

Working Group 2 Action Plan
Educating Users:
Development of Key Resources & Guidelines

CalBEM 2019

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Subtopic Context

Educating a Larger Workforce & Advancing Skills

In the first half of 2019, IBPSA-USA and DOE led an effort to interview building energy modeling (BEM) practitioners. The objective of the interviews was to learn how the practitioners were able to successfully adopt BEM tools and apply them to various project-design use cases. One of the key takeaways from the project was that the interviewees unanimously agreed that there is no go-to resource for new practitioners to learn how to perform BEM analysis or the underlying building physics principles and that practitioners are forced to cobble together an education through various non-uniform means.

This situation has contributed to BEM being an unpredictable endeavor where the quality of results and the ability to interpret the results is highly variable depending on the practitioner and how well they were able to learn how to properly perform energy analysis.

Creating a Robust Reporting Process

In code compliance, green building standards and other predominant use cases, review of results and documentation of calculations is necessary. What best practices exist for enhancing compliance of models that are created, such as peer review and automated checks of modeling files? For documentation itself, where could enhancements or simplifications be made in state documents for codes and program administrators' documents for incentives and where are examples for such available in the industry, be it states or through private rating systems such as LEED?

Cal TF Technical Position Paper #10

The modeling ecosystem in California is heavily siloed, with a variety of entities conducting building modeling to serve their local needs but without the benefit of sharing their modeling efforts with other entities. CalTF held a one-day modeling charrette in May 2019 to bring the various entities together, identify similarities and differences in modeling efforts (e.g., rulesets, prototypes, input/output, software), and list issues that, if addressed, could begin the process of aligning the various efforts and create efficiencies in the modeling community.

Technical Position Paper #10 (TPP 10) reflects the CalTF's effort to take the feedback from the charrette, coupled with input from prior SCE symposia, and establish a framework to address identified issues going forward. The TPP is not a solution unto itself; rather, it helps direct efforts on near-term, medium-term and long-term issues that may be addressed by SCE, CalTF, or other interested leaders.

During CalBEM 2019, Working Group 2 reviewed and provided feedback on TPP#10, which was subsequently brought to CalTF for consideration by Roger Baker.

Problem Statements and Actions

Problem Statement A: There is a Lack of Market Intelligence for BEM Education in California

Summary

A well-developed BEM education system should grow from a data-driven understanding of the demands from California’s BEM market and students. Funding to undertake such a study will be most successfully sought when the savings potential (energy, money, and/or emissions) of a developed BEM education system can be clearly presented. Working Group 2 proposes to create a 1-page BEM Education Business Need document that identifies and leverages existing and contemporary works, e.g. projects from CABEC, BEM Collaborative, CEC and DOE, or conversations with California Community Colleges. This would be followed by a defined Needs Assessment Project Scope and Budget that can be used to solicit funding for a larger research project into what California needs for BEM Education.

The Needs Assessment could aim to address the following unknowns:

- Identify workforce demand for building energy modelers
- Identify demand for BEM education programs
- Catalogue existing programs and certifications
- Identify California-specific knowledge, skills and abilities (KSAs) required of a qualified BEMer
- Identify the range of stakeholders requiring differentiated education materials
- Identify and define specialties for BEMers
- Identify demand for modeler certification

After the business case and subsequent project scope and budget documents have been assembled, Working Group 2 will reconvene and assess the appropriate next steps.

Relevant Subtopics

- Educating a Larger Workforce & Advancing Skills

Actions

Action 1	Catalogue the Current Landscape of BEM Educational Efforts in California and Propose Research of California’s Need for BEM Education
Description	Establish a 1-page Business Need Document that identifies and leverages existing works and efforts. Establish a Project Scope and Budget that enables funding solicitation.
Status	Not started
Driving Stakeholders	CABEC, IBPSA-USA, IOUs

<p>Impacted Stakeholders</p>	<p>Energy Code Ace, Community Colleges in CA, other colleges/universities, utility training centers, software vendors who provide training, professional organizations that provide training (AIA, ASHRAE), other organizations that provide training (e.g. Linux Energy Foundation online courses), USDOE/BEM Collaborative.</p> <p>Energy modelers, HVAC engineers, architects, utility staff, building officials.</p>
<p>Key Barriers</p>	<ul style="list-style-type: none"> Funding for Needs Assessment Research
<p>Milestones</p>	<p>11/20/2019 <i>Establish shared workspace (Completed 11/25/2019)</i></p> <p>12/13/2019, ongoing Upload existing resources/research for BEM and sibling industries</p> <p>12/20/2019 Develop draft business case for Working Group 2 review and for informal review by select stakeholders (Mike Wilson and Andres Fergadiotti)</p> <p>1/21/2020 9-11am Working Group 2 Webinar Check-in</p> <p>2/1/2020 Revised business case distributed to CalBEM attendees and select stakeholders</p> <p>2/2/2020 Review finalized business case (Working Group 2)</p> <p>3/1/2020 Draft project scope and budget for review by Working Group 2, select stakeholders and potential funding sources.</p> <p>4/1/2020 Revised project scope and budget. Funding solicitation.</p>

Add additional "Actions" sections as needed: To do so, copy blank Action table from

Problem Statement A: There is a Lack of Market Intelligence for BEM Education in California

Appendix A: Section Templates.

Problem Statement B: Reports and Forms do not Effectively Communicate Key Information to Audiences

Summary

The forms and reports that are generated as the result of a building energy model do not efficiently communicate the desired information to their disparate target audiences. An ideal report would clearly give a user the relevant values (e.g. dollars or emissions) specific to their use case. For example, forms and reports could be generated in a modular format so that each audience could be served with a report that tells “the whole story” as relevant to their use case. If there could be a minimum set of requirements for each user identity independent of a particular software, any software could employ these data models to more successfully reach each audience. Standardization of data models may lead to more efficient software development, code compliance and enforcement, and program implementation.

The proposed action is a market assessment of reporting use cases followed by a proof of concept of one or more reporting use cases. The first step is developing a business case to establish the need for this work, considering existing work. The second proposed step is to develop a scope and budget for the work, which could be used to solicit funding

Potential research questions include:

- What are the use cases and roles relevant to BEM reporting?
- What are the data types that each audience needs?
- What is the most effective data communication format/language for each audience?
 - How can specific reports be tailored for targeted audiences/use cases?
 - Presentment of data (tables, graphs, etc.)
 - Level of detail (Use Goldilocks rule, not too much, not too sparse)
- Literature review for items above. What exists and what needs to be researched?

The group identified some initial existing resources and ideas:

- *Defining use cases and roles:* See Cal TF Use Cases identified in TPP#10, DOE roadmap, Kromer whitepaper, and NREL documentation of pain points.
 - Consider constructing a matrix for use cases and data types.
- *Defining the data types that each audience niche needs:* An initial survey of plan checkers may be a suitable test run. And perhaps ask BEMers and their clients directly what they need to communicate.
- *Defining the best data communication format/language for each audience:* See whitepaper by Tianzhen Hong.

Relevant Subtopics

- Creating a Robust Reporting Process

Actions

Action 1	Propose Market Assessment and Proof of Concept of Use-specific Reports
Description	Establish a 1-page Business Need Document that identifies and leverages existing works and efforts. Establish a Project Scope and Budget that enables funding solicitation.
Status	Not started
Driving Stakeholders	Utilities, CEC, software developers, BEMers themselves
Possible Stakeholders	<p>Building officials, plan checkers, architects, mechanical engineers, national laboratories, trades, builders, city/local governments, policy developers, ratepayers/homeowners... (part of mission is to identify these groups)</p> <p>IBPSA-USA, CABEC, ASHRAE, AIA, CalBO, RESnet</p> <p>Organizations developing data exchange standards such as gbxml, BuildingSync, hpxml.</p>
Key Barriers	<ul style="list-style-type: none"> Consider that less work has been done on reporting for end uses other than compliance.
Milestones	<p><i>11/20/2019 Establish shared workspace and resource hub (Completed 11/25/2019)</i></p> <p>12/20/2019 Document draft business case (Heidi Werner)</p> <p>1/21/2020 9-11am Working Group 2 Webinar check-in</p> <p>3/1/2020 Develop high-level scope and budget</p>

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Appendix A: Section Templates

Problem Statement X: [add name]

Summary

[Add context, details, and resolution goal]

Relevant Subtopics

- [select the one or more subtopics most directly related to the Problem Statement]
- Creating a Robust Reporting Process
- Cal TF Technical Position Paper #10
- Educating a Larger Workforce & Advancing Skills

Actions

Action 1	[Action Title]
Description	[Description of action to be taken]
Status	[Not started / In Progress]
Driving Stakeholders	[Name, additional names as needed]
Impacted Stakeholders	[Name, additional names as needed]
Key Barriers	<ul style="list-style-type: none">• [Barrier]• [Additional barriers as needed]
Milestones	XX/XX/20XX [Description of milestone] XX/XX/20XX [Additional milestones as needed]

