Technical Forum Meeting

CALIFORNIA
TECHNICAL FORUM

DECEMBER 14, 2023

LOS ANGELES

Cal TF will record the meeting for notetaking purposes

Agenda

Time (PST)	Agenda Item & Action	Discussion Leader(s)
10:00 – 10:15	**Agenda Review and Quick Updates**	Annette Beitel
10:15 – 11:00	**2023 Cal TF Annual Review**	Ayad Al-Shaikh
11:00 – 12:00	**Final Draft Business Plan and Roadmap** *ACT: TF Affirmation of BP and Roadmap*	Annette Beitel
12:00 – 1:00	Lunch	n/a
1:00 – 2:00	**Custom Initiative – Recap + Next Steps for 2024**	Arlis Reynolds and Spencer Lipp
2:00 – 3:00	**ISP White Paper** *ACT: TF Input on Draft White Paper*	Arlis Reynolds and Spencer Lipp
3:00 – 4:00	**eTRM Streamlined Data Set** • Analysis, Methodology, Next Steps *ACT: TF Feedback on Methods and Future Use-Cases*	Ayad Al-Shaikh
4:30 – 7:00	***Cal TF End of Year Celebration*** *Zinc Cafe & Market and Bar (580 Mateo St, Los Angeles, CA 90013)*	n/a

Meeting Materials: http://www.caltf.org/tf-meeting-materials

Cal TF Quick Updates

- ALJ Request for Comments on Draft NMEC Rulebook
  - Comments due Feb 29
  - CPUC/PAs organizing workshop

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Cal TF 2024 Meeting Dates

Proposed 2024 Cal TF Meeting Schedule

- Monthly, 4th Thursdays (3rd in Nov, 2nd in Dec)
- No meeting in Jan, Jul
- Plan in-person; change to remote based on agenda
- **Discuss:** Timing for potential location changes (in-person to remote)

Jan	No Meeting
Feb	February 22, 2024 (Data Charette)
Mar	March 28, 2024
Apr	April 25, 2024
May	May 23, 2024
Jun	June 27, 2024
Jul	July 25, 2024
Aug	No Meeting
Sep	September 26, 2024
Oct	October 24, 2024
Nov	November 14, 2024 (Remote)
Dec	December 12, 2024

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Metric 8D

Quarterly Business Plan Progress Reports

- 2023 Q1 Business Plan Progress Update
- 2023 Q2 Business Plan Progress Report
- 2023 Q3 Business Plan Progress Report
- **2023 Q4 Business Plan Progress Report and Annual Review**

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Cal TF 2024 Business Plan and Roadmap

- Presented Draft BP and Roadmap in November TF Meeting
  - Stakeholder Comments and Responses on Draft BP and Roadmap
- Revised Drafts for Affirmation
  - Final Draft Cal TF 2024 Business Plan
  - Final Draft Cal TF 5-Year Roadmap
  - Redline versions: TF MEETING MATERIALS — Cal TF
- ACT
  - TF Affirmation of Business Plan
  - TF Affirmation of Business Roadmap

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LUNCH
12:00 – 1:00

Cal TF Custom Initiative

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ARLIS REYNOLDS
SPENCER LIPP, PE

Cal TF Custom Initiative

Custom Subcommittee

Custom Measure Working Groups

eTRM for Custom Library, Measures

ISP White Paper Working Group

Custom Initiative Workplan

SW CPUC/PA Coordination Meetings

RESOURCE LIBRARY

ISP Stakeholder Survey

Custom Initiative SharePoint Site

Boiler CMC Affirmed

Chiller Systems CMC Affirmed

CMC Workflow

HVAC RCx CMC Affirmed

TOOL LIBRARY

MEASURE LIBRARY

Custom Roadmap

DRAFT ISP White Paper

… Custom Templates

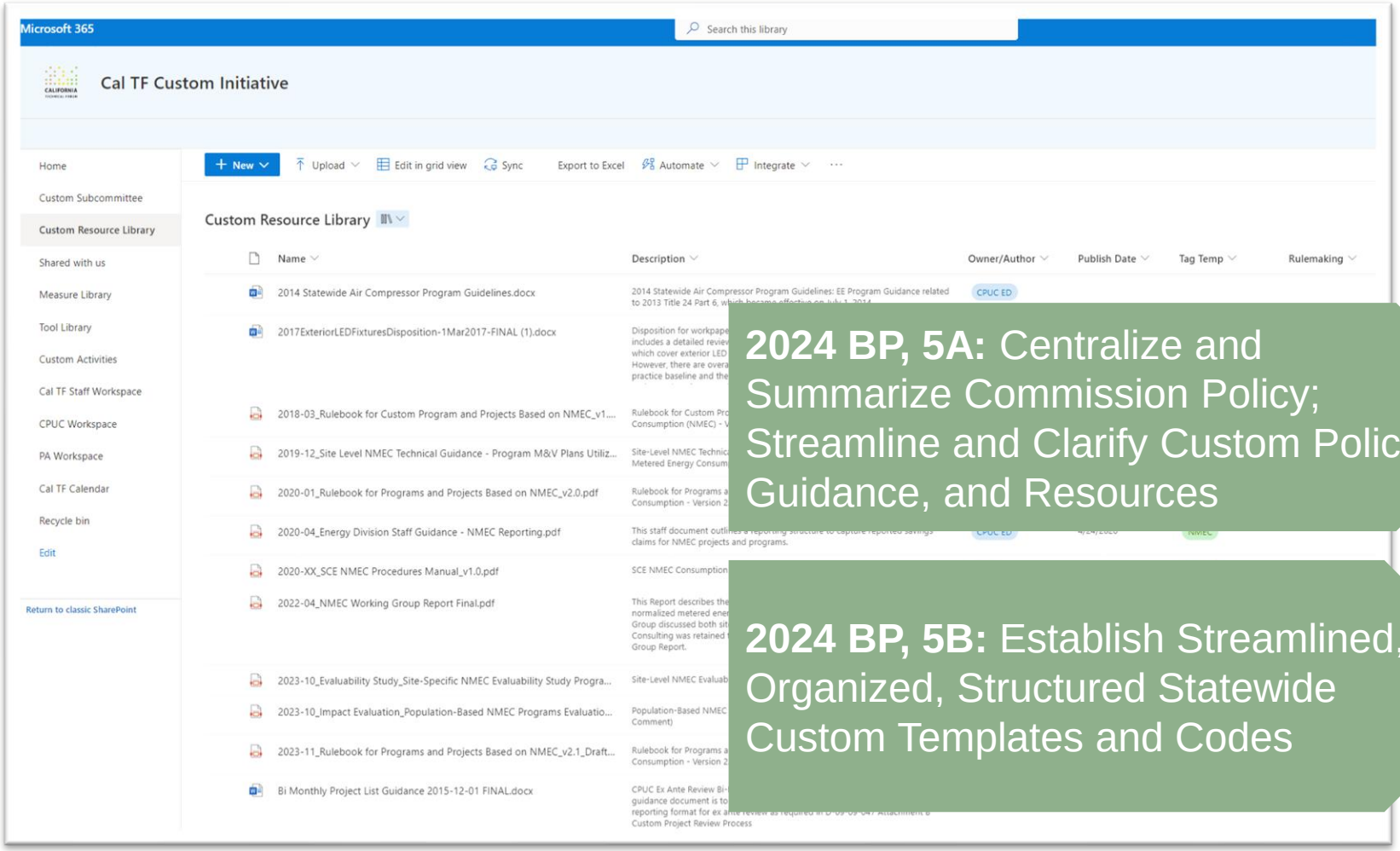
… Policy Initiative

Custom Resources: Current State

Resource Types

Document Type	Includes policy or guidance	PII Flag	Public	Available
CA Legislation	Yes	n/a	Yes	Yes
CPUC Decisions and Resolutions	Yes	n/a	Yes	Yes
CPR Public Tracker	Yes	n/a	Yes	Yes
CPUC Guidance Document	Yes	n/a	Yes	Partial
CPUC Guidance Memo	Yes	n/a	Yes	Partial
CPUC Pilot Document	Yes	n/a	Yes	Partial
Market-Based ISP Study	Yes	n/a	Yes	Partial
CPR Dispositions (redacted)	Yes	n/a	Yes	Partial
PA-Specific Resources	Yes	n/a	Partial	Partial
Informal ISP Study (with CPUC Disposition)	Yes	may include PII	Partial	No
Early Opinion	Yes	may include PII	Partial	No
CPR Dispositions	Yes	may include PII	No	No
CPUC/PA Meetings; Bi-weekly meeting notes	Yes	may include PII	No	No
Deemed Documentation	Maybe	n/a	Yes	Yes
Evaluation Report	Maybe	may include PII	Partial	Partial
CPUC Ad Hoc Communication	Maybe	may include PII	No	No
CPUC Publication	No	n/a	Yes	Yes
Efficiency Savings and Performance Incentive (ESPI) Memos	No	n/a	Yes	Yes
CPUC White Paper	No	n/a	Yes	Partial
Stakeholder Working Group Materials	No	n/a	Partial	Partial
PA Memos	No	n/a	Partial	Partial
Custom Tool Archive (CTA)	No	n/a	No	No

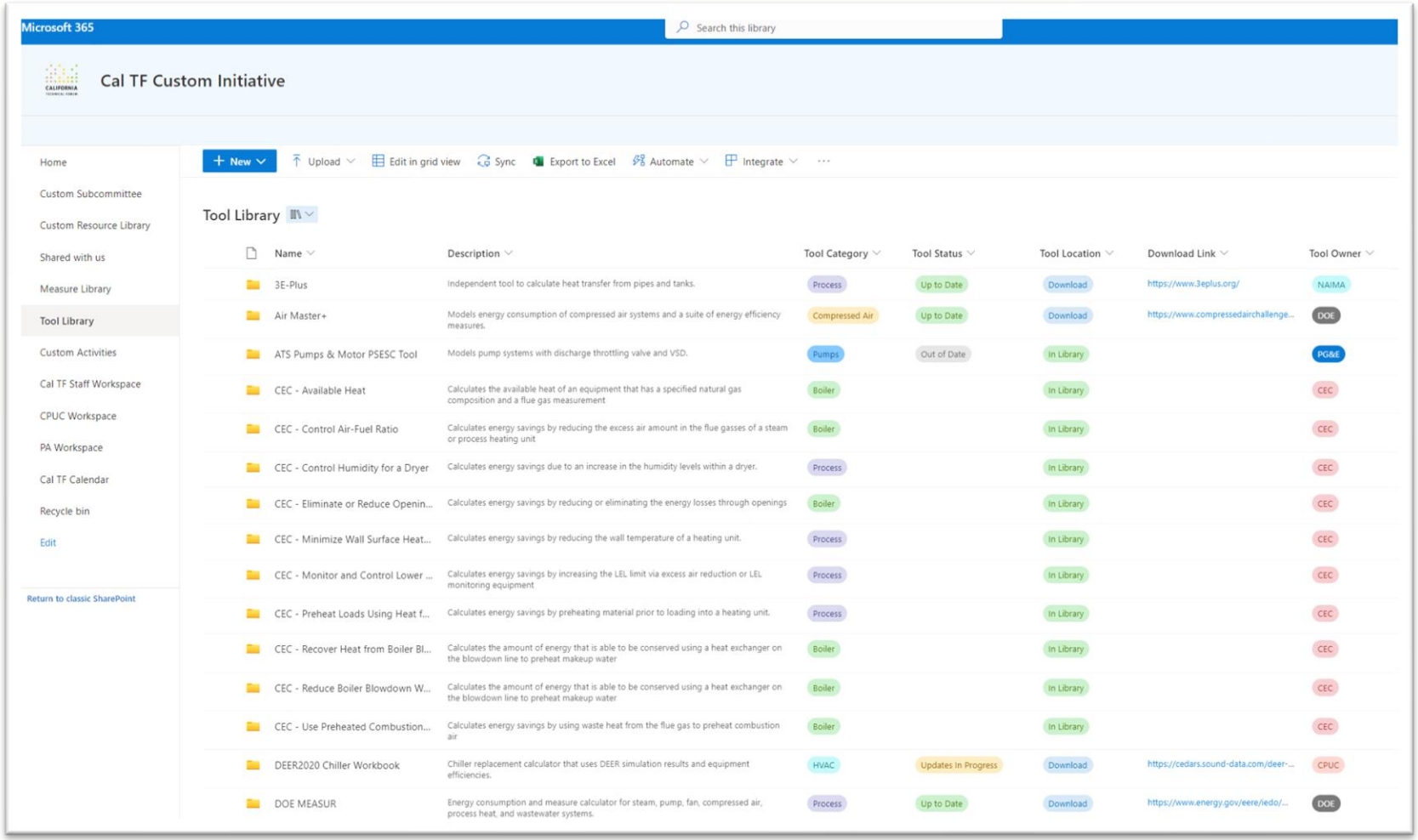
Resource Library



2024 BP, 5A: Centralize and Summarize Commission Policy; Streamline and Clarify Custom Policy, Guidance, and Resources

2024 BP, 5B: Establish Streamlined, Organized, Structured Statewide Custom Templates and Codes

Custom Tools Library



Public Custom Tools Library

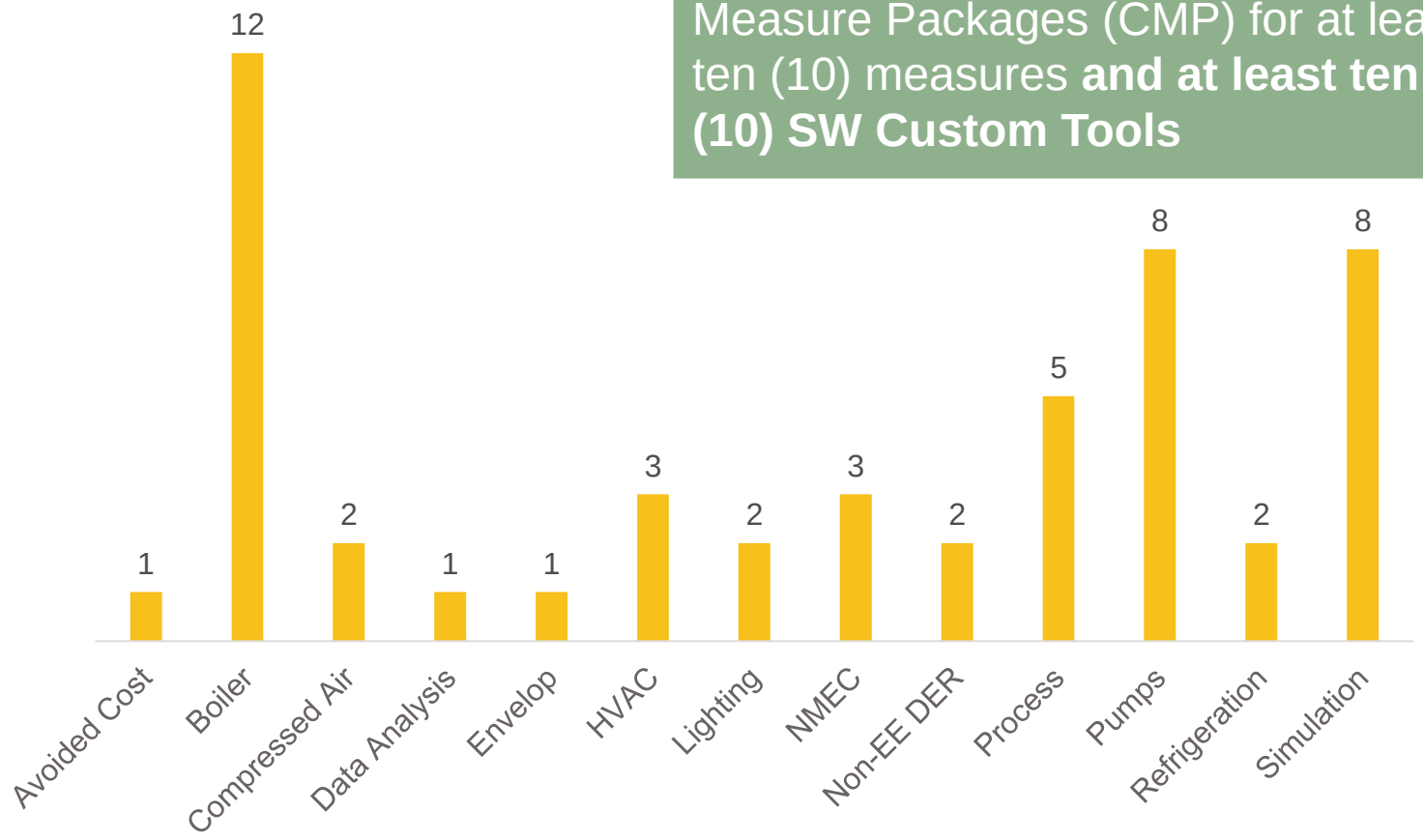
- 50 total tools in Custom Tool Library
  - 26 are up to date
  - 9 need updates
  - 15 likely need updates
- Included
  - Tools prioritized through stakeholder feedback
  - Pool Pump Calculator was “saved” from the removed list by stakeholders
  - 36 “internal” to CA program activity; 24 “external” to CA program activity
- Not Included
  - “Removed” tools
  - CCT tools
  - Some tools with limited stakeholder prioritization (e.g., single project specific; IOU could not locate tool; Obsolete due to eligibility issues)

Key Information in Public Tool Library

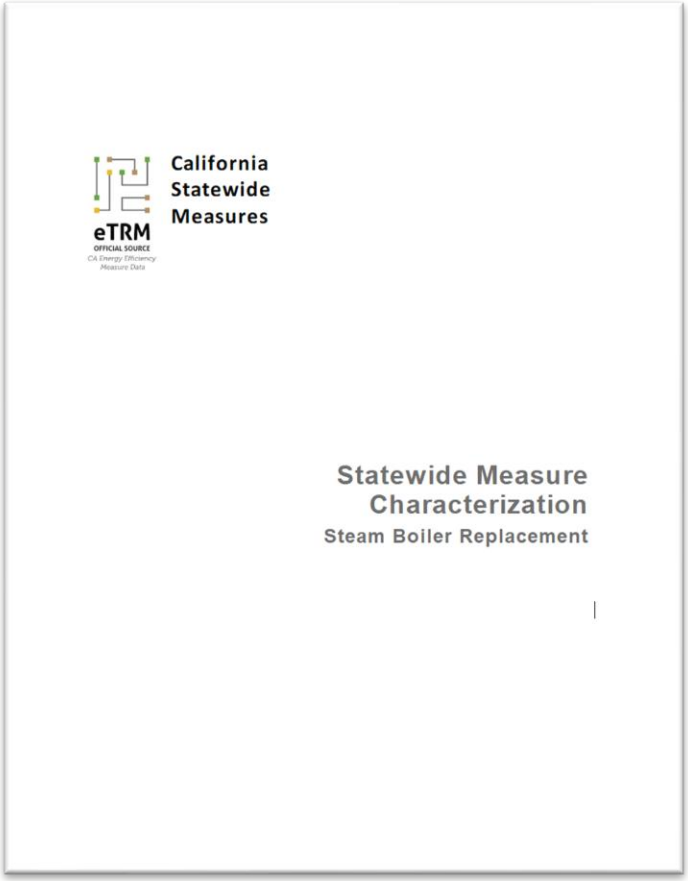
- Description
  - Brief description of the tool
- Tool Category
  - boiler, process, pumps, HVAC, data analysis, etc.
- Tool Status
  - Up to date, out of date, updates in progress
- Tool Location
  - Download, In Library, Online
- Download Link
  - Not populated for “In Library” tools
- Tool Owner

Public Tool Library by Category

2024 BP, 5C: Develop SW Custom Measure Packages (CMP) for at least ten (10) measures **and at least ten (10) SW Custom Tools**



Custom Measure Packages

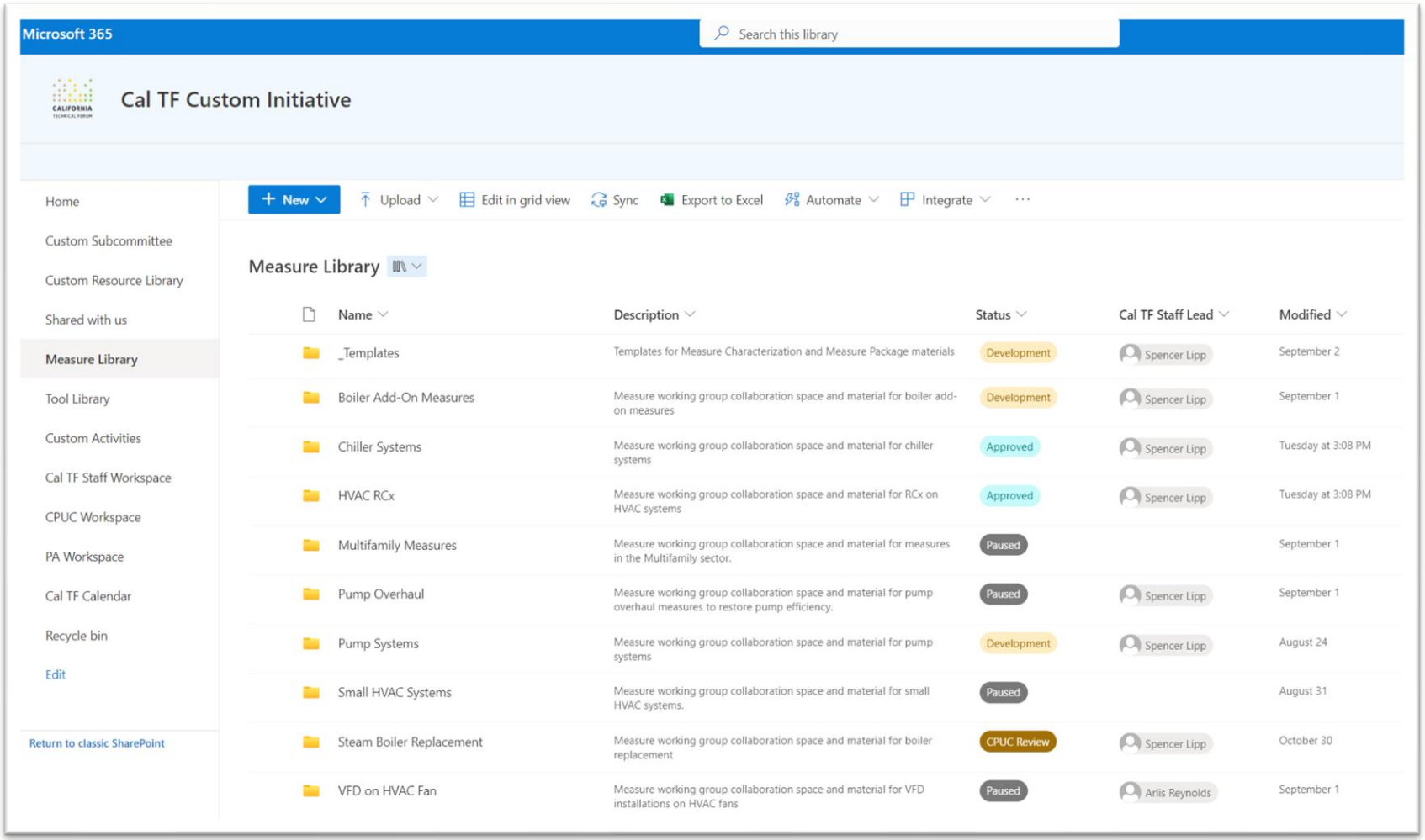


- Standard, pre-defined protocols for custom measure development
- Statewide resources to increase measure uptake
- Increase statewide consistency and efficiency
- Reduce risk and uncertainty

- 2023 Activities
  - Three CMCs completed and affirmed; two in progress
  - Updated Custom Measure Characterization Template
  - Formalized Workflow for CMC Development

2024 BP, 5C: Develop SW Custom Measure Packages (CMP) for at least ten (10) measures and at least ten (10) SW Custom Tools

Measure Library



Custom Measure Packages

Measure	System	Activity	Subsector
• Steam boiler replacement • Pump system overhaul • Compressed air leaks • HVAC controls • Mechanical vapor recompression	• HVAC chiller • Boiler Plant • Pump systems • Boiler distribution • Compressed air • Lighting • Pool pumps • Process equipment • Process fans • Process refrigeration • Process cooling	• HVAC RCx • Fuel substitution • Site NMEC • Strategic Energy Management	• Data centers • Indoor horticulture • Oil production • Multifamily existing whole building • Non-res new construction individual systems • Res new construction whole building • Wastewater

2023 complete or in progress 2023 paused 2024 plan (11 CMPs)

2024 Proposed CMPs

Measure	Description
Boiler plant add-on	Suite of measures within the boiler plant. In progress (target Q1 to TF)
Pump systems	Suite of measures for pumping systems. In progress (target Q1 to TF)
Boiler distribution	Steam system measures in the distribution system.
Compressed air	Suite of measures related to compressed air systems.
Process refrigeration	Suite of measures related to process refrigeration systems.
Process cooling	Suite of measures related to process cooling systems.
Lighting	Non-horticulture lighting efficiency and lighting controls.
HVAC controls	Replacement of controls with additional functionality.
Data centers	Suite of measures associated with data centers.
Site NMEC	Clarify process, approach, and M&V
Fuel Substitution	Methodology to drive new, innovative fuel substitution activities
Multi family existing whole building	Addresses suite of measures with a streamlined calculation approach that balances cost and accuracy.
Non-Res NC individual systems	Define specific approaches for system level fuel substitution and energy efficiency improvements in new construction

On-Hold CMPs

Measure	Description
Compressed air leaks	Program process to address compressed air leaks.
Mechanical vapor recompression	Energy recovery process through mechanical recompression of exhaust streams.
Pool pumps	Large pool pumps outside of the deemed and DOE ECS.
Process equipment	Process improvements relating to energy/widget calculations
Process fans	Suite of measures relating to process fans.
Strategic Energy Management	Documented process, approach, and policy related to site SEM
Indoor horticulture	Lighting and HVAC measures for indoor horticulture.
Oil production	Suite of measures associated with oil production.
Res new construction whole building	Addresses suite of measures including value of the process and accuracy of savings.
Wastewater	Suite of measures associated with wastewater systems.

2024 BP, 5D: Custom Policy Initiative

Stakeholder discussions to **develop proposals that solve key barriers** to custom measures, projects, and programs

Identify and **research custom best practices** in up to ten (10) jurisdictions (may include CA POUs)

Develop materials and facilitate discussions to **socialize and build consensus** around proposals and solutions.

Coordinate **stakeholder engagement to gain support** for proposals among key decision-makers

Custom Initiative

- Stakeholder Engagement
  - Custom Subcommittee Meetings – Monthly, 1st Wednesdays
  - Working Groups as needed
  - Statewide Custom Coordination Meetings
  - Regular engagement/collaboration with CPUC Staff
  - Updates/discussion at TF and PAC Meetings

- Resource/Activity Hub
  - Cal TF Custom Initiative - Home (sharepoint.com)

ISP White Paper

- Draft ISP White Paper
  - Summary of Findings and Recommendations
- Draft ISP Research Memo
  - Details on data collection, analysis supporting findings
  - Additional details on implementing recommendations
- Policy-related discussion to be part of Custom Policy Initiative (2024 BP)
- ACT – TF, Stakeholder Input on White Paper Recommendations

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Key Findings & Recommendations

#	Current Practice	Recommendation
1	No Central Repository and Limited Accessibility of Market-Based and Other ISP Studies and Baselines	Create a Central, Public, Searchable Database of Market-Based ISP Studies and Approved Baselines (**Baseline Database**)
2	No Consistent Format or Data in ISP Studies	Establish **Consistent Format and Data Requirements** for ISP Studies to Clarify Baseline Definition and Applicability
3	Most Informal ISP studies exceed the cost of the custom project incentive	Remove the Informal ISP Study Requirement for Custom Measures With Customer Incentive Less Than $100,000 (**Tiered Baseline Approach**)
4	No Coordinated, Public Planning Process for Market-Based ISP Studies	Develop Statewide Market-Based ISP Study **Public Planning Process**
5	ISP Guidance is Complex, Unclear, and Inconsistently Interpreted; Additional Guidance and Clarifications Are Not Consistently Accessible to All Stakeholders	**Update, Clarify, and Simplify ISP Guidance**, and Provide Means for Ongoing Updates, Clarifications, and Training

POU Data Streamlining

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Goals for POUs

- Reduce the complexity of choosing the right permutation for:
  - Report / Claims
  - Planning / Budgeting
- Understand the uncertainty / risk associated with streamlined data
  - No risk
  - Minimal risk
  - Mitigate risk

Could part of this plan work for IOUs also?

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3 Levels of Permutation Collapse

Full eTRM Data	Streamlined Data	Collapsed Offerings
~20,000 perm/CZ	~1,400 perm/CZ	??? Perm/CZ (~1/3)
Full set	Offering / CZ / Sector	Offering / CZ / Sector
Nightly sync	Quarterly Review	Guidance document to collapse offerings
eTRM naming	Streamline designation	Same as Streamlined
Updated by measure package owner	Script to combine; looks like AR	Same as Streamlined
	Memo describes script	Memo to recommend collapse

Questions:

- Using Res / NonRes for sector, would you also distinguish building type for NonRes?
- Using AR columns to be consistent, would you also distinguish MAT to make permutations easier to use?
- Would IOU consider using Streamlined data for planning?

How Energy Savings (kWh) Vary?

- Offering
- Climate Zone
- Building Type
- Building Vintage
- Building HVAC

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Offering:
How Energy Savings (kWh) vary?

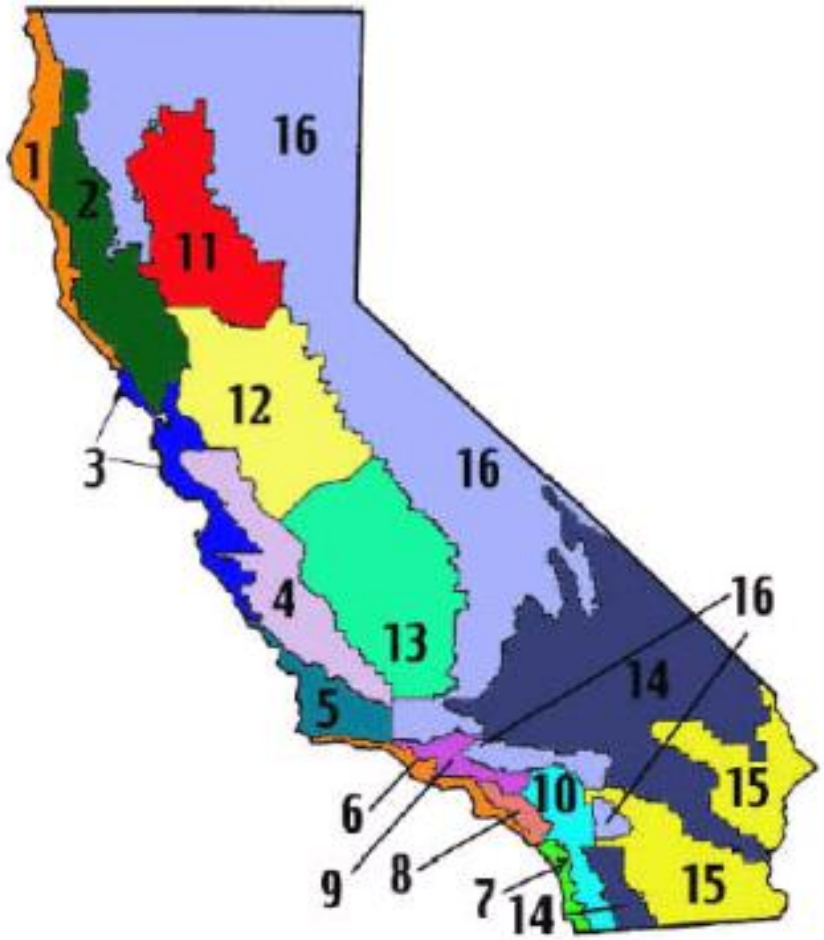
- *This parameter will be handled separately – looking at the measures with the most offerings*
- How to describe this product to a customer:
  - Measure Efficiency (SEER 17, Energy Star, etc)
  - Measure Size (> 10 tons, <2 hp, etc)
  - Physical Description of the Equipment (Side Freezer, R-19 Batt, etc)

- Examples:

Measure Package	Feature 1	Feature 2	Feature 3
Refrigerators	Refrig and/or Freezer	Side/Top/Bot	Efficiency Tier
Clothes Dryers	Fuel	Efficiency Tier	Size
Ceiling Insulation	Insulation value (R-value)		
Fryer	Fuel	Efficiency Tier	
HVAC Package Units	Size (tons)	Efficiency Tier (SEER/SEER2)	Equipment Type (HP/AC)
Whole House Fan	Motor Type	Efficiency Tier (cfm/ft2)	

Climate Zone: How Energy Savings (kWh) vary?

- 16 Climate Zones
  - Recommend: Do not collapse 16 Climate Zones since POUs already only use a small set of values
  - Typical use cases:
    - Weather dependent measures such as HVAC (heating and cooling)
    - Water heating measures due to ground water assumptions



Building Type: How Energy Savings (kWh) vary?

- Non-Residential and Residential
  - Align building type naming
  - Variation due to building construction, typical usage patterns, typical loads
    - Often driven by modeled results
  - Sometimes differentiated to make eligibility clearer

- Assembly
- Education - Community College
- Education - Primary School
- Education - Relocatable Classroom
- Education - Secondary School
- Education - University
- Grocery
- Health/Medical - Hospital
- Health/Medical - Nursing Home
- Lodging - Hotel
- Lodging - Motel
- Manufacturing Biotech
- Manufacturing Light Industrial
- Office - Large
- Office - Small
- Other Agricultural
- Other Commercial
- Other Industrial
- Restaurant - Fast-Food
- Restaurant - Sit-Down
- Retail - Big Box
- Retail - Large
- Retail - Small
- Storage - Conditioned
- Storage - Unconditioned
- Warehouse – Refrigerated
- Residential
- Residential - Mobile Home
- Residential - Multi-Family
- Residential - Single-Family

Building Vintage and HVAC: How Energy Savings (kWh) vary?

- Vintage
  - Associated with differences in prototype model (code construction, age of building, etc)
- HVAC Type
  - Linked to what is typical in a building type

Building Vintage:

- Existing
- New Construction
- *Old (removed 2026)*
- *Recent (removed 2026)*

Building HVAC Type:

- rDXGF (central AC with gas furnace)
- rDXHP (central heat pump with electric resistance backup)
- rNCEH (no cooling, electric baseboard heating)
- rNCGF (no cooling, gas furnace).
- (and more...)

		Number of Measures (Total=164)	AppPlug	BldgEnv	CompAir	ComRefrig	FoodServ	HVAC	Irrigate	Lighting	NonSav	ProcDist	ProcHeat	Recreate	SHW	HotWater	WhlBldg
1	Measures already streamlined (no variation beyond Offering, CZ)	81	7	0	0	18	26	6	2	1	1	4	4	2	10	0	0
2	Measures to streamline (variation < Limit)	36	6	0	1	0	1	6	1	1	0	1	0	2	17	0	0
3	Measure very small contribution to portfolio (<0.01%)	21	0	2	0	0	0	18	0	0	0	0	0	0	1	0	0
4	Due to Bldg Type and/or HVAC Type	26	0	3	0	0	0	16	0	2	0	0	0	0	3	0	2

- Types of groups:
  1. Already streamlined
  2. Variation in BT, HVAC Type and Vintage small
  3. Low risk to portfolios
  4. Higher risk / higher variation

Streamlining by Group

	Number of Measures (Total=164)	AppPlug	BldgEnv	CompAir	ComRefrig	FoodServ	HVAC	Irrigate	Lighting	NonSav	ProcDist	ProcHeat	Recreate	SHW	HotWater	WhlBldg
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Due to Bldg Type and/or HVAC Type	26	0	3	0	0	0	16	0	2	0	0	0	0	3	0	2

- Take-aways:
  - Many measures already collapsed or little impact to collapsing
  - Focus on HVAC/Lighting measures (mostly)
  - Question that we are asking is how to handled bottom two rows

3 Levels of Permutation Collapse

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Questions / Next Steps

- **Next Steps**
  - Integration with ESPPortfolios (POU reporting / planning tool)
  - Finalize approach to created streamlined permutation set
  - Planned memo to recommend offering collapse

Back-up Information

Limits Used in Analysis

- Percent of Portfolio taken from IOU claims data from 2020-2023
- Limit compared to % deviation (SD/Average)

Tier	% Portfolio		Limit
1	100%	1%	10%
2	1%	0.50%	15%
3	0.50%	0.25%	20%
4	0.25%	0	25%

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Next Steps

- ***THANK YOU!***
- Action Items
  - Cal TF Staff send 2024 meeting invites
- Next TF Meeting
  - Thursday, Feb 22, 2024
  - Location TBD

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Cal TF End of Year Celebration

5-minute walk

0.2 miles