Subcommittee Summary

Subcommittee	***Cross-Cutting Technical Issues Standing Subcommittee: Measure Complexity***
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Final Deliverable(s)	Make recommendations for simplifying approaches and reducing costs associated with developing measure parameters and savings estimates. The proposal will present methods for including all relevant factors while achieving balance between precision and accuracy and preventing systemic bias.
Commencement Date	February 2015
Conclusion Date	July 2015

I. Subcommittee Objective

The subcommittee will produce a proposal document that:

- Identifies methods for evaluating when increasing precision is likely to lead to false accuracy
- Develop criteria for determining when engineering equations or modeling software should be used for developing ex ante estimates
- Determines how and when to consider factors that may introduce further variability (human behavior, etc.)
- Establishes and acceptable error band for ex ante savings estimates, considering the merits and limitations of relying on point values versus savings ranges
- Determines how to prevent systematic bias towards optimism or conservatism

II. Description of Issues

In recent years the trend in California's ex ante system has been to attempt to increase the precision of savings estimates by relying on a substantial number of measure combinations and the use of very complex building energy modeling software. While the employment of multiple measure combinations and energy modeling, favored by the current DEER, can arguably be said to contain very precise savings estimates, in many cases there is little evidence to show how truly accurate the ex ante

estimates are, and whether the use of many measure combinations supported by energy modeling contributes to increased accuracy over simpler approaches.

While the Cal TF's transparent peer review of energy efficiency estimates strives to improve the balance of false precision and accuracy in savings estimates, some worry that systematic bias will influence the forum's decisions. This concern is valid for both optimism and conservatism bias by any reviewing entity in which recommendations are skewed to the high or low end of a range of possible ex ante estimates. Therefore, the subcommittee's recommendation must propose best practices for preventing such systematic biases.

III. Background information

"Measure complexity" in this context generally refers to a) how many different "measure combinations" should be developed for a measure to account for differences in how a measure is deployed, where it will be installed, and how it will be used, and b) the engineering approach used to generate savings estimates, either through building energy computer simulations or through simpler engineering calculations, and c) the application of additional factors such as HVAC "interactive effects" to more accurately estimate energy savings.

Currently, it is estimated that the CPUC's Database for Energy Efficient Resources (DEER) contains over one million measure combinations, many of which are used by both IOU workpapers, as well as the POU Technical Reference Manual (TRM) that leverages DEER values and IOU workpapers for many of its ex ante estimates. DEER contains 16 CEC climate zones, 23 commercial building types, 5 residential building types, 7 building vintages, and multiple HVAC options. It is important to note that not all DEER measures utilize all of these parameters, and not all IOU and POU measures account for all of these parameters depending on the measure delivery strategy (i.e., upstream, downstream, etc.) and program-targeted sector.

The use of vast numbers of measure combinations presents many challenges to program administrators. Managing multiple measure combinations developed from complex energy simulations introduces a very real risk for human error, making QA/QC efforts difficult and impractical in many cases. Additionally, updating measures which employ hundreds or thousands of measure combinations can be time-consuming, complicated, and expensive. On the program transaction side, the number of measure combinations for a given measure in some cases may not align well with program implementation design or customer information accessibility. Finally, increased complexity makes it more difficult to reproduce values derived from computer models, a multitude of data sources, and/or many assumptions. This subcommittee will consider all of these challenges and develop recommendations to address them.

IV. Schedule

Date	Agenda	Next Steps

	• Overview of abstract • Agreement on Issues • Agreement on Objectives • Agreement on number of meeting to hold • Discussion	Subcommittee members to consider issues discussed, prepare comments for next meeting
	• Identify methods for evaluating precision/accuracy trade off • Discuss mechanics of factoring in human behavior, etc.	Cal TF staff to compile subcommittee conclusions into working proposal draft.
	• Establish and acceptable error band for ex ante savings estimates • Determine how to prevent systematic bias • Finalize proposal	Cal TF staff to draft final proposal.

V. Attachments

Cal TF Cross-Cutting Position on Measure Complexity_ver 1