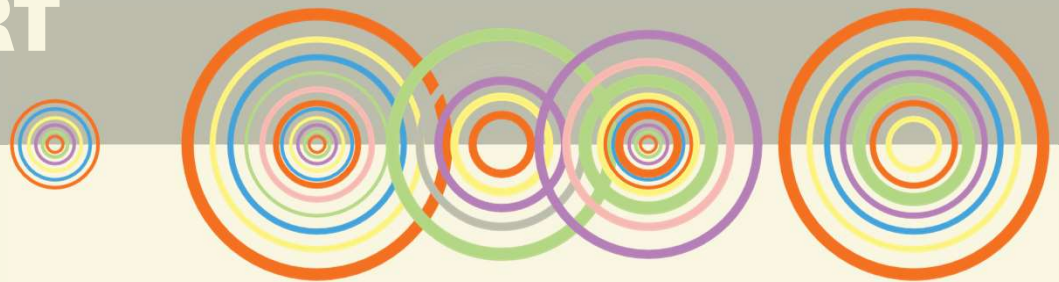


# SD-9: INTEGRATED SYSTEM PLANNING MONITORING REPORT

➤ 09.16.25 ➤



Brad Underwood  
Vice President and Chief Financial Officer



# SD-9 INTEGRATED SYSTEM PLANNING

Integrated System Planning is the ecosystem of planning processes used to efficiently integrate the transmission system, supply and demand side resources, and the increasingly complex distribution system. Through Integrated System Planning efforts, OPPD will continually plan for, adapt to, and enable both the needs of our customers and the rapidly transforming electric industry. Successful planning will ensure both a reliable electric system and the resiliency of the system and its components to prepare for, withstand, respond to, adapt to and quickly recover from a non-routine event.

OPPD shall:

- 1 Ensure that year-round supply-side and demand-side resource capacity exceeds forecasted load in compliance with resource adequacy and planning reserve margin requirements of OPPD's regional balancing authority.
- 2 Ensure compliance with applicable planning-related North American Electric Reliability Corporation Reliability Standards, including consideration of Essential Reliability Services.
- 3 Ensure planning accounts for potential extreme weather events, changes to demand-side and supply side regional resources and extended periods of low energy production by variable energy resources.
- 4 Compute resource adequacy metrics that quantify the ability of OPPD's resources to meet its forecasted electric demand:
  - Measure the frequency with which a system's demand is expected to be met by system capacity over a period of time
  - Measure the percentage of total energy that a system is projected to be able to serve over a period of time.

# SD-9 INTEGRATED SYSTEM PLANNING

- 5 Update the board on at least a quarterly basis as to its progress in developing new bulk electric system resources, engage the board in key decisions, and obtain annual board affirmation on current plans for developing new bulk electric system resources.
- 6 Achieve the following resource volumes by dates indicated:

RESOURCES (Nameplate or Peak Tested Capacity)	RANGE OF INCREMENTAL ADDITIONS (MW)
<b>Renewable Generation</b>	<b>1,000 - 1,500 MW</b>
Contracted by the end of 2024	200 MW
Contracted by the end of 2026	400 MW
Contracted by the end of 2028	300 MW
Contracted by the end of 2030	100 MW
<b>Energy Storage</b>	<b>Approximately 125 MW</b>
Contracted by the end of 2026	50MW
Contracted by the end of 2027	75MW
<b>Dual Fuel Combustion Turbines</b>	<b>600 – 950 MW</b>
Contracted by the end of 2025	600MW
<b>Demand Response</b>	<b>Minimum of 32 MW</b>
<b>On-site fuel oil storage for year-round accreditation for approximately 320 megawatts (MW) of existing natural gas-fueled generation assets</b>	<b>Approximately 320 MW</b>
Contracted by the end of 2025	320MW

# SD-9 INTEGRATED SYSTEM PLANNING

1

Ensure that year-round supply-side and demand-side resource capacity exceeds forecasted load in compliance with resource adequacy and planning reserve margin requirements of OPPD's regional balancing authority.

- OPPD is a member of the Southwest Power Pool (SPP), which identifies sufficient regional resource volumes which are required **to reliably serve electric demand.**
- As a member of SPP, OPPD is required to have enough generation capacity to **meet peak demand plus a Planning Reserve Margin (PRM).**
- OPPD has satisfied PRM requirements for 2025 and has plans to meet the increased requirements for the 2026 summer and winter seasons.

OPPD Historical and Current Planning Reserve Margin (PRM)

		2021	2022	2023	2024	2025
Summer	Required	12%	12%	15%	15%	15%
	Actual/Forecasted	20.8%	18.6%	16.8%	23.6%	26.3%
	Difference	8.8%	6.6%	1.8%	8.6%	11.3%
Winter	Required	12%	12%	15%	15%	15%
	Actual/Forecasted	26.0%	25.5%	31.8%	21.2%	38.1%
	Difference	14.0%	13.5%	16.8%	6.2%	23.1%

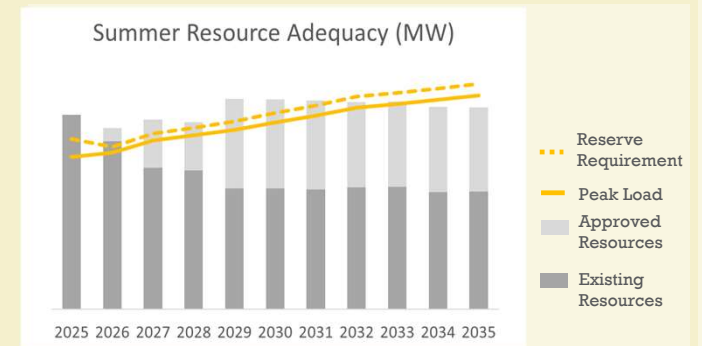
# SD-9 INTEGRATED SYSTEM PLANNING

1

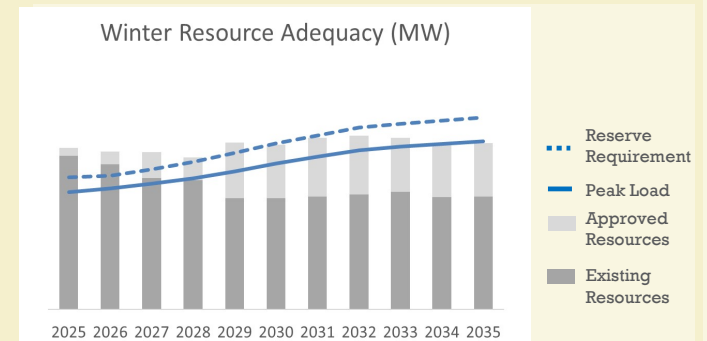
Ensure that year-round supply-side and demand-side resource capacity exceeds forecasted load in compliance with resource adequacy and planning reserve margin requirements of OPPD's regional balancing authority.

- OPPD is experiencing extraordinary economic development across its service territory, driven by growth across its customer classes and particularly large-scale load requests.
- OPPD is advancing a diverse mix of new resources to ensure reliable, affordable electric service and support Nebraska's continued economic growth.
- OPPD's Board-approved resources are expected to meet near-term resource needs. However, OPPD is continually evaluating potential needs for additional resources and will do so as part of its **2026 Integrated System Plan (Integrated Resource Plan)**.

- Summer Base PRM is increasing **from 15% to 16%** starting in 2026
- Summer Base PRM is increasing **from 16% to 17%** in 2029



- Winter Base PRM is increasing **from 15% to 36%** starting in 2026/27
- Winter Base PRM is increasing **from 36% to 38%** in 2029/30

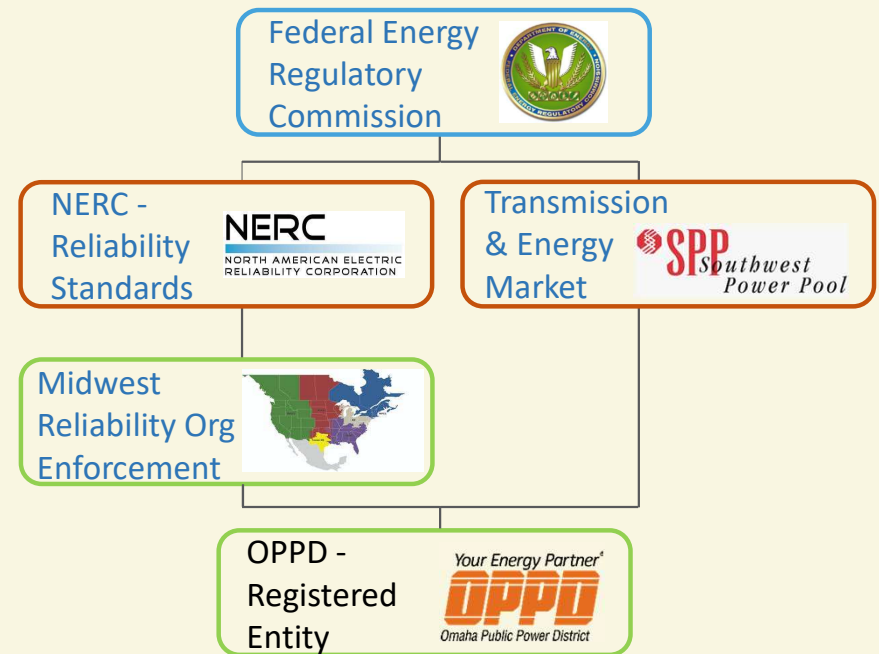


# SD-9 INTEGRATED SYSTEM PLANNING

2

Ensure compliance with applicable planning related to North American Electric Reliability Corporation Reliability Standards including consideration of Essential Reliability Services.

- Federal NERC Reliability Standards define the reliability requirements for planning and operating the North American bulk power system
- No enforceable NERC violations for the planning standards since the last SD-9 update
  - Various transmission system expansion plans identified and in-progress to support compliance
- Essential Reliability Services incorporated into generation expansion planning
  - Voltage support
  - Frequency Response
  - Load ramping/balancing
- Grid Reliability regulations continue to evolve due to the changing generation landscape and extreme weather events:
  - New transmission planning standard established in 2024 regarding system performance during extreme temperatures
  - New standards being drafted for enhanced performance requirements involving Inverter Based Resource (e.g. wind, solar, battery) integration

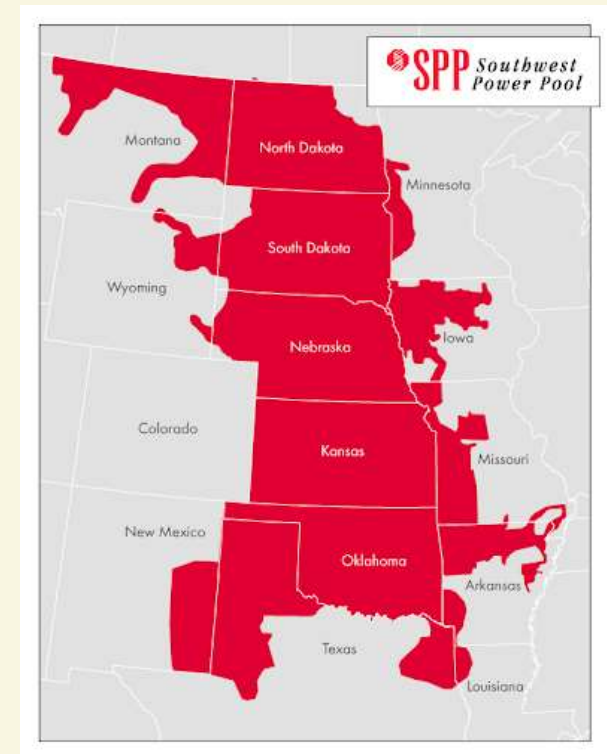


# SD-9 INTEGRATED SYSTEM PLANNING

3

Ensure planning accounts for potential extreme weather events, changes to demand-side and supply side regional resources and extended periods of low energy production by variable energy resources.

- SPP initiated enhancements to its regional resource adequacy and transmission expansion planning policies based on recent extreme weather events
- Several key SPP resource adequacy policy changes were advanced in 2025, providing a foundation for enhanced regional reliability. These include:
  - Performance Based Accreditation (PBA) *Approved by FERC July 2025*
  - Effective Load Carrying Capability (ELCC) *Approved by FERC July 2025*
  - Fuel Assurance (FA) *Approved by FERC July 2025*
  - Expedited Resource Adequacy Study (ERAS) *Approved by FERC July 2025*
  - Demand Response Policy *SPP working group reviews (Target February 2026)*
- In 2024, SPP incorporated extreme winter weather analysis into its annual regional transmission planning process and developed transmission expansion plans based on that analysis



# SD-9 INTEGRATED SYSTEM PLANNING

3

Ensure planning accounts for potential extreme weather events, changes to demand-side and supply side regional resources and extended periods of low energy production by variable energy resources.

- OPPD continues to identify opportunities to **harden existing and expand and modernize its generation supply and grid delivery infrastructure** to help withstand extreme weather events and accommodate the changing generation resource mix. These include:
  - Generation Supply:
    - Extreme weather hardening and readiness of generation fleet (e.g. component freeze mitigation, flood protection)
    - Four new combustion turbines at Turtle Creek Station (TCS) and Cass County Station (CCS) will be designed to operate between extreme high and low temperatures.
    - Adding dual fuel capability and fuel oil storage at existing and newly planned generation sites (CCS, TCS & Standing Bear Lake Station).



Nebraska City Station (NCS)



Standing Bear Lake Station



Cass County Station (CCS)



Turtle Creek Station (TCS)

# SD-9 INTEGRATED SYSTEM PLANNING

3

Ensure planning accounts for potential extreme weather events, changes to demand-side and supply side regional resources and extended periods of low energy production by variable energy resources.

- OPPD continues to identify opportunities to **harden existing and expand and modernize its generation supply and grid delivery infrastructure** to help withstand extreme weather events and accommodate the changing generation resource mix. These include:
  - Transmission & Distribution Grid:
    - ~400 miles of new or rebuilt transmission line projects planned in 10 year horizon, all to be built with modernized design and capacity along with multiple new substations
    - Integrated Distribution Plan underway to advance distribution planning & grid modernization efforts



## AMI Program – Next Gen Grid



# SD-9 INTEGRATED SYSTEM PLANNING

4

Compute resource adequacy metrics that quantify the ability of OPPD's resources to meet its forecasted electric demand:

- Measure the frequency with which a system's demand is expected to be met by system capacity over a period of time
- Measure the percentage of total energy that a system is projected to be able to serve over a period of time.

- System Resource Adequacy modeling provides valuable system insights and is conducted as part of OPPD's resource planning efforts. This modeling simulates the capability of OPPD's resources to meet OPPD's electric demands under a large range of:
  - Weather conditions (over 40 years of historical weather)
  - Renewable production scenarios
  - Conventional unit reliability scenarios
- OPPD's system is currently improving from a previously degraded state due to delays in resource additions. This will markedly improve with the completion of OPPD's planned generation additions.
- **OPPD's next update to system resource adequacy metrics will occur as part of the 2026 Integrated System Planning Process** and is essential to ensuring a robust future resource mix supporting load growth.

Resource Adequacy Reliability	2023 (Prior Study)	2026 (In progress)	2030 with Near Term Generation (Prior Study)
Frequency Basis (1-LOLE)	92.05%	Pending new number in 2026 ISP	99.99%
Energy Basis (1-EUE)	99.83%	Pending new number in 2026 ISP	99.99%

Note: The completion of OPPD's Turtle Creek Station, Platteview Solar Facility, and the completion of Standing Bear Lake Station later in 2025 has and will meaningfully improve OPPD's local system resource adequacy metrics from the 2023 period.

# SD-9 INTEGRATED SYSTEM PLANNING

5

Update the board on at least a quarterly basis as to its progress in developing new bulk electric system resources, engage the board in key decisions, and obtain annual board affirmation on current plans for developing new bulk electric system resources

- New Generation and Transmission updates were provided to the board on a quarterly basis or more frequently since the last SD-9 monitoring report



## 90-DAY OUTLOOK

All dates are directional and subject to change.

2025  
Q2

### Cass-to-Sarpy T-Line

- Vegetation clearing begins
- Finalize detailed construction and outage sequencing
- RFP Issue for Bid: May 2025

### North Douglas County T-Line

- Landowner conversations continue
- Public hearings planned for May and July
- RFP Issue for Bid: June 2025

### DELIVERY PROGRAM HEALTH

- Schedule** ● All projects are on track or ahead of schedule but challenged due to material lead times.
- Budget** ● Projects are over budget primarily due to increases in steel and construction costs.



### Standing Bear Lake Station

- 150MW Reciprocating Internal Combustion Engines (RICE)
- Commissioning & Performance Testing
- Next Milestone:
  - Engine Demonstration
  - Performance & Emission Testing



### Turtle Creek Station

- 450MW Simple Cycle Combustion Turbine (CT)
- Commissioning & Performance Testing
- Next Milestone:
  - Fuel Oil Firing
  - Performance & Emission Testing

## PIERCE COUNTY ENERGY CENTER

### PROJECT OVERVIEW & STATUS

**Nameplate:** 420 MW Solar / 170 MW Storage  
**Location:** Pierce County, Nebraska  
**Developer:** NextEra  
**Estimated COD:** 2027

Unique Partnership between Google and OPD

- Contingent items include:
  - Generation Interconnection Agreement
  - Firm Network Transmission Service Study
- Construction activities
  - Q4 2024 – began county road construction, grading and other civil site work
  - Q2 2025 – began pile and racking installation



Pierce County Energy Center Investor Pad

# SD-9 INTEGRATED SYSTEM PLANNING

- Complete
- On Track
- Challenged
- Delayed

6

Achieve the following resource volumes by dates indicated:

Resources	Year	Contracted Target	Status	
Renewable Generation	2024	200MW	<span style="color: green;">●</span>	<b>Complete:</b> Executed High Banks Wind Capacity Contract
	2026	400MW	<span style="color: green;">●</span>	<b>Complete:</b> Executed High Banks Wind Capacity Contract
	2028	300MW	<span style="color: green;">●</span>	<b>Complete:</b> Executed Milligan Wind Purchase Power Agreement
	2030	100MW	<span style="color: green;">●</span>	<b>Complete:</b> Executed Pierce County Energy Center Solar/Battery Purchase Power Agreement
Energy Storage	2026	Approx. 50MW	<span style="color: green;">●</span>	<b>Complete:</b> Executed Pierce County Energy Center Solar/Battery Purchase Power Agreement
	2027	Approx. 75MW	<span style="color: green;">●</span>	<b>Complete:</b> Executed Pierce County Energy Center Solar/Battery Purchase Power Agreement
Dual Fuel Combustion Turbines	2025	600MW	<span style="color: green;">●</span>	<b>Complete:</b> Equipment and EPC contracts executed and work underway at Turtle Creek Station (Unit 3) and Cass County Station (Units 3, 4 & 5).
Demand Response		Min. of 32MW	<span style="color: yellow;">●</span>	<b>Challenged:</b> SPP DR policy in development. Minimizing program spend until more clarity. Uncertainty around participation and growth.
On-Site Fuel Storage	2025	Approx. 320MW	<span style="color: green;">●</span>	<b>Complete:</b> Equipment and EPC contracts executed and work underway at Cass County Station.

# RECENT RENEWABLE AGREEMENTS

## High Banks Wind Energy Center

- > WITH: Google
- > SIZE, TYPE:  
600 MW Wind
- > AGREEMENT TYPE:  
Capacity Only

## Pierce County Energy Center

- > WITH: Google
- > SIZE, TYPE:  
420 MW Solar  
680 MWhr BESS
- > AGREEMENT TYPE:  
Capacity  
PPA for Partial Energy

## Milligan I Wind Project

- > WITH: EDF Renewables
- > SIZE, TYPE:  
300 MW Wind
- > AGREEMENT TYPE:  
PPA for all Energy,  
Capacity, and  
Environmental  
Attributes (RECS)

# RECOMMENDATION

- The System Management & Nuclear Oversight Committee has reviewed and accepted this Monitoring Report for SD-9 and recommends that the Board find OPPD to be sufficiently in compliance with the Board Policy SD-9.

# Any reflections on

- what has been accomplished, challenges and/or strategic implications?

