

MEETING NOTES



California Technical Forum (Cal TF) Meeting

Thursday, November 16, 2023

10:00 a.m. – 3:30 p.m.

Remote Meeting

Agenda Topics

- [Agenda Review and Quick Updates](#)
- [EE Portfolio Claims Data Analysis](#)
- [Hybrid Measure List](#)
- [HVAC Fuel Substitution Measures](#)
- [Report: HVAC Fuel Substitution Measure Research \(SDG&E\)](#) (posted after meeting)
- [Draft 2024 Business Plan and 5-Year Roadmap](#)
- [Summary of Action Items](#)

Attendees

Cal TF Members	Abhijeet Pande Adan Rosillo Alfredo Gutierrez Anders Danryd Antonio Aliberti Babak Yazdanpanah Briana Rogers Charles Ehrlich Christopher Rogers Eduardo Reynoso Eric Noller Gary Fernstrom George Beeler	Greg Barker Jay Bhakta King Lee Lake Casco Martin Vu Michael Green Mike Casey Richard Ma Roger Baker Sepideh Shahinfard Steven Long Tim Olsen Tom Eckhart
Non-Member Stakeholders	Ada Rodriguez (SDG&E) Amy Rearden (CPUC) Anthony Zavala (SCG) Beth Kelly (BayREN) Bryan Boyce (Energy Solutions) Danny Ng (PG&E) Fernanda Craig (LA County) Harpreet Singh (PG&E) Henry Liu (PG&E) Jessie Wang (SDG&E) Jim Hanna (Energy Solutions) John Zwick (SDG&E) Kim Mowery (SCG)	Leanne Hoadley (CPUC) Matt Swenka (Willdan) Michael Walters Nicholas Fette (Lincus) Paolo Pecora (Willdan) Patricia Terry (Rural REN) Peter Biermayer (CPUC) Rachel Marmorstein (City of Roseville) Rod Houdyshe (SDG&E) Ryan Cho (SCE) Soe Hla Wayne Chi (SCG) Wilfredo Garcia (SCG)
Cal TF Staff	Arlis Reynolds Ayad Al-Shaikh Spencer Lipp Chau Nguyen Randy Kwok	

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

- [Agenda](#)
- [TF Meeting Presentation](#)
- [HVAC Fuel Substitution Measures \(Energy Solutions\)](#)
- [Draft Cal TF 2023 Business Plan v3.0](#)
- [Draft Cal TF 5-Year Roadmap v3.0](#)

I. Agenda Review and Quick Updates

Presenters: Arlis Reynolds, Ayad Al-Shaikh

Materials: [TF Meeting Presentation](#)

- eTRM Release 2.7.0 (11/9/2023)
 - No comments
- Measure Package Updates
 - Michael Green – How often is the 2024 Measure Package Update report being updated?
 - Ayad – About monthly; if we hear about significant changes, we will update – but there is no live link. The reports gives dates for updates; the dates are our best guesses, not exact dates.
- December TF Meeting
 - **Action Item** – [RSVP for December Meeting and EOY Celebration](#)
- CPUC Memo: POE Requirements for Accelerated Replacement of Deemed Measures
 - Ayad – there is some standard language in the characterization template as to what will be added; we will incorporate new text as MPs are updated.
 - Steven – in addition to POE, there are also new requirements to report site/measure data; this is a reporting requirement (that came out through funding authorization) that is similar and goes into effect in January 1. (See [D. 23-06-055](#), OP12.)

II. EE Portfolio Claims Data Analysis

Presenter: Spencer Lipp

Materials: [TF Meeting Presentation](#)

2022 CEDARS Claims Analysis: 20 Electric and 24 Gas 3P Programs

- Steven Long – All custom lighting doesn't disappear; my understanding is that scope of planned of MLC workpapers is just four or so measures, so there is still some lighting that could go through custom, correct?
 - Spencer – Yes, we didn't look in detail at the custom claims to assess which would or wouldn't go deemed; we anticipate a good amount will go deemed.
- Leanne Hoadley – Can you clarify whether the comment regarding implementers is specific to lighting?
 - Spencer Lipp – This is not specific to lighting; this is based on conversations with implementers related to the cost of developing a custom project and the risk of it not moving forward and getting approved. This is not based on a survey of all implementers; but the trends in data does seem consistent.

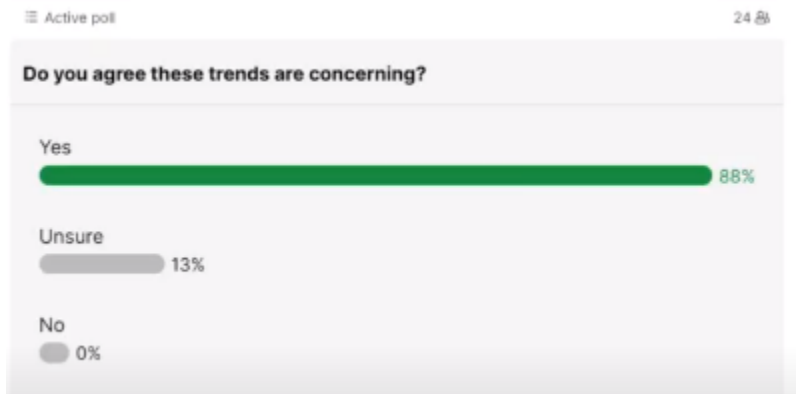
- Leanne – We are looking at similar data, and I have some different assumptions from that; we can pursue later some additional assumptions around cause and effect.
- Paolo – Regarding custom lighting projects, we are hearing that the approval of using the MLC will not be extended into next year. We will be relying on the deemed measure package and will not be doing custom lighting next year.
 - Steven – Why is it not going forward? Is this effort to update, or Commission direction?
 - Paolo – I believe it is Commission Direction. It is difficult to create a lighting calculator. The SP analysis would need to be updated; a simpler calculator still has the issue of setting the efficiency level.
 - Ajay – I don't think this is CPUC direction. This was specified in the EO. Nobody has updated the standard practice, so the calculator is not useable anymore. If somebody updates it, it can move forward. I don't believe the CPUC has said you cannot do lighting anymore?
 - Sepi – Isn't SCE the lighting lead?
 - Ajay – SCE is the statewide lighting lead for deemed but not the MLC lead.
- Martin – Does the claims analysis include the summer reliability programs, which provided avenues for lighting to be calculations?
 - Spencer – No, the analysis is based only on 3P solicitation programs. We did not analyze any claims from the summer reliability programs.

See [Slido Responses](#): Do you agree these trends are concerning? What can we do to reverse these trends?

2022 CEDARS Claims Analysis: all of CA PPP Programs

- Gary Fernstrom – Confirmed ASH Controls = anti-sweat heater controls
- Leanne Hoadley – Are there any insights into the disconnect between claims and P&G or recommendations?
 - Spencer Lipp – We need to do more analysis into this e.g., to understand where different TRC values come from; to understand differences between what was projected and what was claimed.

See [Slido Responses](#): Do you agree these trends are concerning? What can we do to reverse these trends?



- Arlis – the comments we are receiving seem consistent with the feedback and discussion on custom through the Custom Initiative. Are these comments also relevant for deemed?
 - Spencer Lipp – Yes, I think we are seeing some of the challenges on the custom side drifting toward deemed. The Deemed POE is an example of that, and growing effort that it seems to take to do projects.
- Steven Long – The length of time to get a Measure Package developed and approved.
 - Spencer Lipp – Does that issue deter implementers from developing MPs?
 - Steven Long – Yes, there is thought up front on whether it’s worth the hassle of doing things. E.g., we are working on the horticulture lighting measure package, several years back on forth on standard practice. It’s not easy to get measures into the process. So, the big stuff gets in because that’s the only thing that’s worth going through the process for.
- Steven Long – It’s also challenging to get all the measures coordinated among PAs and implementers; while there are discussions, it’s not an ideal solution. MLC situation is a good example of it not being clear who is carrying the torch on that effort.
 - Arlis Reynolds – Regarding challenges on SW coordination, is that on selecting measures to develop, sharing comments on measures in development, or other?
 - Steven Long – Those are elements; the big part is developing it. When utilities were doing this, they had access to all the data. 3Ps don’t have access to all the data. We can’t necessarily trade stuff back and forth due to confidentiality requirements.
 - Arlis Reynolds – So there is an issue of access to data that exists; we need coordination and to overcome data privacy issues.
 - Steven Long – That and more; there is also the effort associated with that. Even with NMEC that allows contractors to analyze data when they have a contract with a given utility. Once you get into developing measure packages, you sometimes need customer level information.
 - Ayad Al-Shaikh – This issue of trying to talk through issues in the Measure Development process is part of our Business Plan for 2024.

III. Hybrid Measure List

Presenter: Cal TF Staff

Materials: [TF Meeting Presentation](#)

Hybrid Measures

- Steven Long – POU's don't need to deal with influence, correct?
 - Arlis – I believe that’s correct. POUs may do NTG studies for programs in ex post, but are not required to assess influence on a project level in project development.
 - Steven – part of this is engineering and part of this is influence, which seems to be the more challenging part in many instances. It would be nice if the deemed and hybrid had “approved influence;” something that is simplified vs. lots of documentation as required in the past. Hybrid should simplify the savings and the influence.
 - Arlis – A couple pathways “approved influence” could be 1) “deemed influence method” and/or 2) deemed NTG value, which was discussed a couple years ago in the Hybrid Subcommittee.

- Beth Kelly – Agree with Steven that we need certainty on influence; this is not a pipe dream. Trying to analysis case by case rather than macro lens gives a false sense of security of the accuracy as to FR/influence and other things.

Missing Deemed MP Permutations

- Lake Casco – Heat Pump Water Heater MPs have restrictions; we are getting requests to add different base and measure case configurations. We can run permutations for some combinations, but it may not make sense to build out for all scenarios. The water heater calculator is easy to run if tech ID exists; should not exclude if opportunity exists.
 - Arlis – Deemed vs Hybrid?
 - Lake – There have been CalMAC studies and others that have looked at this and provide recommendations; TECH does not have the same restrictions; all data has been useful for deemed – but anything else could work in the hybrid method.
 - Spencer – HPWH are rapidly changing, may always have new offerings until the market solidifies. Could be easier to introduce through hybrid so that capture frequent changes with maturing market.
 - Lake – that makes sense since it's a rapidly-changing space. A lot will be covered in deemed, but there will always be stranded measures. Hybrid may be easier way to introduce measures into the market. Hybrid analysis could transition to deemed once market has matured.
- Steven Long – This is typical of anytime a new measure is introduced; lots of iterations (like with LEDs); probably makes sense to go Custom → Hybrid → Deemed makes sense for newer measures; then once offerings/permutations figured out, you deemify.
 - Spencer – we are also seeing a lot more integration of new tech with DERS; this may become more prevalent in the coming years.
- Abhijeet Pande – Timing is important; if enough information available - deemed; if permutations are not known yet, hybrid is valuable. CalNEXT can help identify gaps and how to fill gaps.
- Greg Barker – An ET report from CalNEXT on permutations of sizing seen in TECH and the implications for the eTRM will be published this month!

Common/Standard Custom Measures

- Antonio Aliberti – Steam Boiler Replacement is for > 20 MMBTU?
 - Spencer – Yes, this is the CMC that was affirmed by the TF in July; greater than 20MMBTU so it expands beyond the existing deemed measure package.
- Antonio – MVR (multi-vapor re-compression)?
 - Spencer – We included this because of the amount of savings in the custom bi-monthly data analysis; not sure exact numbers, but high enough savings to consider on the list.
 - Wayne – What was the number of MVR measures? We see typically on larger steam systems; These systems are typically more specialized due to operation at different operating pressures. This doesn't sound like a good candidate for hybrid; this is a more custom measure.
- Abhijeet – Is HVAC RCx (Activity) including in the HVAC Controls (Measure)
 - Spencer – related, but different activities and MATs. HVAC Controls measure could build on the HVAC RCx activity.
 - Abhijeet – There is a lot of work on Guideline 36 and optimized controlled sequence; these could be great hybrid measures because the endpoint is

known, but baseline is different; productized control could be good candidate for hybrid. Some aspects of new codes maybe be included soon.

- Abhijeet – How does Fuel Sub here compare with missing permutations?
 - Spencer – the thought for custom is for industrial applications; we would always start the working group process by understanding the measures we will be including. Any one of these items could be broken down into multiple measures. Could be an expansion of deemed, or something very different from deemed.
 - Abhijeet – Large Commercial FS (e.g., central plant) could be a good example.
- Lake Casco – Another thought for missing baselines or system types in a measure package, the Switch Reluctance Motor MP only covers packaged DX systems with gas furnaces. so packaged DX AC only, furnaces, packaged HPs, AHUs, exhaust fans, etc are not eligible. RTU's are the target market for SRMs but there's likely a lot of potential in these other system types.

Stranded Measures

- Example: Small Commercial HVAC controller – small individual savings, but potentially high volume (e.g., GridPoint add-on controller)
 - Steven Long – Simple RCx also; there is a lot of opportunity for simple control systems, e.g., in smaller buildings/systems
 - Jessie – this measure is very vague; adding a controllers is replacing a controller doesn't mean energy savings; it's hard to standardized when savings can vary a lot
 - Spencer – The controllers include package of controls that cycle units on/off (e.g., GridPoint); may also include DR integration; Pre-programmed controllers - control VFD, cycle, control load; now many RTU operate with just thermostat
 - Lake – Could this be used with the PG&E HVAC Calculator? There is a chicken & egg issue: In the past, level of data required for deemed is difficult to overcome; custom - not enough savings to warrant, so can't get savings.

Hybrid Approach

- Lake – Agree with most items; have trouble with pre-determined rebate per unit – it seems to separate rebate from savings which doesn't make sense. We do want to make rebate calculation simple. It doesn't make sense to have a pre-determined rebate on a variable saving measure.
 - Arlis – Agree; the idea was to scale the rebate with the savings – e.g., if savings is per unit; then the rebate is also per unit – scaling in the same way.
 - Lake – Yes, there should be a connection between the savings and rebate; otherwise breaks link to cost-effectiveness
- Abhijeet – Custom tools could be used to develop initial savings estimate, and also have minimal criteria for specific site conditions to follow hybrid approach.
 - Another thought could be a true-up analysis when everything is done and measured; post-install true-up of savings (but not change customer incentive); these data could then help in future transition to deemed
- Lake – Deemed NTG vs Custom NTG different; would this be a Hybrid NTG?
 - Arlis – Intent is a streamlined alternative to lots of influence documentation; options include a standard deemed NTG for new measures that then gets studied after a year of implementation.

IV. HVAC Fuel Substitution Measures

Presenters: Ayad Al-Shaikh and Bryan Boyce/Energy Solutions

Materials:

- [Presentation: Fuel Substitution Measures - Energy Solutions](#)
- [Report: HVAC Fuel Substitution Measure Research \(SDG&E\)](#)

Site vs. Source

- Gary Fernstrom – Question about the study scope: I assume you have compared the energy use of electric substitution heat pumps against gas heating of various kinds. Was there consideration of where source fuel comes from, or simply a site comparison (one fuel/tech compared against the other)?
 - Bryan – We used the Fuel Sub calculator
 - Gary – Does that calculator take into consideration time and season of use to capture the impact of renewables and generation mix and lack thereof in middle of winter / middle of night?
 - Peter Biermeyer – It's an average number; average heat rate for the entire year
 - Gary – I can see the industry moving toward electrification; it truly bothers me that in the short run, a lot of the electric energy to serve electrification is relying on fossil fuel electric generation. That doesn't seem to be the environmental outcome that we want. I want to raise that global scope point. We should consider this when making decisions on whether FS is a good thing for the environment.
 - Lake – That may not be done in the Fuel Sub calculator, but it is considered. Fuel Substitution calculator may not capture annual change in GHG due to source changes, but CET does (which is where TRC and TSB come from).
 - Steven (chat) – GET program is looking into emissions by hour for GAHP and electric HP that should address the concerns of changing incremental emissions.
 - Bryan – TSB intends to put things on an apples-to-apples basis.

R2: 120V Heat Pumps (Micro Heat Pumps)

- Tom Eckhart – what do we know about the costs and saturation?
 - Bryan – I'd like to follow up on this; memory is that costs are not too different from A/C units on per-BTU basis.
- Lake – these are included in Energy Star; these are categorized under window AC with reversing values. A marketing challenge is that people don't know they are heat pumps. Are these the same as what is in EnergyStar now?
 - Bryan – Yes, DOE calls these Room AC.
- Gary – Don't we find this tech in hotels/motels as PTAC; single unit heating and cooling.
 - Bryan – Yes, that is in our commercial segment.
- Spencer – I'm not sure if same tech or different; can you comment on filtration in these systems? I've heard about lack of filtration for something similar. If that's the case, we need to be cognizant of potential IAQ issues especially for equity segment. Also, curious if this is the same measure selected by CalMTA.
 - Bryan – Unsure of answers; there is always a focus on ventilation.
 - Lake – We are doing the Room AC measures; like window AC, these don't offer actual ventilation – they include a thin filter for recirculated air. [The connection to the outdoors is typically to reject heat (on the condenser side).]

R4: GSHP

- George Beeler (chat): GSHP heat exchangers can sometimes be installed in utility trenches; GSHP have been used to capture wastewater heat

R8: Dual Fuel Heat Pumps

- Spencer Lipp – I'm wondering how we can incentivize this through utility programs. You are keeping gas, there is not measure application type, can't be an add-on because HP operates on its own. CPUC R-4818 language talks about this. This could be a challenge to implementation.
- Nicholas Fette – re: grid impacts from leakage; there is a lot of uncertainty in the leakage rates in RACC, including in program design for existing and new measures. If there is some way to measure leakage rates – could go a long way to reduce the refrigerant leakage costs that impact TSB of these measures.
 - Bryan – Agree this definitely needs more measurement and certainty.

General Discussion

- George Beeler (chat): What program requirements can we add to avoid refrigerant leaks from field connections?
 - Bryan – Want to make sure refrig. leaks are accurately quantified in RACC? Maybe a certain type of fitting that we can look at. Perhaps also a manufacturer certification class and/or training requirement. We don't have to worry about refrig. leak with hydronic systems.
 - Ayad – there is a MP for lifetime refrigerant management. Includes training, documentation, leak check verification, non-invasive strategies to check charge, and locking Schrader caps.
 - Lake – We could use something like SWSV014 be used for limit refrigerant leakage.
- George Beeler – Do any measures include residential economizers for improved efficiency?
 - Bryan – we did not look at residential economizers
- Steven Long – cost may impact dual fuel on this as well. GET doing an analysis of this one as well.

See [Slido Polling Results](#): Indicate your excited level for each Residential Fuel Sub Measure.

- Bryan – this is consistent with what we expected to see.
- George Beeler – I'm happy to see R1 with highest rating. My Harvest Thermal System avoids morning and afternoon peak load times; uses power when the grid has the lowest amount of fossil fuels.

Commercial measures

- Martin Vu – For C14 and C11, would you consider other TES technology such as phase change envelope material?
- George Beeler – Solar air pre-heating works well with high occupancy spaces.

C7: Waste Fluid Heat Recovery

- George Beeler (chat) – Regarding wastewater heat recovery, Sonoma County Water Agency experimented with HX in the street waste water piping.

See [Slido Polling Results](#): Indicate your excited level for each Commercial Fuel Sub Measure.

Action Items: Provide feedback to SDG&E in thinking about what Measure Packages should be prioritized. Send additional feedback to Ayad.Al-Shaikh@futee.biz

V. Draft 2024 Business Plan and 5-Year Roadmap

Presenter: Arlis Reynolds and Ayad Al-Shaikh

Materials:

- [Draft Cal TF 2024 Business Plan v3.0](#)
- [Draft Cal TF 5-Year Roadmap v3.0](#)

Business Plan

Goal 1

- Steven Long – We have discussed MF housing over the past year; there are programmatic, data, MP gaps. We need more comprehensive solutions. Small business may have similar issues. There are likely other gaps – and we just need to identify solutions for these gaps.
 - Ayad – suggested it goes in Goal 1A; could also be included in the prioritization of new measures.

Goal 2 – no comments

Goal 3

- Steven Long – Suggested adding support to operationalize viable electric alternative (VEA) requirements.

Goal 4 – no comments

Goal 5 – no comments

Goal 6 – no comments

Goal 7 – no comments

Action Items: Cal TF comments due by 11/28; send to Arlis.Reynolds@futee.biz

Roadmap (Components of each goal discussed noted below)

Goal 1 – no comments

Goal 2 – no comments

Goal 3 – no comments

Goal 4

- Lake Casco – there are a lot of non-EE things planned; how do we get funding outside of the normal channels?
 - Ayad – Items needing additional fundings are marked in blue (e.g., if supporting a different goal or outside of EE); we do need to respect those boundaries.

- Spencer Lipp – Integration will be great; being able to download CET files has been great. Consider adding searchable functions to create a CET file based on climate zones, building types, etc.
 - Ayad – will add it to the eTRM enhancement log.

Goal 5 – no comments

Goal 6 – no comments

Goal 7 – no comments

Action Items: Cal TF comments due by 11/28; send to Arlis.Reynolds@futee.biz

I. Summary of Action Items

- Updates
 - [RSVP for December Meeting and EOY Celebration](#)
- Fuel Sub Measures
 - [SDG&E Fuel Substitution Study](#) posted to Cal TF Website
 - Provide feedback to SDG&E in thinking about what Measure Packages should be prioritized. Send additional feedback to Ayad.Al-Shaikh@futee.biz
- Draft Business Plan and Roadmap
 - Draft Business Plan comments due by 11/28; send to Arlis.Reynolds@futee.biz
 - Draft Roadmap comments due by 11/28; send to Arlis.Reynolds@futee.biz