



Agenda

California Technical Forum (Cal TF) Meeting

March 12, 2020

Location: Teleconference Only

10:00 a.m. – 11:30 a.m.

1:00 p.m. – 3:00 p.m.

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Time	Agenda Item	Discussion Leader(s)
10:00 – 10:15	Opening <ul style="list-style-type: none"> Review agenda and meeting goals 	Annette Beitel
10:15 – 11:25	New Measure Process Review <ul style="list-style-type: none"> Process Updates, Forms, Website Resources ACT: <ul style="list-style-type: none"> Questions 	Ayad Al-Shaikh Jennifer Holmes
11:25 – 11:30	Member Feedback on Value and Objectives of Cal TF Organization ACT: <ul style="list-style-type: none"> Members to complete short survey in email link 	Annette Beitel

Break for lunch



Time	Agenda Item	Discussion Leader(s)
1:00 – 3:00	<p>White Paper Topics</p> <ul style="list-style-type: none"> • Overview (10 min) • Process for selecting topics (5 min) • White paper topics (70 min) • Ongoing white papers from 2019 (5 min) <p>ACT:</p> <ul style="list-style-type: none"> • Cal TF Members: By Monday, 3/16/2020: Vote for top 3 white paper topics & indicate your interest in any of the subcommittees (<i>see survey link in email sent on day of meeting</i>) • Non-Cal TF Members: Indicate your interest in a subcommittee. Cal TF Staff will circulate proposed subcommittees to all interested parties after short list of topics is determined. 	Ayad Al-Shaikh Jennifer Holmes

Meeting Materials

- **Meeting Decks**
 - New Measure Process Review
 - White Paper Selection Process and Topics
- **For Information**
 - Subcommittee White Paper Template



Meeting Attendees

	<i>In-Person</i>	<i>Via Telephone</i>
<i>Cal TF Staff</i>		Annette Beitel Ayad Al-Shaikh Tim Melloch Tomas-Torres-Garcia Cameron Assadian Chau Nguyen
<i>Cal TF Members</i>		Pierre Landry Steven Long Sepideh Shahinfard Alfredo Gutierrez Andrew Parker Armen Saiyan Charles Ehrlich Dave Hanna Douglas Mahone Ed Reynoso Eric Noller Gary Fernstrom Jay Madden Jeffrey Seto Jonathan Pera Lacey Tan Lawrence Kotewa Spencer Lipp Martin Vu Mudit Saxena Chan U Paek Richard Ma Scott Blunk Tom Eckhart Vrushali Mendon Christopher Rogers
<i>Non-Cal TF Members</i>		Bob Ramirez Amy Reardon Bing Tso Carol Yin Edwin Hornquist Henry Liu Jeff Horn Jennifer McWilliams Marc Costa Rachel Murray Luke Sun



	<i>In-Person</i>	<i>Via Telephone</i>
		Andres Marquez James Hanna Tai Voong Un-recognized numbers: +12134483468 +15102901159 +15108528423 +16263020299 +18503211223 +19513258727



I. Opening

Presenter: Annette Beitel

II. New Measure Process Review

Presenter: Ayad Al-Shaikh

Materials: New_Measure_Process_v2.pdf

New Measure Process Review

Measure Submission form: Measure Description:

Spencer Lipp (via webinar): On the measure screening, is that a firm no from the committee? The reason I ask is that a 3P Program may acknowledge a low-cost effectiveness for the measure but still may want to include the measure for strategic reasons. Overall, the Program needs to be cost effective and other measures could balance out that measure.

- Henry Liu (via webinar): Spencer, that info should be included with the forms that way the PAs can understand that reasoning and that could be considered.
- Annette Beitel: They can resubmit the measure after they addressed all the review committee concerns. The question is what if, preliminary, the measure is not cost effective? 3Ps can proceed with measure if they wish, but utility may not fund, IOUs have expressed interest in funding development of primarily cost-effective measures.
- Tim Melloch: Voting members are representative of IOU. They may weight on cost effectiveness if this is the reason the measure is not going forward.
- Spencer Lipp: If 3Ps must roll through IOU, it seems to limit their flexibility.
- Annette Beitel: There are situations where 3P measures that are not cost effective have potential to go DEEM, but better as custom right now. It can still move forward just won't be funded. The intention is for developer to obtain consistency, transparency and feedback in a timely manner.
- Jay Madden: You can put together a package, but utilities can't buy if it is not cost-effective measure level or package level. Want everyone to succeed: both 3Ps and utilities.
- Ayad Al-Shaikh: Your measure may fall into bundle EE or new measure types – where they're no clear guidelines.
- Armen Saiyan: If a measure is not suitable for deem, a pathway should be provided so that they know what they need to do to get to deem.

Measure Submission Form: Measure Considerations:

- Tim Melloch: Displaying the warranty might increase the possibility of the measure being cost effective.



- Ed Reynoso: White paper for refrigeration fan. Comment from previous EAR. For mass market – must have manufacture warranty.
- Steven Long (via webinar): The contracts usually state 5 yrs.

Measure submission form: Measure Values:

Martin Vu: The new statewide workpaper template does not include a section to describe load shapes. If an existing load shape used appears inconsistent, where does one access load shapes to view the actual load shape to determine a more appropriate load shape (i.e. load shape viewer).

- Ayad Al-Shaikh: There are a limited number of load shapes available to use. We will consider where in the template load shape choice can be described.
 - IOU specific measures have impact profiles that can relate to the load shapes. Typically, load shapes are mapped to every permutation. Once load shapes are updated in the eTRM, there should be a separate place for them.

ACT: Identify where in the measure development form load shape choice can be described.

Dave Hanna: On Demand Reduction, what does this represent? Non-coincident, class coincident or system (utility) coincident?

- Ayad Al-Shaikh: Defined by DEER, is climate zone specific, three consecutive business days that are the hottest from 4PM to 9PM. Then, take the average demand reduction, for some measures you use rules of thumb to capture the spirit of rule if rule cannot be applied directly.
 - Average over those 15 hrs (= 3 x 5 hrs/day).

Armen Saiyan: Should we include other values/factors that are of high interest such as on-site & source GHG reduction? (nontraditional factors we haven't considered)

- Annette Beitel: Yes, we are tracking additional values/fields that parties suggest could be useful for inclusion in future updates. Examples may include water-energy savings and non-energy benefits, in the context of low income. We can add "On-site and source GHG reductions."
- Ayad Al-Shaikh: A little bit of training in this area will go a long way.
- Tim Melloch: Training video links in the TPP.

ACT: Add the following fields to consider in the "enhancements" list "on-site and source GHG reductions."



Reference Slides: Measure Development:

Jay Madden: Regarding attachment E, before submitting workpaper, we submit the workpaper plan to the ExAnte review team. They can give us early feedback on what we want to submit.

- Ayad Al-Shaikh: Getting approval doesn't guarantee you will get approval down the path.

Reference Slides: Measure Review & Submission:

Steven Long: Is there going to be real time feedback on where the submittal stands? Will the timing of the committee be indicated for planning purposes?

- Tim Melloch: We will try to get a real time report. There's some proposed real time layout for certain procedures, but nothing beyond that.
- Steven Long: There should be a provided date that specifies the submittal.
- Tim Melloch: I agree, a schedule should be laid out for people to be kept aware of the submittal.
- Steven Long: Will you indicate when the subcommittee meets?
- Tom Melloch: There is a timeline in the procedure.
- Ayad Al-Shaikh: We will add this to our calendar on the measure screening page within the TPP file.

ACT: Make dates for Measure Review meetings publicly viewable.

Lacey Tan (via webinar): MATs also available on CEDARS under measure specification value lists

- Ayad Al-Shaikh: I agree with Lacey, information is also provided on the main website within the Data tab.
- Tim Melloch: Would 3Ps know how to use CEDARS to find Measure Application Type?
- Ayad Al-Shaikh: Training might be needed. If you don't get it from the website, can get it from deemed Rulebook
- Also accessible from CalTF website: <http://www.caltf.org/measure-application-types-1>

III. Member Feedback on Value and Objectives of Cal TF Organization

IV. White Paper Topics



Presenter: Ayad Al-Shaikh

Materials: Cal_TF_Meeting_March_2020_White_Paper_Topics_v4.pdf

Cal TF White Paper Selection Process & Topics

Ayad Al-Shaikh: With new measure process we know there will be great new ideas that will be brought forward. We want to make sure we can evaluate these ideas in best way possible. There is nuance to all of them. We don't have tools today to evaluate them fairly. The purpose is to get them grouped together. What are challenges and opportunities so we can be proactive, reduce delays, categorize proposed measures quickly, and be as consistent as possible when evaluating ideas. The more we can be clear about what the inputs are to these measures, the more consistent we can be over time. We really strove for consistency. We want to provide guidelines and clarity as much as we can.

- The bundled measures have a component that is harder to deal with right now. Those are the items we are looking at for emerging measure types.
- Emerging Measures: For the top voted measures, we would like to bring them to the completed template stage. We will consult with the regulators (CPUC and CEC) because they have excellent visibility into what measures are likely to raise new issues.
- Procedural Measures: Looks like a deemed measure. All the documented values for these measures. There is a procedural process that is document, so there is understanding of what ex post evaluation look like. Audit examples are good examples. They can be big savings measures so important.

Overview: New Crosscutting Technical/Policy Issues:

Annette Beitel: For new measure review process, if the group isn't sure what category a measure falls in. Want to start a guideline that can be modified over time for the sake of consistency and transparency.

1. Procedural Measures

Armen Saiyan: My question. There is some type of ex ante estimate but stipulates that ex post would be done in particular manner and provide procedural advice. Do you know that it really happens in that manner? Will we get some guidance on it?

- Jay Madden: Last one that went through was Universal Audit tool, and there were no ex ante savings
- Henry Liu: That is correct, for UAT and HERs there are no deemed values for HERs. However, there are specific assumptions. There are things established, as we move forward looking at meter – savings.
- Armen Saiyan: These procedural measures can be applied in custom. Procedural measures sound like they provide methods on how to calculate the savings, but you



must wait for data to come in and replace the placeholders. This can be an application to expand custom, custom measures incorporate everything and are organized on a measure basis. Focus on the measure itself and all the applications it might have. This is a great point.

- Ayad Al-Shaikh: If we can get to the point where custom measures are in the eTRM, would streamline the process.
- Sepideh Shahinfard: Another example is Marketplace; they were going to pull all measures in one workpaper and estimate using ex post savings.
- Armen Saiyan: LADWP uses RPP services. PGE provided us the proceeding and #, but the # isn't clearly documented
- Henry Liu: RPP and marketplace are two different programs.
- Armen Saiyan: RPP is strictly deem savings, correct?
- Henry Liu: Last year we did not claim savings. However, for now, not claiming savings because it was a pilot.

2. Targeted Measures:

Ayad Al-Shaikh: Trying to develop cost-effective savings where entire measure is not cost-effective?

- Amen Saiyan: We are starting to conceptualize EE measures within DER offerings within specific constrained areas where avoided costs could be different. It does not fit within statewide context. The more we get into value the savings, the eTRM could help us, because it provides ability to have more variables included. When Annette and I talked about water-energy, localized savings for water-energy can be quite different across certain areas. There may also be EM&V results where certain groups of measures may have a different baseline. This could be an example of how you might target.
- Ayad Al-Shaikh: eTRM provides the ability to include variables. UC Davis water experts: localized savings for water can be dramatically different.
- Annette Beitel: Are there measures that are cost effected excluding by their geographical location?
- Ayad Al-Shaikh: There may also be EM&V results where certain groups of measures may have a different baseline. This could be an example of how you might target.

3. Bundled EE Measures:

Armen Saiyan: This category can have so many different combinations. There could be bundled for DI program – unfortunately, not all measures get applied together. Potentially home upgrades might be good for this. Interactive effect b/w measures.

- Henry Liu: Ideal we can bundle EE measures, help implementer design their program for cost effectiveness (more measures in 1 cycle). Regarding, home upgrade – bundled in deem environment. This was evaluated very poorly – 20% realization rate. Didn't capture



all permutation and savings. Should be mindful about this, might create a lot of interactive effects.

- Martin Vu: Bundled measures that include generation measures and EE save a lot of energy but are not cost-effective because of the EE policy manual when calculating TRC.
 - If you do solar project with a VFD on fan motor. You can only count the VFD savings, but not solar. TRC only counts VFD. Although there's a push for IDSM, cost effectiveness isn't great compare to solar savings.

Jump to "10. Generation + EE Bundled Measures" and "11. DR + EE Bundled Measures"

4. Software Measures:

Ayad Al-Shaikh: Are there special considerations for software measures?

- Henry Liu: Smart thermostat is something that has been done recently.
- Annette Beitel: Tier 2 power strips – savings come from algorithm.
- Steven Long: Building controls, tend to not only be manufacturers, also how they are used. People want to deem but hard to do.
- Charles Ehrlich: Catalyst has optional features that compare to standard EMS. EMS feature that turns on or off.
- Jonathan Pera: Overlay or EMS system. Central plant optimization packages. Not something you can model, but measure.
- Marc Costa: Oak Ridge or PNNL. Model predictive controls: very simplified energy modeled. Lot of these have to do with grid interactions. Something optimized by machine learning algorithm. How to operate the building and where to place certain technology.
- Armen Saiyan: Goes back to customized world difficult to create deemed savings.
- Annette Beitel: Could this be a hybrid measure? EUL and costs are deemed and savings can't be deem-ify (require input data). Or are there much more variation of parameters?
- Armen Saiyan: Small businesses trying to squeeze savings, but there is potential, it is small. Is it worth to install? Building IQ – temp set back and predictiveness. But trickle-down other system to react to this.
- Steven Long: Go back to bundling discussion. DR incentives rich enough that you could put in EMS and potentially piggy-back off EE. However, issue of how you claim savings is there and was there.
- Armen Saiyan: I agree with that concept, the issue is justifying paying for something that not doing anything (the enabler).
- Steven Long: It would be functional for DR, leverage it later to do incremental EE.
- Armen Saiyan: This could be considered incremental add-on type of measure.
- Ayad Al-Shaikh: Two items – healthy discussion at the building level, EMS system. Could be control strategies at widget level.



- Steven Long: Widget likely could more readily be deemed. Another example is recirculation pump controls, driven as much by software as it is by hardware. Building example brings up too much complexity.
- Marc Costa (via webinar): For the BTO ET Technology report that touches on MPCs...<https://www.energy.gov/sites/prod/files/2019/04/f61/bto-sc-rdo-041519.pdf>
- Dave Hanna: It seems like we are discussing the broad measure category of Integrated DER. Do we need to re-think the groupings? These all just seem to be under a broad DER category. With software, you need the widget. We are trying to break up a bit too much and need to put back together a bit.
- Ayad Al-Shaikh: Maybe we could have software: One where it is the smart power strip or thermostat. Another – energy management system that may have learning items in it.
- Armen Saiyan: Don't separate widget from software. For our programs, we would not pay for an EMS unless it did something. It would have to perform savings and demonstrate savings. Software that comes to mind, add-on layered types of measures. Provides for incremental savings above and beyond.
- Ayad Al-Shaikh: An example is model predictive controls. It could take other forms though. Maybe the common link is that there really are tiers of savings that are seen. Smart power strip had different functionality that lead to different savings. Different tiers with different savings.
- Sepideh Shahinfard: Dealing with smart savings under UMP. One-time savings calculation approach does not always capture everything. However, you can get device data, but customers may not want to share. Have over the air software updates all the time and may create additional savings.
- Ayad Al-Shaikh: Are the over the air updates predictive learnings or new control algorithms? Maybe this is about savings improvement versus immediate savings potential.

5. BRO & Service Measures:

Ayad Al-Shaikh: BRO and Service Measures: For this new category of measures, we are starting to see measures into portfolio that have this category. They are typically maintenance measures. When they get used, they are standard EUL values that go with them. In some cases, EUL data maybe show a different story. I don't know where it stands with duct sealing. Started with a BRO EUL but may be changed. Henry, do you know?

- Henry Liu: still working on documenting higher EUL than BRO EUL. In this new potential DEER update, savings may relate to material being used. PG&E is doing work.
- Ayad Al-Shaikh: pump overhauls – huge amount of data that exists now. Documenting EUL could get us more accurate values. Maybe there are good sensitive values. This might be another **good topic for discussion**.

6. Codes & Standards Measures:



Ayad Al-Shaikh: Codes & Savings Measures: They are claimed differently. They are identified as lump sum values rather than discrete items. It is quite different. There is value from other entities perspective. If you were able to have standard savings values in more transparent way, may help roll-up to match with statewide goals. What do people think about more documentation for codes and standards measures?

- Armen Saiyan: The way I have seen codes and standards., CASE and CEC would come up with prescriptive, would model based on Title 24 prototypes. Those get incorporated into potential models. The potential models predict what the savings are going to be. The IOUs claim exactly what potentials are. A few adjustment factors, however, biggest modification is attribution – how much did utility contribute to getting code and standard adopted.
- Charles Ehrlich: I don't disagree with anything you say. It is very much about paper savings they are not real savings, even if no specific measure to point at. Would really just subtract from savings from other part of the portfolio. One category that might be early adoption.
- Armen Saiyan: There are examples for 2022, if utilities could implement quickly, could potentially have 3 years of claims. One opportunity might be ET measures that they leap into code. This might be the best opportunity.
- Marc Costa: This could inform NOMAD goals but could also be accelerated replacement measure.
- Armen Saiyan: It is code but if you incentivize then you can accelerate it, we do overlap with codes.
- Annette Beitel: Could a case study have enough information? Would we have enough parameters? Just trying to envision as far as a template.
- Armen Saiyan: Key different would be prototype measures. One thing the CASE doesn't look at existing building stock. All prototypes are based on new construction.
- Charles Ehrlich: Typically assume 100% enforcement of code.
- Armen Saiyan: Difficulty cooperation from the building department.
- Annette Beitel: You are capturing below code savings using existing buildings.
- Armen Saiyan: Basis for all savings, all new construction.
- Marc Costa: Might not be apples to apples to apply the whole code to the entire building. For existing buildings, squishy part – Delphi panels that have huge weighting on potential.
- Armen Saiyan: The Delphi panels are the attribution to the utilities. They become an effective NTG for that program.
- Charles Ehrlich: Not a good fit EXCEPT a measure that are early adoption or not quite cost-effective for certain circumstances.
- Marc Costa: This might be great for hybrid approach. You could apply a measure code default and existing building, expose the parameters for that building maybe a way to salvage as a measure category.
- Ayad Al-Shaikh: Using a modeling approach for hybrid measures been thrown around and I think it is another one we could fit in.



7. EUL-Extender Measures:

Steven Long: For clarification purposes, is this for add-on, do we want to change from 1/3 EUL to 1/2 EUL or change a measure life from 20 years to 40 years?

- Ayad Al-Shaikh: I don't know if we thought about it that way. Can be used for both.
- Spencer Lipp: Appropriateness of 1/3 EUL = RUL for AOE. Also throw in blanket 3 years retro commissioning EUL. I believe both require policy change.
- Steven Long: There is a rebuttable presumption for RCx, no grayness.
- Spencer Lipp: The issue is EUL of AOE is tied to host equipment. If the host is changed, all the AOE measures are done, but may not always be the case.
 - Jump to Item 13
- Annette Beitel: Do you have an example on top of your head?
- Spencer Lipp: Pump measures, installation measures on DX – doing work in central plant. More examples of where it does not fit than where it does fit.
- Ayad Al-Shaikh: If not integrated to equipment, maybe it is not being applied correctly. This is one of the cross-cutting policy issues that we specifically pointed out. Sometimes RUL IDs that don't necessarily exist.
- Rachel Murray (via webinar): Per pg. A-37 of E-4952, the EUL of the AOE \leq the RUL of the host equipment.
 - Back to Item 7
- Charles Ehrlich: Tying together particular measure to improve life. Or demonstrate life can be longer. VFD can work with different motor and not just one.
- Ayad Al-Shaikh: Have you seen this in action anywhere?
- Charles Ehrlich: No, but it's a hot topic in custom: what can you do to improve cost effectiveness.
- Ayad Al-Shaikh: How would you implement it?
- Charles Ehrlich: This particular measure qualifies for EUL extender, check the box with 3 options of how to extend life, data collection maybe showing that the measure is doing something that would extend the life.
- Armen Saiyan: Would need expensive amount of data to support this. One of the things that are a problem is that underlying EUL data does not exist.
- Annette Beitel: Some states are spending a lot of time on EUL extension?
- Armen Saiyan: Maybe accelerated studies done in a lab setting, when it is onsite it becomes a bit more challenging and you just must wait and see.
- Vrushali Mendon (via webinar): The 2022 cycle is looking at additions and alterations measures for residential at least so they include some non-NC modeling efforts
- Martin Vu: Have you checked with SCE on their custom projects for pump overhaul measures and EUL extenders?
- Ayad Al-Shaikh: I will follow up with Jay.
- Jay Madden: I do not know off the top of my head.



- Martin Vu: Whatever you find out, if data is being collected or has potential then it's great opportunity for people to get that data while they are out there.

ACT: Follow-up with Jay B/SCE and PG&E to get an update on the EUL of Pump measures.

8. Industrial Measures:

Ayad Al-Shaikh: Is this an opportunity?

- Charles Ehrlich: Definitely, savings values depend on production rates.

ACT: Change definition to have it be based on production.

- Ayad Al-Shaikh: Any good examples on how it could be implemented?
- Steven Long: Would many of these measures fall into hybrid category that we have been working on?
- Ayad Al-Shaikh: Yes, but they might be submitted as deemed measures, so we want to prepare just in case. Want to think of what the reasons would be that these measures should/should not be deemed.
- Steven Long: We tried to deem-ify industrial measures, but they were undone, where they moved back to custom?
- Jay Madden: More likely that moved back, have not seen them as statewide measures.
- Spence Lipp: Good metric data, they may track daily production, but you won't capture all the variability. Something to be aware of when talking about what measures might work here. Availability of production data.

9. Fuel Substitution – Site to Source Energy:

Ayad Al-Shaikh: Any thoughts? Ground has been broken by SCE. The three things that may be related, getting source energy comparison for base and measure case. They are doing it right now, and there is guidance in fuel substitution guidance.

- Jay Madden: Yes, we are far down the road. CPUC has put together the fuel substitution guidance. Further work on fuel substitution would be worthwhile, for example, hourly impact. It was the first shot and as a group like this we want to see if we addressed certain things. CalTF would be a good independent body to continue the fuel substitution.
- Charles Ehrlich: A similar example would be dual-fuel heat pump, would have demand savings with increased gas usage. Hourly impacts might tell a different story.
- Ayad Al-Shaikh: This is a timely one, important to a lot of different groups.

10. Generation + EE Bundled Measures:



Ayad Al-Shaikh (carrying conversation over from slide “3. Bundled EE Measures”): Aren’t we able to realize savings in the cost-effectiveness tool? Do others see this problem?

- Charles Ehrlich: Can only count savings above and beyond generation. Non-IOU fuel.
- Ayad Al-Shaikh: Do they look at on an hourly basis, or over a course of the year?
- Charles Ehrlich: The hourly approach is preferred but requires more data and time. We proposed monthly approach and there is annual approach. You can do a monthly approach but by doing this you are throwing away potential data.
- Ayad Al-Shaikh: Could be a good topic for a white paper to see if there could be a better way to calculate cost-effectiveness. This does not seem like it is like it is classified correctly.

Armen Saiyan: Are these policies in place because they are coming from different funding sources? Is there a desire to separate impacts if coming from different funding sources? How is thermal treated?

- Charles Ehrlich: Onsite generation on custom side of the meter has impacts on rate cases. So to provide incentives that change rate cases is difficult. So, Peter Lai has said if you don’t have any usage on the meter, no potential for savings on the grid.
- Ayad Al-Shaikh: This can be looked at from an EE perspective. There are cases where you have a load shift. You don’t seem to get load shifting benefits.
- Armen Saiyan: There was load shifting benefits in the past, similar to what you receive as kW reduction.
- Martin Vu: The thermal storage was historically under DR. Segmenting EE and generation I think is because buckets of funding. This puts us in conundrum.
- Jay Madden: In the future vs. what can be done now. EE in storage and EE in generation. We will get into situations where we pre-cool a residence and using the EV for batteries during peak hours. We have storage in form of EV in driving, then charging at night.
- Ayad Al-Shaikh: As part of these items, we want to understand what the policy considerations are. Some of them are harder, where we know it provides value in the future. However, unless we can evaluate cost-effectiveness correctly, we can’t do it.
- Armen Saiyan: There are other forms of incentives, DR incentives, rate structures. We have other types of incentives therefore we may not want to bundle together. Static load shift and singular incentive may not make sense. What could be possible is that first buy-down could enable DR features. If just strict DR or load-shifting capabilities. A DR incentive might be more appropriate.
- Jay Madden: Market pricing signals might be a good bundling.
- Armen Saiyan: Yes, probably.
- Ayad Al-Shaikh: Storage and EE bundles, are there any other examples? Could be residential.

11. DR + EE Bundled Measures:



- Armen Saiyan: Energy management that has passive EE strategies and more aggressive on demand strategies would be good for this bundle.
- Jonathan Pera: DR potential is on the table. Very interesting. Leveraging tech and DR savings potential would be beneficial.
- Armen Saiyan: Lot of potential for DR + EE because EE with control capabilities has large DR capabilities and we are not quantifying.
- Jonathan Pera: Much is already required by code.
- Armen Saiyan: However, the code requires DR-enabled. Need to look at DR strategies to see if you can capture DR savings from marketing strategies, etc.
- Annette Beitel: Are there DR strategies that have DR savings?
- Armen Saiyan: There is a CPUC study that can show this.
- Henry Liu: Should be mindful what measures can be bundled together. It's depends on what we want to achieve. Think about the customer experience. Individual measure that are not cost effective alone but are bundled with others that can get them through the door.
- Annette Beitel: Is bundling on policy perspective? Certain (zero net and customer) may not know how to get there and bundle to help these customers reach the policy perspective.
- Henry Liu: Whenever cross-functional, different proceeding, rules and funding, can be challenging. So accounting and loading order is important. We have an EE/DR Heat pump water heater + DR attachment + control: customer can benefit in different incentives. Codes and standards have a different reach. As program developer ask questions, we can expand the potential.

12. Storage + EE Bundled Measures:

13. EUL/RUL Policy guidance for AOE Measures:

- Carried from item #7

14. Guidance for Load Shapes:

Annette Beitel: CEC expressed a lot of interest on working on load shape issues. Is the question what load shapes are out there? Are we using the correct load shapes? Looking at what is there instead of trying to develop new ones?

- Ayad Al-Shaikh: A little bit of both, what we are looking for is a bit different: "can we use what we have now moving forward?"

Martin Vu: You mentioned 21 load shape. Are they being used for cost effectiveness calculation? My understanding is we move on from this? Can you clarify on what you mean with



moving away from IOU specific? Load shapes are pretty critical for cost effectiveness calculation. Statewide measures all use statewide load shapes.

- Ayad Al-Shaikh: They aren't IOU-specific ones. IOUs as part of ABAL filings as far as I know. There has been some preliminary analysis. The impact does not look to be that great. In some sectors there were increases and some sectors there were decreases (8-10%). Something that needs to be looked at in more detail.
- Armen Saiyan: On this particular subject, NREL is doing something for the DOE in a nationwide context. CEC has done something recently with ADM. It is not just a static list of load profiles, but it is a load profile generator. They are creating a 2.0 version of HELM. Quite a few can be used as efficiency measures. They could provide guidance on subcommittee group.
- Dave Hanna: Modified forecasting tool that the energy commission uses. They use it primarily for demand forecasting, but they are taking actual measurements out of field.
- Armen Saiyan: Opportunity to align based on information they have gotten, such as geographic boundaries.
- Dave Hanna: Both sets of definitions fall within IOU service territory as well. CZ mapping and Title 24 CZs.
- Ayad Al-Shaikh: Is conversion not an obstacle?
- Dave Hanna: No
- Ayad Al-Shaikh: This would support the effort as much as possible.

Rachel Murray: Group A, Deliverable 17 involves updating and developing new load shapes. Jennifer McWilliams is going to hop onto the call to see whether she can help you with your questions.

- Jennifer McWilliams: We are updating load shapes. We have produced some from recent DEER runs. We have some new load shapes for HVAC measures. We are working right now for a process to make them available, and how can we propagate new load shapes through existing CET system. Right now, gets updates from E3 in avoided cost calculator cycle. Provides to Sound Data who updates in calculator. You'll see more about this in scoping memo.
- Annette Beitel: A matter of updating all the load shapes? Do you see where we could add value?
- Jennifer McWilliams: It is a bit premature now, our scope might not include updating all the load shapes.
- Annette Beitel: Is the focus on high impact measures?
- Jennifer McWilliams: Yes.
- Annette Beitel: Does the current process work properly?
- Jennifer McWilliams: The load shape itself does not have an update, using old load shapes and update the avoided cost but the load shape doesn't get updated.
- Armen Saiyan: Is it mainly used for the CET?
- Jennifer McWilliams: Correct.



- Martin Vu: Will there be a load shape viewer?
- Jennifer McWilliams: We will have a load shape viewer. We are developing in Excel. We are hoping to have something more sophisticated. I don't know exact date.
- Marc Costa: ADM made in EnergyPlus.
- Jennifer McWilliams: ADM shared files with us. It will be in a format used in LBL load shapes and PNNL. So not long string, 8760. Values summarized by month. Factors calculated.
- Annette Beitel: Group A consultants already working on this?
- Jennifer McWilliams: Yes, we would say it would be premature for CalTF to work on this. Everyone will learn more about this in the scoping memo.

ACT: Take the load shape white paper off the list. Group A consultants already doing this.

- Ayad Al-Shaikh: What is the best way to keep in touch?
- Jennifer McWilliams: Scoping memo that will come out soon.
- Charles Ehrlich: CEC report on HELM v2.0 (new to me):
<https://ww2.energy.ca.gov/2019publications/CEC-500-2019-046/CEC-500-2019-046.pdf>

15. Classification of a Measure as ET vs. Custom vs. DEEMed

16. Ongoing White Papers from 2019