.1 Foster Private Capital Market

Substrategy 5.1.1 State Finance Council

PG&E is willing and able to support the Infrastructure Bank in establishing the State Finance Council. PG&E believes the proposed timeline for establishing the Council is reasonable.

Substrategy 5.1.2 Database

PG&E notes that the Database contract referenced has not started as of April 2015; therefore the proposed Q1 2015 timeline noted may need to be updated.

Substrategy 5.1.3 Pilots

PG&E notes that it expects CAEATFA to provide an update to the Commission on all aspects of the pilots.

Strategy 5.2 Asset-Based Financing

PG&E recommends that the CAL HFA and their EEEM + Grant Program be highlighted under this section.

Substrategy 5.2.2 PACE

PG&E notes that it conducts regular outreach to professional services firms and mortgage regulators in support of this substrategy.

Substrategy 5.2.3 Split Incentives

PG&E requests clarification on which CPUC proceeding will address this issue.

Strategy 5.3 Borrower-Based Financing

PG&E notes that IOUs and Private lenders can develop these options under the CAEATFA/CPUC pilots. Pilot programs such as these could provide the market the flexibility it needs to successfully develop.

PG&E notes that the timeline for the CAEATFA pilot mentioned is 2015-2017, rather than 2014-16.

Strategy 5.4 Integrated and streamlined delivery of efficiency solutions, finance, and utility incentives

PG&E supports this strategy and notes that the timeline for the CAEATFA pilot mentioned is 2015-2017, rather than 2014-16.

Strategy 5.5 Government Building Finance Mechanisms

Substrategy 5.5.1 Revolving Funds

PG&E notes that our Local Government Partners (LGPs) have had the opportunity to establish revolving loan funds with Partnership dollars since 2010, yet there has been very limited uptake according to PG&E's bi-annual progress reports.¹⁰ PG&E submits that On-Bill Repayment (OBR) may be a mechanism by which some hurdles to uptake may be overcome, but suggests more comprehensive research into the barriers of these programs and how to overcome them.

Substrategy 5.5.2 ESAs

To the best of PG&E's knowledge, some private sector firms currently offer such energy service agreements, but these offerings have not yet been utilized by the state.

Strategy 5.6 Leveled Tax Playing Field

PG&E agrees with this strategy and submits that there also should be a level playing field between energy efficiency and renewable energy. PG&E suggests that the Plan discuss the potential impact to the California marketplace if Federal tax credits are discontinued.

Strategy 5.7 Establish deeper subsidies for full participation by low-income households

PG&E supports this strategy and has no additional comments.

¹⁰ Revolving loan funds are captured under the California Long-Term Energy Efficiency Strategic Plan under Local Government Menu Item 3.2.2, "Develop policy for a revolving energy efficiency fund for City/County facilities." See here: http://www.pge.com/notes/rates/tariffs/tm2/pdf/GAS_3099-G-A.pdf

IV. CONCLUSION

PG&E thanks the CEC for the opportunity to review and provide comment on the Draft Action Plan. PG&E looks forward to continued collaboration with the CEC on this subject in the future.

Sincerely,

/s/

Valerie Winn

cc: D. Ismailyan by email (david.ismailyan@energy.ca.gov)