

**Pre-Construction Submittals to
the South Dakota Public
Utilities Commission**

Docket EL17-042

Astoria Station Project

Submitted to:

Public Utilities Commission of the
State of South Dakota

Submitted by:

Otter Tail Power Company



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- Appendix I: Scandinavia Township & Otter Tail Power Memorandum of Understanding



Acronyms and Abbreviations

Abbreviation	Meaning
BDRWS	Brookings-Deuel Rural Water System
BSSB 345 Line	Big Stone South to Brookings Transmission Line
Commission	South Dakota Public Utilities Commission
Company	Otter Tail Power Company
CT	Combustion Turbine
GPM	Gallons Per Minute
Gen-Tie	Generation-Tie
kV	kilovolt
mmscfd	Million standard cubic feet per day
MOU	Memorandum of Understanding
MW	megawatt
Otter Tail	Otter Tail Power Company
Project	Astoria Station Project
ROW	right-of-way
SDDENR	South Dakota Department of Environment and Natural Resources
SDPUC	South Dakota Public Utilities Commission
SWPPP	Storm Water Pollution Prevention Plan
USACE	United States Army Corps of Engineers

1.0 Introduction

Otter Tail Power Company (Otter Tail or Company) submitted an energy conversion facility siting application for the Astoria Station Project (Project) to the South Dakota Public Utilities Commission (SDPUC or Commission) on October 5, 2017 (Application). On July 12, 2018, Otter Tail and the SDPUC Staff filed a Joint Motion for Approval of a Settlement Stipulation. At its regularly scheduled meeting of July 26, 2018, the Commission voted unanimously to grant a permit to construct the Project and its associated infrastructure, subject to the Terms and Conditions set forth in the Settlement Stipulation. On August 3, 2018, the Commission entered an Order Granting Joint Motion for Approval of Settlement Stipulation; Order Granting Permit to Construct Energy Conversion Facility; Notice of Entry, which order granted the energy conversion facility permit subject to the terms and conditions in the Settlement Stipulation.

In accordance with the Settlement Stipulation, this document provides documentation and information to comply with terms and conditions presented in the stipulation associated with activities and actions required prior to construction. This includes providing the most current preconstruction design, layout, and plans of the Project and any corresponding updates to information that has been previously supplied to the SDPUC.

2.0 Stipulation Condition 1:

The Applicant will obtain all governmental permits which reasonably may be required by any township, county, state or federal agency or any other governmental unit for construction and operation activity prior to engaging in the particular activity covered by that permit. Copies of any permits obtained by the Applicant shall be sent to the Commission.

An updated permit listing and status for the Project is provided in Table 2-1 below. All required permits will be obtained and provided to the Commission.

Table 2-1. Required Permits

Federal/ State/ Local	Agency	Type of Permit/Approval/Consultation	Timing	Status
Federal	U.S. Army Corps of Engineers	Section 404 permit for impacts to jurisdictional Waters of the United States	Prior to Construction (if wetlands are impacted)	Not Applicable – no wetlands impacted by Project
	U.S. Environmental Protection Agency	Title IV Acid Rain Permit	Prior to Operation	Granted 10/19/18 – See Appendix A
State	Public Utilities Commission	Facility Siting Permit	Prior to Construction	Granted 8/03/2018
	South Dakota Department of Environment and Natural Resources	Water Right Permit for Non-Irrigation Uses	Prior to Construction	Granted 12/15/2017 – Provided to SDPUC on 3/01/2018
		Permit to Construct for a Non-PSD Source of Air Emissions	Prior to Construction	Granted 1/8/2018 – Provided to SDPUC on 3/01/2018
		NPDES Construction Storm Water Discharge Permit	Prior to Construction	See Appendix B for SWPPP
		NPDES Industrial Storm Water Discharge Permit	Prior to Operation	Pending
	South Dakota Department of Transportation	Oversize/Overweight Permit	Prior to Heavy Hauling	Haulers to Obtain
Local	Deuel County and/or Scandinavia Township	Special Exception and Zoning Change	Prior to Construction	Granted 5/14/2018 – Provided to SDPUC on 6/28/2018
		Building Permits	Prior to Construction	Granted 2/27/2019 – See Appendix C
		Township Road Haul Agreement	Prior to Construction	Signed on 2/11/2019 – See Appendix D
		County Road Haul Agreement	Prior to Construction	Signed on 2/11/2019 – See Appendix D

3.0 Stipulation Condition 7:

The applicant shall provide the following information to the landowner on whose property the 345 kV generation-tie electric transmission line is to be constructed:

- a. A copy of the Commission Order Granting Permit to Construct Facilities;*
- b. Detailed safety information describing:*
 - i. Reasonable safety precautions for existing activities on or near the Project,*
 - ii. Known activities or uses that are presently prohibited near the Project, and*
 - iii. Other known potential dangers or limitation near the Project;*
- c. Construction/maintenance damage compensation plans and procedures;*
- d. The Commission's address, website and phone number; and*
- e. Contact person for Applicant, including name, e-mail address, and phone number.*

Otter Tail mailed a notification letter to the landowner on whose property the 345 kV generation-tie electric transmission line is to be constructed on February 20th, 2019. A copy of the notification is provided in Appendix E.

4.0 Stipulation Condition 10:

Not later than one month prior to commencement of construction, Applicant shall commence contacts with state, county and municipal emergency response, law enforcement and highway, road and other infrastructure management agencies serving the Project area in order to educate such agencies concerning the planned construction schedule and the measures that such agencies should begin taking to prepare for construction impacts and the commencement of Project operations.

Otter Tail held an Emergency Response Coordination meeting on February 27th, 2019 with local governments, fire, law enforcement, hospitals and emergency medical services organizations. Attached as Appendix F are the materials covered during the meeting and the sign-in attendance sheet.

5.0 Stipulation Condition 11:

Applicant will negotiate road use agreements with Deuel County and any affected townships, if required. Applicant will follow the terms of all road use agreements. Applicant shall take appropriate action to mitigate wind-blown particles created throughout the construction process, including but not limited to implementation of dust control measures such as road watering, covering of open haul trucks when transporting material subject to being windblown, and the removal of any soils or mud deposits by construction equipment when necessary.

Otter Tail has entered into road use agreements with Scandinavia Township and Deuel County, although at this time the Company does not anticipate using county roads for construction or commissioning. The road use agreements contain conditions requiring Otter Tail to use dust control measures as needed throughout the construction process, and the cleaning of mud from vehicles prior to entering roadways. The road use agreements are provided in Appendix D.

6.0 Stipulation Condition 12 g:

Applicant shall use appropriate preventative measures to prevent damage to paved roads and to remove excess soil or mud from such roadways. Before commencing construction, the Applicant shall furnish an indemnity bond in the amount of \$250,000 to comply with the requirements of SDCL 49-41B-38. Such bond shall be issued in favor of, and for the benefit of, Scandinavia Township and Deuel County. The bond shall remain in effect until released by the Commission, which release shall not be unreasonably denied following completion of the construction and repair period. Applicant shall give notice of the existence and amount of this bond to Scandinavia Township and Deuel County.

Otter Tail has furnished an indemnity bond in the amount of \$250,000 to comply with the requirements of SDCL 49-41B-38. As part of executing road haul agreements, Otter Tail has provided notice of the existence and the amount to Scandinavia Township and Deuel County. The original bond was provided to the SDPUC on February 14th, 2019. A copy of the bond is provided in Appendix G.

7.0 Stipulation Condition 17:

Applicant shall provide the Stormwater Pollution Prevention Plan (SWPPP), for both Project construction and operation, to the Commission when Applicant has a final design for the Project. The SWPPP will outline the water and soil conservation practices that will be used during construction to prevent or minimize erosion and sedimentation. The SWPPP will be completed before submittal of an application for a National Pollutant Discharge Elimination System (NPDES) general permit for construction activities. All contractors will be given a copy of the SWPPP and requirements will be reviewed with them prior to the start of construction.

A construction SWPPP for the project is included in Appendix B.

8.0 Stipulation Condition 24:

Applicant shall notify the Commission prior to making any material deviations to the Project and afford the Commission the opportunity to review and approve such modifications. For purposes of this paragraph, the term "material deviations" shall mean any action or activity outside the reasonable parameters of this Permit (such as, for example, if the Project is constructed differently than described in the Application).

In Section 9 of this document, Otter Tail is providing the most current pre-construction design, layout, and plans for the Project. Otter Tail does not believe these plans contain any material deviations, but we are also providing updates to information that was previously provided to the SDPUC to afford the Commission the opportunity to review and approve such updates.

9.0 Stipulation Condition 27:

Not less than 30 days prior to commencement of construction work in the field, Applicant will provide to Staff the most current preconstruction design, layout and plans of the energy conversion facility and 345 kV generation-tie electric transmission line. Applicant will also provide such additional Project preconstruction information as Staff requests.

Appendix H contains the most current preconstruction engineering design and layout drawings for the Project.

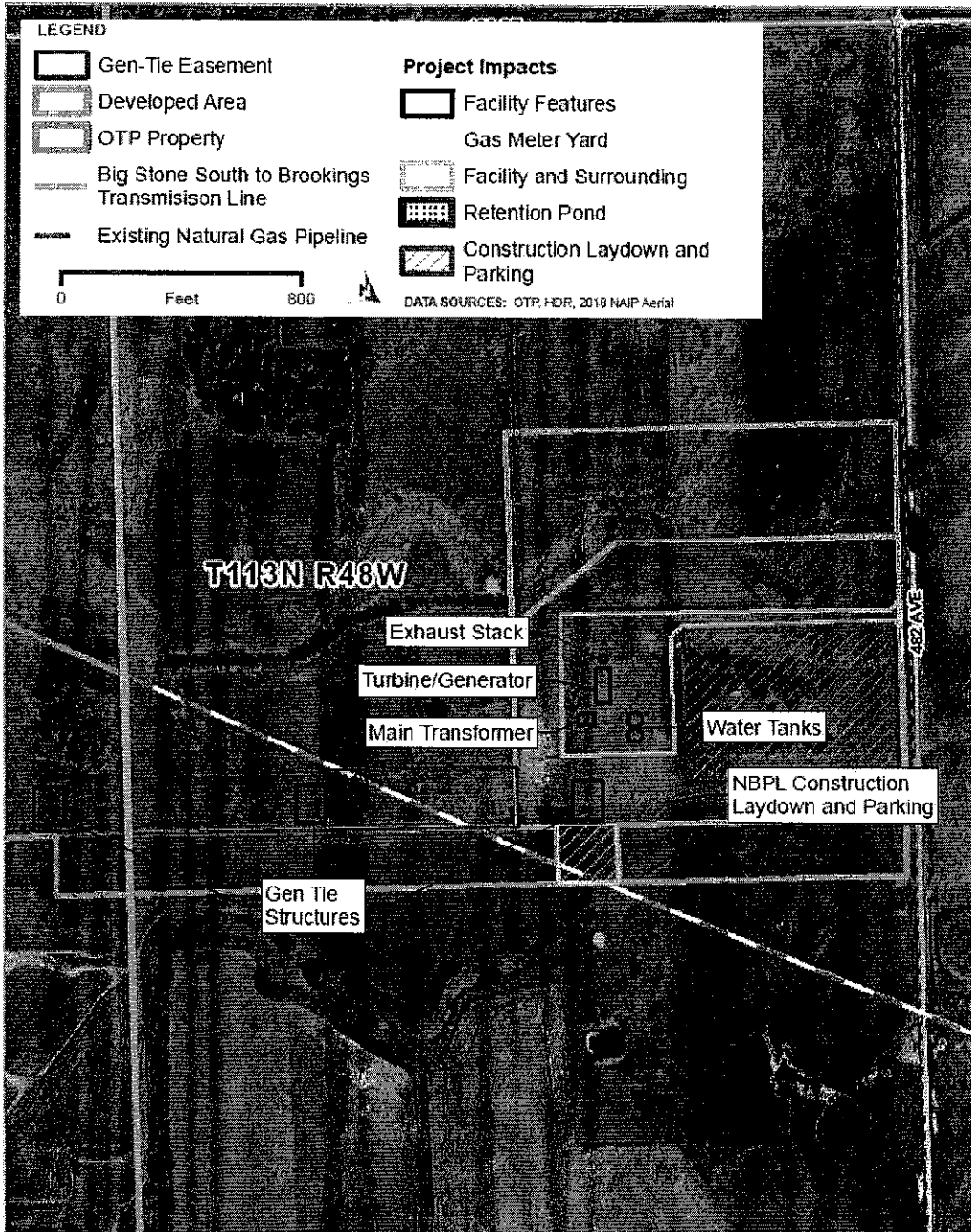
Additionally, Otter Tail is providing the following updated information to the Commission.

9.1 General Site Description (ARSD 20:10:22:11)

There are no changes to the proposed energy conversion facility general site description that was previously provided to the SDPUC. However, the Project's westernmost 345 kilovolt (kV) generation-tie (gen-tie) structure will be located on land immediately adjacent to the gen-tie easement area, which was not previously reflected in an Exhibit provided in the Application. The Company owns this adjacent land on which the westernmost gen-tie structure will be located. Locating the westernmost gen-tie structure on Company land will allow the Project to only place one gen-tie structure on the neighboring landowner's easement area.

Exhibit 9-1, below, shows an updated view of key Project features, including the most current location of the gen-tie structures.

Exhibit 9-1. Project Features



9.2 Hydrology (20:10:22:15)

Water uses for the facility include process water, fire water, and potable water. The primary source of process, fire, and domestic water will be provided by the Brookings-Deuel Rural Water System (BDRWS), which will upgrade their pipe distribution system in order to accommodate the Project. An on-site groundwater well will be developed and relied upon as a backup to the BDRWS. The rural water supply, and if needed the on-site well, will transfer water into an on-site water storage tank which is preliminarily designed to be 500,000 gallons. This “raw” water will be available to be used for fire protection and potable water treatment, or be processed through a demineralization system and stored in another tank sized at 500,000 gallons. During ambient temperatures above 59 degrees Fahrenheit (°F), a blend of raw and demineralized water will be used to cool inlet air. Consistent with the Application, typical consumption of process water will be less than 40 gallons per minute (gpm) at warm ambient conditions, but based on annual average ambient conditions, there will be many days or months when process water is not required.

Otter Tail will also be utilizing the onsite well for construction water for the project site in the initial stages of construction since the BDRWS connection is not expected to be developed enough to meet the need of initial construction activities. Construction water uses include but are not limited to dust suppression, soil compaction, and clean up for onsite contractors. The use of the onsite well for construction water will not alter plans for connecting into the BDRWS.

9.3 Land Use; Energy Conversion Facility Aesthetics (20:10:22:18)

The original Application estimated the main stack height to be 105 feet above the graded surface. As shown in Appendix H, the most current design estimates the stack height at 129 feet above the final graded surface. This height is similar in height to the nearby existing Big Stone South-Brookings County 345 kV electric transmission line (BSSB 345 Line) structures.

9.4 Time Schedule (20:10:22:22)

Otter Tail had originally been targeting Spring 2021 for commercial operation of the energy conversion facility. As project planning continues to develop, there is potential that commercial operation could take place before Spring of 2021. Below is an updated project schedule based on information known as of this filing. As the project development is finalized, this schedule may be subject to change. Otter Tail will provide project updates through the project website.

Table 9-1. Astoria Station Project Major Events Schedule

Activity	Schedule
Permitting (Air Quality, Water Appropriations, Energy Conversion Facility)	September 2017 through September 2018
Combustion Turbine Selection	October 2018 through February 2019
Detailed Engineering/Design	October 2018 through April 2020
Site Development, Grading, Foundation Construction	May 2019 through September 2020
Building Erection and Gas Turbine Installation	July 2019 through April 2021
First Fire	October 2020
Commercial Operation	December 2020 – May 2021

9.5 Community Impacts (20:10:22:23)

Use of the local roads will be required to bring construction materials and laborers to the site. Road Haul agreements have been entered into with both Deuel County and Scandinavia Township and are included in Appendix D.

9.6 Nature of energy conversion facility (20:10:22:26)

Based on information obtained from the vendor selected to provide the combustion turbine (CT), the CT is designed to produce a nominal range of 267 MW of gross electrical power at full load at an average annual ambient temperature of 43.7°F. Typically, the CT power output will decrease as the ambient air temperature increases, and output will increase as ambient temperature decreases. This change in power output is related to the mass flow of combustion air through the turbine. The CT power output at full load would be approximately 245 MW at a summer ambient temperature of 84.9°F, and increase to approximately 286 MW at a winter ambient temperature of -9.4°F.

9.7 Materials Flowing into the Energy Conversion Facility (20:10:22:26)

Water uses for the facility include process water, fire water, and potable water. The primary source of process, fire, and domestic water will be provided by the BDRWS, which will upgrade their pipe distribution system in order to accommodate the Project. An on-site groundwater well will be developed and relied upon as a backup to the BDRWS. The rural water supply, and if needed the on-site well, will transfer water into an on-site water storage tank which is preliminarily designed to be 500,000 gallons. This “raw” water will be available to be used for fire protection and potable water treatment, or be processed through a demineralization system and stored in another tank sized at 500,000 gallons. During ambient temperatures above 59 degrees Fahrenheit (°F), a blend of raw and demineralized water will be used for inlet air evaporative cooling. Consistent with the Application, typical consumption of process water will be less than 40 gpm at warm ambient conditions, but based on annual average ambient conditions, there will be many days or months when process water is not required.

The CT will include an inlet air filter system capable of removing airborne dust and an exhaust gas stack. The maximum required gas flow for the facility is currently estimated to be 75 million standard cubic feet per day (mmscfd) at full load.

9.8 Estimate of expected efficiency (20:10:22:32)

Table 9-2 provides the expected efficiency of the turbine selected for the energy conversion facility.

Table 9-2. Expected Net Efficiency

Expected Net Efficiency of Selected Turbine	
Net Heat Rate, LHV (Btu/kWh)	8,919
Net Heat Rate, HHV (Btu/kWh)	9,881
Net Efficiency, LHV (%)	38.3
Net Efficiency, HHV (%)	34.5

(based on annual average ambient conditions)

9.9 Transmission Facility Layout (20:10:22:34-35)

Based on the most current design, the Company proposes to use three sets of structures approximately 100 feet tall. The terminus of the gen-tie line on each end will likely be steel pole structures, and the middle structure will be an H-frame steel structure. Preliminary drawings of these types of structure designs have been previously provided to the Commission.

Steel pole structures are typically placed on concrete foundations measuring less than 10 feet in diameter. Span lengths between gen-tie structures are expected to be between 600 feet and 900 feet, with the exception that on the east end of the gen-tie line, the structure will likely consist of two poles approximately 100 feet apart on Company property.

9.10 Gas Transmission Line description (20:10:22:37-38)

There are no significant changes to the pipe technical specifications that have been previously provided to the Commission. Minor updates include revising the anticipated inlet flow capacity which was previously designed to be 126.6 mmcsfd and is currently being designed at 150 mmcsfd. The turbine delivery capacity was preliminarily designed to be 63.3 mmcsfd and is now being designed to be 75 mmcsfd.

10.0 Stipulation Condition 33:

The Applicant shall work with Scandinavia Township to improve approximately ½ mile of 482nd Avenue from SD Highway 28 north to the Astoria Station plant entrances for construction and plant access.

Otter Tail has been in close contact with Scandinavia Township on plans to improve 482nd Avenue from SD Highway 28 north to the Astoria Station plant entrance. Otter Tail entered into a memorandum of understanding (MOU) with Scandinavia Township that establishes the roles and responsibilities for the road improvements. These responsibilities include the obligation for the Township to permit the improvements needed for this segment of roadway, and for Otter Tail to wholly fund all costs associated with the improvements. Since the road improvements will result in impacts to wetlands, Scandinavia Township obtained a water quality certification from the South Dakota Department of Environment & Natural Resources and Clean Water Act Section 404 permit from the United States Army Corps of Engineers (USACE). Upgrades to 482nd Avenue are scheduled to begin in June 2019. The MOU between Scandinavia Township and Otter Tail is included as Appendix I.

11.0 Stipulation Condition 34:

The Applicant shall assess the use of Brookings-Deuel Rural Water System as recommended by the Local Review Committee and submit the assessment to the Commission 30 days prior to construction. The assessment shall include justification for not pursuing the use of Brookings-Deuel Rural Water System for the Astoria Station water supply if the Applicant elects to utilize on-site wells.

As recommended by the Local Review Committee, Otter Tail has been in communication with the BDRWS to assess the viability of BDRWS providing water to the project. Otter Tail is proceeding with BDRWS to supply the majority of the water for the future operation of the site. However, because the peak water usage of the site may coincide with BDRWS system's peak water usage, the onsite well will also be developed to supply the full need of the site in the event BDRWS is unable meet peak water demand or is unavailable due to unforeseen circumstances.

Otter Tail will also be utilizing the onsite well for construction water for the project site in the initial stages of construction since the BDRWS connection is not expected to be developed enough to meet the need of initial construction activities. Construction water uses include, but are not limited to: dust suppression, soil compaction, and clean up for onsite contractors. The use of the onsite well for construction water will not alter plans for connecting into the BDRWS.