

Meeting Summary
NorthWestern Energy Electric Technical Advisory Committee
Butte, Montana
September 14, 2017

Attendance

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

Name	Organization
Beki Brandborg	ETAC Facilitator
Brian Fadie	Montana Environmental Information Center (MEIC)
Frank Bennett	NorthWestern Energy (NWE)
John Bushnell	NWE
Luke Hansen	NWE
Joe Stimatz	NWE
Diego Rivas	Northwest Energy Coalition (NWECC)
Mike Dalton	Montana Public Service Commission (MPSC)
Jamie Stamatson	Montana Consumer Counsel (MCC)
Mike Babineaux	NWE
Jonathan Pytko	NWE
Bill Thompson	NWE
Jim Williams	NWE
Thomas M. Power	District XI Human Resource Council (HRC)
Brian Dekiep	Northwest Power and Conservation Council (NWPPCC)
Chris Pope	Consumer at Large
Jeff Blend	Montana Department of Environmental Quality (DEQ)
Sarah Norcott	NWE
Todd Guldseth	NWE
Tom Wilde	NWE
June Pusich-Lester	NWE
Dan Lloyd	DEQ
Eric Sayre	NWE
Danie Williams	NWE
Ella Caillouette	NWE (via phone)
Bleau LaFave	NWE (via phone)
Brad Layton	UM – Energy Technology Program (via phone)

Agenda

1. ETAC Membership / Expectations
2. Demand Side Management (DSM)
3. Update on CREP RFP
4. Commission Notice of Commission Action and Notice of Receipt of Report and Opportunity to Comment in Docket No. N2015.11.91
5. Net Metering Study
6. Load Forecast Methodology
7. Timeline / Process Check
8. Future Meeting Dates

Meeting

NorthWestern mentioned that ETAC has a new member, Brad Layton from Missoula College. Brad introduced himself as former director of Energy Technology Program at Missoula College. He is the founder of a company called Integration Energy.

1. ETAC Membership / Expectations

ETAC is an advisory committee to help NWE make changes to the plan before it is published. ETAC has been around since the late 1980s. Two ETAC members have been on ETAC since the beginning (one was on PSC staff then).

An ETAC member's editorial was discussed.

The writer responded that he would stand by what he wrote in the editorial, that it was factually true, and that there may have been disagreements on how the information was framed. The writer respects differences of opinion and looks forward to continuing his efforts with ETAC.

The planning process has been similar throughout the years, but modeling was simpler back then. Now conditions are changing faster than we can change the model to reflect them. NWE is trying to get ahead of the curve. This is really a good time for stakeholder involvement in the process because things are changing really fast.

ETAC Comment - NorthWestern should try to create an environment where things are as open as possible and members can let you know what they and their organizations are thinking and not divulge this later to the media. But no one is giving up their right to talk to the press.

NorthWestern added that as part of the ground rules ETAC members should participate with frankness and candor and not misrepresent topics in the media. It is the responsibility of each ETAC member to use all information and not eliminate portions to push a political agenda.

ETAC Comment – The way things were phrased in the plan were ambiguous to say the least. There was a clear statement of a new focus by NorthWestern to plan on the basis of capacity. There was at least a hint that NorthWestern on its own would be responsible for meeting the identified need. Natural gas plants were identified as the least-cost resources to fill the need. ETAC cannot understand why NorthWestern would not sense some confusion by ETAC and the Commission about this. In follow up, it was explained that an all-source RFP would be used to fill the need. However, there was still emphasis in the plan that gas resources were the most capable to fill the need. So there was a period when it was unclear how NorthWestern was going to fill the need, how much would be owned, how much would be market purchases, etc. Things fell apart at the end, and lots of ETAC members were surprised by the wording in the plan.

Answer – We are not aware of any NWE plan that was perfectly “correct.” Plans are forecasts.

ETAC Comment - The bigger question here is over the framing of facts. It might be helpful to get a definition or guidance on what is and what is not acceptable.

Answer – NorthWestern cannot and will not try to restrict ETAC about what you do outside of this room, but there is a responsibility that when you acquire information in this setting you use all of it and use it responsibly.

ETAC Question - Who is the arbiter of what is acceptable?

ETAC Comment – I do not think that there are any rules on this except that we will not quote each other in the press. This is important so that there is no fear to express your opinions. The other restriction is that when confidential information is passed along it should not be shared. NWE has the right to be upset if they feel that information is not being represented correctly.

ETAC Question – Why are we here? There is still a bit of a hangover from the hydro purchase. How can we help? It seems like sometimes there is push and pull. NorthWestern has been good about asking specific questions, but it is also good to get the big picture of why we are here.

Answer – With the fast-changing industry today, it is not like it was in the old days.

Comment – It seems that there is not a base level of understanding about what the company has or needs and what value different assets can bring to fill the need. NorthWestern understands ETAC’s concerns about DSM, wind, etc. Everyone is pushing their own agenda. But if ETAC members agree that the customer is the focus, then that would be the best deal for the customer. We need to define the need, identify assets capable of meeting that need, and then formulate the next plan and the next plan. There has to be open dialog towards that end.

This a technical committee. If we get information from transmission or other groups that ETAC members do not understand, then they need to ask questions. Wind, for example, cannot be ramped up to fill the need.

ETAC Comment – It is about more than the price that rate-payers pay. The whole business plan is broken. We need to go forward to modernize the grid and get away from carbon.

Response - Our mandate today is not this.

Comment - ETAC is too focused on marginal cost and is not seeing life-cycle costs. I am not suggesting that we are going to solve this today.

Response - It is still early in the process, and we have not hit the meat of the plan yet. The 2015 plan did not consider some technologies due to costs, but the next plan will be different. We took criticism that our solar costs were too high.

This process needs to identify the types of needs that our customers have going forward and then identify what technologies can provide for those needs. It is ultimately going to be an RFP that determines which technology wins.

NorthWestern's obligation to serve is very important. We must come to a consensus on what is the need and then how do we fill that obligation. At NorthWestern, we are not opposed to any type of technology.

ETAC Comment – We are starting to get into the future and with changes and dynamics more diversity on this committee is helpful. I am looking forward to digging into the next plan.

ETAC Comment – The utility and ETAC face a nearly impossible task because technology is changing, and what we think we know is changing. This is a nation-wide phenomenon. People are debating grid stability and climate change, and there is also a political aspect. Given that the nation has not yet reached a consensus, we will be making decisions with lots of uncertainty. Since things are changing, the less cement you pour, probably the better.

Response – NorthWestern is uniquely positioned to handle and move forward with uncertainty due to our resource diversity. How do we keep that diversity and ability to handle more wind?

ETAC Question – Are there different tools that we can bring into these meetings to facilitate? Knowing what the tasks are and how this all fits into the bigger picture would be helpful.

Facilitator – Does ETAC want a timeline to shoot for?

ETAC Comment – Sometimes it is unclear what the bigger picture is.

ETAC Comment – The Net Metering Rule will force us to focus on some of these questions.

ETAC Comment – There is a corporate requirement for great communications. Anything coming out of ETAC takes NorthWestern's core principles and scales them up massively. The average public person has no idea as to what we are doing in this room.

NorthWestern – With the history of utilities in general, it is easy to see why the public does not understand the process and challenges because they just flip a switch and the lights come on.

3. Update on CREP RFP

NorthWestern gave an update on the CREP RFP. Only 5 bidders met the criteria. Wind, solar, solar battery hybrid, hydro. We hope to be able to notify bidders within the next 2 weeks.

NorthWestern is working through the evaluations and expects to have an announcement soon.

ETAC Question – What is the size of these?

Answer – 20 to 25 MW in general. The hydro was 7.5 MW.

ETAC Question – Has any level of analysis been done on meeting ownership requirements?

Answer – That gets into legal questions, and we hesitate to make decisions on that.

NorthWestern – We had concerns about some of the ownership statuses of these projects, but ultimately it is the PSC's decision about whether they satisfy the ownership requirements.

2. Demand Side Management (DSM)

NorthWestern is required to go after all cost effective DSM savings. NorthWestern recently hired a contractor to look at the end-use and load profile of Montana customers. Water heating has increased since the last study. The study was to show how much each customer uses (residential, commercial, industrial) and also how much DSM is available. This will be broken into three perspectives (technological, economical, achievable) to form the basis for the 64 aMW.

They have completed a study that said we have 64 aMW achievable. 4.35 aMW is the acquisition goal for the next 5 years starting in 2017 with 3.77 aMW for 15 years thereafter.

NorthWestern has requested clarification from the MPSC on the 10-year rule in the recent decisions as to whether or not the DSM evaluations are under the same 10-year requirement.

Question – Does the utility have the ability to examine smart meter use?

Answer – No, you would have to have a smart meter there to measure that.

Question – If you were to put in a smart meter, now you are looking at capacity.

Answer – This study only looked at the energy portion. Capacity will potentially be part of the 2018 plan.

Question – Has NorthWestern looked at the 10% adder that was removed?

Answer – DSM programs are looked at from a total resource cost test perspective. In industry and society, there is an adder of 10%. So anything that is 0.9 or greater, we can offer to customers as a cost-effective measure. If there is a carbon adder in the avoided costs, we use a 1.0 threshold for cost-effectiveness. So we have not changed the results or the design.

Question – Is there potential that there will be a 10% adder included for the next plan?

Answer – We do not know.

NorthWestern ran the residential demand response pilot program in 2012. The customer piece on the residential side was 200 customers in Helena. We do not have sufficient electric water heating for demand response here in MT

NorthWestern discussed PURPA and QFs for the benefit of ETAC's new member. One part of it is that QF power must be paid no more than the utility's cost for what it could have purchased without the QF. Another is that you have to offer long-term contracts and not discriminate.

The QF-1 Docket involves setting the avoided cost rate for small facilities. Large facilities have to negotiate with the utility for specific avoided cost rates. The avoided cost for the standard offer QF in the docket was used in the DSM study and evaluation.

Along with the order, the commission found that the concept of symmetry needs to be applied to all resources acquired by the utility. NorthWestern is seeking clarification about whether this symmetry concept applies to DSM measures and DSM program lives.

ETAC – The PSC will have a work session on October 5 for the QF-1 Docket.

ETAC – With DSM being the most cost-effective resource for the consumer, would it be a huge undertaking to do a utility cost test?

Answer – No.

ETAC – Do you do it already?

Answer – Yes, we calculate a utility cost test but don't judge cost-effectiveness on this because we are required to use the Total Resource Cost [TRC] test. Also, the PSC just reiterated the need to use the TRC test.

Question – Regarding what happened with the Lost Revenue Adjustment Mechanism, how do you handle that in terms of planning?

Answer – I cannot answer that question.

Question – The utility needs to be compensated or why would they do it?

Answer – Because we are required to by law.

ETAC – There is a headwind coming from the PSC. How crazy it is for a business to pay customers not to use its product!

ETAC – What would change if you have to stick to a 5 or 10 year outlook?

Answer – NorthWestern has not run any models under those conditions yet. But it would not be good for DSM.

ETAC – I would say that DSM would be the last person standing. DSM may be the only one that can survive within these constraints.

4. Commission Notice of Commission Action and Notice of Receipt of Report and Opportunity to Comment in Docket No. N2015.11.91

NorthWestern filed its quarterly update. MPSC has questions for ETAC and the general public. HRC and NRDC already responded with comments.

ETAC – If NorthWestern and the PSC had not been in a “pissing match” for some time now, there may have been a way to provide a response. But considering that there appears to be a political motivation behind these questions, responding would be non-productive.

ETAC – I do not disagree but am not sure how to respond yet. The PSC is represented here so they are not completely in the dark about what goes on. I am not sure what their motivation is.

ETAC – The PSC also has comments to the plan that are filed to reference.

ETAC – It is not a bad idea to do a process check. There are potential benefits to that, such as allowing the public and ETAC to weigh in again. But this is puzzling.

ETAC – What is puzzling?

ETAC – How the questions were posed. It has an aura of looking for an angle. Was the motive to be productive??

ETAC – PSC staff's initial recommendation was to pose general questions. But the Commission thought it would be better to pose these specific questions.

ETAC – Not sure if we are going to respond or not. We have discussed this internally but do not think that our potential responses would help.

ETAC – The PSC is just trying to get ahead of the curve and make sure that things are going the way it would like them to go.

NorthWestern – If ETAC does not think that this planning cycle is going right, this is your forum to voice your concerns. You should make your concerns known sooner rather than later.

ETAC – How to present issues to ETAC that would encourage participation and preparation? You need to get things to people ahead of time with direction as to what questions the utility wants help answering. The Net Metering thing is an example of something that could have been done differently.

NorthWestern – The Net Metering issue is due to a law. And it is under a very tight timeline.

ETAC – The way to get a meaningful contribution from ETAC is to have involved us earlier, instead of dropping this on us. We did not get this until Monday. In terms of the operation of ETAC, I think that question is still there. Does ETAC have the time to respond? Do they have the time to do their homework to be able to respond?

Answer – NorthWestern tried its best to get this out sooner, but we wanted to get this out now. ETAC and NorthWestern will have more discussions at future meetings.

ETAC – Is there some way of encouraging a more thorough response from ETAC?

There was a discussion about large homework assignments and sub-committee conversations outside of the regular ETAC meetings.

ETAC – In terms of the 6-month update to the PSC, I think that was a good move. However, I think for someone outside of this room/process, it would be hard to give meaningful feedback. MPSC is asking for feedback on transparency and rigor of the process. I still think it would be difficult for people outside of ETAC to give feedback on transparency. That is why you should allow for more public participation in ETAC.

ETAC – Aside from bringing more people into this room, is there any other way you see of handling that?

Comment – The easiest, simplest way to address that is to hold meetings open to the public. There is a bullet point in the old document rules about the meetings being open to the public.

Question – Do you believe that would help the process move forward if you have to stop to reeducate new members all the time?

Answer – There would have to be reform to the process. There could be sub-group meetings that are open to the public.

Comment – Those utilities that do have public presentations do all of the technical work in-house and then just present it to the public. ETAC is doing technical analysis that might get bogged down with large amounts of public input.

Question – What are the Commission's expectations for the responses? Is it a requirement that ETAC respond?

Answer – No

Question – What will the PSC do with these comments?

Answer – They will be filed under the docket. If these lead to more questions there may be new questions later on. I have no knowledge of what the commission will do with these.

5. Net Metering Study

NorthWestern posed questions to ETAC on the net-metering study. These questions go back to House Bill 219. The Commission opened a docket in response to the bill in order to set the minimum amount of information NorthWestern needed to study, solicited comments, and published a notice. This project is under a very tight timeline.

There are 7 issues that the commission has required NorthWestern to consult with ETAC about.

NorthWestern worked to put together these questions, and it would like to get ETAC's input. NorthWestern will have a consultant in October, which may garner more questions for ETAC.

ETAC – In the future, members would appreciate more time to consider questions and respond. Even though this is labeled as net metering, almost all of the questions here are dealing with the benefits and costs of distributed generation or customer generators.

ETAC – Net metering is a tariff that has characteristics. The adoption of solar depends on whether net metering exists.

Response – That will be the next step. This is step one of the process. To reiterate, net metering is based on the current tariff, solar PV, wind, and hydroelectric up to 50kW. The customers who overproduce are credited at the full retail rate. This is a study of solar PV and the costs/benefits of any customer who wants to use solar PV up to 50kW.

Question – On the RFP, it specifically called out the Utility Cost Test UCT and the ratepayer impact measurement (RIM) test. Is that all?

Answer – Yes, the UCT and RIM. But that is not to say that a consultant will not suggest that we look at others. Part of the reason to limit this is due to the tight timeframe.

ETAC – We should treat these minimum requirements as the minimum.

ETAC – Interim legislative committee in 2015 looked at issues, found not enough solar penetration. Difficult issue for the utility because not enough information resulting in study built on a bed of sand.

ETAC – In a big picture sense, as part of the process, if we could identify those areas that are lacking then in the future we could fill in those data gaps and rerun the cost benefit analysis.

Answer – The consultant is required to tell us how this study could be improved in the future.

1. Adoption rate of solar

NorthWestern – The PSC has requested that NREL provide information, modeling, and a report on the adoption rate of solar (mostly commercial and residential). But any input that ETAC can provide for the future adoption would be beneficial, including opinions on plausible range of adoption rates. So we would like feedback from ETAC.

ETAC – The adoption rate depends on the tariff. In the West, it went from booming to the other end of the spectrum. But whether you have net metering or impose specific charges will have an impact on who and how many will adopt net metering. NREL can provide how much sunshine you will be getting.

ETAC – The DGEN model is what we are talking about. Feedback is that the model is good and the defaults are reasonable. There is a button in the model for setting the tariff rate.

NorthWestern – We are looking for bookend values, not just one value.

ETAC – DEQ estimates 4-12%

Question – What has the growth rate been in Montana?

Answer – It has been exponential 25% in the last 5 years (NorthWestern's MT service territory).

ETAC – NWPCC estimated that distributed solar would grow 5 to 10% as a regional average over the next five years. Member will verify these numbers and the area involved, but he expects that Montana would be somewhat lower.

NorthWestern – The hope is that the NREL model considers that the cost of solar panels will flatten out at some point.

ETAC – There are a lot of economic type questions in this model.

NorthWestern – I believe that the request to NREL has gone out and we are hoping to have their decision in October.

ETAC – Do you know the current interpretation of the law that allows for third-party ownership of distributed generation?

ETAC – Member’s understanding that law does not currently allow. However, if this were to change then there would be a greater adoption rate.

Question – What about community installed solar panels?

Answer – No, this is not allowed.

NorthWestern has a stakeholder committee that has explored this technology and which communities want it.

ETAC – There is a case before the International Trade Commission regarding China dumping solar panels and potential federal limitations on solar panel imports from China that could result in higher costs of solar panels. This may affect the adoption rate.

ETAC - A possible way to look at his question is to increase the adoption rate to a large enough number that you can do better and more sophisticated analysis. Essentially find the tipping points where large solar penetration makes a difference.

2. Locational attributes

NorthWestern is looking for information on what the locational attributes and the best way to assess them.

ETAC – Is there an impact from maybe using these at the end of a string for voltage support?

Answer – Yes, this is regarding smart inverters, and this is part of the study.

ETAC - Looking at the MT geographic solar radiation maps to tell where solar should be employed.

ETAC - Tie MT geographic solar radiation maps information into NorthWestern's distribution grid to see where distributed generation is needed

ETAC – Did you look at the 2014 NREL study? That study suggested analytical methods to use depending on what you have for data. Many of the issues addressed are similar to these. Study seems neutral; good tool.

ETAC – On the adoption rate issue, one argument for an initial high net metering rate is to get enough of a sample so that you can estimate the adoption rate. In some jurisdictions, it is set until the adoption rate is 2%, and then others get a different rate (or none if the utility “freaks out”).

The new rate would be based on studies done with this initial pool of participants. Should reevaluate.

ETAC – California had a locational benefit analysis done by E3. Also, mentions three-year Oregon study.

ETAC – California seems the most advanced on this topic, so they may have useful information.

ETAC – This might be the largest data point gap to center discussions around.

3. Avoided capacity costs

NorthWestern does not have as much information as we would like on ELCC. Do you think that NREL's modeling capability is sufficient to provide information on the ELCC?

ETAC – I think it is doubtful that you will have time to do a full ELCC calculation, but I think that NREL has simplified this ELCC model.

ETAC – Oregon (PacifiCorp) Modified Effective Load Carrying Capability model could be used. Also, another analysis was done by E3.

ETAC – If NorthWestern looks at what CAISO is experiencing with higher penetration rates it moves the peak significantly so you have to adjust it as you go along.

ETAC – Member likes idea of using ELCC but understands that simpler model may be needed.

ETAC – Having a macro plan is helpful and reserve engineering from there.

ETAC – Cumulative impact is significant, ramp increase when sun sets; very big impact on load.

ETAC – Can you remind everyone when NorthWestern expects their Loss of Load Probability (LOLP) will be done?

Answer – We are still vetting this internally. I would suggest that we look at other methods for this analysis.

4. Avoided transmission and distribution capacity costs

If NorthWestern does not know the future, what kind of regression analysis do we use?

NERA (National Economic Research Associates) came up with a model.

ETAC – That is what has been done in lieu of actual studies of what is on your transmission and distribution systems.

ETAC – These are being used for allocated cost of service but not for planning but to try to steer the locations of additional solar to maximize benefits, minimize constraints.

ETAC – The existing cost of service data is quite old.

ETAC- Does NorthWestern have a transmission plan?

Answer- Yes, and there's a distribution plan, but not sure if they are apples-to-apples.

ETAC – This study could provide useful qualitative information on what the benefits of energy efficiency are in terms of transmission and distribution system deferrals, probably more distribution than transmission.

ETAC - Idaho Power used a regression method for their DSM analysis and we may want to check out analysis using this method.

5. Avoided environmental compliance costs

How does ETAC recommend that NorthWestern handle carbon costs in this study? What does ETAC think that the regulations will say?

ETAC – You could look at a range (sensitivity analysis) in dollars/ton for 10 years out or 20 years out.

ETAC – NorthWestern should look at regulations versus costs i.e. what are the costs of CO₂ and other pollutants. More costs less at regulations. There are various tests out there for societal costs of carbon. Also, this should include NO_x and SO_x. Use societal costs instead of chasing regulations.

ETAC – This would be the place for a discussion about why we include social costs of carbon dioxide and get some buy-in. The American Lung Association could give a bunch of data.

ETAC – Assumptions made in past no longer appropriate. For example, coal was the marginal resource that would get knocked off. May need to look at natural gas as well. We should look at the Maine PSC study, California study, and the Colorado study for the social cost of carbon.

NorthWestern – We had a carbon cost in the past, but given recent commission decisions, we are starting over with no carbon cost. What NorthWestern does for planning and what we do for evaluating resources perhaps should be handled differently.

ETAC – I recommend that the utility takes a public stand on this issue.

ETAC – The QF-1 docket process has not completed yet and could change. Given the tight timeline for this study, it seems prudent to consider a scenario in which the PSC decision is reversed and the 2015 plan carbon cost is returned.

ETAC – The last carbon adder that was approved was in the Crazy Mountain docket, so this might be the baseline and then use a range around that baseline.

ETAC – But I think that number was based on chasing regulations. It may be easier, but it may not be complete. Other studies have used a more complete societal carbon cost.

ETAC – The EPA may look at putting something in place, but not in time for this study.

6. Non-energy benefits

NorthWestern asked ETAC for ideas for non-energy benefits.

ETAC – Non-usage of water, either by avoiding pollution or cooling water.

ETAC – Economic development or net economic benefits.

ETAC - Sometimes economic development benefits are skewed and not real. Should stick to costs and benefits.

7. Reduced revenue

What are the possible assumptions regarding transmission and distribution rates?

ETAC – Depends on if gas plant is built.

ETAC – This goes to the heart of what a lot of the debate is all about. This goes to cost shifting. Different jurisdictions have come up with different results on what the impacts here would be and the consultant should take a deep dive here.

ETAC – It seems premature to include this in the study; it should be included in cost of service and the utility should be cautious.

ETAC – Requires us to take a utility perspective. We should review from several different points of view. It is really an equity question, not a cost/benefit question. You can model with whatever you learn about penetration rates, but until you get to at least 2 to 5% penetration, there is not a significant shift in revenue between solar and non-solar customers. The consultant can hopefully identify at what threshold that occurs.

ETAC - Evaluate a rate change or multiple rate changes in the next 10 years to determine how much revenue reduction occurs. The amount and type of rate change should be determined by looking at the rate changes from the last 10 years.

NorthWestern – If ETAC has anything further on these in the next couple of weeks, email us.

ETAC – Is there any plan as the consultant moves forward? Will you be coming back to ETAC for additional feedback?

Answer – Yes. But we are not sure who is going to be reviewing the consultant's draft study.

6. Load Forecast Methodology

NorthWestern made a slide presentation discussing the model drivers and the peak and energy forecasts for the next 20 years for the Montana service territory.

The customer forecast methodology is broken down as residential and GS-1 secondary (commercial) using a regression analysis. Others are held constant. Typically, new large customers that come onto our system are choice customers and choose other providers.

The NWE Default Supply load is 85% residential and GS-1 secondary small commercial. Montana population growth has averaged 0.9% the past 5 years with Gallatin County the highest of all counties at 2.6%. The number of people per household is expected to decline slowly over the forecast horizon. Four cases were studied: Low, Medium Low, Medium High, and High. The Medium High case was selected as the base case and projects a growth rate of 0.9%, consistent with historical growth.

The weather forecast is based on heating and cooling degree days (total degree days). The big change for this year is that beginning with the 2017 forecast, we will use only a 10-year historical average instead of a longer term average for the normal weather input into the forecast. Historical data shows that the BA has had higher high temps and higher low temps in the last 10 years and, therefore, fewer total degree days compared to a longer term average.

Question – Do you have the comparison of actual versus previously forecast degree days?

Answer – No, not explicitly.

DSM has always been incorporated, and starting this year the plan will reflect DSM at 4.35 aMW/year. This year net metering will also be included. Historically, since 2010, we have averaged about 1 MW/yr growth in net metering. Costs have declined by 13%/yr since 2010.

NorthWestern is waiting on the NREL study to validate our projected net metering forecast.

Question – Why is there a drop off in 2017?

Answer – This is a best guess at this point, and we hope that the NREL study will provide better information here.

The Peak Demand Forecast has a 3-pronged approach: regression, balancing authority ratio, and load factor. The peak forecast is an average of the 3 methods and projects 0.7% growth in the summer peak and 0.6% growth in the winter peak.

The Energy forecast is split into two periods. The 2018-2021 load forecast for residential and GS-1 secondary customers is based on NorthWestern's 5-year plan. For 2022-2038, it is based on regression models using customer counts and 10-yr average degree days. All other customer classes are based on recent actuals or averages. Total projected growth is about 0.6%/yr.

An analysis of how accurate our load forecasts have been since 2007 shows our worst year of under-forecasting has been around -3% and our worst year of over-forecasting has been around +4%. The average error since 2007 has been an over-forecast of 1%.

Question – What goes into the model?

Answer – Historical monthly load, customer, and degree day data and monthly forecasted customer and weather-normalized degree day data.

Question – What is used as the capacity rates for QFs?

Answer – We have proposed to measure and pay for the QFs. The commission has been setting these rates.

Question – If you take all of this data and when you get to capacity and report them out to the commission, how does that work?

Answer – There are many types of capacity.

Question – You say that in the first five years of the forecast there can be some massaging. What can go into that?

Answer – There are some groups within the company that are sensitive to the load forecast and the long-term regression model results don't always transition well with recent actuals, so we perform some smoothing in the initial forecast years so that the forecast transitions from recent actuals in a reasonable manner.

NorthWestern reminded ETAC that we will need to have a forecast by spring so if there are any concerns on this methodology this is the time to bring them up and discuss with NorthWestern or at subsequent meetings.

7. Future Meeting Dates

ETAC will have to decide the next meeting dates online. The October meeting may be in Butte or in Helena.

Question – Storage is an issue not well understood. Can we discuss this at a future meeting?

Answer – Yes, we will have a modeling session, and we will show how storage is modeled.