

Measure Information Template – [Topic]

2008 California Building Energy Efficiency Standards

[Proposer and date]

CONTENTS

Purpose	1
Overview.....	1
Methodology	4
Analysis and Results.....	4
Recommendations.....	5
Material for Compliance Manuals.....	5
Bibliography and Other Research.....	5
Appendices	5

Purpose

This document is a report template to be used by researchers who are evaluating proposed changes to the **2008 California Building Energy Efficiency Standards**. This template sets both the format and content of information needed to completely incorporate a measure into the Standards.

A separate report should be prepared for each measure or change proposed for consideration. The document should use the following headings and subheadings, which are explained in this document:

Overview

- Description
- Type of Change
- Energy Benefits
- Non-Energy Benefits
- Environmental Impact
- Technology Measures
- Performance Verification
- Cost Effectiveness
- Analysis Tools
- Relationship to Other Measures

Methodology

Analysis and Results

Recommendations

Material for Compliance Manuals

Bibliography and Other Research

Appendices

Overview

Complete the following table, providing a brief sentence or two for each category of information.

Description	Describe the proposed measure or change and how it would apply to buildings regulated by the California Building Energy Efficiency Standards. Describe the building types or systems where the change/measure would most likely apply. Provide appropriate details. Keep the description brief – just a single paragraph, if possible.
Type of Change	<p>Describe how the measure or change would be addressed in the California Building Energy Efficiency Standards, e.g., is the proposed change likely to be a mandatory measure, prescriptive requirement, or compliance option? Would it change the way that trade-off calculations are made? The following describes the types of changes in more detail:</p> <p>Mandatory Measure The change would add or modify a mandatory measure. (Mandatory measures must be satisfied whether the prescriptive or performance method is used to show compliance.)</p> <p>Prescriptive Requirement The change would add or modify a prescriptive requirement. Prescriptive requirements must be met when using prescriptive compliance. When using performance compliance (computer modeling), prescriptive requirements define a standard design (which sets the energy budget) and are not mandatory.</p> <p>Compliance Option The change would add or modify a new measure to the list of existing compliance options for meeting the Standards using the performance approach.</p> <p>Modeling The change would modify the calculation procedures or assumptions used in making performance calculations. This change would not add a compliance option or a new requirement, but would affect the way that trade-offs are made.</p> <p>Other If the proposed change is not a mandatory or prescriptive requirement, compliance option or modeling assumption or change, please describe what type of change it is.</p> <p>Does the proposed change modify or expand the scope of the Standards? As a result of the change, would the Standards address new issues or provide requirements for systems or equipment, not previously regulated?</p> <p>Identify the Standards documents (Standards, ACM, Manuals, compliance forms, etc.) that would need to be modified in order to implement the proposed change. Briefly describe the nature of the change to each document.</p>

<p>Energy Benefits</p>	<p>Describe the benefits of the change/measure, especially energy savings and electricity peak demand reduction. Describe how Time Dependent Valuation (TDV) would affect benefits attributed to the measure. Reference the “Analysis and Results” section below for detailed calculations.</p>
<p>Non-Energy Benefits</p>	<p>Identify non-energy benefits, such as comfort, reduced maintenance costs, environmental benefits, improved indoor air quality, health and safety benefits, productivity, and/or increased property valuation.</p>
<p>Environmental Impact</p>	<p>Does the change/measure have any potential adverse environmental impacts? Is water consumption increased? Does it have an impact on indoor air quality or otherwise affect indoor environmental quality? Does it affect atmospheric emissions (including ozone depleting gases)? Are there environmental or energy impacts associated with material extraction, manufacture, packaging, shipping to the job site, installation at the job site, or other activities associated with implementing the measure in buildings?</p>
<p>Technology Measures</p>	<p>If the measure requires or encourages a particular technology, address the following, otherwise skip this section.</p> <p>Measure Availability and Cost Identify the principal manufacturers/suppliers who make the measure (product, technology, design strategy or installation technique), and their methods of distribution. Is the measure readily available from multiple providers? Comment on the current ability of the market to supply the measure in response to the possible Standards change and the potential for the market to ramp up to meet demand associated with the possible Standards change. Identify competing products.</p> <p>Useful Life, Persistence and Maintenance Describe the life, frequency of replacement, and maintenance procedures related to the measure. How long will energy savings related to the measure persist? Is persistence related to performance verification, proper maintenance and/or commissioning? If there are issues related to persistence, how can they be addressed? (See Performance Verification below.)</p>
<p>Performance Verification</p>	<p>In this section, identify the type of performance verification or commissioning that is needed in order to assure optimum performance of the measure. For residential buildings, field verification and diagnostic testing are required for many measures. For nonresidential buildings, the parallel is acceptance testing. Here are some questions to ask: Does the technology or design strategy need performance verification or commissioning to insure that it is properly installed and/or performing as designed? How are energy performance, useful life and persistence of savings affected by performance verification or commissioning? What specific performance verification measures or requirements are needed to assure that the measure is properly installed and performing as designed?</p>

<p>Cost Effectiveness</p>	<p>Is the proposed change likely to be cost effective? If the change is a mandatory measure or prescriptive requirement, then it is necessary to demonstrate cost effectiveness. See the “Methodology” and “Analysis and Results” sections below, and present the detailed analysis there. While cost effectiveness justification is not needed for compliance options, it will help make the case for their consideration.</p>
<p>Analysis Tools</p>	<p>What tools would be needed to quantify energy savings and peak electricity demand reductions? Can these benefits be quantified using the current reference method? What enhancements to the reference method are needed, if any? If a measure is proposed as mandatory, then analysis tools are not relevant, since that measure would not be subject to whole building performance trade-offs.</p>
<p>Relationship to Other Measures</p>	<p>Identify any other measures that are impacted by this change. Explain the nature of the relationship.</p>

Methodology

Describe the methodology and approach used to develop the recommendations for the measure.

Typically this section will contain the assumptions used for the analysis of the measure, a description of the base case (current Standards or current practice) and the proposed Standards case.

The content of this and the following section will depend on the type of measure proposed.

- For any measure proposed as mandatory or prescriptive, perform life-cycle cost analysis to demonstrate that the measure is cost effective. The procedures for calculating life-cycle cost effectiveness are documented in *Life-Cycle Cost Methodology, 2008 California Building Energy Efficiency Standards* (available soon). Discuss the measure’s cost effectiveness.
- For measures proposed as compliance options, life-cycle cost analysis is generally not necessary, since the measure is not proposed to be part of the baseline level of Standards stringency. However, cost justification may improve the chances of the measure being approved. In this case, this section may explain how the measure is to be modeled with the reference method.
- If the measure is a modeling change, this section may deal with the process of how the modeling assumption and/or algorithm affects trade-offs and accuracy of trade-offs.

Analysis and Results

Describe the results of the research. What was learned? How is it relevant to the Standards? Results are not all computational. Some results are based on market share of equipment and applicability of measure limited to certain applications. Provide the following information as applicable:

- *Energy and Cost Savings.* Document the energy and cost savings results that are summarized in the overview section of the report.
- *Cost-effectiveness.* Document the cost effectiveness of the measure following the Energy Commission methodology referenced earlier.
- *Modeling Rules or Algorithms.* Explain the recommended modeling rule or algorithm, how it was developed and how it improves the Standards.

Recommendations

Summarize the specific recommendations for changing the Standards and/or the ACM Manuals. This section should have specific recommended language and contain enough detail to develop the draft standard in the next phase of work. Use the language from the relevant 2005 document(s), and use underlining to indicate new language and strikethroughs to show deleted language.

Material for Compliance Manuals

In this section of the research report, provide information that will be needed to develop the Residential and/or Nonresidential Compliance Manuals, including:

- Possible new compliance forms or changes to existing compliance forms.
- Examples of how the proposed Standards change applies to both common and outlying situations. Use the question and answer format used in the 2005 Residential and Nonresidential Compliance Manuals.
- Any explanatory text that should be included in the Manual.
- Any data tables needed to implement the measure.

The goal is for the author of the evaluation report to provide materials that can later be incorporated into the Nonresidential or Residential Compliance Manual. Requiring that the author/researcher think about compliance and enforcement issues will result in an improved recommendation, one that is less ambiguous and more workable.

Bibliography and Other Research

List and describe each of the research studies, reports, and personal communications that provide background for this research. Identify all resources that have been pursued to further this measure. Identify all “experts” that were involved in further developing the change, all research and analysis reports and documents that were reviewed, and all industry standards that were consulted (e.g., ASTM, UL, ASHRAE test procedures, etc.). Include research that is underway that addresses the measure/change. Indicate if data or information will be produced in time to be used in this update of the Standards.

Appendices

If appropriate, use one or more appendices to present lengthy data tables, referenced studies, or other information that would otherwise disrupt the flow of the report.