



**California Technical Forum (Cal TF)  
Technical Forum (TF) Meeting #23  
July 28<sup>th</sup>, 2016  
Pacific Energy Center  
San Francisco**

**I. Participants**

Annette Beitel, Cal TF Facilitator  
Tim Melloch, Cal TF Staff  
Alejandra Mejia, Cal TF Staff

Paula Gruending, CPUC Staff

Bing Tso, TF Member  
Armen Saiyan, TF Member  
Spencer Lipp, TF Member  
Gary Fernstrom, TF Member  
Mary Matteson Bryan, TF Member  
Doug Mahone, TF Member  
David Pruitt, TF Member  
Mike Casey, TF Member  
Yeshpal Gupta, TF Member  
Ron Ishii, TF Member  
Alina Zohrabian, TF Member  
George Beeler, TF Member  
Tom Ekchart, TF Member  
Mark Modera, TF Member  
Steven Long, TF Member  
Martin Vu, TF Member  
Ed Reynoso, TF Member  
Bryan Warren, TF Member

Jeff Gleason, Presenter, Nest Labs  
Aaron Berndt, Nest Labs  
M M Valmicki, Presenter, AESC  
Jim Benya, Presenter, Benya Burnett Consultancy  
Scott Mitchell, Souther California Edison (SCE)  
Gay Powell, Pacific Gas & Electric (PG&E)  
Jia Huang, PG&E  
Paul Pruschki, San Diego Gas & Electric (SDG&E)



### **On the Phone**

Pierre Landry, TF Member  
Ryan Hoest, TF Member  
Grant Brohard, TF Member  
Christopher Rogers, TF Member

Jeff Hirsch, Ex Ante Consultant to the CPUC

Michael Blasnick, Presenter, Nest Labs  
Antonio Corradini, AESC  
Chan Paek, Souther California Gas (SCG)  
Hammad Chaundry, Nicor Gas  
Joe Priyjanonda, Applied Analytics  
Henry Liu, PG&E  
Roger Baker, ComEd  
David Schallenberg, Schellenber Energy Companies  
Kyle Dunn  
Matt Smith  
Ben Lipscomb

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

### **Q2 Progress Report on 2016 Business Plan**

- ACT: Workpaper to thoroughly think through how the incentive addresses the market barrier and explain justifications for making the incentive downstream.
- ACT: AESC/SDG&E to run small, informal survey with open-ended question to better understand market barriers.
  - Survey questions and target audience to be discussed with CPUC Staff before being started.
  - Full survey data and results—not just conclusions—to be reported to CPUC Staff.
- ACT: Include installation policy question to survey.
- ACT: SDG&E to consider market indicators to use for judging end of “ET period.”

### **Permanent Magnet Synchronous Fan Motors Workpaper Update**

- ACT: Workpaper to explain claim mechanics for hard to reach NTG cases.



- ACT: Collect field data during implementation to pursue ER application soon.
- **Workpaper affirmed on an interim basis for one year.**  
Mark Modera abstained because he was not present for the discussion.

### LED Tubes Presentation

- ACT: SCE to present updated measure assumptions once fall field data is available.

### III. Nest Report Out on Customer Survey of Smart Thermostat Savings

Jeff Gleason and Michael Blasnick, Nest—

[Notes in this section reflect key points due to a note-taking issue]

#### PowerPoint Presentation

Q: Why not indoor temperature instead of set points? Because really we are interested in the relationship between baseline and measure case. We're eventually going to apply that to other building temperature studies. Those studies will bring in the equipment run time and other temperature factors.

Q: Can the user adjust the band of the set point? Yes. That could affect savings.  
Jeff Gleeson: We know most people do not tweak that functionality.

Jeff Gleeson: Nest has "sun block" feature to prevent tripping because of sun on thermostat.

Several TF members expressed concern that the 1/3 reduction was too arbitrary and not sufficiently evidence-based.

Jeff Gleeson: Nest can use survey data to refine 1/3 estimate.

Mark Modera: How do you determine baseline? Flat schedule adjusted by survey results.

Various TF Members: Need to consider Title 24/DEER baselines. TF should see analysis on all those so they can choose best.

Follow-up subcommittee for August to discuss Nest responses to open questions:



- ACT: Follow up teleconference in second week in August
- ACT: Nest to consider possibility of running same analysis using building temperature
  - Mark Modera is concerned that frequency and timing of set point change would affect thermal mass in building
- ACT: EUL follow-up: What is warranty and how does it compare to estimated life?
- ACT: Must come up with a definition that is manufacturer neutral and adequately distinguishes “Smart thermostats” from connected thermostats.
- ACT: Provide more information on EPA Energy Star working group method that NEST is basing its approach on.
  - What method has the working group developed?
  - If not single method, what are methods being considered?
  - How does NEST’s proposed method differ and what are the basis for the differences?
  - Who at EPA is leading the Working group, and is there a website? Can Cal TF get materials? Materials/website from working group/participants.
- ACT: Need to do more analysis on base case.
  - How is base case determined?
  - What would be base case if DEER/Title 24 used? How does it compare to what Nest proposes to use?
  - What would be savings values be if DEER/Title 24 used as base case?
- ACT: Provide further support for 1/3 Reduction for prior efficient behavior
  - Basis for/how can this number be refined quantitatively?
- WP action items
  - Include all market research (studies considered/studies used/conclusions drawn. Important note: Need to include studies considered that were rejected, as well as those considered and included).
  - Include customer survey data
  - Address choice of baseline – what about code baseline? DEER?
  - How do you address/account for “manual touch” – manual adjustments to baseline.
  - How does data set/data analysis methods address outlier days (warm days in SCE in Feb, for example)
  - How many degree days in season vs. shoulder?



- Address why not calibrating to temperature, and instead calibrating to set point.

#### **IV. Permanent Magnet Synchronous Fan Motors Workpaper Update**

M.M. Valnicki, AESC—

##### PowerPoint Presentation

Doug Mahone—Where are the condensers for these things?

M.M. Valnicki—They are outside, so they are somewhat affected by outdoor temperatures. However, the variation is small enough that we don't think it warrants separate savings estimates.

Mark Modera—So that is the absolute change, some are negative values?

M.M. Valnicki—Yes.

Spencer Lipp—How does the incentive minimize the technology risk for the vendor?

M.M. Valnicki—It doesn't, but it does provide an economic incentive to go out and sell the "risky" product.

Annette Beitel—But isn't the rebate for the customer?

M.M. Valnicki—Improving the economics would also catch the attention of the customer and lead them to request the technology from the vendor.

Armen Saiyan—I would also imagine that having the utility "invest" in the incentive would signal some sort of confidence in the technology.

Ron Ishii—My experience is that most store managers are concerned first and foremost with reliability. Especially in their high-margin ice cream sectors.

Spencer Lipp—I think that is probably true, but even then my point about small energy savings may still stand for the larger chains. If the decision goes to the Safeway energy manager, the small individual savings can become a larger opportunity at the portfolio level.



Chris Roman—The economic incentive can help make the customer more comfortable with the risk of product loss.

Rocky Harmsted—Perhaps an upstream incentive will be a better way to address the market barriers.

Annette Beitel—Or split the incentive between customer and trade ally.

Paula Gruending—I can't commit to anything before looking at the workpaper, but if it makes sense, it would be possible to approve only the ROB application even if the ER justification is included.

Annette Beitel—You may also want to include the market indicators that you will use to determine when the product no longer meets ET criteria for NTG.

Ed Reynoso—Wouldn't that be best done via a statewide evaluation?

Steven Long—I think this is an area where we can really use some guidance on. We'll probably have a similar discussion later in the day. That threshold question comes up with a lot of measures.

- ACT: Workpaper to thoroughly think through how the incentive addresses the market barrier and explain justifications for making the incentive downstream.
- ACT: AESC/SDG&E to run small, informal survey with open-ended question to better understand market barriers.
  - Survey questions and target audience to be discussed with CPUC Staff before being started.
  - Full survey data and results—not just conclusions—to be reported to CPUC Staff.
- ACT: Include installation policy question to survey.
- ACT: SDG&E to consider market indicators to use for judging end of "ET period."

## **V. Garage LEDs Workpaper**

Martin Vu, RMS Energy Consulting; Jim Benya, Benya Burnett Consultancy—

### **PowerPoint Presentation**

Gary Fernstrom—So there are no electrical safety issue with the Type C solution?



Jim Benya—Yes, the “UL Kit” requirements ensure that there are no electrical concerns.

Doug Mahone—Are the controls part of the kit?

Jim Benya—Most of the time they are separate, but they are unitary, nearly “plug and play” devices.

Alina Zohrabian—Typically what type of HID wattage is currently found in these cases?

Jim Benya—Typical metal halide lamp wattage would be between 100 to 150 watts. I am seeing the market move towards an at least four or even six luminaires per bay design. The six luminaire model is actually more energy efficient.

Steven Long—Is the multifamily use case limited to high rise buildings?

Jim Benya—No. The real limitation is size, not the vertical design.

Spencer Lipp—Isn't there a Title 24 compliance path that doesn't include photo cells if you reduce wattage enough?

Jim Benya—Yes, but the majority of parking garage projects are very unlikely to meet avoid the minimum threshold for that.

David Pruitt—Do the retrofit kits have the same diffusion pattern as the fluorescent?

Jim Benya—Not exactly, but the difference is small enough to be very hard to notice.

Paula Gruending—How do you identify the different NTGs in the claims?

Steven Long—My understanding is that there is a mapping by zip code, so the claim defaults to .7 unless it is filed in one of those zip codes.

Paula Gruending—It would be helpful if you explained that in the workpaper.

Yeshpal Gupta—So the occupancy sensor doesn't impact operating hours?



Martin Vu—It does, because it fluctuates between low and high power. It just never turns them off.

Annette Beitel—Is the wattage range method official Commission policy? Because it doesn't seem to always lead to the Commission's standard of reasonably expected values.

Alina Zohrabian—That method doesn't come from Commission language; I believe it is from the lighting disposition.

Martin Vu—Yes, per the EAR Team's early feedback, we went back and looked through more of the Edison custom files and didn't find any evidence that the low fluorescents were used in garages. Jim's design analysis also explains why that is, since the low wattage fluorescents do not perform reliably in low temperatures.

Gary Fernstrom—I'm not familiar with how ballast factor plays into LEDs. Is there a similar adjustment that comes into play here?

Jim Benya—It is close enough to be equivalent to the naked eye. We limited the qualified products (as a sort of the DLC list) to ensure that we were within 10%. In my professional opinion, that is within the acceptable range of variability.

Annette Beitel—I think what you're asking the group is if you have enough data to affirm an ER application for this measure. I don't think the TF has had enough time to weight in on that question right now, but that shouldn't stop you from submitting a proposal to Staff.

Gary Fernstrom—This is such a good measure, it should eventually find its way to an early retirement application.

Annette Beitel—Does the group affirm this workpaper for an ROB application?

Group—Yes.

Mark Modera—Abstain.

- ACT: Workpaper to explain claim mechanics for hard to reach NTG cases.
  - ACT: Collect field data during implementation to pursue ER application soon.
  - **Workpaper affirmed on an interim basis for one year.**
- Mark Modera abstained because he was not present for the discussion.





## **VI. LED Tubes Update Discussion**

Steven Long, Southern California Edison—

### **PowerPoint Presentation**

Mary Matteson Bryan—Am I correct that there have been some third party direct install programs that have been installing tubes for a while? They may have some data.

Steven Long—I have heard that there are some 12 watt tubes in the field. That data may be large enough to be a factor in the fall.

Paula Gruendling—I think it's worth mentioning that the EAR team disagreed with the ET NTG because this market is moving so quickly.

Armen Saiyan—That seems curious, given the 1% market saturation rate you cited earlier.

Annette Beitel—Yes, the market share is low, but the other part of the standard is the consideration of it as a “self-sustaining” technology. The static value may look like ET, but the growth rate is equally important here. For that, it would be useful to find out the growth rate with and without utility intervention. That may be found in evaluation reports from jurisdictions currently incenting the measure.

Ron Ishii—But the reality is that this technology has been in the market for four years, and it is still at 1% saturation rate. It seems to be begging for utility intervention. Penetration may change shortly after utility intervention—in one or two years—at which point the NTG would have to be adjusted.

Mike Casey—Is there a reason why the penetration is so low? Could it be perceived technology risk?

Steven Long—There is a substantial price differential.

Jeff Hirsch—We disagreed with the ET NTG because there is no link to the utility's ET program, per Commission language on slide 13. Furthermore, NEMA sales data shows that TLEDs make up 7% of nationwide sales.

Steven Long—In terms of proving that causal link between ET and the program offering, the timeline shows that the initial ET study came almost two years



before the program staff even got involved. It is unclear to us how much more we can document that influence.

Paula Gruending—That timeline is interesting. I remember constantly requesting that the utility ET program clearly document where they were sourcing their technologies. We can continue to flesh out how best to document this link for other measures in the future.

Mike Casey—Did the field measurements encounter any ballast compatibility?

Steven Long—We did find some cases of ballast failure in the field, and this is part of how the ET study informed the program offering, because now we won't allow the incentive before checking the ballast type.

Alina Zohrabian—Did the field study collect lumen levels?

Steven Long—Essentially. Slide 17 shows the sampled values.

Annette Beitel—So, what was the rationale for using the 18 watt value?

Steven Long—I am not quite sure, since the language on slide 19 is all I have as far as explanations, but do keep in mind that there was a significant time crunch here.

Annette Beitel—I think it will be very important for you to find out why the 15 watt value was rejected before you come back. If there was a flaw in the field study design, we wouldn't want to repeat that flaw in this next stage of data collection.

Doug Mahone—We've had concerns for years that Commission Staff has been systematically biasing savings values towards the most conservative estimates. What is the origin of that guidance?

Jeff Hirsch—What we have done is require that the utilities either report what was actually done, or assume the lowest possible wattage for the replaced equipment and the highest possible wattage for the measure case. The reason we have done this is to incent the utilities to report what was actually done.

Armen Saiyan—So it sounds like Program Administrators are obligated to use that biased method for all programs that don't do pre and post verification.

Jeff Hirsch—Market data seems to point to the higher range, so we think its safe to go with the conservative assumptions. We have found evidence of this high



low range method being accurate in the custom projects. We think the wattage in the deemed market is likely to be significantly higher.

- ACT: SCE to present updated measure assumptions once fall field data is available.

## **VII. LADWP and Navigant ELRAM Methodology**

Armen Saiyan, LADWP; Gary Cullen, Navigant Consulting—

### **PowerPoint Presentation**

Gary Fernstrom—Did you do this analysis in regards to new construction?

Armen Saiyan—All construction, but this particular application excludes our new construction savings by designs program.

Paula Gruending—Did you discount naturally occurring savings?

Armen Saoyan—No. We only adjusted for the C&S attributions factor. Naturally occurring savings and non-compliance were left alone.

Steven Long—So does that mean that a fairly small amount was double counted?

Armen Saiyan—Yes, in '14-'15, we only double counted 7% of our savings, but that is expected to increase as our C&S potential decreases and our program reach grows.

Annette Beitel—So, in terms of claiming savings, you would basically just subtract the red from the blue across the portfolio?

Armen Saiyan—Yes.

Paula Gruending—Are you setting goals based on this?

Armen Saiyan—Yes. The proposal is to use this methodology to set goals for all POUs.

Doug Mahone—So, from the practical program point of view, what this does is allow you to claim savings from existing conditions baselines without having to



worry about double counting your claims, since you are subtracting at the portfolio level.

Paula Gruending—Some may argue that factoring in NOMAD would change the calculation to net.

Alina Zohrabian—You mentioned in your territory this is basically limited to custom projects. Is there any possibility of using it in the deemed arena?

Armen Saiyan—Well, the methodology actually uses the state's existing savings potential as determined by the whole set of IOU and POU deemed measures.

Tom Eckhart—Is the value unique to LADWP?

Armen Saiyan—The percentage is unique to us, since we do have a fairly young set of programs. Given the IOU's significantly more mature programs, I would expect the double counting potential to be closer to 20%.

## **VIII. Closing**