California Statewide Deemed Measures

eTRM Transition and Launch Plan

Version 1.0

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REVISION HISTORY

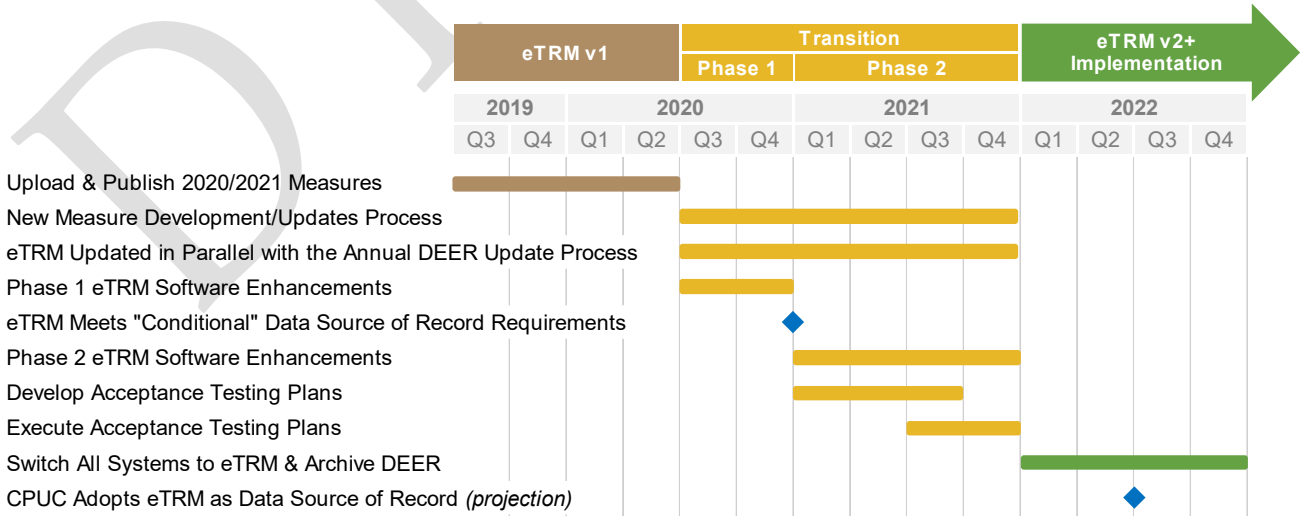
Version	Date	Summary of Changes	By
Draft 0.7	November 20, 2020	▪ Draft for stakeholder review	Jennifer Holmes Cal TF Staff
Final 1.0	December 11, 2020	▪ Added revision history ▪ Extended timeline for Transition & Acceptance Testing Plans through Q3 2021 ▪ Minor clarifications and edits	Jennifer Holmes Cal TF Staff

EXECUTIVE SUMMARY

This *eTRM Transition and Launch Plan* was developed by the California Technical Forum (Cal TF) Staff to propose a strategy to transition from the current Database for Energy Efficient Resources (DEER) to the newly developed electronic technical reference manual, or eTRM. Cal TF developed the eTRM to consolidate the California deemed measure values and supporting information currently contained in DEER, non-DEER workpapers, and the publicly-owned utility (POU) TRM into a single user-friendly repository in which deemed measures are well-documented, transparent, and easily accessible to both advanced and casual users. The eTRM was developed through a collaborative process led by the Cal TF and supported by the investor-owned utilities (IOUs), the POUs, California Public Utilities Commission (CPUC) Staff, and California Energy Commission (CEC) Staff (collectively referred to as the Core Team). This Plan will be updated as necessary to reflect shifts in the scope or schedule of the project.

This document presents a phased approach to transition the CPUC and utility systems to the eTRM by January 1, 2022. During first phase, eTRM v1 was populated with the measures approved for 2020 and 2021 that will be included in the IOU portfolios. By October 15, 2019, demarcated as the "soft launch" of eTRM v1, 82 statewide deemed measures were published and viewable by the public. By the end of Q3 2020, 135 measures were published and viewable by the public.

A Transition period will extend from Q3 of 2020 through Q4 of 2021 and include two phases of eTRM development. Phase 1 will include software enhancements to meet the CPUC requirements for eTRM to be the "conditional" data source of record for deemed measure values. Phase 2 will include additional software enhancements to enable measure review and approval workflow, as well as other features identified by the Core Team. Phase 2 will also entail the development and execution of IOU, POU, and CPUC testing and acceptance plans to ensure a smooth migration to the eTRM by January 2022. Successful completion of Phase 1 and Phase 2 of the Transition will lead to the removal of the "conditional" status and CPUC adoption of the eTRM as the data source of record for deemed measure values in 2022. During the Transition phases, the eTRM will operate in parallel with the DEER suite of resources.



Overview of Phased Approach to eTRM Transition and Launch

CONTENTS

1 INTRODUCTION

This *eTRM Transition and Launch Plan*, developed by the California Technical Forum (Cal TF) Staff, presents a strategy to transition the management and storage of deemed energy efficiency measure values and documentation from the current suite of tools and resources collectively known as the Database for Energy Efficient Resources (DEER) (including the EAdb, PRdb, WPA, and READI defined below), to the newly developed California electronic technical reference manual, or eTRM. The eTRM was developed through a highly collaborative process led by the Cal TF and supported by the investor-owned utilities (IOUs), publicly-owned utilities (POUs), California Public Utilities Commission (CPUC or Commission) Staff, and California Energy Commission (CEC) Staff (collectively referred to as the Core Team). This Plan will be updated as necessary to reflect shifts in the scope or schedule of the project.

Cal TF developed the eTRM to store and manage all deemed measure values and supporting information currently contained across the DEER resources, non-DEER measure workpapers, and the POU technical resource manual (TRM) into a single user-friendly and well-documented repository for statewide deemed measures. For each measure, the eTRM includes documentation of the methods used to calculate energy savings and demand impacts, as well as all final ex ante deemed savings and demand reduction values, costs, and associated parameter values (net-to-gross ratios, expected useful life, etc.). All parameters, assumptions, and supporting documentation are fully cited and linked to the values and parameters they support. Moreover, all publicly available references and source materials for each measure are stored directly in the extensive eTRM reference library.

The underlying principles of the eTRM design were to ensure accessibility, transparency, and accuracy of all measure values and documentation. As such, the eTRM will be an essential tool that will support the CPUC mandate for third-party implementers (3Ps) to design and implement 60% of the IOU energy efficiency portfolios by 2022.[1]

This document presents a phased approach to transition the CPUC and utility systems to the eTRM by January 1, 2022. During first phase, eTRM v1 was populated with the measures approved for 2020 and 2021 to be included in the IOU portfolios. By October 15, 2019, demarcated as the “soft launch” of eTRM v1, 82 statewide deemed measures were published and viewable by the public. By the end of Q3 2020, 135 measures were published and viewable by the public.

A Transition period will extend from Q3 of 2020 through Q4 of 2021 and include two phases of eTRM development. Phase 1 will include software enhancements to meet the CPUC requirements for eTRM to be the “conditional” data source of record for deemed measure values. Phase 2 will include addition software enhancements to enable measure review and approval workflow, as well as other features identified by the Core Team. Phase 2 will also entail the development and implementation of IOU, POU, and CPUC testing and acceptance

[1] California Public Utilities Commission (CPUC). 2018. *Decision 18-01-004 in the Application of Southern California Edison Company (U338E) for Approval of Energy Efficiency Rolling Portfolio Business Plan. And Related Matters.* Issued January 17. OP 1.

plans to ensure a smooth migration to the eTRM. During Transition Phase 1 and Phase 2, the eTRM will operate and be updated in parallel with the DEER suite of resources.

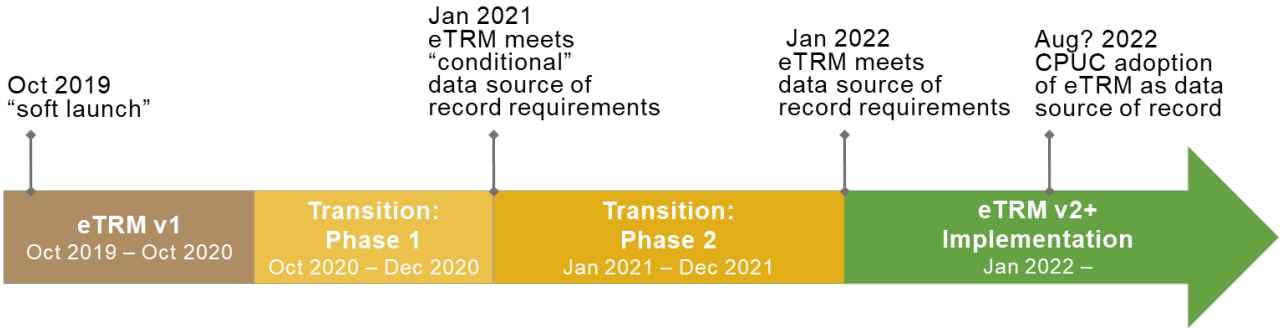


Figure 1. eTRM Transition and Launch Overview & Key Milestones

The final phase – eTRM v2 Implementation – will begin when CPUC Staff determines that the eTRM meets all CPUC requirements to remove the "conditional" status to serve as the data source of record for deemed values; formal CPUC adoption as such will occur via Resolution (likely in August of 2022).

The eTRM transition and launch will require a coordinated effort between the following parties:

- CPUC (regulatory authorization to adopt the eTRM as the data source of record)
- Regulatory staff (CPUC ED Staff and CEC Staff)
- CPUC Ex Ante Review (EAR) Team2
- IOU and POU Staff
- Cal TF Staff
- CPUC CEDARS Team (administers CEDARS)

Additionally, Cal TF Staff will work with industry organizations that represent 3P implementers, such as CEDMC and NAESCO, to ensure private sector use cases and user perspectives are considered. 3P implementers, regional energy networks (RENs), engineering firms, and evaluation firms will be informed of the transition process and, if necessary, can develop transition and testing and acceptance plans to successfully integrate their systems with eTRM.

[2] The EAR Team is a team of independent consulting firms currently under contract with the CPUC Energy Division (ED) to implement the Group A Contract for energy efficiency program evaluation services. The scope of this contract group includes deemed residential, small commercial, HVAC, lighting, crosscutting measures, and the management and updating of DEER.

The remainder of this document is organized as follows:

Chapter 2 (Rationale for the eTRM) summarizes the business and regulatory cases for the adoption of the eTRM.

Chapter 3 (Transition Strategy) provides the Cal TF Staff proposal for each of phase of the transition to and the full launch of the eTRM.

Chapter 4 (Roles and Responsibilities) identifies the parties that have roles in the transition and their responsibilities.

Chapter 5 (Supporting Initiatives) describes eTRM user support, technical support and eTRM updates, and the process for establishing the rules for eTRM administration.

Chapter 6 (Communications & Training) presents the proposed strategy to communicate updates to current and potential eTRM users, as well as training and support to ensure successful adoption and use of eTRM.

Several appendices provide additional detail, as referenced throughout this document.

Appendix A summarizes how the eTRM aligns with CPUC policy objectives.

Appendix B compares the functionality of the eTRM with DEER.

Appendix C provides the DEER information that has been incorporated into the eTRM.

Appendix D describes all software enhancements that will be implemented during Transition Phase 1 and Phase 2.

Appendix E summarizes the early transition planning Cal TF Staff conducted with each IOU.

Appendix F includes a draft stakeholder communications strategy.

Appendix G includes the generic Transition and Acceptance Testing Plan template.

For reference to the reader, the resources collectively known as DEER (referred to throughout this document) includes the following disparate elements:

Ex Ante Database (EAdb): Contains the official ex ante data that can be utilized for savings claims.

Preliminary Ex Ante Review Database (PRdb): The PRdb is a supplement to the EAdb. provides access to data that the EAR Team has recently developed, is currently reviewing, or has newly approved. The PRdb contains proposed changes and additions to the EAdb that may or may not be incorporated into the EAdb at the next scheduled EAdb update.

Remote Access Data Interface (READI): READI is the interface to access the EAdb and PRdb.

Workpaper and Disposition Archive (WPA): A file folder structure behind a secure, restricted access interface through which the IOUs upload workpapers for review and approval by the EAR Team. WPA records when the workpapers are uploaded to track compliance with workpaper review times, but otherwise has limited tracking and reporting functionality.

California Energy Data and Reporting System (CEDARS): An online tool with a secure interface through which the IOUs and other PAs submit their savings and cost claims, budget filings, cost effectiveness data, and monthly report data.

Other commonly used terms used in this document are defined below:

Ex Ante Data Specification. The Ex Ante Data Specification is the current CPUC Staff-developed spreadsheet template that includes four tabs that are required to be populated for all measures Since its initial release, the approved ex anted data specification has been revised several times. The ex ante data specification is sometimes referred to as the “April 1 Data Specification” or more informally as the “ex ante data tables”.

Statewide Data Specification (SW Data Spec): The SW Data Spec is a statewide deemed measure template developed by the Cal TF Staff as part of the eTRM design and represents a streamlined set of requirements that might serve as an alternative to the Ex Ante Data Specification. The SW Data Spec includes documentation to support how to populate it.

Workpaper: Documentation prepared by a PA or program implementer that documents the data, methodologies, and rationale used to develop ex-ante estimates for a deemed measure that are not in already fully contained in DEER.

Cost Effectiveness Tool (CET). The CET is the cloud-based tool used by all IOUs and 3P implementers to compute measure and program cost-effectiveness according to the cost-effectiveness tests designated by the CPUC. The CET on CEDARS is the only approved calculator.

2 RATIONALE FOR THE eTRM

This chapter summarizes the business case and regulatory pathway toward the adoption of the eTRM as the California deemed measure data source of record.

Business Case for the Adoption of the eTRM

The eTRM design provides many valuable enhancements to the California deemed measure database and related processes. It is a modern, relational database that links together all the deemed measure information that is currently stored in multiple locations. This, along with the web-based access, will allow for easy use by all parties involved in the deemed measure process. The eTRM was built using a common and widely adopted open source software development stack that will allow any competent developer to update/maintain the eTRM and that will support scalability and systems integration.[3] The web-based access and standardized formats were designed to support the Commission's requirement for statewide measures. The eTRM advantages are summarized below.

Centralized. The eTRM is a single repository of all active deemed measures in the State of California. Measures in the eTRM are available statewide, for use in both IOU and POU portfolios,[4] and address all climate zones. The eTRM houses all measure values, descriptions, and documentation contained in a complete reference library linked to the values they support.

Modernized. The eTRM is a modern, relational database which allows shared values to be updated in a single shared table then cascaded throughout the database wherever that value is used. It is also an online tool and does not require the user to download software to access the data. All values associated with each measure are linked and viewable together and the eTRM interface is user-friendly, easy to navigate, and visually appealing.

Transparent. By design, the eTRM is transparent. The calculations used to generate the energy savings values are uniformly displayed and clearly explained in the eTRM. The calculation inputs and assumptions are labeled with links to the original supporting reference(s). For modeled measures, the assumptions used to develop the models and any changes to the models are documented (except for DEER modeled measures).[5] All cited references are stored in and can be viewed or downloaded from the eTRM reference library.

Accurate. The eTRM will ensure accuracy of reported savings claims; its centralized, relational database structure will enable claimed savings submitted by

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[3] The eTRM was developed using an open-source stack based on Linux, Django, Python, PostgreSQL, and SSL/HTTPS.

[4] Only measures in the eTRM that are approved by the CPUC are available for use in the IOU service territories.

[5] The assumptions and models used to develop many of the modeled DEER measures could not be readily located in the DEER documentation.

utilities and 3Ps to be automatically validated against approved deemed values. The eTRM will also reduce errors and discrepancies by eliminating repetitive manual entry of the same value in multiple places and data transfers between multiple files.

Consistent. A centralized repository of deemed measures with all values, parameters, and descriptions of methods will facilitate standardization and consistency statewide. This will benefit implementers and regulators that work across the IOU and POU service territories. Furthermore, having uniform value tables, calculations, and measure characterizations will allow for more efficient review during measure development.

Efficient. The eTRM is a single repository that can replace multiple, disparate DEER resources including: EAdb, PRdb, WPA, READI, individual utility workpaper databases, and the POU TRM. This centralization will result in more efficient measure development, updates, and review, resulting in time savings and therefore cost savings by all users.

Managed. The eTRM workflow management functionality can track measure development from measure inception to regulatory approval. This effective workflow management can help identify bottlenecks and enable process improvements throughout the measure development cycle. The eTRM can also track the resources expended for measure development and updating; this information can help measure developers in their budgeting and resource planning activities.

Accessible. The data within the eTRM is easily accessible to all Core Team eTRM users and industry stakeholders. All values, parameters, documentation, and descriptions of each approved measure are accessible publicly to registered users via the online, easy to navigate interface. In addition, the eTRM will offer visibility into the measure development and measure updating processes via opt-in push notifications so that 3P implementers. Such accessibility will enable 3Ps to plan for any changes to their programs accordingly.

Scalable. The eTRM was built using common and widely adopted technologies that will enable scalability and systems integration; this flexibility will allow the eTRM to be updated and expanded to satisfy future needs. Future policy directives can be incorporated into the eTRM and linked directly to the appropriate measures. Examples include (but are not limited to): ex ante estimates of greenhouse gas (GHG)/carbon reduction and water/energy savings and instructions for documenting “embedded” EM&V requirements.

The tables below summarize the benefits of eTRM specific to the CPUC, IOUs, CEC, POUs, and 3P implementers.

The adoption of the eTRM as the California deemed measure data source of record will provide a number of benefits to the CPUC ED that has authority over the ratepayer-funded EE portfolio administration.

eTRM Benefits for CPUC Energy Division

Increased Data Quality & Accuracy	▪ Utilization of a single source of data will eliminate inconsistencies and errors between CET, IOU claims, and CEDARS. ▪ The eTRM features that will significantly reduce manual data entry and calculations and improve data quality and accuracy include: validity checks, dynamic value tables and calculations, calculation validity checks, and shared data tables. ▪ The *Measure Development and QA/QC Guidelines* provides clear guidelines for measure development and review that will improve the quality of measures developed or updated by IOUs.
Workflow Efficiency	▪ The eTRM is a centralized, single relational database will replace multiple CPUC DEER system components (PRdb, EAdb), the file management system (WPA), & the desktop software tool (READI). ▪ The eTRM workflow management functionality will streamline measure review and approval, eliminate obstacles associated with sharing and storage of supporting references and data, and will reduce handoff times. System notifications will ensure users are notified when they must complete a task. ▪ A single, centralized system will be easier to maintain/update. ▪ High quality data for all deemed measures that is readily accessible will better support ED, EAR Team, and IOU staff workload planning for measure review, research for measure updates, EM&V planning, and more.
Transparency	▪ All supporting references are linked to inputs & assumptions and available in the centralized eTRM reference library. ▪ Methodology & calculations are clear, concise & consistent across similar measures.
Stakeholder Collaboration	▪ All interested stakeholders can register to receive automated notifications of new measures or changes to measures of interest. ▪ Notifications facilitate stakeholder engagement, collaboration, & accurate application of measures. ▪ Affords opportunity for 3Ps to contribute to measure development & updating.

Compliance	▪ Additional measure-specific data collection requirements & other regulatory requirements can be linked to measures. ▪ CPUC Staff can use eTRM to automatically check utility savings claims & other measure parameters (i.e., ensure that utilities submitted but unverified claims data can be checked against CEDARS and approved ex ante values).
Scalability	▪ The eTRM can easily adapt to new CPUC, CEC, & other State agency regulatory/legislative directives. ▪ The eTRM can expand to serve as the repository for the custom platform, low-income measures, as well as emerging technologies that are near or in early commercialization, and RD&D projects. ▪ The eTRM can accommodate future use cases as they arise, at a cost that would be significantly less than development of stand-alone systems.

The adoption of the eTRM as the California deemed measure data source of record will provide several benefits to the four IOUs that administer energy efficiency programs throughout the State.

eTRM Benefits for IOUs

Increased Data Quality & Accuracy	▪ The eTRM features that will significantly reduce manual data entry and calculations and improve data quality and accuracy include: range checking of values, dynamic value tables and calculations, calculation validity checks, and shared data tables. ▪ The *Measure Development and QA/QC Guidelines* provides clear guidelines for measure development and review that will improve the quality of measures being developed or updated.
Workflow Efficiency	▪ The eTRM is a centralized, single relational database will replace multiple CPUC DEER system components (PRdb, EAdb), the file management system (WPA), & the desktop software tool (READI). ▪ The eTRM workflow management functionality will streamline measure review and approval, eliminate obstacles associated with sharing and storage of supporting references and data, and will reduce handoff times. System notifications will ensure users are notified when they must complete a task.
Transparency	▪ All supporting references are linked to inputs & assumptions are available in one place. ▪ Methodology & calculations are clear, concise, & consistent across similar measures.

Stakeholder Collaboration	▪ All interested stakeholders can register to receive automated notifications of new measures or changes to measures of interest. ▪ Notifications facilitate stakeholder engagement, collaboration, & accurate application of measures. ▪ Affords opportunity for 3Ps to contribute to measure development & updating.
Eligible Measures for Implementation	▪ All IOUs have access to all statewide measures in the eTRM. ▪ The eTRM will indicate measure offering eligibility for each IOU, providing 3Ps with real-time data to design programs.
Compliance	▪ Additional measure-specific data collection requirements & other regulatory requirements can be linked to measures.
Scalability	▪ The eTRM can expand to serve as the repository for the custom platform, low-income measures, as well as emerging technologies that are near or in early commercialization and RD&D projects. ▪ The eTRM can accommodate future use cases as they arise, at a cost that would be significant less than development of stand-alone systems.

The CEC is the energy policy and planning agency for the State of California and is responsible for energy system infrastructure planning and numerous research and planning initiatives upon which State energy and climate-related policies are based. The CEC's Demand Analysis Office, for example, is responsible for the biennial Statewide Electricity and Natural Gas Demand Forecast, tracking progress towards the SB 350 target to double energy efficiency from 2015 by 2030, as well as analysis required to develop strategies for and tracking achievement toward other key legislative requirements (such as SB 100 and AB 3232). Additionally, the CEC has authority over the POUs and is, therefore, a key regulatory agency with numerous use cases for the eTRM as a scalable platform for integrating many disparate data sources.

eTRM Benefits for the CEC

System Integration	▪ The eTRM API enables POUs to automatically access and import measure data into their data systems.
Standardization of Data	▪ Through its API the eTRM will facilitate a standardized data format across POUs. ▪ Standardization of data will support a common tracking platform for meeting SB 1037 reporting requirements. ▪ The centralized relational database will help to ensure data consistency through the various CEC initiatives that utilize EE deemed measure data (Codes & Standards, demand forecast, IEPR, etc.)

Transparency	▪ All supporting references are linked to inputs & assumptions are available in one place. ▪ Methodology & calculations are clear, concise, & consistent across similar measures.
Scalability	▪ The eTRM can expand to serve as the repository for the custom platform, low-income measures, as well as emerging technologies that are near or in early commercialization and RD&D projects funded through CEC innovation hubs and EPIC grants. ▪ GHG/carbon reduction calculations will be integrated into the eTRM, providing mechanism for more efficient carbon accounting for meeting State goals. ▪ The eTRM can accommodate future use cases as they arise, at a cost that would be significant less than development of stand-alone systems.

There are 38 POUs in California that deliver power to approximately 25% of the State population. While nearly all POUs implement energy (and water) efficiency programs, they are heterogenous with respect to their customer base, energy efficiency program offerings, and their data systems and reporting protocols. The eTRM will provide a transparent, centralized repository of statewide measures to support programs and standardization across all POUs.

eTRM Benefits for the POUs

System Integration	▪ The eTRM API enables POUs to automatically access and import measure data into their data systems.
Standardization of Data	▪ Through its API the eTRM will facilitate a standardized data format across POUs ▪ Standardization of data will support a common platform for POU reporting.
Access to All Statewide Measures	▪ Through the eTRM the POUs will have efficient access to all statewide measures in the eTRM, including measures that are approved for IOU portfolios and measures that are only available to the POUs.
Visibility of Prospective Measures *(a future enhancement)*	▪ Prospective application of eTRM could allow POUs to have early visibility into emerging measures. ▪ Visibility of emerging measures would facilitate entry of emerging measures into program designs/portfolio. ▪ Early visibility will speed measure development & maturity.
Visibility of Measures in Development	▪ Visibility of measure development will give POUs better knowledge of measures that might be available for current & future programs. ▪ POUs can provide input as measures are developed.

Visibility into Measure Review	▪ Visibility into the measure review process & status will give POUs better knowledge of measure availability for current & future programs.
Stakeholder Collaboration	▪ All interested stakeholders can register to receive automated notifications of new measures or changes to measures of interest. ▪ Notifications & increased visibility facilitate stakeholder collaboration.
Transparency	▪ All supporting references are linked to inputs & assumptions are available in one place. ▪ Methodology & calculations are clear, concise, & consistent across similar measures.
Scalability	▪ The eTRM can expand to serve as the repository for the custom platform, low-income measures, and water efficiency measures. ▪ The eTRM can accommodate future use cases as they arise, at a cost that would be significant less than development of stand-alone systems.

The eTRM will provide much needed information to 3P implementers; giving them access to the same data available to utilities will allow them to design and manage their programs cost effectively.

eTRM Benefits for 3P Program Implementers

System Integration	▪ The eTRM API enables 3Ps to automatically access and import measure data into their data systems for program design, tracking, and reporting. ▪ Data fields in eTRM were specifically designed to reduce CET errors.
Eligible Measures for Implementation	▪ The eTRM will indicate measure offering eligibility for each IOU, providing 3Ps with real-time data to design programs.
Visibility of Prospective Measures *(a future enhancement)*	▪ 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 will speed measure development & maturity.
Visibility of Measures in Development	▪ Future visibility of measure development will give 3Ps knowledge of measures that might be available for current & future programs. ▪ 3Ps can provide input as measures are developed.
Visibility into Measure Review	▪ Future visibility into the measure review process & status will give 3Ps better knowledge of measure availability for current & future programs.

Stakeholder Collaboration	▪ All interested stakeholders can register to receive automated notifications of new measures or changes to measures of interest. ▪ Notifications & increased visibility facilitate stakeholder collaboration.

Regulatory Pathway Toward eTRM Adoption

Through a sequence of decisions, the Commission has established a clear set of requirements for the development and use of deemed measure values. These requirements served as the guiding principles for the development of the eTRM which has resulted in a highly user-friendly tool that meets both the needs of the PAs, 3Ps, regulators, and other stakeholders.

Notably, Phase 2A decision in the Rolling Portfolio proceeding (R.13-11-055) states:

> *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.*[6] [Emphasis added]

Additional requirements set forth by the CPUC include:

> **Tighter linkage between ex ante values, program tracking data and ex post studies.**[7] The eTRM is designed to ensure that it can be linked to CEDARs such that utilities' unverified claims data can be checked against approved ex ante values contained in the eTRM.
>
> **Develop statewide measures.**[8] The eTRM supports the Commission directive to standardize deemed measures across the IOU service territories and make them applicable statewide.

[6] California Public Utilities Commission (CPUC). 2015. *Decision 15-10-028 in Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues (R.13-11-055).* Issued October 28. Pp. 97 – 98.

[7] California Public Utilities Commission (CPUC). 2012. *Decision 12-05-015 in the Order Instituting Rulemaking to Examine the Commission's Post-2008 Energy Efficiency Policies, Programs, Evaluation, Measurement, and Verification, and Related Issues (R.09-11-014).* Issued May 18. P. 359.

[8] California Public Utilities Commission (CPUC). 2012. *Decision 12-05-015 in the Order Instituting Rulemaking to Examine the Commission's Post-2008 Energy Efficiency Policies, Programs, Evaluation, Measurement, and Verification, and Related Issues (R.09-11-014).* Issued May 18. P. 54.

Improve the uniformity and workpaper standards between the IOUs.[9] The eTRM provides a consistent format and data structure that will ensure that all measures report the same type of information and level of detail. New measures and measure updates will be centralized to ensure that measures are uniform on an ongoing basis.

Compile all commission-adopted frozen ex ante energy savings into one website.[10] The eTRM is populated with all Commission-approved measures for 2020, along with measures intended for use only in the POU portfolios.

The most recent regulatory direction – Resolution E-5082 (August 27, 2020) – laid out clear requirements and a concrete path for the adoption of the eTRM as the data source of record for deemed measure values.[11] Indeed, E-5082 reiterates past Commission position and requirements:

> *"we seek now to modernize the architecture of the DEER and workpaper project archives (WPA) to create a truly relational database that can be searched, referenced and updated for efficiently and reliably."* (p. 6)
>
> *"The eTRM uses a modern relational database architecture that can be integrated with the CPUC's other EE data systems."* (p.7)
>
> *"Transitioning to the eTRM as data source of record will replace these older systems and enable users transparent and efficient access to deemed EE measure data in an online environment; additional eTRM enhancements will make review and approval of EE measures more efficient, enable a more robust data architecture, and allow for integration with other EE data systems like the California Energy Data and Reporting System (CEDARS) and the cost effectiveness tool."* (p.8)

Importantly, E-5082 sets forth the transition to eTRM in two phases upon which the transition phase outlined in this plan is based. As per the Resolution, Phase 1 "establishes that the eTRM reflects official ex ante data and displays current approved ex ante measure data for statewide measures … to be ready by January 1, 2021." (p.7)

Phase 2 "addresses enhancements necessary for the eTRM to meet the Deemed Data Standard … scheduled to be completed by Q3 2021" (p.7) and will require the development of eTRM software enhancements that will enable CPUC ED Staff and the EAR Team "to review workpapers directly within the eTRM itself, using a new 'CPUC User' role with read/write privileges." (p.7)

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[9] Gamson, D., ALJ, California Public Utilities Commission (CPUC). 2009. *Administrative Law Judge's Ruling Regarding Non-DEER Measure Ex Ante Values.* November 18. Pp. 1 – 2.

[10] California Public Utilities Commission (CPUC). 2011. *Decision 11-07-030 in the Consolidated Application of Southern California Edison Company (U338E) for Approval of its 2009-2011 Energy Efficiency Program Plan and Associated Public Goods Charge (PGC) and Procurement Funding Requests. And Related Matters. (A.08-07-021).* Issued July 14. Pp. 27, 28, 44 and 49.

[11] California Public Utilities Commission (CPUC). 2020. *Resolution E-5082*. August 27.

Pending successful completion of Phase 1, the Resolution establishes the eTRM as the "conditional data source of record to enable public users access to active Commission-approved deemed statewide measure values" (p.8) The Resolution also identifies specific milestones and requirements that must be achieved to remove the "conditional" label (via a future resolution).

Finally, E-5082 allows the IOUs to fund and contract for the eTRM Phase 1 and Phase 2 transition via their respective annual EM&V budgets

Comparison of Content in eTRM with DEER

A key consideration for replacing the suite of DEER tools/resources with the eTRM is whether the eTRM contains the same data and information as DEER. The eTRM contains complete data and information for all approved and published measures. This includes savings values and calculations, cost data, and supporting parameters, such as NTG and EUL. The measure data is supported by robust descriptions of the values so they are easy to understand. Lastly, the supporting data and information is linked directly to the values/information in the eTRM, which supports transparency.

Many of the values in the eTRM originate in and are maintained in support tables (NTG, EUL, interactive effects, hours of use, etc.) within DEER. These tables have been replicated in the eTRM and will be maintained/updated by Cal TF Staff as the values change in DEER until this function is transitioned to the CPUC Staff and/or their EAR Team. In some limited cases, eTRM does not include documentation for DEER savings values because they could not be found in DEER. Cal TF Staff welcomes the opportunity to work with the EAR Team to identify and link the documentation for DEER measure values in eTRM to provide transparency and reproducibility.

A great deal of historical information, as well as per-unit impact values and cost estimates for many non-active measures, should be archived and remain available to the public, in addition to Commission guidance and other documents associated with legacy utility-specific measures. CPUC ED Staff, in consultation with Cal TF Staff, shall determine if the following should be retained in a DEER archive or stored in the eTRM:

- Inactive DEER measures
- Legacy utility-specific non-DEER workpapers
- CPUC ED dispositions for legacy utility-specific non-DEER workpapers
- Historic information such as DEER updates and documents relating to the Efficiency Savings and Performance Incentive (ESPI) mechanism (such as Earning Coefficients and Caps, Savings Performance Statements, and the Uncertain Measure Lists) that are posted on the CPUC website and distributed via the R.15-11-055 proceeding service list.
- Custom related data, such as industry standard practice (ISP) libraries and other guidance documents
- IOU-specific measure IDs including implementation IDs, solution codes, and product codes

Comparison of eTRM and DEER Functionality

Another key consideration for replacing the suite of DEER tools/resources with the eTRM is whether the eTRM can perform the same functions as DEER. The eTRM performs all the same functions as DEER and, in some cases, the eTRM functionality surpasses that of DEER. For instance, the workflow functions in the eTRM can be programmed to enforce review and approval protocols for quality control prior to publishing a measure. The eTRM workflow functions also allow for tracking of time and resources spent on measure development. In the eTRM, 100% of the approved, deemed measures (including cost and implementation parameters) are viewable to the public. In contrast, EAdb does not contain cost implementation parameters, nor does it directly link (or provide) references to values for all deemed measures. Lastly, in the eTRM, any user can register to receive notifications for measures or technology categories they are interested in tracking. This functionality does not exist in DEER.

Appendix A summarizes the alignment of the eTRM and the current DEER system with Commission objectives.

Appendix B compares DEER and eTRM functionality.

Appendix C compares the data in DEER and the eTRM with recommendations indicates which information has been/should be added to the eTRM.

3 TRANSITION STRATEGY

This *eTRM Transition and Launch Plan* outlines the critical tasks to support the transition of the eTRM to become the data source or record for statewide deemed energy efficient measures.

The phased approach began in 2019 with the implementation of eTRM v1 (shown by the brown segment in the Figure 2) and uploading of measures approved for the IOU 2020 portfolios into the software. A “soft launch” of the eTRM on October 15, 2019 demarcated the point in time that a user of eTRM could view and download data associated with published measures.

A transition period will extend from Q3 of 2020 through Q4 of 2021 (shown by the gold segments in the figure) and will include two phases of eTRM development. Phase 1 will include software enhancements to meet the CPUC requirements for eTRM to be the “conditional data source of record” for deemed measure values. Phase 2 will include addition software enhancements to enable measure review and approval workflow, as well as other features identified by the Core Team organizations. Phase 2 will also entail the development and implementation of IOU, POU, and CPUC testing and acceptance plans to ensure each organization can successfully integrate with the eTRM. Throughout the entire transition period, the eTRM will operate and be updated in parallel with the DEER suite of resources.

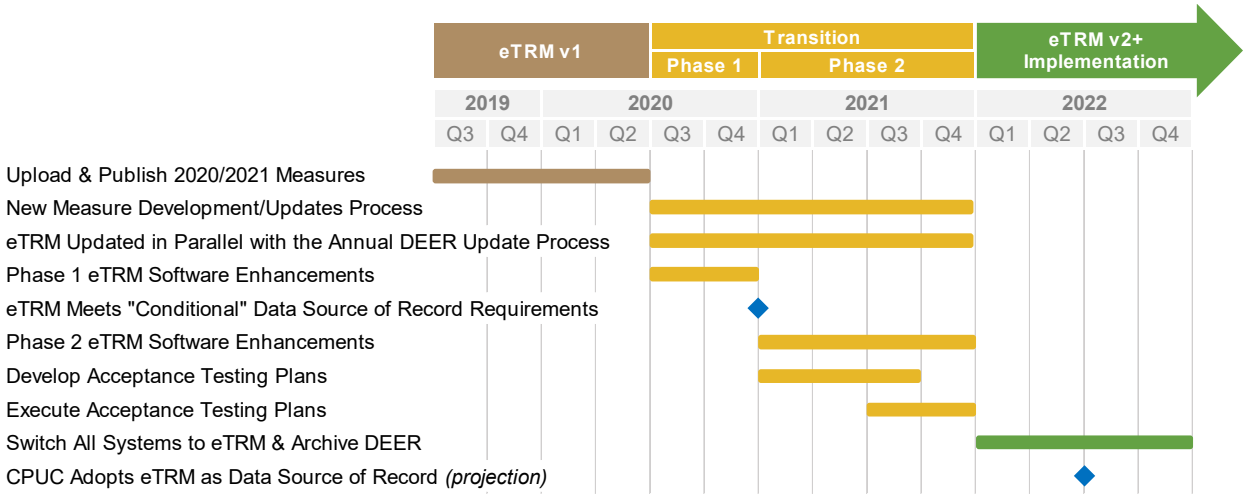


Figure 2. Overview of eTRM Transition

eTRM v1 Implementation

The development of the eTRM online software launched in 2017 and involved extensive participation from the IOUs, POUs, and Cal TF Staff. Cal TF Staff uploaded measures and measure updates approved for 2020 and 2021 to be included in the IOU portfolios into eTRM v1. By October 15, 2019, demarcated as the “soft launch” of eTRM v1, 82 statewide deemed measures were published and viewable by the public. Throughout this phase, eTRM v1 continued to be updated with new measures and measure updates submitted by the IOUs to the CPUC for review and approval. By the end of Q3 2020, 135 measures were published and viewable by the public.

In addition to software development and measure uploading, this initial eTRM v1 Implementation phase involved several initiatives that contributed to the development of the Transition phase:

- Assessment of eTRM functionality compared to existing DEER system functionality
- Inventory of DEER system elements incorporated into eTRM
- Identification and prioritization of software enhancements to meet CPUC requirements and stakeholder needs
- Core Team training
- Maintenance and updating of templates and guidelines to support statewide measure development
- Development of the Cal TF New Measure Development and Measure Update Process

Transition Phase

The Transition period occurs from Oct 2020 through December 2021 during which the following initiatives will occur:

- Management of the Statewide New Measure Development and Measure Update Process
- Parallel measure development and updates in eTRM with annual DEER update process
- Phase 1 software enhancements (release 2.1)
- Phase 2 software enhancements (releases 2.2 and 2.3)
- Develop and execute acceptance testing plans
- Switch all DEER systems to eTRM and archive DEER library

As shown in the figure above, two crucial milestones are:

- The eTRM meets the CPUC “conditional” data source requirements
- The CPUC adopts the eTRM as the data source of record

Management of the Statewide New Measure Development and Measure Update Process

As of January 1, 2020, all requests for new measures and measure updates by IOUs, POUs, and 3Ps will be reviewed through a process led by Cal TF Staff.[12] Cal TF Staff will upload the proposed measures to the eTRM and will conduct a QA/QC review prior to the measure presentation to the Cal TF. Once a measure is affirmed by the Cal TF, the lead IOU will be responsible for conducting a final review of the measure submitting the measure to the CPUC for review. After completion of Phase 1 software development (described below), the measure characterization and data will be downloaded from the eTRM and included in the files submitted to WPA. After completion of Phase 2 software development, all measure submission, review, and approval will occur within the eTRM environment.

Note that POU-only measures are not required to be submitted to or approved by the CPUC and will be published as “Cal TF-affirmed” in the eTRM once they are affirmed by the Cal TF.

Measures in eTRM are Updated in Parallel with the Annual DEER Update Process

As shown in Figure 2, the eTRM will be maintained and will operate in parallel with the DEER resources through December 2021 to allow the IOUs, CPUC Staff, and EAR Team to monitor the performance of each system and conduct acceptance testing (described below). To ensure that the eTRM values remain aligned with the values in DEER, Cal TF Staff will monitor the PEAR Change Log (via VisualPing). Pending funding availability in 2021, Cal TF Staff will monitor the eTRM daily sync log for any changes and will update the eTRM values and existing measures accordingly. Note that after Phase 1 software enhancements are complete, the eTRM will include a CPUC Support Tables page that will present all PRdb tables in a read-only format.

The measure update process within the eTRM will be similar to the process followed for DEER updates and IOU-specific workpapers. The EAR Team will recommend DEER measure updates and the CPUC will issue a resolution in accordance with current practice and the Rolling Portfolio schedule. Required measure updates for 2022 will be released in a draft resolution by June 1, 2021 and a final update resolution will be published no later than September 1, 2021. Cal TF Staff will be responsible for updating the eTRM Shared Parameter and Shared Value tables in the eTRM, provided available funding for this work, until the Phase 2 software enhancements are deployed to the live “production” eTRM site.

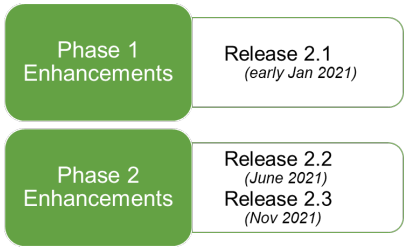
Once the eTRM Shared Parameter and Shared Value tables are updated with the final 2022 values on September 1, 2021, Cal TF Staff will collaborate with the IOUs to incorporate these changes into the affected measures along with any other measure updates required as per the applicable resolution. Cal TF Staff will collaborate with the IOUs to ensure that any necessary edits to the measure characterization, including updating or adding new reference documents, are completed. The updated measure files will be available for download from the eTRM and provided to the CPUC (and the EAR Team) for review and approval. Note that reference files

[12] http://www.caltf.org/submit-a-measure
The process is documented in *Cal TF Technical Position Paper No. 11: Statewide New Measure Development and Measure Update Process* (February 28, 2020) available for download at http://www.caltf.org/tools.

will be accessed through links provided within the measure characterization that are stored within the eTRM and will thus no longer need to be submitted.

Phase 1 and Phase 2 eTRM Software Enhancements

The process to identify eTRM software enhancements spanned over a year and involved extensive collaboration among Cal TF Staff, the Core Team organizations, and the software development contractor. The final list of enhancements and the software development schedule are stipulated in Resolution E-5082.



The schedule specifies three releases that will deploy software enhancements to the live eTRM site. The key milestones upon which the date for each release was determined is also stipulated in E-5082.

eTRM v2 Software Enhancements

Phase 1 enhancements include those identified by the CPUC ED Staff that are required to consider the eTRM as the "conditional" data source of record. Phase 1 also includes an enhancement to add an API endpoint that provides a master list of permutations across latest published versions of all measures, specifically needed for integration of eTRM into the POU Energy Platforms software. Phase 2 will include all other enhancements required by the CPUC as well as many enhancements agreed upon by the Core Team. All Phase 1 and Phase 2 enhancements are defined in Appendix D.

eTRM v2 Software Development Process

eTRM enhancements will be developed and tested using the "Agile" software development method, which means completing groups of enhancements in short sprints of approximately three weeks each. Week 1 and 2 of each spring involve coding by the software developer; and the third week involves internal quality assurance testing and deployment to a staging server. Week 3 of each sprint will include a minimum three (3) day Core Team review and approval period during which representatives of each Core Team organization will conduct *functional testing* of each enhancement. The next sprint will not begin until Cal TF Staff have reviewed all Core Team feedback and the project manager has approved software developer responses and actions to address any identified issues.

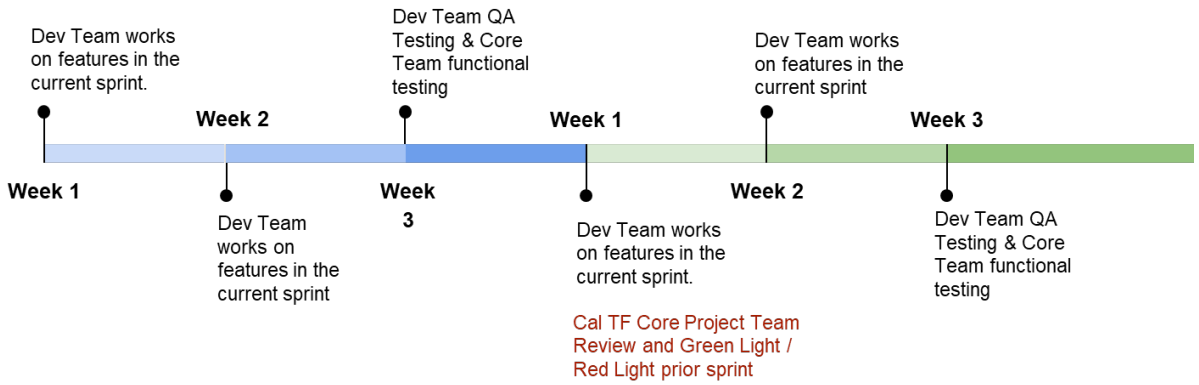


Figure 3. Agile Software Development for eTRM v2 Development

Following the successful completion of all sprints for a particular release, the software developer will conduct *integration testing* over two-week period to ensure the new enhancements integrated into the existing eTRM software function as required. Following the integration testing is an *acceptance testing* period, during which representatives of each Core Team organization will review and test the new enhancements integrated into the existing eTRM software to ensure they function as required. After the Cal TF project manager has determined that all issues have been adequately addressed, the enhancements will be deployed to the live eTRM site.

eTRM v2 Software Development Schedule

The software development schedule shown in Figure 4 depicts crucial planning periods (yellow) during which enhancements will be assigned to a sprint and functional requirements and acceptance criteria are established, the enhancement development sprints (green), integration testing by the software developer (light blue), and acceptance testing periods (dark blue). As shown, the duration of the eTRM v2 software development is 59 weeks, culminating in release 2.3 in November 2021.

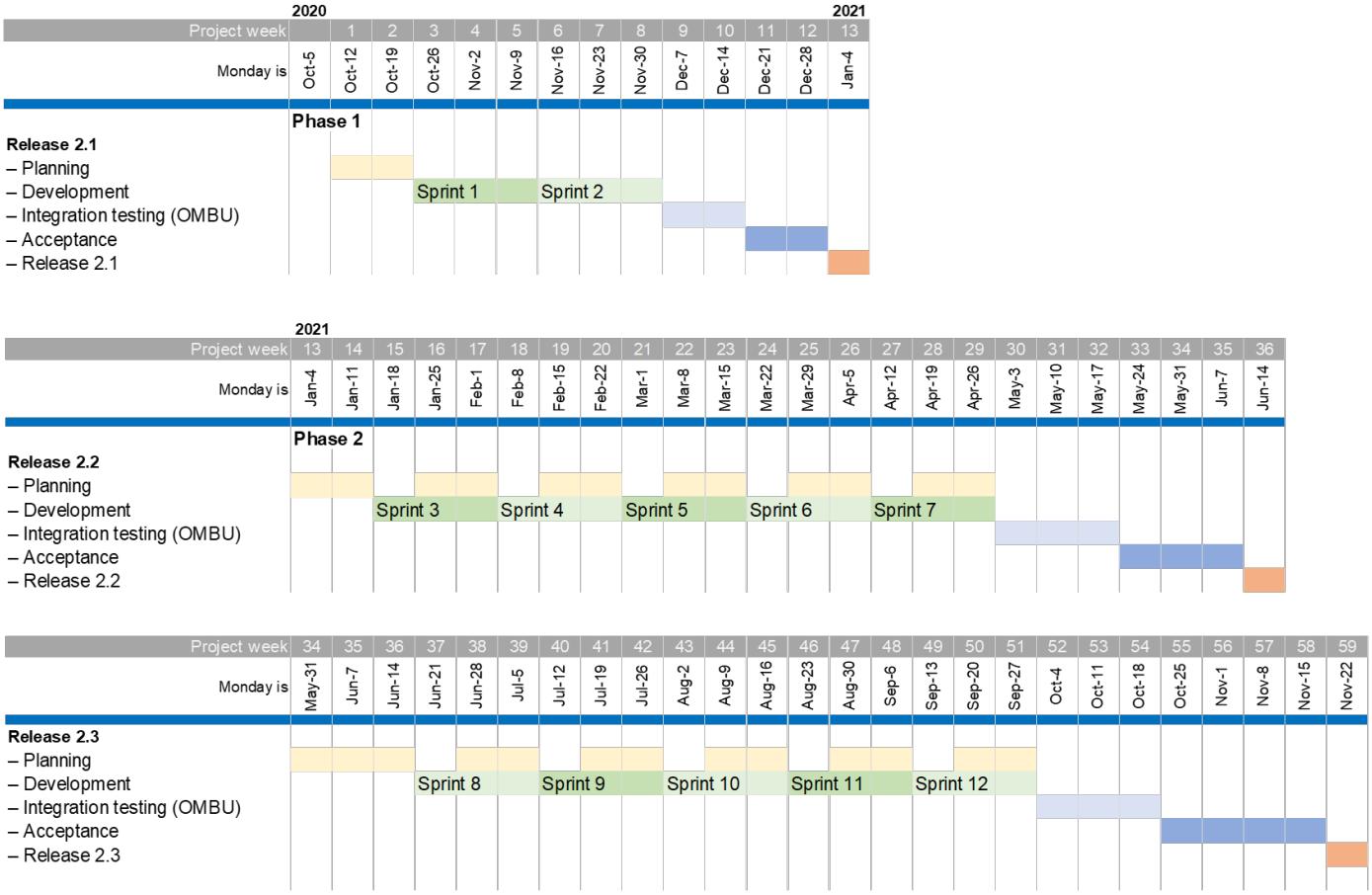


Figure 4. eTRM v2 Software Development Schedule

Develop and Implement Transition and Acceptance Testing Plans

Each Core Team organization will be asked to develop a Transition and Acceptance Testing Plan (TATP) to ensure all use cases are identified and that all related data systems and internal processes will successfully migrate to the eTRM. A generic abbreviated TATP is provided in Appendix G. Cal TF Staff will request that each organization will customize/expand this generic form to ensure that all systems will be adequately and systematically tested.

The unique TATP for each organization will identify their specific use cases for eTRM data in the near term (next 1 to 2 years) and all internal data systems that currently utilize DEER components (PRdb, EAdb, READI, WPA, CEDARS, and the CET) and that will need to migrate to the eTRM. Each unique TATP will specify the steps required to convert each identified internal data system from DEER to the eTRM, the barriers likely to be encountered, the responsible parties to switch each internal system from DEER to eTRM, and key milestones and associated dates. Importantly, the TATP also specifies acceptance criteria that must be met to ascertain success.

Use cases identify the specific scenarios or situations under which the eTRM data will be used; identifying the eTRM use cases is critical to understanding each Core Team eTRM user system requirements. Specifically, use cases are written descriptions of interactions between the user and the system and include:

- Specific tasks that each internal system needs to complete
- The main user task(s)
- The information the user has/provides
- The information the user needs from the system

Acceptance criteria clearly describe the testing of each system that is required to ensure that user requirements are satisfied. Establishing agreed upon acceptance testing criteria in advance ensures that there is no uncertainty or misunderstandings about whether the eTRM has satisfied the user-defined requirements.

Cal TF Staff will work with each of the Core Team organizations below to develop individual TATPs:

CPUC ED: The CPUC TATP will specify use cases across all components of the current DEER environment (PRdb, EAdb, READI, WPA, CEDARS, and the CET) and will necessarily include all EAR Team requirements and processes related to deemed measure development, review, and approval.

IOUs: The TATP for each IOU will identify internal systems that currently access DEER resources: PRdb, EAdb, WPA, CEDARS, and the CET. The transition of each IOU to the eTRM will involve modifying their current interfaces that pull deemed measure data from the PRdb to the eTRM. Each IOU plan will be complete and delivered to the IOU for review and comment, and Cal TF Staff will finalize each plan based on the IOU comments.

Preliminary descriptions of the integration strategy, current intake platforms, and data system interfaces of each IOU are provided in Appendix E. Cal TF Staff will work with each IOU to ensure detailed TATPs are finalized and approved through necessary internal governance channels prior to implementation.

POUs: The California POUs can choose the source of their deemed measure impact and cost values, but since the eTRM will contain a robust set of current/updated values (both POU-only values and CPUC-approved values which are also applicable in the POU service territories) the POU might want to leverage the eTRM.

Cal TF Staff will provide LADWP and SMUD with the template TATP using the same process and schedule as the IOUs. These plans will necessarily cover the integration with the POU cost Energy Savings Platform software.

Cal TF Staff will also work with the Southern California Public Power Authority (SCPPA), and the Northern California Power Agency (NCPA) to develop a generic TATPs for other POUs to customize. This plan will ensure that the POU uses cases are well understood and that the eTRM functionality can support the POU requirements for integration.

3Ps and Other Stakeholders: Cal TF Staff will work through the California Efficiency and Demand Management Council (CEDMC) and National Association of Energy Service Companies (NAESCO) to modify the generic TATP in Appendix G to address the specific needs of 3P implementers and other stakeholders. The objective will be to identify common use cases related to DEER and deemed measure information more generally, with an emphasis on the processes and interfaces that 3Ps currently use to access deemed measure data.

A specific objective of the 3P adoption of eTRM will be to streamline or automate the current systems and processes that 3Ps use to obtained deemed measure information. Once the 3P use cases are clearly defined, Cal TF Staff will develop a generic TATP that will be broadly applicable to all 3Ps. Individual organizations will customize the generic TATP to conduct their own acceptance testing.

CEC: Cal TF Staff will work with the CEC to define potential use cases for the eTRM. Cal TF Staff will work with the CEC to identify opportunities to leverage the eTRM for CEC planning, reporting, and/or appliance and building code development. Cal TF Staff will develop the use cases for these opportunities and prepare a TATP to ensure that CEC Staff is fully prepared to leverage these opportunities. Cal TF Staff will adapt the eTRM training curriculum, as needed, and will offer targeted training sessions for the CEC Staff.

As shown in Figure 2 above, all TATPs will be developed through Q3 of 2021. While some preparatory work can be completed during Q1 and Q2, finalization of the TATPs will likely depend on deployment of high priority software enhancements in June 2021 (Release 2.2). All TATPs will be finalized by the end of Q3 and will be executed and complete during Q4 of 2021.

eTRM v2 Implementation

The full implementation of the eTRM v2 will launch on January 1, 2022 and marks the cut over from the use of the DEER tools and resources to the eTRM by the CPUC, EAR Team, and IOUs, POUs (if applicable), and 3Ps. After the full launch on January 1, 2022, the following functions would transfer from DEER to the eTRM:

- The EAR Team will enter annual DEER updates to the eTRM Shared Parameter and Shared Value tables directly in the eTRM.
- Measure development, review, and submission processes will occur fully within the eTRM.
- IOUs will submit measures/measure updates to CPUC / EAR Team for review in eTRM through eTRM workflow management feature.
- 3Ps will continue to propose new measures through the new measure development and update process managed by the Cal TF. Cal TF Staff will upload proposed measures into eTRM; Cal TF Staff and 3Ps will use eTRM to develop measure for IOU and Cal TF review, and ultimately for IOUs to submit to the CPUC for review and approval.
- The EAR Team will review and approve all new measures and measure updates in the eTRM, including those developed by 3Ps, unless the measure is solely for POU use.
- CEDARS will access measure values through eTRM to verify claims data/verification.
- eTRM measure data (Support Table information) will be updated nightly through an API from PRdb to eTRM. It will also be downloaded from eTRM to CEDARS nightly to permit measure-level cost effectiveness analysis.
- POUs will download measure data through an API to be imported into the Energy Savings Platform for cost effectiveness analysis and reporting.

4 ROLES AND RESPONSIBILITIES

Implementation of this *eTRM Transition and Launch Plan* will require a coordinated effort by all the Core Team organizations; roles of each organization are outlined below.

The CPUC is the agency with regulatory authority of the IOUs, including the approval and administration of DEER and deemed measures.

CPUC Role & Responsibilities

Role	Responsibility
Regulatory Transition	▪ Approve the eTRM as the "conditional" data source of record, effective January 1, 2021 ▪ Determine that the DEER suite of tools and data can be fully retired and/or archived, effective January 1, 2022 ▪ Adopt eTRM as the data source of record, via resolution issued in 2022

The CPUC ED Staff are responsible for reviewing new measures and measure updates to ensure compliance with CPUC policies and technical requirements related to DEER and deemed measures. They oversee IOU compliance with these policy directives and serve as the primary point of contact for the IOUs when they have questions or need guidance. CPUC Staff also oversee the EAR Team and the CPUC CEDARS Team.

CPUC ED Staff Roles & Responsibilities

Role	Responsibility
Transition and Acceptance Testing	▪ In collaboration with the Cal TF Staff, develop a TATP for CPUC systems/databases including WPA, EAdb, PRdb, CET, and CEDARS. ▪ Oversee the CEDARS Team transition to the eTRM.
Measure Updates	▪ Direct EAR Team to review and approve new and updated measures in eTRM rather than WPA. ▪ Direct EAR Team to develop new and updated DEER measures using eTRM. If measure is a modeled measure, the measure impacts will be developed using MASControl or another energy use modeling tool and results will be imported into eTRM.
Regulatory Transition	▪ Ensure eTRM release 2.1 (Phase 1) meets CPUC requirements for "conditional" data source of record designation. ▪ Ensure eTRM releases 2.2 and 2.3 (Phase 2) meet CPUC requirements to remove the "conditional" designation for eTRM to be the data source of record for all deemed measure values.

Role	Responsibility
eTRM v2 Development	▪ Participate in weekly software development meetings with the Core Team and software developer ▪ As part of eTRM Core Team, approve functional requirements and acceptance criteria for each enhancement. ▪ Participate in functional testing of enhancements in each sprint. ▪ Participate in acceptance testing to ensure enhancements work together. ▪ Review and approve security protocols, shared data management process, and updated workflows

The CPUC EAR Team is responsible for reviewing and approving deemed measure workpapers and preparing annual updates to the DEER values.

CPUC EAR Team Roles & Responsibilities

Role	Responsibility
Transition and Acceptance Testing	▪ Collaborate with Cal TF Staff to develop a TATP for CPUC systems/databases, including WPA, EAdb, PRdb, CET, and CEDARS. ▪ Conduct acceptance testing for eTRM measure review and approval that will replace WPA, EAdb, PRdb, and CET.
Measure Updates	▪ Develop new and updated DEER measures using eTRM. If a measure is a modeled measure, the measure impacts will be developed using MASControl or another energy use modeling tool and results will be imported into eTRM.
eTRM v2 Development	▪ Participate in weekly software development meetings with the Core Team and software developer ▪ Designate a “lead” and “secondary” staff who will serve as the Cal TF Staff primary point of contact throughout eTRM v2 development and who will ensure appropriate SMEs participate in functional and acceptance testing as necessary. ▪ Participate in software development planning to establish and finalize functional requirements and acceptance criteria for all eTRM software enhancements. ▪ Conduct functional and acceptance testing of software enhancements, particularly those identified as requirements to meet CPUC “conditional” data source of record and requirements needed to remove the “conditional” designation. ▪ Work with Cal TF Staff to develop security protocols and shared data management process. ▪ Conduct shared data management acceptance testing.

The CEDARS Team is responsible for maintaining the CEDARS database and ensuring that it aligns with the values in the PRdb.

CPUC CEDARS Team

Role	Responsibility
CEDARS Integration	▪ Work with Cal TF Staff to develop the CEDARS transition and acceptance testing plan. ▪ Execute the CEDARS transition plan and conduct acceptance testing.

Cal TF Staff are responsible for administration and oversight of the eTRM throughout the Transition phase.

Cal TF Staff

Role	Responsibility
Transition and Acceptance Testing	▪ Support CPUC ED and EAR Team to develop TATPs to migrate from CPUC systems/databases including WPA, EAdb, PRdb, CET, and CEDARS to eTRM. ▪ Support CPUC Staff and EAR Team as they transition to the eTRM ▪ Facilitate development of CEC TATP for CEC systems/databases, and support CEC Staff as they transition to the eTRM ▪ Facilitate development of IOU TATPs for IOU system/databases and support the IOUs as they transition to the eTRM. ▪ Facilitate the development LADWP, SMUD, SCPPA, and NCPA TATPs for POU systems/databases and support the POU transitions to the eTRM. ▪ Regularly brief the Core Team eTRM users and industry stakeholders on transition activities and progress.
New Measure Development & Measure Updates	▪ Manage statewide new measure and measure update process. ▪ Conduct QA/QC of EAR Team, IOU, and POU measure updates in eTRM. ▪ Update measures in eTRM in accordance with DEER updates (pending funding availability).
eTRM v2 Development	▪ Oversee eTRM software development contract and the development and deployment of all enhancements to the live eTRM production environment. ▪ Develop functional requirements and acceptance criteria. ▪ Lead and participate in Week 3 review sprints and provide feedback. ▪ Track comments from all parties during functional and acceptance testing periods and ensure comments are addressed and resolved satisfactorily. ▪ Work with EAR Team to develop security protocols and shared data management process. ▪ Develop shared data management acceptance testing plan. ▪ Regularly brief the Core Team eTRM users and industry stakeholders on eTRM v2 development and progress.

The IOUs have a number of responsibilities related to deemed measure development, including (but not limited to) the preparation and submittal of deemed measure workpapers, reviewing and submitting deemed measure workpapers developed by 3Ps, use EAdb data to prepare annual ABALs (prospective), and prepare and upload monthly and quarterly reports (retrospective) via CEDARS. Roles and responsibilities of the IOUs for the transition to eTRM v2 are outlined in the table below.

IOUs

Role	Responsibility
Transition and Acceptance Testing	▪ Work with Cal TF Staff to develop IOU-specific TATPs. ▪ Dedicate engineering staff to oversee the transition to eTRM. ▪ Engage IT, reporting, and other SMEs, as required, to develop and implement TATPs. ▪ Conduct IOU transition acceptance testing plan. ▪ Review and comment on plans for switching from WPA to eTRM.
New Measure Development & Measure Updates	▪ Attend eTRM training as needed. ▪ Develop new measures in the eTRM. ▪ Conduct measure updates in eTRM.
eTRM v2 Development	▪ Participate in weekly software development meetings with the Core Team and software developer. ▪ Designate a “lead” and “secondary” staff who will serve as the Cal TF Staff primary point of contact throughout eTRM v2 development and who will ensure appropriate SMEs participate in functional and acceptance testing as necessary. ▪ Participate in software development planning to establish and finalize functional requirements and acceptance criteria for all eTRM software enhancements. ▪ Conduct functional and acceptance testing of software enhancements.

Though they are not required to do so, the POUs will be able to leverage the eTRM for deemed measure information. Roles and responsibilities below are specific to LADWP, a Core Team organization involved in the development of the eTRM.

LADWP

Role	Responsibility
Transition and Acceptance Testing	▪ Work with Cal TF Staff to develop POU transition and acceptance testing plans ▪ Dedicate engineering staff to oversee the transition to eTRM ▪ Engage IT Staff, as required, to implement the TATP ▪ Conduct POU transition acceptance testing

Role	Responsibility
Measure Updates	▪ Develop new measures and measure updates in eTRM
eTRM v2 Development	▪ Participate in weekly software development meetings with the Core Team and software developer. ▪ Designate a “lead” and “secondary” staff who will serve as the Cal TF Staff primary point of contact throughout eTRM v2 development and who will ensure appropriate SMEs participate in functional and acceptance testing, as necessary. ▪ Participate in software development planning to establish and finalize functional requirements for all eTRM software enhancements. ▪ Conduct functional and acceptance testing of software enhancements.

CEC Staff

Role	Responsibility
Transition and Acceptance Testing	▪ Identify CEC use cases, tools, and initiatives that can leverage eTRM software ▪ In collaboration with Cal TF Staff, develop a TATP for CEC systems/databases
eTRM v2 Development	▪ Participate in weekly software development meetings with the Core Team and software developer. ▪ Designate a “lead” and “secondary” staff who will serve as the Cal TF Staff primary point of contact throughout eTRM v2 development and who will ensure appropriate SMEs participate in functional and acceptance testing, as necessary. ▪ Participate in software development planning to establish and finalize functional requirements for all eTRM software enhancements. ▪ Conduct functional and acceptance testing of software enhancements.

Other Stakeholders

The Regional Energy Networks (RENs) have similar roles and responsibilities as the IOUs in that they are required to use the EAdb data to prepare their Annual Budget Advice Letters (ABALs) (prospective) as well as monthly and quarterly reports (retrospective) via CEDARS. The RENs currently do not have a role in deemed measure development, although RENS utilize deemed measure values to plan and design new program offerings and will therefore benefit by leveraging the values and information in the eTRM.

3P implementers require deemed measure values to identify cost effective measures and design programs and to propose new program offerings. Some 3Ps, particularly large

companies with sophisticated analysis and program design tools, may want to develop their own TATP, as described above.

Engineering and evaluation firms will not have any direct roles or responsibilities through the transition to the eTRM; however, such entities are typically under contract with one or more of the Core Team organizations and will thus benefit from the adoption of the eTRM as the data source of record. Evaluation firms conduct essential evaluation research for both the CPUC and the IOUs, as well as other research that utilizes deemed measure data (Potential and Goals Study, for example). Engineering firms are often contracted by the utilities to support measure development and measure updates and some evaluation firms will utilize ex ante values to conduct impact evaluations and other research.

5 SUPPORTING INITIATIVES

This section summarizes several important tasks that will be implemented throughout the Transition and eTRM v2 Implementation phases:

- eTRM user support
- Ongoing monitoring and maintenance and website administration
- Bug fixes and minor feature enhancements
- eTRM software update planning
- eTRM governance

Provide eTRM User Support

The eTRM user experience will be essential for long-term success and ability of the eTRM to meet needs of the many organizations that will rely on the eTRM to develop measures, access and utilize data efficiently, and effectively manage shared data and measure review and approvals. Cal TF Staff will provide technical support for eTRM users who have questions or issues submitted through the eTRM email account (eTRM@FutEE.email). The level of eTRM user support provided will be commensurate with available funding.[13] Cal TF Staff will not provide dedicated phone support due to funding constraints. For most help requests, the Cal TF Staff will direct users to existing resources, such as the *eTRM User Guide* and training materials/recordings available on the eTRM and Cal TF websites.

Additionally, eTRM users can submit their suggestions for future software enhancements to the eTRM via eTRM@FutEE.email. Cal TF Staff will document all comments and suggestions and use them to inform the annual eTRM enhancements process.

Conduct Ongoing Monitoring and Maintenance and Website Administration

The eTRM is a web-based tool that is currently hosted by Amazon Web Services (AWS), a subscription-based service that provides extensive security protections and up-time guarantees. As a web-based tool, the eTRM will need ongoing monitoring and maintenance to ensure that it is secure and working as designed. This includes monitoring the application to ensure it remains online and available and that performance is not degrading over time based on increased traffic, growing number of measures or other expected system use. Security patches and security-related updates will need to be made when they are developed by the various software providers. In addition, the system will need to be monitored for hacking and other security

[13] Cal TF Staff intention was to provide the following eTRM support for users: a “Help Desk” for users that could provide individual phone support that would address a wide range of eTRM issues, including problems accessing their accounts, where to find data and information within the eTRM, and how to run reports, and how to download measure data. eTRM Help Desk representatives will not be able to answer policy or other questions outside the scope of the eTRM.

threats. Lastly, it is necessary to validate the offsite backups on a regular basis to ensure they are valid and usable. The following tasks are included in ongoing monitoring and maintenance and website administration:

- Application uptime monitoring of the eTRM application to ensure it remains online and available.
- Application server software security update patching to ensure that all elements of the Application Server Stack receive security patches and security-related updates within fourteen (14) days of general release by software providers. (This does not include major software version updates.)
- Application performance, stability, and security testing as part of monitoring the application environment for any issues that adversely impact system security, stability, speed and performance, including low memory issues, stack leaks, Denial of Service attacks, repeated login attempts including dictionary and brute force strategies, or any other known issues.
- Validation of daily offsite backups on regular basis to ensure they are valid and usable for the intended purpose of restoring the application and database if needed.
- Support needed to restart the application during application outages caused by the underlying AWS hosting infrastructure (i.e., a server outage affecting the eTRM system),
- Regular monitoring and updating of eTRM access logs and security protection to monitor and seek to prevent hackers from gaining access to the eTRM.

Implement Bug Fixes and Minor Enhancements

Bug Fixes. A “bug” is problem that causes the program to crash or produce invalid results; bugs are unexpected but common issues associated with software programs that must be expected and resolved. To prevent unexpected invalid results, errors, and delays caused by bugs, it will be prudent to ensure funding and processes are in place for swift mitigation.

Minor Enhancements. Minor enhancements refer to small software updates of limited scope and consequence that can be scoped, implemented, tested, and deployed outside of the rigorous agile scrum process summarized above. IOU users have already made suggestions for small updates to improve the usability of the eTRM. For instance, one of the funders requested that the measure status category originally named “CPUC Approval” be changed to “CPUC Approved” and that the ordering of the value tables be changed to be more intuitive. These are small changes but require software developer time to implement.

Coordinate eTRM Software Update Planning

Throughout the Transition phase, Cal TF Staff will manage the process to receive and log recommended enhancements from the Core Team organizations and from eTRM users. Recommendations can be submitted through the eTRM email account, the Cal TF email account, or direct to Cal TF Staff. Recommendations could range from minor feature improvements to major enhancements to improve functionality or expand to address new use case(s).

Beyond 2021, Cal TF Staff recommends an annual eTRM update planning cycle that will conclude in time for required funding to be incorporated into the IOU ABAL filings.

Develop eTRM Governance Plan

During the Transition phase in 2021, Cal TF Staff will facilitate the development of an *eTRM Governance Plan* to document how the eTRM will be administered by funding that share ownership over the software.

An eTRM Governance Board, initially facilitated by the Cal TF Staff, will oversee the administration of the eTRM. Cal TF Staff proposes that the Governance Board be comprised of representatives from the California regulatory agencies and eTRM funding entities expected to be the eTRM owners post 2021 (CPUC, LADWP and SMUD). The CPUC is expected to assume the IOU portion of eTRM ownership on or about January 2, 2022, as per E-5082.

The following organizations will each appoint one member to the Governance Board: CPUC, CEC, LADWP, and SMUD, with participation (but not voting rights) of organizations that represent other stakeholders that will use the eTRM, such as CEDMC, NAESCO and NRDC.

A primary purpose of the Governance Board will be to resolve issues elevated to the Board by consensus. When consensus cannot be reached, decision making by the Governance Board would be by a simple majority with each member, or their designee, casting a single vote. Issues that deal with compliance with statutory or regulatory requirements are exempt from these voting requirements, however, the Governance Board may need to address the method or process to achieve compliance.

A set of eTRM Governance Standards will dictate the rules for administration of the eTRM including how the eTRM will be funded and managed. Cal TF Staff proposes to develop the eTRM Governance Standards in 2021 in collaboration with expected owners of the eTRM. The Governance Standards would address the following governance topics:

“Vision for eTRM”

- Annually update “Vision for eTRM” that describes how eTRM can streamline, yield quality and consistency and usability of the ISDM data ecosystem while reducing cost and increasing transparency.

Funding and Support

- Determine the funding responsibilities related to annual eTRM updates and ongoing maintenance and support.

Annual eTRM Enhancements

- Establish guidelines for conducting the annual update process and determining which enhancements will be funded.
- Determine how the potential enhancements will be identified and screened.
- Decide which new functionality to fund in each annual cycle.

eTRM Integrations with 3P Implementers

- Establish requirements and screening process for 3P integration with/connection to the eTRM.
- Identify the circumstances under which 3P integration rights may be terminated.

eTRM Integration with Other Tools/Platforms

- Establish requirements for considering requests for integration with other tools/platforms, such as CEUS, RASS, EnergyPlus, and other rich data sources that could support future analysis.

Integrity of the eTRM Data/Information

- Establish who has authority over the control of the data and information in the eTRM and how changes or updates are authorized and executed.
- Create clear directives on conditions that must be met to publish a measure (or measure information).
- Establish the process for review and approval prior to publishing.

Security Requirements

- Establish the protocols that will dictate information protection in the eTRM.
- Create a hierarchy of security requirements for various levels of confidential information contained in the eTRM as the functionality and usage expands (i.e., if customer-specific data is added to the eTRM.)

User Roles

- Determine the roles and constraints that will be applied to individual eTRM users; these roles and constraints will ensure that users will not be able to make changes to measures or values unless their security profile permits them to do so.

Hosting, Maintenance, and User Support

- Establish expectations around hosting and maintenance of the eTRM system and level of support provided to the eTRM users.

Once the eTRM Governance Standards are developed and approved, Cal TF Staff will work with the Governance Board to develop security protocols and a shared data management process. These are the specific programming rules that allow the eTRM to comply with the requirements of the Governance Standards. The shared data management process defines the means and methods used to oversee management of and updates to the eTRM Shared Data Library. Careful management of this library is critical as any data changes therein could affect multiple individual eTRM measures.

6 COMMUNICATIONS & TRAINING

Cal TF Staff will work to ensure that energy efficiency industry stakeholders have the information, knowledge, and support they need to effectively leverage the eTRM. This section describes the communications and training the Cal TF Staff plans to provide to support the Core Team organizations and other industry stakeholders during the transition to the eTRM.

Communications

Cal TF Staff will develop and execute a communications strategy to ensure that the industry stakeholders receive timely information about the eTRM and any change in its status as the California deemed measure data source of record.

Target Audience

The target audience for eTRM transition and launch communications includes the Core Team organizations (IOUs, POUs, CPUC ED/EAR Team, and the CEC).

Tactics & Channels

Communications during the Transition Phase with the Core Team will be primarily through weekly meetings for eTRM v2 development project and via a private SharePoint site. The SharePoint site provides a central repository for all documentation, information, and files associated with eTRM v2 development. Importantly, the SharePoint will ensure all aspects of eTRM v2 development (planning, design, testing, issues logged, and sign off) are transparent and accessible to all Core Team members.

Communications with other industry stakeholders will leverage existing industry channels. The primary tactic will be brief updates and notices using existing communications such as newsletters and email distribution lists. Primary channels include the California Energy Efficiency and Demand Management Council (CEDMC), California Energy Efficiency Coordinating Committee (CAEECC), the Proposal Evaluation and Proposal Management Application (PEPMA) platform, and the R.13-11-005 Service List (when appropriate). Cal TF Staff will supplement these efforts with updates provided through other industry events such as the CPUC Quarterly EM&V Stakeholder Meetings and ACEEE Summer Study.

A draft Stakeholder Communications Strategy is provided in Appendix F. In Q1 of 2021, Cal TF Staff will finalize the Communications Strategy pending inclusion in its 2021 Business Plan and available funding.

Training

Cal TF Staff will conduct a series of six training sessions to ensure that users can fully leverage the features of the eTRM.

Base User Training

A Base User can view all published measures in the eTRM. A new user who registers on the eTRM website will become a Base User by default. Cal TF Staff has developed two, one-hour training webinars for eTRM Base Users:

- General eTRM User Training will cover accessing the eTRM, navigating the eTRM, subscribing to measures for notifications, and exporting data from the eTRM.
- Customizing Data Exports Training will provide guidance regarding how to create customized measure reports, permutation reports, and report subscriptions. It will also provide high-level information regarding how to access the application programming interface (API) to access eTRM data. Note that use of APIs requires a level of programming skill that this training session is not intended to provide.

Cal TF Staff will administer a web-based feedback survey and send to each training participant. The survey will include questions about the training and suggestions for improvement as well as questions about the usefulness of eTRM functions and suggested enhancements.

Measure Developer Training

Measure development within the eTRM is more complex than simply accessing the data in the eTRM and, therefore, requires more extensive training. Cal TF Staff will conduct training sessions for individuals within the IOU and POU organizations who will be authorized to develop measures within the eTRM. Topics will include understanding the relationship between parameters and value tables, using and filtering shared tables in measures, pruning measure permutations by creating exclusions, and managing the measure review process for a fully developed draft.

Measure Developer training materials and recordings will be made available for reference.

Administrator Training

Administrator training will be conducted for CPUC Staff and EAR Team consultants. This training will cover administrative functions such as navigating and managing the workflow functions, managing users and roles, developing shared reports, managing the shared data library and reference library, and monitoring the published data.

Other Resources

The *eTRM User Guide* provides short tutorial “how to” videos to instruct Base Users how to complete a variety of tasks in the eTRM. The User Guide will be updated upon completion of each software development release to address new features or functionality.

A ALIGNMENT WITH REGULATORY OBJECTIVES

The table below compares the eTRM and DEER alignment with regulatory objectives

Commission Objective	EAdb/DEER	eTRM
Improve the Usability and Transparency of All Ex Ante Values (D.15-10-028, pp. 97 – 98).	The current READI tool can only be installed on Windows-based systems. There is some documentation built into the system, but it is limited, especially as it relates to the fields and values stored in the database.	As discussed in the decision language, the eTRM "offer(s) a common platform for all PAs to compose savings estimates transparently and consistent with Commission direction." It will allow development of the workpapers and the values on the same platform where the values are stored along with links to algorithms and documentation for the stored values, significantly enhancing transparency. The firm hired to develop the interface for the system does user-interface design professionally and has designed a system that is user friendly and is accessible across many platforms because it is web-based.
Tighter Linkage Between Ex Ante Values, Program Tracking Data and Ex Post Studies (D.12-05-015, p. 359).	The current system is structured to provide a linkage between the EAdb and the program tracking data through a Cost Effectiveness Values table (CEV Table). However, this system has not produced a comprehensive set of actively used values in the EAdb.	Measure development will be initiated in the eTRM and will therefore be in a standardized format, from their inception. The eTRM will systematically assign standardized IDs to measures, measure offerings, and measure permutations. Those IDs are expected to be provided in claims submitted through the CEDARS system, providing a clear linkage between the eTRM and claims.
Statewide Measures (D.12-05-015, p. 54; See also Ex Ante Team 2017 Workpaper Guidance Memo, p. 7.)	Prior to the measure consolidation process, statewide measure coordination was limited. Multiple utility-specific workpapers were developed for the same measure, and all non-	The measure consolidation process has yielded a single set of statewide measures, consistent with Commission direction and sound public policy. The measure consolidation effort undertaken as part of the

Commission Objective	EAdb/DEER	eTRM
	DEER workpapers were utility-specific.	development of the eTRM significantly accelerated the movement toward statewide measures, consolidating existing workpapers into statewide measures and values that are uploaded into the eTRM. It will also support future development of standardized statewide measures and could facilitate measure development by 3Ps.
Measure Standardization-Across the State (D.05-01-055, p. 131.)	The current system is focused on the IOUs.	The eTRM was designed in collaboration with both IOUs and the POUs.
Measure Standardization-Across the IOUs (ALJ Ruling Regarding Non-DEER Measure Ex Ante Values (ALJ Gamson, November 18, 2009, pp. 1-2)).	The current system tries to impose standardization across the IOUs, but each IOU has developed their own systems and processes for developing and QA/QCing workpapers.	Measure development will be initiated in the eTRM and will therefore measures will exist in a standardized format, from their inception.
Compilation of All Commission-Adopted Frozen Ex Ante Energy Savings into One Website (D.11-07-030, pp. 27 and 49.)	The current system does not include all ex ante values in a single location.	The eTRM includes all current measures used by the IOUs and POUs. New measures will be initiated and developed in the eTRM.

B COMPARISON OF eTRM & DEER FUNCTIONALITY

Function	eTRM	DEER	eTRM/DEE Comparison
Receive Submitted Measures	▪ Measures developed within eTRM directly. ▪ Can make "in progress" measures viewable to the public (enhancement).	▪ Measures submitted via WPA. ▪ No public access to WPA (CPUC review status). ▪ No public visibility of measure development & review.	The current eTRM workflow management feature allows for the tracking of time & resources spent on measure development & review, as well as measure status.
View Measures (DEER & Non-DEER Measures)	▪ All active measures (DEER and non-DEER) viewable through eTRM modern web interface. ▪ eTRM contains all values & information about a measure in a single location.	▪ Measures stored in EAdb. ▪ Measures viewed via READI. ▪ EAdb contains all DEER measures, only some non-DEER measures. ▪ EAdb is not a complete database of all approved deemed measures. ▪ Key measure parameters are not linked in EAdb.	In eTRM, 100% of approved, deemed active measures are viewable, including cost & implementation parameters. In contrast, EAdb does not contain cost, implementation parameters, or references.
Draft Updates to DEER Measures	▪ Measures can be updated/versioned in eTRM. ▪ Measures are published when approved.	▪ PRdb	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.

Function	eTRM	DEER	eTRM/DEE Comparison
Active DEER Measures	▪ All active DEER measures are in eTRM effective 1/1/21. ▪ An enhancement will provide a CPUC workspace to include all DEER measures that are used and not used within approved measures.	▪ EAdb	The eTRM is the repository for all active DEER & non-DEER measures. Cost and implementation data are stored for all measures in the eTRM.
Support for DEER Energy & Demand Impact Values	▪ eTRM does not contain the supporting documentation for DEER energy savings and demand reduction values or costs because they could not be found in DEER.	▪ Values exist throughout DEER and in MASControl (external software). ▪ Supporting documentation is not readily accessible. Some documentation missing.	It would be very helpful to work with EAR Team to locate, identify, and link all supporting documentation for DEER measures (particularly DEER energy & demand impacts) so DEER values are transparent and replicable.
Active DEER & Non-DEER Measures	▪ All active measures are in the eTRM.	▪ DEEResources.net	Because of the eTRM relational database structure, DEER & non-DEER measures can be easily updated when support values change. In DEER, updating each measure is a manual & more laborious process.
References for DEER & non-DEER Measures	▪ The eTRM includes a complete reference library for IOU measures & all DEER references that could be located. ▪ All references linked directly to values they support in the eTRM. ▪ All references are hosted in the eTRM reference library.	▪ References are scattered throughout DEER resources. ▪ References not linked to values they support. ▪ Documentation for some DEER values/assumptions not identified.	In eTRM, original DEER sources found & linked (to extent possible). References are available via the eTRM interface. References also accessible via active links within the PDF to the eTRM library.

Function	eTRM	DEER	eTRM/DEE Comparison
Shared Tables	▪ Current: Copies of shared tables are in the eTRM but updated & maintained externally. A nightly sync will be available to document differences and maintain the latest tables for downloading by the public. ▪ Proposed: Move & maintain in the eTRM.	▪ PRdb ▪ Viewable and downloadable through READI.	The relational nature of the eTRM facilitates efficient measure updates when a change has been made to a shared table.
Data for CET Analysis	▪ The eTRM can also be used to create direct link to CET tool to automate C/E analysis. ▪ eTRM Data Spec is designed for use with CET.	▪ Costs in the EAdb are outdated, cannot link to CET calculator & get accurate results. ▪ EAdb does not contain all active measures.	eTRM facilitates easy CET analysis. Obtaining data out of DEER is manual, cannot be automatic, and is time-consuming.
Data for CPUC Staff Review of IOU Claims (particularly savings)	▪ The eTRM contains all approved measures & stores savings & other key parameters for all measures, so CPUC Staff could use eTRM to validate accuracy of utility savings claims & other measure parameters such as cost.	▪ The EAdb is not complete (does not contain all measures and all measure parameters), so CPUC Staff cannot automate process to verify accuracy of savings claims.	eTRM has an API that allows CPUC Staff to programmatically validate savings claims, costs, & other parameters against approved measure data. Current DEER system does not support automated comparison of claims & other parameters against approved values. Must be done manually, so Staff is not currently able to validate accuracy of all savings, costs & other parameters in utility savings claims against approved deemed values.

Function	eTRM	DEER	eTRM/DEE Comparison
MASControl & Other Calculation Tools (e.g., Water Heater Calculator)	▪ These are separate software programs and their values are imported into eTRM.	▪ These are separate software programs and their values are imported into DEER.	Cal TF Staff could work with Commission Staff to add MASControl references if they are made available.
Commission Rulings, Dispositions, Guidance, "What's Happening"	▪ Guidance will continue to reside on Commission website.	▪ Stored and accessible via DEEResources.com	eTRM cites guidance for specific measures/values & Commission guidance stored in the eTRM reference library. Regardless, the Commission would still host Commission guidance on its website (rulings, dispositions, etc.)

C DEER INFORMATION IN THE eTRM

Information	Examples	Add to eTRM?
Support Tables	EUL, NTG, GSIA, interactive effects multipliers, and many other parameter related lists. A copy is maintained that can be downloaded by the public that is updated nightly from PRdb in the same manner that CEDARS is kept in sync.	Copies of support tables in eTRM. Currently updated in PRdb. 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 with "inactive" status.	No. Keep as historical archive.
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 supporting documentation for DEER values because they could not be found in DEER. Cal TF Staff recommends working with the EAR Team to identify and link support for DEER measures in eTRM to provide transparency and reproducibility.
Measures (for all active deemed measures, including those from DEER)	All measures used by IOU programs are measures in the eTRM. In other words, eTRM contains all active measures, DEER and non-DEER.	Yes, if any are missing, they can easily be added.

Information	Examples	Add to eTRM?
Historic Information	Archived DEER Updates and ESPI-related documents posted on the CPUC website.	No, recommend that DEER and ESPI documents be maintained 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)	Yes, the eTRM generates statewide measure IDs and measure offering IDs, which are appropriate for statewide measures and statewide program implementation. IOUs maintain their own cross reference between statewide IDs and their IOU-specific measure IDs. An enhancement will allow PAs to maintain their IDs separately from the measure approval process. This also provides a public facing tool for users to understand which Measures are offered by which PAs.

D eTRM v2 ENHANCEMENTS

This appendix enumerates the eTRM software enhancements that will be developed and implemented during Phase 1 (2020) and Phase 2 (2021). “Phase 1” enhancements, identified by the CPUC Staff and EAR Team, are required for the eTRM to be the “conditional” data source of record.

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
11	2	Hourly savings	Add ability to associate load shapes--either 8,760-hour or compressed format--to measure permutations based on permutation attributes. eTRM should store library of load shapes, which may be associated at the permutation level. Energy Division will need to finalize appropriate measure-level load shapes that can be used for each measure or technology type, but we would like to add IDs now if we can.		- POUs want to use CEC 8,760-hour load shapes - LADWP wants ability to use custom load shapes (not default CEC load shapes) once they are developed. - IOUs may need 8760 load shapes for GHG reduction calculations NOTE: Cal TF will create table of load shapes that vary based on permutation attributes
12	2	Reporting	Add the ability to select any available public field in any order, downloadable as Excel or PDF file. Ability for user to save report format associated with their specific log-in credentials so they can use repeatedly.		Users will need different information in different formats for viewing and downloading; users should not have to recreate reports each time they want to use a report.
13	2	Reporting	Incorporate interactive report rendering system (e.g., Tableau Public Version) with eTRM. Build presentment into dedicated eTRM page (via iframe) and add Report link to global navigation.		Ability to show certain data in visually intuitive, interactive format would be useful for users
14	2	Reporting	Add an extension of notifications available on measure and permutation reports. Any change to the data in the report, where the source is from a commit (NOT a saved draft) would trigger a notification to subscribers. Notifications would be aggregated so that a user only receives one notification per report per day, in the case that someone is committing updates to a measure multiple times in one day.		Scheduled reports are not very useful to program implementers and others who are primarily interested in knowing when underlying measure data changes and may impact their programs
15	2	Reporting	Develop and add ability to download master report (flat file) of measure permutations that is not limited to a single measure.		This facilitates mass loading of data primarily into utility platforms until such time as they can accommodate data loading via APIs. It also aids users who want to evaluate multiple measures externally.

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
16	2	Reporting	Develop master report (flat file) of measure permutations that is not limited to a single measure.		This facilitates mass loading of data primarily into utility platforms until such time as they can accommodate data loading via APIs
17	2	Administration	Implement a software hard-coded roles and permissions matrix. Roles will still be categorized into system roles or measure roles. Included in the roles created shall be “CPUC User.”	5 roles will be created at the estimated cost (additional roles, if needed, will cost more).	Additional roles will be needed to support the expected measure review process that involves CalTF and CPUC Consultants. This will also support the automated workflow enhancement by ensuring that designated entities during workflow have access to measures commensurate with the assigned role.
18	2	Administration	Define and implement workflows to eTRM for Energy Division ex ante workpaper review, tracking, approval, and value updating functionality.		Automated workflow ensures that measures progress through a properly defined review process and associated statuses, while eliminating possibility of inadvertently bypassing necessary review steps prior to measure publication
19	2	Administration	Add Functions that support email notifications as a measure changes status and assignee, including: – Ability for a user to assign a measure to another user – During a measure status change – Independently of a measure status change (admin only) – Email notifications when a measure is assigned to you – Email reminders after a period of time that a measure has been assigned to you		This enhancement supports the automated workflow by ensuring that "next step" reviewers are timely notified of measures pending their review.

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
20	2	Shared library	When Shared Table updates occur, the system will determine which measures are affected and permit the administrator to notify the appropriate parties who have registered for notification when specific measures or measure technology types change. Update notification would be at discretion of administrator.		Measure developers and subscribers should be notified when underlying shared table data changes, which may lead to changes in the affected measure(s).
2	1&2	PEAR integration	Create a process (API with specific views designed by the ex ante team for the eTRM) that would sync with the Ex Ante tables and update the eTRM shared tables daily.	- Process would poll PEAR database tables every weeknight and compare contents to corresponding Shared Table - When differences are detected, system notified administrator(s). - Administrators would be able to commit identified changes to new table versions. Administrators may also reject identified changes if appropriate.	The process of monitoring Ex Ante tables for changes may best be addressed outside eTRM, given that not all eTRM shared tables subject to update may be in spreadsheets versus database.
21	2	CET integration	Add ability for the eTRM to generate a flat- file export that is compatible with the CET measure import specification: - The user shall be able to select measures from an available list - The user should be able to filter the measures based on parameters that define permutations (e.g., Delivery type, MAT) - eTRM shall be able to import permutation- level cost-effectiveness values from a flat file that is compatible with CET measure results file specifications: -Values will be loaded and stored at the measure permutation level.		eTRM would be more useful for planning if measure-level and program-level cost effectiveness could be run and program planners given information about when measure is cost-effective.

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
22	2	Measures	Develop filters for dashboards that are specific to individual users. The dashboards and filters shall only be viewable by a specific user, as determined by the user's log-in credentials. as specified. Filters include end use, sector, and delivery type.		As eTRM is populated with full universe of published measures (approx. 150), the ability for users to easily filter (one-click) by key parameters will improve user experience.
23	2	Measures	Update the measure data model to include a new field for delivery type, so that it can be filtered on. Delivery type shall be added to the table of measures on the user's dashboard.		As eTRM is populated with full universe of published measures (approx. 150), the ability for users to easily filter (one-click) by key parameters will improve user experience.
24	2	Value Tables	Allow an editor to sort Value Tables based upon any column (parameter or value) and save that sort to embed that sort into a characterization field.		Users will be better able to grasp, understand and work with data if they have some control over how it is organized and displayed.
25	2	Value Tables	Implement the ability for an editor to transpose value tables. This applies to both static (RTE) tables and dynamic (embedded) tables. In the case of an embedded value table, this display configuration only applies to the table in the characterization, and does not affect the underlying value table (located in the Supporting Data page of the measure)		Users will be better able to grasp, understand and work with data if they have some control over how it is organized and displayed.
26	2	Value Tables	Design new table styles (to be added to existing "Zebra" and "Plain" table style options). One example new style is a table with smaller font and narrower column widths. Enable measure editors to set a table style to both static (RTE) and dynamic (embedded) tables.		Users will be better able to grasp, understand and work with data if they have some control over how it is organized and displayed.
27	2	Value Tables	Implement functions that assign a reference to a value table row.		Users will be better able to grasp, understand and work with data if they have some control over how it is organized and displayed.

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
28	2	Value tables	Add ability for users to hide columns and rearrange columns based on individual session needs.		Users will be better able to grasp, understand and work with data if they have some control over how it is organized and displayed.
29	2	Permutation table and generation	Allow users to save their permutation table preferences for next time (including sorting, filtering, hiding columns, etc.)		Users will be better able to grasp, understand and work with data if they have some control over how it is organized and displayed.
30	2	Value tables	Add capability to show calculated values in value tables		Business rationale: Will help users understand and trace calculated values that are inputs to savings calculations (Transparency)
31	2	Value tables	Support the Boolean type, with TRUE and FALSE displayed/imported/exported instead of 0 and 1.		The use of TRUE and FALSE are more intuitive to most users, rather than a binary 1 or 0.
32	2	Calculations	Implement enhancement to the equation editing interface to allow editors to type directly into the editing bar (including autocomplete suggestions) without having to click (+) to see the list of terms to choose from.		Inline autocomplete speeds up equation entry via the web application
33	2	Calculations	When viewing calculations, implement a way to provide insight as to the source of a calculation's variable – which could be a value table, parameter or another calculation – and a link to travel to the object detail page.		If user mouses over a term, system lets user know what table the term is tied to.
34	2	Shared library	Add capability to have global or imported calculations. Global calculations are calculations that are used in more than one measure.		A number of calculations are identical across multiple measures (e.g., measure cost calculation). Allowing such to be shared will ensure consistency and improve measure entry efficiency

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
35	2	Permutation table & generation	In the configure permutation fields panel, fields that are not mapped will be color-coded so that they are easier to see and correct.		With few exceptions, all output fields in permutation table should be mapped to data spec field. Color coding provides quick, visual signal that fields may need to be mapped to be compatible with data spec
36	2	Permutation table and generation	Pre-map values from shared parameters/shared value tables to data spec field.		Shared data fields almost always map to the same data spec field. Pre-mapping the field in the shared table relieves measure developer from repeatedly, manually mapping these fields within measures.
37	2	Permutation table and generation	Add capability for users to filter and sort permutation table. When filtered, system would automatically hide the rows that are no longer unique due to missing columns.		Business rationale: Online permutation list can be unwieldy; filter and sort capability would address this.
38	2	Permutation table and generation	Include ability to hide columns of the permutation table that user may consider unnecessary. Column-hiding functionality should also hide duplicate rows if columns being hidden were distinguishing columns to unique permutations.		Business rationale: Some users do not need the full set of permutation data for a given measure, and allowing reduced presentation set to be shown would be useful for certain implementers
39	2	Exclusion tables	In the exclusion table, implement a visual design for exclusion table rows that are NOT excluded (e.g. unchecked), so that they are easier for editors to scan in the table.		Quickly provides feedback to measure designer about exclusions not in use

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
40	2	Value tables	Implement feature that allows range-checking on value tables. An editor would be able to specify a maximum value, minimum value, allowable data type (such as text or number only) and/or "cannot be empty" validation on a value table column. Value table cells that do not meet the validation criteria would be flagged to the measure developer or measure reviewer. Prior to implementing this feature, ensure that error-checking features to be developed for eTRM are consistent with and at least as robust as the error-checking features for CET and CEDARs. Note: This does not apply to static (RTE) tables.		Additional error-checking would allow eTRM to enforce error control at level similar to CEDARS, CET and other downstream data systems that use eTRM data
41	2	Rich text editor	Implement text comparison and redlining feature for all measure text fields so textual differences between different versions of a measure are readily apparent. This feature shall allow an editor to compare two versions of a measure, selected by the editor, marked up with differences.		A built-in measure comparison capability will facilitate and expedite measure reviews, particularly where textual changes exist in the measure characterization.
42	2	Rich text editor	Once necessary license with the WebSpellChecker CKeditor plugin is obtained, ensure it is used as the spell-checking source for all rich text fields in the eTRM.		While all browsers have spell-check capabilities, each is implemented differently, and effectiveness varies by browser. A unified spell-checker enables more consistent measure editing.
43	2	Rich text editor	Redesign the reference file download green rectangle element to reduce its footprint for an individual reference and when seen in a long list of references.		Improves presentment within measure characterization

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
44	2	Rich text editor	Explore adding a drag-to-resize image capability to measure characterization rich text fields. If that solution is not recommended or stable, add up to two new image styles. One desired new style is a small stamp-size image style.		Improves presentment within measure characterization
45	2	References	Add the ability for a reference to be associated with a measure, value table, parameter or calculation by a specific page or table number. This eliminates the need to duplicate references in the reference library.		Improves ability to search, sort and report on reference library
46	2	References	Add a field to the reference data model for Publication Date. Add a filter to the manage references list that allows filtering by publication date.		Improves ability to search, sort and report on reference library
47	2	References	Add "Year" field to search matrix for reference search.		Improves ability to search, sort and report on reference library
48	2	References	References that have file attachments will display an attachment icon in the manage references list. Implement the ability to filter the manage references list by "has attachment".		Improves ability to search, sort and report on reference library
49	2	References	Implement a list of common reference sponsor organizations. When adding or editing a reference, a user can select a sponsor organization from the list or add their own.		Improves ability to search, sort and report on reference library
50	2	API	Add an API endpoint that provides a master list of value tables across latest published versions of all measures and including the shared data library.		Facilitates loading of multiple measures' data into PA or implementer systems
51	1	API	Add an API endpoint that provides a master list of permutations across latest published versions of all measures.		Facilitates loading of multiple measures' data into PA or implementer systems

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
52	2	API	Add an API endpoint that provides a master list of all references. The list can be filtered by reference type.		Allows PAs and implementers to retrieve reference lists for use in their platforms.
53	2	Measures	Include "at a glance" capability for viewing tables without clicking into them (using mouse-over or hover-enabled popup).		Allows users to "see" tables without having to click into them - improves user experience for casual users
54	2	Administration	Design and implement a pagination selector to all paginated eTRM lists (except panel lists), offering pagination by 25, 50, 100 objects.		Provides functionality similar to many other websites
55	2	References	Design and implement a new reference detail page. This reference detail would be viewable through site search, including the ability to include/exclude reference results from the search results list. All references shall be accessible through site search.		Allows reference documents to be included in user search if desired
56	2	References	Design and implement a new calculation detail page. Implement the addition of shared value tables, shared parameters and shared calculations being accessible through site search.		Allows shared data to be included in search results
57	2	Anonymous users	Modify home page to allow view access without login. Such anonymous access would deny user features such as subscriptions, saved preferences, etc., that rely on a registrant's email address.		Promotes transparency of eTRM (public, no registration required).
1, 58	1	Permutation table and generation	Add additional fields to the "Configure permutation fields" panel, "Data spec" tab.	Up to 24 new fields	Additional fields will ensure interoperability with CET; Additional funding added to FR-48 to increase to 24 fields; Phase-1 = 2 fields; Phase 2 = balance of fields.
3	1&2	Shared library	Set versioning of shared parameters and value tables at the object (table/parameter) level rather than at the shared data library level.		This will simplify measure updates, particularly if only one shared table is updated

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
59	2	Measure packet download	Add an affordance to download the measure characterization PDF separately from the full measure download packet. Only the PDF would be contained in the download.		Provides quick way for users to save/print measure characterization from eTRM
60	2	Calculations	Allow ability to perform 8,760-hour array calculations (for example, developing annual carbon impact using hourly values that can be summed over full year), as well as over measure lifetime.		- POUs want to use CEC 8,760-hour load shapes - LADWP wants ability to use custom load shapes (not default CEC load shapes) once they are developed. - IOUs may need 8760 load shapes for GHG reduction calculations NOTE: Cal TF will create table of load shapes that vary based on permutation attributes
61	2	Measure packet download	Add measure name and version number to the characterization PDF file name.		Continued improvement in measure text export can improve user experience via better readability
62	1	Measure packet download	Revisit enhancements to the measure characterization PDF, ensuring: - Logical page breaks, where possible (not splitting up object/table names from its host object/table, etc.) - Maintain proportionality and consistency in text style levels (headings) and sizes (esp. static vs. dynamic table headings) - Floated elements retain their size, instead of erroneously expanding to full width in the PDF - All symbols in the measure characterization text and calculations will render correctly in the PDF		Continued improvement in measure text export can improve user experience via better readability
63	2	Measure packet download	Update parameter .csv files to identify which values from shared parameters are selected for measure.		Business rationale: Makes measure download more useful by identifying parameters in use

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
64	2	Rich text editor	Add ≥ and ≤ to the list of available symbols in the rich text editor toolbar.		Improves presentment and accuracy of static calculations and relationships within measure characterization
65	2	Measures	Applies to site search, measure list, manage measure list. Ensure the statewide measure ID is always displayed next to the measure name when viewing a list of measures.		Business rationale: Measures may have similar names but are distinctly different. Including the SW ID avoids potential confusion. This will become more important when we have the ability to download more than one measure at a time - we will want to make sure that the SW ID appears on the list to choose from.
66	2	Calculations	Allow ability to calculate Greenhouse Gas impacts using 8,760-hour GHG lookup data and 8,760-hour measure energy savings.		Supports initiatives related to GHG mitigation and decarbonization in state.
4	1	Value tables	Add ability for editors to choose what columns appear (and their order) in the characterization when a value table is embedded (both shared and measure-specific).		
67	2	Data model	Reconsider all places where an API name is presented to the user and consider the use of a friendly name instead. If we pursue a friendly name, effort includes: - Ability for users to manage the friendly name - Effort to migrate existing measures to use their friendly name, eliminating the need for Cal TF to update all measures		Since equations rely on API names, the use of "friendly names" would improve readability of equations for users.
1	1		Add additional data fields at staff direction to meet the Deemed Data Standard.		Additional funding added to FR-48 to increase to 24 fields; Phase-1 = 2 fields; Phase 2 = balance of fields.

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
5	2		Creation of a CPUC-specific shared data library for DEER measures. This shared data library would support versioned parameters and value tables managed by CPUC and available for eTRM measures to import.		
5	2		Creation of CPUC-specific workspace to allow for storage and viewing of DEER Measure and Energy data that could be imported into the eTRM Measure Template for further development and approval. Users who wish to develop a new measure based upon a valid DEER Measure (a DEER measure that has not expired) shall be able to import DEER Energy data into the eTRM Measure Template for further development of a statewide measure.		Duplicate of item above.
68	2		Provide necessary enhancements to fulfil the CPUC's updated eTRM Workpaper workflow process once it is complete (develop workpaper management backend and front end infrastructure, CPUC user roles, workpaper and parameter-level version control management, integrated communication tools, user interface design, and other requirements as needed).		All addressed by other requirements within the document. Requirement that other requirements can address.
69	2		Develop infrastructure as needed to ensure CEDARS can eventually use a live eTRM data connection for claims and reporting purposes.		
70	2		Provide the framework that would allow the eventual sunsetting of the PEAR/Ex-Ante database, at which point the CPUC user roles may absorb all administrative permissions.		This is not software, but rather a procedure. Cal TF Staff would do.

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
71	2		Develop unanticipated enhancements that the CPUC determines essential within Phase 2 but did not foresee during the publication of this appendix.		
72	2		Creation of workpaper space for PAs to submit "Workpaper in Development" with ability for CPUC to provide early feedback on workpapers prior to submittal.		Budgeted for three workflows. This can be built into a workflow. If intent is that workpaper = measure.
73	2		Add ability for the eTRM to generate a workpaper revision history by parameter.		Captures all existing versions and what changes over time. (175 hours). Redline for data with respect to one other point. Algorithm will always compare two. Depends on how this needs to be displayed. Relevant redlining.
74	2		Create a dedicated schema on the server where views for all of the shared tables that will be read by CEDARS can be created, stored and modified. Provide assistance on how to make the 21 existing views work with the JSON tables, which includes the two new tables for ‘source_status’ and ‘Measure’.		
75	2		Ability for PAs to assign their measure/solution codes to eTRM measures and permutations.		
6	1&2	Deployments	Add the ability to maximize production system uptime during deployment of enhancements and fixes. Deployments that require system downtime should be deployed outside typical business hours.		
7	1&2	Testing	Add the ability to utilize the staging environment as a User Acceptance Testing platform for all enhancements.		

CPUC Number	Phase 1 or 2	Category	E-5082 Requirement	Expanded Description	Business Rationale
8	1&2	Deployments	Add the ability to retain independent user profiles between staging and production environments during deployment of enhancements and fixes.		
9	1&2	Deployments	Add the ability to deploy enhancements to production environment without compromising existing measures, measure data and user tracking data.		
10	1&2	Deployments	Add the ability to roll-back changes in the event of failed deployment, without loss of data.		
	2	Deployments	All changes deployed under this scope will not impair compliance with System reliability requirements established as part of the Consulting Services Agreement dated 1/15/2018 between Future Energy Enterprises Inc. (FutEE) and SBW Consulting (specifically, TR-55 through TR-68).		
	2	Infrastructure	eTRM ver. 2.0 infrastructure upgrades, system administration manual updates, and code management		

E IOU TRANSITION PLANNING

The IOU transition to the eTRM will require that they modify their current interfaces that pull deemed measure data from the PRdb. Descriptions of each IOU current intake platforms and data system interfaces are provided below.

During the Q1 and Q2 of 2021, Cal TF Staff will work with each IOU to develop a utility-specific Transition and Acceptance Testing Plan (TATP) that describes:

- The IOU current interface with DEER components and the subsequent databases that leverage the data
- The method for and system changes required to interface with the eTRM
- Key tasks required for the transition
- Roles and responsibilities for each task of the transition

Each TATP will be completed by the IOU for review and comment by Cal TF Staff. These TATPs are anticipated to require no more than four weeks to complete. The transition will be followed by two weeks of acceptance testing by each IOU.

IOU ACCEPTANCE TESTING

Each IOU will conduct the acceptance testing according to the approved TATP. The IOU acceptance testing criteria will include (but not be limited to):

- eTRM measure data matches workpaper values
- eTRM measure data can be easily ported to various IOU data systems
- Approval workflow works as expected and supports IOU internal approval requirements
- Measure subscriptions and notifications function as expected

PRELIMINARY IOU TRANSITION PLANNING

In March 2019 Cal TF Staff conducted interviews with IOU staff who were involved with accessing and using data from the DEER environment. IOU staff included both engineering staff and IT staff, as appropriate. The following sections summarize the findings from these interviews.

Southern California Edison (SCE)

Interview Date:	March 1, 2019
Utility Attendees:	Jay Madden, Ajay Wadhera
Cal TF Staff Attendees:	Jennifer Barnes, Roger Baker
Held via:	In person

SCE's primary intake platform is the Master Measures Data Base (MMDB). This platform receives the data from workpapers and DEER and will also accept eTRM data. Once data is in the MMDB, it is made available to program managers and program staff for use in their program design and development.

SCE's workpaper team plans to use flat file exports from the eTRM to load measure data into MMDB. Data from the eTRM must also be "translated" using an internal Excel macro-enabled workbook. This is the same workbook that is used to generate the four ex-ante tables typically used to submit measures to the EAR Team. Part of this translation includes adding SCE-specific "solution codes" to measures.

SCE has an interest in utilizing the eTRM API's in the future; the timeframe for doing so is uncertain at this time. There are concerns about pulling data from multiple sources (eTRM, EAdb) and managing the data conflicts in the event they do not match for some measures. To the extent that measure data in eTRM and EAdb match, no conflict exists. While there is the expectation that data would match in both systems, this is not guaranteed.

SCE is developing a new Customer Service Rebate Platform (CSRP), with a planned deployment sometime in 2020. This platform will manage the majority of program design, tracking, and reporting functions in a fully integrated system. It will replace existing program design and management tools. MMDB will not go away; a "bolt-on" will be developed to allow the existing MMDB to serve as a feeder into the CSRP.

Pacific Gas and Electric Company (PG&E)

Interview Date:	March 1, 2019
Utility Attendees:	Henry Liu, Emerson Yap
Cal TF Staff Attendees:	Jennifer Barnes, Roger Baker
Held via:	Phone

PG&E's primary intake platform is the Workpaper Tool. This system receives the data from workpapers and DEER and will also accept eTRM data. Once data is in the Workpaper Tool, it is routed for internal approvals and (if needed) external approvals. Once approvals are received, the measure data is ported to the Program Data Warehouse (PDW), which in turn feeds the data to Energy Insights (EI). EI is the primary system that PG&E uses for program tracking, and it directly supports reporting functions and claims.

Workpapers that are entered into the Workpaper Tool are routed for internal approvals, after which they are submitted for CPUC ED/EAR approval. Measures do not move out of the Workpaper Tool until all approvals are received and recorded. Phase 1 workpapers (that receive pass-through approval) do not receive ED/EAR approval and will proceed to EI.

PG&E workpaper staff plans to load eTRM measures directly into the Workpaper Tool, using flat files that are manually exported from eTRM. To that end, they have requested additional flat file capability for eTRM that would support this process. They did not indicate any plans to consume the existing eTRM APIs for automated data processing.

Southern California Gas Company (SCG)

Interview Date:	March 1, 2019
Utility Attendees:	Chan Paek, Winnie Tran, Matthew Mendoza, Rebecca Jenkins, Paul Deang, Eric Corona (via phone)
Cal TF Staff Attendees:	Jennifer Barnes, Roger Baker
Held via:	In person

SCG's current primary intake platform is Program Builder. This system receives the data from workpapers and DEER and will also accept eTRM data via flat files. Once measures are loaded into Program Builder, this data is fed to SCG's tracking system and the Reporting Warehouse. The Reporting Warehouse manages all the data that is used to generate exports to CEDARS and EESTATS, as well as other needs via Report Builder.

Certain DEER updates are not fed into Program Builder; for example, some data (e.g., NTG updates) are ported directly to the Reporting Warehouse if it primarily affects filed claims but may not affect measure viability or program design.

SCG is not currently planning to migrate to the CPMS platform that SDG&E is developing; they are taking a "wait-and-see" approach before considering this transition.

SCG manages a number of jointly-delivered programs for LADWP. For these programs, SCG provides electric savings values as part of data provided to LADWP. To the extent that eTRM provides POU electric savings for joint measures, SCG believes they can use and manage that data.

Data transfer from eTRM to Program Builder is expected to be done manually. While some interest in automated data transfer via API was raised, this does not appear to be a priority. It is possible that such a decision may be tied to any future decision to migrate platforms (contingent on success of SDG&E's work with CPMS).

San Diego Gas & Electric (SDG&E)

Interview Date:	February 7, 2019
Utility Attendees:	Paul Pruschki, Tish Lewis, Greg Green
Cal TF Staff Attendees:	Jennifer Barnes, Roger Baker
Held via:	Phone

SDG&E's current primary intake platform is Program Builder. This system receives the data from workpapers and DEER and will also accept eTRM data via flat files. This platform, and other subsequent systems, is largely the same as the one used by SCG. SDG&E is in the process of replacing much of this infrastructure with a new platform called Customer Program Management System (CPMS). This platform, which was expected to go live in July 2019, will serve as the central hub for all program data and will interface with other company platforms (e.g., SAP). Those interfaces are expected to be built as part of SDG&E's "Phase 3" workplan and would not be done until 2020.

CPMS is being designed to utilize the same data loading methods as the current Program Builder. eTRM data would be loaded into CPMS using the existing flat file exports that are available. SDG&E is considering adding capability to CPMS to utilize the eTRM APIs for automated measure loading; however, they are reticent to invest resources in this process until it becomes clear that the eTRM will supplant the EAdb as the primary database from CPUC ED perspective.

F DRAFT STAKEHOLDER COMMUNICATIONS STRATEGY

Communication with the industry throughout the eTRM transition will be essential. As the IOUs and 3P implementers will be engaged with the solicitation process for new energy efficiency programs over the same timeframe as the eTRM transition it will be especially important to communication both when the various milestones will occur and how to access the data they need for their organization-specific use cases.

This appendix describes a high-level communication strategy Cal TF Staff will implement to keep stakeholders informed of the progress of the eTRM transition and the availability of deemed measure data.

In Q1 of 2021, Cal TF Staff will finalize the Communications Strategy in accordance to the forthcoming 2021 Cal TF Business Plan and available funding.

OBJECTIVES

The objectives of the stakeholder communication strategy are to ensure that the target audience is informed of:

- Changes to deemed measure values
- Availability of/sources for deemed values (and any supporting information) throughout the transition from DEER to the eTRM

TARGET AUDIENCE

The primary target audience of stakeholder communications includes 3P implementation contractors, evaluation firms, engineering firms, manufacturers, as well as public and private sector entities that are involved with technology innovation.

TACTICS & CHANNELS

The eTRM transition and launch communications will leverage existing industry channels. The foundational tactic will be to circulate written updates and notices using each existing communications channel, such as newsletters and email distribution lists. Cal TF Staff will supplement these efforts with opportunities to present updates through various venues like the CPUC Quarterly EM&V Stakeholder Meetings and ACEEE Summer Study.

Cal TF Staff will use the following channels to communicate to the industry:

California Energy Efficiency and Demand Management Council (CEDMC). CEDMEC is a California trade association of non-utility companies that provide energy efficiency, demand response, and data analytics products and services in California. The CEDMEC membership is comprised of approximately 72 businesses program implementation, evaluation, demand

response, engineering and architecture, data analytics, installation contractors, financial services experts, energy service companies, workforce training, and manufacturers.

The following communication channels are available through CEDMC:

- Bi-weekly Newsletter: CEDMC publishes a bi-weekly newsletter for the exclusive use of their members. The newsletter includes a section on industry updates and announcements and CEDMC Staff has posted announcements on upcoming events or opportunities for Cal TF in the past.
- Policy, Demand Response, and EM&V calls: CEDMC Staff holds bi-weekly and monthly calls on policy, demand response, and EM&V topics. During these calls, CEDMC Staff is willing to make verbal announcements on topics of interest to their membership. In some cases, they are willing to allow parties to make short presentations if they believe the topic is of high interest to their members.

California Energy Efficiency Coordinating Committee (CAEECC). CAEECC is a venue for stakeholders to discuss energy efficiency matters while ensuring transparent access to information and opportunities to get involved.

- Email announcements: CAEECC Staff sends email notices the email distribution lists about upcoming CAEECC meetings and can include updates on other events.
- Website: CAEECC has an “Upcoming Events” ticker on their main page where they post events of interest to the industry.

Proposal Evaluation and Proposal Management Application (PEPMA). PEPMA is an energy efficiency solicitation website managed by the IOUs. PEPMA serves as a resource for individuals and organizations to learn about upcoming energy efficiency contracting opportunities with the IOUs and for potential bidders to register their information.

- Website: Registration is required to access most of the features on PEPMA, but there is an “Upcoming Events” section on its main page to notice upcoming industry events.

R.13-11-005 Service List. CPUC Staff can send announcements to the service list for R13-11-005.

Northern California Power Agency (NCPA) and Southern California Public Power Authority (SCPPA). The NCPA and SCPPA have members on the Cal TF PAC. Cal TF Staff will work with their members to circulate announcements to their membership.

Cal TF Staff can leverage the following communication channels:

- Email distribution list: Cal TF members and other interested parties receive email updates about Cal TF meetings and other relevant events.
- Social Media: Cal TF Staff regularly posts announcements to their Linked In lists.

eTRM Opt-in Push Notifications. The eTRM has built in reporting capabilities that notify users when any changes or updates are made to a measure. Users must register with an eTRM account and opt into the measure updates.

CPUC Quarterly EM&V Stakeholder Meetings. are held by CPUC Staff to provide updates on current and planned CPUC and IOU led energy efficiency evaluation work, as well as discussion of key issues relevant to the energy efficiency proceeding.

G TRANSITION AND ACCEPTANCE TESTING PLAN (TATP) TEMPLATE

California Statewide Deemed Measures

eTRM Transition & Acceptance Testing Plan

CONTACT

Organization/Company:	*Organization name*
Primary Contact:	*List the primary contact name, title, phone & email address*
IT Contact:	*List the IT contact name, title, phone & email address*
Engineering Contact:	*List the engineering team contact name, title, phone & email address*
Reviewers:	*List names, title, phone & email address for all reviewers who will be conducting acceptance testing*

PURPOSE/OBJECTIVES

SYSTEM DESCRIPTION

Primary Intake Platform:	*Describe platform that is currently used as the primary interface with the EAdb, including the system's primary function and the input/output capabilities*
Secondary/Tertiary Intake Platforms:	*Describe any other platforms with connectivity to the EAdb, including the system's primary function and input/output capabilities*
System(s) and Database(s) Affected:	*Describe all the systems or databases that ultimately receive/use the deemed measure data*
Description of Current Intake:	*Include the format, processing, interval and trigger (manual or automated), and any translations that occur*
Current DEER Interface:	☐ PRdb ☐ EAdb ☐ Other (specify:)

DEER AND eTRM FIELDS ACCESSED

Attach .xlsx or .csv file with the list of data fields

eTRM INTEGRATION STRATEGY

Describe (briefly) plan to integrate/incorporate eTRM data into primary intake platform. Plan approaches may include a) flat files, b) API Endpoint consumption, c) combination of a and b, or d) Other. Description should also include expected data update frequency, level of client system automation, and internal quality assurance process.

USE CASE(S)

1:	
2:	
3:	
4:	
5:	
6:	
7:	

Use cases can refer to the eTRM website (who accesses it and for what purpose), and API endpoints (how they are to be used – program design, tracking, reporting, etc.)

INTEGRATION STRATEGY TASKS, TIMING, & TASK OWNERS *

	Task	Complete Date	Owner
1:			
2:			
3:			
4:			
5:			
6:			
7:			

**Can also specify internal tasks related to identified use cases and secondary/tertiary intake platforms.*

TESTING PROTOCOLS & ACCEPTANCE CRITERIA

	Protocol	Acceptance Criteria
1:		
2:		
3:		
4:		
5:		
6:		
7:		

SCHEDULE

Provide the acceptance testing schedule and enumerate key milestones. Include the day and time for weekly status calls.

FEEDBACK & GUIDANCE PROCEDURES

Describe the procedures for reviewers to interact with the Cal TF Team during the T&A period.

Include:

Hours and method of contact

Issue resolution process and timeframe

Format for reporting issues, which must include the following key information:

Date/time issue encountered
Name of person identifying the issue
Email address
eTRM username
Brief description of issue
Was the issue reproducible? (yes/no)
URL of the page where issue encountered
Screenshot of issue (if applicable)
Browser and version
Operating system and version

TESTING ENVIRONMENT

Provide location and log in instructions:

Supported Browsers: Please indicate the browsers that are supported:

- Latest version of Chrome on Windows and Mac
- Latest version of Safari on Mac
- Latest version of Firefox on Windows and Mac
- Latest version of Edge on Windows
- Internet Explorer 11
- Latest version of Safari on a current generation iPhone
- Latest version of Chrome on a current generation Google phone
- Table/iPad (specify all supported tablet/ipad + browser combinations)