Meeting Summary

NorthWestern Energy Electric Technical Advisory Committee

Butte, Montana

December 21, 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
Chuck Magraw	Natural Resources Defense Council (via phone)
Brian Fadie	Montana Environmental Information Center (MEIC) (via phone)
Frank Bennett	NorthWestern Energy (NWE)
John Bushnell	NWE
Jeff Blend	Montana Department of Environmental Quality (DEQ)
Joe Stimatz	NWE
Diego Rivas	NW Energy Coalition (via phone)
Brian Dekiep	Northwest Power and Conservation Council
Mike Dalton	Montana Public Service Commission (MPSC)
Jamie Stamatson	Montana Consumer Counsel (MCC)
Thomas M. Power	District XI Human Resource Council (via phone)
Patrick Barkey	University of Montana – BBER (via phone)
Chris Pope	Citizen at Large
Mike Babineaux	NWE
Jonathan Pytka	NWE
Danie Williams	NWE
Eric Sayre	NWE
June Pusich-Lester	NWE
John Carmody	NWE
Jonathan Shafer	NWE
Bart Kluck	NWE

Agenda:

1. Smart grid demonstration project

2. Deer Lodge micro grid demonstration project

3. Bozeman solar PV project

4. Smart meter / smart infrastructure

5. Resource Definitions

6. Timeline

7. Montana Public Service Commission - Discussion
    a. Order on Reconsideration in D2016.5.39 (QF-1 Docket)
    b. Order on Reconsideration in D2016.12.103 (MTSUN Petition)
    c. Commission work session in N2015.11.91 (2015 Plan)

8. Future Meeting Dates

a. January 25, 2018 – Helena
b. February 28, 2018 – Location to be determined
c. March

Meeting

1-4. Smart Meter / Smart Grid / Demonstration Projects

NorthWestern gave a presentation with slides.

Smart grid came out in 2009. There was big talk about smart appliances, but some of that did not play out as anticipated. It takes NWE 7 to 10 years to make changes to its distribution infrastructure. In 2009, smart grid was cost prohibitive. But costs have come down since then, and now there is value for customers to invest in smart infrastructure.

NWE is trying to integrate portfolio management. We look at how a project impacts the customer, financials, and risk.

Smart infrastructure ... what does that mean? It means sensors strategically placed around the system, communication networks to talk to the sensors, control software to manage the data, and system equipment.

Question: How does the data get back to the command center?
Answer: NWE has its own communication network. The fiber backbone allows us to communicate with our transmission and distribution system.

Question: Regarding the spectrum, does the federal government assign your spectrum?
Answer: Some spectrum (~700 MHz) recently came open and NWE secured this for Montana. The spectrum is blocked out by the FCC, and only NWE can use this band.

Question: Does NWE own this statewide?
Answer: We own areas in our service territory. It is wireless – very flexible and expandable.

Within our Five Year Plan, we are planning for EMS (transmission management software), DMS (distribution management system), and AMI metering (meter with a computer and wireless communications). Once these are in place, we can look at the delivery system, customers, and energy supply. We can then manage it all as one unit. Currently, these are managed separately. This will allow us to optimize across the system. This is critical for Demand Response.

This is our strategy. We will know in ten years whether we did it correctly.

Question: According to the EIA, 20% of all meters in Montana are AMI. Is this correct?
Answer: We do not know where the 20% is. NorthWestern's metering is AMR – a van drives around, sends a signal, receives data from the meter, and then the meter goes back to sleep.
Comment: AMI locks in the potential for real-time rates. Flathead Electric was part of smart-grid and installed some AMI so that they could do Time-of-Use pricing.
Comment: Most cooperative utilities in the western part of the state have gone over to AMI metering.

Question: How long ago was this the standard for Montana?
Answer: In 1997, Montana Power started with AMR. We were told that AMR would last for 15 years. Currently, these are forecasted for a 2025 to 2040 end-of-life. The batteries are the driver for their lifespan. So we expect a ramp-up in failures between 2025 and 2030.

Question: Inside of the utility, how do you consider asset depreciation for these meters?
Answer: The depreciation cycle runs every 5-10 years with the commission. If we bought the meters all in one year, then after 15 years these assets would have zero plant value because the depreciation has already been recovered. But there is constant churn as the system is built out in an incremental fashion.

Question: If something has zero plant value, does it come out of the rate-base?

Answer: If it goes to zero, it is still on the books. From a value standpoint, when it comes to making rates, there is no return so it is not included in the rates.
Comment: The big issue with switching between AMR and AMI is that there are still active AMR meters with book value that could be stranded.

Question: How do you step through quantifying those values, and where is the breakpoint?
Answer: If there is a stranded asset, the total cost of the project is increased by the stranded costs. There will be a revenue requirement adjustment based on that new cost.

Question: Does NWE have a cost-benefit analysis to present?
Answer: We have done this type of analysis, but we are not presenting the results here today.

Question: What about load?
Answer: This equipment allows us to get better information on how the load changes and potentially lets us defer distribution equipment upgrades.

Starting in 2010 and ending in 2015, NorthWestern participated in a DOE pilot to test smart grid technology. Some of these assets are still in place. The goal was to contribute and learn from other regional utilities and test technology and evaluate cost and benefits. This project started our journey into the automation process.

The utility side of the project included FLISR (Fault Location, Isolation, and Service Restoration), which allowed us to quickly restore circuits in case of an outage. One example was a tree taking out power to 1500 customers. Within seconds, we restored power to 1200 customers. Another example was a squirrel getting into our equipment; in this case, FLISR allowed us to restore power to 780 customers. Historically, we would need to send someone to drive the line to find out where the outage occurred.

Question: What is the current state of inverters for safety when the power goes out?
Answer: If the utility power goes out, the inverter shuts off if set up correctly.

Question: Has there ever been a documented failure of the smart inverter to shut off?
Answer: We are aware of one on another system.

NWE learned many lessons from the smart grid pilot, including:

- Devices were not “plug and play”
- A robust communication system is paramount
- Email notifications were difficult to decode

Question: Where is your communication system at right now? Is it adequate to move forward?
Answer: We have areas where we are planning to upgrade. There is never enough bandwidth.

Question: When does your spectrum license expire?
Answer: There are renewals, but I would have to check.

Question: Are you a step away from this looking like a piece of cake or is it still a real headache to try to get intangible benefits?
Answer: From a high level standpoint, we are well on our way. The foundation is in place. Where some of these other things go, we are waiting to see what regulations and rule changes may happen. We are comfortable with where we are at. AMI is the next big bite that we want to discuss internally.

Question: Do you still monitor all of the houses that were in this study?
Answer: We do not.

Comment: As part of this study, I saved about $5/month. The biggest item was the clothes dryer and timing when that could run. We were never able to control our dryer with this system so we did not see savings with that appliance.

NWE typically runs our feeders between 114 and 126 volts. If we do not have to set voltage really high at the regulator, we can save energy. In the Volt/VAR Optimization study, we found we could go down 1.21 volts in December 2013. The savings depends on what the load is at the end of the line. On the piloted feeders, a 1% reduction in voltage resulted in an approximately 0.8% reduction in energy.

Question: Are there some businesses that will be against voltage reduction?
Answer: The way electronics are designed, 114 is the minimum. That value came from studies. Things will have to run longer but typically cooler with fewer losses.

Question: Are there strings that have 10,000 people on them and others with only 6 people?
Answer: In our AMI design, we may only have to cover 10% of the system with AMI to get a lot of the benefits, as opposed to everyone getting AMI. We will look at these strategies. We do not have substation automation in every substation, so we will grab the low-hanging fruit.

The Customer side of the project involved 200 residential customers in the meter collector wireless footprint.

Question: Is the 15-minute increment a fixed part of the meter?
Answer: This is programmable. The meter can store it as fast as you want, but the storage in the meter will fill up faster. This increment can be changed to help diagnose power issues.

Question: Is it more expensive to make meter reads every 5 minutes?
Answer: This would require a communications network with more bandwidth, more storage, and more backup for disaster recovery. Also, more computing power to process that data.

Question: What is the cost of these meters?
Answer: It was about $100 for these, and a typical meter is now around $30/meter. The towers and infrastructure are much more expensive for interval reads.

Question: Do you have an estimate for how much data is required for 15-minute reads?
Answer: It depends on what data are you bringing back. For example, one variable or multiple variables for each phase. About 1 GB/day is being brought back with 5 minute data, multiple channels, for approximately 80 meters.

Question: Do you have a dedicated server for this?
Answer: For this project, we used Itron to interactively store the data. We pulled the data at night from Itron's servers.

Question: Could a town decide that they want to put in a bunch of meters and say "we are the AMI community of Montana"?
Answer: We have just started our Montana AMI analysis, but there are certain customers that would benefit from AMI. One strategy would be to install AMI on these but leave the remaining AMR meters until they go out.

The project let customers control their usage. They had a computer dashboard that allowed them to see their usage over time.

Question: How did it go over?
Answer: People liked it. We tried to run events when people were not home.

Question: Was there a control group?
Answer: Yes there was control group of customers.

We sent a regional price signal and tried to simplify the pricing. Customers saw $0.03, $0.05, and $0.08 prices. We did Time-Of-Use calculations to show what credit they received. $5/month was about the average. The max credit received was about $31, but that particular customer had electric heat.

Question: How many customers on average would have had a penalty?
Answer: This was a very small percentage, maybe 5%.

Comment: I have heard of companies buying hot water heaters with timers and handing them out to customers, perhaps in New York or California. Is this something NWE would consider?
Answer: If we knew an event was coming, we could pre-heat the water to a high temperature, and the customer would not see an effect of turning off the hot-water heater during the event. A big part of this is what the customers really want.

Comment: Many customers do not use electricity for space or water heating.

We looked at Demand Response and TOU pricing in residential homes. We looked at DR and building management system in the Metcalf Building, primarily for lighting and HVAC systems. We proposed DR events for the Metcalf Building but ran out of funding before we could test it.

For our future plans, we will keep an eye on load growth, peak demand changes, renewable energy integration, and the state of smart grid technology.

NorthWestern presented slides on the Advanced Distribution Management System (ADMS). ADMS is the software that allows us to view the system in real-time. It will help us track what the load is when the renewable energy generation is on or off.

The Outage Management System (OMS) helps predict where outages will be, which saves on our patrol time and allows our customers to stay up-to-date. This reduces call volume when there is an outage because customers can see the status on the map.

Question: How often does it update?
Answer: We are working with our servicemen to report back promptly after repairs. Our goal is to set up a proactive notification system to send outage notifications to prevent damage due to freezing pipes, etc. This is set up to go live by December 2018.

ADMS will help with reliability by giving us fault locations, switch orders, FLISR, and enhanced OMS. It will allow us to model and optimize load and energy supply. The system will help detect and prevent thermal or other issues from causing failures. It will help manage and optimize our system and lower cost to customers.

The back-office integration (tying systems together and managing information) is the hardest part of the process. We are also making sure we can scale up the system to meet future needs.

Question: If you invest a dollar in ADMS or if you invest a dollar in a natural gas plant, do these go equally into the rate-base?
Answer: Yes. We look at projects and see which one brings the most value.

NorthWestern presented slides on utility-supported solar projects. These were in 4 locations: Deer Lodge (Beck Hill), Bozeman, Missoula, and Helena. Beck Hill is a rural microgrid. Bozeman is a community microgrid. Missoula will be community solar at schools. Helena will be utility-owned rooftop solar

Question: The USB program already funds school projects. So why are you doing these other school projects?
Answer: At Hellgate High School, for example, the USB project is on the roof, which does not allow access for students to really see it and interact with it.

A microgrid is an energy source that can operate without connection to the utility. We wanted to look at safety, reliability, deferral opportunities, and efficiency. At Beck Hill, we are testing how big the plant has to be to serve the load and whether the batteries can pick up the load. We are also testing the batteries’ limitations. The Beck Hill microgrid serves 17 customers.

We have had several successful events, with the longest islanded operation lasting 4 hours and 22 minutes. Customers were able to have power that entire time supplied by the batteries.

When it is cold, we have to heat the batteries to keep them at acceptable temperatures.

Question: Is there a scenario where you could install batteries all around the state?
Answer: Possibly. One scenario includes looking at electric vehicles and how we can count on them to design our system.

Question: Due to bankruptcy statutes, isn't NWE precluded from getting into EV projects?
Answer: There may be limitations on such projects.

The Bozeman Solar Project has 330 kW AC of solar panels. One question we wanted to answer was does solar generation align with our customers' load.

Question: Why did you do community solar in Bozeman?
Answer: The City of Bozeman was our partner. We wanted to get some data. Bozeman wanted to strategically look at placing solar around their community and to see how this would work in the future. This ties into their sustainable community initiative.

Question: Did the customers buy into the panels?
Answer: This was just a study, so the customers did not get an economic impact. That was not the intent of this study. There was virtual metering for the project. This would help customers to determine how many panels they may want to buy to serve their load. The purpose was to add data points for these projects going into the future.

Question: Did you notice customers shifting their loads at all?
Answer: No, we did not study this. Nine customers wanted to see what their loads were, and we provided them with this information.

Getting 5-minute data from this project and figuring out how to process it has been a challenge. However, the effort has helped to build our database for future projects.

Question: When do you anticipate a cut-off for data collection? And when might we be able to have a final report for this project?
Answer: We set this up to be a 5-year study. We have an option to extend the project for another 5 years. Bozeman has access to the data. We do not have a date for the final report.

Question: Will this be available for other communities?
Answer: Yes, the format and timeline has yet to be determined, but it will be rolled out for others to use.

The Missoula project is a private-public partnership. It is meant to test how communities respond to solar panels mounted in different configurations and locations. The goal is to see how the community supports solar integrated into the urban environment – vertical, fence-mounted, parking lots, etc. – and what are the challenges of doing so. Also, the project studies alignment effects of matching generation to load profile.

The Helena project will be a utility owned and controlled solar project connected with AMI.

Question: Are these projects being funded through the USB program?
Answer: NorthWestern committed to spend $3 million on these projects.

Question: Regarding USB, is there a committee that reviews spending? Does that committee review proposals that are NorthWestern projects?
Answer: The committee just reviews proposals sent in for USB funds. But that is not to say that they are not part of the review group for the NorthWestern projects. For example, MREA was also part of the group that reviewed these NorthWestern projects.

Question: Is there a breakdown for the USB portion of renewable projects at schools?
Answer: A good reference would be the 2016 USB report that came out in 2017.

Comment: USB funding for schools has been a popular type of grant request. The other Missoula funding for schools was a separate funding source/project.

Question: What does NorthWestern hope to get out of these projects that you are not getting out of the USB-funded projects?
Answer: The USB-funded projects in Missoula are tiny 5-10 kW rooftop-mounted solar panels. The inverters are difficult for us to access because they are typically mounted in utility rooms.

Question: Are you partnering to develop curriculum?
Answer: There is already some curriculum out there.

Question: What is the rollout timeline?
Answer: We are having those discussions right now to see what is needed and what is available. We hope to educate the kids as well as the community. We also want to test a different piece of the technology, i.e., thin-film panels.

AMI technology is around generation 3 or 4, so NorthWestern will get the benefit of starting with more developed technology. NorthWestern is doing this in South Dakota and Nebraska right now and not Montana. In South Dakota and Nebraska, we still send out a meter man to every customer every month, so the savings potentials are much higher there at the moment. We get the data back to our Meter Data Management system. With 2-way communications, there is a lot of data. The meters can talk to each other in a “mesh configuration” so we only need communication towers at take-out points. Gas meters can talk to electric meters.

We have to consider from several perspectives where we deploy these units in a community. There are some locations within a community with quick paybacks and other locations with longer paybacks.

Question: When you build out your network, what companies do you work with?
Answer: We are discussing this a lot right now because this is about the meter-reading process. Some cell towers are not available 24/7. Is that good enough service for our needs? There are also security issues. Verizon is not in our control. We have to determine how to limit our risk.

Question: Are there federal guidelines on this?
Answer: Critical Infrastructure Policy has guidelines. There are other regulations, and it depends on what types of units you are talking to.

Comment: If you Google "smart meter," you get many results addressing these security issues.

Comment: FirstNet is a system that will be deployed across the county as part of the 911 initiative. Motorola got a contract to deploy these systems. They will be able to preempt your use of any towers if they need it.

An AMI Project would consist of replacing 365,000 Montana electric meters with smart meters and 190,000 Montana gas meters with AMI modules and installing communications infrastructure as required. The new electric meters range in price from $90 to $500 apiece depending on what you want inside of them. A big question involves how to communicate to our customers about this project and these new meters. Operationally, we would no longer be sending a crew out to read a meter, which is more efficient but requires change management.

Comment: This is probably the best-kept secret in the company. There are a lot of people excited to see NorthWestern invest in the future.

Question: Regarding the pilot projects, you mentioned demand response. Do you have any thoughts on how to include demand response in the next plan?
Answer: We talked a little bit about this in the 2015 Plan. Demand response is very preliminary, particularly for residential. We are still trying to get the foundation of the DMS system in place to be able to implement demand response programs in the future.

5. Resource Definitions

NorthWestern discussed the resource definitions list. We have contracted with HDR to update our resource definitions, leaning on the most recent definitions they did for South Dakota in last few months. There are different resources that we will consider as additions in Montana for the 2018 Plan. For example, we are not looking at CCCT in South Dakota but will for Montana. Geothermal may be considered as being in the research and development stage and thus not practical for consideration in this plan from a risk perspective. We will leave it on the list. We would like to know if ETAC feels this list is fairly complete or should we add to this list?

Question: Did the Nov 29 Technology Forum point to anything that should be added to this list?
Answer: HDR attended that meeting, and they can discern operational characteristics from the presentation materials.

Question: Where do ancillary services rank in terms of need?
Answer: This will be based on the results of the current VER study to determine our need, and PowerSimm will be used to model the value of these services in the model.

Comment: You do not have anything combined.
Answer: That is a different step – combining wind and batteries, or solar and batteries.

Comment: I would consider fixed-tilt solar versus tracking systems.

NorthWestern needs feedback on our resource definitions. HDR will provide some feedback. We welcome feedback from ETAC as well. Also, if an ETAC member has an informed opinion on the capacities that we should analyze for each of these resource types, please forward these to NorthWestern. We would like these by the end of the first week of January.

Comment: The first thing that comes to mind is to model "utility-scale," whatever that means, for each resource type.

Question: Does that mean that rooftop solar or distributed generation should be at this size?
Answer: No, those were left off the list accidentally. Rooftop solar and distributed generation will be separate items. April 1 will be the final report.

Question: Do we have to have one size?
Answer: That is more in the area of portfolio analysis. For example, in the last plan DNV looked at a 3 MW solar, and we scaled that up to 60 MW. But we received criticism that these costs were too high.

Question: Once you have figured out the size of a "utility-scale" solar project, will you then look at which sites would be the most beneficial?
Answer: As you add more and more resources, at some point, you get diminished geographic diversity benefits of each new resource.

Question: Will all of the benefits of pumped storage hydro be analyzed?
Answer: We will rely on HDR's input for these.

Question: Regarding the scope of work with different natural gas resource types, this might be the place to insert the different infrastructure costs associated with these resources?
Answer: We will attempt to identify in more detail the specific locations and associated infrastructure costs. We will work with HDR to include the possibility of firm backup fuel for these resources.

Question: Will infrastructure costs be included with all resources if they have significant infrastructure costs?
Answer: Yes.

Question: Hasn't NWE included, at least for the QFs, the costs associated with interconnecting these resources?
Answer: Yes, in our testimony, we include location-specific resource interconnection costs, but we are now talking about our planning process and not about site-specific projects.

Question: Is it apples-to-oranges, regarding Colstrip 1/2 shutting down, that the plan would anticipate this closure?
Answer: No.

Question: Is it part of the plan to consider building the next resource on the Colstrip tie-line?
Answer: We are not running an integrated resource plan in which transmission is fully integrated with supply. We just look at supply resources.

Question: Is it in statute that ETAC is studying just the resources and not the transmission?
Answer: Yes, HB509 requires a resource procurement planning process. Also, it is under MCA 38-5-8200, I think.

Question: Gordon Butte Pumped Storage is talking to other utilities in the west. Have they had discussions with NorthWestern about what they could offer?
Answer: If those discussions are taking place, they are with executives, and we do not have any knowledge of this.

Comment: I asked Gordon Butte if they are currently in any RFP process. They said no.

<u>7. Montana Public Service Commission - Discussion</u>

Question: Can we discuss the commission's comments on repurposing of Colstrip 1 and 2?
Answer: We would like ETAC's input on how to handle this.

Question: What about issuing a request for information (RFI)?
Comment: That may have limited value if it is not going to result in a transaction.

Comment: Colstrip 1 and 2 are operating plants with significant life left in them. The PSC is asking NorthWestern to model these to see how they would fit into the portfolio. This exercise might yield useful information.

Comment: The commission's rules place a high importance on competitive solicitations. The commission's comments are sending mixed messages with this regard. We need ETAC's best advice on how we should incorporate the commission's comments and react to them.

Question: Is there a legal obligation to comply with the commission's comments?
Answer: I would have to consult with my attorney, but I do not think there is. However, you are at your own peril to disregard these comments.

Comment: There was a company from back east that discussed with the commission about repurposing Colstrip to burn biomass pellets.

Comment: That was the proposal for Centralia from a Canadian company. But it shut down.

Comment: Any time you have to transport biomass fuel it becomes very expensive.

Comment: Your resource list includes gas resources and pumped storage. You can throw in a baseload coal plant and a biomass-fueled generating facility, but my impression is that they would not do well in terms of being valuable in the portfolio.

Comment: Regarding the 2015 Plan, it seems impossible. Resources would have to be modeled so that customers pay off the full cost in 15 years.

Comment: This is just a waste of time and the planning process.

Comment: Quoting directly from our consent decree with Talen on Colstrip, "All combustion of coal shall permanently cease operation and shall not burn any fuel in the burners after that."

There was discussion about what 15-year symmetry/financing means for rate-payers.

Comment: You finance against the viable life of the project.
Answer: If you are advising us to say forget the 15-year order and use a life-cycle analysis, that is advice.

Comment: NorthWestern should model resources at 15 years. The alternative would be for NorthWestern to say up-front that they are willing to take a risk of unguaranteed capital recovery after 15 years.
Question: Where did the commission get that idea?
Answer: There would be a maximum contract length of 15 years for any new resources.

Comment: There is a big concern about future risk. In 10 years, solar plants might be half as expensive. There is also a risk that we will be buying all of our power from California.

When NorthWestern forecasts load growth, we do not anticipate that a watershed technology will come along and change everything. Instead, we stay conservative and base our forecasts on what is known and measurable.

Comment: I think that the PSC feels they got burned on the Hydro acquisition, and they are not willing to do that again.

Comment: Is there consideration to move the RFP to shorter contract terms?
Answer: We have not decided what to do with the RFP, but we are going to have to figure out how to deal with the need that we were hoping to address with the RFP.

Question: Why hasn't NorthWestern terminated the RFP yet?
Answer: Internal processes take time. We still have a need to meet, and we have to figure out how to meet that need. This could mean salvaging the RFP, but maybe it does not.

Comment: The commission has heard all of the concerns mentioned here, and they are not convinced. Is there some way to respond that provides additional analysis that says something that was not demonstrated to them already?

Question: Does it make sense/is it possible to take the portfolios, run them at 15 years and at life-cycle, and then compare the results to determine what the longer term provides?

Comment: If what the commission is saying is that any risk beyond 15 years has to be shouldered by the utility, that is a much more difficult thing to model or analyze. But that is what the commission is after. The point of regulation historically seemed to be to provide this long-run process. But the commission is doing away with this.

Comment: I would like to see a more cooperative conversation. This seems untenable.

Question: Can there be a difference between what the commission wants and what NorthWestern can do with the 15-year limit?

Question: Regarding the RFP, is there anything that can be done, considering the 15-year limit?

Question: What is the risk profile of having a long-term deal versus three short-term deals?
Answer: You do long-term deals to try to hedge the risk of rising market prices.

If you have a 15-year limitation, is it advantageous to join an RTO? We do not know. We do not have a good projection of capacity prices.

NorthWestern asked ETAC for feedback on paragraph 10, regarding the capacity needs of the region and how to deal with that. The Northwest Power and Conservation Council estimates a 400 MW deficit, and NorthWestern is about 80% of that.

Comment: If WECC ever decides to enforce the capacity requirement, they would look to those utilities that are short, not those that are long, to fill the need.

Comment: At the end of the day, every load serving entity has the responsibility to meet their capacity plus some margin above that. What is the commission asking NorthWestern to do – not plan for that need?

Question: Could we have a discussion point on an agenda about joining an RTO?
Answer: NorthWestern is not yet at the point of deciding on joining an RTO.

Question: Would it behoove ETAC and NorthWestern to have a vision of what we would like to portfolio to be like in 20 years and plan from there?
Answer: That is already part of our planning process. But remember that we are under a least-cost planning requirement.

Question: Is there a difference between least-cost and reasonable least-cost?
Answer: Yes. We take into account environmental concerns, for example.

Comment: This conversation has to be lifted to a higher level.

Comment: Many of the people on ETAC are not independent contractors or citizens. They are government employees who report back to the governor. Thus, they are not in a position to petition the PSC about anything. ETAC's role is to warn NorthWestern when they seem to be going astray rather than to lobby government on positions. Their task is to lobby NorthWestern to do things right.

Comment: The commission has in the past said that markets in the region are so erratic and uncertain that they lead to costly results for consumers. But for NorthWestern's history, the company has relied heavily on markets. The PSC is not convinced that each utility has to be self-sufficient and then some, especially since NorthWestern has never operated that way.
Answer: NorthWestern is pretty self-sufficient from an energy perspective, but very short on capacity. And with all of the new renewables coming online, we are quite sure that we are short on flexible capacity, too.

Comment: The commission seems to be stating that they do not believe you. They appear to be convinced of their alternative view of the universe.
Answer: One of the big goals of this plan is to show the need. Some will be immediate need. Some could be filled in different ways. We are at a crossroads with many uncertain futures.

Comment: I think that NorthWestern has already figured out its need. The commission has said that you have not proven it.

Question: In the coming months, what are your questions for ETAC members so that we can bring them home and discuss them and come back with some direction?
Comment: If NorthWestern asks us more specific questions, that would be helpful.

Comment: The one suggestion that I would make is the need for greater precision of language. You use the word capacity in a lot of different contexts. You need to be more precise.

Question: When/how will NorthWestern be able to figure out what its needs are?
Answer: That is on our task list with the loss of load study. The VER integration study will provide a great deal of information about what we need in terms of INC and DEC. But there is some question about what good is a LOLP study when you are 500 MW deficit.

Comment: For every RTO that I am familiar with, I have not seen any situation where a utility could enter into an RTO with a deficit without having to pay something to account for that.

Comment: I think that it would be helpful for the 2018 Plan for NorthWestern to look at the most likely RTOs that they could join and the associated requirements of each.

Question: In the 2011 and 2013 Plans, did they result in NorthWestern assuming that it could meet all of its resource adequacy needs?
Answer: Up until the 2015 Plan, the region was awash in capacity and no one paid attention to capacity. Now, with coal plants closing, more renewables, and increased hydro regulations, the region has changed and is now concerned with capacity.
Comment: You should be overwhelmingly ready to back up that assertion in this plan.

Comment: Many of us in the 2015 Plan process were surprised by the idea that NorthWestern needed so much capacity because flexible capacity need was all that we concluded. You took another step by saying that the newly discovered capacity gap needed to be closed. This was not fleshed out. And so we are struggling over that right now with the commission.

6. Timeline

Question: What would be helpful for ETAC members to respond to in the next few weeks?
Answer: We need comments and suggestions on the resource definitions.

Question: Can you do an RTO presentation at the next meeting including capacity requirements for CAISO, PJM, MISO, and SPP?
Answer: Yes.

Question: Can we look at the VER integration study to this point?
Answer: They are working on it and will release the results when they are ready.

Question: Have we put to bed the carbon costs (item 23) on the list?
Answer: No, we have put that item off. There will be some information from the current Navigant Net Metering study that we will bring to ETAC when that study is complete.

Question: Can we talk about demand response at the next meeting?

Answer: Yes.

Question: In February and March, you have load forecast. Can you show us the current static load forecast?
Answer: Yes.

8. Future Meeting Dates

a. January 25, 2018 – Helena (at Comfort Suites near Costco)
b. February 28, 2018 – Helena
c. March 22, 2018 – TBD