

Decision 12-05-015 contents related to use of DEER assumptions, methods and values in custom measure/project ex ante value development.

At 341 (Section 17.1.4.1. Custom Project and Measure Review Process):

The utilities are directed to ensure that custom measure and project calculation tools or methods are consistent with the adopted DEER values and assumptions as applicable. The utilities shall bring all custom measure and project calculation tools used in the 2013-2014 ex ante calculations into compliance with the 2011 DEER Update. Commission Staff shall develop direction for the utilities to follow for individual custom projects, which may span the 2010-2012 and 2013-2014 program cycles (and thus multiple DEER versions) when moving through the various application stages, to satisfy our requirement that their ex ante values utilize the current DEER version.

Ordering Paragraphs:

8. The proposed dispositions for issues provided in Attachment A to this Decision are adopted and Commission Staff shall modify the final Database of Energy Efficiency Resources 2011 release to include all changes in those proposed dispositions.

10. Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company **shall use the clarifying direction contained in the adopted dispositions for issues in Attachment A to this Decision in ex ante value filings required by this Commission.**

143. Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company **shall utilize Database for Energy Efficient Resources (DEER) assumptions, methods, and data in the development of non-DEER values whenever appropriate, and shall follow Commission Staff direction relating to the determination of appropriate application of DEER to non-DEER values.**

147. Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company **shall ensure that custom measure and project calculation tools or methods are consistent with the adopted Database of Energy Efficient Resources values and assumptions as applicable.**

Appendix A

6. **Description of Issue:** The absence of **specialty building types** with long operating hours limits the use of DEER to typical buildings and forces **specialty buildings** to have workpapers or be handled via a custom measure.

DEER team proposed disposition of Issue:

At this time only the building types available in DEER may be used for non-DEER workpaper values. does allow the use of the current DEER building types to represent other non-DEER buildings types. However, there is no existing EM&V data to support the claim that the typical building types in DEER should have longer operating hours. However, the utilities may utilize a customized calculation approach in situations where it is desired to use site specific parameters to develop energy savings estimates. **The customized approach should be utilized for activities that target a building with operating parameters that are substantially different than the DEER assumptions. However, it is expected that in these cases there will be a M&V plan for measurement activities to support the operating hour claims during the custom project review process.** Based upon the above discussion, the DEER team does not propose any changes at this time in response to the comment.

At 5

7. **Description of Issue:** A small food store **building type should be added.**

DEER team proposed disposition of Issue:

The DEER team agrees that additional building types should be considered for future updates. At this time, however, only the building types available in DEER may be used. Commission Staff does allow the use of current DEER building types to represent other non-DEER buildings types. For the specific case of *small food store*, it is acceptable to use the DEER Grocery Store building or to use a mixture of building types such as Grocery Store and Small Retail. The utilities may propose equivalent relationships between DEER and non-DEER buildings through the workpaper process. Commission Staff has approved utility proposed relationships in several existing utility workpapers. The DEER team has added a customized building type weight feature to the READI tool to accommodate the utilities desire to utilize a combination of existing DEER building types to represent a typical composite building type within their program activities. The weights used to create a new building type will be subject to review by Commission Staff; once approved, the new weighted building type will be incorporated into the DEER database and the associated energy impacts will be able to be referenced as DEER impacts.

8. **Description of Issue:** The draft DEER does not address measures that are known to be missing from older versions of DEER such as exterior lighting.

DEER team proposed disposition of Issue:

The DEER team has updated the values for residential exterior CFL lighting in the DEER2011 update. There are currently no values for other types of exterior lighting. The utilities must propose values for other types of residential or all non-residential exterior lighting via the submission of non-DEER workpapers.

At 6

10. Description of Issue: The draft DEER does not include **a method for utilizing standardized lighting savings methodologies for technologies not included** in the current draft.

DEER team proposed disposition of Issue:

In response to this comment and request from the utilities, the DEER team has augmented the DEER2011 database and the READI tool to allow DEER lighting savings methodologies to be utilized to calculate savings for technology combinations (measures) not included in the standard set of DEER measures. This new feature can also be utilized in conjunction with the customized weighting feature described earlier. The technologies used to create a new lighting measure will be subject to review by Commission Staff; once approved, the new lighting measure will be incorporated into the DEER database and the associated energy impacts will be able to be referenced as DEER impacts. This new features is described in more detail below.

The energy impacts associated with all DEER2011 lighting measures are scaled based on a single set of energy impacts for each lighting category. The lighting categories are:

- i. Commercial indoor general lighting, including linear fluorescent and HID fixtures
- ii. Commercial indoor CFL general lighting
- iii. Commercial exit lighting
- iv. Residential indoor general lighting
- v. Residential outdoor lighting

Direct energy and demand impacts (the impacts due to the lighting end-use change only, excluding HVAC interactive effects) for each category vary by building type, building vintage (new, existing, or specific vintage years) and building location. HVAC interactive effects are applied to these direct energy impacts to determine the basis for whole-building energy impacts.

The DEER2011 READI database interface tool provides a means to create new lighting measures based on the existing sets of scalable energy impacts (listed above) combined with the appropriate HVAC interactive effects factors. A proposed new measure definition references a proposed-for-installation lighting technology along with a code baseline lighting technology, and in the case of early retirement, a pre-existing lighting technology. This new measure definition will then be applied to the standard DEER energy impacts and HVAC interactive effects to create a proposed “customized” DEER set of energy impacts. Upon review and approval by Commission Staff, a new “custom” DEER measures, based on the adopted DEER method, will be incorporated in the standard measure list and will be able to be referenced as a DEER measure.

The DEER2011 READI database interface tool also allows for weighting the energy impacts associated with existing building types together to create a new set of energy impacts for the custom weighted building type. The weights used to create the new building type will be subject to review by Commission Staff; once approved, the new weighted building type will be incorporated into the DEER database and the associated energy impacts will be able to be referenced as DEER impacts.

Integral LED lamp technologies present a particular challenge for determining ex ante savings in that the READI tool does not include applicable wattage reduction ratios for these technologies. The DEER team is also concerned that the annual operating hours values currently in DEER (either non-CFL or CFL) may not be representative of operating hours for installed integral LED lamps. At this time Commission Staff is reviewing utility 2010-2012 phase 2 workpaper submissions for LED technologies which include proposals for wattage reduction relationships as well as annual hours of use. Commission Staff is working with the utilities to develop acceptable workpaper values for integral LED technologies. Once approved these workpapers shall apply until these technologies are incorporated into the READI database interface tool via the new measure technology feature described above or are added into the DEER database in the next DEER update.

At 9

1. **Description of Issue:** Clarify the correct table of interactive effects and operating hours to be used for non-DEER lighting measures

DEER team proposed disposition of Issue:

This issue is addressing a workbook of Lighting HVAC interactive effects that included a reference to an outdated residential lighting hours-of-use. Though this reference did not affect the HVAC interactive effects values contained in the workbook, the workbook was re-published with the corrected lighting hours-of-use on 12-13-2011 and the link provided on the “DEER2011 for 13-14” page of DEERresources.com. (http://deeresources.com/DEER2011/download/LightingHVACInteractiveEffects_13Dec2011.xls) Note that the final tables of DEER Lighting HVAC interactive effects will be impacted by the disposition of NRDC issue #2 below, such that the spreadsheet listed here will be superseded by the final DEER2011 Update version of HVAC interactive effects factors.

2. **Description of Issue:** Clarify which interactive effects should be used for LED lighting measures

DEER team proposed disposition of Issue:

The DEER HVAC interactive effects tables contain interactive effects factors based on IOU, building type, building location, building vintage and lighting type. The lighting types are:

- Non-CFL (for commercial buildings only)

- Exit fixtures (for commercial buildings only)
- CFL (for both commercial and residential building types)

All LED lighting measures that replace existing incandescent or CFL fixtures are to use the HVAC interactive effects for the CFL lighting type.

All LED lighting measures that replace linear fluorescent or HID lighting fixtures are to use the HVAC interactive effects for the Non-CFL lighting type.

All LED lighting measures that replace existing Exit fixtures are to use the HVAC interactive effects for the Exit Fixture lighting type.

At 10

3. Description of Issue: DEER should specify that the Code/Standard Field value for a lighting measure be used as a base case for a Replace On Burnout/NEW measure

DEER team proposed disposition of Issue:

The DEER2011 database includes measures that can be utilized for the following measure application types: replace on burnout (ROB) and normal replacement (NR) with both these cases usually referred to as the ROB case; new construction (NC) and capacity expansion (CE) with both these cases referred to as the NC case; early retirement (ER); and early retirement for RUL period only (ERRUL). In the READI database interface tool the “supported applications” field for a measure specifies the cases for which energy impacts are available for the measure. Measures that support ROB, NC, and ER application types have impacts for the above code or above standard practice case.

Measures that support ER and ERRUL application types have impacts for the above preexisting case. The above pre-existing impacts apply for the RUL period and the above code or above standard practice impacts apply to the post RUL period.

Measures that only support the ERRUL only have impacts for the above preexisting case since these measures just meet code or standard practice thus do not have savings that can be claimed in the post-RUL period. For ROB and NC measures the above code or above standard practice impacts apply to the entire EUL.

The DEER team, during the investigations related to this comment, noticed that some measures did not have the proper “supported applications” field setting and additionally some measures did not have the required impacts for the above code or above standard practice case. These issues have been corrected and database revisions have been made to include code baselines as described below by lighting technology class.

- There is a group of linear fluorescent and HID measures in the DEER2011 database where measure and code technologies are identical. These measures were incorrectly identified in the database as “New Construction” and “Replace on Burnout” measures. The DEER team has revised and correctly identified these measures as “Early Retirement” with savings only for the RUL period. In addition, T5 lamp measures which had negative above-code savings have been revised to remove the negative savings by correctly setting the code base equal to the measure.

- Exit signs in the DEER2011 database did not have code baselines. Exit signs have been covered by federal standards since January 1, 2006, therefore the DEER team added code baselines for all exit sign measures. These measures have been revised to specify the support of “Early Retirement”, “New Construction” and “Replace on Burnout” measure application types.
- Some linear fluorescent and HID measures in the DEER2011 database were missing code baselines. The DEER team has added code baselines that are consistent with federal and state (Title 20 and Title 24) standards for these measures.
- There are some 4 foot linear fluorescent, 8 foot linear fluorescent and HID fixtures that do not have federal or state code requirements governing the efficiency of the fixture components. Examples are 3-lamp linear fluorescent ballasts, very high output (VHO) linear fluorescent lamps, and metal halide fixtures less than 150 watts. The DEER team has established code baselines for these fixtures using the same criteria as other covered fixtures.

Note that screw-in CFLs and pin-based CFL fixture retrofits are not covered by code at this time so no code baseline was assigned to these lighting technologies in the DEER2011 update. Additionally, with the exception of Exit Signs, LED technologies are not included in the DEER2011 update. The DEER team expects to more closely examine the appropriate baseline to use for these technologies under alternative installation circumstances during the next DEER update process to identify if alternate “supported applications” should be implemented for these technologies.

The DEER2011 READI database interface tool has been revised to allow the development of custom lighting measures as described under SCE item 10 above. Each lighting technology available to use in describing a new measure will include references to an appropriate code baseline technology to be used in both ROB and NC measure cases. Additionally, for early retirement measures, the existing technology case shall be used for the RUL period while the code baseline case shall be used for the period following the RUL.

At 13

5. Description of Issue: DEER (or this update) should specify which CDF value should be used when there is no climate zone and vintage variation.

DEER team proposed disposition of Issue:

The exact nature of this issue is ambiguous, so the DEER team provides three alternate directions to be followed in the appropriate cases as described below.

For the case where the whole-building energy impacts for a DEER measure have no climate zone or vintage variation, there will be only one CDF per building type. In this case the location and building vintage will be listed as “any” in the DEER2011 database. As an example, this is the case for residential outdoor lighting measures in DEER.

For the case where the direct energy impacts (end-use impacts not including the HVAC interactive effects) for a DEER lighting measure have no climate zone or vintage variation, whole-building impacts are accounted for via the DEER Lighting HVAC interactive effects tables. The whole building impact including HVAC interactive effects have location (climate) and building vintage variation. If the location and vintage information are known that information should be used to select the correct HVAC interactive effects factors to apply to the direct end-use impact when calculating the whole building energy impacts. For the situations where the climate zone location or building vintage is not known, the climate zone and/or vintage weighted HVAC demand interactive-effects values can be used. The DEER Lighting HVAC interactive effects tables and DEER2011 database impact tables include a location entry for overall “utility service territory” (the “IOU” location) and for a weighted “Existing” vintage (the “Ex” building vintage). The demand factors based on these selections can be used when the location or vintage is not known.

For custom measures and projects the DEER methods for calculating CDF and HVAC interactive effects are to be utilized. When possible and appropriate, based on similarity of a DEER measure to the custom measure or project, DEER values shall be used. As discussed in SCE item 10 above, the READI database interface tool has capabilities to develop new lighting measures as well as customized weighted building types and measures. **Custom lighting measures and projects shall utilize these DEER methods and values to the extent possible. When an appropriate DEER values is not available, the DEER methods shall be utilized to the extent possible.** The DEER definition for peak demand savings applies to all deemed and custom measures and projects. DEER CDF values should be used as appropriate, however, the DEER peak demand savings definition can be utilized directly when sufficient site metered data for a custom measure or project is available to accurately estimate the demand reduction during the DEER defined demand period using the DEER peak demand calculation method.

The DEER demand impact is defined as the average demand impact, for an installed measure, as would be “seen” at the electric grid level, averaged over the nine hours, between 2PM and 5PM, during the three consecutive weekday period which contains the highest average temperature during the 12PM to 6PM period for those three days. For analysis using the CEC adopted Title 24 weather files, which are used as the DEER reference weather files, the dates that correspond to this definition, are provided in the DEER documentation. DEER methods utilize the kWh consumed during each hour as representing the average demand for that hour. The DEER method then calculates the average of the nine average demand values for the defined peak period hours. When the peak electric demand savings for a custom measure or project is being determined based upon metering during current weather conditions, the metered data would need to be projected into the DEER reference weather files or the metered data would need to be collected during a period which represents the equivalent conditions as the DEER peak definition. A current weather period which represents the equivalent conditions as the DEER peak definition period may not be the same dates as for the DEER reference files.

6. Description of Issue: Since interior residential lighting hours of operation changed, DEER needs to specify what interactive effects should be used to calculate non-DEER residential lighting work papers.

DEER team proposed disposition of Issue:

The DEER team evaluated how the HVAC interactive effects would change based on the new residential lighting impacts hours-of-use. Since the normalized profile of usage did not change significantly, the ratio of whole-building impact to direct impacts (that are referred to as the HVAC interactive effect factors) did not change significantly. For the DEER2011 update, the residential lighting interactive effects have not changed based on lighting hours-of-use.

Other issues relating to custom measures use of DEER

At 64 (regarding HVAC interactive effects factors):

... we affirm our order in D.09-05-037 that HVAC interactive effects are appropriate for incorporation into DEER.¹¹⁰ We also affirm that the inclusion of HVAC interactive effects into DEER places a similar requirement for inclusion of those effects into non-DEER workpapers and custom measures and projects calculations. In its review of utilities' workpapers and custom measures and projects, Commission Staff shall ensure the utilities include these effects when Staff deems that inclusion has a significant impact on the savings estimate.

¹¹⁰ D.09-05-037, Ordering Paragraph 3 denied the utilities' proposal to eliminate HVAC interactive effects from DEER.