

Technical Position Paper #10
Recommendations for Improving
Building Energy Modeling in California



CALIFORNIA
TECHNICAL FORUM

ROGER BAKER
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Overview

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- Summarizes the modeling charrette held at PEC in May
 - Overview & background
 - Current modeling landscape
 - Improving the California modeling ecosystem
- Identifies issues, concerns & recommendations raised during the charrette
- LADWP presented case study of grid-level building modeling
 - Conducted in partnership with SCG
 - Modeling performed by NREL

Improvements for the CA Building Energy Modeling Ecosystem

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Seamless Integration

Seamless integration of models, prototypes, rulesets, & processes must be successful

Create Single Library of Prototypes

Publicly available & transparent
Clear designation of “ownership”
Clear designation of update protocols & responsibilities

Develop Interoperable Rulesets

Aligning common elements across rulesets can reduce use-case specific rules by 80%

Minimize Redundancies

Eliminate duplicate expenditures & efforts

Develop Roadmap

Short, mid & long-term goals
Clear designation of responsibilities to execute strategies

Desired Future State

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Coordinate w/ National Entities

Coordination at the national level will ensure a stable future state for modeling & cement California leadership in national modeling arena (Example: ICC)

Standardize Outputs

Standardizing output will lead to easier to navigation & will promote model & output sharing across use cases

Include Uncertainties

Providing uncertainties as part of the output will increase understanding of the model precision & supports transparency

Expand Tools for Any Use Case

Establishing criteria & allowing any qualified tool to be used will promote software evolution in the private sector

Future Opportunities

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ZNE / Decarbonization

ZNE & Decarbonation are underlying policy objectives in CA

Ensuring that modeling can incorporate ZNE & decarbonization will ensure BEM aligns with current policy objectives

Non-Energy Benefits

Non-energy data outputs from building modeling can support NEB estimates

Examples include power-based carbon reduction, health benefits (through air change & temperature profile management) etc.

Persistent Models

Maintaining a building model throughout its lifetime could save resources & support long-term policy initiatives

Examples include:

- Title 24 new building model
- Building continuous commissioning & calibration
- Future energy efficiency/renewable energy retrofit on building
- Title 24 building remodel

Roadmap

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Mid Term

- ✓ Develop interoperable rulesets that can apply to multiple use cases
- ✓ Use modeling to replace current “single point” measure savings with savings ranges

Long Term

- ✓ Explore dynamic model development
 - LADWP grid-based modeling*
 - Behavioral effects*
 - Machine learning to improve models over time*

Short Term

- ✓ Establish a single reference library of building prototypes
- ✓ Identify a path to reduce redundant modeling efforts
- ✓ Focus on aligning CPUC & CEC modeling tools

Next Steps

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Provide your
feedback



Attend SCE
CalBEM 2019
Symposium
November

- Cal TF presenting



Form Cal TF
Subcommittee in
Q1 2020

- Refine recommendations
- Refine roadmap results
- Coordinate with SCE

Questions?