Meeting Minutes 06.25.2025 ETAC

Meeting Date: 06/25/2025 9:30 AM – 1:00 PM
Location: *Helena Capital One-Board Rm (235) and Teams
https://events.teams.microsoft.com/event/3cd12856-b87b-495e-ad10-9c27908c302f@c5c3c8b3-5dfc-4d45-9c42-df8a9867c635
Participants
Olson, Megan (Meeting Organizer)
Shafer, Jon (NWE)
Carmody, John (NWE)
Stajcar, Matthew (NWE)
Barnheiser, Quintin (NWE)
Jeff Blend (MT DEQ)
'Barkey, Patrick' (BBER)
Brian Dekiep (NWPCC)
'Chuck Magraw'(NRDC)
Haylee Gobert (MT PSC)
Jamie Stamatson (MCC)
Kyla Maki (MDEQ)
Mike Dalton (MT PSC)
Kelli Schermerhorn (SPP)
Ben Bright (SPP)
Ben Brouwer (DEQ)
Disha Pansuriya (MT PSC)

Minutes

1) Call to Order
   a) Meeting started at 9:30 AM by Jon Shafer
   b) Purpose of this meeting: Review Stakeholder Working Group, setting up PowerSIMM, and learning about the benefits of multi-day energy storage from FORM Energy.
2) Discussion Points
   a) Topic 1: Stake Holder Working Group

   Key Discussion Points:

   (1) Is SWG membership static, and is it valuable?
      (a) SWG leads to a balance of conversations, sensitivities, and provides more in depth information on differing topics.
      (b) As of this point, the SWG have history and discussions amongst its members. If we add people now, there will be a tendency from the new members to rehash what was

already discussed in previous meetings, which would hurt to the efficiency of the group.

(c) Suggestions/Discussions from group
  (i) Discussed the size of the working group, smaller than the 20 people goal
  (ii) Discussed the frequency of meetings. The SWG is having another meeting in July, about three more meetings total.
    1. About once every month to month and a half
  (iii) Discussed whether the SWG fulfill the public portion of the requirements.
    1. NWE is planning to have public meetings in addition to the SWG.

(2) Data Centers:
  (a) Sensitivities, how to serve the data center load?
  (b) What size blocks for data center loads?
    (i) Rough numbers: 300 MW, 500-600 MW, and 1 GW
      1. Would providing smaller loads be more reasonable?
  (c) The data center sensitivities should intersect with how to model Colstrip
  (d) The Base case serves base load, while the sensitivities include serving data centers load.

(3) Candidate Resources:
  (a) Thoughts on tri-hybrid resource? This is specified as wind, solar, and storage combined in one facility. Should NWE add it to the candidate resources, or maybe put in action plan for next IRP?
  (b) Suggestions/Discussions from group
    (i) Worth modeling because certain parties advocate for it, good to find the true cost of this resource.
    (ii) Solar and storage seems most probable in Southwest region, modeling it to see conclusions
    (iii) Can run storage anywhere, especially LDES systems, do not need to build new resources for it to be installed.
    (iv) Maybe use different utilities as an intro into researching this type of hybrid.
    (v) There are synergies with this type of hybrid, this could potentially reduce the size of interconnection by combining all three, this would reduce the transmission requirements, however, how much does this effect other variables in modeling.
    (vi) Schedule-wise, it would push it back
      1. Maybe NWE can research and add as action item?
      2. Maybe model next IRP?
      3. Balance complexity vs feasibility with timeline?
    (vii) Please note that NWE are still doing wind and storage, as well as solar and storage in the candidate resource modeling.

(4) Geothermal:
  (a) Model typically takes 3-4 days to run, modeling more candidate resources will make a runtime of this model longer.

(b) Geothermal has a higher cost of capacity vs other resources, due to this, probability of the model picking resource is low.
(c) Suggestions/Discussions from group
(i) Disclude geothermal in production cost model
(ii) Geothermal builds start smaller to see performance, and consistency
(iii) Realistically, first build would start at 10-20 MW cap on this resource
(iv) Based on scenarios, having large loads come online, might not be the best
(v) No real great locations for geothermal in MT to sync into portfolio
(vi) The timing is tricky, there is currently research in the last 5 years with various types of geothermal. These are in research and characterization stages, which could help NWE understand these resources after this stage is complete.
(vii) Maybe have a s next candidate resource in the action plan. State why it is not being implemented as a candidate resource, the next steps in understanding this type of resource, and have high amounts of transparency in this description.
(viii) The next few years will have better insights on pricing for these types of resources.
1. Look into The Cape Project
(ix) Pricing costs are very expansive, which could be a strong con while looking into them for MT specific scenario.

(5) Transmission
(a) Northern Plains Connector:
(i) Try to look and model the energy portion of this.
(ii) It does not go into the resource adequacy portion of the model
(iii) Suggestions/Discussions from group
1. Rumors that funding is in jeopardy.
a. Funding is still in conditional status, still movement toward finalizing
2. Strict modeling if this goes through, how would the customers benefit from this?
3. Has NWE characterized MISO/SPP resources and costs, will those costs be factored in as a candidate resource?
a. NWE is planning on creating a sensitivity analysis for this.
4. ELCCs and WRAP Accreditations

b) Topic 2: Form Energy Presentation

Key Discussion Points:

(1) Multi-day Energy storage (MDS)
(a) Rechargeable iron-air technology
(b) 100-hour reversible iron-air technology
(c) First deployment stage, grid connected, not operating on a commercial basis as of yet, the test facilities are being used for evaluation to check how the system can perform in a variety of settings.

(2) MDS in NorthWestern portfolio
    (a) The northwest is exposed to reliability events which last for days at a time – and is no longer limited to peak demand hours
    (b) MDS can hold >10x the stored energy of equivalently sized pumped hydro or Li-Ion.
    (c) Charges during weeks of wind oversupply, discharging during weeks of wind lulls, and deep discharges during the most energy constrained winter and summer periods.
    (d) Delivers firm capacity across 100% of high grid stress hours in a way that other resources cannot.
    (e) During stress events, when charging and discharging variability
(3) Suggestions/Discussions from group
    (a) Are MDS getting full 50 MW over the 100-hour simulation?
        (i) Correct, when sizing, 50 MW is 50 MW for 100 hours.
    (b) What does the ramp look like?
        (i) Ramping constraint, charging to discharging is an instantaneous ramp
        (ii) If storing to discharging, then a few minutes to ramp.
    (c) With ancillary and regulation, is there some loss of duration?
        (i) It largely remains unchanged.
    (d) What is the useful life?
        (i) 15-year useful life.
    (e) A lot of the costs that are seen is from transmission capacity congestion, or scarcity events. It would be great to see how the savings are in these situations.
    (f) What is the refill, and how long?
    (g) Recharge time for the system is around 250 hours, for a super charged version, 120 hours.
    (h) Why don't you market it for shorter times?
        (i) Technology should be viewed as complimentary to Li-Ion than replacing it, MDS provides firm reliability that the other batteries do not.
        (ii) The system can provide frequency regulation/
    (i) What is the round-trip efficiency, and difference between Li-Ion?
        (i) Round trip efficiency is between 35-40%. This is important per cycle, but over the course of the year, does not cycle that much.
        (ii) Designed to play a different role due to this. Being able to deliver energy for a long period of time.
        (iii) Can charge up anytime of the year, especially during the lowest energy cost of the year.
    (j) Emphasizing on the importance of modeling accurately in PowerSIMM, is this resource set up to model accurately?
        (i) NWE is looking at Ascend and Form energy modeling to see how these parts come together.
        (ii) Form and Ascend have been modeling the MDS together.
(4) Modeling MDS
    (a) Setting to capture grid volatility across a timeframe.

(b) Modeling recommendation.
    (i) Modeling 8760-hour grid operations in capacity expansion model and production cost model simulations.
    (ii) Simulate a diverse set of weather scenarios, including atypical grid stress events.
(c) Storage technologies with longer durations will keep a higher capacity accreditation, even while their penetrations increase.
(d) Must be configured to accurately simulate multi-day storage.
    (i) Conventional simulation methods can grossly understate the value of MDS.
(e) MDS sees 8-13 cycles per year.
    (i) When stating cycles, it is important to understand for MDS, between 800-1300 hours discharge cumulative over the year.

c) Topic 3: PowerSIMM

(1) Key Discussion Points:
    (a) Setting up logins
        (i) Making sure that everyone can gain access.
        (ii) If a member cannot gain access, then contact NWE staff for help

d) Topic 4: Website Update

(i) All updates are planned by first week of July
(ii) NWE plans to finalize workplan
(iii) NWE is adding comment tracker to website

e) Topic 5: Costs Discussion

(i) Item E: like transmission costs, is it realistic to build a gas plant, etc.
(ii) Gas constraints: what the fuel costs could be based on incremental gas generation quantity
(iii) Two big ones:
    1. H: Environmental remediation
    2. K: Decommissioning, abandonment, and securitization
        a. Colstrip is important
            i. The prorated cost of acquisition of additional shares is still in discussion.
            ii. If Colstrip keeps running, is there a specified date to start cleanup, or is it after it shuts down?
(iv) Costs are the best estimate perspective.
    1. Where there is a requirement, there is a cost.
(v) Most important variable, how it is affecting customers.
(vi) DR as a candidate resource:
    1. Implementation of DR is effective if data centers are implemented.
(vii) Social Cost of Carbon
(viii) Potential regulatory risk and costs NWE has on their portfolio, or cost impacts would be to the customers.
(ix) Must make judgements on what is important and not important.

f) Topic 6: Additional Questions or Comments?

(a) Next meeting will be sometime this summer.

3) Adjournment
   a) Meeting adjourned at 1:00 PM by Jon Shafer.