AGENDA

CALIFORNIA TECHNICAL FORUM

California Technical Forum (Cal TF) Meeting

Thursday, April 25, 2024
10:00 a.m. – 4:00 p.m.
LACI Building (525 S Hewitt St Suite 150, Los Angeles, CA)

Microsoft Teams Meeting Details
Click here to join the meeting
Meeting ID: 222 607 559 55
Passcode: LDtob3
Or call in (audio only)
+1 929-352-2667,,434850223#
Phone Conference ID: 434 850 223#

Attendance

TF Members

- Abhijeet Pande
- Alfredo Gutierrez
- Andy Danryd
- Ed Reynoso
- Babak Yazdanpanah
- Martin Vu
- Mike Casey
- Roger Baker
- Steven Long

TF Members (online)

- Briana Rogers
- Christopher Rogers
- Eric Noller
- George Beeler
- Greg Barker
- James Hanna
- Jay Bhakta
- King Lee
- Michael Green
- Myrna Dayan
- Nicholas Fette
- Richard Ma
- Sepideh Shahinfard
- Tim Olsen

TF Stakeholders (In-Person)

- Anthony Zavala
- Armen Saiyan (PAC Member)
- Cassie Rauss
- Vishal Diddi
- Diego Monterroso
- Felix Monterroso
- Geoff Wilkens
- Kim Mowrey
- Paolo Pecora (PAC Member)
- Sean Lim

TF Stakeholders (Online)

- Ajay Wadhera
- Andres Marquis
- Andrew Leishman
- Antonio Huizar
- Bryan Oyan
- Casey Carnes
- Code Bruder
- Fernanda Craig
- Glen LaPalme
- Greg Green
- Harpreet Singh
- Henry Liu
- Jacob Kurt
- James Gingras
- Jeanie Huntsman
- Jessie Wang
- Kyle Dunn
- Luke Haun
- Madeline Talebi
- Magdalena Means
- Matt Swenka
- Michael Walters
- Nick Dirr
- Paul Kuck
- Peter Biermayer
- Rachel Harcharik
- Rachel Murray
- Robert Morgan
- Rod Houdyshel
- Ryan Cho
- Sean Lim
- Shane Sugiyama
- Sheetal Chitnis
- Soe Hla
- Steven Apodaca
- Tim Xu
- Vida Daneshmand
- Vrushali Mondon
- Wayne Chi

Cal TF Staff

- Annette Beitel
- Ayad Al-Shaikh
- Arlis Reynolds
- Spencer Lipp (online)

		• Randy Kwok (online) • Chau Nguyen

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

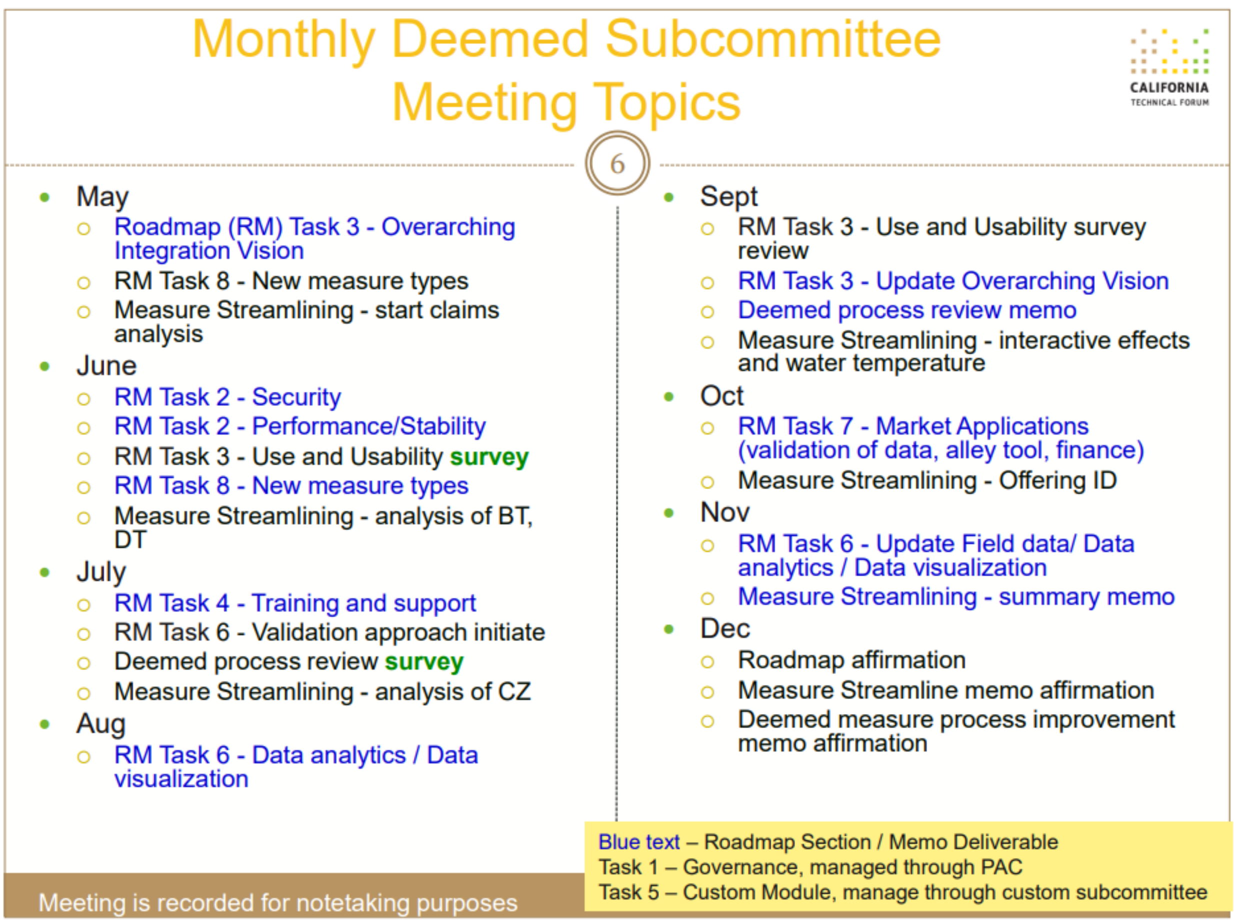
- Agenda
- Meeting presentations for:
  - eTRM Roadmap Workplan
  - Measure Permutation Streamlining
  - Deemed Measure Process Improvement
  - New Measure Type – Load Shifting
- eTRM Roadmap Workplan Survey

<u>Deemed Initiative Subcommittee Overview</u>

Presenter: Ayad Al-Shaikh

Materials: Cal TF Presentation

No discussion- Proposed schedule, but subject to change



eTRM Roadmap Workplan – Overview of tasks

Presenter: Annette Beitel, Ayad Al-Shaikh

Materials: Cal TF Presentation, eTRM Roadmap Workplan

Survey Results: (posted to Cal TF website)

- eTRM development on pause for 9 months to update/confirm eTRM workplan
- Two surveys will be distributed during the year:
  - Deemed Process Survey
  - Use and Usability Survey

Task 1: Finalize eTRM Governance and Oversight (Annette)

- PAC has previously created eTRM governance document; need to incorporate changes and user experience since launch (e.g., broader user base, extended uses, eTRM experience)
  - Expand voices giving input
  - Plan for improved integration with other systems, expanded uses (e.g., to incorporate custom measure functions)
- Governance update will primarily be through PAC, but welcome TF and stakeholder input

Discussion:

- S.Long – Interested in engaging on this topic. Does governance cover the data on the platform? Who owns the data, tools, Measure Packages? Who is responsible for updating? E.g., if CPUC "owns" the MPs, who is responsible for updating.
  - A.Beitel – Excellent points that we need to figure out. These are important questions that need to be asked and answered. Other questions include: What is the role of tools, who owns and updates, and do they get approved so we have a useful library that stakeholders can use with confidence.
  - S.Long – Same question applies to other areas of the Roadmap.
  - Annette – The topic of data ownership is important to discuss with the Cal TF; we will find a time to discuss this.
- A.Pande – Where is the current governance document?
  - Annette – We can post the current draft for review. It was drafted several years ago and needs feedback.
  - ACTION: Send to Abijeet and Steven separately.
  - A.Pande – From implementer perspective, it's not clear what we can and can't do; will help to know what is there so that implementers know what they should and shouldn't do.
- G.LaPalme – We have recently had the discussion regarding hierarchy of guidance enforcement and how we incorporate that into CMPs. Is the CPUC going to be approving projects in consistent and formal manner so that CMP supersedes other guidance or policy positions?
  - Annettee – This question is more about the hierarchy of policy and guidance materials and how Staff decision is provided through guidance documents rather than eTRM governance. Arlis is going through documents to pull out custom rules and distinguishing the source (decision, resolution, guidance, etc.) to

determine the different level of authority. Dispositions would be considered more guidance.

- Key takeaways: Valuable to know how to help.

Task 2: Update and Memorialize eTRM Security and Quality Assurance Requirements and Practices (Discussion Lead: Annette)

- Common standards (e.g., system performance and reliability)
- Common documentation (e.g., how we document code)
- Common standards for software development, documentation, training, etc.
- Hoping to work on this in conjunction with CPUC Staff to expand the discussion to other related systems (e.g., CEDARS, CET)

Discussion:

- R.Baker – When we started eTRM development, we expected to keep stuff forever. It looks like we are moving into a much more transactional system. Current system is more of a read-what's-there system; introducing custom projects is more of a "e-commerce" platform. We need to make sure we have a platform that can support that; we need to consider data retention – how long do we want to keep project-specific data in the system.
  - A.Beitel – (1) Custom projects into eTRM – new features would be modularized in a separate system connected to eTRM; from user interface it would look similar. The data structure for custom is similar to deemed, but would be in different system; (2) Regarding data retention – data would come in through or after PA review (smaller PAs seem interested in developing projects in the eTRM); PII would then need to be stripped out and then "dumped" into the Data Lake. The idea would not be to keep the data in the eTRM – more of a through and out approach.
  - R.Baker – Modularization: does that also fall under this task?
  - A.Beitel – This task is more of the "how"; other tasks will cover the "what".
  - A.Al-Shaikh – Performance and stability is by user group; most Base Users just look at data. The Measure Developers experience a different set of needs that we need to manage to. Having a good structure will help us adapt.
  - A.Pande – For custom projects, there is a security perspective regarding the data – need to be able to sandbox data that some others should and shouldn't see. How long do we keep data? What gets transferred to the CPUC? These are important questions.
  - S.Long – Data retention policy needs to be part of governance.
    - A.Beitel – It absolutely is; we don't expect data to "live" in the eTRM. It will eventually go into the Commissions' Data Lake. PII can be generally effectively stripped out using AI.
  - A.Pande – Security requirements are important. Each stakeholder has security requirements that they have to meet with PAs.
    - A.Beitel – That came out in second Data Charette; one goal is a single statewide set of security requirements.
  - C.Rauss – What socialization have you done with CPUC on governance?
    - A.Beitel – They have been part of draft governance as member of PAC. We have talked about general principles but not recommendations.
    - C.Rauss – I want to understand if this is on their [CPUC] minds as well and whether this may come up in DEER Resolution.

        - A.Beitel – It is not likely this will be addressed in the DEER Resolution.
    - A.Beitel – We will always be bringing recommendations back to this group for review.

<u>Task 3: Enhance eTRM Integration with External Databases and Other Applications (Discussion Lead: Ayad Al-Shaikh)</u>

- One deliverable will be a schematic of what the data flow could/should look like
- Need to understand all the different stakeholder touch points
- Includes integration with POUs

Discussion

- What other examples of where flow is not working or could be improved?
- A.Saiyan – One thing that will be important for integration is stability of data and content. There are changes and that's wreaking havoc, when source data or content changes. Example: Building Vintage Type changed from "Existing" and "New" to add "Old" and "Rec"
    - S.Long – Another example: QPL data changes frequently and may cause problems in the future. There are complexities in dealing with QPL data. AHRI data would be great to have in the eTRM, not sure about DLC QPL data because of membership. Could be valuable to link measures together.
    - A.Pande – It would help if you could connect measure package and measure. Who has access to push things into the eTRM? Can non-Cal TF people make changes?
    - A.Beitel – Data Charette #2 had lots of complaints about the downstream effects of changes. This reinforces the need to really get discipline about communicating changes and making changes only at defined intervals. This will be critically important to address through governance.
    - Babak – Example: Unit consumption, we have a data column header, but we never use it because we don't receive anything from models into that column.
        - A.Al-Shaikh – Those examples may be holdouts of old workpapers. IOUs are now modeling all measures, so we should be able to populate those fields for all measures.
- G.LaPalme – Without a consistent, periodic revision schedule, it's hard to anticipate the what and when of changes and how those impact the pipeline. We need a schedule for making changes effective; ad hoc changes can throw programs into a spiral. A simple schedule would solve a lot of these problems. (Maybe a biannual revision schedule.)
    - A.Al-Shaikh – Changes are not made frivolously. There is a "bus stop" that limits changes in each two year period. The complexities of reality is that other systems or tools (EnergyStar, CA Energy Code, RACC calculator, ACC data) don't adhere to this schedule. The eTRM can tell you when something has changed. You can ask the eTRM what has changed since the last time you looked at it. This is a solution to things that we do want to make better.
    - G.LaPalme – Simplest solution: When a program cycle starts, what is in place at start of program should stay through program cycle (since that's what's in the program contracts). Changes should have to follow the same process we do and then apply for the next program year. At least make changes annual; hard to make changes on a monthly basis

    - A.Pande – Could there be a requirement on the other side – e.g., CEDARS making updated – could the other entity be required to document the change to the eTRM / stakeholders.
        - A.Saiyan – That information needs to be accessible as POUs are not following CPUC changes; we rely on Cal TF to expose changes.
- Key takeaways: Bus stop would help; reliance on understanding changes.

<u>Task 4: eTRM Documentation, Training and Support (Discussion Lead: Ayad Al-Shaikh)</u>

Discussion

- A.Pande – We use training for people new to the eTRM. Any more details requires talking to an expert, not going to a video. We all have our go-to people.
- A.Saiyan – Videos or other guidance make sense for the common issues.
- A.Al-Shaikh – We have office hours for Measure Developers. Does it make sense to broaden that to other users?
- A.Pande – There are different people with different rules. E.g., My view for Emerging Tech is different from a Deemed MP User.

<u>Task 5: Custom Measure Project Development, Tracking and Review (Discussion Lead: Ayad Al-Shaikh)</u>

- Meant to be a longer term vision to incorporate the entire process through lifecycle of measure/project
- Must consider PII
- ADD: External facing dashboard to see project status at anytime

Discussion

- A.Saiyan – Good use to try to avoid PII; any security wrappers are bound to get broken at any time. Try to avoid using PII, anonymize if possible.
    - A.Pande – That gets to functionality – e.g, if you cannot include an installed "receipt"
    - A.Beitel – Very much agree with Armen's point about trying to avoid PII because systems will inevitably have a break; it takes a long time to redact information; I'm hoping we can use generative AI for that.
    - A.Pande – We need all parties to agree on what data/documentation is required. It's a challenge when a party says "we need to see" this.
    - A.Beitel – We would try to address with badging and generative AI.
- A.Pande – What is the timeframe for this?
    - A.Beitel – We are still debating that? We have been trying to plan and fly the plane at the same time. We are anticipating planning over the next 9 months. This is a high priority for everybody.
- R.Cho – This Task 5 needs to be discussed with the PAC members; it might be premature to include this in the effort given PII issues, other system issues, and that custom project volume is so low. Stakeholders should focus on CPUC Continuous Improvement Initiative and Cal TF Custom Subcommittee effort that will have a tangible immediate effort. This could have a long-term benefit, but my recommendation would be to exclude this from the effort.

Task 6: Field Data Collection / Data Analytics / Data Visualization (Discussion Lead: Ayad Al-Shaikh)

- Examples of this is refrigerant uses, fuel substitution infrastructure costs where there are benefits to having a central location
- Data analytics and visualization – want to access different types of data to accelerate through link data linkage.
- What data should be linked?
- What are the best questions to be asking if we had a tool to connect the data? Examples targeting HTR or water savings measures

Discussion

- A.Saiyan – Wasn't field data collection covered in the Measure Properties work?
    - A.Al-Shaikh – Long term these two will come together. There are requirements right now where you may have to provide data that is not in the measure package. Over time, all data requirements should all be in the measure package. One example is that, for energy models, we want the capacity in the building to match what's in the model. If we could collect these data, it could be used to improve prototypes over time.
    - A.Saiyan – This sounds like it could be very expansive.
    - A.Al-Shaikh – It's not clear yet what we need. The intent is for it to be a tool that could be utilized as need.
    - R.Baker – Concern goes into the prioritization process.
    - S.Long – I can see a lot of challenges with doing this. Getting, sorting the data, managing consistency.
    - A.Al-Shaikh – We do want to look at how we connect to other different data sources. The other integration task is intended to be more aligned with the EE ecosystem companies and requirements.
    - R.Baker – This is more like connecting to external systems like EnergyStar. Coordinating 3rd party systems. An example is if someone wants to know the load shape for a hospital in Southern CA, Snowflake has that data but it would need to be anonymized.
    - A.Pande – Cal TF sets the standard – e.g., data must be set up in this format; then request a way to access information in this specific standard.
    - A.Saiyan – My concern with this item is the expansive nature. I could imagine this being a crowd-sourced market survey… that keeps expanding. It could be impossible to maintain. Need to narrow the direction or will be unmanageable.
    - A.Pande – Define use cases to help constrain.
    - A.Saiyan – Need to determine what are the important pieces of information. We are all touching it but not collecting in a manner to run analytics.
    - A.Al-Shaikh – Sounds like we need to define what are the impactful questions? Maybe it will become more expansive or maybe could be very targeted.
    - G.Wilkins – Every piece of data collected adds cost each step of the way. We should also consider what are the end goals, where are the gaps to improve TSB. Want to ensure that all costs adds for new data contribute to something that is valuable/critical.
- Key takeaways: Narrow direction; define use cases; understand questions to ask; every piece of data has a cost, important to connect to value.

Task 7: Market-Facing Applications (Discussion Lead: Ayad Al-Shaikh)

- Three elements
  - Upload information to a central location. In the field and need some validation of a measure. Current system has duplicative reviews by PA, CPUC etc.
  - Measure property data – define the finite things that you need to prove a claim with the end goal that those things can be checked and validated
    - Mobile app – We would like to know if implementers currently have their own tool for this.
  - Connecting in a finance module with confirmation to move forward with incentives

Discussion

- A.Pande – Plan to have measure developers or implementers
- A.Al-Shaikh – Could be either
- A Beitel – Large implementers may have tools already but smaller implementers may not have the funds to develop these tools. The other thing is delays in payment can be a barrier and if we can shorten that would make projects go more quickly.
- A Pande – See the value but the challenge is with timing the process of with reviews. We all have financing, and it is how you do it.
- S. Long – Programmatically it will vary, and implementers have their own process flows. Aligning all of them will be challenging.
- A Pande – EE, DR, Solar battery that's the universe of what we want to do.
- A Beitel - If we can't do it how will a customer do it.
- A Pande – Agree but can it work within the current workflows.
- S Long – Challenge is approval and then later change by CPUC or PA.
- A Beitel – We need some commonality, or we eliminating the small trade allies.
- A Pande – Agree
- C Rauss – From PA perspective, we have a wide range of implementers, and it is their design and driving them to an app. We are putting a lot of emphasis on implementers for validation permitting, workforce standards, and other requirements and consider how do we check this.
- A Beitel – Would this be valuable or not useful?
- A Pande – Flip phone or iPhone it is the same data. Maybe focus on the data validation.
- M Casey – Would tool allow photographs?
- A Beitel – Yes, when sending nameplate data, maybe it can even read the plate.

<u>Task 8: Adding New Measures and Measure "Types" to the eTRM (Discussion Lead: Ayad Al-Shaikh)</u>

- New measure development tool to make it easier to get their idea into the eTRM through streamlined upload and take advantage of the tools in eTRM.
  - Help categorize platform (deemed, custom, NMEC).
  - Understand relationships to other MP
  - Understand cost effectiveness
- Low income measures need to be more robust and how we could get MP streamlined for these measures like existing conditions.
- POU new measures
- Other measures like extended EULs, load shifting as things change.

Discussion

- C Rauss – How is this different than the online Excel input form?
- A. Al-Shaikh – That tool gives you the list but you still have to pick from it and knowledge needs to be there. Also, this concept is designed to be imported into the eTRM for a clone of building types. Then other features that provide insight like sensitivity run on cost effectiveness if EUL varied. Also, could identify what is missing.
- A Pande – It is almost like a QC tool like what information is missing. Like we do not have a good EUL or we don't have the cost.
- C Rauss – Low income measure packages. How would funding work. The model of using expired MP, what is wrong with that model.
- A. Al-Shaikh – Funding would have to come from low income team.
    - A Beitel – It does make sense to start with market rate as a template when they exist. If there is an existing measure package, some parameters might be different btw low income and market rate (e.g., EULs are typically longer for low income, Baseline is often Existing conditions for Low Income, NTG will be different)
    - C.Rauss – Low Income Ex Ante savings are typically replaced with EM&V results.
    - A.Beitel – Our understanding is that CPUC is giving direction for low income to start using deemed savings.
- S.Long – Surprised this is coming back; driver for low income was past evaluation studies. Household size for low income is typically larger than market rate – can have big impact on savings.
- A.Pande – Is this Low Income (ESA) or same measure but applied to Low Income customer?
    - A.Beitel – I don't think we have a clear answer to this. Low Income customers should get the low income savings regardless of program mechanism.
    - A.Pande – Many PAs have requirements for Low Income customers, but market rate logic doesn't work.
    - A.Beitel –Agreed. There is a technically correct answer to getting the right savings.
- A.Pande – Tracking existing POU measures, or also new measures?
    - A.Beitel – There are POU measures that are not in the eTRM that maybe should be added; we have also done some research on measures from other TRMs that are not offered in CA. We have also found that CA PAs/implementers are using a very small list of measures, and we need to understand that.
- Martin Vu – Have you had any input from Staff about their interest/consideration for hybrid measures? Related to introducing other benefits to EE framework? Interested in measures with multiple streams of benefits – EE benefits alone may not be enough to get through framework, but combined other benefits are very valuable.
    - A.Al-Shaikh – I have talked to Peter B about this; this will still need to be taken to CPUC management. The bottom line is that we have measures with EE savings; the additional benefits have some cost but don't help TRC in any way. We do this with refrigerant; we want to count load shifting as an added benefit. Re: Staff, it sounds like there is openness. The purpose of this session to continue having discussions on this topic to move this idea forward.
    - A.Beitel – I think we have to be open to this as there are so few EE measures being used now.

    - Martin Vu – Want to make sure there is openness to this before we put a lot of time and effort into this. There are opportunities for customers with a lot of benefits, but it needs to be supported to be implemented by market. Example: Generation – a solar EE technology.
    - A.Beitel – There is a collective drive towards IDSM. Address this question through the IDSM benefits that are provided through this measure.
- A.Al-Shaikh – Is there a policy that would preclude a measure from claiming other benefits (e.g., load-shifting benefits)
    - Rachel – That is not in the EE lane; for that reason, it cannot be added to EE measures. It's not categorized as energy efficiency.
    - Peter B – Some of this is still uncertain. I've been told that EE programs by statue are supposed to save energy. If it saves energy and it has additional benefits (e.g, refrig), those can be counted. If it doesn't save energy at all, can we do it? I would need to go back to see if this is allowed or not. I've been told (by retired management) that we can't do storage because it's not EE.
    - A.Beitel – Clarify that if it is EE with additional benefits (GWP, load shifting, etc), then it could be counted.
    - Peter B – Health benefits have not been addressed; We do have a refrig. calculator, which calculates a value that goes into the CET.
    - A.Beitel – Can we count benefits from load shifting?
    - Peter B. - Eli in Programs says that we can do load shapes from the new business plan, but we don't have a process for doing that. It's unclear if I'm allowed to do that. It's still a bit murky. It's not a matter of my opinion – Load Shifting is a great idea. I don't know if I'm allowed to do that based on Decisions and Resolutions. Current policy siloes what we can do. Need to figure out where we are allowed to do this.
    - R.Murray – We may also need Decision language; e.g., if annual kWh goes up but the shifting is beneficial, we need language to clarify whether we can do this. Example with commercial refrigeration.
- S Long - With affirmation, what if all the questions and comments, you modify.
    - A Al-Shaikh – Roadmap is intended to open discussions. If some things are not clearly wanted by people, we can modify the roadmap.
    - A Pande – It might be that things are priority but on different timelines.
- Key takeaway: Clarify that if it is EE with additional energy benefits (not non-energy benefits), these can be counted. Important to continue the discussion with CPUC staff. Some cases where no EE benefits are not included.

Affirmation to move forward with the eTRM Roadmap based on feedback

No opposition.

Action:

- Review stakeholder feedback from the survey results to update the eTRM Roadmap Workplan.

Measure Permutation Streamlining

Presenter: Ayad Al-Shaikh, Chau Nguyen

Material: [Meeting Presentation]

- A Al-Shaikh - Understanding key drivers for permutation
    - Where is the differentiation between a large office and small office
    - Administratively, migration to a PA when adding multiples of permutations has issues including CCAs and RENs
    - Streamline the process to choose the right permutation.
    - Understanding the initial areas of focus to reduce permutation
        - Offering ID collapse is more complex and measure specific
        - Delivery type, CZ, building type, interactive effects and water temperature is simpler
- C Nguyen - Offering ID collapse
    - Parameters might be dependent on the equipment type or efficiency
    - More offerings = more distinction = more permutations
    - Labels = Independent variables (Measure specific, MAT), dependent variables (Gas Ben, Elec Ben, TSB, TRC) drive offerings
    - Influencing factors are NTG, GSIA, norm unit, exclusions
    - Methodology
        - Average impacts when label is held constant
        - Average of the Label averages to see the variation
        - A. Saiyan – When looking at sensitivity refrain from using percentage. You may have a large percentage but a small impact.
        - S. Long – On SEER2 rated AC there are likely a lot of permutations. Large variations will skew average.
        - First step is to look at all the parameters and then the second step is to assess the impacts of the collapse. Also evaluate potential outliers
        - A Pande – For the green box, you should also have the standard deviation.
        - This is to give us a first assessment and then look to collapsing.
        - Repeating the process we see which parameters are sensitive or non-sensitive. High ranges are high variation and high sensitivity. Low range is low sensitivity. We are using a criteria of a coefficient of variation of +/- 15%.
        - When you pulled out the SEER rating was that done individually?
        - Chou - yes, measure specific parameters have to be pulled out at the measure level.
        - SEER rating is a sensitive parameter. There is variation within SEER and SEER2
        - Equipment type example is not very sensitive. Variation comes from HP vs AC and not SEER and SEER2. So, this is an example to collapse.
- Agree with approach?
- Criteria?
- Median, average or weighted average
- Any rules for standard parameters
    - A Saiyan – Might be some good parallels between simulation study on sensitivity analysis of parameters from NREL in modeled measures. **Could share.**
    - S Long – Process wise, does Cal TF Staff do this after measure package is done.
    - A Al-Shaikh – We don't have a complete answer. Some may be obvious like parameters like climate zone that might be limited before the development starts. I think we want to make recommendations for the future measure package.

  - S Long – Thinking about the review. We all agree that we probably don't want 5,000 permutations. We need to do the analysis and QC for 5,000 permutations.
  - A Beitel – Need logical decision rules for grouping values, not just cherry picking.
  - A Danryd – TSB isn't enough. As a single fuel utility, I feel like you need to look at savings.
  - A Al-Shaikh – Gas benefit, Elec ben, TSB and cost.
  - *Discussion on kW impact – kW and kWh can be part of the electric benefits calculation. kW is included when DS-Type (which is a feature of a load shape) is "kW" by including it with transmission/distribution avoided costs. Alternatively, kW is not used when DS-Type is "kWh"; instead the kWh value is used for both transmission/distribution and generation avoided costs.*
  - A Pande – Would it be worthwhile to look at specific impacts and not want to collapse for a measure specific reason. Potentially try this approach on 10 measure packages. Consider box and whisker plot to document outliers.
  - S Long – Where do you draw the line which is somewhat program specific.
  - A.Beitel – Concerned that program impacts may change year after year.
  - N Fette (chat) - Aside from whether permutations can be collapsed from a data similarity perspective, some decisions on existing MPs have been based on (1) perceived need for tracking these variables in claims to support both eligibility validation and program evaluation and (2) administrative rules on where "Any" or other representative label is allowed (e.g., Any or Ex vintage were previously used as representative or multiple vintages, then guidance changed, etc).
  - A Al-Shaikh –There are reasons to split some offerings for customers, or some other reasons (ie, exclusion/validation rules, etc).
  - S. Long – Say you merge but the structures would need to be different or dropped. There's a renaming process that would have to happen. How would that happen? It has to align with claims.
  - A Al-Shaikh – As long as it is done during measure development it could be worth the effort to rework the measure packages. We should look at the cost benefit analysis based on the time to do the work versus time saved.
  - S. Long – Would be good to get some real examples.
  - A. Pande – Process for collapsing existing measures may be different.
  - A Danyrd – Is there a reason for TRC cost versus project costs like IMC? This could be a scalable thing.
  - F Monterrosso – Programs are still monitoring TRC
  - A Danryd – These don't include any program costs.
  - R. Murray (chat) - I'd caution against relying solely on TSB to assess sensitivity and reasonableness of coalescing offerings since the definition of TSB is likely to evolve over time.
  - A Danryd – Every three years the ACC changes we need to redo it.
  - A Al-Shaikh – Maybe the CV of 15% is not baked but the goal is to get the correct average savings.
  - C Nguyen – Full CET includes lifetime net savings which exclude ACC values. TSB can be pulled directly from the CET, while other solutions would require additional post-processing.
  - S Long – Net kBTU basis might be easier to make it more automated.
- A Al-Shaikh – Delivery type collapse
  - S Long – Issue with what you can and can't offer. Different data requirements. Certifications.

  - A Al-Shaikh – Just like with building type, you still have to report the specific building type even if "any" is used in the permutation.
  - S Long – That gets a little messier. Assuming that if permutations were merged, then fewer data requirements would be included.
  - A Beitel – If people did not have stop reporting delivery type, would this diminish the value of streamlining data.
  - A Al-Shaikh – You still have a single delivery type in the permutation
  - S Long – I would love to get rid of as much that we could but I think delivery type and AR would be difficult.
  - A Pande – Even with Any you still might have different data requirements and qualifications.
    - A Al-Shaikh – Just to be clear, we can consolidate the permutation but still include different validation requirement through the measure package or measure property data.
  - S Long – Systems would have to be designed to deal with the differences.
  - A Beitel – Evaluation changes based on upstream or downstream.
  - A Al-Shaikh – You still have to report it.
  - S Long – Measure properties is in essence putting in controls for eligibility. Now you have two sets of rules for eligibility and reporting savings.
  - A Al-Shaikh – May be worth looking at some examples.
  - A Saiyan – Need to be cautious with Cedars where "any" permutations weren't accepted.
- A Al-Shaikh – Climate zone – US based CZs, UAT (coastal, Inland, Mountain, Desert)
  - R Baker – Potential and Goals Study uses marine, hot and mountain based on uniformity of temperatures based on CDDs, HDDs from 143 weather stations and average them across the T-24 CZ and see how much they differ. Whole coastal climate zone may have small variance. EE shouldn't have to track to T-24
  - P Biermayer – T-24 sometimes has different requirements for different climate zones.
  - R Baker – Yes, we need to be aware of those issues.
  - A Pande – T 24 is based on zip code matching to CZ. It's there because people are wanting more solutions.
  - A Saiyan – That is making the consideration for micro climates.
- A Al-Shaikh – Calculated values
- A Al-Shaikh – Building type may be more complicated
- A Al-Shaikh – Next steps
  - Create a funnel chart for which elements are most impactful.
  - Create recommendations for collapsing.
  - Determine how this impacts claims.

Action:

- Review approach used by NREL/PNNL in modeling efforts.
- Consolidate feedback on Offering ID and implement for a small number of measure packages to be reviewed by a Cal TF member team.

<u>Deemed Measure Process Improvement</u>, *Shortened discussion due to time.*

Presenter: Ayad Al-Shaikh

Material: Meeting Presentation

- Causes for delays
  - Measure initiation
  - Development phase
  - Approval phase (e.g. delay getting MPP back, lack of data, feedback not clear)
- Send out survey
- What metrics are driving delays that are impacting timelines to keep good measures from being implemented?

Action:

- Complete survey and get input from Cal TF members before distributing.

New Measure Type – Load Shifting

Presenter: Martin Vu, Ayad Al-Shaikh and Chau Nguyen

Material: Meeting Presentation

- A Al-Shaikh – Interest from PAs and new measure screening committee in trying to implement EE with load shifting.
- M Vu –
  - AB 846 7000 MW partially through load modifying. Study from LBNL in coordination with CEC, CPUC, ISO is looking for. Current DR programs are event based. The future is flexible and dynamic based on prices.
  - RMS looking at thermal energy storage system through CEC grant.
  - Phase change material typically has a lot of infrastructure in walls etc. This is installed in the ducts.
  - Testing with this product revealed:
    - 5-10% EE savings due to improved COP at cooler morning hours
    - 60% AC kW peak demand reduction
    - Load shifting of 50% peak to off peak (range 38% to 82%)
    - Reduce GHG by 80%
  - What barriers exist in EE to be able to have these technologies?
  - S Long – Deemed or custom?
  - M Vu – Ideally deemed but we might have to go through custom to build descriptions.
  - S Long – Why not do this via NMEC?
  - M Vu – We have discussed this. There are tradeoffs on costs, data collection, and time.
  - A Saiyan – What storage technology? There's also controls aspects to consider?
  - M Vu – This is a phase change. Part of the CEC grant was to identify the control strategies that optimize the benefits.
  - A Saiyan – Deemed would define the control strategy.
  - A Saiyan – Custom opens it up to other technologies. Deemed will narrow the scope for eligibility.
  - M Vu – It can be scaled. T-24 is not triggered. Isolated to single areas minimizes the costs.

  - A Beitel – Has this been installed in other jurisdictions?
  - M Vu – Yes
  - A Beitel – Is this true up or ongoing data collection?
  - M Vu – We have enough data across the state and different building types and disadvantaged communities.
  - D Wylie – To S Long's NMEC, there is enough change in behavior to see it on the meter. It would be a good measurement method. Otherwise, we look at the runtime of the compressor.
  - A Guitierrez – How does cost effectiveness look?
  - M Vu – With EE benefits only .1 to .15 TRC. We haven't done load shifting but we think it will be cost effective.
  - A Beitel – Are you just going to develop the measure?
  - M Vu – We presented to the measure screening committee and a measure package plan is ready.
  - A Beitel – Develop the measure and show the value.
  - A Saiyan – Consider parallel paths with deemed and custom. With Deemed, you will burden yourself to collect the data. With Custom, you just roll it out.
  - S Long – In the data collected, was there a weather parameter, OAT or CDD, was that impactful.
  - D Wylie – Correlation is there. Hot days need to be supplemented 40% of the time. Mild days takes the whole peak period offline.
  - S Long – Might be able to do this in EnergyPlus model.
  - A Beitel – You can collect more data whether it is deemed or custom. If there's not a variation in savings, why not go deemed? If go custom, develop a CMP through Cal TF.
  - R Baker – Do we know it is repeatable?
  - M Vu – Yes, it is pretty consistent across all sites. 11 sites and 18 RTUs.
  - D Wylie – It can fit into a smart T-stat for control
  - P Pecora – Why not try it out in pop NMEC targeting small buildings to piggy back off their projects?
  - D Wylie – No incentive for shifting. It is based on kWh.
  - A Beitel – Do you have an implementer to do it?
  - M Vu – Yes
  - D Wylie – Payback exceeds 10 years on EE. If you add benefits from Load Shifting, payback decreases to 2-3 years.
  - A Pande – Adding load shifting is another wrinkle.
  - A Saiyan – EE framework limits and what about DR and other programs.
  - D Wylie – Building would see benefits but only on DR days.
  - A Beitel – Programs have kW, kWh and therms. Seems like we should be creating an argument for combining these benefits.
- C Nguyen – Methodology to capture the benefits for load shifting
- Step 1 Use measure load shape with ACC in the DNV python tool to determine the avoided costs.
  - C Rauss – SCE submitted an advice letter to get this on the load shape calendar.
- Step 2 Use Local CET copy to get TSB to input back into the measure.
- Step 3 Input TSB into Cedars CET
- Two options

  - Option 1 - Run CET manually for load shifting with custom avoided cost with a DEER load shape – We think this is the best option. Maintains ability to claim kWh/kW.
  - Option 2 – kWh must be reported as zero for it to work.
    - A Pande – If there is zero energy savings, is that allowed.
    - A Al-Shaikh – Just to be clear, it does have energy savings, with Option 2 the EE savings would be entered as zero to be sure to not double-count EE benefits.
  - S Long – Option 3 – custom load shapes in the CET
  - N Fette – Is the local copy used so that you could hard-code usage curves or meant to modify CET to make it reproducible.
  - C Nguyen – This solution is to allow using a load shape as an input on a local copy of the CET; code does not need to be changed. If a custom load shape was desired to be run on the actual CET, CET code would need to be updated.
- Recurve NMEC tool to calculate benefits based on the data.
  - N Fette (chat) Note that Recurve tool called "FlexValue" is different from the EEMeter NMEC tool.

Action:

- Move forward to submit load shifting measure as deemed measure packages.
- Work with the CPUC on the next steps for including EE + Load Shifting measure packages.

Next Cal TF Meeting: Thursday, June 27 (LACI Building, 525 S Hewitt St Suite 150, Los Angeles, CA)