

Statutory and Regulatory Requirements for Evaluation, Measurement, and Verification (EM&V)

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December 6, 2021



California Public
Utilities Commission

Statutory Requirements for EM&V

- Senate Bill 14 77 (Stern, 2018) requires the CPUC to supervise administration of the BUILD Program
- PU Code section 921.1 (d) (4) requires the CPUC to ensure development of program guidelines that include a process for evaluating new technologies, and a process and a set of metrics by which to evaluate and track program results
- CPUC Decision (D).20-03-027; provides guidance on role of the program evaluator

CPUC Decision: Role of the Program Evaluator

“The program evaluator shall be continuously engaged throughout the initiation of these pilot programs and during the administration of them. This should occur in as close to real time as possible so that timely, substantive feedback can be used to change course when and if appropriate, and to ensure the success of these pilot programs.”

“The program evaluator shall be engaged throughout the initiation of the two pilot programs and during the administration of them to ensure that substantive, real time feedback is given, and data and information gathering is meaningful to support the success of these pilots.”

CPUC Decision: Expectations from Program Administrator

“The CEC shall also collect program performance data and information to inform evaluation and lend insight to program successes and failures. Data collection plans should be coordinated with the Commission and the program evaluator.”

“...Data collection will be expected of the BUILD Program administrator and TECH Initiative implementer, who shall work with the program evaluator to understand data needs and implement processes to obtain and share program data.”

The Decision emphasizes “substantive, real-time feedback” to support the success of the pilot programs.

Program Evaluator Selection:

Opinion Dynamics

Subcontractors: Guidehouse and Mitchell Analytics

**Proposed Evaluation,
Measurement, and
Verification (EM&V)
Requirements for the
Building Initiative for Low
Emissions Program (BUILD)**



Current Evaluation Status

- Program evaluator proposed an initial evaluation plan as part of its response to the Request for Proposals
- Currently developing the overarching evaluation plan
- Four overarching goals of BUILD Evaluation Plan
 1. To evaluate effectiveness of the BUILD program's implementation,
 2. To evaluate program impacts in terms of GHG savings, utility bill savings, energy savings, non-energy impacts, and cost-effectiveness
 3. To evaluate BUILD program's long term market impact
 4. Ensure implementers comply with CARB rules regarding Cap-and-Trade funds





Opinion **Dynamics**

Feasibility of Real-time Embedded EM&V within BUILD

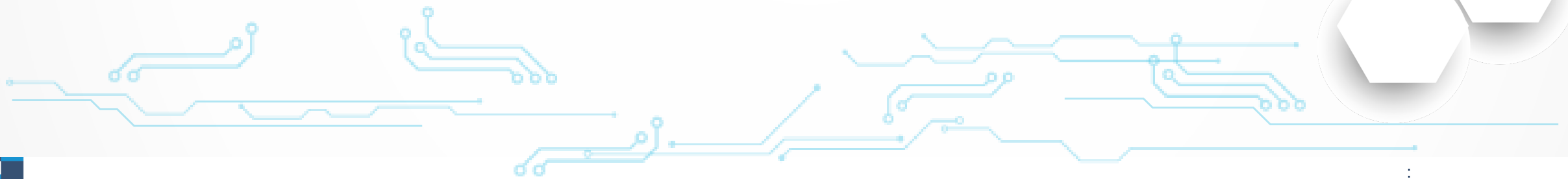
Real-time, Embedded EM&V for the BUILD Program

1. BUILD is a whole building, new construction program

- Monitoring devices can be incorporated at time of construction and/or embedded within the equipment decreasing costs and occupant burden

2. BUILD caters to multi-family properties

- Equipment monitoring devices can enable property-wide energy management solutions and save building owners expensive repairs that would otherwise occur from premature equipment breakdown



Real-time, Embedded EM&V for the BUILD Program (continued)

3. BUILD program will incentivize multiple end use appliances

- A single project could install program-incentivized heat pump space conditioning equipment, heat pump water heaters, smart thermostats, cooktops, clothes dryers, additional on-site solar and energy storage, and electric vehicle supply equipment

4. BUILD is a pilot program

- It is important to:
 - Accurately account for the GHG reduction potential of individual technologies through empirical, field-based data (as opposed to modeled or mathematical estimates)
 - Understand the lifecycle performance, degradation curves and failure thresholds of these new technologies, so that their large-scale deployment is done based on sound evidence
- Enables the state to provide iterative feedback to manufacturers and improve these technologies based on data gathered in real, non-laboratory conditions
- Inform policy decisions to scale future electrification programs



Opinion **Dynamics**

Currently Available Submetering Equipment and Devices

Categories of Submetering Equipment and Devices

- Whole House Smart Panels
- Connected Circuit Level Metering Devices



Source: luminsmart.com



Source: span.io



Source: egauge.net



Source: emporiaenergy.com





Opinion **Dynamics**

Four Proposed EM&V Program Requirements for BUILD Program Applicants

1. Monitoring-Devices

- If selected for real-time monitoring, install evaluator-approved monitoring devices on the BUILD-incentivized property.
- Evaluator will provide a list of approved smart electrical panels and/or integrated data loggers for individual appliances that the applicant may choose from.
- The applicant shall not be responsible for any incremental costs for the monitoring devices but agrees to coordinate with the evaluator to ensure timely procurement.

2. Internet Connection

- Ensure availability of a wireless internet connection on the BUILD-incentivized property needed to transmit data from the EM&V smart devices to the device manufacturer and the evaluator

3. Building Occupant Disclosure and Consent

- D.20-03-027 Conclusion of Law 29:

“It is reasonable to provide IOU customers the option of voluntary public donation of their energy use data rather than assume that every customer is unwilling to share their individual energy use data for public interest decarbonization-related research.”

3. Building Occupant Disclosure and Consent (continued)

- Agree to inform the future building occupant/s that:
 - a) the property is incentivized through ratepayer dollars approved by the legislature and the CPUC for reducing GHG emissions from buildings, and is subject to energy monitoring to ensure bill savings for the building occupant
 - b) if selected for real-time monitoring, obtain consent from the building occupant for CPUC and program evaluator to collect data from the installed monitoring devices (such as during signing of the lease or mortgage agreement).
- Program evaluator shall provide the disclosure form to be shared with the building occupant.

4. EM&V Activities

- Cooperate with the evaluator to facilitate EM&V activities such as occupant surveys, interviews with project professionals, and access to incentivized property (if needed).

Questions?

