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California Energy Commission
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1516 Ninth Street
Sacramento, CA 95814-5512
Via email to docket@energy.ca.gov

Comments of the California Center for Sustainable Energy regarding the Comprehensive Energy Efficiency Program for Existing Buildings (AB 758) Scoping Report Staff Workshop

The California Center for Sustainable Energy (CCSE) would like to thank the California Energy Commission (Energy Commission) for the opportunity to provide these public comments regarding the comprehensive energy efficiency program (AB 758) scoping report staff workshop. CCSE is pleased that the Energy Commission is moving towards implementation of AB 758 through both the staff scoping report and highly thoughtful public workshops. We enjoyed the frank and thorough discussions involving a wide array of stakeholders that characterized the two-day workshop held on October 8-9, 2012. We commend Commissioner McAllister and Energy Commission staff for properly identifying the most salient issues surrounding the implementation of a comprehensive energy efficiency program for existing buildings and for framing the conversation with an exhaustive list of complex and highly relevant questions. Moreover, we were pleased to see participation in the workshop from leadership at the California Public Utilities Commission (CPUC), and we hope to continue to see the commissions deliberately and effectively work together to ensure a truly comprehensive program that is conducive to market participation and successfully engages all stakeholders, consumers and end users most importantly of all.

For more than a decade, CCSE has been engaged in policies and programs aimed at transforming the state's clean energy marketplace, performing work across the continuum of technology adoption, from research and demonstration to market support and facilitation. Our activities include the administration and implementation of multiple clean energy technology incentive programs, such as the California Solar Initiative (CSI), Self-Generation Incentive Program (SGIP), and Clean Vehicle Rebate Program (CVRP), as well as a number of market development and facilitation programs, including the Department of Energy (DOE) Better Buildings Program, DOE SunShot Rooftop Challenge Program, and most recently, we started work on the transition of Energy Upgrade California to become the statewide Marketing, Education, and Outreach (ME&O)campaign to engage residential and small business consumers in energy management concepts and action.. Together, these activities provide CCSE with

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cutting edge experience and unique insight into the challenges faced by consumers, contractors, companies and local governments active in transforming California's energy economy.

For nearly 3 years, CCSE has been on the front lines of efforts to implement AB 758 through comprehensive retrofit programs for existing buildings, supported by ARRA funding through partnerships with local governments, including AB 758 pilots, and ratepayer funding through partnerships with utilities. Through our experience in marketing and outreach, contractor training, recruitment and mentorship, financing and policy efforts, CCSE has gained a great deal of insight regarding market barriers to widespread participation in comprehensive energy efficiency retrofits in California, and we appreciate the opportunity to provide these comments and continue to participate in this program development.

We point out that while AB 758 tasks the CEC with the responsibility of designing and implementing a comprehensive energy efficiency program for existing buildings, many of these programs are already underway, working with the contractor community to change the focus of energy efficiency program delivery from single-measure approaches to a comprehensive whole-building format, drawing on tenants of building science as a foundation. While early efforts have been crucial in laying the groundwork for a comprehensive energy efficiency program infrastructure throughout the state, customer uptake of these whole-building programs has been disappointingly low compared to the initial goals. CCSE continues to work with the IOUs, government agencies, local governments, and other stakeholders to improve program delivery, and utilize lessons learned over the past 3 years, and we are heartened that so much learning has happened here in California and across the country due to the support of ARRA.

We note, however, that even if the rate of program uptake were to triple, without leadership from agencies like the Energy Commission, it is highly unlikely that California will reach its ambitious goals for energy efficiency in existing buildings by 2020. While voluntary efforts will move forward and improve incrementally over time, achieving these crucial energy and environmental goals for California will require carefully crafted policies *and regulations* to further encourage the market for comprehensive retrofits. Currently, the State is relying on a number of "carrots" to pull demand for these retrofits; these carrots may begin to look more attractive if they were complemented by targeted "sticks" to simultaneously "push" the market along. Certainly, regulation is complicated and politically delicate matter, but we encourage the Energy Commission to explore as many options as possible to equitably and appropriately set new standards that reflect California's energy values.

We applaud the Energy Commission for posing the right questions to public stakeholders throughout these workshops. CCSE therefore offers the following responses to select questions posed at the October 8-9 AB 758 Staff Workshop:

1. What customers are choosing building performance upgrades today? Where are the opportunities for scaling upgrades?

Current participants in whole-building retrofit programs are largely innovators: those consumers with a measure of disposable income who own their homes and have at least some

equity left in them. This allows these customers to absorb the significant out-of-pocket costs associated with comprehensive retrofits. Innovators represent the earliest market participants along the product lifecycle, coming before the "early adopter" phase. While it is normal for new products and services to begin at this first stage, the statewide impact of these programs cannot be realized until they are moved much further along the curve.

In order to properly scale these efforts, comprehensive upgrades must be packaged in ways consumers can see their value and opt-in, thus increased, integrated marketing of financing options and reduction of upfront costs are crucial. Also, "trigger points" such as time-of-sale, major renovations and emergency system replacements which would normally involve only single measure change-out upgrades provide exceptional opportunities to speak with a predisposed consumer. However, contractors and consumers must understand the value proposition of a more energy efficient, more comfortable home to see these events as opportunities to improve overall home energy performance and comfort in a holistic manner. For example, HVAC replacements should turn into overall building envelope improvement by pairing duct-sealing and attic insulation measures with the new (and potentially smaller) HVAC system. This requires support for the contractor to sell the value and education of the consumer to understand energy management and the value in his or her daily life of energy efficiency.

3. What is the role of rebates in efficiency upgrade programs? Can financial products/financing strategies motivate deeper retrofits in lieu of rebates? Are both needed to motivate deeper retrofits?

The proposition of a comprehensive energy efficiency retrofit carries with it a number of characteristics that must be kept in mind when deciding what kind of support and incentives are necessary to spur widespread adoption among consumers. First, whole house retrofits entail substantial upfront costs, ranging from $5,000-15,000, representing a far larger investment decision for potential participants than traditional energy efficiency programs. Second, these projects come with extended payback periods, from 5-15 years in many cases. Thus, there are two financial barriers to market adoption: sticker shock and a comparatively small cash flow generated from energy savings. These market barriers can be addressed through a smart and balanced combination of rebates and attractive financing options. Rebates and financing both reduce the upfront cost, and rebates further improve the payback or cash flow proposition. Financing options must still consider the long term pay back and may not be available to the low income market. Ideally, retrofit costs will come down and financing will become more robust, and the industry can transition away from rebates and incentives.

4. How can "reactive" interaction with customers (e.g., HVAC tune-ups or water heater replacements) best be leveraged to encourage whole house upgrades? How can such customer interaction encourage or enable future upgrades?

Reactive interactions with customers represent some of the best opportunities for comprehensive retrofits. They open the door to discussing energy performance and comfort with homeowners. Unfortunately, these opportunities are fraught with pitfalls that must be

carefully navigated in order to leverage them into a comprehensive retrofit project. For example, when a homeowner needs to replace or tune up a water heater or HVAC system, the situation often requires a rapid response from the contractor born from the homeowner's sense of urgency, whose priority is a return to full service of their home's equipment. Under such time pressure, a comprehensive retrofit program may "get in the way" of these priorities due to onerous assessment, application and reporting procedures for both the contractor and homeowner. Therefore the key to successfully leveraging these opportunities is streamlining the process for the contractor. Currently, contractors do not see the value in upselling customers to comprehensive retrofits in these situations, as the process is simply too complicated and costly to engage in. There is an inherent balancing act that must occur in program design whereby program participation is made so seamless and simple that contractors can effortlessly market the program, while maintaining the proper level of QA/QC and other relevant reporting requirements.

6. How can quality assurance be provided without excessive impact on the customer experience?

Program design around quality assurance must ensure high standards, clear guidance, transparency and accountability. Consistent QA is necessary in order to continue the development of a robust value proposition to homeowners and contractors alike. The objective must be to not prolong or complicate the job submittal process, but to steadily increase industry best practices. Contractor mentoring can play a key role in reducing the impact of QA/QC on the retrofit process. We must ensure that contractors new to the whole-building retrofit industry are properly mentored, not only with regard to installation practices guided by established and consistent standards in building science, but also proper training on the job submittal process and any associated technical details.

8. What workforce development is desirable for the residential sector?

The residential home performance industry will not adequately scale to meet the state's goals without significant investment in workforce development capacity while simultaneously building demand for retrofits. As implementers of a single family program in the San Diego County AB 758 pilot, CCSE led an innovative and successful retrofit installation workforce development program known as the Green Graduate Education Program (GETUP). The GETUP program has not only been offered to Energy Upgrade California participating contractors as an avenue to improve upon their installation skills, but also to train those individuals (unemployed or underemployed) looking to get into the home performance field and fill the growing need for skilled retrofit installation technicians as EUC contractors expand their capacity to meet the growing demand for these niche services. An equally important workforce development component is field mentoring. As new contractors move into the home performance industry, mentoring by uniquely qualified building science trainers is critical in the adoption of the whole building approach to energy efficiency. It is equally important that contractors are trained to successfully market these services and given the skills necessary to engage in productive business development activities. These "soft" skills are vitally important to building the home performance industry, though they are not generally given adequate attention or funding. We

note that one way to streamline the overall process would be to coordinate Title 24 verification and HERS II/BPI testing.

9. Under what conditions would it be appropriate to include an energy rating in an upgrade project?

Energy ratings, such as HERS II are best utilized at the conclusion of a project, in conjunction with the QA/QC process. We note that while ratings can play an important role in the marketplace, particularly in relation to the real estate valuation process, a full HERS rating is not always an effective marketing tool and is likely too expensive and onerous to facilitate project scoping on the front end of a retrofit. Integrating a HERS rating into the QA/QC process in a simplified manner, however, would be beneficial to the marketplace on a number of levels.

14-16. Comprehensive retrofits and low-to-moderate income customers

Programs such as the Energy Savings Assistance program (ESAP) and DOE's Weatherization Assistance Program (WAP) can and should be leveraged to integrate a whole-building approach into their implementation in order to maximize their energy savings impact. Interestingly, the goals of these low-income programs greatly overlap with what are often termed the non-energy benefits of whole house programs (safety, comfort, indoor air quality, etc.). CCSE has been taking advantage of this synergy in San Diego through a partnership with the City to implement the San Diego Home Energy Upgrade Program (SDHEU). This program builds upon existing programs such as ESAP, MIDI (Middle-Income Direct Install), and Energy Upgrade California to provide an offering targeted at low and moderate income residents in both single and multi-family buildings. This pilot program incentivized BPI diagnostic testing in tandem with ESAP and MIDI program offerings while also adding additional funds to supplement the areas of priority identified by the BPI level assessments. CCSE trained and mentored ESAP contractors in building science concepts and facilitated their participation in the Energy Upgrade California program. ESAP contractors were trained to test shell leakage and perform combustion safety tests prior to measure installation, resulting in the discovery of additional opportunities for energy efficiency. By applying BPI level assessments and diagnostics to ESAP projects, contractors are able to better serve their clients and achieve deeper energy savings than would otherwise be possible under more traditional low-income program designs.

In order to successfully integrate whole building programs with existing low-income programs, we will need to invest in cross-training programs for contractors currently implementing ESAP, WAP, MIDI and other low-income programs in order to provide them with the additional skills and knowledge to incorporate building science concepts into their business model. Contractors must be trained to use BPI diagnostic testing methods so that they can then develop an effective scope of work as part of their low-income program implementation. Much like in the market-based programs, the key here is shifting the paradigm within the contractor community that delivers these programs.

33. What is the proper role for regulations to achieve energy efficiency through AB 758? What are the appropriate points in the life of buildings (trigger points) where regulations could be applied?

The question of regulatory intervention in the marketplace to achieve energy savings must be answered in the context of the highly ambitious energy and climate goals the State of California has set out to achieve in a very short timeframe. Goals found in the Long Term Energy Efficiency Strategic Plan, for example, include reducing energy use in existing residential buildings by 20% by 2015 and by 40% in 2020. AB 32's greenhouse gas reduction goals are similarly daunting as we near the end of 2012.

With time being of the essence, it is clear that absent regulations to "push" the market along, voluntary programs will not "pull" the market fast enough to achieve the scale required to meet these goals (unless incentive levels and subsidies to improve financing terms were to be dramatically increased). Many stakeholders have identified time-of-sale, HVAC and major appliance replacements, and remodels/renovations as key entry points in which to potentially insert regulations requiring home assessments and/or retrofits. Many such ideas envision enforcement of these regulations running through the building permit desk. While we are inclined to agree that these trigger points are important, it is not clear that regulatory efforts that rely on building permits will be effective, due to the very low percentage of compliance with requirements to obtain permits for this type of work. Unless such efforts are paired with a highly effective compliance-enhancement program, we cannot recommend the Commission focus its regulatory efforts around the building permit process.

One potential model for the Commission to consider is the City of Berkeley's Residential Energy Conservation Ordinance (RECO). A RECO requires a specified level of energy and/or water efficiency must be reached upon sale or transfer of property or during a renovation. Perhaps such an ordinance could focus instead on the time of rental for a property rather than sale to achieve initial scale, or could apply to all properties by a designated date far into the future, regardless of transfer of ownership or occupancy, and provide incentives in the near term for building owners to meet that requirement early. Berkeley's program put reasonable cost caps in place and provided a one-time deferment.

A RECO or similar style of regulation could be applied on a statewide basis, albeit with a measure of political difficulty. We suggest that such regulatory "sticks" could be applied in a narrow, targeted manner to spur a higher rate of retrofit projects if properly complemented by incentives and appropriate financing mechanisms such that the burden on real estate transactions and homeowners is minimized.

34. How could the real estate industry play a role to encourage assessments, rating and upgrades as a means of differentiating homes where owners have invested in upgrades?

It is now common practice to have a home inspection performed before the sale of a property. Such inspections are not normally required by financial institutions; however, homeowners have come to recognize the value of such inspections, and responding to this demand and the value demonstrated by such inspections to all parties involved in the transaction, real estate agents now work on behalf of the buyer to coordinate and promote such inspections as a best practice. In order to establish the value of highly energy efficient homes, the real estate industry must undergo a similar transformation with regard to regard to whole home energy

assessments. If the real estate agent is conditioned to point out the relative energy efficiency, or "operating cost" of a home, it becomes a selling point for the transaction.

35. Should non-energy benefits (NEBs) be recognized in cost-effectiveness criteria for an upgrade program, and if so, how?

The concept of non-energy benefits is critically important to the comprehensive retrofit industry. Due to the previously discussed high upfront costs and long payback periods associated with these deep retrofits, the monetary value proposition is oftentimes not the primary driver, nor the most noteworthy result for homeowners who participate in these programs. Comfort, indoor air quality and noise reduction are just a few of these NEBs which participants consistently cite as the most positive results of whole-home retrofits. Up to this point, however, these programs in California have been delivered under the CPUC's cost-effectiveness framework for energy efficiency programs. Viewed as a demand-side resource, but assessed like a supply-side resource, energy efficiency programs must (together in a portfolio) have a benefit-cost ratio of 1.0 or better under the Total Resource Cost test (TRC). When evaluated in this manner, whole-house programs do not typically meet this standard; however, many stakeholders point out that in the cost-benefit calculation, benefits that accrue to the participant that are not associated with reduced energy bills (NEBs) are not included, though all participant costs are included. By not placing a value on these NEBs, the costs of the program appear to outweigh its benefits.

36. What process improvements or funding solutions would facilitate better compliance with the Building Energy Efficiency Standards? What actions could be taken to encourage contractors to pull permits?

A labeling program, where houses were rated for their energy efficiency based on all *permitted* upgrades and functions, would add value to houses that had lowered their energy consumption while improving comfort or NEBs. Thus, it would be in the interest of contractors to pull the permits and have the homeowner (and their own portfolio) reflect that value add to the home.

39. How effective are workforce training efforts to prepare building officials, experienced contractors and new workforce entrants for energy upgrade programs? What education or training gaps exist?

Workforce training efforts are an essential element of any comprehensive retrofit program. These programs ensure a competent and consistent pool of contractors exists to perform the actual retrofits, and provide ancillary job-creation benefits as well. Unfortunately, funding for such programs is limited and dwindling as ARRA-funded efforts sunset. While there is some ratepayer funding available for BPI contractor training workshops, the need exists for apprenticeship style training that takes a more in-depth mentoring approach to workforce training, including the development of "soft" skills such as marketing and business development. Trainees require much more than just a certification in order to translate their new training to real-world applications. Such programs are expensive and do not produce direct energy savings; therefore they are largely ignored by current IOU ratepayer funded programs, which must adhere to cost-effectiveness criteria as discussed above. Building officials are

largely unaware of whole-house retrofit programs and building science concepts. This may be partially alleviated by integrating Title 24 verification with HERS II/BPI assessments.

Data

It is crucial that AB 758 programs both rely on and produce detailed and transparent data. Both aggregate and project-level data can play a key role in driving market innovation. This has been proven extensively by the solar industry and its use of data collected and disseminated through the California Solar Initiative (CSI) program. We note that there is currently a smart grid (R.08-1-009) proceeding at the CPUC which among other topics addresses data privacy and other data related issues. We encourage the Energy Commission to ensure that data is extensively collected and made widely available in a digestible format as a critical tool for marketplace innovators. We also urge the Commission to require data collection from any financing efforts associated with these programs, such as PACE, CAEATFA, etc.

Conclusion

In closing, we note that the CPUC recently released a proposed decision for approval of the IOUs' 2013-2014 energy efficiency programs and budgets, with opening comments due October 29. The proposed decision seeks to require the IOUs to "hire a market transformation consultant to design a long-term approach to the EUC program, as well as to develop a tiered advisory committee approach to oversight of the continued improvements to the design of the program."[1] We are concerned about the potential duplication of efforts taking place at the CEC and CPUC, and we encourage the CEC to provide input before the CPUC votes on this proposed decision at the November 8 business meeting. We caution that if this process moves forward at the CPUC, a great deal of both taxpayer and ratepayer funds will likely be spent to hold two parallel processes, the results of which will inevitably need to be harmonized through a third process in order to integrate the results of this AB 758 process with the whole house program being implemented by IOUs, local governments, and others in 2013-2014. Such an outcome is clearly not desirable, and we hope that the two commissions can work together to consolidate these processes while ensuring that the resulting program is designed and governed in a collaborative manner that involves all relevant stakeholders, as described at the outset of our comments.

We are gratified to have the opportunity to provide these comments to the Energy Commission, and we look forward to further coordination with the Energy Commission and stakeholders as the Commission moves through this important process towards a comprehensive energy efficiency program for existing buildings.

Sincerely,

[1] October 9, 2012. *Decision Approving 2013-2014 Energy Efficiency Programs and Budgets*. Pg. 21

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