

Minutes of the second meeting of Demand Forecast Advisory Committee
June 26, 2014.

Attendees:

In person: Bud Tracy(citizen), Terry Morlan (citizen), Jess Kincaid (ODOE),
Tomas Morrissey (PNUCC), Massoud Jourabchi (council) , Tom
Eckman(Council)

Online: Grant Forsyth (Avista), Ham Nguyen (PGE) Villamor Gamponia (PSE),
Bryan Lanspery (Idaho PUC), Barr Smith (Idaho Power), Brad Snow (Idaho
Power), Robert Downese (Seattle City Light), Sarah Gurvinder (PSE), Tom
Payant (Snohomish) .

Jourabchi started the meeting at 1:35 PM with a greeting and round of
introductions. He then went over the agenda items shown below and asked the
committee if there are any suggestions for modification to the agenda. No
suggestions were made.

Jourabchi, then discussed the reason behind having the items in the agenda.

- 1. Impact of Federal Standards on future loads**
- 2. New data on load shape of appliances**
- 3. Next steps in 7th Plan development**

He thanked BPA for sponsoring the impact assessment of the federal standards by
hiring Navigant consulting. The research measured impact of new appliance
standards that have come into effect since completion of the 6th Power Plan.

Jourabchi stated that Council will make available the assessment tool to the region
so that forecasters can use this information in their analysis. He then invited Tom
Eckman to start the second item on the agenda.

Tom Eckman went through the slides prepared. Link below will take you to the
presentation material Tom Eckman used.

<http://www.nwcouncil.org/media/7111693/dfac-june-26-2014-presentation-material.pdf>

Tom's presentation covered a brief walk through the different mechanisms
available to increase savings/efficiency. These mechanisms include market forces,
codes and standards, market transformation and utility programs. He then took the
participants through a history of federal standards since 1970s. He then presented list
of appliances covered under standards. He mentioned why federal standards are an
effective means to get savings at lower cost, larger savings, and more equitably.

Tom then went through a few examples of improvements in efficiency for refrigerators, freezers, dish washers and clothes washers. All these appliances have experienced significant drop in use since 1980s.

Grant Forsyth asked would these standards replace some of conservation efforts. Tom Eckman indicated that it may be the case, but that utility programs would still be needed to keep the markets moving forward.

Jourabchi mentioned that there is a distribution around the efficiency, or Use per year figures shown in the graphs and that standards removes portion of the distribution that is less efficient. There is always going to be a distribution of options available to the customers and utility programs can help push more of the market to the more efficient section of the distribution.

Tom Eckman then continued with showing impact of standards. Standards passed (prior to 2010) have lowered the regional loads by about 2300 MWa, and these savings have contributed about 20% of cumulative regional savings since 1985. Tom then showed the list of 24 appliance standards that come into market by 2017. The list is growing and by the end of 2014 there are another 5-10 standards coming.

Tom then described the analytical approach that was used. There were a few clarifying questions regarding fuel switching impact of the standards. Tom indicated that DOE looks into this issue as part of standard setting process. Ham Nguyen asked how data was collected for the analysis. Tom indicated that either prorated national data was used or in the case of lighting regional lighting distributed were surveyed to get data on lighting equipment.

Tom then went through a number of slides measuring impact of new federal standards that were not part of 6th Plan. The results show that in the short-term there will be very little savings attributable to the standards, but that in the medium and long term the savings are very significant. Over 350 MWa of savings by 2029, and 280 MWa of savings in Commercial and Industrial sectors are projected. The biggest single item of savings is savings from transformer improvements.

Bud Tracy, asked about sizing the transformers Tom mentioned that care was taken not to double count the savings from transformers. In the calculation of savings from transformer improvements, the net (loads net of the savings from other appliance standards) was feed in the calculation of transformer savings.

Tom then talked about lighting standards, these standards are expected to generate about 150 MWa of savings by 2029. These standards are expected to have the greatest short-term impact of about 62 MW 2010 and 2014 and 65 MWa between 2015 and 2019.

Tom noticed that the labels on the two graphs in slides 70 and 71 graph should have read 2015- 209 instead of 2010-2014. [The labels were corrected since the meeting].

Tom then discussed the implication of these savings on the Seventh Plan. It is expected that load forecast would be lower particularly in the long term. Tomas, Bud and Terry discussed the impact on forecast load.

Villamor commented that the presentation on impact of savings on load forecast has been very useful and that they have hired outside consultant to incorporate impact of standards in their load forecasting work.

Jourabchi then thanked Tom for his presentation and reiterated that goal of the Council is to make the analytic available to the region so utilities could incorporate savings from the standards in their work.

Next item on the agenda was New Data on load shape of appliances and the capacity impacts of energy efficiency. Jourabchi asked Eckman to present the findings on the new load shapes.

Tom then went through the presentation, showing that although Northwest system daily load profile has not changed significantly since 1995, after adjustment for weather, the underlying appliance load shapes have changed. Tom then went through history of load shape studies in the region, mentioning that the only significant study was done in late 1980 to early 1990s under the ELCAP study. The latest study was part of Residential Building Stock Assessment 2012-2013 where a number single family residences were metered.

Tom showed comparison of the ELCAP load shapes and the new load shapes for residential electric water heating, refrigerators, ductless heat pumps and residential lighting. In almost all cases the energy and contribution to system peak show a flattening of load shapes. Tom then estimated peak impact from these appliances with ELCAP load shapes and with the new load shapes. The analysis shows there can be serious over estimation of peak reduction impact if one uses the ELCAP load profiles. Tom called for help for further studies on load shapes expanding the new study to more appliances and sectors.

Jourabchi thanked Tom Eckman for very data rich presentation.

The next item on the agenda was the Next Steps. Jourabchi, talked about update on the Seventh Plan timing, update on economic drivers of the seventh plan, how the federal standards are going to be incorporated in the long-term model and the topics for the next DFAC meeting. In terms of key drivers to the plan he mentioned that there has been little changed since last year. He went through brief discussion on population growth in the region, commercial floor space additions and projections of manufacturing output and natural gas prices. on the

natural gas prices, he mentioned that based on recommendations from the Natural Gas Advisory Committee range of future prices has been widened.

Ham Nguyen asked if the low end and high end of the range were widened to the same degree. Jourabchi responded that the low end of prices and high end of price increase were not widened to the same degree. The lower end of prices was kept around \$3.5 per mmBtu while the high end of the range was increased to about 10 dollars.

Jourabchi then discussed how the federal standards will be incorporated in the long-term model.

The last items on the agenda were the potential topics for the next meeting. Next meeting very likely will be on October 2014 and will address rooftop PV, data center load growth, electric vehicle loads, indoor growing operation loads as a result of Washington state's I502.

Jourabchi thanks all the participants.

Meeting ended at 4:00 PM.