CALIFORNIA
TECHNICAL FORUM

Memorandum

To: Interested Cal TF Stakeholders

Re: Ex Ante Abstract and Workpaper Development: CPUC-Approved Values, Methods, Data and Quality Expectations, and Development Guidelines

From: Jenny Roecks, FutEE

Date: August 6, 2014

Introduction

The purpose of this memorandum is to identify the current California Public Utilities Commission (CPUC) Database for Energy Efficiency Resources ("DEER") requirements for workpaper development, and clarify how they must be used so the requirements are clear and can be readily followed. DEER requirements include values, guidelines, methods, tools and data, and will be used in developing California Technical Forum (Cal TF) workpapers. DEER requirements are located in a variety of places and extensive efforts were made to identify as many requirements as possible. We believe this memorandum identifies the majority of DEER requirements, however, due to the distributed nature of the requirements, the requirements identified are not considered comprehensive.

The memorandum describes a systematic process for using the DEER requirements in the development of Cal TF workpaper abstracts and templates.

This memorandum describes:

1. Overview of the Cal TF
2. Background on workpapers, DEER requirements, and Commission policy directives for developing workpapers
3. DEER abstract/workpaper requirements
4. Proposed interpretation of Commission DEER workpaper requirements
5. Guidelines for developing workpapers absent applicable CPUC requirements
6. Checklist for completing Cal TF Abstract/WP Templates

1. The California Technical Forum

The Cal TF will be a collaborative of up to thirty (30) technical experts who use independent professional judgment and a transparent, unbiased, technically rigorous process to review and issue measure-level energy savings, and other measure parameters (such as measure costs and expected useful lives). During its first year, the Cal TF will focus its review on new measure abstracts and workpapers. Once Cal TF has issued a workpaper, investor-owned utilities may submit the workpaper to Commission staff before utilities use the measure in their portfolio. POUs and other may incorporate into the POU Technical Reference Manual (TRM).

The Cal TF will follow and use CPUC staff-approved parameters, methods, data sources, and quality guidelines for Cal TF abstracts and workpapers where they exist and are applicable. However, TF Members will also be asked to identify whether measure parameters based on DEER should be updated or modified if they don't represent values based on "Best Available Data," consistent with CPUC direction.[1] The CPUC has repeatedly and recently emphasized the importance of using best available data in ex ante value development. Since the Cal TF will focus on new measure workpapers, Cal TF may need to develop new information and approaches for new measures.

2. Background

Workpapers

Workpapers are created for new energy efficiency program measures to document the methodologies and assumptions for any ex ante cost-effectiveness parameters that differ from the corresponding DEER measure parameters developed by the CPUC. Workpapers are developed by Program Administrators, such as Investor-Owned Utilities (IOUs) and Community Choice Aggregators, and Implementers, including regional energy networks (RENs) and local governments. Parameters include unit energy savings (UES), net-to-gross (NTG) ratios, effective useful lives (EUL) of the measures, and incremental measure cost (IMC) of measure implementation. Workpapers must comply with CPUC requirements and expectations as they must ultimately be approved by Commission staff for use in reporting of program performance. A "Fact Sheet" with a high-level overview of the ex ante review process can be found on the CPUC website.

[1] In D.10-12-054, the Commission wrote, "it is our expectation that DEER values be updated and set using the best available information."[1] Most recently, in 2011, the Commission wrote that the "use of best available information" was one of three concepts that guided their entire decision on freezing ex ante values for the program cycle. D.01-11-06, November 29, 2001 at 20.

CPUC Staff DEER Requirements and "Best Available Information"

The CPUC's staff oversees the Database for Energy Efficient Resources (DEER) which contains cost-effectiveness parameters and accepted methodologies, tools, and data to be used in developing parameters. In addition to requiring use of DEER parameters, methods, and data, where applicable in workpaper development, CPUC staff requires that workpapers be "high quality." Standards for "high quality" workpapers are found in DEER and elsewhere, as described below.

D.01-11-06 recognized DEER as the preeminent resource for program planning and portfolio management and sought to develop a more user-friendly "tool containing [same] best-available deemed savings values for all regions of the state." Almost a decade later, in D.10-12-054, the Commission wrote, "it is our expectation that DEER values be updated and set using the best available information." Most recently, in 2011, the Commission wrote that the "use of best available information" was one of three concepts that guided their entire decision on freezing ex ante values for the program cycle.[2]

Furthermore, Commission decision 12-05-015 clarifies that "Staff should continue to seek input from parties to determine where and when to use a particular analytical approach."[3] Only by continuously seeking improved data sources and methods can DEER continue to have the best available data as directed by regulators. TF members will help the Commission staff meet the "best available data" standard by providing input from a broader range of experts.

3. CPUC Staff Abstract/Workpaper Requirements

To clarify and organize DEER requirements and instructions so that the Cal TF process participants can understand and correctly comply with DEER requirements up-front to avoid re-work, several documents and resources were consulted, reviewed and summarized. Then, the identified resources and their applicability were reviewed by utility technical staff. Finally, Commission staff have been asked to review and confirm the identified resources and their applicability. The following sources were reviewed:

- Commission Decisions
- Database of Energy Efficient Resources (DEER)[4]
- Workpaper Dispositions – Public
- Workpaper Dispositions – Non-Public

[2] D.11-07-030, at 8.
[3] D.12-05-015, May 18, 2012 footnote 64
[4] www.deeresources.com

- Other Non-Public Sources
- Workpaper Quality Metrics used to calculate the Shareholder Incentive Mechanism[5]

Commission Decisions

Specific directives on WP development from Commission decisions address the following:

1) Using DEER: DEER values and assumptions must be used to the extent possible in non-DEER workpapers.[6] Specific directions are provided for non-DEER UES development in response to IOU requests for clarification, related to non-DEER building types, non-DEER lighting measures.[7]

2) Duty to Collaborate: IOUs and Commission staff must collaborate in applying updated DEER values to non-DEER workpapers.[8]

3) Best Information: Use best and most recent information, including impact evaluation results.[9]

4) WP Quality Metrics: Commission staff scoring metrics containing guidance on WP quality.[10]

DEER

The IOUs are directed by the Commission to use DEER values, methods and data to the extent possible for new EE program measures. Therefore DEER is the primary source of approved resources and methods for workpaper development for "non-DEER" values. Appendix I lists required DEER values, methods, data for abstract and WP development; Appendix II includes a flow chart of resources on the DEER public website to use in workpaper development; and Appendix III lists documentation of the DEER values contained in READI.

Workpaper Dispositions – Public

In addition to the resources posted on the DEER website, dispositions of ED-reviewed workpapers on the DEER website detail approved methodologies for specific

[5] Attachment 7 of Decision (D).13-09-023.
[6] Decision (D).12-05-015 accessed at http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/166830.PDF.
[7] Id., Attachment A
[8] Id.
[9] Id.
[10] (D).13-09-023 (Attachment 7): Decision Adopting Efficiency Savings and Performance Incentive Mechanism.

technologies and contain Commission staff comments and feedback on proposed methodologies that would be informative in new measure development. The posted dispositions provide guidance on how to approach new measures for similar technologies, particularly lighting. Supplementary tools for calculating workpaper parameters are embedded in the lighting disposition documentation that are not referenced in other locations on the DEER website, and other dispositions may have similarly useful embedded tools. Some of these tools may be applicable and recommended for use for other workpaper measures. Tools and guidance in the lighting disposition include:

- Lamp wattage ratios
- Non-DEER building type operating hours
- Wattages for different lighting fixture types (workbook referenced in lighting disposition but not currently publicly accessible)
- Minimum LED lighting recommendations
- Lamp life

Workpaper Dispositions – Non-Public

Workpaper dispositions generated in previous program cycles for measures not currently offered may provide insight to the ED's position on certain methodologies. Such workpaper dispositions include products in the consumer electronics and food service technology categories. Although these workpapers are not public, a workpaper developer should review them prior to developing an abstract for similar measures.[11] Measures addressed in unpublished dispositions include:

- Notebook computers
- Printers
- Desktop computers
- Monitors
- Commercial refrigeration
- Pipe insulation
- Food service equipment

Other Non-Public Sources

Commission staff have provided verbal guidance to IOU staff through regular conference calls for workpapers. In one such instance, Commission staff have indicated that workpapers should report "typical" or "average" values instead of the most "optimistic" values.[12] Further work will be done to cull and summarize verbal staff

[11] Personal communication via e-mail, Katie Wu, CPUC staff, to Annette Beitel, dated 4/17/14.
[12] Communication via conference call from Jeff Hirsch, CPUC Consultant, to CPUC, IOU, NRDC, and Future Energy Enterprises staff on 5/1/14 during Cal TF policy and overview meeting. Jeff Hirsch

guidance on workpaper development by reviewing meetings notes from the past three (3) years of Commission meetings, and this memo updated accordingly.

Workpaper Quality Metrics

The expectations of Commission staff on workpaper quality were interpreted or inferred through a review of a) the ex ante implementation scoring metrics used to evaluate IOU performance in conforming with the ex ante review process[13], and b) IOU workpaper dispositions posted by Commission staff on the DEER website[14]. The disposition feedback from ED generally reflects the failure of the reviewed workpapers to meet several of the benchmarks for ex ante implementation scoring metrics pertaining to workpaper quality. Consequently, the ex ante implementation scoring metrics discussed in this section will provide the basis for pursuing quality in Cal TF workpaper development.

Over half of the ten ex ante implementation scoring metrics described in Attachment 7 of Decision (D).13-09-023 rely on benchmarks relevant to workpaper quality that should be addressed during initial workpaper development. Table 3 identifies these metrics and the corresponding workpaper development action derived from the metric benchmarks to ensure quality. Metrics for processes during or after formal ED workpaper review are irrelevant to initial workpaper development and therefore excluded from Table 3.

It is important to note that "quality" is explicitly addressed by scoring metrics 6a and 6b for "Depth of IOU quality control and technical review of ex ante submittals," however the benchmarks for these metrics do not imply specific actions that can be taken in the workpaper development phase to ensure quality. Other scoring metrics that don't explicitly mention "quality" do imply specific actions during workpaper development that affect the ED's perception of overall adequacy of the workpaper upon formal review, and are considered "quality" metrics in Table 3.

indicated workpaper UES values should reflect the "typical" or "average" usage case and not the most "optimistic".

[13] Attachment 7 of D.13-09-023 can be accessed at http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M076/K775/76775903.PDF

[14] Dispositions are published at www.deeresources.com in the "Non-DEER Work Paper Values 13-14" section.

Table 3. Ex ante implementation scoring metrics related to workpaper quality that can be addressed during workpaper development.

Metric	Workpaper Development Action to Ensure Quality
2	Address all aspects of the Uniform Workpaper Template[15]
3a[16]	Include appropriate program implementation background
3b	Include analysis of how implementation approach influences development of ex ante values
3c	Include all applicable supporting materials
3d	Include an adequate[17] description of assumptions or calculation methods
4	Pursue up-front collaboration on high impact measures with Commission staff prior to formal submission for review
7	Include analysis of recent and relevant existing data and projects that are applicable to workpaper technologies for parameter development that reflects professional care, expertise, and experience
9	Appropriately incorporate DEER assumptions, methods, and values for new or modified existing measures using professional care and expertise
10	Incorporate cumulative experience into workpaper through inclusion of an analysis of previous activities, reviews, and direction. (ED expects IOUs to immediately incorporate disposition guidance into workpapers to be submitted for formal review)

4. Proposed Interpretation of Commission Guidance

The following interpretations of Commission requirements for workpaper development (as described in section 4 of this memorandum) are proposed, specifically for ensuring that "best available data" requirements[18] are met while being mindful of cost-effectiveness. The objective for ex-post evaluation efforts to strike "a reasonable

[15] The Uniform Workpaper Template has been replaced with the "ex ante database specification" per personal communication via e-mail, Katie Wu, CPUC staff, to Jenny Roecks, dated 5/128/14.The specification is posted under "Guidance Documents" at http://eestats.cpuc.ca.gov/StandardTables/GuidanceDocument.aspx

[16] Metric 3 is not split among a – d in Attachment 7, however metric 3 was separated into four subcategories in this document for the purposes of identifying individual workpaper development actions to address quality.

[17] "Adequate" is defined in Attachment 7 such that derivations of underlying assumptions of workpaper are easy to understand by the CPUC reviewer.

[18] D.11-07-030, at 8.

balance of accuracy and precision, cost, and certainty"[19] is a goal that should be applied to ex ante development as well.

Best Available Data

It is not always clear what the "best available data" for measure development should be, given the accessibility, applicability, credibility, and cost of various data sources. Consequently, it is proposed that "best available data" be defined as data, tools, and/or techniques in the public sector that a) are found with relative ease either through internet searches or contacting available consultants or experts, and b) do not require further studies be done of either marketing applications, usage conditions or characteristics, or technology performance or applicability. If any aspects of the data are sufficiently ambiguous, they should not be used for workpaper development. Best available data should include data from other jurisdictions. However, data from other jurisdictions should be carefully scrutinized to ensure data were developed with similar care and rigor as data in California.

Balancing Accuracy, Precision, Cost, and Certainty

Workpaper development costs can vary significantly, while the level of resources devoted to development is not necessarily correlated with the level of accuracy or precision of cost-effectiveness parameters. To address the need for balance, the following framework is proposed:

1) Set Workpaper Development Cost Caps: Workpaper cost caps are recommended depending on the level of effort and analysis required. These cost caps include the costs to perform incremental studies or data analysis to support cost-effectiveness parameter development.
    a. For workpaper measures requiring a) building simulations, b) significant external consultant expertise and time, or c) extensive data manipulation and analysis, first-time workpaper development costs should be capped at $125,000. Subsequent revisions should be capped at $5,000.
    b. For workpaper measures that a) derive from DEER or other easily accessible sources, b) require minimal external consultant expertise and c) do not require extensive data manipulation or analysis, first-time workpaper development cost should be capped at $20,000. Subsequent revisions should be capped at $2,000.

2) Establish Thresholds for Workpaper Value Changes that Trigger Workpaper Revisions: For all workpapers, proposed changes to workpaper measure parameters (UES, IMC, EUL, and NTG) due to updated information will not be

[19] D.09-09-047 at 299.

implemented via a workpaper revision unless the percentage change in value is greater than the level of uncertainty associated with the most impactful assumptions used to calculate the parameter value.

a. For UES values calculated via DOE-2 building simulation, the savings change threshold to trigger a workpaper update is 10% or more, assuming that building simulation outputs have at least 10% uncertainty based on assumptions and inputs.[20]
b. For other UES values as well as EUL, NTG, and IMC values, the threshold level of change to trigger a workpaper update is equal to or greater than the level of uncertainty associated with the study used to inform those values.[21]

5. Guidelines for Developing Measure Parameters Absent Applicable CPUC Requirements

Possible approach:

1. Investigate potential values or workpapers developed by other jurisdictions (start with Consortium for Energy Efficiency, but review whether or not values or workpapers exist in Technical Reference Manuals from other jurisdictions)
2. Determine of EM&V studies exist for similar measures or programs in California or other states
3. Develop proposed engineering calculations
4. Seek Commission staff determination if new workpaper is "sufficiently uncertain" and subject to ex post true-up, which will lead to fewer resources required to development ex ante workpaper.[22]

7. Checklist for Completing Cal TF Abstract/WP Templates

These checklist describes steps to take in new abstract/workpaper development for the Cal TF. The preceding section outlines resources available for workpaper development as well as quality issues to consider in the course of development.

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[20] Texas A&M Energy Systems Laboratory, Literature Review of Uncertainty of Analysis (DOE-2 Program) at 3, accessed at http://repository.tamu.edu/bitstream/handle/1969.1/2072/ESL-TR-04-11-01.pdf?sequence=1

[21] For example, if a UES value was determined in a study based on an analysis with +/- 10% uncertainty, proposed changes to the workpaper UES value must be 10% or greater to trigger a workpaper update. Changes in values less than 10% in this case would be considered within the level of existing uncertainty. Note that a "confidence interval" of 90% in statistical applications indicates that there is a 10% probability that the expected value does not fall within the predicted range. It is not an indication of the percentage of variability for a given value.

[22] Decision (D). 13-09-023 at 51, accessed at http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M076/K775/76775903.PDF

1. Discuss measure implementation approach with the program manager. Understand the high-level logic of the program and how this will influence your selections for key parameters (IMC, EUL, NTG, UES).
    a. (Incremental) measure cost
        - Who bears the cost of the energy efficient upgrade?
        - Who receives the rebate?
        - Is the measure an early replacement or a replace on burnout? If the former, how do you know and how will you verify it?
    b. Effective useful life
        - Is the measure and early replacement or a replace on burnout?
        - Is the product installed for the duration of its useful life, and does it function at a uniform energy consumption level for the duration of its life?
    c. NTG
        - Is the measure upstream, midstream, or downstream?
    d. UES
        - Is the measure early replacement or replace on burnout?
            - Does the product function at a uniform energy consumption level for the duration of its life?

2. Collaborate with other IOUs or PAs that may be offering the same measure based on measure implementation in part (1) to create one statewide workpaper.

3. Research applicable DEER values, methods, and data using Flow Chart 1: determining whether applicable DEER value or tool exists.

4. Contact Commission staff if questions exist about applicable existing values, methods, tools, and data via email or conference call.
    a. Determine applicability of GSIA values in READi support table

5. Research relevant recent (past three years) EM&V studies in California and outside of California (for jurisdictions that produce high-quality EM&V). Consult with EM&V team to understand how and whether EM&V study is applicable.
    a. Search calmac.org under searchable database option. Enter the name of the workpaper's technology category as in the "search text" box (ex: "televisions"), and filter search by "energy efficiency" under publication type and "impact evaluation" under categories.

6. Consult the California POU TRM and research if there are workpapers or values in jurisdictions that produce and regularly update a high-quality Technical Reference Manual.

7. Review DOE's Uniform Method's Project (UMP) website to see if the UMP has developed an approach for the measure.[23]

8. Identify recent custom projects to see if any information is useful for determination of early retirement baseline. Consult Commission documentation on establishing a "preponderance of evidence" for early retirement measures.

9. Conduct additional research, as necessary, to inform methodology, assumptions, and calculations.
    a. Department of Energy
    b. ENERGY STAR product list
    c. Consortium for Energy Efficiency
    d. LBNL, NRDC, PNNL
    e. EPRI

10. Complete Cal TF Abstract. Submit to Cal TF staff, who will confirm abstract is complete and correct, conforms to Cal TF requirements and guidelines, and seeks comment from Commission staff and approval by TF members.

11. Cal TF staff will form subcommittee to review and comment on the abstract.

12. Once Cal TF issues abstract, assigned WP developers will develop WP consistent with abstract.

13. Cal TF staff may convene a Cal TF WP subcommittee to provide input on technical issues that emerge during WP development.

14. Once WP developer completes WP, submits to Cal TF staff.

15. Cal TF staff will review WP to ensure all information is included in workpaper documentation, including:
    a. Program implementation background
    b. Analysis of how implementation approach influences development of ex ante values
    c. Clear and easy-to-follow description of assumptions or calculation methods
    d. Explanation of use of DEER values and assumptions
    e. Analysis of recent and relevant data and projects ("best available data")

[23] http://energy.gov/eere/about-us/initiatives-and-projects/uniform-methods-project-determining-energy-efficiency-program-savings

f. Analysis of relevant information from impact evaluations and workpaper dispositions
g. All supporting materials
h. Conforms to Cal TF-approved abstract and any Cal TF WP development guidelines.

Attachments:

1. Cal TF Abstract Template

2. Cal TF Workpaper Template

3. Cal TF “Swim Lane” Process Flow Chart

5. Cal TF DEER Resources Flow Chart: Determining whether applicable DEER value/methods/tools/data exist (Appendix II)

Appendix I: DEER Values, Methods, Tools and Data for Abstract/WP Development

Table 1. Required DEER Values, Methods, Data for Abstract/WP Development

DEER Website Resource	Location	File Type	Purpose
Ex ante database specification	CPUC website[24]	Access Database	List of parameters to be submitted to ED for a new workpaper
READI	DEER 2014 Code Update	Remote Database	Remote database tool containing ex ante cost effectiveness parameter data for 1.2 million measure combinations, gross savings adjustment (GSIA) values
Lighting HVAC Effects Workbook	DEER 2014 Code Update	Excel	Interactive effects factors for use in all measures for products located in conditioned spaces, residential and nonresidential lighting operating hours, coincident diversity factors
Effective Useful Life (EUL) and RUL tables	DEER 2014 Code Update	Excel	EUL values for all technologies
Net-to-Gross (NTG) table	DEER 2011 for 13-14	Excel	NTG values for all technologies (includes defaults)
Cost Tables	DEER 2011 for 13-14	Excel	Measure costs for selected technologies
"Requirements for Selection of Effective Useful Life for Lighting Measures"	DEER 2014 Code Update	PDF	Guidance on how to choose most appropriate EUL and RUL for lighting technologies
Building weights by HVAC type, vintage, and IOU territory	DEER 2014 Code Update	Excel	Building weights used in DEER2014

[24] Posted under "Guidance Documents" at http://eestats.cpuc.ca.gov/StandardTables/GuidanceDocument.aspx

Appendix II: DEER Resources Flow Chart

Draft DEER
Resources Flow Cha

Appendix III: DEER Website Documentation of DEER Values, Methods, Tools

The DEER documentation is also consolidated under the "DEER Master Documentation" on the CPUC Ex Ante Review website.[25]

Table 2: Documentation for DEER Values, Methods, Data

Documentation	Location	File type	Purpose
2014 Update Documentation	DEER 2014 Code Update	PDF	Overview of changes to DEER due to Codes and Standards update for 13-14 cycle
DEER 2011 Update Report	DEER 2011 for 13-14	PDF	Documentation of parameter updates to DEER to reflect CPUC 2006-2008 impact evaluations and recent data on market conditions. Includes lighting operating hours by space type.
DEER 2011 Update Report Appendices	DEER 2011 for 13-14	PDF	Details DEER Measure database updates and status of 2005 DEER measures – if they were updated in DEER2014 or now reside in workpapers. Overview of nonres and res HVAC EFLH and CF calculations, NTG methods for nonres and res HVAC, nonres refrigeration, nonres and res water heating, res appliances. Contains lighting operating hours and coincident diversity factors
DEER 2011 Update Workbooks	DEER 2011 for 13-14	Excel	Excel workbooks which show data used in DEER modeling described in Update documentation

[25] "DEER Master Documentation" link via http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/exantereiew.htm

Appendix IV: Examples of "Low-Quality" Workpapers from WP Dispositions

Workpaper Disposition Feedback

A review of the IOU workpaper dispositions posted on the deeresources.com website revealed several categories of feedback from the ED on the quality of the IOU workpapers as shown in Table 3. Commission staff also frequently commented on the lack of uniformity in unit energy saving (UES) values among IOU workpapers, however this feedback is not considered an issue of "quality" but rather an issue of standardization. Quality issues identified in the workpaper dispositions, such as misapplication of DEER and lack of due diligence to develop and support parameter assumptions, are addressed in the ex ante implementation scoring metrics.

Table 3. Common feedback categories from ED on IOU workpaper quality and relevant ex ante implementation scoring metric pertaining to workpaper quality from Table 2.

Quality Issue	Example	Relevant Quality Metric
Incorrect application of DEER for measure with a perfect parameter match	Out-of-date NTG used for upstream CFLs.	9
Failure to apply, or incorrect application of, DEER for measures with an imperfect parameter match	Incorrect application of DEER weighted commercial building hours based on limited building types for lighting occupancy sensors; Commission staff recommended use of supplementary resource for more building types	9 and 4
Disagreement on subjective methodologies or assumptions with no clear precedent or supporting literature	Lighting Disposition: Disagreement on determination of base and measure wattages used for UES calculations for lighting measure based on wattage ranges (i.e., measure "LED Fixture A Lamp, >10 Watts")	4
Lack of evidence to support assumptions for calculating UES (operating hours, baseline categorization or quantification, etc.)	Early retirement was claimed for some linear fluorescent fixtures (an uncommon occurrence in downstream applications) without evidence such as convincing a customer to retrofit prior to burnout or pictures of operational equipment immediately prior to replacement.	7
Lack of due diligence to develop non-DEER workpaper parameters	Domestic hot water fixture measures did not use field research data from other IOUs to calculate low flow showerhead	7

using best available data sources	savings but rather used outdated DEER measures	

In some cases, misapplications of DEER parameters were avoidable for measures with a clear match in DEER. For example, an out-of-date NTG value was used for upstream CFL measures in one workpaper instead of the more recent DEER2014 value. In another case, DEER was used for appropriate measures but incomplete DEER data let to Commission staff recommending supplementary analysis for those measures. In this case, the workpaper for lighting occupancy sensor measures used commercial building weighted operating hours from DEER2014 for which DEER excluded some building types. Commission staff recommended the building weights be modified to include missing building type hours from a supplemental tool developed by ED but not publicly available or referenced on the DEER website. The lack of availability of this source is an indication that ED expectations may be difficult to meet during workpaper development without knowledge of, and access to, to best available information or recommended data sources.