DEER Requirements for Development of Ex Ante Savings

CALIFORNIA
TECHNICAL FORUM

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Overview

- CPUC Staff Directive to Cal TF
  - Follow DEER requirements in WP development process
- Where are DEER requirements found?
- What are the DEER requirements?
- Next Steps
- Conclusion

DEER Requirements: Where?

- Where are DEER requirements located?
  - Directory of DEER website material created by CPUC Staff
  - DEER website
    - READi tool: database of ex ante values for select measures
    - Various workbooks and tools (cost, EUL, interactive effects, etc.)
  - Workpaper dispositions – some posted publicly, some not
  - Ex ante implementation scoring metrics / evaluation criteria for workpaper development
- IOU tech leads often don't know if they have correctly identified applicable DEER requirements in WP development

DEER Requirements: Where?

- Cal TF Staff efforts to memorialize location of DEER requirements
  - Extensively researched and documented locations of DEER requirements and guidance in memorandum
  - Created flow charts to identify what requirements apply to different measures, and in what order
  - Consulted with IOU tech leads and CPUC staff
  - May not have successfully identified all DEER requirements, despite considerable effort
- Conclusion: To confirm whether DEER requirements have been identified, must get CPUC Staff input early in process.

DEER Requirements: What?

- Lots of work went into developing DEER values, but limited documentation methods, and assumptions
- DEER values not linked to sources
- Conclusion: Once DEER requirements are identified, need to consult with CPUC Staff early in process to understand how they should be applied and whether there is any other prior work that should be considered.

Next Steps

- Cal TF – Staff Coordination
  - Staff has agreed to provide early feedback on DEER requirements and prior DEER work
- 2015
  - Important to document DEER requirements, accepted DEER methods, data, and assumptions, by measure
  - Good work for graduate intern?
    - Considerable level of effort
  - Staff will need to review each section to determine whether information is correctly captured and memorialized

Conclusion

Clear, complete manual of DEER requirements, including accepted sources of data, methods and assumptions, will considerably streamline and improve WP development process.

Appendix: Clothes Washer Example MEF 2.4 (2011 CEE Tier 3)

- DEER Website

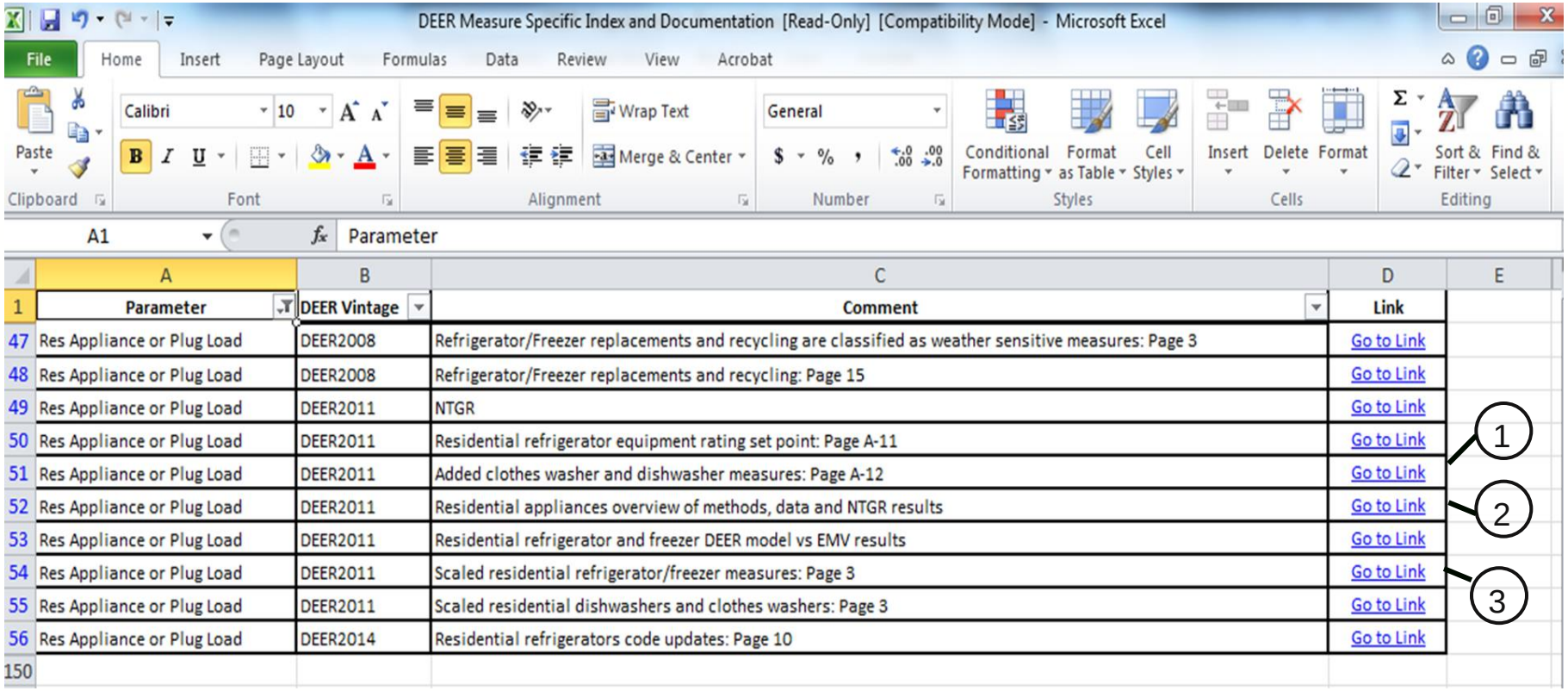
DEER 2014	DEER 2011 for 13-14	DEER 2008 for 09-11
✓ Interactive effects factors ? EUL for CEE Tiers 1, 2, and 3 (what CEE year?) x READi x Update Documentation	✓ NTG for 10%>ENERGY STAR (MEF 2.0) ? IMC for CEE Tier 3 (CEE Tier 3 defined as MEF 2.2) ? Support document workbook (methodology & relevance unclear) x Update Report (NTG only)	? Summary of Energy Analysis changes from 2005 to 2008 (relevant methodology?)

- Existing clothes washer workpaper: no disposition
- Ex ante scoring metrics: general expectations

Appendix: Clothes Washer Example

DEER Master Documentation, CPUC Ex Ante Review website

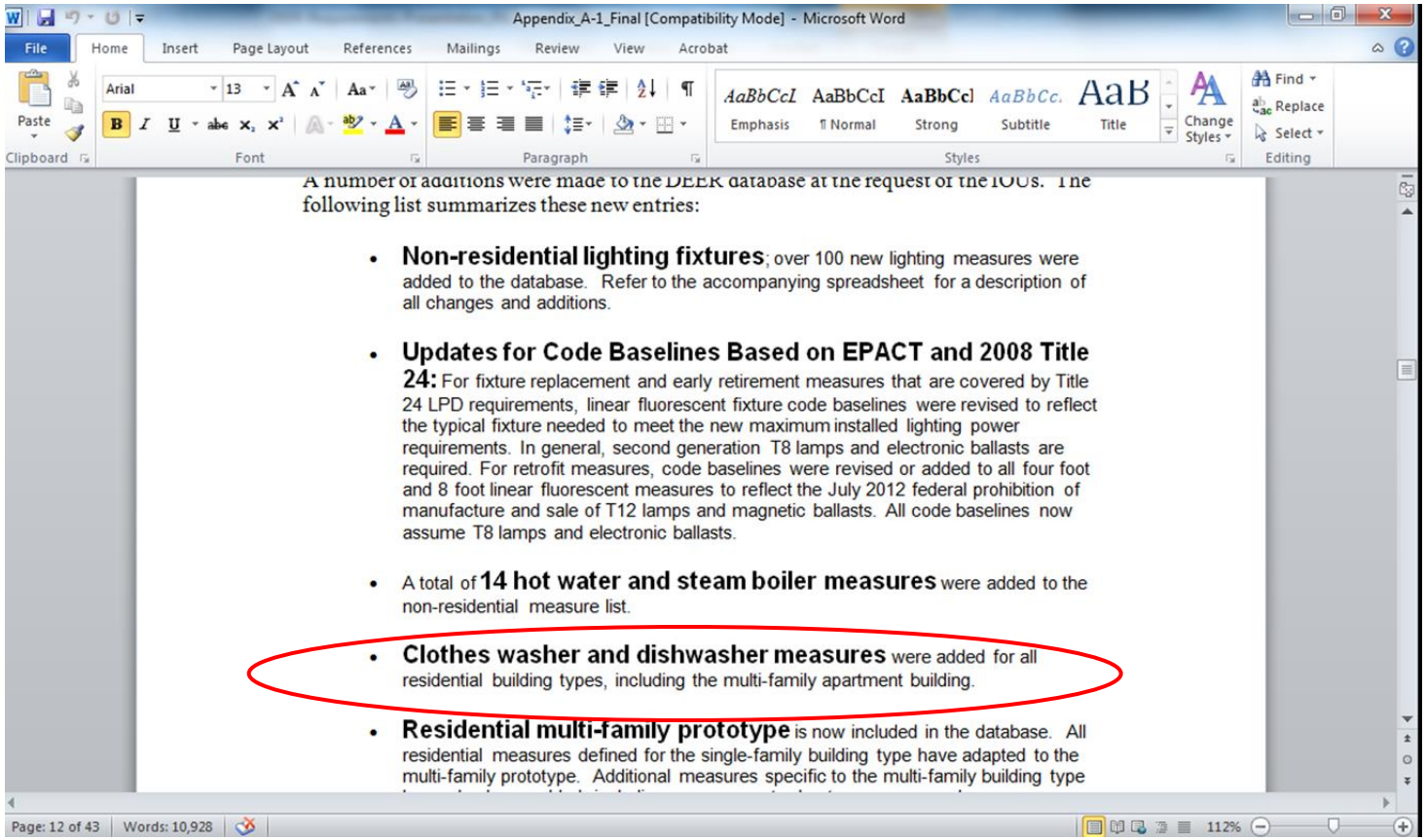
http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/exantereiew.htm



	A	B	C	D	E
1	Parameter	DEER Vintage	Comment	Link	
47	Res Appliance or Plug Load	DEER2008	Refrigerator/Freezer replacements and recycling are classified as weather sensitive measures: Page 3	Go to Link	
48	Res Appliance or Plug Load	DEER2008	Refrigerator/Freezer replacements and recycling: Page 15	Go to Link	
49	Res Appliance or Plug Load	DEER2011	NTGR	Go to Link	
50	Res Appliance or Plug Load	DEER2011	Residential refrigerator equipment rating set point: Page A-11	Go to Link	
51	Res Appliance or Plug Load	DEER2011	Added clothes washer and dishwasher measures: Page A-12	Go to Link	
52	Res Appliance or Plug Load	DEER2011	Residential appliances overview of methods, data and NTGR results	Go to Link	
53	Res Appliance or Plug Load	DEER2011	Residential refrigerator and freezer DEER model vs EMV results	Go to Link	
54	Res Appliance or Plug Load	DEER2011	Scaled residential refrigerator/freezer measures: Page 3	Go to Link	
55	Res Appliance or Plug Load	DEER2011	Scaled residential dishwashers and clothes washers: Page 3	Go to Link	
56	Res Appliance or Plug Load	DEER2014	Residential refrigerators code updates: Page 10	Go to Link	
150					

Appendix: Clothes Washer Example

1. "Added clothes washer and dishwasher measures: Page A-12" linked to 2011 DEER Update Documentation, Appendix A-1. Clothes washer measures were added to DEER at one point but have since been removed and are not included in 2011 or 2014 DEER searchable databases.



A number of additions were made to the DEER database at the request of the IOUs. The following list summarizes these new entries:

- **Non-residential lighting fixtures**; over 100 new lighting measures were added to the database. Refer to the accompanying spreadsheet for a description of all changes and additions.
- **Updates for Code Baselines Based on EPACT and 2008 Title 24:** For fixture replacement and early retirement measures that are covered by Title 24 LPD requirements, linear fluorescent fixture code baselines were revised to reflect the typical fixture needed to meet the new maximum installed lighting power requirements. In general, second generation T8 lamps and electronic ballasts are required. For retrofit measures, code baselines were revised or added to all four foot and 8 foot linear fluorescent measures to reflect the July 2012 federal prohibition of manufacture and sale of T12 lamps and magnetic ballasts. All code baselines now assume T8 lamps and electronic ballasts.
- A total of **14 hot water and steam boiler measures** were added to the non-residential measure list.
- **Clothes washer and dishwasher measures** were added for all residential building types, including the multi-family apartment building.
- **Residential multi-family prototype** is now included in the database. All residential measures defined for the single-family building type have adapted to the multi-family prototype. Additional measures specific to the multi-family building type

Appendix: Clothes Washer Example

2. "Residential appliances overview of methods, data and NTGR results" linked to 2011 DEER Update Documentation, Appendix A-7. Source is an overview of methods and data for deriving clothes washer NTGR.

Database for Energy Efficiency Resources: 2011 Update

Appendix A-7

Residential Appliances

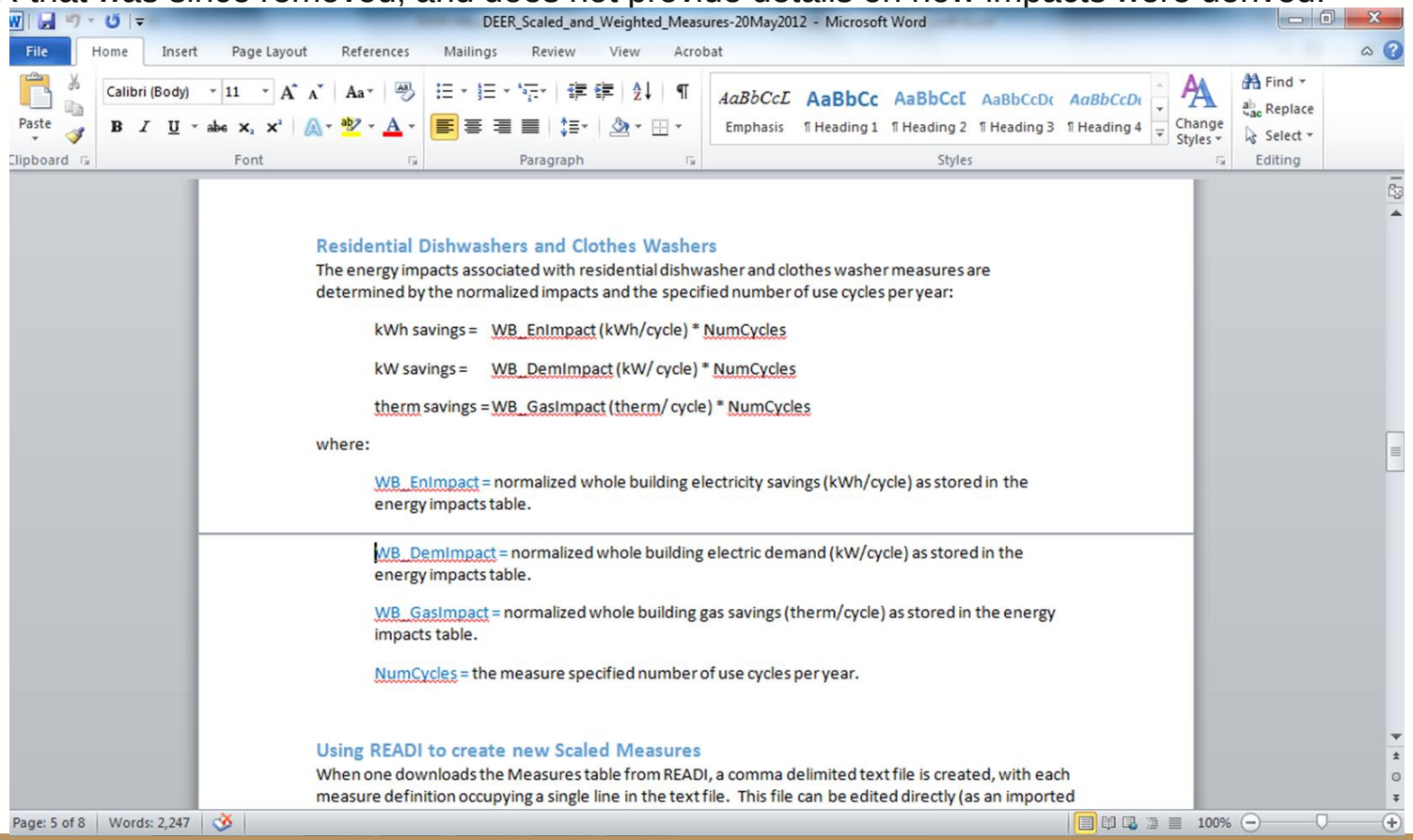
Table A-7-1: Overview of Methods, Data and NTGR Results by Method

DEER Updates Technology Group 9 – Residential Appliances						
EEM Categories	**Current NTGRs**	**Program Delivery Approach**	**Data Sources**	**NTGRs from Data Sources**	**Methods Used in Data Sources to Estimate the NTGR Values**	**Proposed Approaches to Estimate "Forward-Looking" NTGR Values**
Clothes Washer	CW>1.75MEF = 0.81	Downstream Prescriptive	EM&V of the CPUC Residential Retrofit High Impact Measure Evaluation Report and Appendices, February 8,	0608:NTGR[1] (Therms) PG&E2000 0.31 SCG3517 0.29	0405 Itron October 2007: All Residential NTGR (SR) = -0.57; NTGR (DC) – 0.81 Used both the self-report and discrete choice methods for estimating CW NTGR (a) The self-report analysis used participant and non-participant data - (b) A two-stage discrete choice method modeled the probability of purchasing high-efficiency measure as the product of the probability that the measure is purchased and the probability that the high-efficiency measure is selected SR: analyzed FR from four separate ways in which the Program may influence a customer to adopt an	Both the 0405 and the 0608 evaluations used similar self-report multi-step approach in calculating the NTGR, with the latest study using larger sample sizes but no non-participants data to corroborate the results. In addition, the 0608 self-reported NTGR values are significantly lower than the DEER (0405 study) values by 50%-52%.

Page: 1 of 4 | Words: 877 | 105%

Appendix: Clothes Washer Example

3. "Scaled residential dishwashers and clothes washers: Page 3" linked to a document titled "DEER_Scaled_and_Weighted_Measures-20May2012.doc". This appears to describe the measure in DEER that was since removed, and does not provide details on how impacts were derived.



DEER_Scaled_and_Weighted_Measures-20May2012 - Microsoft Word

Residential Dishwashers and Clothes Washers

The energy impacts associated with residential dishwasher and clothes washer measures are determined by the normalized impacts and the specified number of use cycles per year:

kWh savings = WB_EnImpact (kWh/cycle) * NumCycles

kW savings = WB_DemImpact (kW/ cycle) * NumCycles

therm savings = WB_GasImpact (therm/ cycle) * NumCycles

where:

WB_EnImpact = normalized whole building electricity savings (kWh/cycle) as stored in the energy impacts table.

WB_DemImpact = normalized whole building electric demand (kW/cycle) as stored in the energy impacts table.

WB_GasImpact = normalized whole building gas savings (therm/cycle) as stored in the energy impacts table.

NumCycles = the measure specified number of use cycles per year.

Using READI to create new Scaled Measures

When one downloads the Measures table from READI, a comma delimited text file is created, with each measure definition occupying a single line in the text file. This file can be edited directly (as an imported

Appendix: Clothes Washer Example

The directory sorts through files but locating information is still difficult.

deeresources.com/index.php/deer2011-for-13-14

DEER2008 for 06-07 Updates

DEER2005

ESPI - EAR Performance Scoring

Custom EAR Guidance Docs

Guidance for creating and claiming against Ex Ante Data

Custom Project Disposition Abstracts

Login Form

Hi DEER,

Log out

The 17 November 2011 ALJ ruling in R.09-11-014 entered the contents of the draft 2011 DEER version 4.00 update into the official record via its Exhibit B. On May 10th 2012 the CPUC voted out the "Decision Providing Guidance on 2013-2014 Energy Efficiency Porfolios and 2012 Marketing, Education and Outreach". The 2013-2014 Guidance Decision directed that Energy Division make a number of changes to the draft 2011 DEER version 4.0 and adopted DEER 2011 including the directed changes, for use by the California Investor Owned Utilities in developing their 2013-2014 Energy Efficiency Portfolio applications.

The changes directed by the 2013-2014 Guidance Decision are detailed in Section 4.3 DEER 2011 Update, Several Ordering Paragraphs (see highlighted OP's 8-11, 14-15 and 44), and Attachment A. The 2011 DEER 4.01 available on this site is to fully reflect the changes to the the draft 2011 DEER version 4.00 ordered by the 2013-2014 Guidance Decision.

DEER2011 Update Documentation

DEER 2011 Update Report and the DEER2011 Update Report Appendices A report describing the DEER2011 value changes and additions relative to DEER2008 (PDF files posted 8 November 2011 - an update to reflect 2013-2014 Guidance Decision being finalized)

DEER 2011 Report Appendix A - Summary of changes to the measure content, modeling methods, and model input parameters (PDF file updated 16 May 2012)

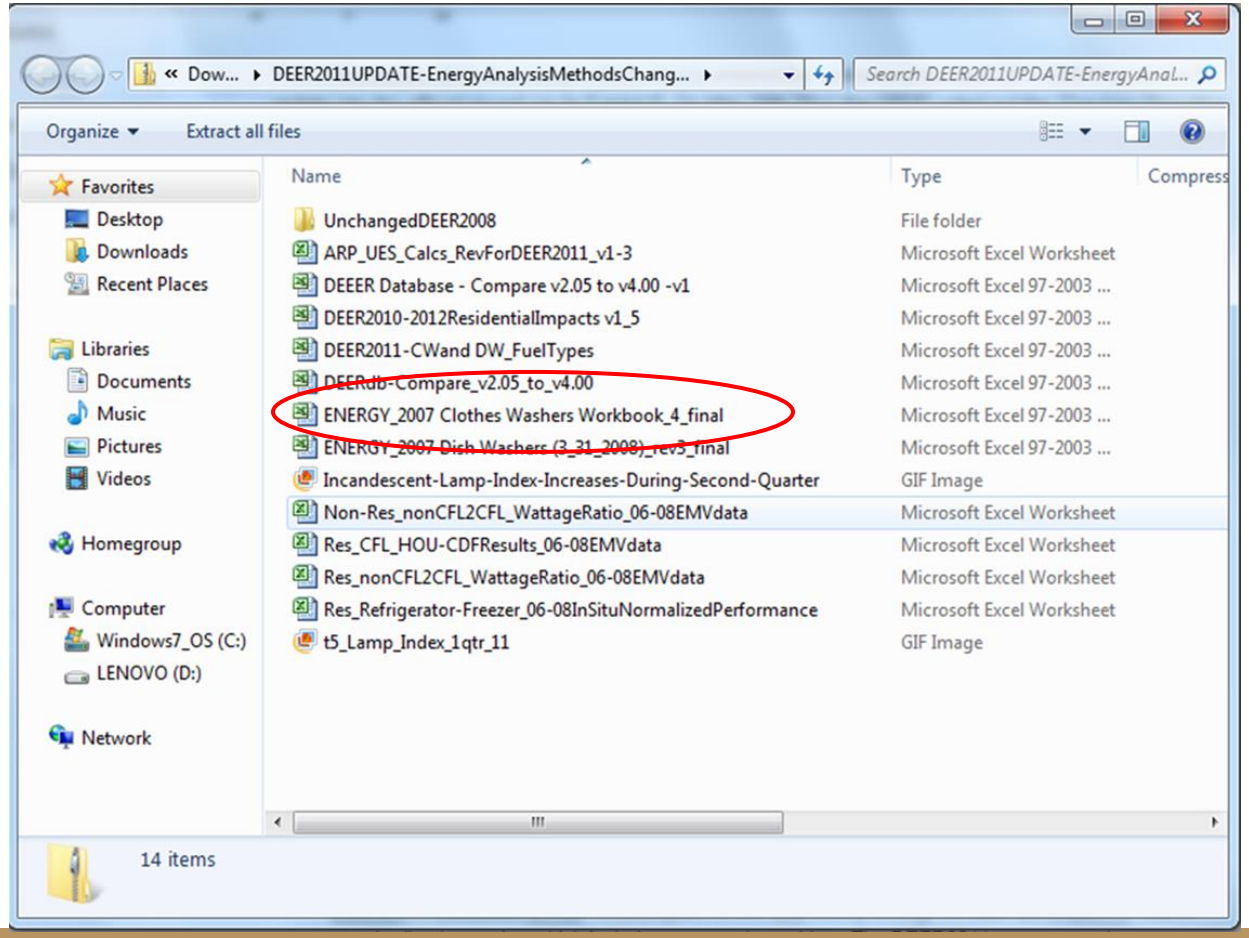
The documents below contain a description of changes and additions to the DEER2008 (version 2.05) that are contained in this DEER2011 (version 4.01).

Support documents for the above summary of content, methods and parameters document Several Excel workbooks which show the data used in the DEER modeling activity. (a zip archive updated 16 May 2012)

DEER2011 Database format A description of the data format Energy Division developed for use in standardized reporting which includes ex-ante data tables. The DEER2011 measure and energy

Appendix: Clothes Washer Example

Clicking on “supporting documents for the above summary of contents, methods, and parameters”, a list of files is available to view and select.



Appendix: Clothes Washer Example

The supporting files contain an Excel file titled "ENERGY_2007 Clothes Washers Workbook_4_final.xls" that can also be found in a sub-folder within the Master Documentation files. The methods are not explained an it's unclear how this analysis was used in DEER, or if it is still relevant.

ENERGY_2007 Clothes Washers Workbook_4_final [Compatibility Mode] - Microsoft Excel

A1: Regression of Energy Consumption based on Capacity and MEF

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Regression of Energy Consumption based on Capacity and MEF														
2	Variables	Capacity	MEF												
3	t-values	15.79000985	18.015388	1.96480722											
4	mn, mn-1,b	54.23406852	-164.1980905	363.599958			correlations								
5	sen,sen-1,seb	3.43470771	9.48209558	20.1827437			-0.29194								
6	r2,sey	0.45583199	46.8056288	#N/A			0.036551			#yes	475.0	475.0	441.0	333.0	
7	F, dF	205.647433	491	#N/A		average WF				#no	12.0	10.0	20.0	5.0	
8	ssreg, ssresid	901051.173	1075666.54	#N/A		4.77			average for input		yes	yes	yes	yes	
9	MEF	Cap	Energy Consumpti	WF	Retail Y	Cost	Cost Sourc	Model Numbe	Manufacturer	Water Usage (gal/yea	Electronic Controls (Y/N)	Temperature Contro	Internal Water Heate	Water Fill Sensor (Y/N)	Ann Elect Cost (
10	2.2	1.6	127	6.9	0	1449	www.ajma	W6461	asko	5486	yes	yes	yes	yes	
11	1.8	1.6	129	3.6	0	1169	www.asko	W6222	asko	2766	yes	yes	yes	yes	
12	1.8	1.6	129	3.6	0	1229	http://www	W6222T	ASKO	0	Yes	Yes	Yes	0	
13	1.8	1.6	129	3.6	0	1299	http://www	W6222T	ASKO	0	Yes	Yes	Yes	0	
14	1.8	1.6	129	3.6	1	1079		W6222T	ASKO	0	Yes	Yes	Yes	0	
15	1.8	1.6	170	5.9	0	749	www.absol	MAH2400	maytag	4701	yes	yes	no	yes	
16	1.8	1.6	170	5.9	0	689	www.ajma	MAH2400	maytag	4701	yes	yes	no	yes	
17	1.8	1.6	170	5.9	0	680	www.amro	MAH2400	maytag	4701	yes	yes	no	yes	
18	1.8	1.6	170	5.9	0	699	www.home	MAH2400	maytag	4701	yes	yes	no	yes	
19	1.8	1.6	170	5.9	0	625	www.rainb	MAH2400	maytag	4701	yes	yes	no	yes	
20	1.8	1.6	170	5.9	0	700	www.sears	MAH2400	maytag	4701	yes	yes	no	yes	
21	2.08	1.6	138	5.73	0	1197	www.abes	WFR2460	Axxis	0	Yes	Yes	Yes	Yes	

2007 Workbook | Climate Zones_Results m1 | Clean_RAW | ENERGY analysis & weighting | Elect. $ per yr Regression | Gas $ per year Regression | Annual C