eTRM Launch Plan

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CAL TF STAFF

SEPTEMBER 2019

Overview

- Summary of Benefits (Why eTRM?)
- Regulatory Context
- Regulatory Compliance
- Launch Plan: Key Milestones
- Launch Plan: Key Elements
- Benefits to CPUC
- Benefits to Third-party Implementers (3Ps)
- Responses to Staff Questions
- Open Issue: Ownership vs Control
- Supplemental Information

Summary of Benefits (Why eTRM?)

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Centralized

- The eTRM is a single repository of all active deemed measures for the State of California
- Measures in the eTRM are available statewide, addressing all CZs
- Measures are available for IOU & POU portfolios (some are only POU approved and flagged as such)
- The eTRM houses all measure values, descriptions, and documentation linked to values they support in a cohesive way so “non-power users” can use it successfully

Modernized

- The eTRM is an online relational database and does not require user to download software to use
- Shared values are updated in a single place then cascaded to all places in the database where that value is used
- All values associated with a measure are viewable together
- The eTRM interface is user friendly, easy to navigate, and visually appealing

Transparent

- Calculations are displayed and clearly explained
- Inputs and assumptions are displayed with links to original supporting reference(s)
- Model assumptions and changes are displayed (except for DEER modeled measures)
- All cited references are stored in and can be viewed or downloaded from the eTRM library

Accurate

- The centralized relational database enables utility and third party claimed savings to be automatically checked against approved deemed values
- The eTRM reduces errors and discrepancies by eliminating repetitive manual entry of the same value in multiple places and data transfers between multiple files
- Less entries equals less errors

Summary of Benefits (Why eTRM?)

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Consistent	• Centralized measures – values, parameters, and descriptions of methods – facilitates standardization and consistency • Uniformity of value tables, calculations, and measure characterizations enables more efficient review during measure development and utilization by users
Efficient	• The eTRM is a single repository that can replace multiple, disparate resources: DEER, PRdb, WPA, READI, individual utility WP databases and the POU TRM • The centralization results in more efficient measure development, updates, and review • Efficiency results in time saved and therefore cost savings by all users
Managed	• The workflow management functionality tracks measure development from start to regulatory approval • The eTRM can track resources expended for measure development and updates • Workflow management can help identify bottlenecks and enable process improvements
Accessible	• All values, parameters, documentation, and descriptions of each approved measure are accessible to the public via the online interface • Stakeholders/3Ps can have visibility into measure development and measure updating
Scalable	• Additional policy directives can be incorporated easily and linked directly to measures (GHG/carbon reduction, water/energy, “embedded” EM&V)

Regulatory Context

We direct the PAs to work with stakeholders to jointly investigate and propose potential solutions to Commission Staff **to improve the usability and transparency of all ex ante values**. The solutions may include **new software tools that offer a common platform for all PAs to compose savings estimates transparently and consistent with Commission direction**. Proposals should be focused on opportunities to **facilitate transparency and collaboration**. Proposals should specify the expected outcomes from the proposals and how they will improve the process to develop, review, and implement ex ante values. Any proposal must recognize that Commission staff is still responsible for review and approval of ex ante values and methods and that past and current ex ante guidance still pertains. [Emphasis added.]

(D.15-10-028, pp. 97 – 98)

Regulatory Compliance

- Improve the usability and transparency of all ex ante values

  D.15-10-028, p. 97-98

- Tighter linkage between ex ante values, program tracking data, and ex post studies

  D.12-05-015, p. 359

- Statewide measures; measure standardization across the state

  D.12-05-015, p. 54

  D.05-01-055, p. 131

  Ex Ante Team 2018 Workpaper Guidance, p. 7

- Compilation of all Commission adopted ex ante energy savings into one website

  D.11-07-030, pp. 27 – 49

Proposed Key Milestones

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October 15, 2019

- eTRM launched to public and approved statewide measures are visible

October 15, 2019 - December 31, 2020

- Regulatory determination on whether eTRM should replace DEER as "Database of Record"
- eTRM "Phase 3 Enhancements" complete
- eTRM runs parallel to WPA, PEARdb, DEER, READi
- Testing and acceptance period for key stakeholders

January 1, 2021

- eTRM replaces DEER, PEARdb, WPA, READi
  - EAR maintains support tables in eTRM
  - EAR develops "draft" DEER measures in eTRM EAR updates "DEER" measures in eTRM
  - EAR reviews utility measures and measure updates in eTRM.
  - eTRM is "Database of Record" for all Measures (DEER and non-DEER)
  - Utilities and 3P view & download measure information from eTRM
  - Measure information downloadable in form that is easy to upload into CET & run measure-level C/E tests (or direct link to CET)
- Annual eTRM Enhancement Process
  - Based on input from CPUC, CEC, IOUs, POUs, 3P-identified additional functionality and/or upgrades.

***Control** would be transitioned to CPUC Staff for measure regulatory approval, DEER measures, support tables, and measure publishing after CPUC approval.*
Cal TF Staff would retain control of "POU only" measures.

Key Elements: Regulatory

- Regulatory Strategy and Timing
  - Could be accomplished through either a Staff ruling or motion
  - Cal TF staff to work with ED Staff to execute their preferred regulatory path
- Timing of Commission Ruling
  - Need action by Q3 2020 to meet January 1, 2021 cut over

Key Elements: Phase 3 eTRM Enhancements

- "Priority" Enhancements
  - Configurable security
  - Shared data library versioning process
  - Enhanced reporting capabilities
  - Enhanced workflow management
  - CET integration
- Other eTRM Enhancements

Key Elements: Transitions

- CPUC Database Transitions
  - PRdb
  - EAdb
  - DEER
  - WPA
  - READI
- IOU Database Transition
  - Who, What, When
- 3P DatabaseTransitions
  - Input from CEDMC and NAESCO

Key Elements:
Communications, Training & Support

Communications & Training

- Measure Developers
  - 2020: Cal TF Staff enters measures to preserve integrity of eTRM
  - 2021: "Trained" measure developers enter measures and measure updates
- Measure Reviewers
- 3Ps

Support

- Measure Developers
  - Cal TF Staff support and QA/QC review after measure developers trained
- Measure Reviewers, including Ex Ante Review team
  - Cal TF Staff support, after training
- 3Ps
  - E-mail with 24-hour response (during business days)
  - Follow-up phone call if necessary

Benefits to CPUC Staff

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Increased WP Quality	• The eTRM Data Dictionary, range checking of values, and clear guidelines for measure development and measure QA/QC will increase quality of measures being developed or updated
Efficiency	• A single relational database will replace multiple CPUC databases (PRdb, EAdb), file management system (WPA), and desktop software tool (READI) • A single system will be easier to maintain/update • The eTRM can easily adapt to new CPUC, CEC, and other State agency policy directives
Transparency	• All supporting references gathered and linked to inputs and assumptions in one place • Methodology and calculations are clear, concise, and consistent across “like” measures
Stakeholder Collaboration	• All interested stakeholders can register to receive automated notifications of new measures or changes to measures they are interested in • Notifications facilitate stakeholder engagement, collaboration, & accurate application of measures • Affords opportunity for 3Ps to monitor and contribute to measure development and updating
Compliance	• Additional measure-specific data collection requirements and other regulatory requirements can be linked to measures • CPUC can use eTRM to automatically check utility savings claims and other measure parameters

Benefits to 3Ps

Third Parties will be designing and implementing 60% of the portfolio. Therefore, they should have an integral role in measure development and measure updates.

Visibility of Emerging Measures *(prospective)*

- *Prospective* application of eTRM could allow 3Ps to have early visibility into emerging measures
- Visibility of emerging measures would facilitate entry of emerging measures into program designs/portfolio
- Early visibility would speed measure development and maturity

Visibility of Measures in Development

- Visibility of measure development will give 3Ps better knowledge of measures in development for current and future programs
- 3Ps can provide input as measures are developed

Visibility into Measure Review

- Visibility into the measure review process and status will give 3Ps better knowledge of measure availability for current and future programs

Stakeholder Collaboration

- All interested stakeholders can register to receive automated notifications of new measures or changes to measures they are interested in
- Notifications and increased visibility facilitate stakeholder collaboration

CPUC Staff Questions

- Can eTRM replace DEER?
  - Can eTRM perform all functions that DEER can perform? (DEER is very complex . . .)
  - Is eTRM complete? (Does it have all current information in DEER?)

- What is the testing and acceptance plan in 2020 that will ensure key stakeholders could use output from eTRM?

Can eTRM perform all functions that DEER can perform?

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Function	DEER	eTRM	DEER/eTRM Comparison
Receive Submitted Workpapers	Measures submitted via WPA. No public access to WPA (CPUC review status). No public visibility of measure development and review.	Yes. Measures developed within eTRM directly. Can make "in progress" measures viewable by public (enhancement).	Current eTRM workflow management feature allows tracking of time and resources spent on measure development and review, as well as measure status.
View Measures (DEER & Non-DEER Measures)	Measures viewed via READI. READI contains all DEER measures, only some non-DEER measures. READI is not complete database of all deemed, approved measures. Key measure parameters not linked in READI.	Yes. All active measures (DEER and non-DEER) viewable through eTRM modern web interface. eTRM contains all values and information about a measure in a single, cohesive location.	In eTRM, 100% of approved, deemed active measures are viewable, including cost and implementation parameters. In contrast, READI does not contain cost, implementation parameters, or references.
Draft Updates to DEER Measures	PRdb	Yes. Measures can be updated/versioned in eTRM Measures are published when approved.	In eTRM, automatic stakeholder notifications keep interested parties informed of measure changes. Stakeholders can register to receive notifications for measures or technology categories they are interested in tracking.

Can eTRM perform all functions that DEER can perform?

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Function	DEER	eTRM	DEER/eTRM Comparison
Active DEER Measures	EAdb	Yes. All active DEER measures are in eTRM effective 1/1/20.	The eTRM is the repository for all active DEER and non-DEER measures. Cost and implementation data is stored for all measures in the eTRM.
Support for DEER Energy & Demand Impacts Values	Values exist throughout DEER and in MASControl (external software). Supporting documentation is not readily accessible. Some documentation missing.	Yes and No. eTRM does not contain the support for DEER energy savings and demand reduction values. (because they could not be found in DEER)	It would be very helpful to work with ex ante team to locate, identify, and link all support for DEER measures (particularly DEER energy & demand impacts) so DEER values are transparent and replicable.
Active DEER and Non-DEER Measures	DEEResources.net	Yes. All active measures are in eTRM.	Because of the eTRM relational database structure, DEER and non-DEER measures can be easily updated when support values change. In DEER, updating each measure is a manual and more laborious process.

Can eTRM perform all functions that DEER can perform?

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Function	DEER	eTRM	DEER/eTRM Comparison
References for DEER and non-DEER Measures	References are scattered throughout DEER. References not linked to values they support. Documentation for some DEER values/assumptions not identified.	Yes. eTRM includes a complete reference library for IOU measures, and all DEER references that could be located. All references linked directly to values they support in eTRM All references are hosted in eTRM reference library.	In eTRM, original DEER sources found and linked (to extent possible); References are available via the eTRM interface References also accessible via active links within the PDF to the eTRM library.
Shared Tables	PRdb	Current: Copies of shared tables in eTRM, but updated and maintained externally. Proposed: Move and maintain in the eTRM.	The relational nature of the eTRM facilitates efficient measure updates when a change has been made to a shared table.
Data for CET Analysis	No. Costs in EAdb are outdated, cannot link to CET calculator and get accurate results. Also, EAdb does not have all measures.	Yes. eTRM can also be used to create direct link to CET tool to automate C/E analysis.	eTRM facilitates easy CET analysis. Getting data out of DEER is manual, cannot be automatic, and is time-consuming and cumbersome.

Can eTRM perform all functions that DEER can perform?

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Function	DEER	eTRM	DEER/eTRM Comparison
Data for CPUC Staff Review of IOU Claims (particularly savings)	No. EAdb not complete (does not contain all measures and all measure parameters), so CPUC Staff cannot automate process to verify accuracy of savings claims.	Yes. eTRM contains all approved measures and stores savings and other key parameters for all measures, so staff could use eTRM to validate accuracy of utility savings claims and other measure parameters such as cost.	eTRM has an API that allows Staff to programmatically validate savings claims, costs, and other parameters against approved measure data. Current DEER system does not support automated comparison of claims and other parameters against approved values. Must be done manually, so Staff is not currently able to validate accuracy of all savings, costs and other parameters in utility savings claims against approved deemed values.
MASControl & Other Calculation Tools (e.g., Water Heater Calculator)	No. Separate software – values imported to DEER.	No. Separate software – values imported to eTRM.	Cal TF Staff could work with Commission Staff to add MASControl references if they are made available.
Commission Rulings, Dispositions, Guidance, “What’s Happening”	Yes. Stored and accessible via DEEResources.com	No. Guidance will continue to reside on Commission website.	eTRM cites guidance for specific measures/values and Commission guidance stored in the eTRM reference library. Regardless, the Commission would still host Commission guidance on its website (rulings, dispositions, etc.)

Is eTRM complete?
(Does it have all current information in DEER?)

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Information	Examples	Add to eTRM?
Support tables	Interactive effects, EUL, NTG, GSIA, and many other parameter related lists.	Copies of support tables in eTRM. Currently, updated in PEAR db. However, support tables could be updated and maintained in eTRM.
Inactive DEER Measures	Measures not currently used by programs are not in the eTRM. However, when eTRM measures are "sunset" they will remain in the eTRM as "inactive" status.	No. Keep as historical archive in case someone needs it.
Support for DEER Energy Savings Values	Weighting tables, thermostat settings tables, building prototypes, "key word" changes from DEER base case to measure case.	Yes. In general, eTRM does not have support for DEER savings values (because they could not be found in DEER). We recommend working with the ex ante team to identify and link support for DEER measures in eTRM to provide transparency and reproducibility.
WP (for all active deemed measures, including those from DEER)	All WP used by IOU programs are measures in the eTRM. In other words, eTRM contains all active measures, DEER and non-DEER.	Yes. If any missing, can easily be added.

Is eTRM complete?
(Does it have all current information in DEER?)

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Information	Examples	Add to eTRM?
Historic Information	Archived DEER Updates and ESPI postings.	No. Recommend that DEER be kept as historical archive.
Custom Related Data	DEER has link to custom ISP libraries, other guidance documents, and a few disposition abstracts.	Could be a future opportunity for the eTRM
IOU-specific Measure IDs	Implementation IDs, solution codes, product codes (codes are IOU-specific)	No. In eTRM, have SW measure offering IDs, which are appropriate for SW measures and SW program implementation. IOUs maintain their own cross reference between SW IDs and their IOU-specific measure IDs.

Can eTRM Replace DEER?

YES

- **eTRM** is a repository of all active deemed measures (DEER and non-DEER). eTRM is built as a modern relational database that will lead to reduced costs and improved measure updating, tracking, and C/E analysis. The eTRM will reduce errors and increase the Commission's ability to validate claims.
- **DEER** should be maintained as a historic archive and as the repository for Commission guidance and other Commission documents. The Commission will no longer need to maintain and update the DEER elements that would be replaced by eTRM if the eTRM becomes the "database of record."
- **MASControl** (which exists outside of DEER) will need to be maintained and updated.

What is the Testing and Acceptance Plan?

- Cal TF Staff will implement Testing and Acceptance plan(s) in 2020 (prior to January 1, 2021).
- Testing and Acceptance will include the following key stakeholders:
  - CPUC: Including connection with CEDARs and CET
  - CPUC Group A Consultants
  - CEC
  - IOUs
  - POUs (LADWP, SMUD)
  - 3Ps (recruited through CEDMC)

What is the Testing and Acceptance Plan?

- Purpose is to ensure that stakeholder requirements for using the eTRM are identified and met
- Cal TF Staff met with IOUs and LADWP to understand:
  - Databases/systems that need to integrate with the eTRM
  - Mechanism to upload eTRM measures into IOU systems
  - Level of automation available to support data transfers
  - Additional needs for eTRM development to support transition
- Cal TF developed proposal for integration with CEDARS and CET
- Draft plan will be presented to IOUs/POUs for comment then to the CPUC/CEC

Open Issue: Ownership vs Control

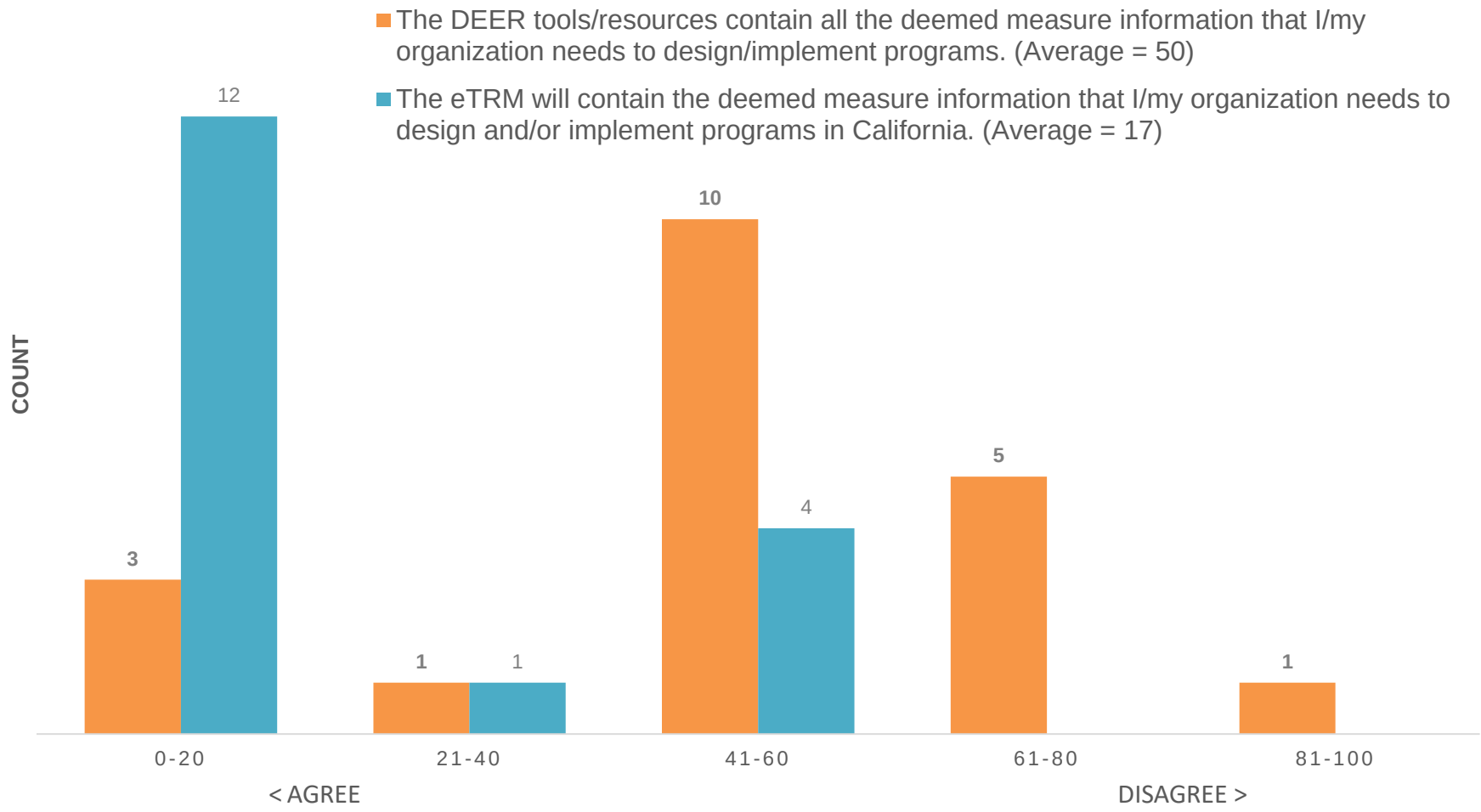
- **Control: Staff/EAR Team can control specific data and measure approval**
  - Environment – AWS SLA
  - Software – Maintenance contract; Staff can direct updates
  - Data – eTRM security can allow only Staff/EAR to control specific data and certain functions (e.g. measure approval), plus full database can be downloaded and stored by Staff (or exported to CPUC server to run)
- **Ownership**
  - Current: 4 IOUs and SMUD/LADWP
  - Current ownership structure allows for efficient annual updates and enhancements identified by key stakeholders and the market
  - Regulatory staff (CPUC and CEC) can have priority decision-making regarding annual eTRM enhancements

Appendix

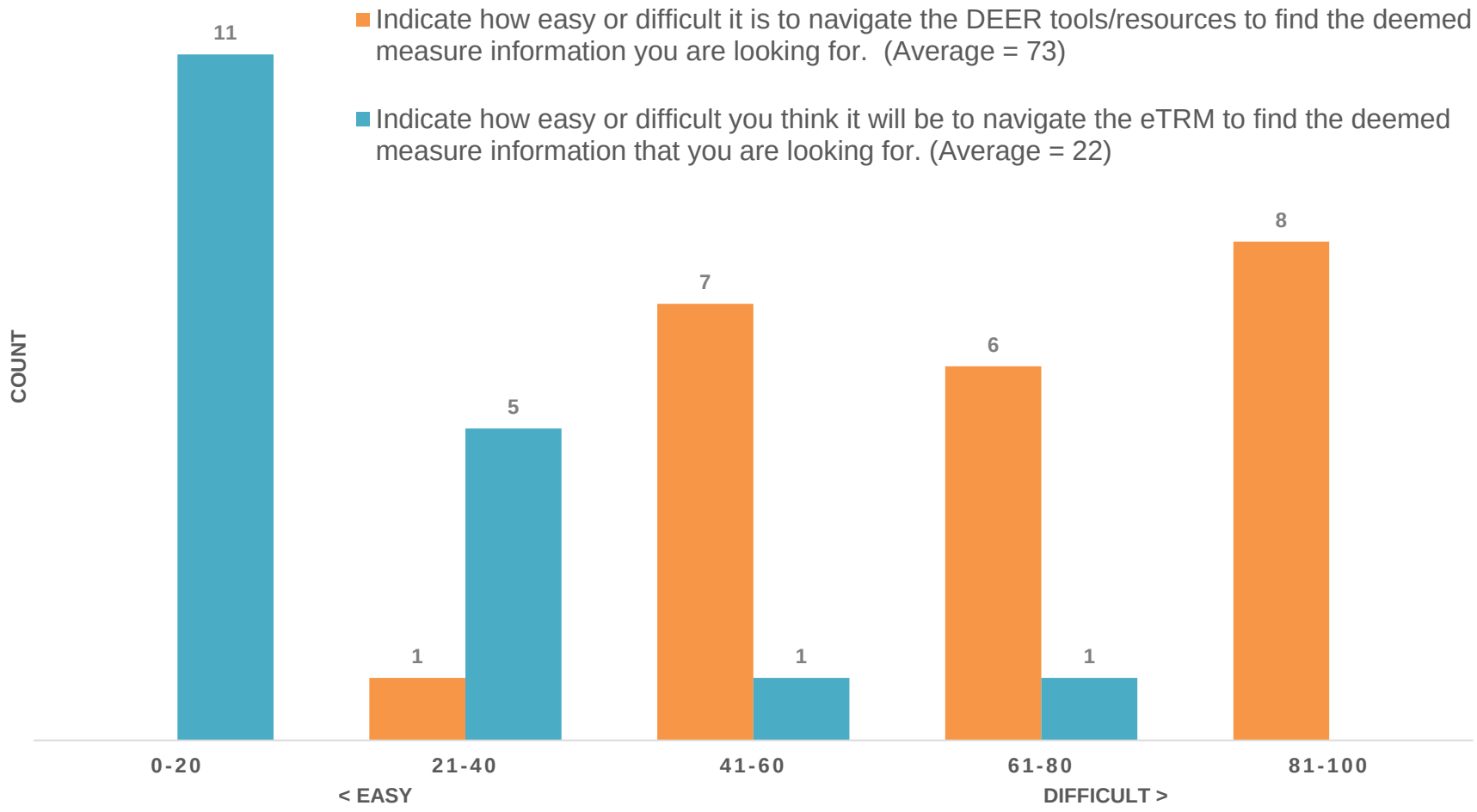
- eTRM Post-training Survey Results (stakeholder input on eTRM
- Finding a measure in eTRM vs. DEER (incl. measure parameters and measure references)
- DEER Shared Data (Support) Tables
- MASControl and DEER

eTRM Post-Training Survey Results

Contains Deemed Measure Information



Ease of Navigation



DEER Verbatim Responses

Comment on your overall experience using the DEER tools/resources. What features/aspects do you find useful? What features/aspects are not working well?

- *Hard to navigate: difficult to search without knowing exactly what you're looking for in advance. Difficult to trace references.*
- *Work papers are confusing to navigate. Column headers are repetitive and make it unclear which values to utilize.*
- *User interface is absolutely terrible. Impossible to use without significant training. Not transparent, assumptions not clear, source information not clear. Does not inspire trust in the quality of the information.*
- *There is very minimal back-up documentation for DEER measures. For IOU measures the work papers are not consistent. Very tough / almost impossible to trace the rationale behind lor of DEER numbers/ assumptions.*

eTRM Verbatim Responses

Comment on the eTRM content and functionality. What features/aspects do you think will be useful? What additional features/aspects would you like to see?

- *The design of the system looks great. Being able to follow citations easily, and see data tables will be very useful...*
- *Seeing the actual calc methodology is helpful.*
- *The reference tags/flags look like they will be useful.*
- *It looks fantastic from the training...I'd prefer to use this than the other DEER resources.*
- *Looks easy to use. Hoping to be able to integrate with other tools via the API to automate savings calculations.*
- *Central repository and CalTF's effort to source back-up documentation will help. I am assuming CalTF is going to do similar work on DEER measures which may not have IOU workpapers.*

Finding a Measure in eTRM vs. DEER

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Comparison

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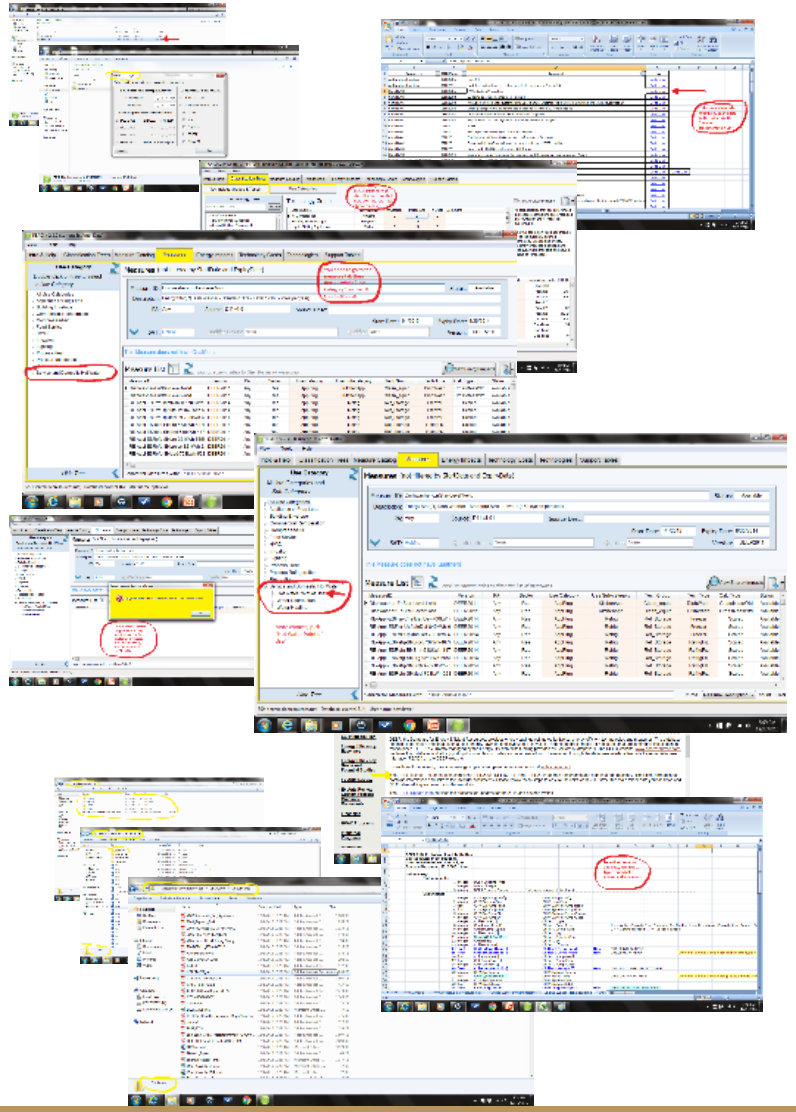
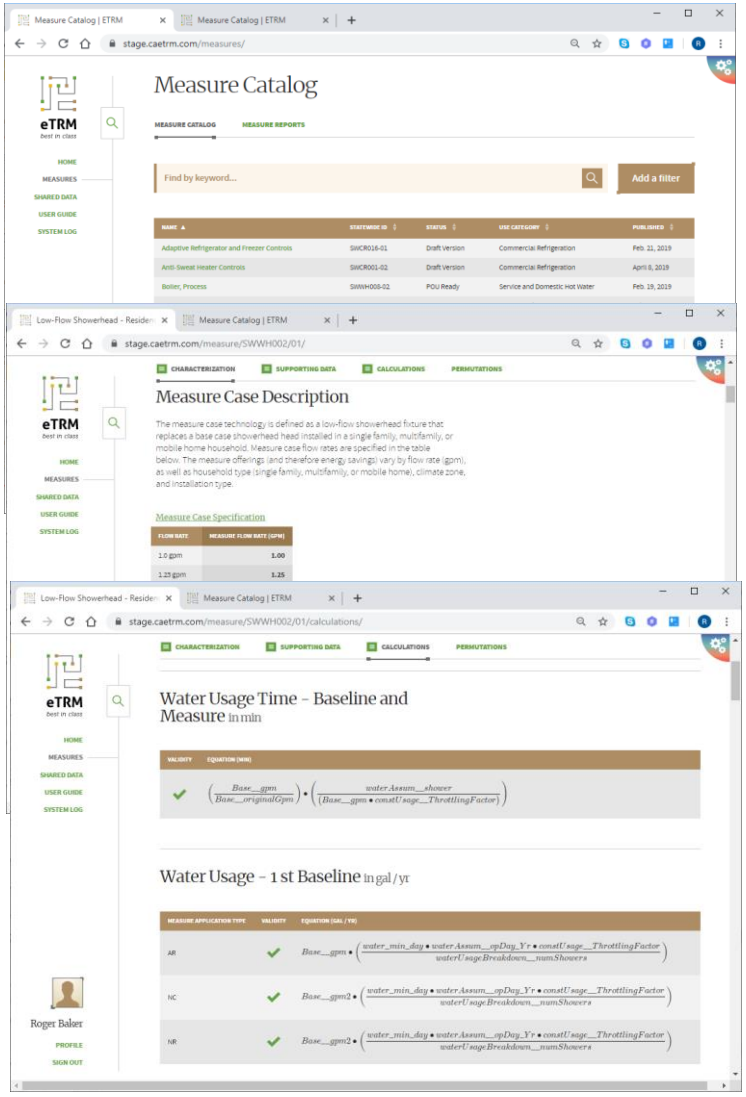
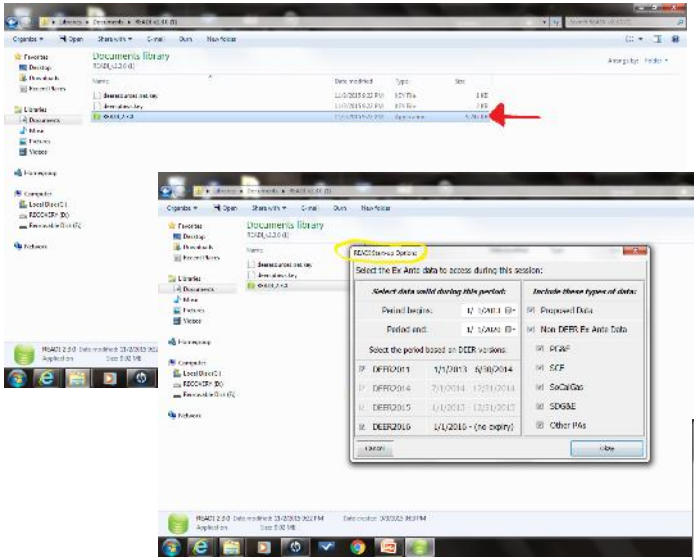
DEER/READi



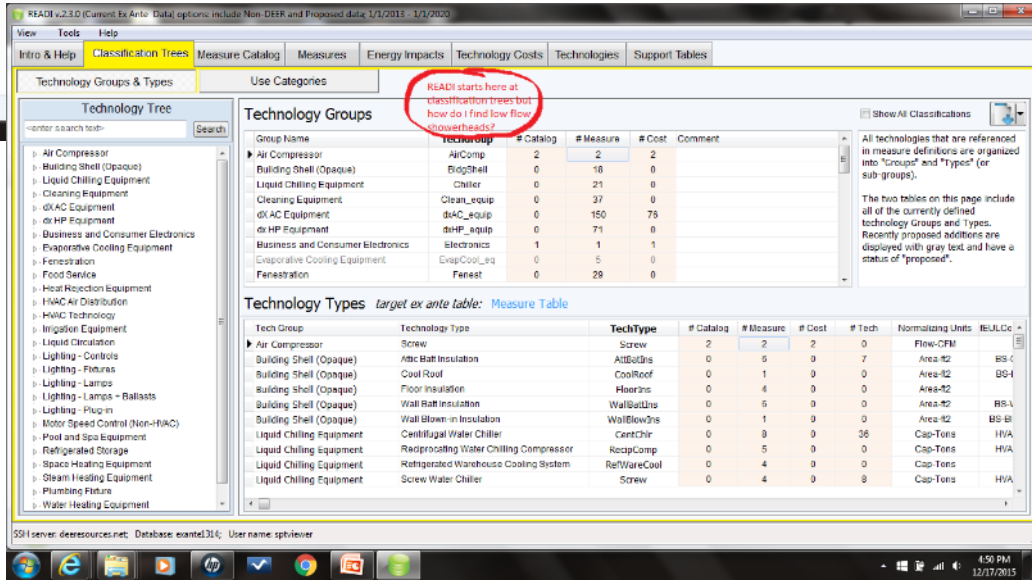
eTRM



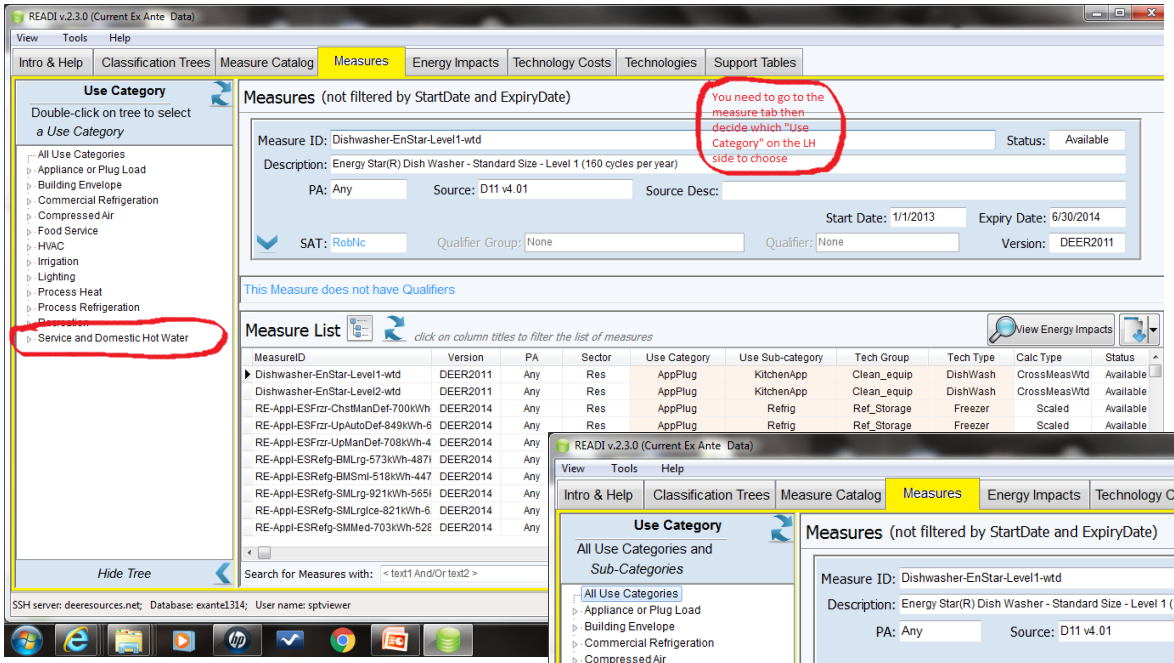
Comparison
Finding a Measure in READi

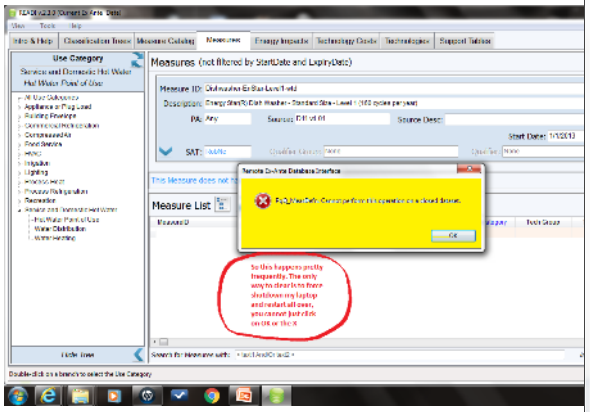


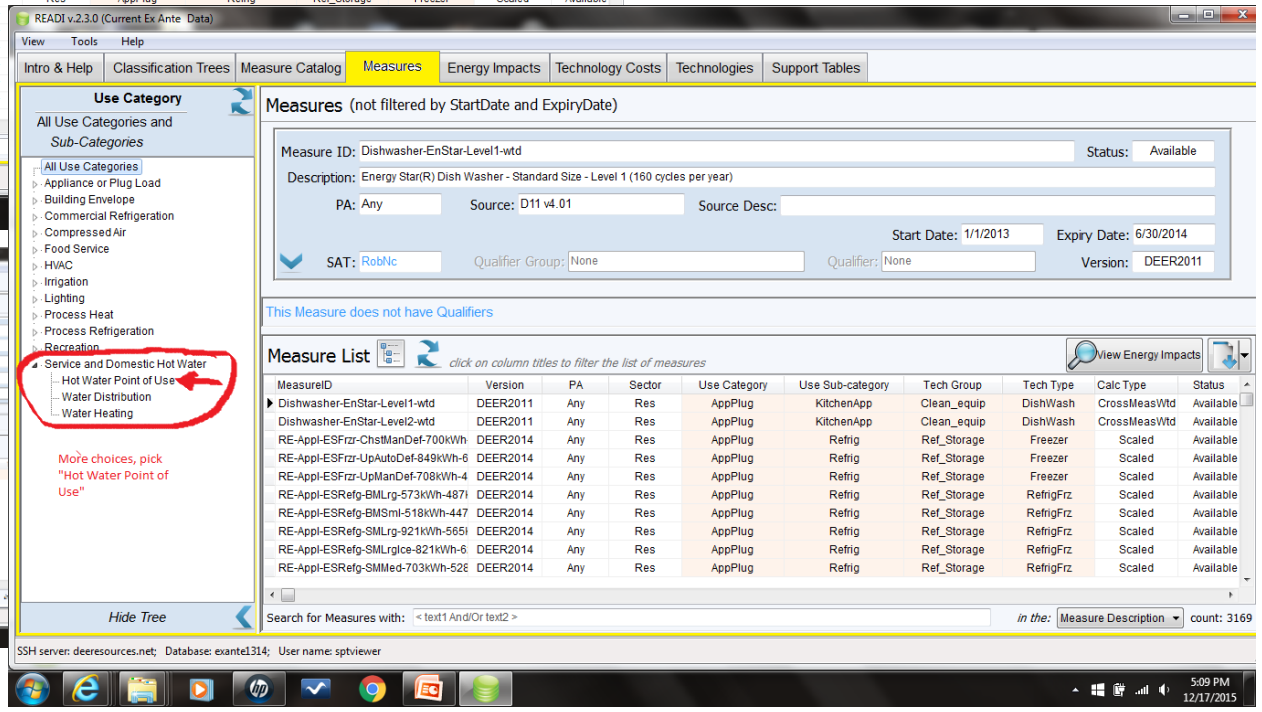
Once the latest READi tool is downloaded, and the right DEER version is selected, it is still difficult to find individual measures.



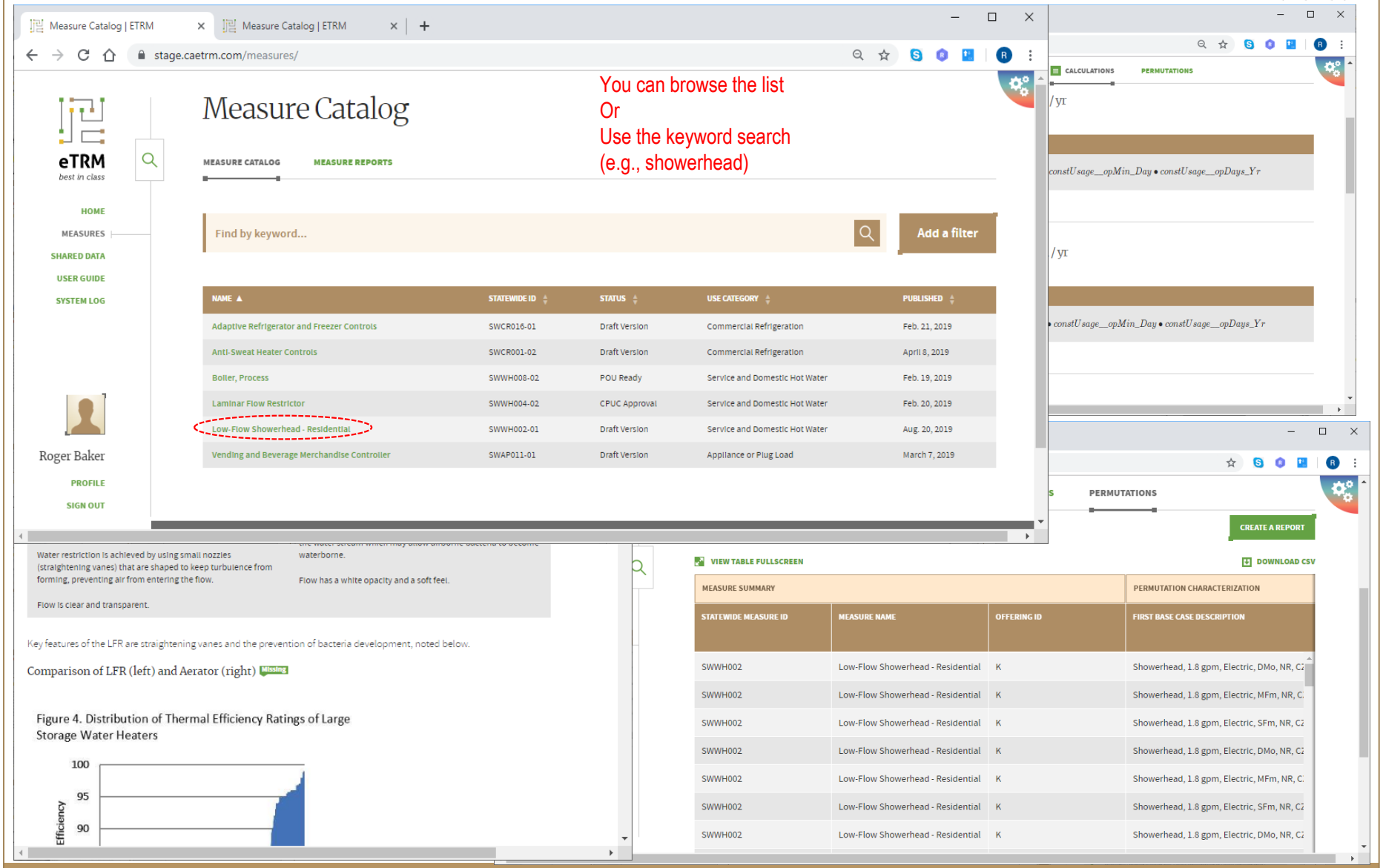
Comparison: Finding a Measure in READi



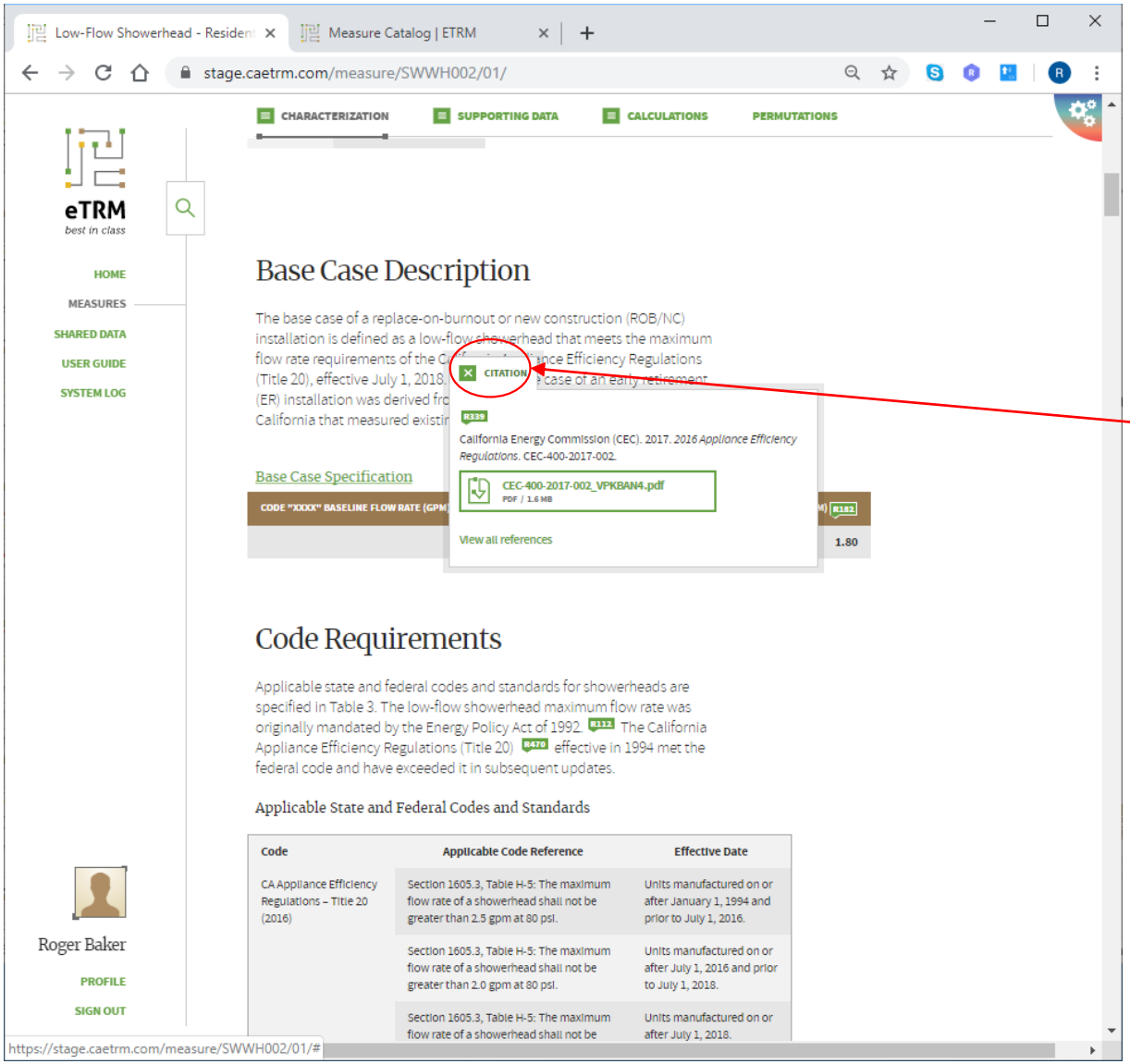




Comparison: Finding a Measure in a TRM



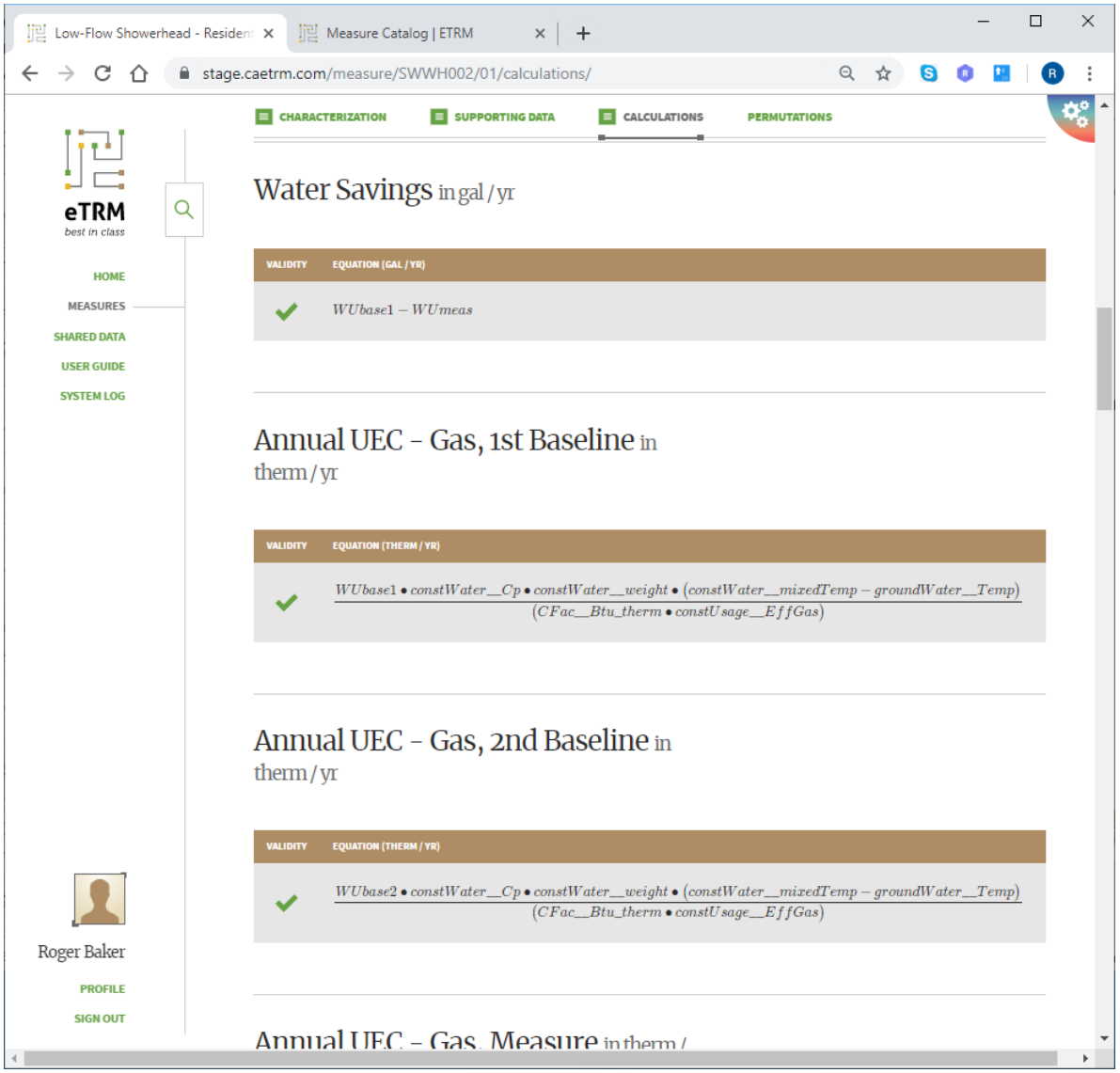
Comparison: Measure Documentation in eTRM



References are cited within the measures in eTRM and the source document is one click away.

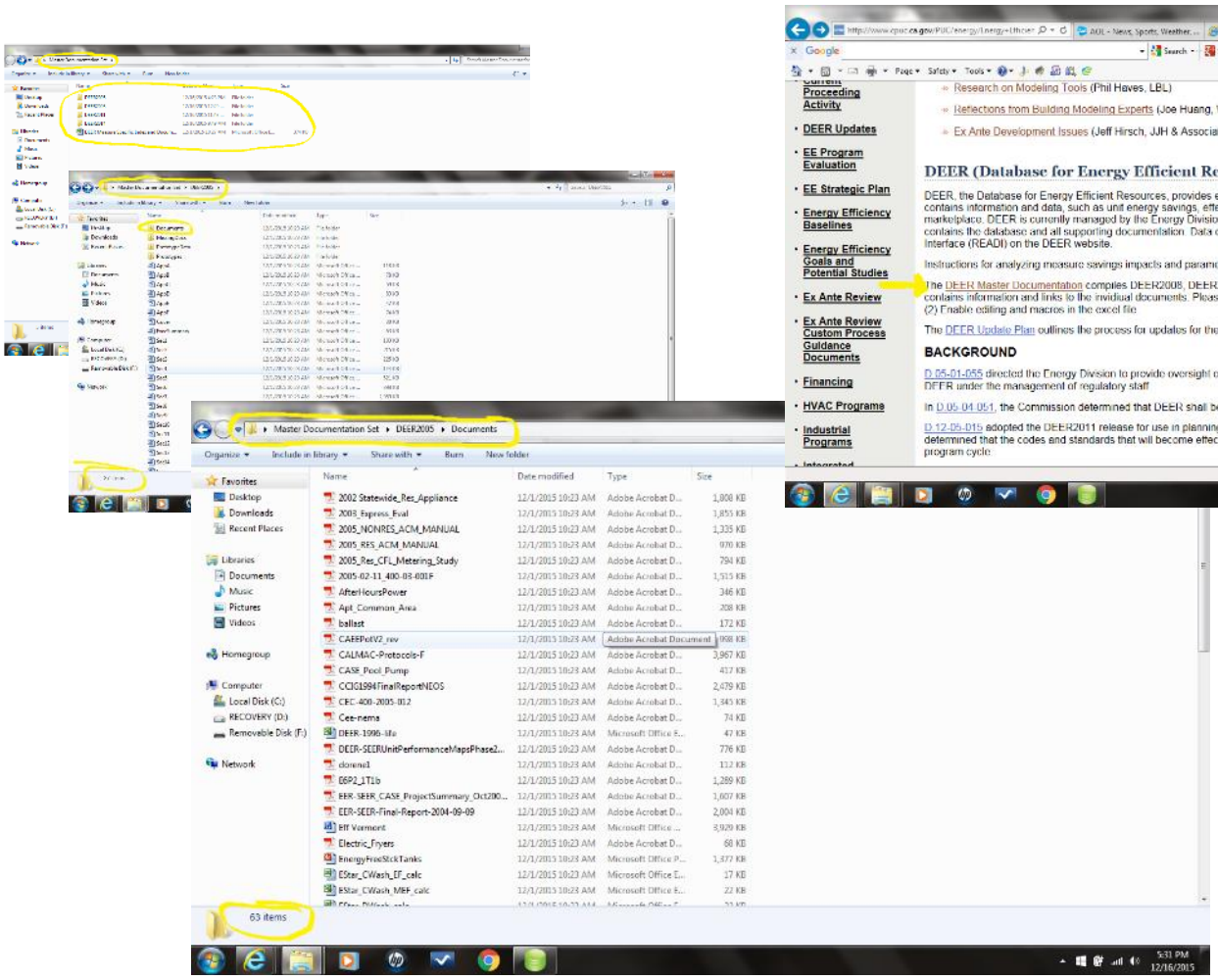
The eTRM also hosts source documents—no risk of broken links

Comparison: Measure Documentation in eTRM

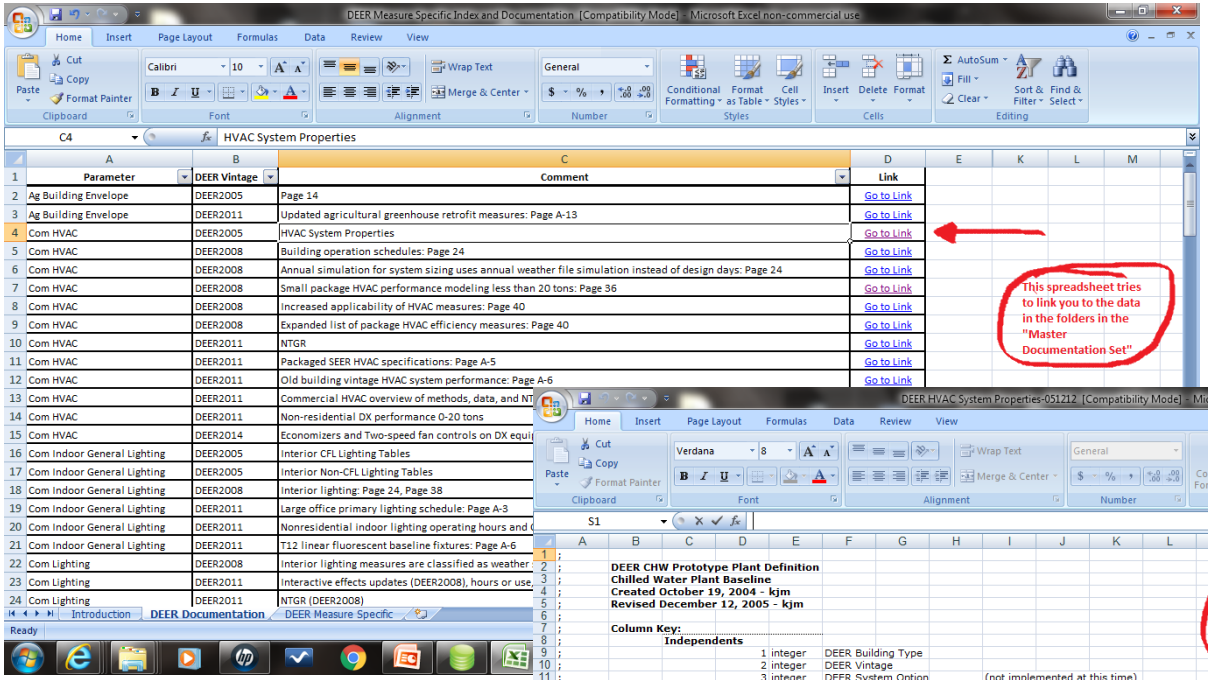


eTRM provides calculation methodology in transparent manner – the user can replicate the savings calculation to verify accuracy

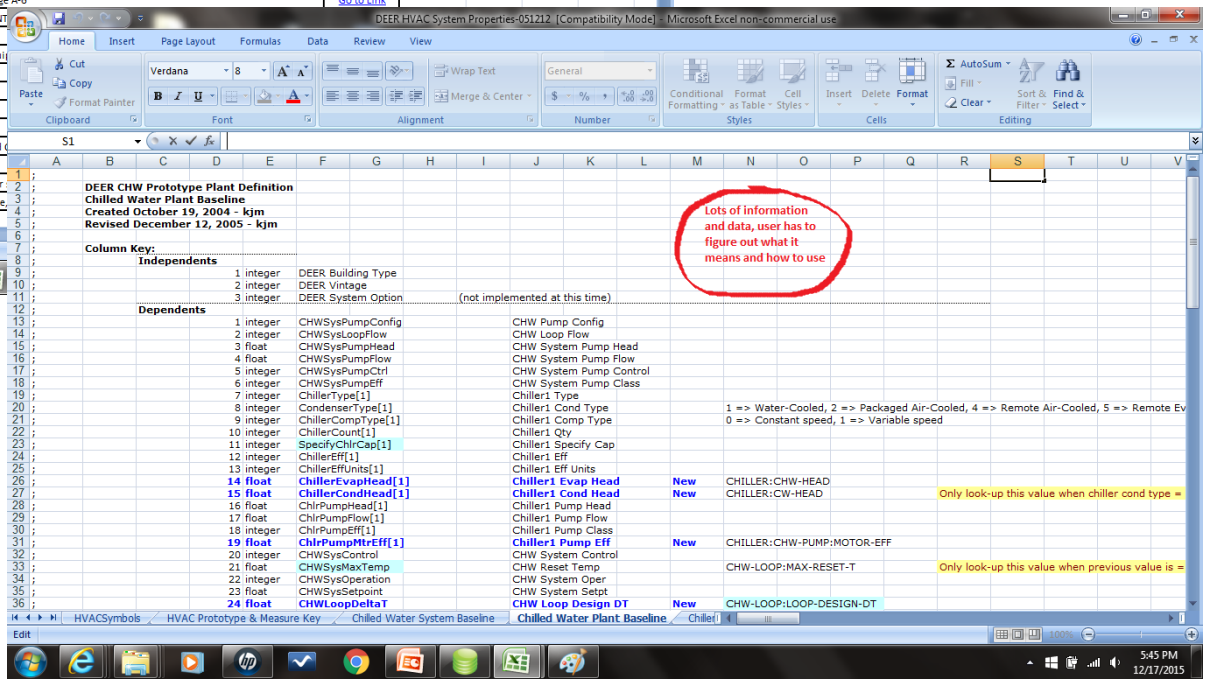
Comparison: Measure Documentation for DEER



Comparison: Measure Documentation for DEER



Parameter	DEER Vintage	Comment	Link
Ag Building Envelope	DEER2005	Page 14	Go to Link
Ag Building Envelope	DEER2011	Updated agricultural greenhouse retrofit measures: Page A-13	Go to Link
Com HVAC	DEER2005	HVAC System Properties	Go to Link
Com HVAC	DEER2008	Building operation schedules: Page 24	Go to Link
Com HVAC	DEER2008	Annual simulation for system sizing uses annual weather file simulation instead of design days: Page 24	Go to Link
Com HVAC	DEER2008	Small package HVAC performance modeling less than 20 tons: Page 36	Go to Link
Com HVAC	DEER2008	Increased applicability of HVAC measures: Page 40	Go to Link
Com HVAC	DEER2008	Expanded list of package HVAC efficiency measures: Page 40	Go to Link
Com HVAC	DEER2011	NTGR	Go to Link
Com HVAC	DEER2011	Packaged SEER HVAC specifications: Page A-5	Go to Link
Com HVAC	DEER2011	Old building vintage HVAC system performance: Page A-6	Go to Link
Com HVAC	DEER2011	Commercial HVAC overview of methods, data, and NT	
Com HVAC	DEER2011	Non-residential DX performance 0-20 tons	
Com HVAC	DEER2014	Economizers and Two-speed fan controls on DX equi	
Com Indoor General Lighting	DEER2005	Interior CFL Lighting Tables	
Com Indoor General Lighting	DEER2005	Interior Non-CFL Lighting Tables	
Com Indoor General Lighting	DEER2008	Interior lighting: Page 24, Page 38	
Com Indoor General Lighting	DEER2011	Large office primary lighting schedule: Page A-3	
Com Indoor General Lighting	DEER2011	Nonresidential indoor lighting operating hours and	
Com Indoor General Lighting	DEER2011	T12 linear fluorescent baseline fixtures: Page A-6	
Com Lighting	DEER2008	Interior lighting measures are classified as weather	
Com Lighting	DEER2011	Interactive effects updates (DEER2008), hours or use	
Com Lighting	DEER2011	NTGR (DEER2008)	



DEER CHW Prototype Plant Definition
Chilled Water Plant Baseline
Created October 19, 2004 - kjm
Revised December 12, 2005 - kjm

Column Key:

Independents

1	integer	DEER Building Type		
2	integer	DEER Vintage		
3	integer	DEER System Option	(not implemented at this time)	

Dependents

1	integer	CHWSysPumpConfig	CHW Pump Config		
2	integer	CHWSysLoopFlow	CHW Loop Flow		
3	float	CHWSysPumpHead	CHW System Pump Head		
4	float	CHWSysPumpFlow	CHW System Pump Flow		
5	integer	CHWSysPumpCtrl	CHW System Pump Control		
6	integer	CHWSysPumpEff	CHW System Pump Class		
7	integer	ChillerType[1]	Chiller1 Type		
8	integer	CondenserType[1]	Chiller1 Cond Type		1 => Water-Cooled, 2 => Packaged Air-Cooled, 4 => Remote Air-Cooled, 5 => Remote Ev
9	integer	ChillerCompType[1]	Chiller1 Comp Type		0 => Constant speed, 1 => Variable speed
10	integer	ChillerCount[1]	Chiller1 Qty		
11	integer	SpecifyChlrCap[1]	Chiller1 Specify Cap		
12	integer	ChillerEff[1]	Chiller1 Eff		
13	integer	ChillerEffUnits[1]	Chiller1 Eff Units		
14	**float**	**ChillerEvapHead[1]**	**Chiller1 Evap Head**	**New**	CHILLER:CHW-HEAD
15	**float**	**ChillerCondHead[1]**	**Chiller1 Cond Head**	**New**	CHILLER:CW-HEAD
16	float	ChlrPumpHead[1]	Chiller1 Pump Head		
17	float	ChlrPumpFlow[1]	Chiller1 Pump Flow		
18	integer	ChlrPumpEff[1]	Chiller1 Pump Class		
19	**float**	**ChlrPumpMtrEff[1]**	**Chiller1 Pump Eff**	**New**	CHILLER:CHW-PUMP:MOTOR-EFF
20	integer	CHWSysControl	CHW System Control		
21	float	CHWSysMaxTemp	CHW Reset Temp		CHW-LOOP:MAX-RESET-T
22	integer	CHWSysOperation	CHW System Oper		
23	float	CHWSysSetpoint	CHW System Setpt		
24	**float**	**CHWLoopDeltaT**	**CHW Loop Design DT**	**New**	CHW-LOOP:LOOP-DESIGN-DT

Only look-up this value when chiller cond type =

Only look-up this value when previous value is =

But the sources it links to are still problematic.

DEER Shared Data (Support) Tables

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DEER Shared Data (Support) Tables

Mapped to eTRM Shared Parameters

- Building HVAC Types
- Building Locations (Climate Zone)
- Building Types
- Building Vintages
- Electric/Gas Impact Profiles
- Measure Delivery Type
- Measure Application Type
- Measure Impact Calc Type
- Measure Impact Type
- Normalized Unit
- Sector
- Technology Group
- Technology Type
- Use Category
- Use Sub-Category
- Version

Mapped to eTRM Shared Value Tables

- NTG
- EUL/RUL
- GSIA
- Labor Rates
- Locational Cost Adjustment Factors

Other DEER-related Tables in eTRM

- Commercial Interactive Effects
- Residential Interactive Effects

Mapped to eTRM Measures

- Source Description

Mapped to eTRM Measures

- Version Source
  - Merged into Version Parameter

MASControl and DEER

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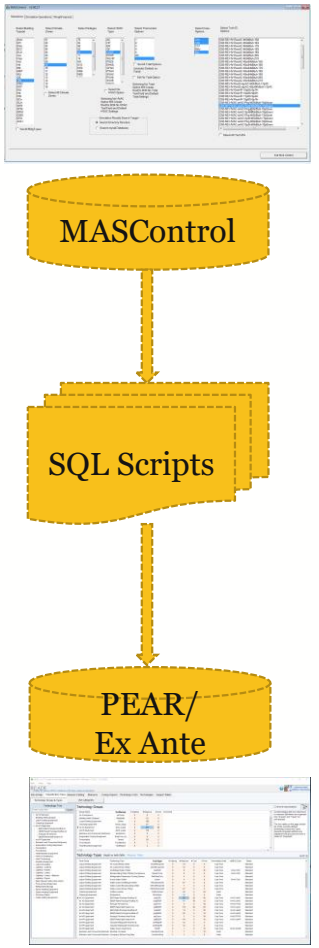
MASControl and DEER

- MASControl operates outside of DEER
- Significant post-processing of MASControl simulation outputs performed
- Up to 13 discrete SQL scripts applied to output data
  - Weights and consolidates thermostat setting-based runs (residential only)
  - Calculated peak period impacts
  - Calculates measure impacts
  - Weights and consolidates by building vintage
  - Weights and consolidates by climate zone
  - Rounds results and formats output for use in measure impacts table