

# OTTER TAIL POWER COMPANY – IRP INFORMAL HEARING

11-20-2023



# OVERVIEW

1. OTP mission
2. Procedural history
3. OTP Supplemental Preferred Plan
4. Split-system modeling
5. Environmental regulation update
6. Looking ahead

## KEY TAKEAWAYS

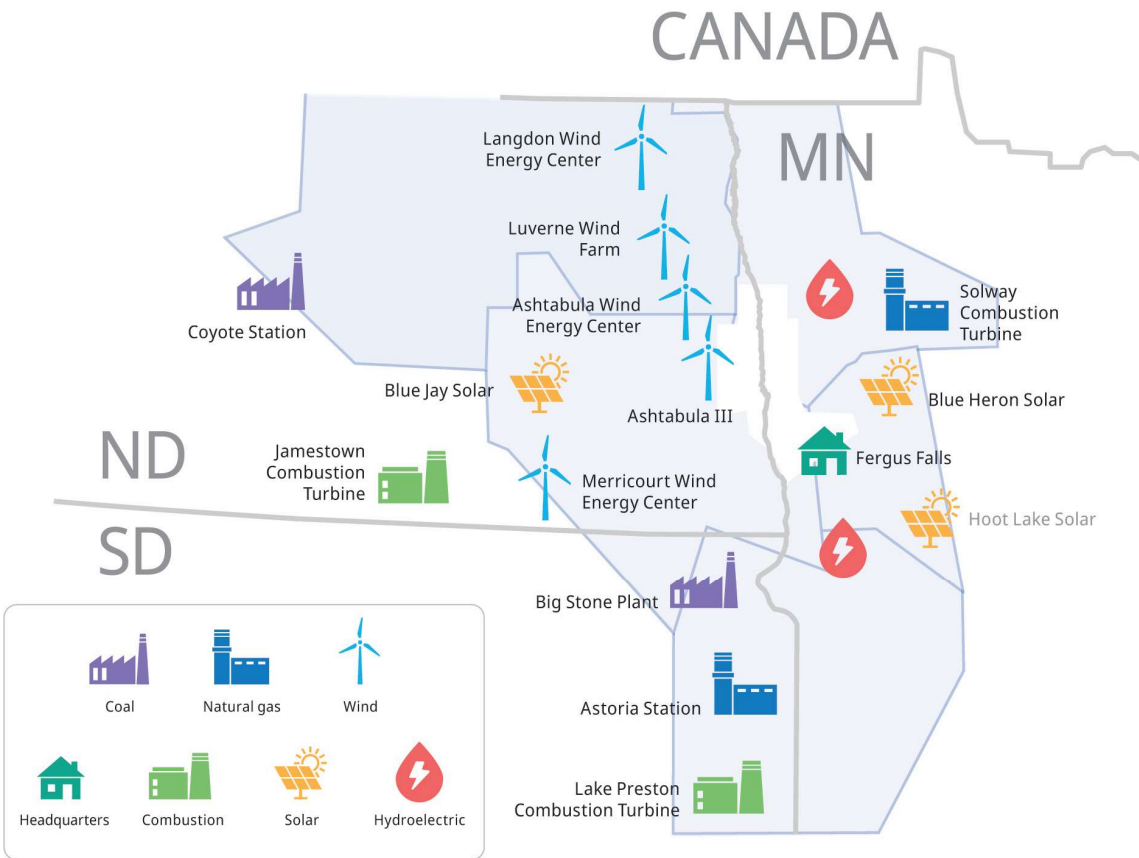
- Long-term resource planning continues to be challenging.
- Balancing the desires of multiple jurisdictions requires creative solutions.
- Bifurcated resource planning will be necessary moving forward.
- The future of Coyote will look different for each jurisdiction.
- Federal environmental rules continue to pose challenges.

# OUR MISSION

To produce and deliver electricity as reliably, economically, and environmentally responsibly as possible to the balanced benefit of customers, shareholders, and employees and to improve the quality of life in the areas in which we do business.



# WHO WE SERVE



# PROCEDURAL HISTORY

- September 2021 – OTP Initial Filing
- IRP filed in North Dakota and Minnesota pursuant to statutory requirements and courtesy copy with South Dakota
- Preferred Plan included:
  - the addition of dual fuel capability at Astoria Station;
  - the addition of 150 MW of solar generation in 2025; and
  - the commencement of the process of withdrawal from our 35 percent ownership interest in Coyote Station

# PROCEDURAL HISTORY

## Developments after September 2021 Initial Filing:

- May 2022 – Large load addition increased OTP’s energy needs by over 15%
- August 2022 – Inflation Reduction Act signed into law
- August 2022 – FERC accepts MISO’s seasonal capacity construct filing, with capacity requirements that increased planning reserve margins (PRMs) above the quantities included in our Initial Filing and its modeling;
- December 2022 – Winter Storm Elliot
- February 2023 – MN legislative changes affecting planning
  
- The number of significant disruptive events impacting Resource Planning over the last three years is unprecedented.

# INFLATION REDUCTION ACT (IRA)

- The IRA increased and extended production and investment tax credit opportunities for renewable and other carbon free technology investments.
- Base Investment Tax Credit (ITC) = 30%\*
  - Potential ITC bonus if domestic content (10%) and energy community (10%) standards are met.
- Base Production Tax Credit (PTC) = 2.75¢/kWh\*
  - Potential PTC bonus if domestic content (10%) and energy community (10%) standards are met.
- Impact to OTP's IRP assumptions
  - Wind: -\$15 / MWh      Generic wind modeled at \$34.50 / MWh
  - Solar: -\$8 / MWh      Generic solar modeled at \$39.00 / MWh

\*Provided prevailing wage and apprenticeship requirements are met.

## SUPPLEMENTAL PREFERRED PLAN

- On March 31, 2023, OTP filed its Supplemental IRP; Supplemental Preferred Plan (replacing Initial Preferred Plan):
  - The addition of onsite liquified natural gas at Astoria station in 2026
  - 200 MW of surplus solar in the 2027/2028 timeframe
  - 200 MW of wind in 2029
  - Withdrawal from Coyote Station in the event a large, non-routine, capital investment is required.
- This plan balances reliability risks, environmental risks, and customer bill impacts.

## SUPPLEMENTAL PREFERRED PLAN CONTINUED

- The renewables selected in our Supplemental Preferred Plan are based on system wide energy needs and future resource cost projections. These additions are not solely driven by any single jurisdiction's policy decisions.
- The timeline of the renewable build-out reflects a compromise between the with and without externality runs.
- The following slides compare our Supplemental IRP system-wide capacity expansion plans with North and South Dakota only capacity expansion plans.

# SUPPLEMENTAL PREFERRED PLAN

## 2028 Coyote withdrawal

	Base No Externalities	Preferred Plan	Base With Externalities
2023	Hoot Lake Solar	Hoot Lake Solar	Hoot Lake Solar
2024			
2025	Wind Repowers	Wind Repowers	Wind Repowers 400 MW Sur Solar 150 MW Gen Wind
2026	Astoria On-Site Fuel	Astoria On-Site Fuel	Astoria On-Site Fuel
2027		100 MW Sur Solar	
2028		100 MW Sur Solar	50 MW Gen Wind
2029	25 MW Sur Solar 250 MW Gen Wind	200 MW Gen Wind	50 MW Gen Wind
2030	25 MW Sur Solar	100 MW Sur Solar	
2031	50 MW Gen Wind	150 MW Gen Wind	50 MW Gen Wind
2032	25 MW Sur Battery 250 MW Sur Solar 100 MW Gen Wind	25 MW Sur Battery 100 MW Sur Solar	25 MW Sur Battery 150 MW Gen Wind
2033			
2034			
2035			
2036			
2037			

## 2040 Coyote withdrawal

	Base No Externalities	Preferred Plan	Base With Externalities
2023	Hoot Lake Solar	Hoot Lake Solar	Hoot Lake Solar
2024			
2025	Wind Repowers	Wind Repowers	Wind Repowers 400 MW Sur Solar 150 MW Gen Wind
2026	Astoria On-Site Fuel	Astoria On-Site Fuel	Astoria On-Site Fuel
2027		100 MW Sur Solar	
2028		100 MW Sur Solar	50 MW Gen Wind
2029		200 MW Gen Wind	
2030			
2031			
2032	350 MW Sur Solar 200 MW Gen Wind	25 MW Sur Battery 100 MW Sur Solar	150 MW Gen Wind
2033			
2034			
2035			
2036			
2037			

- The action plan within the green boxes is the same regardless of when we withdraw from Coyote.
- Resources in red are additions needed if we exit Coyote in 2028 and will be reevaluated in our next IRP.

# NORTH AND SOUTH DAKOTA MODELING RUNS

	March 2023 Renewable Price Assumptions		October 2023 Renewable Price Assumptions	
	North and South Dakota with Coyote through 2040	North and South Dakota with Coyote through 2028	North and South Dakota with Coyote through 2040	North and South Dakota with Coyote through 2028
2023				
2024				
2025	Wind Repowers	Wind Repowers	Wind Repowers	Wind Repowers
2026				
2027				
2028	25 MW Surplus Solar	25 MW Surplus Solar		
2029	50 MW Surplus Solar	50 MW Surplus Solar 150 MW Wind		200 MW Wind
2030				
2031	50 MW Wind		50 MW Wind	
2032	125 MW Surplus Solar 50 MW Wind	75 MW Surplus Solar 100 MW Wind	50 MW Surplus Solar 50 MW Wind	75 MW Surplus Solar 50 MW Wind
Wind	100	250	100	250
Solar	200	150	50	75
Total	300	400	150	325

Surplus Solar: \$40 / MWh  
Wind: \$35 / MWh

- The model selects wind and solar resources over thermal generation to meet energy needs between now and 2032.
- Modeling North and South Dakota independently from Minnesota without considering externalities, wind and solar resources are still part of a least cost resource mix.

# JURISDICTIONAL CHALLENGES

- OTP has found it increasingly challenging to model a unified system.
- In recognition of differing jurisdictional policies, OTP is moving towards bifurcated resource planning in future IRPs.
- The North Dakota PSC is a key stakeholder in helping us navigate these resource planning challenges.

# ENVIRONMENTAL REGULATION UPDATE

EPA's regulatory agenda indicates that they intend to finalize numerous rules in the first half of 2024 that will impact coal and gas-fired electric power generation. Specific to Coyote Station, key rules we are monitoring include Regional Haze, Mercury Air Toxics Standards, and Greenhouse Gases.

## Regional Haze:

North Dakota submitted their state implementation plan to EPA on 8/11/2022; EPA deemed it complete on 8/23/2022. At a national scale, there has been minimal EPA activity on Regional Haze in 2023.

- On 11/10/2023 Environmental Organizations filed an amended complaint against EPA for failing to take action on 34 state plans, including ND.
- The Coyote Station co-owners are closely monitoring Regional Haze, and submitted joint comments in support of DEQ's proposed plan that would not require additional reductions at Coyote Station.



# ENVIRONMENTAL REGULATION UPDATE

## Mercury and Air Toxics Standards:

- In April 2023 EPA proposed a rule eliminating the lignite subcategory for mercury and lowering the allowable particulate matter emissions standard.
- Coyote already employs EPA's presumptive control technologies for both mercury (halogenated activated carbon injection) and particulate matter (baghouse).
- EPA is proposing three years to comply with the new limits after the effective date of a final rule, but accepted comment on allowing as little as one year.



OTP submitted extensive comments and data on the rule that showed:

1. Subbituminous and Lignite EGUs do not similarly control mercury.
2. EPA's cost-effectiveness calculations contained critical errors.

# ENVIRONMENTAL REGULATION UPDATE

## Greenhouse Gases:

On May 25, 2023 EPA proposed a greenhouse gas rulemaking under Section 111 of the Clean Air Act. Existing coal plants would need to choose from four options:

- Imminent-Term: Unit retirement before 1/1/2032
- Near-Term: Unit retirement by 1/1/2035 and adopt a 20% CF limit beginning 1/1/2030.
- Medium-Term: Unit retirement by 1/1/2040. Improve CO<sub>2</sub> rate by 16% beginning 1/1/2030 -- presumptively by co-firing 40% natural gas.
- Long-Term: Unit will continue to operate on and after 1/1/2040. Improve CO<sub>2</sub> rate by 88.4% beginning 1/1/2030 --presumptively by installing CCS.



OTP submitted extensive comments on the rule that stressed:

1. EPA needs to carefully analyze the proposed rule's impacts on grid reliability and electric affordability.
2. Carbon capture and sequestration was inappropriately identified by EPA as the Best System of Emission Reduction.
3. EPA's proposed timeline for compliance is unrealistic.

## LOOKING AHEAD

- 12/12/2023 – Astoria onsite fuel ADP hearing
- 1/4/2023 – MN IRP hearing



[otpc.com](http://otpc.com)  
[otpsustainability.com](http://otpsustainability.com)

# MINNESOTA MODELING RUNS

Exit Coyote in 2028	A	B	C
	Minnesota Only No Externalities	Minnesota with Old Externalities	Minnesota with New Externalities
NPVRR (\$000)	\$1,248,958	\$1,458,627	\$1,638,570
Year			
2023	Hoot Lake Solar	Hoot Lake Solar	Hoot Lake Solar
2024			
2025	Wind Repowers	Wind Repowers 200 MW Sur Solar	Wind Repowers 175 MW Sur Solar 50 MW Gen Wind
2026	Astoria Onsite Fuel	Astoria Onsite Fuel 100 MW Gen Wind	Astoria Onsite Fuel
2027			25 MW Sur Solar
2028			50 MW Sur Solar 100 MW Gen Wind
2029	75 MW Sur Solar 50 MW Gen Wind		100 MW Gen Wind 75 MW Battery
2030			
2031	50 MW Gen Wind		
2032	100 MW Sur Solar	50 MW Gen Wind	25 MW Gen Solar
Wind	100	150	250
Solar	175	200	275
Battery	0	0	75
Total	275	350	600

- Table 7 from our October 30, 2023 Reply Comments filed in Minnesota shows the impact externalities have on resource selections in the model.