



California Public Utilities Commission

June 19, 2014

Ex Ante Review Fact Sheet #2

The Commission's Ex Ante Review Process

WHAT IS THE PURPOSE OF EX ANTE REVIEW AND WHEN DOES IT OCCUR?

Purpose:

- The purpose of the Commission's ex ante review process is to evaluate the reasonableness of the IOUs' forecasted energy efficiency program savings.

Ex Ante Timeline:

- For each portfolio, the ex ante review process begins a year or more before the beginning of the program cycle via an update of the [Database of Energy Efficient Resources](#) (referred to as DEER).
- The next step in the ex ante review process is the Commission's review of the utilities' portfolio applications, which include savings based on both the most current version of DEER and any non-DEER workpapers¹ submitted by the utilities in their applications.
- Finally, the Commission also performs ex ante review during the portfolio implementation cycle for custom projects and additional workpapers submitted by utilities during the cycle and any workpapers submitted with the applications that Commission staff did not review in advance of Commission authorization of the portfolio. Any savings changes resulting from the review of these workpapers are only made on a prospective basis.

¹ Non-DEER workpapers are submitted to the PUC by program administrators and implements to cover measures that are not captured in DEER. Potential energy savings are calculated based on best available information and extrapolation from DEER values and methods, as appropriate.



WHY IS THE ACCURACY OF ENERGY EFFICIENCY PROGRAM SAVINGS FORECASTS IMPORTANT?

- Utility portfolio savings estimates are used by the CA Energy Commission (CEC) to help determine the state's electricity demand forecast, which in turn is used by the CPUC in its determination for how much additional conventional generation it authorizes utilities to procure and by the CA Independent System Operator (CAISO) in transmission planning and power flow modeling (which is also an input into the CPUC's determination of the need for additional conventional generation).
- Historically, the CEC and, in turn the CAISO and CPUC, have discounted the utility estimates of energy savings associated with their portfolios significantly (i.e., by as much as 90%) because CEC forecasters had concluded that much of the savings that IOU programs were delivering would happen anyway as a result of market trends, "free ridership," or the anticipated adoption of the program measures into code in the near future. Consequently, this devalued the ratepayer benefits of the EE programs.
- As a result of additional discipline that the CPUC has instituted into the program savings forecasts and evaluation processes, the CEC has agreed to consider a much higher percentage of future program savings in its forecast, and the CAISO has agreed to use the resulting CEC forecast in its transmission planning.

HOW DOES THE EX ANTE REVIEW PROCESS WORK?

Ex Ante Components:

The ex ante review process estimates the potential energy savings for an energy efficient measure before it is installed based on predictions of typical operating conditions and baseline usage. The process is the basis for utilities to claim savings for their energy efficiency portfolios. The ex ante review process covers deemed measures (DEER and non-DEER work papers), meaning measures that have well-known and consistent performance characteristics, and custom measures. Custom measures require site specific calculations and parallel review involving CPUC and program administrators. In the 2010-2012 portfolio cycle, deemed measures made up 60% of the kWh savings and custom measures made up of 40% of the kWh savings. In the same cycle, deemed measures made up 30% of the therms savings and custom measures made up of 70% of the therms savings.

A variety of parameter components are included in ex ante estimates.

- Unit Energy Saving (UES) include kWh, kW, and therm impacts. Savings values are calculated as the baseline performance value minus the measure performance value. Measure impacts may be dependent on environmental, behavior, business type or home or building type, economic conditions, and other variables. HVAC measures are inherently weather sensitive. Additionally, for measures which



change the heating and cooling loads on a building HVAC system, the secondary impacts on the building (HVAC interactive effects) are included into the UES values if significant.

- Measure Impact Shapes are used to distribute the annual kWh and therm impacts across months, days, and hours such that the Commission-adopted avoided costs can be applied to provide a dollar benefit value for the annual savings. A measure impact shape is developed by subtracting the measure time series shape from the baseline time series shape.
- Effective Useful life (EUL) of newly installed measures and Remaining Useful Life (RUL) of existing conditions or currently installed measures are used to calculate lifetime savings, benefits, and costs from the annual values.
- Net-to-Gross Ratio is expressed as the ratio of net expected savings to gross expected savings and is applied to the gross savings to remove the fraction of participants would have taken the action without the program participants would have taken the action without the program as well as add in those who did not participate in the program but were influenced by the program to take an action. During each cycle, the evaluation activity produces updates for many net-to-gross ratios.
- Measure Costs are used along with program costs to establish overall measure cost effectiveness. Depending on the pace of changes in the market, measure cost can be highly volatile.

DEER (Database for Energy Efficient Resources):

Background: DEER provides energy savings estimates for typical energy efficient technologies and measures. The database contains information and data, such as unit energy savings, effective useful life values, and net to gross ratios for measures that are commonly installed in the marketplace.

History: DEER was created at the CEC in the early 1990s and passed on to the utilities. In 2005, the Commission directed the Energy Division oversee research and analysis of the energy efficiency values. The Commission placed the updates to DEER under the management of regulatory staff. The Commission determined that DEER shall be the source of assumptions used to estimate load impacts to the extent possible. In 2012, the adopted the DEER2011 release for use in planning the 2013-14 energy efficiency program cycle.

Resources: The DEER website, www.deeresources.com, contains the database and all supporting documentation. Data can be accessed and downloaded through the database interface Remote Ex Ante Database Interface (READI) on the DEER website. The current version of READI includes the addition of lighting non-DEER work papers in the database.



Update Process: DEER is updated periodically by Commission mandate to reflect and incorporate new codes and standards and best available information from evaluation research. The update process involves stakeholder workshops and comments and scope and technical inputs. Interested parties are welcome to suggest updates to DEER values or methods with relevant documentation.

In 2012, the Commission also determined that the codes and standards that will become effective in 2014 should be used to update the baseline values during the 2013-14 energy efficiency program cycle. DEER2014, the newest version of DEER, was released on November 25, 2013. The update of DEER2011 required by Codes and Standards (C&S) changes that are effective in 2014. The C&S updates include the California Title 20 Appliance Efficiency Regulations, the California Title 24 Building Energy Efficiency Standards, and the United States Code of Federal Regulations.

Non-DEER Work Papers:

Background: Non-DEER workpapers are developed for any measures an IOU offers that are not in the most current version of DEER. Typically, when an IOU identifies a new or updated measure that does not have ex ante values in DEER, the IOU will prepare a workpaper for Commission review. A workpaper combines applicable DEER and new methods to describe the engineering algorithms, methods, and assumptions used to estimate the energy and demand savings that results from the installation of a measure or group of measures. For the 2013-14 portfolio cycle, over 400 workpapers were submitted with the IOUs' applications; these workpapers are referred to as "Phase 1" workpapers. Approximately 40 additional workpapers have been submitted during the 2013-14 portfolio cycle; these workpapers are referred to as "Phase 2" workpapers because they were not submitted with the IOUs applications.

Development and Approval Process: Development, review and approval of non-DEER workpapers has evolved through several decisions. In 2009 the Commission delegated to Energy Division authority to review and approve non-DEER workpapers and required Energy Division to develop a process for submittal, review, and freezing of non-DEER measures. During the 2010-2012 program cycle, an administrative law judge ruling provided a standardized review and approval process for Phase 2 non-DEER workpapers. The guidance decision covering 2013-2014 energy efficiency applications also includes a process for workpaper review that builds upon the process established in the previous decisions.

The process includes:

- A requirement for consideration of the latest evaluation, measurement and verification published studies in the development of ex ante values including energy impacts, cost data, effective useful life, remaining useful life, and net-to-gross ratios.
- If staff is unable to review all Phase 1 workpapers submitted with the initial 2013-2014 workpapers, the un-reviewed workpapers shall receive "interim approval,"



and staff may review any of these in the future, with changes to savings values applied prospectively.

- New non-DEER measures may be added during the program cycle through a Phase 2 workpaper. Staff may assign new non-DEER measures “interim approval” prior to the completion of any necessary research.
- The Phase 2 submission and review process limits the time for staff review of workpapers to 25 days and does not allow the use of the disposition of “conditional approval” that was previously allowed under D.11-07-030. If Commission staff does not review a Phase 2 workpaper within 25 days, the ex ante values in the workpaper are considered approved. As with un-reviewed Phase 1 workpaper, staff may choose to review a Phase 2 workpaper at a later date, with revisions applied prospectively.
- Every six months Commission Staff will develop a draft resolution covering any disputed workpapers that will be subject to a Commission vote.

Commission staff is currently working with the IOUs to streamline the workpaper development and review process. This includes development and implementation of a statewide workpaper template to facilitate tracking and reporting and the potential formation of a Technical Collaborative to develop new workpapers.

Custom Projects:

Background: Custom measures and projects are site-specific energy efficiency projects. Custom projects require unique calculations for each project, as parts of the project do not rely on DEER or workpaper values. For custom measures and projects, the ex ante values cannot be forecasted in advance since the preliminary ex ante values are not known until the project is identified. Final ex ante values are not developed until the project is completed. Commission decision D.11-07-030 establishes a clear process by which ex ante energy savings estimates from custom measures and projects are reviewed.

Development and Evaluation Process: Attachment B of D.11-07-030 details how the investor-owned utilities’ custom project energy savings claims will be reviewed:

- IOUs submit project lists bi-monthly
- Commission staff selects projects for review by next submission (projects not reviewed have a gross realization rate of 90%, which decrements the total estimated savings by 10%).
- For projects for parallel review, IOUs submit complete information, including:
 - Application with all calculations to support baseline and new energy use
 - All tools and assumptions used for calculation
- Commission staff issues project review findings and identifies:



- Calculation methodology Issues
- Baseline Issues
 - Codes
 - Industry standard practice
 - Early retirement vs. Replace on Burnout/Normal Replacement/Capacity Expansion issues
 - Remaining useful life analysis
- Free-ridership issues
- Project incremental cost determination
- Issues with Post-install measurement and verification (M&V)
 - This usually entails an inadequate post install M&V period and occasional lack of pre-installation inspection
- Since July 2013, Commission staff and IOUs have been working collaboratively to clarify project review information needs and to enhance the overall process.

Regulatory Proceeding History of Ex Ante Process:

- [Decision 05-01-055](#) directed the Energy Division to oversee research and analysis of energy efficiency values.
- [Decision 05-04-051](#) determined that DEER shall be the source of assumptions used to estimate load impacts to the extent possible.
- [Decision 12-05-015](#) adopted the DEER2011 release for use in planning the 2013-14 energy efficiency program cycle and covers 2013-14 energy efficiency applications and also includes a process for workpaper review that builds upon the process established in the previous decisions.
- [Rulemaking 09-11-014](#) determined that the codes and standards that will become effective in 2014 should be used to update the baseline values during the 2013-14 energy efficiency program cycle.
- [Decision 09-09-047](#) delegated Energy Division the authority to review and approve non-DEER workpapers and required Energy Division to develop a process for submittal.
- [Application 08-07-021](#) provided a standardized review and approval process for Phase 2 non-DEER workpapers.
- [Decision 11-07-030](#) approves that the custom project ex ante review process is reasonable and should be adopted.

