

# California Compliance Software Symposium 2

## Update on Software Efforts: Roadmap

Thursday, July 12, 018

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Energy Codes & Standards and ZNE

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Engineering Project Management

Energy for What's Ahead<sup>SM</sup>

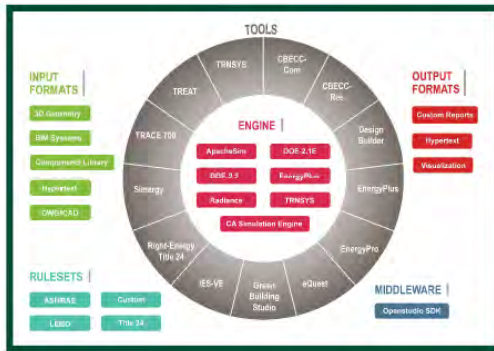


# Roadmaps

## Emerging Products

### SCE Building Energy Modeling Roadmap

ET14SCE7050



Prepared by:

Emerging Products  
Customer Programs & Services  
Southern California Edison

August, 2016



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## Compliance Software Roadmap

Draft Report  
February 26, 2016



### Action Plan

#### 2016 CBECC-Com Development Prioritization and Gap Analysis Report

February 26, 2016

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Submitted To:

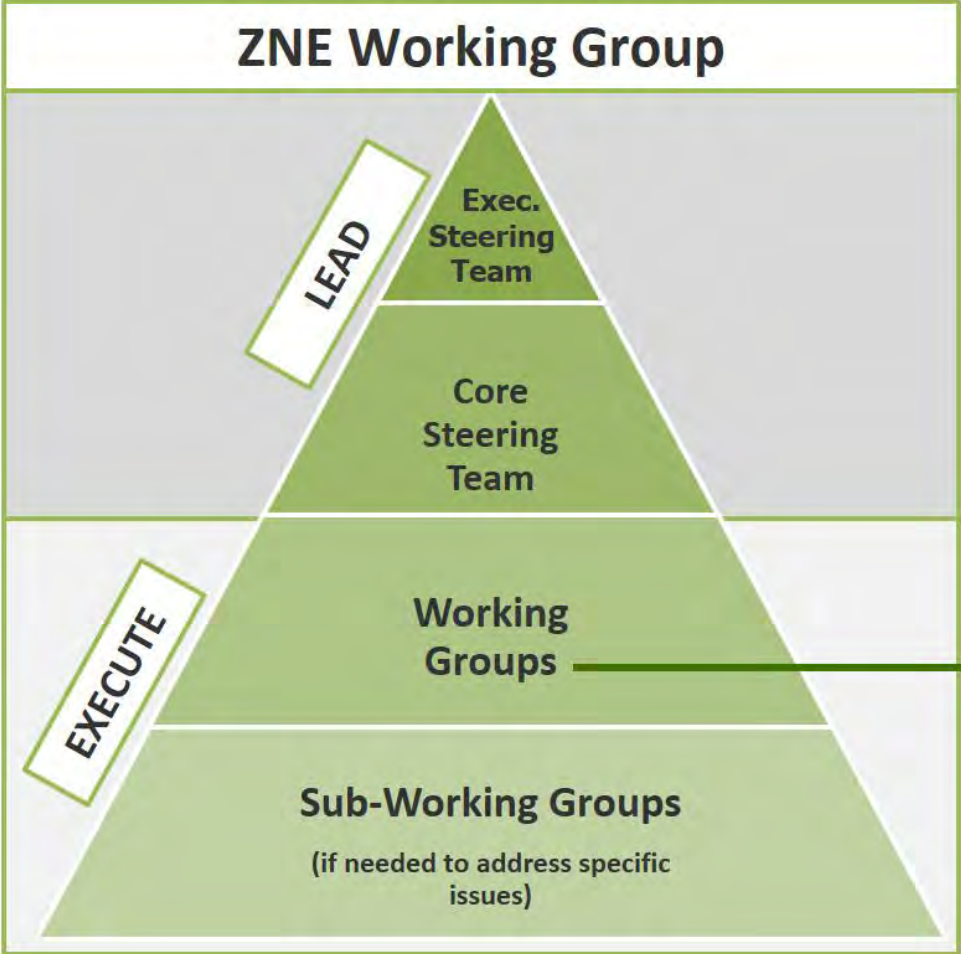
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# Leadership Through Collaboration



- Engineering Project Management
- Energy Codes & Standards
- Emerging Products
- California Advanced Homes Program
- Environmental Affairs & Sustainability
- DSO Programs & Strategies
- Key & National Accounts
- Program & Product Review
- Emerging Technologies Program
- Customer Marketing
- Distributed Residential Program Mgmt.
- Planning & Integration
- Emerging Markets & Technology
- Product Governance & IM
- Local Government Partnerships

# BEM Is the Foundation

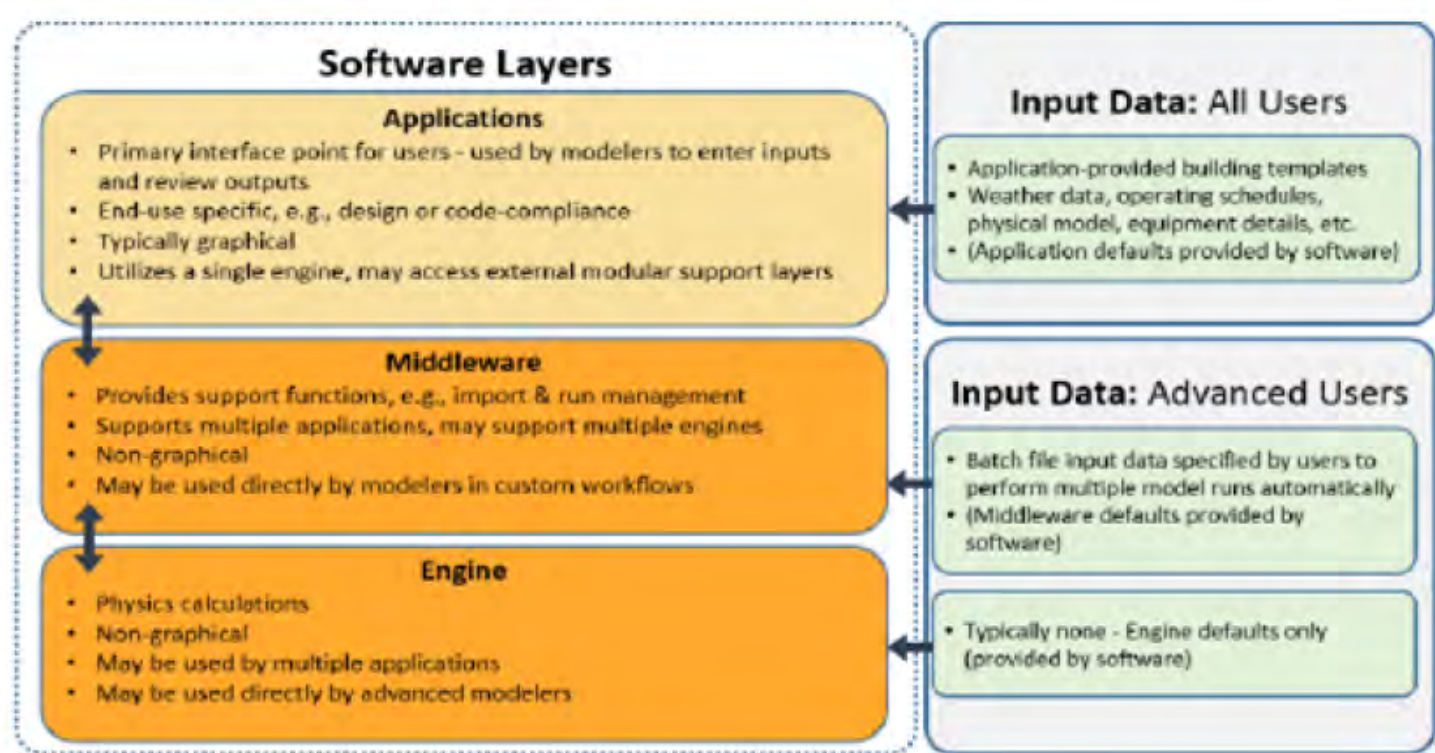
Building Type	Building Asset (By Vintage & CA Climate Zone)					Building Performance
	Mandatory New Construction Measures List	Building Prototype(s) (PDF, XML)	Compliance Minimum (Source EUI)	Carbon Budget (lbs. CO2e/ft <sup>2</sup> /Year)	Average Annual Utility Bill Costs (\$/ft <sup>2</sup> )	Incentive (\$/MMt Avoided CO2e)
Education		 	72	11.3	\$1.06	\$150
Office		 	83	13.1	\$1.11	\$150
Retail		 	70	11	\$1.14	\$150
Residential Single Family		 	21	3.3	\$0.94	\$150
Residential Multifamily		 	24	3.8	\$0.97	\$150
Residential Mobile Home		 	23	3.6	\$0.96	\$150

FOR DEMONSTRATION PURPOSES ONLY. NOT REAL DATA.



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# Software Platform



## Complexity of the BEM tools

# BEM Tools in SCE Programs

- 115 Tools and Platforms
  - 13 Platforms
  - 7 unique Rulesets
  - 5 Unique input formats
  - 3 unique output formats
  - 11 unique GUIs

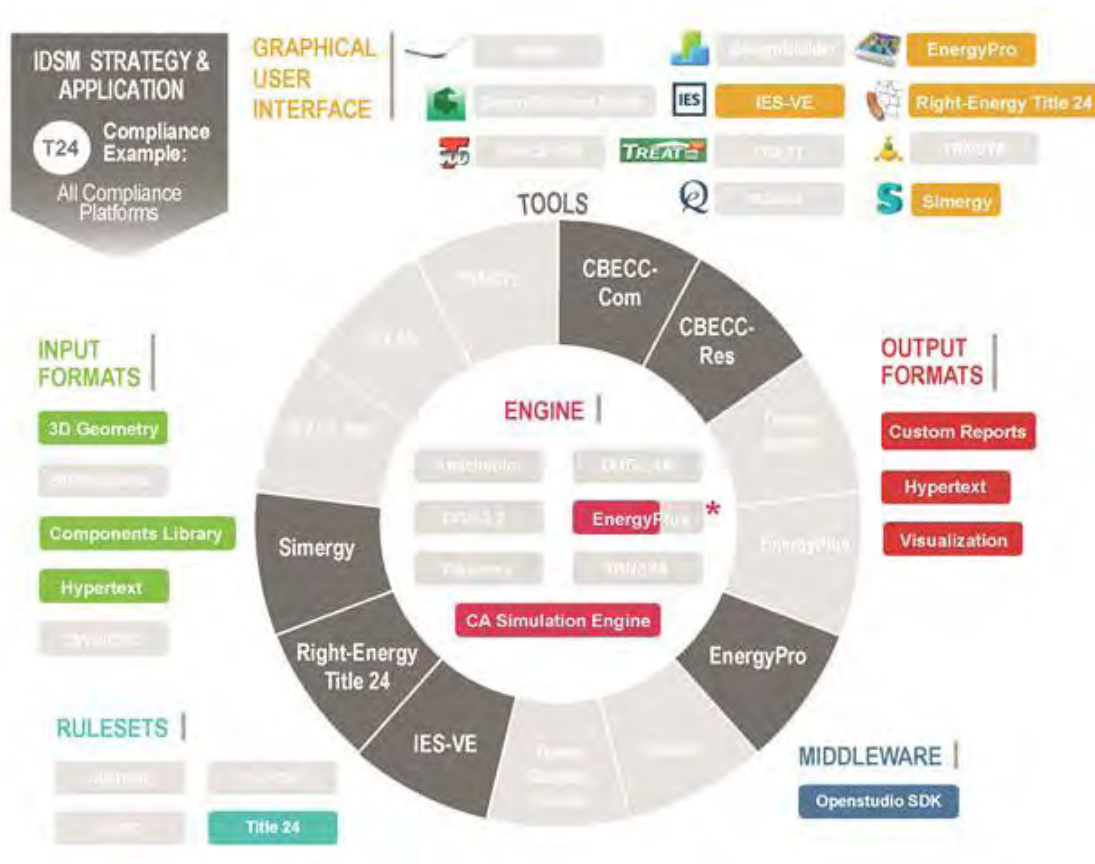


Note: These tools are representative of the BEM market; this graphic is not intended to be a comprehensive collection of BEM tools. The BEST Directory ([www.buildingenergysoftwaretools.com](http://www.buildingenergysoftwaretools.com)) lists 115 building energy software components.



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# BEM Tools Associated with CA Code Compliance



- Underlying Engine may be EnergyPlus
- CBEEC-Res : California Simulation Engine (CSE)

# Compliance Roadmap Topics

Below, we provide suggested timing of topics into immediate, near-term, and long-term priorities.

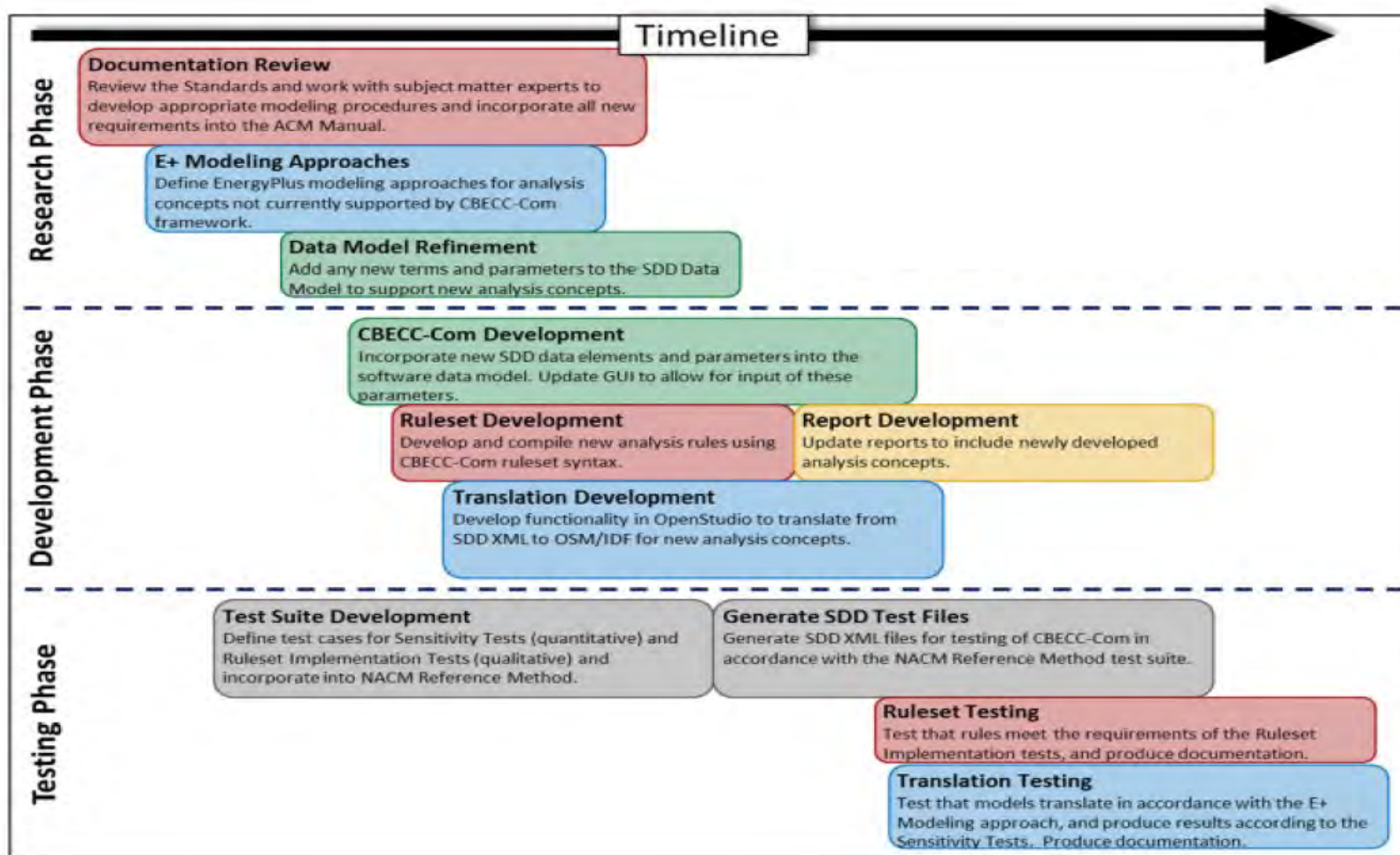
Building Type	Near-term (2016) Issues	Mid-term (2017-18) Issues	Long-term (2019+) Issues
Residential (including low-rise multifamily)	<ul style="list-style-type: none"> <li>- Coordinated cost-effectiveness analysis</li> <li>- CEBCC-Res updates incorporating PV, EDR, MELs, and HWPH</li> <li>- ZNE implementation and enforcement issues</li> <li>- Clarification of role of TDV and renewables</li> <li>- Reach code analysis</li> <li>- 2019 CASE analysis</li> </ul>	<ul style="list-style-type: none"> <li>- 2019 CASE analysis</li> <li>- Energy Design Rating</li> <li>- Coordination with appliance standards</li> <li>- Software updates incorporating other advanced measures</li> <li>- Programs targeting ZNE</li> <li>- Training designers and energy modelers</li> <li>- Relation to local and statewide emissions goals</li> <li>- Net-metering policy implications</li> </ul>	<ul style="list-style-type: none"> <li>- Address software data management and ownership.</li> </ul>
Nonresidential (including high-rise multifamily)	<ul style="list-style-type: none"> <li>- Coordinate gap-analysis for CBECC-Com</li> <li>- Improving run-time</li> </ul>	<ul style="list-style-type: none"> <li>- Coordination of 2019 CASE analysis</li> <li>- Coordination with appliance standards</li> <li>- Software updates incorporating advanced measures</li> <li>- Relation to local and statewide emissions goals</li> <li>- Net-metering policy implications</li> </ul>	<ul style="list-style-type: none"> <li>- Software updates incorporating ZNE metrics</li> <li>- Programs targeting ZNE</li> <li>- Training designers and energy modelers</li> <li>- Address software data management and ownership.</li> </ul>



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# Compliance Software Feature Development Timeline



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# Focus of Future State in Building Energy Modeling

- CBECC Missing Functionality
  - CBECC Measure Specification
- Building Types: & Proto type Development
  - Multi-Family Prototype Development
  - EUI Database
- Align BEM Tools with ZNE goals
  - Site to Source Energy and Emissions Metrics for Buildings
- Processing Speed and Design Time
- Simplify and Streamline Quality Control
- Building Simulation Registry
- Continued Research
  - DOE/SCE LBNL : Accuracy of HVAC Load Predictions: Validation of EnergyPlus and DOE-2 using FLEXLAB
  - Modeling Batteries for California Residential Code Compliance



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# Focus of Future State in Building Energy Modeling

- Improve Accuracy of Equipment Simulation
  - *Standard Representation of Performance Simulation Data for HVAC&R and Other Facility Equipment* : ASHRAE Standard 205
    - Defines performance map data models that convey equipment performance
      - ASHRAE / ANSI consensus committee: Manufacturers, software developers, users
      - Data source: manufacturers
      - Data use: simulation software
      - Fully automated transfer
    - Status
      - Public review comment period soon (Sept ?)
      - Prototype software implementation underway
  - With participation from Manufacturers
    - Compliance Software allow for improved credit

# What do you think?



Let's move on to a discussion of...

# Updates on Software Efforts: Multifamily Prototypes

Elizabeth McCollum

