California Technical Forum (Cal TF)
Technical Forum (TF) Meeting #14
October 22nd, 2016
Pacific Energy Center

I. Participants

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

Steven Long, TF Member
Mike Casey, TF Member
Andy Brooks, TF Member
Tom Eckhart, TF Member
George Beeler, TF Member
Ryan Hoest, TF Member
Spencer Lipp, TF Member
Yeshpal Gupta, TF Member
John Proctor, TF Member
Armen Saiyan, TF Member
Pierre Landry, TF Member
Alina Zohrabian, TF Member
Grant Brohard, TF Member
Sherry Hu, TF Member
Ed Reynoso, TF Member
Martin Vu, TF Member
Gary Fernstrom, TF Member
Brandon Tinianov, TF Member
Mary Matteson Bryan, TF Member

Juliana Colwell, Southern California Gas Company (SCG), Presenter
Jesse Martinez, SCG, Presenter
Jia Huang, Pacific Gas & Electric (PG&E), Presenter
Andrea Salazar, EMI Consulting, Presenter
Rick Ridge, Ridge & Associates, Presenter

Janisse Martinez, San Diego Gas & Electric, SDG&E
Mike Myser, Energy Platforms
Linda Wan, PG&E
James Tuleya, PG&E
Brian Smith, PG&E

On the Phone
Bryan Warren, TF Member
Jon McHugh, TF Member
Mark Modera, TF Member
David Springer, TF Member
Bing Tso, TF Member
Christopher Rogers, TF Member
Doug Mahone, TF Member
Bruce Harley, TF Member
Srinivas Katipamula, TF Member

Chan Paek, SCG
Tim Melloch, Future Energy Enterprises

II. Key Decisions and Action Items

Laminar Flow Restrictor Workpaper

- ACT: Jesse Martinez and Juliana Colwell to report back to Technical Forum on cost and methods for validating DEER .7 NTG with empirical data.
- ACT: Consolidate Pressure Reducing Valve (PRV) and non-PRV steam use cases into one.
- **Workpaper approved**

Proposed 2016 Business Plan

- ACT: Cal TF staff to collect and maintain public repository of existing workpapers as part of Statewide Coordination work.

Final RPP Workpaper Presentation

- ACT: **Workpaper approved**
  - Values to be updated yearly with copy for posting on Cal TF public website.
  - Workpaper to note source of DEER freezer UES values not known and engineering equations suggest savings 17 – 18% higher than DEER.

III. Opening

Annette Beitel—Thank you for your patience as we had to change the order of some of our agenda items last minute. The CPUC Ex Ante Review Team will no longer be calling in for the Variable Refrigerant Flow discussion, so we will begin with SCG's Laminar Air Flow Restrictor presentation and then continue on to the proposed 2016 Business Plan.

IV. Laminar Flow Restrictor

Juliana Colwell and Jesse Martinez, Southern California Gas—

PowerPoint Presentation

Steven Long—What did you end up with for your EUL/RUL?

Jesse Martinez—The RUL will be 6.7 years per this group's recommendation about Energy Division staff guidance.

Gary Fernstrom—I see that you are using an NTG of .7. That means that 3 out of 10 have would have been installed regardless. Have you ever seen one of these installed outside of IOU programs?

Juliana Colwell—No, we have only seen these as part of our custom program.

Gary Fernstrom and Pierre Landry—It just seems that the default DEER NTG seriously overestimate free ridership on this measure.

Janisse Martinez—You have to look at your expected market penetration and really weight weather the extra cost of fine-tuning the NTG is really worth the cost of collecting new data.

Pierre Landry—Would a more accurate NTG help this measure's TRC?

Juliana Colwell—The TRC is already in the teens so further increasing it may not be cost effective.

Andy Brooks—We should also consider that manufacturers may step up their marketing now that the device is approved by OSHPD, so that may bring potential free ridership up some.

Martin Vu—Our main focus should be to get this approved under current Commission directions, which is the .7 NTG. Once the measure gets in the market, then the EM&V protocols and early M&V funding come into effect for fine-tuning the NTG and other parameters.

Jesse Martinez—This does have significant potential to become a high impact measure relative to SCG's entire savings portfolio.

Juliana Colwell—Especially since our early market potential study is probably conservative because of the proxy variables we used.

Annette Beitel—We will ask the SCG team to report back to the TF on the type of data that could be collected to validate the current DEER NTG for this measure and the estimated cost of that analysis. This may be important to pursue, if not for the individual measure TRC for the sake of properly accounting savings, including water savings.

- ACT: Jesse Martinez and Juliana Colwell to report back to Technical Forum on cost and methods for validating DEER .7 NTG with empirical data.

Excel Spreadsheet Diagram and Calculations

Juliana Colwell—In response to the group's questions about flow rate effects on hand washing time, we applied a .7 behavioral adjustment to the standard gallons per minute flow rate of faucets where the user does not have control over flow (foot operated and sensor controlled). The result is now our baseline flow rate.

Pierre Landry—Your hand washing time for patient rooms seems high. Where did you get it?

Juliana Colwell—It is a median value from a self-report survey conducted by Water Energy Solutions.

Steven Long—I had a similar question with regards to the hours of operations of clinics. Aren't some clinics not open seven days a week?

Juliana Colwell—That is true. However, that depends the type of clinic, and at this time we can't disaggregate that category.

Jesse Martinez—That may be something that we can incorporate in later revisions.

Andy Brooks—I don't see why there is such a discrepancy between the savings for equipment with and without PRVs.

Jesse Martinez—That was the reason why we initially proposed a simplified calculation approach; however, the TF did not agree with that proposal last month. The PRV creates differences in enthalpy and efficiencies.

Spencer Lipp—How much does ground water temperature vary across climate zones?

Juliana Colwell—CPUC data shows average yearly ground water temperature varying between 51 and 75 degrees.

Jon McHugh—Don't you think a simple first law analysis would be more direct and less subject to interpretation?

Jesse Martinez—The first law is used repeatedly in our calculations. We did review the spreadsheet you sent and incorporated your ideas in the calculations for the hot water case.

Jon McHugh—Ok. For the steam analysis, wouldn't be easier to do your calculations based on the recovery efficiency?

Jesse Martinez—So, if I understand you correctly, there is no difference in the steam case with or without PRVs?

Jon McHugh—Yes.

Group—Agreement.

- ACT: Consolidate Pressure Reducing Valve (PRV) and non-PRV steam use cases into one.

Annette Beitel—So, to summarize the group's feedback:

There were questions about the accuracy of the default DEER .7 NTG so we are asking Jesse and Juliana to come back to us with an estimate of how and with what resources that estimate could be refined. There were also questions about the hours of operation for some types of clinics. However, there seems to be

enough conservative assumptions throughout the rest of the calculations to make the group comfortable with leaving that assumption as is right now. Lastly, Jon McHugh had a recommendation for simplifying the steam application that will be incorporated to streamline the final workpaper. With that, does the Technical Forum affirm SCG's new Laminar Flow Restrictor workpaper?

Group—Yes.

- **Workpaper approved**

V. Proposed 2016 Business Plan

Annette Beitel, Cal TF Facilitator—

Proposed 2016 Business Plan and Working Log of Comments on Proposed 2016 Business Plan

Annette Beitel—What type of measures would the group like to focus on in 2016?

Steven Long—I would find value in the group focusing on more controversial existing measures. Things have gotten so difficult that we are now seeing whole programs, not just measures, being canceled. LEDs for instance. Also, some of the items on the uncertain measures list.

Tom Eckhart—Have you noticed any particular trends in workpaper review subsequent to our review of those measures? Is there any interest at the CPUC staff level on any particular type of measures?

Annette Beitel—Our experience has been that the CPUC Ex Ante Review team does not find fault with the Technical Forum's review of measure. What they usually do is request for more or different data.

John Proctor—I believe residential customers are not getting the value they are paying for with the energy efficiency dollars. California program are disproportionately focused on industrial and commercial customers. HVAC is still the most significant percentage of load. We should focus more on both residential and HVAC measures.

Brandon Tinianov—I would add some nuance to John's comments and say that reducing the cooling load should be one of our chief goals. That means building envelope measures in addition to HVAC efficiency.

Gary Fernstrom—I too echo John's call for more focus on residential measures.

Pierre Landry—In response to John and Gary's comments about the benefit for residential customers, they *are* getting the benefit of reduced load and deferred power plants that come from the more cost effective industrial and commercial programs.

Tom Eckhart—In light of Pierre's comment, I will say that the NW RTF recently suspended several residential HVAC measures. It's not just about adding new measures; it's also about making sure existing measures perform.

John Proctor—While that is true, I still believe that there are valid equity concerns here. Especially since residential programs they may never measure up if we continue to measure them according to the same commercial and industrial metrics. We need relevant and correct methods for validating savings from residential measures.

Steven Long—One of our most important programs, Home Energy Upgrade California, is a residential initiative. It isn't necessarily cost-effective, but it i mandated by the Commission exactly because of those equity concerns.

Armen Saiyan—LADWP also maintains residential programs for equity reasons.

Gary Fernstrom—Lastly, I do think that AB 802 will create a need for To Code measures. That is definitely something this group can help with.

Annette Beitel—On Statewide Coordination, would the group find value in having our staff collect and post the currently active non-DEER workpapers currently in use? This would be in addition to the list we already maintain. There is currently no public repository for non-DEER workpapers.

Group—That would be hugely helpful.

- ACT: Cal TF staff to collect and maintain public repository of existing workpapers as part of Statewide Coordination work.

Steven Long—It just needs to be done in a way that prevents version control issues.

Pierre Landry—Why do you think the ISP issues would be such a big undertaking?

Steven Long and Grant Brohard—There is huge variability and complexity in the process of developing ISP studies.

Pierre Landry—Exactly. To me it is a process, not substance issues. It would be a matter of developing, or improving, a protocol.

Armen Saiyan—In terms of the request to review custom projects, it seems like a lot of added work. How many are we talking about?

Annette Beitel—We absolutely could not review individual projects. What we *could* do is a best practices analysis to recommend process improvements. I also think that in addition to that, measure complexity is a huge thing we need to close out next year. What else should we focus on in 2016?

Martin Vu—I think procedural problems are huge. One-year times for developing new measures should be unacceptable.

Annette Beitel—Definitely. We really hope our DEER Alternative project will address that current shortcoming.

Armen Saiyan—I imagine the pass through of the 125 IOU workpapers would be just for the initial implementation?

Annette Beitel—Of course.

Steven Long—When you say that in other jurisdictions the Commissioners approve the measures, what is the basis for that type of approval?

Annette Beitel—The best practice in that respect is that consensus agreement is reached via a technical collaborative where Commission staff participates. General consensus, or even consensus with a few particular objections from staff or particular interveners, sends strong signals to the decision maker about the technical merit of the measure parameters.

VI. Final RPP Presentation

Andrea Salazar, EMI Consulting; Jia Huang, PG&E—

PowerPoint Presentation

Room Cleaner Power Factor Update

John Proctor—In the calculations right now, are we considering the power factor of any product?

Grant Brohard—PG&E does have minimum power factor requirements for any of ourproducts.

Andrea Salazar— The RPP program will not be counting power factor savings from any of the products.

James Tuleya—The point about possible power factor benefits is well taken, and it *is* something to consider including in the national program strategy in the future. However, it is just not a priority at this point.

Clothes Dryers Update

Andrea Salazar—DEER savings values for freezers are consistently lower than values calculated with engineering calculations. However, I believe PG&E will choose to use the DEER values per Commission guidance.

Armen Saiyan—That does follow the decision rules we have approved for the entire RPP program in the past.

Tom Eckhart—What is the control sequence on the gas dryers?

Andrea Salazar—Just to be clear, we will not be claiming any electric savings from gas dryers.

Tom Eckhart—That's what we too have been forced to do in, since we could not find a way to measure the moisture reductions.

Gary Fernstrom—I think the answer is that there are no notable electric savings in currently available equipment. However, there are still things we could do to standard gas dryers to create significant energy savings. For instance, change the glow bar. I also think that defining this measure to not include electric to gas switching really limits the savings potential.

Grant Brohard—However, the CPUC's policy manual currently limits our ability to pursue fuel-switching measures.

Annette Beitel—How would you operationalize clothes dryer fuel switching in a mid-stream program?

Gary Fernstrom—The idea works best for new construction.

Steven Long—What about heat pump dryers?

Gary Fernstrom—That is definitely the future hope for electric customers; however, heat pump clothes dryers are still about twice as expensive as traditional electric dryers.

Sound Bars CF Update

Alina Zohrabian—I believe the adjustment factor used by ED was an average of the Nielsen data.

Armen Saiyan—So that basically means that Northern California watches significantly more TV than the rest of the state?

John Proctor and Gary Fernstrom—The value you are being directed to use by ED is hard to understand. We recommend that if you have access to the actual data you document how the CPUC-directed value differs from the empirical data.

John Proctor—There was a study that direct metered a good number of TVs in the Northwest.

Spencer Lipp—It seems like the Nielsen data showed some regional differences in coincidence factor for TV viewing.

Jia Huang—Quite the opposite actually; There was no significant difference in California and national TV watching patterns.

UES Values

Gary Fernstrom—I thought the question on freezers last month was whether they were in conditioned spaces or not.

Andrea Salazar—The analysis that you asked us to perform appeared to show that the interactive effect values DEER uses for freezers seem to be the ones used for CFLs.

Grant Brohard—I believe the DEER team's explanation for that is that there would still be a common wall between the conditioned and un-conditioned spaces.

Group – Did you find documentation for DEER UES values for freezers? How do the results of the engineering equations compare to the savings in DEER?

Andrea Salazar – We could not find the source and assumptions for the DEER UES freezer values, nor could we replicate them. It appears that the CFL interactive effects may have been applied. The savings resulting from engineering equations are about 17 – 18% higher than the DEER UES values for freezers.

Advanced Tiers

Annette Beitel—How did you pick 5%?

Andrea Salazar—It is an ambitious value that still allows some models on the qualified products list to meet the standards.

James Tuleya—There is a nationwide effort underway to define a most efficient ENERGY STAR efficiency for freezers, and the expected value from that effort is also 5%.

Annette Beitel—So, before we move on to addressing the discrete questions from Energy Division, let summarize the RPP team's proposal and see what the TF is willing to approve:

Is the Technical Forum ready to affirm the proposed plan to update all workpaper parameters on a yearly basis?

Group—Yes.

Annette Beitel—On unit energy savings, the only objections we've had on the UESs have been to the DEER freezer values, since the RPP team was unable to find the DEER documentation for those values. It seems like the group may want to recommend that engineering equations be used instead of DEER values, since those would be more transparent and can be documented.

Group—That would be a change from the value prioritization rule set we approved earlier along with the program logic.

Gary Fernstrom—It's one thing to say to follow DEER when we can't see where the estimates came from, but at least they make sense. These freezer values don't make sense at all.

Pierre Landry—But we do need a consistent approach for selecting data from now on.

Steven Long—I would say that you could arguably question every DEER value, but the CPUC staff directive is still to default to those when available.

Martin Vu—Our recommendation should be to use DEER, document that those values don't make sense, and then formulate path forward for the Cal TF to provide input on improved future values.

Steven Long—I recommend that the workpaper follow the original path, where DEER values are the default data source when available, but document this debate and our observations that the freezer values are incongruous and impossible to understand.

Group—Agreement.

- **Workpaper approved**
  - Values to be updated yearly with copy for posting on Cal TF public website.
  - Workpaper to note source of DEER freezer UES values not known and engineering equations suggest savings 17 – 18% higher than DEER.

Annette Beitel—The next set of slides were prepared by the RPP team in response to questions posed by Energy Division.

Rick Ridge, Ridge & Associates—

<u>Continued PowerPoint Presentation</u>

Pierre Landry—Is this EPA-led nationwide evaluation framework coming up with metrics that will then be used by all the administrators?

Rick Ridge—Yes. There will be cost and data sharing. ICF will be that data service provider.

Pierre Landry—So in the national effort PG&E could get credit for savings in Edison's territory?

James Tuleya—Yes, in the nationwide effort, but Energy Division can then simply strip off the savings outside of each IOU's territory. This is all still being worked

out, but maybe what we do is just divide by percentage of load, or some other way so that none of the credit is lost.

John Proctor—This is very complex. It seems that the savings are real, and this is an attempt at taking some of the ambiguity off the ex ante numbers.

Pierre Landry—I think the attribution is what is fussy.

John P—Actually, I think the magnitude of the savings is what is unknown, and we are trying to estimate that magnitude roctorthrough this complex process.

Armen Saiyan—You're kind of pre-empting naturally occurring adoption.

Pierre Landry—How are you allocating the data services provider costs?

James Tuleya—Each program administrator is contracting with ICF individually. We anticipate similar approaches for other costs.

Metrics

James Tuleya—This subset of metrics was selected to be representative of how success can be measured across the entire program in the mid- and short-terms.

Rick Ridge—We will use the results as measured by these metrics to continue to update the model inputs. All these indicators are embedded in the logic model itself.

Steven Long—On outcome B, do you think it may be worth considering the impact/magnitude of the effect of a standard?

James Tuleya—That makes sense, but in the short term we're really looking to just have any effect at all.

Annette Beitel—So, does the Technical Forum approve the first year RPP workpaper with the UES values recommended earlier in this discussion?

Group—Yes.

- ACT: **Workpaper approved**

VII. Upcoming Technical Position Papers for December Approval

DEER Alternative

Mike Myser—I see in the proposed business plan that Cal TF staff plans on working with DOE to develop the TRM platform. Does that mean you are no longer open to using commercially available tools?

Annette Beitel—Not necessarily. However, the subcommittee does think it is important for the platform to be an Open Source tool and so far have not found any commercially available products that meet that requirement.

Mike Myser—Ok. Are you aware of the data-management RFP recently released by CPUC staff? I think that may change this plan somewhat.

Annette Beitel—Yes, I have reviewed that RFP. It is actually a request for a data management consultant, not tool, so we don't think it could be used to contract for the actual platform.

Savings To Code

Alejandra Mejia, Cal TF—

PowerPoint Presentation

VIII. Closing

Annette Beitel—Thank you all for your active participation throughout the day. Our last meeting of the year will be here at the PEC on December 3rd. We will have Assemblyman Quirk join us for the entire meeting, including a lunch discussion with him, and we will have a small end of year celebration afterwards. We are really looking forward to seeing as many TF members here in person as possible.