OTTER TAIL POWER COMPANY
Docket No: EL25-022

Response to: SD Public Utilities Commission
Analyst: Jennie Fuerst
Date Received: September 02, 2025
Date Due: September 16, 2025
Date of Response: October 24, 2025
Responding Witness: Amber Grenier, Manager, Regulatory Economics, 218-739-8728

Data Request:
Regarding the Milbank Area Reliability Project:

a) Refer to Grenier Testimony, page 16. The testimony indicates phase one of this project supports the increased load associated with the large industrial customer expansion as well as broader load growth in Otter Tail's service area. Is the broader load growth in the service area reflected in the test year? Please explain.
b) Provide an analysis of the upgrades to the system that would be necessary to continue to serve existing customers/load in the Milbank area reliably and safely, absent the expansion of the large industrial customer in the Milbank area.
c) Compare the analysis in part b) with the costs of the Milbank Area Reliability Project and the increased revenues received due to the large industrial expansion in the Milbank area.

Attachments: 0

Response:

The data below contains trade secret and proprietary information, as defined in SDCL 1-27-28(5), 37-29-1(4) and SDCL 1-27-28(4). Specifically, the data marked as NOT PUBLIC in the charts and tables of this response, which (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use; (ii) is subject to efforts by OTP that are reasonable under the circumstances to maintain its secrecy AND/OR (iii) is information on pricing, costs, revenue, taxes, market share, customers, and personnel held by OTP and used for OTP's business purposes. OTP therefore requests protection of the confidential information under ARSD 20:10:01:39(4) and 20:10:01:42, and consistent with its June 9, 2025 Request for Confidential Treatment of Information.

a) Yes. TY-17 adjustment reflects the broader load growth occurring in the service area.

b) The Milbank Area Reliability Project was and is necessary to address reliability and performance concerns on the 41.6 kV system serving the Milbank area. These concerns predate the recent expansion of a Milbank agricultural processing customer. OTP operates a 41.6 kV transmission system between two high voltage (115/41.6 kV) sources: (1) the Highway 12 substation south of Big Stone City, South Dakota, and (2) the Ortonville substation in Ortonville, Minnesota. These sources are connected via a 41.6 kV line with an open switch between them. The Highway 12 source serves the city of Milbank, including the agricultural processing customer's facility. The Ortonville source supplies several quarry loads and a portion of Big Stone City. The picture below shows the configuration of the 41.6 kV system and the 115 kV high voltage sources.

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In the event of an outage of the Highway 12 source, the Ortonville source is required to serve the City of Milbank, which includes the agricultural production facility, along with the eastern portion of Big Stone City, and the various quarries that are normally served from the Ortonville source. When the combined load on this 41.6 kV transmission system between these sources exceeds 16 MWs in total, the 41.6 kV system will experience low voltage and loading violations.

The figure below is a series of load duration curves that illustrate the historical hourly loading on the 41.6 kV system from 2019 through 2023. This period predates the increased load associated with the large industrial customer expansion. While the total load is typically below the 16 MW limit, historical data shows that this limit was exceeded between 38 and 452 hours per year and the system load peaked near 25.8 MW, which is well above the 16 MW limit. During such periods, the outage of a high voltage source would have resulted in OTP being unable to serve all of the load while operating within acceptable voltage and loading criteria.

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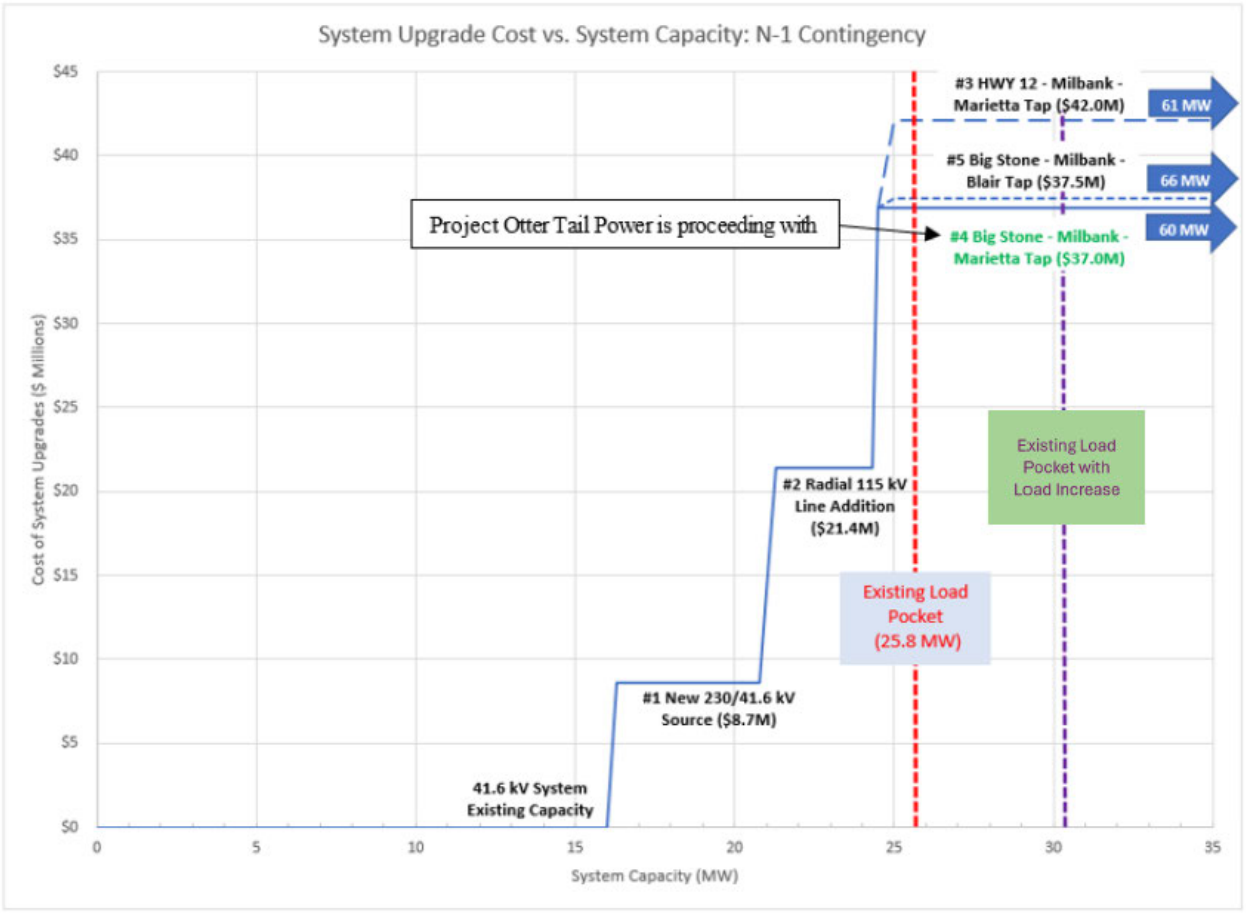
Progression of Transmission Planning

Due to the historical load exceeding the system limit and the real-time operational challenges of keeping the system within acceptable voltage and loading limits, OTP considered upgrading a section of the 41.6 kV line near Milbank by replacing the small 1/0 conductor between two Milbank distribution substations with a larger conductor. This upgrade would have eliminated the most restrictive conductor on the system, improved voltage performance in the Milbank area and increased the thermal capacity of the line. However, this upgrade alone would not have fully resolved the voltage issues that could occur with the loss of one of the sources.

The inadequacy of replacing the conductors between the Milbank substations was underscored in 2022, when the agricultural production customer announced plans to expand its facility and requested adding **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]** of increased load. In view of these circumstances, including the historical overloading of the 41.6 kV system shown in the figure above, OTP conducted a holistic study of the transmission system. Within this study, the Company evaluated several potential solutions to resolve the system deficiencies that included a new 230/41.6 kV source, the addition of a radial

115 kV line, and a variety of other 115 kV transmission loops. The study concluded that a 115 kV transmission loop (the Big Stone – Milbank – Marietta Tap 115 kV loop referred to as the Milbank Area Reliability Project) would be the most effective and lowest cost solution to support both the existing and new load demands, while also addressing existing voltage and loading concerns. The lower voltage and radial solutions were inadequate to support the existing or new load demands of the area, and the other 115 kV transmission loops evaluated were more costly to implement. The chart below shows the estimated cost of the system upgrades evaluated and how much load each system upgrade could support.



The red dotted line represents the load without the customer expansion. The graph shows that the other possible projects all fell short of the pre-expansion need. The purple dotted line shows what is needed to support the existing load plus the extra load due to the new expansion. No extra cost was incurred to support the new load.

c) The annual average revenue expected to be received as a result of the expansion is **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]**. This revenue is included in the 2024 Test Year.

As described in the response to part B, the Milbank Area Reliability Project is necessary to reliably and safely serve the existing customers and load in the Milbank area, without the

expansion of the agricultural processing customer. Other potential solutions evaluated were more costly or inadequate to support the existing customers prior to the expansion of the agricultural processing customer