

DOCKETED

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2022 Measure Proposals

Measure Proposal Template for the 2022 Energy Code Update



Adrian Ownby
April 24, 2019
California Energy Commission



Agenda

- Measure Proposal Template and the 2022 Energy Code Update
 - Background
 - Purpose
 - The 2022 Energy Code Update
- Template Section Review
 - Measure Description
 - Market Analysis
 - Energy Savings
 - Life Cycle Cost and Cost-Effectiveness
 - First Year Statewide Impacts
 - Proposed Revisions to Code Language
 - Executive Summary
 - References and Other Research
 - Appendices



Background

- Released to the public for the first time during the 2016 Energy Code update cycle
- Undergone multiple iterations over the 2016 and 2019 Energy Code update cycles
- Downloadable here:
<https://www.energy.ca.gov/title24/participation.html>



Purpose

- Measure Proposals are Foundational Documents
 - Meets Our Basic Statutory Requirement to Show Cost Effectiveness
 - Provides Necessary Research and Documentation Supporting Purposed Changes to the Energy Code
 - Necessary to Finalize Key Components of the Rulemaking Package:
 - Fiscal and Economic Impact Report (Form 399)
 - Environmental Impact Analysis
 - Nine Point Criteria



2022 Energy Code Cycle

- Things to consider before beginning:
 - **Energy Commission bandwidth constraints are real**
 - **Reach out to the appropriate Subject Matter Expert(s) before starting**
 - Shifting focus from residential to nonresidential and multifamily buildings
 - **Expanding focus to include de-carbonization**
 - Get key data sets for the analysis
 - **Submission doesn't guarantee adoption**



The 2022 Energy Code Cycle Subject Matter Experts

- Payam Bozorgchami – Project Manager, Envelope
 - Haile Bucaneg – Demand Response, Process Systems
 - Maziar Shirakh – Metrics, advisor
 - Larry Froess – ACM Lead, Mechanical assistance
 - Ronald Balneg – Nonresidential and High-Rise Mechanical Systems
 - Thao Chau – Demand Response (backup), Load Management, Lighting
 - Simon Lee – Lighting
 - Cheng Moua – Low-Rise Residential and Multifamily Mechanical Systems
 - Danny Tam - Water Heating, Solar PV and Water Heating, Storage, All Electric Buildings
 - Gabriel Taylor – Healthcare Facilities, Local Ordinances
 - Robert Hudler – Compliance Options, Envelope, Water Heating
 - Dee Anne Ross – Residential ACM
 - Michael Shewmaker – Documents, Envelope
 - Alexis Smith – Documents
 - RJ Wichert – Nonresidential and Residential ACM
- Email Convention at the Energy Commission: firstname.lastname@energy.ca.gov



2022 Energy Code Cycle

- We are actually in 2022 pre-rulemaking at this moment

2022 STANDARDS UPDATE SCHEDULE	
ESTIMATED DATE	ACTIVITY OR MILESTONE
November 2018 – April 2019	Updated Weather Data Files
November 2018 - July 2019	Metric Development
November 2018 - July 2019	Measures Identified and Approved
April 24, 2019	Present the Efficiency Measure Proposal Template for public to submit measures
May 23, 2019	Compliance Metrics and Climate Data workshop
June 12, 2019	Final Metric Workshop
July 2019	Research Version of CBECC Available with new weather data files and updated compliance metric
February 2019 - March 2020	Utility-Sponsored Stakeholder Workshops
March 2020	All Initial CASE/PUBLIC Reports Submitted to Commission

- Full Schedule
https://www.energy.ca.gov/title24/2022standards/prerulemaking/2022_StandardsUpdate_schedule.pdf



Section Reviews

- Things to note before we continue:
 - The Measure Proposal Template includes extensive instructions in yellow highlighted text
 - The Template also includes examples in green highlighted text
 - You'll need to do extensive revisions to the template but don't drop sections - if they are not applicable indicate that



Measure Description

- Provides an overview of the proposed measure
 - History
 - Summary of the Proposed Changes
 - Regulatory Context
 - Compliance and Enforcement Considerations



Market Analysis

- Frequently the weakest part of a Measure Proposal
- Not the traditional market analysis many of you may be familiar with as a consumer
- Driver for this is the Form 399 and Department of Finance's acceptance of it so take a cue from <https://efiling.energy.ca.gov/GetDocument.aspx?tn=223071-2&DocumentContentId=27673>
- **Be explicit / transparent about your assumptions**



Energy Savings

- Arguably 1st or 2nd most critical section
- Estimated by CBECC modeling . . . if at all possible
- Use the “2022 research version” of CBECC
- For electric space or electric water heating measures use the “all electric” baseline



Energy Savings

- For single family residential buildings we have two prototypes
 - 2100 sq ft single story single family prototype
 - 2700 sq ft two story single family prototype



Energy Savings

- For multifamily buildings we have four prototypes
 - Low-Rise Garden (2 story, ~7300 sq ft)
 - Loaded Corridor (3 story, ~39000 sq ft)
 - Mid-Rise Mixed-Use (1 commercial + 4 residential stories, ~113000 sq ft)
 - High-Rise Mixed-Use (1 commercial + 9 residential stories, ~125000 sq ft)



Energy Savings

- For nonresidential buildings we have 14 prototype buildings:
 - Small Office (1 story; ~5K sq ft)
 - Medium Office (3 story; ~53K sq ft)
 - Large Office (12 story + basement; ~500K sq ft)
 - Stand Alone Retail (1 story; ~24K sq ft)
 - Large Retail (1 story; ~240K sq ft)
 - Strip Mall (1 story; ~9K sq ft)
 - Ground Floor of a Mixed Use Bldg. (1 story; ~9K sq ft)
 - Small Restaurant (1 story; ~2.5K sq ft)
 - Small Hotel (4 story; ~42K sq ft)
 - Warehouse (1 story; ~50K sq ft)
 - Small School (1 story; ~24K sq ft)
 - Large School (2 story; ~210K sq ft)
 - Parking Garage for Mixed Use Analysis (5 story; ~53K sq ft)
 - Laboratory (Educational) (3 story; ~53K sq ft)



Life Cycle Cost and Cost Effectiveness

- Also arguably the 1st or 2nd most critical section
- Energy savings feeds directly into this section
- Benefit streams vary based on the type of measure being proposed
- Installation and maintenance costs/savings are included



Life Cycle Cost and Cost Effectiveness

- For the past several cycles we've relied on the Time Dependent Valuation (TDV) of energy to determine cost effectiveness and set the energy budgets of buildings
- For the 2022 Energy Code we will be relying on a revised version of TDV that also emphasizes carbon reduction



Life Cycle Cost and Cost Effectiveness

- Key Pieces are Tables 8 - 10
- Table 8 is a new requirement reflecting Department of Finance's request to provide nominal dollar impacts
- Table 9 provides similar information as Table 4 except that the data is net present value discounted using our 3% discount rate
- Table 10 provides the benefit cost summary and ratio of the measure by climate zone



First Year Statewide Impacts

- Feeds most directly into our Environmental Impact Report
- Statewide first year electricity, natural gas, peak electrical demand reduction, and net present value energy cost savings
- Statewide greenhouse gas emissions reductions
- Statewide water use impacts, materials impacts and other identified non-energy impacts



Proposed Revisions to Code Language

- Section has been slightly updated for the 2022 Energy Code by adding minor clarifications regarding marked up language for all relevant sections of the Alternative Calculation Method (ACM) manual
- Added a related Appendix D requirement



Executive Summary

- This is the first section in the Template and the last section you should complete
- If it doesn't exist in the other sections of the Template it shouldn't be here



References and Other Research

- Be thorough in documenting all of the research that went into the Measure Proposal



Appendices

- Appendix A has been updated and now contains the most recent data available for:
 - FCZ to BSCZ Conversions
 - Existing and Newly Constructed Housing
 - Existing and Newly Constructed Nonresidential square footage
- You can download the Excel version of the data used in this example at <https://www.energy.ca.gov/title24/participation.html>



Appendices

- Appendix B and C have been updated
 - Material in these appendices are relevant to the Environmental Impact Report
 - Both appendices have been updated for consistency with the methodology used in the 2019 EIR
 - Appendix C has also been revised to remove some contradictory provisions regarding calculating embedded energy in water



Appendices

- Appendix D has been added
 - Concerns requirements for a California Building Code Compliance (CBECC) software specification
 - Describe the information needed by the CBECC development team to implement changes to the compliance software



What to Expect Post Measure Submission

- Depends on your timing
- Be prepared to answer questions, show your data and calculations and potentially make changes to your proposal based on staff and public feedback
- **Submission of a measure proposal does not equal acceptance of that proposal**



Questions and Answers

Any questions you don't think of now you can submit later to me at:

Adrian Ownby

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Comments or suggestions for changes to Measure Proposal Template can be made through our online docket visit:

<https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=19-BSTD-03>, which links to the comment page for this docket. Select or enter a proceeding to be taken to the "Add Comment" page. Enter your contact information and a comment title describing the subject of your comment(s). Comments may be included in the "Comment Text" box or attached in a downloadable, searchable Microsoft® Word (.doc, .docx) or Adobe® Acrobat® (.pdf) file. Maximum file size is 10 MB.

