



**California Technical Forum (Cal TF)  
Technical Forum (TF) Meeting #6  
Thursday, January 22, 2015  
NRDC, San Francisco**

**I. Participants**

Annette Beitel, Facilitator  
Jenny Roecks, Cal TF Staff  
Alejandra Mejia, Cal TF Staff

Tom Eckhart, TF Member  
Doug Mahone, TF Member  
Ron Ishii, TF Member  
Spencer Lipp, TF Member  
Martin Vu, TF Member  
Steven Long, TF Member  
Armen Saiyan, TF Member  
Sherry Hu, TF Member

Rick Ridge, Ridge & Associates, Presenter  
Brian Smith, Pacific Gas & Electric (PG&E), Presenter  
Todd Malinick, EMI Consulting, Presenter  
Grant Brohard, PG&E, Observer  
Jia Huang, PG&E, Observer  
Rob Kasman, PG&E, Observer  
Steve Kromer, Independent Consultant, Observer  
Jesse Martinez, Southern California Gas (SCG), Observer  
Mike Messner, Energy Platforms, Observer

**On the Phone**

Brandon Tinianov, TF Member  
Bruce Harley, TF Member  
Christopher Rogers, TF Member  
George Roemer, TF Member  
Pierre Landry, TF Member  
Andy Brooks, TF Member  
Bing Tso, TF Member  
Bryan Warren, TF Member  
George Hernandez, TF Members

Andrea Salazar, EMI Consulting, Observer



Mike Campbell, Division of Rate Payer Advocates, PAC Member, Observer

## **II. Key Decisions and Action Items**

### **RPP**

- ACT: RPP team to commit to performing sensitivity analyses on measure-vs. model-level approaches as data becomes available. This approach is to be documented in the abstract and workpaper.
- ACT: Systematically document, explain analysis behind each secondary source chosen.
- ACT: Include decision rule in WP that describes process that will be used when selecting from a range of values to ensure the values are neither overly optimistic nor overly conservative.
- ACT: Describe how demand savings will be calculated.
- ACT: Include ultimate savings potential when presenting the WP in February
- ACT: RPP WP should include requirement to recalibrate key metrics on at least an annual basis, and sooner if market indicates values are changing significantly (IMC, baselines, NTG)
- ACT: Include decision rule in WP that describes process that will be used when selecting from a range of values to ensure the values are neither overly optimistic nor overly conservative.
- ACT: Include ultimate savings potential in WP presented to the Cal TF for approval.

### **Advanced Power Strips**

- ACT: Ensure that confidence interval from SDG&E pilot is embedded in workpaper.
- ACT: The California studies are most appropriate for use in this workpaper. Combining the two studies would be reasonable.
- ACT: Estimate cost of collecting baseline usage data through implementation.
- ACT: Use RASS and Nielsen data to cross-validate baseline usage assumptions.
- ACT: Estimate saving potential as percentage of portfolio.
- Martin Vu to come back to the TF with updated workpaper in February.



### Update on CPUC Engagement

- ACT: Cal TF staff to prepare summary memo on TF recommendations to RPP team.

### Review of Business Plan Goal 3: Crosscutting Technical Position Paper Topics for 2015

- ACT: Address number of measure permutations in Measure Complexity subcommittee.
- ACT: Consider use of statistical analysis for all parameters.
- ACT: Address timing aspect of best available requirements.

### Repair Indefinitely Measure Application Type

Various recommendations:

- Consider using 'can't be repaired' instead of 'catastrophic failure.'
- Consider collapsing requirements one and three in proposed rule set
- Steven Long may have access to useful equipment life studies
- Review Itron's Work Order 29 and SRC commercial lighting study

### Closing

- ACT: 2015-2017 RFQ to be released in early February. Alejandra will follow-up with TF members to assess who would like to continue in the 2015 past June 1.

## **III. Opening and Introductions**

Annette Beitel, Facilitator—Run down of agenda.

## **IV. RPP: UES and EUL**

Brian Smith, PG&E; Todd Malinick, EMI Consulting; Rick Ridge, Ridge and Associates—

### Power Point Presentation

Tom Eckhart—How was the UES calibrated or determined? I thought we had left the discussion last year with some open questions.



Todd Malinick—One issue was moving to DEER whenever possible, and calibration. If DEER doesn't get updated, we have nothing to recalibrate. For anything else using a measure-level approach, there is nothing to re-compute.

Annette Beitel—Weren't you going to recalculate on a monthly basis with the sales weighted data?

Todd Malinick—Recalculating with sale-weighted data actually becomes a moot point when we chose to go with a measure level approach. Measure level is simpler and does not require sales weighting. The first period of sales data would be used for weighting, and we recommend annual recalibration when there are large product changes.

Rick Ridge—An annual recalculation approach is actually faster than individual measures in DEER are currently updated.

Armen Saiyan—So model-weighting is a last resort approach now?

Todd Malinick--Yes, because it is so laborious. Undertaking such wide-scale expensive efforts for continuous recalibration does not seem to justify the increase in UES precision. In one example, for instance, it didn't matter if I used a 1 month, 3 month, 6 month, or annual recalibration of sales data, and it didn't cause a large change in average UEC/UES.

Steven Long—Does the product have to literally be in DEER, or does DEER have a similar product that would be scaled? In the past, we've had to take DEER approaches and scale the DEER information to get the non-DEER values. I think if you have a product similar to DEER, you will have to scale it in that way.

Todd Malinick—Most of these products are not even close to DEER products, and the life cycles are much shorter than the DEER update intervals.

Doug Mahone—The model-level approach is more data intensive but potentially more accurate. Have you looked at the relative conservatism of measure-level versus model-level estimates?

Todd Malinick—Yes, that is something we are definitely interested in doing. Right now we only have one retailer with a small product assortment, but in 2015 we will have much bigger assortment of retailers and products. Using this additional data, I want to look at the sensitivity of model-level vs. measure-level to see if it's worth using the model-level approach.



- ACT: RPP team to commit to performing sensitivity analyses on measure-vs. model-level approaches as data becomes available. This approach is to be documented in the abstract and workpaper.

Todd Malinick—For some products we may ultimately be forced to use a measure level approach because there is not enough information.

Steve Kromer—Sounds like this is an issue that will come up again and again. Is the goal of this group to dissect and recreate DEER methods? It's not that hard to tweak parameters once models are set up. DEER will continue to loom large, and I would think this group would want to be able to recreate DEER methods systematically.

Todd Malinick—The only product category in 2015 that is DEER-related is freezers. Freezers aren't as granularly classified as refrigerators. I don't know that tweaking DEER is a driving issue at this point.

Annette Beitel—One of Cal TF's overarching principles is to follow DEER to the extent possible, but we are also trying to characterize DEER methods to the extent possible for new measures. Are you saying that an energy model should be used to calculate savings for this measure?

Steve Kromer—DEER methods are kind of vague. I'm just saying that it would be useful for this group to figure out what the DEER methods are so they can be tweaked openly.

Martin Vu—The workpaper template requires you to explain why you are deviating from DEER.

Annette Beitel—Steve's view seems to be that this departs from DEER methodology. We need to decide if it does or not.

The RPP team will be using DEER to the extent possible, but you are saying that if there is a blank, you should run a model and do primary data collection. I don't think that the DEER methodology explicitly requires this. I don't think it's clear-cut where DEER applies. Because it's not clear-cut, I would say that they are using DEER where they can, and are proposing a cost-effective and reasonable approach to developing other measure parameters.

Martin Vu—Todd, have you had a chance to get early opinion from Commission Staff consultants on secondary sources such as Energy Star? This could boil



down to the battle of the experts if they reject your proposed secondary sources.

Rick Ridge—No, we have not had that opportunity yet.

Annette Beitel—One area I can see staff questioning is, for secondary sources there is probably a range of options. They may not be able to double-check every secondary source. Are you going to be carefully documenting the secondary source for each value? How will you ensure you are not picking the most optimistic source?

Rick Ridge—We will show them all the data, the distribution of values, explain why we picked each sources as representing the average, and let them judge.

Annette Beitel—I don't think they will have time to look through every source, but you should explain that you researched several sources, and picked the middle point in the range. You could explain what decision rules you used to ensure the values you pick when you have a range of values to choose from are unbiased – neither overly optimistic nor overly conservative. .

- ACT: Systematically document, explain analysis behind each secondary source chosen.
- ACT: Include decision rule in WP that describes process that will be used when selecting from a range of values to ensure the values are neither overly optimistic nor overly conservative.

Todd Malinick—The portfolio product categories will change over time.

Steve Kromer: My question was really geared at the broader Cal TF process. Will you be looking at DEER methods so you don't have to recreate DEER methods for all measures reviewed by the Cal TF?

Annette Beitel—As part of our foundational research, Jenny spent a lot of time trying to identify DEER resources. This documentation is organized on our website. However, DEER methods are not very clear. That is why we are asking Staff to provide early feedback on applicable DEER requirements for all the measures we review.

Lastly, one of the goals of our business plan is to systematically document DEER methods by measure and have Staff review this information. Every other DEER-like source outside of California is accompanied by a TRM where you can trace a number back to its source. DEER does not allow this as the values can not be



traced back to source documentation such that the documentation would allow someone to recreate the values in DEER. Thus, DEER is hard to validate, and we are attempting to replicate a TRM-like approach such as those used in other jurisdictions.

Doug Mahone—To go back to Rick's point of using the central tendency for values, you can make a mistake by being conservative on all values or optimistic on all values. We are committed here to be systematic with the median.

Todd Malinick—We feel that as long as we're being transparent and systematic, we should be in good shape.

Annette Beitel—You need to be able to show a decision rule that you used that led to reasonable values, and document everything so that they can be reassured.

Rick Ridge—Commission Staff will review our approach by sampling, so everything we do must be reviewable and defensible so it will pass muster.

Sherry Hu—In the air-cooled chiller workpaper, we used DEER values and collected data during implementation. We trued up the values based on the actual efficiency of units rebated. This workpaper was not reviewed by the consultants, but passed through.

Annette Beitel—Are you saying there should be a trueup in a year?

Sherry Hu—The consultants did not give direction on this; but this RPP approach sounds reasonable in light of the approval of that previous workpaper.

- ACT: RPP WP should include requirement to recalibrate key metrics on at least an annual basis, and sooner if market indicates values are changing significantly (IMC, baselines, NTG)

Armen Saiyan—For the model level recalibration frequency, I recommend you look at the savings to see which product models contribute to either the highest savings or product sales volume, and see if your assumptions makes sense based on the sales and associated energy savings actually occurring.

Todd Malinick—We will be getting monthly sales data from the retailers, so we will be monitoring that.



Steven Long—There are workpapers that support some of these products, such as Room Air Conditioners. If there is study data, you may need to use it.

Jia Huang—For room air conditioners, I did dig up an old workpaper, and the methodology was part DEER and the UECs were back calculated from DEER. This was the only measure aside from freezers that I could derive from DEER.

Annette Beitel—Earlier, the team proposed using retailer-specific UECs. Has this changed?

Todd Malinick—Yes, since we're moving to a measure-level approach, it didn't seem important to vary between retailers. We realized this only really matters for products at a model-level, and there won't be a big difference between retailers.

Doug Mahone—Because the savings from this program are based on volume, it could be impactful to be more precise for individual UECs.

Rick Ridge—If you were to do a study to determine UECs, as soon as you finished it, the values would be obsolete.

Steven Long—How are you going to deal with demand savings?

Todd Malinick—We still need coincident factors, but we may be able to back into peak demand hours. Some of these things will potentially be pretty small.

Steven Long—You may be right. If these products are primarily on at night, beyond the parasitic loads, there will likely not be demand savings.

- ACT: Describe how demand savings will be calculated.

Annette Beitel—Ok, so we will provide comments in the next few days, and please be prepared to address them in the workpaper and/or presentation. If you could put in what you think the ultimate potential might be when the measure comes to full fruition, it will help us better understand the importance of your novel approach.

- ACT: Include ultimate savings potential in WP presented to the Cal TF for approval.

### **III. Advanced Power Strips**

Martin Vu, MRS Energy Consulting—





## Power Point Presentation

Spencer Lipp—How were the outliers determined?

Martin Vu—The CALPLUG report doesn't specify exactly how they do that, but my educated guess is that they removed the highest and lowest users.

Doug Mahone—So the energy saved was basically how much power it was turning off?

Martin Vu—Yes.

Armen Saiyan—Why do savings start accumulating before it turns off?

Martin Vu—I believe that is during the ramp period.

Spencer Lipp—Did you look at the actual distribution on a site basis to see if your sample size makes for a strong confidence interval?

Martin Vu—Yes, the consultant did do that.

Spencer Lipp—It would be helpful for us to know the precision and confidence level of your sample. A strong confidence interval would be very strong evidence for your argument.

Martin Vu—Yes, that was done for the San Diego study, but I would have to check with SDG&E to make sure I can release that information.

Spencer Lipp—That should be included in the workpaper.

- ACT: Ensure that confidence interval from SDG&E pilot is embedded in workpaper.

Annette Beitel—So, if the SDG&E study has enough confidence, wouldn't that mean you can just scrap the rest of the data and use that study?

Martin Vu—My inclination is to use the rough savings percentages, since they are fairly consistent across all of the studies.



Spencer Lipp—The problem is that, while your data shows savings, if you choose to use the percentage savings you are introducing an additional assumption: baseline consumption.

Armen Saiyan—I don't think the savings percentage is actually in question here. The question is what is the appropriate baseline consumption.

Martin Vu—Yes, and you can argue that the more regional appropriate studies are the ones in California; however, there are caveats to both California studies.

Dough Mahone—The problem we have statistically is that you can attempt to calculate confidence, but that assumes you know something about your study population. We don't know enough to really do that.

Martin Vu—So, assuming equal confidence, which studies do you think are the most appropriate?

Armen Saiyan—I would suggest that Santa Cruz and SDG&E are close enough samples that you can just combine them and use those.

Ron Ishii—The problem with the other studies is that we don't really know for sure if there are any significant cultural differences.

Group—Agreement that averaging the two California studies is the most appropriate approach.

Dough Mahone—I'm willing to believe that the South Africa and Australia sets are acceptable, but what I'm hearing in the room is that we are unqualified to make that decision.

Spencer Lipp—It would be key to know what the population of the target market for the measure looks like. Since we don't—which is characteristic of a new measure—then the California data we have right now is as good as we're going to get at this point.

Armen Saiyan—For the purposes of the workpaper for the time being, I would think that those are as good as you need right now.

- Recommendation: The California studies are most appropriate for use in this workpaper. Combining the two studies would be reasonable.



Annette Beitel—So, if the 50% reduction estimate is good enough for now, would it be possible to collect baseline information through implementation to calibrate later?

Steven Long—Is there a program mechanism to collect that data?

Annette Beitel—How intrusive would that be?

Steven Long—It would be intrusive, but more importantly it's a cost issue—it could easily double the program cost.

Annette Beitel—So the big question is how to determine baseline usage, but is collecting that data too costly?

Sherry Hu—Extrapolating from available home TV usage, your numbers seem to make sense. Could you reference the RASS study to cross validate your assumption?

Annette Beitel—So, what I'm hearing from the group is that they would like Martin to come back in February with the following:

ACT: Incorporate

- The confidence interval of the California studies
- The cost of collecting baseline data through implementation
- RASS and other TV use information (Nielsen data) to validate baseline assumptions.

Dough Mahone—Do you have a rough idea of the cost effectiveness of the measure?

Martin Vu—Yes, we ran a rough estimate and the TRC is above 1, maybe 2.

Dough Mahone—In that case, you should be safe starting with a lower estimate and then truing up.

Martin Vu—Do the program administrators have funding to commission baseline studies?

Steven Long—That is the problem. I'm fairly sure there is money, but the problem is process: if the ET folks can't justify doing it, then the program managers are probably going to be too busy during implementation to focus their resources on it.



Armen Saiyan—Worst case, you can always leave it up to the evaluators to confirm persistence and baseline.

Spencer Lipp—Was the San Diego study done during the summer time? That would affect AV system use in homes with school-aged children.

Martin Vu—It's likely that it was done in the fall; worst case would be late summer and fall.

Brian Smith—The publicly available Nielsen data is an accurate way to show how TV use varies seasonally. We know from previous work that the free national data is the same as the California-specific sets.

- ACT: Reference timing of San Diego study with Nielsen TV data.

Rob Kasman—Isn't what matters for savings the consumption in stand-by mode, not when the TV and other equipment is on?

Steven Long—Actually the big advantage of this new technology is that it turns off that big TV load, not just the vampire drain.

Martin Vu—That's the difference between tier one and tier two products.

In addition, the advantage of offering it as a direct install measure is that it can be installed so that the consumer's TV settings aren't altered. That should help with persistence.

Sherry Hu—Does the workpaper calculate savings per home or per AV environment?

Martin Vu—The field studies acknowledge the possibility of multiple environments, but they only focused on the main TV.

Armen Saiyan—So you are probably going to see a decrease for the secondary environments. My guess is that the savings would still be significant.

Doug Mahone—For residential customers, what is the market potential?

Martin Vu—If you estimate reaching 1% of California residences, you still get around 40 million kWhs.



- ACT: Estimate saving potential as percentage of portfolio.

Annette Beitel—So, Martin will come back in February with a short update presentation. By that time we should be in a good place to approve the workpaper.

#### **IV. Update on CPUC Engagement**

Annette Beitel, Facilitator—

##### **Power Point Presentation**

Doug Mahone—Do you know if Staff having any anxieties about us diverging from what they would have done?

Annette Beitel—We've always planned to follow all existing requirements. So far your recommendations haven't conflicted with that of the ex ante's team's directions, but we do feel comfortable that we will be able to work through any differences with them if that ever comes up.

Tom Eckhart—Thanks for the presentation Annette. My team recently met with Commissioner staff, and we were surprised that only one of the three staffers were very aware of the Cal TF's work.

Annette Beitel—That is a very valuable comment Tom. As you know there has been significant turn over at the Commissioner level since Cal TF started, but we do plan to continue that outreach as we have throughout this first year.

Brian Smith—Katie Wu recently asked the RPP team for a memo with all of the recommendations the TF has made so far.

Annette Beitel—Cal TF staff would like to put that memo together for Staff. What we will do is draft it, put it out for 5-day review from the group, and then work with the RPP team to submit it to Staff.

- ACT: Cal TF staff to prepare summary memo on TF recommendation to RPP team.

#### **V. Review of Business Plan Goal 3: Crosscutting Technical Position Paper Topics for 2015**

Annette Beitel, Facilitator—



## Power Point Presentation

### *Measure Complexity*

Grant Brohard—The thing I don't see on the list right now is the number of measure permutations.

Tom Eckhart—I agree that that is a very important issue, since managing and updating multiple permutations becomes really problematic.

- ACT: Address number of measure permutations in Measure Complexity subcommittee.

Spencer Lipp—Is the intent for these position to apply to deemed and custom projects?

Annette Beitel—We will definitely be limiting ourselves to deemed applications, since that is the Cal TF's current domain.

Doug Mahone—If we can come up with answers to these questions for deemed measures that may be a good starting point for answering the custom questions.

Annette Beitel—Another question that this group may want to ask is when to require statistical analysis.

Steven Long and Jesse Martinez—We used to use a lot more statistics, have been steered towards engineering since that time, but now possibly will have to start relying on statistical analysis again.

Dough Mahone—Well, statistics will be important for the baseline but also for every other parameter, because we need to recognize that everything has an error band around it.

- ACT: Consider use of statistical analysis for all parameters.

### *Best Available Information*

Steven Long—I would be careful how you phrase the second high level bullet because we don't want to imply that best available information means gathering new data for every new measure.



Jesse Martinez—It will also be important the timing aspect of best available information requirements.

Steven Long—It might be useful to see if the ‘bus stop’ concept from the rolling portfolio can be used for non-EM&V data.

Jesse Martinez—Yes, defining the playing field of applicable information sources, or when it would be too late to require use of freshly published data.

Steven Long—Yes, there should be guidelines for when a workpaper is in the safe harbor so the developer cannot be charged with an error for not including data after the fact.

- ACT: Address timing aspect of best available requirements.

## **VI. Cross-cutting Policy Issue: Repair Indefinitely Measure Application Type**

Doug Mahone, TF Member—

### **Power Point Presentation**

#### *Discussion During Presentation*

Jesse Martinez—The Commission settled on a 20 year EUL a long time ago because of the discounted value of savings that far back; however, that has other repercussions now. It’s important to keep in mind that this is essentially a financial accounting mechanism, and it can’t be used for measuring actual savings.

Armen Saiyan—It’s essentially a misapplication of a tax principle.

Mike Campbell—However, there are valid concerns about double counting with codes and standards portfolios.

Doug Mahone—That’s a completely valid concern, so what we are trying to do is come up with a counting approach that avoids the pit falls already brought up by the Commission.

Annette Beitel—Maybe Doug can elaborate on his proposal.



Ron Ishii—It seems like Doug’s proposal focuses on projects that would not have happened otherwise.

Martin Vu—My understanding is that pre-existing conditions for deemed programs are almost self-reported. I think that may raise a concern with the CPUC.

Spencer Lipp—That goes back to the workpaper. My guess is that most workpapers would continue to use code as baseline to avoid the burden of the preponderance of evidence or the risk of retroactive savings shortfalls.

Ron Ishii—I can see there being enough evidence available for select deemed measures.

Tom Eckhart—Who is the assumed decision maker for your proposed rule set?

Doug Mahone—You don’t necessarily need to make a determination site by site, you can pre-define a list of applicable measures/equipment.

Group—‘Can’t be repaired’ might be better terminology than ‘catastrophic failure.’

- Consider using ‘can’t be repair’ instead of ‘catastrophic failure.’

Steven Long—This seems like it would work really well for the industrial side where ISP stands in for code baseline.

Spencer Lipp—I’m wondering what the Commission will say, since what we currently have to do is prove one year operation to claim early retirement, and repairing it would reset the clock, but you could work it for another year and then claim early retirement.

Annette Beitel—Could you collapse one and three on your three proposed criteria and use a scale of percentage of cost of repair?

- Consider collapsing requirements one and three in proposed rule set

Jesse Martinez—EUL economics currently set the rules of the game, but we should keep in mind that real life degradation would bring other risks.

Spencer Lipp—And what the Commission might say to that is that they don’t want to pay for people’s deferred maintenance on degrading equipment. That, again, goes back to the artificial 20 year EUL.





Annette Beitel—Maybe that's one of the recommendations we make.

Spencer Lipp—Because the current rules penalize the customers who are maintaining their equipment appropriately.

Jesse Martinez—I would go to the manufacturers to try to get more curate equipment life data.

- Equipment manufacturers may be a good source of accurate useful life data

Sherry Hu—I think most manufacturers have good data on this.

Steven Long—Yes, I know of several studies on this.

- Steven long may have access to useful equipment life studies

Annette Beitel—How do you screen out free riders for this approach?

Doug Mahone—My guess is that free riders would be a very small percentage. One option is to tighten up the screening, or settle on a percentage beforehand and apply it ex post.

Armen Saiyan—It could be considered a limited time market transformation program.

Steven Long—Even if you get the extended life approved, the preponderance of evidence to do early retirement is still very onerous and expensive.

Jesse Martinez—It is very hard to prove.

Annette Beitel—But could you try to get away from customer-specific rules, and make this a standard for deemed measures?

Pierre Landry—I think you should be able to if you come up with some case studies.

Grant Brohard—I would recommend that you look at Itron's Work Order 29 (2010-2012 lighting EM&V for deemed and custom measures). They came up with ~50% early retirement.



Pierre Landry—SRC did a study and found that the typical commercial establishment re-does their lighting every 5 years for non-efficiency reasons. This is somewhat contradictory to the study Grant just mentioned.

- Review Itron’s Work Order 29 and SRC commercial lighting study

Annette—Great, we will incorporate Doug’s proposals and analysis into the Savings Below Code subcommittee work and will keep the group updated.

## **VII. Closing**

Annette Beitel—Thanks for another great meeting.

We will be releasing a new RFQ for the TF term beginning this June early next month. For that reason we will be reaching out to the existing members about your wishes and ability to continue for another term. Please also let us know if you know of colleagues who would be valuable members for next term.