

Cal TF Custom Subcommittee Meeting #1



CALIFORNIA
TECHNICAL FORUM

ARLIS REYNOLDS
CHAU NGUYEN
OCTOBER 05, 2022

Subcommittee Overview

Subcommittee Objective

1) develop standard savings estimation methods, calculation tools, and data requirements for select custom measures

Outcome: Recommend SW standard methods/tool/requirements for TF review

2) develop a statewide naming convention for custom measures

Outcome: Recommend SW standard nomenclature for custom measures for TF review

3) provide input on Cal TF Staff analysis of how existing eTRM tools can be used to standardize and streamline custom projects

Outcome: Recommend eTRM enhancements to support custom measures; TBD

Agenda & Goals

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- **Meeting Agenda**

- Custom Measure Standardization Approach [10 min]
- eTRM enhancements for Custom Measures [15 min]
- Measure-Specific Discussions [70 min]
- Planning for Custom Charette [10 min]
- Wrap-up & Action Items [5 min]

- **Meeting Goals**

- Clarify measure standardization approach & goals
- Introduce eTRM Phase 1 enhancements
- Collect input for measure-specific characterizations

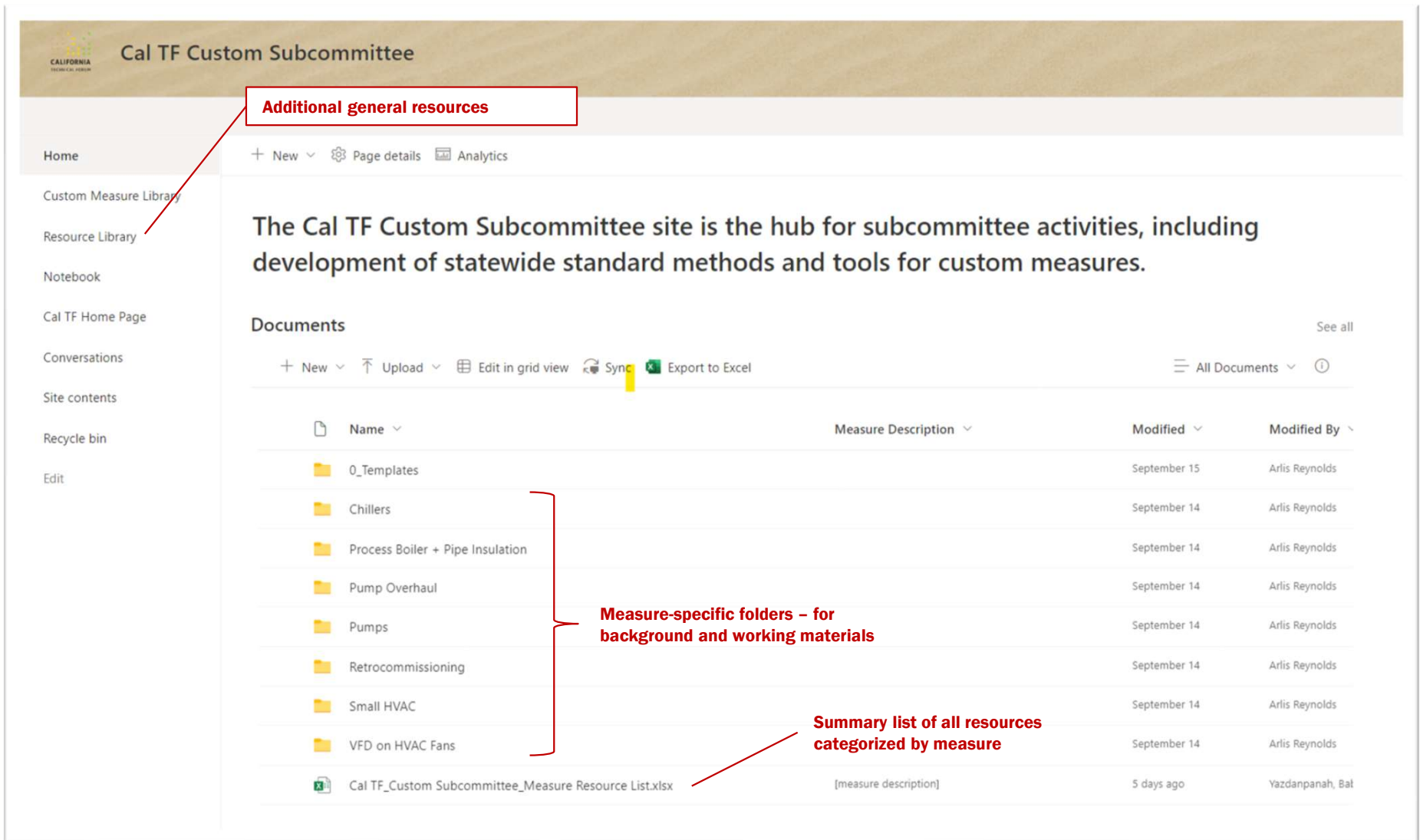
Quick Updates

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- Meetings
 - ❑ 1st Wednesdays, 1pm to 3pm (remote)
 - ❑ 10/27 Custom Charette in Los Angeles
 - ❑ All subcommittee members should have received calendar invites
- Subcommittee SharePoint Site
 - ❑ futeeenergy.sharepoint.com/sites/CalTFCustomSubcommittee
 - ❑ All subcommittee members should have received invitations
 - ❑ Bookmark this site; we will include links in communications
- Cal TF Website
 - ❑ Meeting materials still posted on Cal TF website
 - ❑ www.caltf.org/2022-subcommittees
- Questions: arlis.reynolds@futee.biz or 949-394-4339

SharePoint Site

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Additional general resources

Home

Custom Measure Library

Resource Library

Notebook

Cal TF Home Page

Conversations

Site contents

Recycle bin

Edit

The Cal TF Custom Subcommittee site is the hub for subcommittee activities, including development of statewide standard methods and tools for custom measures.

Documents See all

+ New Upload Edit in grid view Sync Export to Excel All Documents

Name	Measure Description	Modified	Modified By
0_Templates		September 15	Arlis Reynolds
Chillers		September 14	Arlis Reynolds
Process Boiler + Pipe Insulation		September 14	Arlis Reynolds
Pump Overhaul		September 14	Arlis Reynolds
Pumps		September 14	Arlis Reynolds
Retrocommissioning		September 14	Arlis Reynolds
Small HVAC		September 14	Arlis Reynolds
VFD on HVAC Fans		September 14	Arlis Reynolds
Cal TF_Custom Subcommittee_Measure Resource List.xlsx	[measure description]	5 days ago	Yazdanpanah, Bal

Measure-specific folders - for background and working materials

Summary list of all resources categorized by measure

Custom Measures

Objective: develop standard savings estimation methods, calculation tools, and data requirements for select custom measures

Measure Standardization Approach [draft]

start

ID measures for statewide standardization

- Subcommittee identify Measure Champion (MC)
- Stakeholders share resources, experts, background information, etc.
 - Upload key resources to SharePoint
- MC develop initial draft for SW recommendations
 - Measure definition (scope and boundaries)
 - Measure characterization
 - Savings estimation methods
 - Guidelines for site-specific parameters
 - Data collection and M&V requirements
 - Determine whether tool is needed
- Input from TF, CPUC, other stakeholders
- MC revise based on feedback
- Subcommittee affirmation
- Send recommendation to the TF for review/approval
- Publish custom measure in the eTRM
- Request CPUC Early Opinion on “hybrid” approach



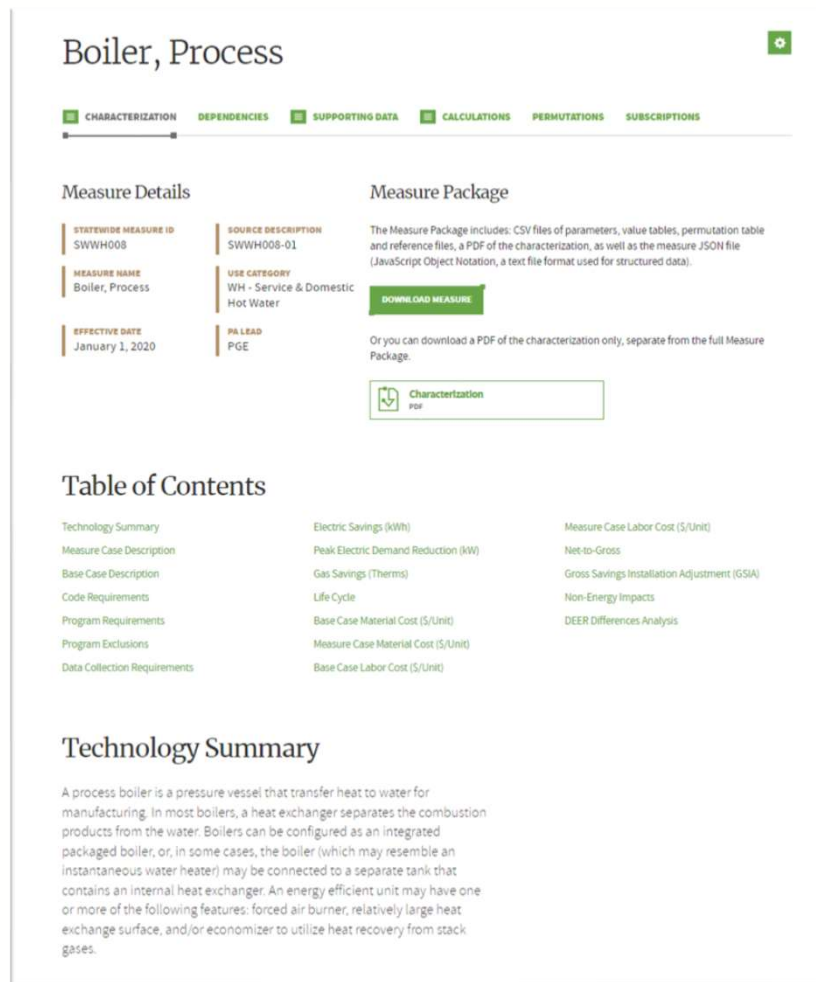
goal

Cal TF approved savings methods, hosted in the eTRM for transparency and access

Measure Characterization Fields

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- Technology Summary
- Measure Case Description
- Base Case Description
- Code Requirements
- Program Requirements/Exclusions
- Data Collection Requirements
- kWh, kW, and Therms Savings (TBD)
- Life Cycle (EUL)
- Base Case Material Cost (\$/Unit)
- Measure Case Material Cost (\$/Unit)
- Base Case Labor Cost (\$/Unit)
- Measure Case Labor Cost (\$/Unit)
- Net-to-Gross
- Gross Savings Installation Adjustment (GSIA)
- Non-Energy Impacts
- DEER Differences Analysis



The screenshot displays the 'Boiler, Process' measure page in the eTRM. The page is divided into several sections:

- CHARACTERIZATION** (selected), DEPENDENCIES, SUPPORTING DATA, CALCULATIONS, PERMUTATIONS, SUBSCRIPTIONS
- Measure Details:**
 - STATEWIDE MEASURE ID: SWWH008
 - SOURCE DESCRIPTION: SWWH008-01
 - MEASURE NAME: Boiler, Process
 - USE CATEGORY: WH - Service & Domestic Hot Water
 - EFFECTIVE DATE: January 1, 2020
 - PA LEAD: PGE
- Measure Package:**
 - Description: The Measure Package includes: CSV files of parameters, value tables, permutation table and reference files, a PDF of the characterization, as well as the measure JSON file (JavaScript Object Notation, a text file format used for structured data).
 - DOWNLOAD MEASURE button
 - Alternative: Or you can download a PDF of the characterization only, separate from the full Measure Package.
 - Characterization PDF download button
- Table of Contents:**
 - Technology Summary
 - Measure Case Description
 - Base Case Description
 - Code Requirements
 - Program Requirements
 - Program Exclusions
 - Data Collection Requirements
 - Electric Savings (kWh)
 - Peak Electric Demand Reduction (kW)
 - Gas Savings (Therms)
 - Life Cycle
 - Base Case Material Cost (\$/Unit)
 - Measure Case Material Cost (\$/Unit)
 - Base Case Labor Cost (\$/Unit)
 - Measure Case Labor Cost (\$/Unit)
 - Net-to-Gross
 - Gross Savings Installation Adjustment (GSIA)
 - Non-Energy Impacts
 - DEER Differences Analysis
- Technology Summary:**

A process boiler is a pressure vessel that transfer heat to water for manufacturing. In most boilers, a heat exchanger separates the combustion products from the water. Boilers can be configured as an integrated packaged boiler, or, in some cases, the boiler (which may resemble an instantaneous water heater) may be connected to a separate tank that contains an internal heat exchanger. An energy efficient unit may have one or more of the following features: forced air burner, relatively large heat exchange surface, and/or economizer to utilize heat recovery from stack gases.

See examples of Measure Characterizations for deemed measures in the eTRM

eTRM Options for Custom

Objective: provide input on Cal TF Staff analysis of how existing eTRM tools can be used to standardize and streamline custom projects

- **eTRM for Custom**
 - Custom Measures
 - ✦ Information/Resources
 - ✦ Calculations
 - Custom Projects
 - Custom Project Review Workflows

- **Initial Approach (“Phase 1”)**
 - A repository with version controls for external calculators
 - eTRM measure template – provides clear, consistent guidance on statewide standardized methods and requirements, with and access to tools

eTRM for Custom Measures

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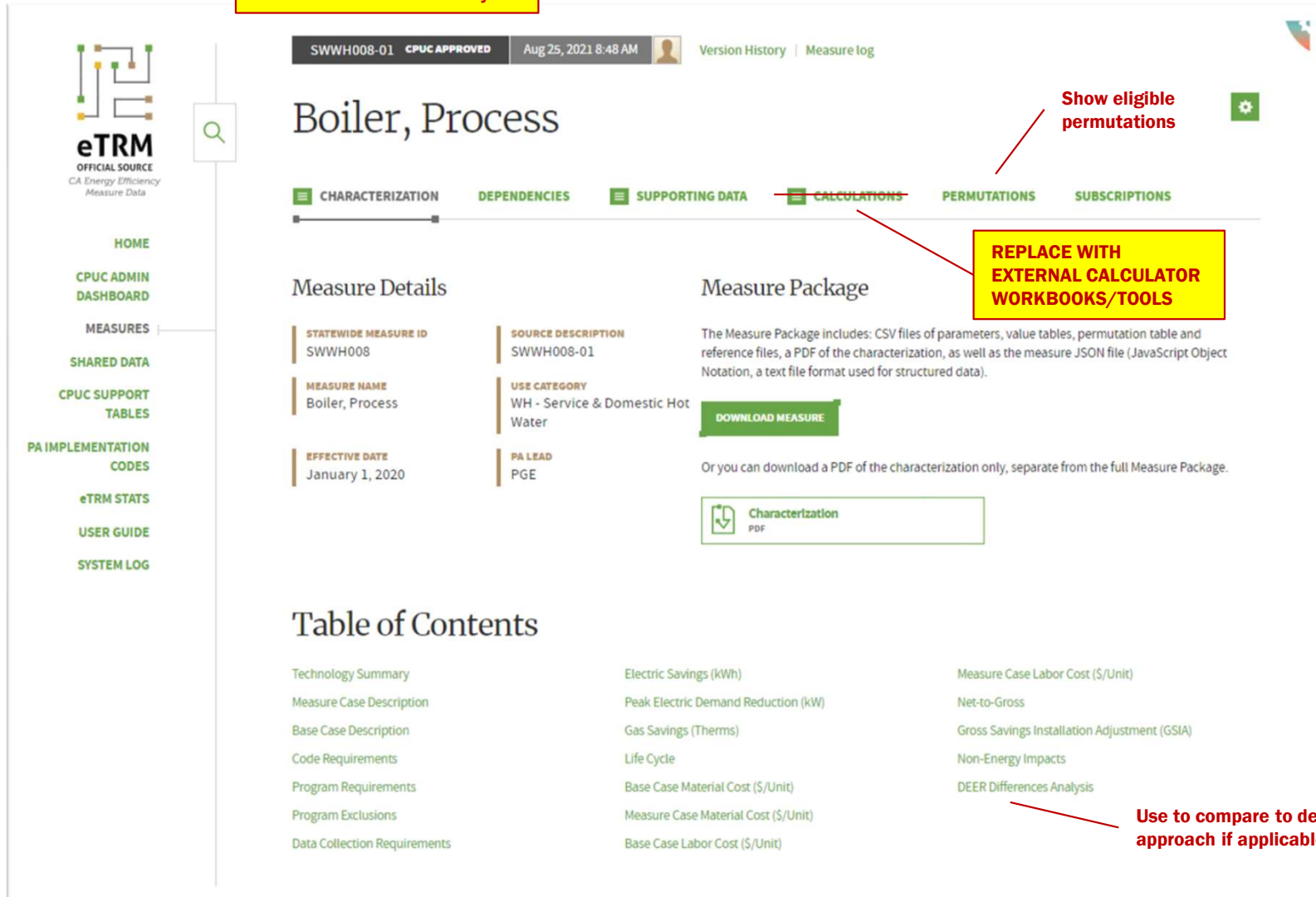
Initial Approach: A repository with version controls for external calculators

- Calculation spreadsheets and required documentation are available to download at measure level
- eTRM measure template – provides clear, consistent guidance on statewide standardized methods and requirements and access to tools
 - Characterization – describes the calculator history, scope, methodology, eligibility, and M&V requirements
 - Supporting Data – defines the measure characteristic
 - Permutations – Measure Detail IDs
- *Top level custom tools library*

eTRM Measure Characterization

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Custom version of eTRM layout



The screenshot shows the eTRM web application interface for measure characterization. The page title is "Boiler, Process". The navigation menu includes: HOME, CPUC ADMIN DASHBOARD, MEASURES, SHARED DATA, CPUC SUPPORT TABLES, PA IMPLEMENTATION CODES, eTRM STATS, USER GUIDE, and SYSTEM LOG. The main content area is divided into "Measure Details" and "Measure Package".

Measure Details:

STATEWIDE MEASURE ID SWWH008	SOURCE DESCRIPTION SWWH008-01
MEASURE NAME Boiler, Process	USE CATEGORY WH - Service & Domestic Hot Water
EFFECTIVE DATE January 1, 2020	PA LEAD PGE

Measure Package:

The Measure Package includes: CSV files of parameters, value tables, permutation table and reference files, a PDF of the characterization, as well as the measure JSON file (JavaScript Object Notation, a text file format used for structured data).

DOWNLOAD MEASURE

Or you can download a PDF of the characterization only, separate from the full Measure Package.

Characterization PDF

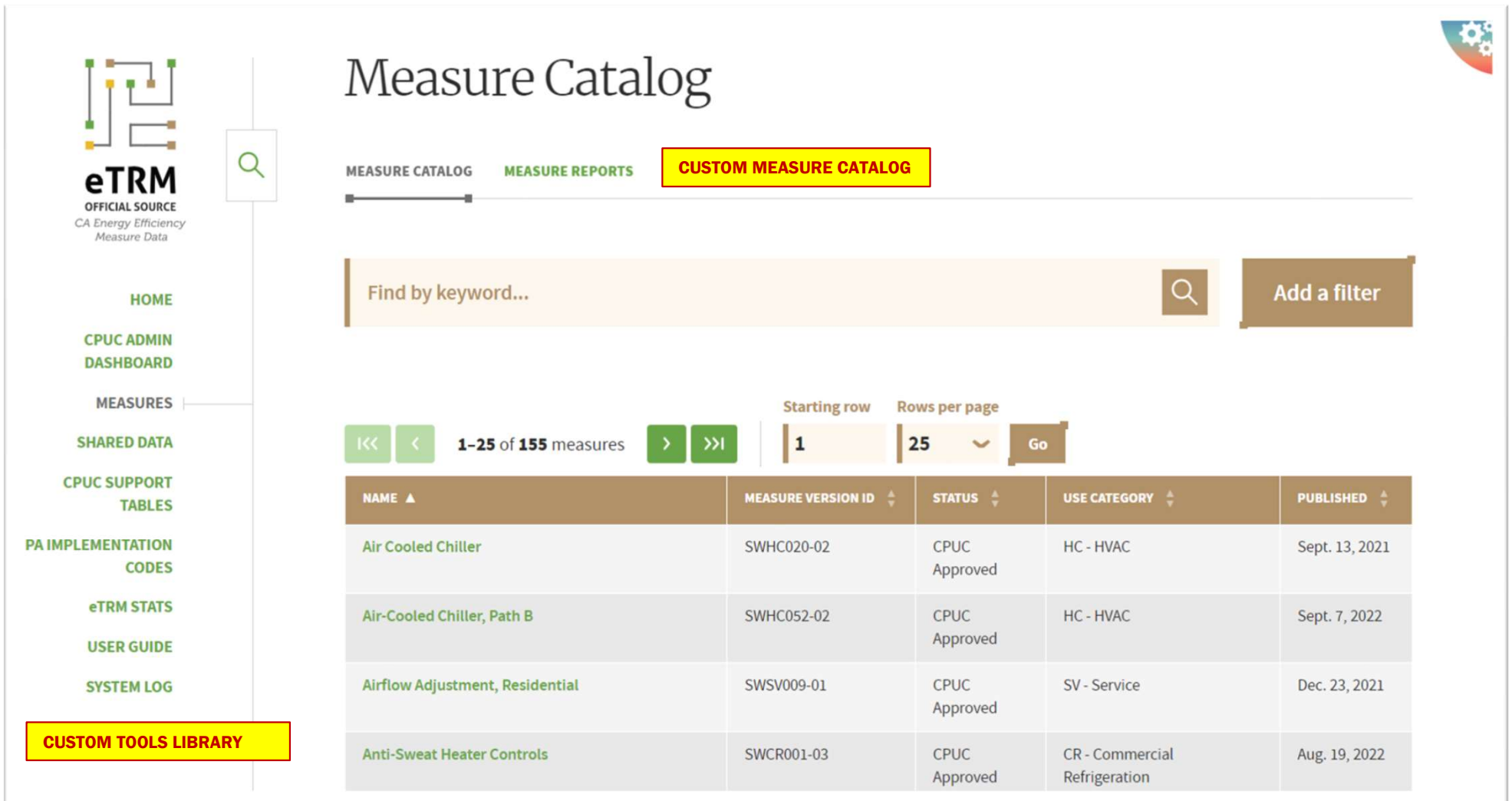
Table of Contents:

Technology Summary	Electric Savings (kWh)	Measure Case Labor Cost (\$/Unit)
Measure Case Description	Peak Electric Demand Reduction (kW)	Net-to-Gross
Base Case Description	Gas Savings (Therms)	Gross Savings Installation Adjustment (GSIA)
Code Requirements	Life Cycle	Non-Energy Impacts
Program Requirements	Base Case Material Cost (\$/Unit)	DEER Differences Analysis
Program Exclusions	Measure Case Material Cost (\$/Unit)	
Data Collection Requirements	Base Case Labor Cost (\$/Unit)	

Annotations:

- "Show eligible permutations" points to the "PERMUTATIONS" tab.
- "REPLACE WITH EXTERNAL CALCULATOR WORKBOOKS/TOOLS" points to the "CALCULATIONS" tab.
- "Use to compare to deemed approach if applicable" points to the "DEER Differences Analysis" item in the Table of Contents.

eTRM Measure Catalog & Library



The screenshot displays the eTRM Measure Catalog & Library interface. On the left is a navigation sidebar with the eTRM logo and menu items: HOME, CPUC ADMIN DASHBOARD, MEASURES, SHARED DATA, CPUC SUPPORT TABLES, PA IMPLEMENTATION CODES, eTRM STATS, USER GUIDE, and SYSTEM LOG. A yellow box highlights 'CUSTOM TOOLS LIBRARY' at the bottom of the sidebar. The main content area is titled 'Measure Catalog' and features three tabs: 'MEASURE CATALOG', 'MEASURE REPORTS', and 'CUSTOM MEASURE CATALOG' (highlighted in yellow). Below the tabs is a search bar with the text 'Find by keyword...' and a search icon, followed by an 'Add a filter' button. A pagination control shows '1-25 of 155 measures', 'Starting row 1', and 'Rows per page 25' with a 'Go' button. Below this is a table with the following data:

NAME ▲	MEASURE VERSION ID ▲	STATUS ▲	USE CATEGORY ▲	PUBLISHED ▲
Air Cooled Chiller	SWHC020-02	CPUC Approved	HC - HVAC	Sept. 13, 2021
Air-Cooled Chiller, Path B	SWHC052-02	CPUC Approved	HC - HVAC	Sept. 7, 2022
Airflow Adjustment, Residential	SWSV009-01	CPUC Approved	SV - Service	Dec. 23, 2021
Anti-Sweat Heater Controls	SWCR001-03	CPUC Approved	CR - Commercial Refrigeration	Aug. 19, 2022

eTRM Dashboard

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Dashboard

DASHBOARD MEASURE REPORTS PERMUTATION REPORTS CET DOWNLOADS SUBSCRIPTIONS

Your Assignments

MEASURES

- Boiler, Process Hybrid (SWWH999)
- Electric Homes (SWWB008)

Visual cues for custom measures

D Low-Flow Pre-Rinse Spray Valve (SWFS013)

Your Development Roles

MEASURES

Standardized ID

CUSTOM "BADGE"

NAME	STATEWIDE MEASURE ID	USE CATEGORY	STATUS	LAST EDITED
Boiler, Process Hybrid	SWWH999	WH - Service & Domestic Hot Water	Cal TF Affirmation	Sept. 19, 2022
Low-Flow Pre-Rinse Spray Valve	SWFS013	FS - Food Service	CPUC Request for Information	Sept. 19, 2022
Pump and Fan VFD Retrofit - TRM401	CMHC001	HC - HVAC	Draft	Sept. 13, 2022
Electric Homes	SWWB008	WB - Whole Building	Draft	Sept. 12, 2022

eTRM Enhancements for Custom

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- Next Steps
 - eTRM Phase 1 mockups
 - Discuss eTRM Phase 2+ (calculations, projects, and workflow) at the 10/27 Custom Charette
- Questions/Discussion
- Email chau.nguyen@futee.biz

Custom Measures

Objective: develop standard savings estimation methods, calculation tools, and data requirements for select custom measures

Note: Dropped MLC from the list due to parallel effort to create deemed measures

- Measure-Specific Discussions
 - Discuss measure scope and key resources
 - Provide input on scope, examples, challenges, and other resources
- Measure List
 - Process Boiler, Pipe Insulation, Add-On
 - Pump Overhaul
 - Pumps
 - Chiller Measures
 - RCX
 - Small HVAC
 - VFD on HVAC Fan

Measure Characterization – Step 1

- **Technology Summary**
 - Describe the technology/measure and how it saves energy
- **Measure Case Description**
 - Describe the high efficiency scenario and any boundaries (i.e., equipment efficiency > X; equipment size > Y)
- **Base Case Description**
 - Describe the high efficiency scenario and any boundaries (i.e., equipment efficiency > X; equipment size > Y)
- **Code Requirements**
 - Identify relevant code requirements
- **Program Requirements/Exclusions**
 - Identify eligibility requirements
- **Data Collection Requirements**
 - Indicate which savings parameters are relevant
- **kWh, kW, and Therms Savings (TBD)**
 - Indicate which savings parameters are relevant
 - Describe proposed method(s) for estimating savings (existing/available tools if applicable)
 - List key parameters
- **Non-Energy Impacts**
 - Indicate whether there are non-energy impacts to count
- **DEER Differences Analysis**
 - Describe any differences with comparable DEER approach

Process Boiler, Pipe Insulation, Add-On



Section	Guide	Responses
Technology Summary	Describe the technology/measure and how it saves energy	
Measure Case Description	Describe high efficiency scenario and any boundaries (i.e., equipment efficiency > X; equipment size > Y)	
Base Case Description	Describe base scenario and any boundaries (i.e., equipment efficiency > X; equipment size > Y)	
Code Requirements	Identify relevant code requirements	
Program Requirements/ Exclusions	Identify eligibility requirements	
Data Collection Requirements	List key parameters	
kWh, kW, and Therms Savings (TBD)	Indicate which savings parameters are relevant Describe proposed method(s) for estimating savings (existing/available tools if applicable)	
Non-Energy Impacts	Indicate whether there are non-energy impacts to count	
DEER Differences Analysis	Compare to DEER approach if applicable	



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Process Boiler, Pipe Insulation, Add-On

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Pump Overhaul

Section	Guide	Responses
Technology Summary	Describe the technology/measure and how it saves energy	
Measure Case Description	Describe high efficiency scenario and any boundaries (i.e., equipment efficiency > X; equipment size > Y)	
Base Case Description	Describe base scenario and any boundaries (i.e., equipment efficiency > X; equipment size > Y)	
Code Requirements	Identify relevant code requirements	
Program Requirements/ Exclusions	Identify eligibility requirements	
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kWh, kW, and Therms Savings (TBD)	Indicate which savings parameters are relevant Describe proposed method(s) for estimating savings (existing/available tools if applicable)	
Non-Energy Impacts	Indicate whether there are non-energy impacts to count	
DEER Differences Analysis	Compare to DEER approach if applicable	

Pump Overhaul

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Pumps

Section	Guide	Responses
Technology Summary	Describe the technology/measure and how it saves energy	
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Pumps

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Chiller Measures

Section	Guide	Responses
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Chiller Measures

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RCX

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RCX

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Small HVAC

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Small HVAC

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VFD on HVAC Fans

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VFD on HVAC Fans

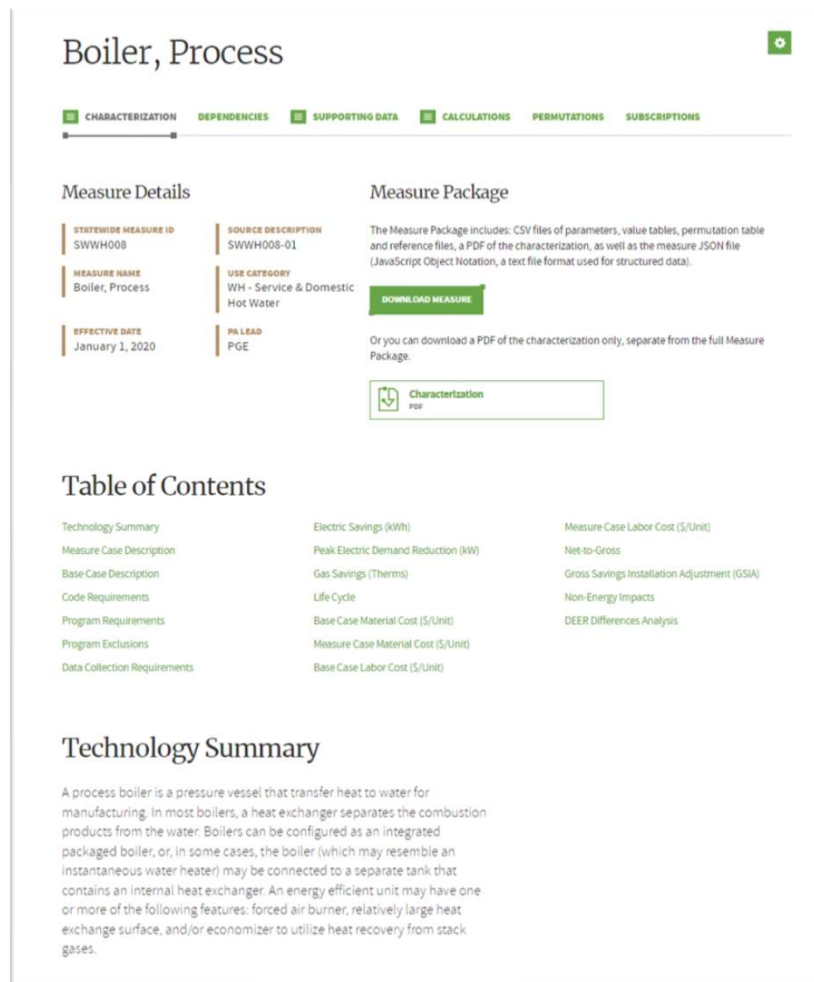
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Measure Characterization Fields

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Measure Champions will continue to draft Measure Characterizations including savings calculation approach with stakeholder input

- Technology Summary
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- Program Requirements/Exclusions
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- kWh, kW, and Therms Savings (TBD)
- Life Cycle (EUL)
- Base Case Material Cost (\$/Unit)
- Measure Case Material Cost (\$/Unit)
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See examples of Measure Characterizations for deemed measures in the eTRM

October Charette

Joint Cal TF + Custom
Subcommittee

Thursday, 10/27

LACI, Los Angeles
(remote options)

10am – 5pm Charette

5 – 6:30pm Happy Hour

- Custom Charette
 - Stakeholder discussions to shape long term custom roadmap for Cal TF/eTRM
- Goal
 - Develop common understanding of issues, opportunities, and challenges
 - Achieve shared vision for custom improvements and draft custom roadmap
 - Understand steps to arrive at the shared vision
- Topics
 - Integrated Custom Data Flow
 - SW Standard Measures in the eTRM
 - SW Standard Custom Nomenclature
 - SW templates and organizing customer/PII data
 - eTRM enhancements for custom measures, custom projects, and technical review workflows
 - Regulatory Review
 - Disposition Database

RSVP and share input: arlis.reynolds@futee.biz

Integrated Custom Data Flow

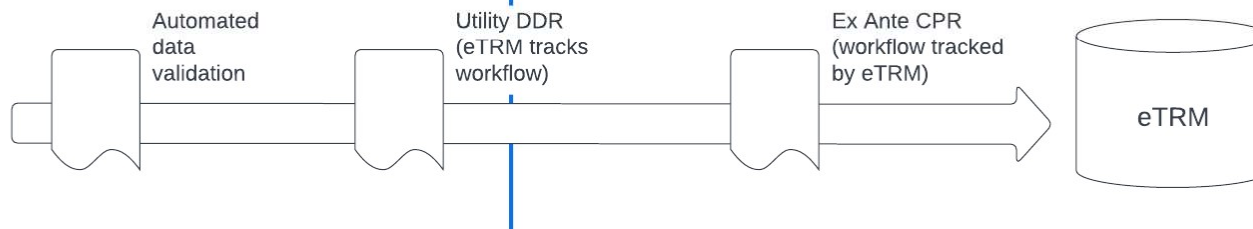
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Modern, User-Friendly, Integrated User Interface

- Web interface includes:
- All custom requirements
 - Statewide tools
 - Guidance documents
 - Training videos
 - Status dashboard
 - Reporting/Stats

All Custom Projects housed in eTRM, facilitating Ex Ante and Ex Post analysis, reporting and data analysis across projects

Custom Project*
uploaded by Project Developer (including claims data)



- SW standardized nomenclature
- SW standardized project template, by Project Type
- SW calculation tools, where applicable
- SW standardized data collection requirements, by Project Type
- Standardized / consolidated baseline
- Standardized, approved custom tools

**All PII encrypted*

Benefits for Custom

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Cost Savings



Time Savings



Customer
Experience



Standardization



Transparency



Stakeholder
Engagement

There remains significant EE savings opportunity for custom measures. We can capture additional EE savings and reduce costs if we 1) organize, simplify, streamline, and standardize custom guidance, tools, and processes and 2) clarify regulatory requirements.

Meeting Wrap-Up & Next Steps

- **Action Items**
 - All members continue to provide input on resources, guidance, etc. measure standardization
 - Measure Champions develop draft Measure Characterizations
 - Cal TF prepare materials for Charette
- **Upcoming**
 - 10/27 Custom Charette (all day)
 - 11/2 Custom Subcommittee (1-3pm)