

Bayfield Peninsula Energy Alternatives advance questions

for Jan 17 meeting with Xcel Energy

section & page references are to Bayfield Peninsula System Assessment, Nov '17

NEED

Topic: understanding outages

“Due to the current radial nature, local geography, the age, and long length and exposure of the 34.5 kV transmission system lines in the Bayfield Peninsula, the area is susceptible to frequent, and occasionally long outages. These outages occur because there are no other lines in the area from which the load can be restored or temporarily served.” (sec 1.0, p 3)

Q) How are “frequent” and “occasionally long” defined when describing outages?

“The outage history for the last seven years is included in Appendix B.”

Q) This table doesn't indicate reason for outages – is it possible to get that information for each outage in Appendix B?

Q) Can you provide any quantified estimation of benefit in terms of improved reliability from different 2nd Circuit options?

Topic: low voltage

“The voltage problems in the area occur during peak conditions with the system intact. Steady state power flow cases were run to determine the impact of each transmission option on the transmission system under existing and modeled future load projection conditions.” (sec 3.0, p 7)

Q) How often and what is a typical duration for a peak load condition that would affect voltage in Bayfield area? Are these peak loads driven by specific events such as AppleFest or during hot summer weather when air conditioning spikes?

Q) Could power drawn from storage in Bayfield eliminate the problematic low voltage condition during a peak load episode?

Topic: western portion of loop under 2nd Circuit

Q) The majority (14 of 18) of outages over the last seven years have been west of the open switch – if an outage occurs west of that open switch, even with the Bayfield 2nd Circuit in place, how will you get power to those areas? Will east side be emergency feed to west via closing the normally open switch?

Q) Is the 2nd Circuit necessary to rebuild western portion of loop (Iron River-Bayfield)? If so, specifically why?

WAYS TO ADDRESS NEED

Topic: restore functional Iron River-Gingles loop

“After the new Fish Creek to Pikes Creek 34.5 kV line is constructed, a portion of the existing 34.5 kV line on the west side of the peninsula will be rebuilt. All transmission lines included as part of this project will be constructed to 69 kV standards, which is the Company’s standard design for 34.5 kV transmission facilities.” (sec 7.0, p 21)

“Even after the Iron River – Herbster and Cornucopia – Bayfield Tap 34.5 kV lines are rebuilt, the west side of the Bayfield Peninsula will not be able to serve any of the load on the east side.” (sec 6.0, p 19)

Q) Why not? Is this a function of line size/capacity and length relative to loads? If so, what size/capacity lines would be required? Or is it constraints relating to substations and other supporting hardware and, if so, what would be needed in that regard for the original loop to function essentially as originally conceived? Or are there other issues?

Q) If reconstructed lines and appropriately sized substations from Iron River would only be enough to feed electricity to Bayfield but not all the way to Washburn, could you rebuild the Iron River line to Bayfield, but build the second circuit only to Washburn via Hwy 13, or the existing right of way, or a combination of the existing ROW and Hwy 13? Couldn't this eliminate the need for a Washburn Tap down Co C, and the need for a new line to Bayfield along Star Route and other roads?

Topic: solar generation/battery storage potential

“For this analysis, the Bay Front Generation Station was the only local generation assumed on during system peak conditions. There is no wind or solar generation in this area and future renewable generation penetration was not studied in this analysis. There are currently no interconnection requests in this area. While Planning understands there has been a Request for Proposals for a Solar Garden in the northern part of NSPW’s service territory, it cannot speculate on the potential for future requests or the locations thereof.” (sec 4.1, p 9)

“While the Company did not have the detail it would typically require if there had been an interconnection request, it did study this idea on a conceptual level and determined that it was not a feasible alternative.” (sec 4.1, p 9)

Q) What analysis was included at the conceptual level?

Q) Has Xcel requested details of the proposed solar farm from CheqBay Renewables that they would normally require if an interconnection request had been made? Will this be included in any other analysis?

“While batteries are sometimes paired with intermittent sources in order to provide power when the intermittent sources cannot, batteries are a finite resource because they can only hold a set amount of power and *cannot generate or receive power from other sources if the intermittent sources are not producing electricity.*” (sec 4.1, p 9)

Q) Why couldn't a storage facility be constructed so that it can be charged from "grid power"? (Is this not being done elsewhere?)

Q) Are the proposed options under this project designed to be optimally receptive to future interconnects with distributed energy resources? If so, how so?

Topic: risk of co-located circuits

"Paralleling the existing 34.5 kV line with a new line performs electrically similar to the new right-of way option listed above. This option does not provide the same geographic separation of lines that the separate right-of-way option above does, therefore there is minimal risk of a weather event in the corridor taking out both lines. In this option, the issue of a single pole failure or planned maintenance resulting in outages on both lines which is identified in the double circuit option below is eliminated. This "single point of failure" issue was one of the need drivers for the project and this alignment would allow either of the lines to be taken out while still providing power through the remaining line." (sec 6.2, p 19)

Q) How do you weigh the "minimal risk" of a weather event taking out both lines against the greater impact of a new utility corridor?

ROUTE OPTIONS

Topic: separation of right of ways

"From a planning standpoint, building on a new right-of-way is always preferred because it provides isolation between the existing and new lines. Once the line is built, there are no common corridors or double circuit conditions that take out both circuits. Outage concerns during construction and future maintenance activities are also completely mitigated when using a completely new right-of- way." (sec 6.1, p 19)

Q) How does Xcel reconcile this planning preference for new right of way with PSC priority of building on existing utility corridors when feasible (2003 WI Act 89)?

Topic: highway 13 as route

Q) What about running part or all of the project along WI 13? It was mentioned at the first public info session that this is off the table due to the "Scenic Byway" designation for Hwy 13. How far was this option explored and might it still be on the table if the scenic byway aspect was not a barrier? There are already existing lines for most of the section from Highway 2 to Washburn, so wouldn't this be similar to using an existing ROW?

Topic: underwater cable for southern end

Q) Can Xcel provide details to further substantiate why it has rejected this option? If rejection is primarily on the basis of cost, can you share your cost estimates to whatever level of detail they were developed?

DETAILS

Topic: underground lines

Q) From the Wisconsin PSC document "Underground Electric Transmission Lines", it's our understanding that intermediate voltage lines such as 69kV can be buried without need for cooling fluids or gases. What type of additional structure/construction is required to place 69kV lines underground?

Q) When considering double or parallel circuiting on the existing ROW, would Xcel consider burying lines for short distances in areas of pinch points or where additional easements would come too close to houses, especially if no other underground utilities or obstructions are in place?

Topic: work already completed on loop

Q) You've already rebuilt the Cornucopia to Herbster section without the 2nd Circuit – how was that done without power supply from east?

Q) Can you explain the new and larger poles along Terwilliger Rd and how that change relates to this project (or not)?

PROCESS

Topic: how to move ahead constructively

Q) From the perspective of Xcel, what can be done to upgrade the Xcel-BPEA working relationship?

Q) Will Xcel support BPEA's request to Bayfield County for additional time beyond current Jan 30 possible action, in order to give sufficient time to develop an optimal mutually supportable proposal for the PSC?