California Building Industry Association

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California Energy Commission
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In the matter of:	)	**DOCKET No. 12–EPIC-01**
	)	
EPIC Second Investment Plan:	)	California Energy Commission
Applied Research & Development	)	Dockets Office, MS-4
and Market Facilitation	)	1516 Ninth Street
_____	)	Sacramento, CA. 95814-5512

Comments submitted on behalf of:

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Introduction:

The California Building Industry Association (CBIA) is a statewide trade association representing over 3,500 member-companies involved in residential and light-commercial construction. CBIA member-companies are responsible for over 90% of the new homes built in California each year. CBIA welcomes the opportunity to provide these comments to the California Energy Commission.

Over the past 12 years, the CEC has significantly increased the stringency of the energy efficiency building standards. The low-cost, easy-to-do, "low-hanging fruit" has been picked and has been incorporated into the standards as mandatory features.

This means that the next two updates of the energy efficiency standards will become very challenging to builders, designers, contractors, product manufacturers and local code enforcement personnel. Given recent discussions with CEC Staff and their contractors, it is highly likely that the following measures will be considered for incorporation into the standards as either mandatory features or prescriptive measures for use in calculating the compliance energy budget.

- Roof-deck insulation
- Advanced wall system assemblies
- Further reductions in air-infiltration
- Advanced plumbing system design for hot water supply

In addition, industry is seeking:

- Expansion of the existing compliance credit for installation of rooftop solar
- Expansion of compliance credit for appliance efficiency measures and plug-load reduction strategies.

Lastly, industry and the enforcement community are seeking a significant reduction in the complexity of the standards, including the development of marketable, prescriptive compliance packages with, and without solar.

All seven of these items are in urgent need of background research, field-testing and/or education efforts needed to move them forward in a reasonable and thoughtful manner. This being the case, each of the items below could be classified as either Applied Research & Development or Market Facilitation.

For example:

- **Roof-deck insulation:** industry designers, contractors and product manufactures need to understand how to do this without voiding warranties and without creating moisture problems that lead to product failure and ultimately, construction defect litigation. Once that is finished, thousands of members of the construction workforce need to learn how to incorporate this new technique into their daily routine.

- **Advanced wall system assemblies:** Similar to roof-deck insulation, the design sector needs to understand how to incorporate this into the standard residential design. And just like roof deck insulation changes, thousands of contractors will need to be trained on how to move away from standard 2x4 wall-construction and shift to 2x6 or 2x8 wall-construction designs.

- **Advanced plumbing system design for hot-water supply:** There is several innovative plumbing design concepts are out there, however, they lack solid field-documentation of the energy and water conservation benefits and of the increased level of cost (if there is any). And, like the previous issues, thousands of sub-contractors (plumbers) and enforcement personnel must become familiar with these new design strategies prior to a statewide mandate.

- **Further reductions in air-infiltration:** During the development of the 2013 Residential Building Energy Efficiency Standards, the CEC was considering a significant reduction in the air infiltration rate for new homes. Representatives from industry and the Air Resources Board objected to this proposal as there was no documented evidence showing that further reduction in air infiltration rates would not result in unhealthy indoor air quality. In the simplest of terms, we need to find out if this proposal is going to make the occupants sick. Unlike the two issues mentioned above, industry is already knows how to do this; we just need to verify that it will not lead to indoor air quality concerns.

- **Expansion of the existing compliance credit for rooftop solar:** The 2013 Energy Efficiency Building Standards incorporated for the first time a compliance credit for rooftop solar. However, the application of this credit is limited to only seven of the sixteen climate zones. In addition, the allowed credit is "static" in that the compliance credit for a 2.0kW PV system is the same as that generated by a 5.0 kW PV system. As the CEC moves forward in the development of the 2017 and 2020 efficiency standards, research needs to be done to validate the appropriate level of credit to be given to PV systems of varying size and in all 16 of California's climate zones.

- **Compliance credit for appliance efficiency and plug-load strategies:** The CEC's efficiency standards regulate the envelope of the building, HVAC system, water heating and certain lighting features of the home. However, approximately 50%-55% of the homes energy use is related to appliances and "plug loads" not regulated by the standards. And while federal statue and regulations place serious limits on state authority to adopt more stringent appliance efficiency mandates for many common appliances, the CEC clearly has authority to provide compliance credit for many of these appliances and for "plug-load reduction" designs and emerging technologies.

- **Marketable Prescriptive Packages:** It goes without saying that the technical complexity of the energy efficiency standards has grown over the years, so much so that the design and compliance documentation work has, for the most part, moved away from the builder and rest largely in the hands of the energy consultant. This has had the unintended effect of removing the builder from key discussions regarding compliance design, application and verification/documentation. The same thing has happened to the local enforcement personnel. Simplification of the standards will clearly help increase compliance in the field. To that end, it would be very useful for the CEC to generate a set of marketable, prescriptive compliance packages for the next set of regulations: one that incorporates a reasonable amount of rooftop solar and one that does not.

STATE OF CALIFORNIA

EPIC TRIENNIAL INVESTMENT PLAN 2015-17
Proposed Energy Research Initiative Questionnaire

CALIFORNIA ENERGY COMMISSION

(This is a Request for Information only - Complete Pages 1 and 2 for each initiative)

Title of Proposed Initiative (Short and concise):

Investment Areas (Check one or more) – *For definitions, see First Triennial Investment Plan, page 12*:

- ☒ Applied Research and Development
- ☐ Technology Demonstration and Deployment
- ☒ Market Facilitation

Electricity System Value Chain (Check only one): *See CPUC Decision 12-05-037, Ordering Paragraph 12.a. http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF.*

- ☒ Grid operations/market design
- ☒ Generation
- ☐ Transmission
- ☐ Distribution
- ☒ Demand-side management

Issues and Barriers:

Describe the issues and barriers that are impeding full market adoption of the proposed clean energy technology or strategy (such as cost, integration, or lack of information).

Initiative Description and Purpose:

How will this technology or strategy help address the issue/issues? Describe knowledge to be advanced to overcome critical barriers. Include the recommended funding level (minimum and maximum) for each project under this initiative.

Stakeholders:

Identify the stakeholders who support the initiative.

Background and the State-of-the-Art:

- What research development and demonstration has been done or is currently being done to advance this technology or strategy (cite past research as applicable)?
- Describe any public and/or private successes and failures the technology or strategy has encountered in its path through the energy innovation pipeline: lab-scale testing, pilot-scale testing, pre-commercial demonstration, commercial scale deployment, market research, workforce development.
- Identify other related programs and initiatives that deal with the proposed technology or strategy, such as state and federal programs or funding initiatives (DOE, ARPA-E, etc.).

Justification:

Describe how this technology or strategy will provide California IOU electric ratepayer benefits and provide any estimates of quantified annual savings/benefits in California, including:

- Name of sector and estimated size and energy use.
- Quantifiable performance improvements for the proposed technology/strategy.
- Maximum market potential, if successful.
- Number of direct jobs created in California.
- Why this research is appropriate for public funding.

Ratepayer Benefits (Check one or more)**:**

- ☒ Promote greater reliability
- ☒ Potential energy and cost savings
- ☐ Increased safety
- ☒ Societal benefits
- ☒ Environmental benefits - specify
- ☒ GHG emissions mitigation/adaptation in the electricity sector at the lowest possible cost
- ☐ Low emission vehicles/transportation
- ☒ Waste reduction
- ☒ Economic development

Describe specific benefits (qualitative and quantitative) of the proposed initiative

Public Utilities Code Sections 740.1 and 8360:

Please describe how this technology or strategy addresses the principles articulated in California Public Utilities Code Sections 740.1 and 8360. The California Public Utilities Code is available online at www.leginfo.ca.gov/cgi-bin/calawquery?codesection=puc.