

Meeting Summary
NorthWestern Energy Electricity Technical Advisory Committee
Helena, Montana
December 7, 2016

| Table of Contents | Page Numbers |
|--|---------------------|
| 1. Attendance | 1 |
| 2. Review of 2003 ETAC’s Charge, Mission, and Ground Rules | 2 |
| 3. 2017 ETAC Meetings Discussion | 3 |
| 4. Review of Plan Development | 3 - 4 |
| 5. Discuss Timeline | 4 - 5 |
| 6. Timeline Topics | 5 - 7 |
| 7. Topics for the 2017 Plan | 7 - 9 |
| 8. 2017 ETAC Next Meeting Discussion | 9 |
| 9. 2017 ETAC Follow up Discussion | 9 |

1. Attendance

Those participating in or attending the Energy Electricity Technical Advisory Committee (ETAC) meeting in person or via the web and by teleconference included:

| Name | Organization |
|-----------------|--|
| Beki Brandborg | ETAC Facilitator |
| Chuck Magraw | Natural Resource Defense Council |
| Brian Fadie | Montana Environmental Information Center (MEIC) |
| Frank Bennett | NorthWestern Energy |
| John Bushnell | NorthWestern Energy |
| Luke Hansen | NorthWestern Energy |
| Joe Stimatz | NorthWestern Energy |
| Diego Rivas | Northwest Energy Coalition |
| Patrick Barkey | University of Montana - Bureau of Business and Economic Research |
| Thomas M. Power | District XI Human Resource Council (via web and telephone) |
| Brian Dekiep | Northwest Power and Conservation Council |
| Mike Dalton | Montana Public Service Commission (MPSC) |
| Jamie Stamatson | Montana Consumer Counsel (MCC) |
| Will Rosquist | MPSC (via web and telephone) |
| Paul Schulz | MCC |
| Al Brogan | NorthWestern Energy |
| Jeff Blend | Montana Department of Environmental Quality (DEQ) |

2. Review of 2003 ETAC's Charge, Mission, and Ground Rules

In the 2003 document about the ETAC's purpose and role from Gerald H. Mueller / Consensus Associates:

– “NWE formed the Advisory Committee in response to a default supply order issued by the Montana Public Service Commission (PSC). The order directed NWE to ‘openly communicate with stakeholders...’ and ‘to the greatest extent possible, (use) transparent resource planning, management and procurement processes’ NWE therefore invited representatives of those stakeholders that regularly participate in PSC rate cases to serve on the Committee to work with NWE to carry out its default supplier role.”

– “At the initial meeting on September 5, 2002, the Committee agreed that its purpose ‘is to provide advice to the NorthWestern Energy about the acquisition of an electrical supply for its default customers. The ground rules also provide that ‘The Committee will strive to provide advice to NWE by consensus that is all members should be able to live with the advice. When consensus is not possible, the nature of the disagreement should be noted.’”

Statement – ETAC has since dropped consensus in favor of offering advice. Consensus should be dropped.

Statement – Government employees should not have to vote or have group consensus on issues they may have to decide.

NWE – Agreed, participation should be in good faith. We need good advice from the group.

Statement – At one time the group committee did send recommendations to the company on the planning process as a group consensus.

Statement – Yes, the Red Book on least cost planning rules.

Question – What is NWE going to do for ETAC to improve information and engagement needed?

Answer – NWE fell short last planning process. The goal is to get information to ETAC at least one week prior to the meeting. Meetings might have to be rescheduled to allow for review of materials.

Statement – Good faith works in both directions. We need to fix times and plan meetings to avoid the short time notices of the past.

Facilitator – What worked well in the past and what needs to be improved?

Answer – One week advance with pre-scheduled meetings will help.

Statement – For ETAC to play its role, it needs a complete copy of entire plan to allow for appropriate comments, and then NWE needs to address those comments. Meetings were good but there was no appropriate review or discussion of plan.

3. 2017 ETAC Meetings Discussion

Facilitator –

a. In 2015, what went well about our process? What aspects did we appreciate?

Answer – NWE’s pattern is to submit the plan to the public and then receives MPSC comments before work on the next plan usually one year which is not enough time. NWE should begin immediately after the plan to begin the next plan, working in comments as they are received.

b. About our process in 2015, what could have been better? What challenges did we experience?

– Canceling and postponing meetings.

– The cycle felt crammed, including the comment process with the PSC, into one year.

– Decisions were made without the input of the ETAC members.

c. What specific improvements with the process do we want to commit to for the 2017 planning process?

– NWE is asked to provide information in preparation for upcoming meetings at least one week in advance of the meetings.

– A consistent schedule of meetings, and the avoidance of postponing meetings, are requested.

– It is requested the ETAC have the opportunity to review the entire draft Plan and an opportunity provide feedback – before its submission.

– The planning process time line needs to be extended, and begin immediately after the last process.

– It is requested that all decisions and important issues be aired with the ETAC, and an opportunity be provided for the members’ opinions to be heard.

4. Review of Plan Development

NWE – Updates and forecasts are needed and take time. April is when we have load updates and any problems with the forecasts force changes to the process. Our South Dakota plan was recently filed and that takes part of Energy Supply’s time in that we do file a plan each year (South Dakota in even years and Montana in odd years). The final loads are available in May or June which causes the trickle down issues. We may not wait for future MPSC comments.

Statement – The planning process operates in a measured manner over a two year period that also resets the QF rates and Dockets. This does not work and results in outdated QF rates which is why there was a recent rate freeze. There needs to be a separate QF process to be more nimble or there needs to be a more flexible planning process.

NWE – Yes. NWE will have a new QF filing with this plan. As long as problems do not arise our goal is to have more review time in this cycle.

Statement – Member is uncomfortable with plan in a one-year time frame even though the current forecasts are an issue. The big picture items like resource adequacy or capacity contribution need group review to work through and would be a benefit leading up to other forecasts.

NWE – ETAC will update the timeline as we proceed. NWE understands that ETAC did not have the input they would like on items.

Statement – The concern should not be a focus on deadlines but on facilitating with the group. ETAC wants input on important subjects and ideals that go into the plan. NWE needs ETAC input and should consider ETAC for all aspects of the planning process.

Statement – The planning is every other December and after it is submitted to the MPSC there is a one-year gap before addressing the new plan.

1. Is ETAC and NWE using the time efficiently? Can we spread time across for bigger issue items?
2. Maybe the big issues only get confronted on the tail end but ETAC sometimes losses out to other issues like the Hydro acquisition. Sometimes this has to happen because of the environment or outside forces that make it hard for ETAC to impact those issues that need to be handled by a deadline.

Statement – ETAC should take on issues like DSM in discussions because in the planning process they do not always come up. The big issue items can be addressed by an ETAC sub-group similar to the past with Lands resource definition items.

NWE- Agreed, technical issues should be addressed right away. Energy Supply does not wait a year, they file a plan each year.

5. Discuss Timeline

Facilitator – Any additional suggestions?

Statement – ETAC is concerned about the DSM assessment and needs to see a draft for comments.

NWE – The DSM assessment was returned for capacity to be addressed in the review and some other issues. They will work capacity into the report which will cause a delay. It will be out.

Statement – The time chart should have fixed ETAC meetings scheduled and an updated timeline should be added.

Questions – The Capacity RFP doesn't appear in the timeline. Is ETAC going to be brought in to the conversation with this? This is important, like capacity build or capacity owned to serve peak load. ETAC should discuss the characteristics.

NWE – Accion has been approved to run the RFP. The goal is to have it completed ASAP. ETAC will receive a draft form of the RFP for review.

Question – ETAC should be fully informed about how it will work.

NWE – There will be discussion perhaps by email or webinar. However the process should be discussed.

Question – ETAC process in page 2, section 1.1.2, NWE opted not to include electric suppliers, but does that need to be revisited? There is good reason to see both sides of the argument.

NWE – Will think about that issue as well as other parties' participation for our next meeting.

Question – Should ETAC propose the issue or should NWE?

NWE – Email to NWE and that will be used to meet with the VP's to discuss.

Overview – Refer to the timeline with the on-going hydro study. Perhaps a January ETAC review.

6. Timeline Topics

Question – Is this the hydro optimization study?

NWE – Yes. The timeline (reviewed) reflects just the nuts and bolts issues. Big issues are next.

Question – The outline is silent on owned vs. purchased resources or specific units vs. market. Is this outside of the plan or should ETAC provide analysis?

NWE – It will be bilateral negotiation for capacity but no decision on market.

1. Future resource needs need to be nailed down. Trend looks to be thermal is a stretch if you say they all will be, however the RFP will determine what it is by developer participation.
2. As far as market vs. owned, the plan is just to identify what is needed. The RFP results will determine market vs. owned or other options.

Question – The six month to one year articles indicate lower PPA prices and EIA reports wind in the \$30-\$35/MWh range so should these generation sources replace the portfolio analysis in the direct comparison?

NWE – Analysis performed in the last plan utilized double wind and 3 times the amount of wind and turned to capacity. There is a sense of urgency for resource adequacy in the future in light of announced coal plan closures and continues ISO development.

Question – In the timeline the RFP is January through May but DSM within the same period is good. Is the plan fully utilizing those resource possibilities? It seems the timing is off for doing a DSM assessment ahead of time.

NWE – Demand may displace some capacity in an RFP but NWE is 400 MW short so there is not enough DSM to displace the portfolio need. Resource adequacy is close in SD but MT is extremely short and is way behind the curve.

Statement – Yes, the portfolio is deficient but with hydro and market; looking forward the coal closures will cause questions. Energy is available [from the market] but future capacity is questionable, 8 to 12 years is a probability.

Question – In meeting reserves, will we will need to get to a reserve margin?

NWE – Generally yes, but not in the short term future. Our level of resource adequacy would not work in an ISO or regional area that normally requires an approximate 12% margin and 75% of need covered with long term resources. In MT we are meeting our planning reserves month to month and day to day.

Question – How do we look at energy storage or a Gordon Butte type of ancillary resource in terms of affordability and reliability?

NWE – Hopefully we will see these types of projects bid in our RFP and they can be modeled.

Question – The timeline reflects April to July for regional EIM potential study benefits and analysis how or what is it going to impact as far as prior topics.

NWE – The study is going on and will look for cost/benefits to inform us only to an extent. There are other considerations for NorthWestern's customers and other stakeholders beyond the cost/benefit analysis. Any decision to join the EIM will have an impact only on within the hour dispatch. It will not define the overall need for capacity like participation in a full market would.

Question – Is NWE talking with CAISO or looking to form a separate RTO for a better fit?

NWE – NWE is following the current RTO activity of PacifiCorp and CAISO but is not directly engaged in that process

Question – Within the 20-year plan horizon the process to join EIM could be modeled. Does NWE know the cost benefit analysis around a decision that would play into the plan?

NWE – NWE will evaluate that at the time any decision is made but for the plan over a 20-year horizon, an RTO is more important to our portfolio of resources. EIM participation would not be a significant driver of the need for capacity.

Question – You need to be resource sufficient to join EIM, so would NWE need to change operations to more long term?

NWE – Yes, we would need to change operations somewhat to participate in the EIM. However, NWE within-the-hour needs are similar in an EIM to the needs outside an EIM.

Statement – Optimal resource expansion needs to be an issue discussed before the RFP but it is not in the timeline for ETAC.

NWE – As mentioned the timeline is just nuts and bolts. These, and other issues need to be taken up with ETAC; thoughts about the region, ISO development and whether or not NWE joins, and other issues.

Statement – Que that one up for discussion or does NWE want to point that out for an ETAC response? ETAC should take that up.

Question – Given carbon cost and current environment, are we going to change the plan?

NWE – Discussion on that topic should be during the middle of March to address it.

NWE Request – ETAC should submit ideas on resource costs or technology cost that members can make us aware of.

7. Topics for the 2017 Plan

Question – Is there a plan to discuss transmission costs for a plant?

NWE – NWE will discuss new infrastructure with the transmission group.

Question – Battery storage is not on the list?

NWE – That was an inadvertent error, battery storage will be on the list.

NWE question – Does anyone have comments on load or price forecasts?

1. Focus on length of time horizon and DSM with consumption. We do have electric cars and bitcoin uses a large amount of energy.
2. We need the discussion on DSM and computer data centers. The Washington Public Utility District's costs are changing fast, and that might need a study.
3. Community solar is another level of values to have on the list.

Question – Is NWE comfortable with its load forecast over the last several years?

NWE – Yes. Lawrence Berkeley Laboratory published a study on utility load forecast performance and NWE's forecast performed best among peers. NWE will search for that study and send it to ETAC. [study was sent to ETAC on 12/18/2016]

Statement – It would be helpful to define environmental considerations. The MCA and MPSC rules on carbon offsets for coal and natural gas was not discussed in the 2015 plan for modeling costs used.

NWE – NWE will review. On DGGS the MPSC limited the offsets and what was evaluated and for how long. Believe a 1-year offset was ruled on and preapproval of gas resources only.

Question – Is there feedback between the regulators and the market?

NWE – Yes. NWE believes that the costs of environmental regulation are imbedded in electric market prices.

Question – Does PowerSimm differentiate between a company owned or third party asset when determining an optimal plan ? The uncertainty or risk of resource defined vs. market energy as opposed to long term resources.

NWE – The RFP will determine if what resource is selected, [all other things being equal] the least cost resource will be selected.

Question – When does ETAC get plugged in to the RFP process to compare different resources and then go after them in the RFP or is it outside the plan?

NWE – While the RFP is a result of the last Plan, it is outside of the current planning process.

NWE – It is important to discuss the future of NWE and future Pacific Northwest capacity needs, and weigh the risk of continuing to rely on the market for capacity. The first step will be to discuss the on-going process.

Statement – ISO standards may set the capacity contribution of intermittent resources and impact renewables in the plan. This occurs in South Dakota where NWE operates in the Southwest power Pool. While SPP does not directly impact MT, we need to pay attention to it.

Question – Will NWE do a more robust method for determining intermittent resource capacity contribution or keep it the same?

NWE – That decision will be informed by the Commission’s decision in the current QF-1 Docket (D2016.5.39).

Question – Will NWE model ancillary services to meet the BA and discuss them in the plan? How does it enter the plan or how does NWE decide on analysis whether to include it in, or to leave it out of, the plan?

NWE – The plan identified resources with ancillary service benefits. Load following is in a gray area but not like EIM, and Basin Creek or a CT might address that.

Question – ETAC doesn’t understand how the model picked flexible resources or how we put it in the model. Do you compare hourly and fuel costs?

NWE – Model characteristics and heat rate make the plant efficient in the hourly market and more cost effective. That would make them the least cost compared to capacity only.

Question – How did we model the intermittent renewable generation and regulation requirements?

NWE – Ascend modeled the integration of intermittent resources on a sub-hourly basis to develop NorthWestern’s portfolio capacity needs. This analysis was performed on CPS2 as there wasn’t enough information to include under the RBC regulation.

Question – What impacts do plan for with an ISO?

NWE – Our estimate is that an ISO will develop within a 20 year plan and that will impact what resources are needed. There was stability in the region over the past 15 years but now there is significant expansion of CAISO. A tipping point causes a quick shift and that might provide a 5 year window. If NWE is outside of an RTO that would cause considerable problems. This is why NWE entered SPP in SD.

Statement – The Western Energy Board discussed a CAISO push back from states due to a lot of worry about it from a resources perspective. Fear of any quick action may slow adoption.

Question – Why is PacifiCorp joining CAISO?

NWE – The benefits for a customer is greater than through an EIM with the reliability of a wider BA.

Statement – Heard that it was pushed by Berkshire Hathaway in an effort to build transmission.

Statement – NWPCC is reevaluating its Loss of Load Probability (LOLP) and changing its analysis. Information downloads for ETAC will need to be broken up in workable bites.

Statement – Rules are changing for Reliability Based Control (RBC). Frequency response is at 100% on December 1st for a 12 month review with the Northwest Power Pool (NPP) frequency group.

Statement – General discussion about modeling and portfolio construction is important to ETAC. ETAC has lots of information so any overlap will need to be covered through issues discussed.

8. 2017 ETAC Next Meeting Discussion

A preference was given for more regularly scheduled meetings.

ETAC will meet monthly through April then break for modeling and drafts and realizes that January and February are questionable with the Legislature.

January 26th for ETAC meeting or webinar.

March 8th for ETAC meeting or webinar.

9. 2017 ETAC Follow up Discussion

Question – Will the capacity situation be discussed in the future? To get effective feedback ETAC needs a full draft of the plan.

NWE – Yes, following ESB review, ETAC will have about 3 weeks for comments.

Statement – Seems more appropriate to give ETAC review then management review to avoid unlikely changes due to institutional reasons.

Statement – ETAC does not normally see a full draft and it is hard to make any meaningful comments about the draft plan before it is filed with the MPSC.