Agenda & Notes

California Technical Forum (Cal TF)

Meeting #45: Technical Forum (TF)

December 13, 2018

9:30 am – 3:30 pm

La Kretz Innovation Center
525 South Hewitt Street, Los Angeles, CA

Time	Agenda Item	Discussion Leader(s)
9:30 – 9:45	**Opening & Updates**	Annette Beitel
9:45 – 10:15	**Affirmation 2019 Business Plan** • Review 2019 Business Plan **ACT**: Cal TF affirmation of 2019 Business Plan	Annette Beitel
10:15 – 11:00	**New Deemed Measures and Deemed Measure Solutions: The Future of Deemed Measures** • Identify new measures or other deemed "solutions" that should be considered for the portfolio **ACT:** Cal TF input on new measures/new measure solutions; general approach to identifying and developing new measures	Annette Beitel Ayad Al-Shaikh Roger Baker
11:00 – 11:15	**Break**	
11:00 – 12:15	**Stage 2 Issues: Round II** • Any missing issues for technology category? • Issue description correct? • Priority correct? • Solution path and supporting data • Who should address as lead? • Cal TF involvement? **ACT:** For each item, cover above topics, record and prepare to report-out.	Annette Beitel Various
12:15 – 12:45	**Lunch**	
12:45 – 2:45	**Stage 2 Issues: Round II** Same as above.	Ayad Al-Shaikh
2:45 – 3:15	**Cal TF Visioning** • What is Cal TF? • What is value of Cal TF?	Annette Beitel

	• How is Cal TF distinct from other efforts? **ACT:** Cal TF Input	
3:15 – 3:30	**Close** • Looking backward to accomplishments	Annette Beitel
4:00 – 6:00	**2018 Celebration**	

Meeting Materials

- Document: Final 2019 Business Plan
- Stage 2 Issue List
- Slide Deck: New Deemed Measures & Solutions
- Slide Deck: Cal TF Vision

I. Attendees

	In-Person	*Via Telephone*
Cal TF Staff	Annette Beitel Jennifer Barnes Jennifer Holmes Ayad Al-Shaikh Roger Baker	
Cal TF Members	Doug Mahone retired HMG/TRC Larry Kotewa Elevate Energy Sepi Shahindard Cadmus Ed Reynoso SDG&E Armen Saiyen LADWP Stephano Galiasson Chan Paek So Cal Gas Larry Brackney, NREL Steven Long Lockheed Martin Tom Eckhart UCONS Mike Casey Onsite Energy Pierre Landry Landry & Associates Ron Ishii AESC Spencer Lipp Lockheed Martin Yeshpal Gupta Lincus	Martin Vu RMS Energy Consulting Lisa Gartland Proctor Engineering Mary Matteson Bryan Chris Rogers CleaRESULT Bing Tso, SBW George Beeler AIM Greg Barker Energy Solutions Gary Fernstrom Retired PG&E Ryan Hoest EcoVox
Non-TF Attendees	Jay Madden SCE Celina Stratton Energy Solutions Mehdi Shafaghi LADWP	Keith Valenzuela SDG&E Jim Hanna, Energy Solutions Jia Huang PG&E Henry Lui, PG&E Adan Rosillo PG&E Tai Voong PG&E

I. Key Decisions and Action Items

2019 Business Plan

- The Cal TF affirmed the 2019 Business Plan:
  - No opposition from TF members in the room or on the phone.
  - The draft plan will be the final after January 15.

New Deemed Measure and Deemed Measure Solutions

- ACTION ITEMS:
  - Look into most recent potential study to see if there are opportunities for new deemed measures.
  - Develop whitepaper to memorialize the sources of new deemed measures with additional detail and analysis.

HVAC Measure Stage 2 Issues

- ACTION ITEMS:
  - Ask the current EAR team how significant changes to the prototypes are documented (mapping between geometries and activities).
  - Jay Madden to send out a copy of the ET lab study the measured UEC of HVAC QM measures.
  - Tom Eckhart to ask if there EUL documentation of duct test and seal in the northwest.

II. Meeting Notes

2019 Business Plan
Presenter: Annette Beitel

Review of Draft Business Plan

- Goal #1: eTRM
  - Yesterday Armen, LADWP demonstrated the POU tool to connect to eTRM to build programs/portfolios. This is an example of a tool that can leverage the eTRM.
- Goal #2: Stage 2 Issue Roadmap
  - Stage 2 issues now include HVAC
  - List is comprised of roughly 300 issues
  - Goal is for Cal TF to refine and prioritize, and track the issues; not to resolve all 300
  - Goal for Cal TF is to identify data, studies, and professionals to work through 12 issues.
  - Pierre Landry: Is there any effort to "prod" other entities to help resolve the "non-Cal TF" issues? Who prioritized?
    - Annette Beitel: Yes. Cal TF will identify the appropriate entity with funding to encourage them to take on issues.
    - Prioritization by Cal TF staff, then fine tuned in past Cal TF meeting
    - CPUC reviewing statewide consolidated measures, using stage 2 issues to help them prioritize their resources.
    - Cal TF staff will coordinate and publicize issues and how they are being addressed, they will not be static in a spreadsheet
- Goal #3: Manage eTRM
  - Phase 2 of eTRM development is complete
  - Training will be conducted in January
  - List of proposed enhancements presented to the PAC, focus will be integrating eTRM with existing tools/systems (CEDARS, CET, utility systems)
  - Feedback from community on benefits of eTRM relative to current system – survey and feedback
- Goals #4: Transition Plan
  - Clear path for opportunities to integrate eTRM into existing systems
- Goal #5: Energy Modeling
  - Received input on this goal from PAC
  - Convene group to document fundamental modeling principles, what issues do organizations diverge?

- Develop framework
- Develop guidelines
- Comments:
  - Larry Brackney: SCE has already invested a lot of effort on roadmap.
  - Annette Beitel: Will build off of SCE roadmap, but this needs to be more comprehensive.
  - Gary Fernstrom: With different models that exist, how will we have consistency and meeting Commission requirements?
  - Larry Brackney: CEC philosophy was to have core engine that others could build upon, customize, etc. Can do the same thing on the "savings" side of modeling.
  - Annette Beitel: Discussion needs to include CEC, new EAR team, SCE roadmap, etc. Information gained from measure consolidation has raised new issue.
  - Gary Fernstrom: Single engine concept is a concern.
  - Annette Beitel: Should the industry moving away from current state (MAScontrol/eQuest, etc.)?
  - Ron Ishii: Biggest challenge has been lack of transparency with current system. Issues about permutations may not go away with a new system. We need a single engine; multiple engines will introduce variation. Need transparency and high confidence of inputs to administer programs and have confidence in results. The community will adapt quickly.
  - Steven Long: Having more engines has created complexity, some products do different things. We need to align with the CEC on this effort.
  - Doug Mahone: Two problems. 1) the engine provides basic capability. Can they be kept up to date and adopt new calculations? DOE2 kept having to wait for updates. 2) the inputs are direct function of the purpose/use of modeling. Compliance is different that actuals. Managing inputs is a big process.
  - Pierre Landry: Disagrees with Doug. Fundamental issue is "what's best available data?" Is the way we are modeling acceptable for the purpose? Basic measurement questions have been ignored. Agree on the questions, use consistent terms, reach common agreement.
  - Spencer Lipp: Inputs need to be validated with building stock.
    - (Note - Bob Ramirez of the new EAR team validated inputs against RASS and CEUS, uncertain how wide-spread these efforts have been)

        - Steven Long: There are other types of modeling in industrial for a different purpose, so need to determine a priori if will be covered
        - Chan Paek: SCE's issue with MASControl for refrigeration raised with ex ante team still being addressed
- Goal #6: Integrate w/ EM&V Planning
    - Tighter connection with EM&V
    - Current EAR interested in increased embedded EM&V in implementation
    - Comments
        - Doug Mahone: Embedded EM&V idea been around for a long time, but CPUC firewall prevents it. Policy needs to be addressed.
        - Annette Beitel: Dispositions required utilities to collect data.
        - Data to be collected by implementers for use evaluation.
- Goal #7: SW Deemed Measure List
- 2019 Business Plan Affirmation:
    - No opposition from TF members in the room or on the phone.
    - The draft plan will be the final after January 15.

New Deemed Measure and Deemed Measure Solutions: The Future of Deemed Measures
Presenters: Ayad Al-Shaikh and Roger Baker

Deemed options are dwindling.
Different source of new measures:

- New IOU Measures (2018)
    - ~15 measures new in 2018. (not consolidated, will need to get worked into eTRM)
        - Chan Paek: Some have been offered already, but did not have workpapers.
- 2019 3P New Measures
    - New measures by 3P have a process in place to follow, resources have been developed to support 3P measure development

Possible New Deemed Measures/Solutions

- Hybrid measures – deemed + data collection
    - Example – floating head pressure is a deemed measure that is operationally based. Lighting measures – collect hours of operation
    - Gary Fernstrom: Hybrid measure savings could be dependent upon behavior or operation. But data collection could be financial obstacle and eliminate the cost effectiveness
- To-code measures

    - Lighting
- Doug Mahone: EE potential studies. Methodology has been based upon current measures. Recently try to account for measures of the future, and the CPUC could (erroneously) consider that as a roadmap for new measures.
    - Steven Long: Potential studies not at measure level, might not be helpful
    - Chan Paek: Hard to implement potential studies; disconnect between future and actual work they can do.
    - ACT: Look into most recent potential study
- Behavior programs
    - Policy is an obstacle for BRO (i.e., UAT measure)
    - Require data and supporting evidence to change EUL value (SCE thermostat measure)
    - Challenge is verifying recommendations and actions customer take as a result of information
    - Embedded M&V
    - NMEC analysis must go through custom
- Systems of measures
    - NMEC might be more appropriate
- Custom measures converted to deemed measures (Doug Mahone)
    - Consistency in realization rates, large enough sample for statistical significance, and is there enough market for the measure
- Can NMEC data be used to develop deemed measures?
    - Issue getting data from implementers, issue will be determining if data is useful and appropriate
    - Doug Mahone: Not retroactively, but perhaps prospectively if set up framework before implementation
    - Greg Barker: Packaged HVAC controllers, analyzing data that might be a path to deemed. Technology is available to facilitate data collection.
    - Gary Fernstrom: Innovative technologies that enable the data collection are key
    - Armen Saiyen: Standardized data collection might infer standardized methodology
- Dusting off retired deemed measures
    - Policy changes, delivery, avoided cost profiles changes might justify resuscitating retired measures
    - Steven Long, Armen Saiyen: Yes, good idea
    - Ed Reynoso: To go back to old measures, there must be a “need” or an “ask” from programs. Some technologies just fade away.
    - Jay Madden: Some 2019 measures are measures that were started previously but not finished.

    - Need process for culling through old measures
    - Measures not developed or retired – put into eTRM reference library so others can access them.
    - 3P programs might bring back old measures
    - Doug Mahone: Load shapes changing, changes to CE tests, measure costs, etc. could be a reason to re-calculate c-e. (Armen's tool)
    - Henry Liu: PG&E revisits all retired measures w/ policy change (E4818, T2 WG, etc.). PG&E is looking at available load shapes, collaborating with E3 and HERS for a calculator to blend actual shape with available shape to accurately use avoided costs.
    - Ron Ishii: Is time-dependency integrated into deemed measures? (incorporated into Armen's tool …)
- Repair Indefinitely
    - Examples – lighting systems, air compressors, chiller systems, boilers
    - Opportunity start as custom measures with defined measure description and plan for measuring savings, then make deem measure
    - Ed Reynoso: SDG&E Navy facilities, light industrial. Do these types of projects go into custom for other IOUs? IOUs might have different customers, project types, approaches, so might be difficult to deem.

Future of Deemed Measures

- Tom Eckhart: How do we view deemed savings under latest P4P?
- Chan Paek: Program offers combination of deemed/custom. Implementer paid upon performance. Savings claimed from NMEC. This is a hybrid. Easier for IOU to claim deemed savings.
- Jay Madden: Custom measure have been dropping. Deemed 60% of portfolio savings.

Next Steps

- ACT: Develop whitepaper to memorialize the sources of new deemed measures with additional detail and analysis.
    - Gary Fernstrom: re: Henry's comment, whatever we can do to re-think value of savings will yield benefits (relative to effort trying to find new measures)
    - Yes, group agreed.

HVAC Measure Stage 2 Issues Overview
Presenter: Ayad Al-Shaikh

Ayad introduced the categories of 121 issues associated with HVAC measures.

Discussion of Specific issues

- DEER 2020 resolution, impact of updating DEER building prototypes with new lighting baselines – is this the right change across all modeled HVAC measures? What else should we be thinking about?
    - Gary Fernstrom: Need to be careful how we apply baseline changes to all vintages.
    - Doug Mahone: Would be reducing HVAC electric savings because lighting loads are smaller.
    - Upstream knows where lamps are installed (to avoid double counting).
    - Larry Kotewa: Old vintages still there, the data is binned differently in the output reports.
- DEER Resolution: Impact of prototype updates with 2003 equipment efficiency in older vintages (because equip past useful life)
    - Implication is efficiency level of building increased. Larger weight of building stock on older vintages
    - Steven Long: What about to-code measures?
    - Larry Brackney: Another prototype change: prototype geometry, use of additional space types, changes between MAScontrol 2 and 3
        - Assembly in MAScontrol 2 has 2 space type definitions, and MAScontrol 3 has 10 space types.
        - Trying to build greater load diversities in prototypes, reflected in MAScontrol 3. More realistic, but huge change between versions 2 and 3.
    - How are significant changes to the prototypes documented? (unknown)
        - ACT: Question for current EAR team (mapping between geometries and activities)
- Methodology for electric savings should be updated (5.19 high efficiency furnaces, commercial)
    - Current method is to scale commercial gas:elec savings using the same ratio as the residential gas:elec
- Evaporative condenser – effectiveness can vary significantly between products because of evaporation media, and savings vary widely by climate zone (5.23 evaporative condenser, residential)
    - Recommendation to change program requirements
    - Jay Madden: ASHRAE performance standard for evaporator effectiveness for different test points will be out next year. Commercial evaporative measure WPs to be revised accordingly. Will tier the measure by evaporator effectiveness, or set minimum range. This would apply to all evaporator technologies.
    - Gary Fernstrom: Agree there are significant impacts on savings

- Confirm performance curves (5.24 unitary air-cooled commercial AC over 65 kBtuh)
    - Gary Fernstrom: Issue in DOE rulemaking is how to treat energy use for ventilation. To what extent do evaluations account for ventilation versus active cooling? Estimates are that half of HVAC energy use is associated with ventilation versus active cooling.
- 5.16 air handler variable speed motor - very small measure
    - Missing climate zone data. What else needs to be done to extend to other climate zones?
    - Savings calculated only for lower HP range.
    - Jay Madden: Usually motors this size are in small packaged DX units. Unit should be each. ET and field assessments. Would want for cooler/moderate climate zones
- DEER IDs not available - tried to create measures in MASControl but couldn't. Older measures.
    - IOUs will tee-up during SW meeting w/ EAR team
- 5.44 adaptive climate controller
    - 30% reduction not well documented, consider push for more data
    - Savings from specific climate zones might not be transferrable to others
- 5.45 EMS
    - IOUs not planning to use, Measure considered industry standard practice (ISP) by IOUs
        - Spencer Lipp: It's important to document ISP. If ISP, could still be to-code eligibility
        - Ed Reynoso: Documentation might be ex post review for custom carried over to deemed
- Ductless AC (5.28 ductless AC under 24 kBTUh, 5.53 ductless AC under 60 kBTUh) – on hold because of a disposition
    - Henry Liu: SCE was the lead. Disposition related to VRF, also fuel switching concerns. IMC too high to be cost effective.
- Whole house fan (5.17) – need documentation for baseline.
- VRF for heat pumps (5.22) – measure is moving from VRF to h/e VRF.
    - Henry Liu: There is approved VRF on DEER. In industry only one model line to choose from. Better potential to move customer from rooftop unit to VRF. The issue is passing the 3-prong test. Surveys to talk with designers to understand market.
    - Jim Hanna: Agreed with Henry.
- Economizer controls (5.01)
    - Need to convert PA values to SW values
    - Looking for documentation

- QM Measures
    - Refrigerant charge 5.10a – being updated for 2019/2020
    - Portioning of charge savings to other QM measures from disposition
        - Jay Madden: Do not know where CPUC got portioning from. ET study lab test in Irwindale measured UEC of each –
        - ACT: Get a copy of the study from Jay
        - Tom Eckhart: Refrigerant charge “overused” by some contractors in the northwest. How do you verify the refrigerant charge measure was appropriately used?
    - Jia Huang: BRO - EUL and NTG from E4952. Change based upon ex post evaluation on res QM program.
    - All QM measures changing to BRO, unless add-on measure
    - Duct seal & test
        - Henry Liu: Placeholder measure from DEER. Collect data and develop non-DEER measure. Going to BRO measure changes EUL. PG&E is retiring this measure for res by June 2019.
        - Tom Eckhart: Policy issue (change to BRO), no technical justification for EUL reduction. Northwest EUL was 18 years.
            - ACT: Tom Eckhart to ask if there EUL documentation of duct test and seal in the northwest
        - Henry Liu: If have data to substantiate different values for BRO, then change can be considered. (smart thermostat)
    - Quality installation
        - Need to keep QI and res split system separate measures because modeling
        - Baseline mis match with upstream
        - Consistent norm units
            - Sqft – how are sqft determined? Needs to be conditioned sqft. Is this worth the effort?
            - Tons – residential systems are commonly oversized so per-ton would over estimate savings
                - Jim Hanna: Should revisit this point of view, in light of codes. Sizing w/ Manual J, permitting, etc. contractors might actually undersize equipment because of first cost issues

Breakout into groups for stage 2 issues to focus on:

- Priority assignment
- Solution path

Groups and focus of each:

1. Commercial refrigeration (Jay Madden) – model/prototype issues
2. Water heating (Chan Paek) – water heater calculator
3. HVAC (Ayad Al-Shaikh)
4. Ag/Process/APL (Roger Baker) – modeling vs calculate, when change for EUL rule is valid for REA

Cal TF Visioning
Presenter: Annette Beitel

What is Cal TF?

- Doug Mahone: Change “more level playing field” to “equal access to information”
- Collectively unbiased. Balanced.
- Pierre Landry: What makes TF biased is ED is not represented here.
- Doug Mahone: Collectively, we are unbiased and mostly balanced. Not achieved balance because we do not have representation of the ED, CEC

Value of TF

- Armen Saiyen: “greater rigor where appropriate”
- Pierre Landry: California is so big, regional collaboration might not be seen as valuable or necessary.
    - Why doesn’t California look more at EM&V, research in other areas

How is Cal TF different than other organizations?

- Structure (working group versus how Cal TF)
    - Working Group – CPUC/consultants have final call, get input from WG
    - Cal TF – goal is to achieve consensus
- Independence is a valuable asset of Cal TF – establish Business Plan, set agenda, etc.
- Doug Mahone: ETCC might be body of comparison