THE POWER OF PEOPLE

2024-2029 Rate Outlook
Load & Production Model Assumptions

NPPD Board of Directors Strategic Business Session
February 2023

Jim Fehr – Manager, Resource Planning & Risk

Nebraska Public Power District
Always there when you need us

Objective

- To share with the Board the key assumptions being used in the 6-year Budget and Rate Outlook pertaining to load growth projections, resulting capacity levels, and production model assumptions
    - — Load may *significantly* increase more than usual
    - — Production model assumptions will drive net non-firm sales revenues as well as fuel costs in Rate Outlook.

Definitions for commonly used terms

- **Resource Adequacy** (RA) is the ability to meet the customers' load (demands) in all hours.
  - **Planning Reserve Margin** (PRM) is the amount of excess resources (capacity) needed to reliably serve load. It is calculated by the Southwest Power Pool for its members
  - **Southwest Power Pool Loss of Load Expectations** (LOLE) study estimates the expected number of days in a year that load loss occurs. It is used to calculate the PRM.
  - **Accreditation** is the recognition of the resource's ability (in MW) to serve the load during peak periods. RA will calculate the accredited value for each resource.
- **Production model** is the software used to project on an hourly basis each unit's generation, fuel use, and market purchases or sales.

Changes impacting load growth and capacity requirements from last year

- Southwest Power Pool Planning Reserve Margin increased from 12% to 15% - impacting available capacity levels

- Passage of the Inflation Reduction Act (IRA) and Infrastructure Investment and Jobs Act (IIJA) has stirred growth
  - Hydrogen and Carbon Capture & Sequestration (CCS) load

- Significantly load growth in 2026-2029 timeframe
  - By 2029, projected energy has grown by 20% (from previous Rate Outlook projections)

- New load also brings new revenues

Capacity status after incorporating Planning Reserve Margin change

- Southwest Power Pool Planning Reserve Margin increased from 12% to 15% - starting with the 2023 summer season
- Table reflects impact on capacity from planning reserve margin change - - using last year's load projections

	2023	2024	2025	2026	2027	2028	2029
Surplus Capacity in Last Year's Rate Outlook	**107**	**261**	**278**	**163**	**178**	**199**	**220**
Additional Capacity required to meet change to 15% Planning Reserve Margin	**74**	**75**	**74**	**80**	**80**	**79**	**85**
	All years still showed at least a small surplus						
Resulting capacity levels (using last years load projections)	**33**	**186**	**204**	**83**	**98**	**120**	**135**

Projected Capacity Surplus/(Deficit)

The high load scenario in the Integrated Resource Plan (IRP) assumed 450 MW of additional load

Row		Scenario 1: Assume 300 MW use Special Power Product #8 (Interruptible Rate)	Scenario 2: No Demand Response assumed	Comment/Formula # = Row number
1	Starting Surplus in **2026**	83	83	From previous slide
2	Projected Additional Load -per Integrated Resource Plan (IRP)	450	450	High Load Scenario in IRP
3	Impact from Demand Response Program	240	0	240 MW = 80% of 300 MW Up to 80% of Interruptible Rate can be Demand Response
4	Additional 15% Reserve required	32	68	15%*(#2 - #3)
5	Resulting Deficit	**(159)**	**(435)**	#1 – (#2 - #3 + #4)

Considerations:

1. Working on load projections, but they could exceed the High Load Scenario in the IRP. Timing of the projected new load could impact capacity need date, there is also the potential for additional load to develop
2. Demand Response (DR) - The customer has the final say as to the DR amount
3. Resource Adequacy (RA) Requirements – due to recent weather events, it is anticipated future resource adequacy requirements will require additional capacity resources

Resource Options - Next Steps

Assuming an increase in projected load and Resource Adequacy requirements:

1. Bid on available surplus capacity
2. Issue Request For Proposal for additional capacity
4. Investigate:
    - Collaboration options with other Nebraska utilities
    - Addition of quick start resources at NPPD locations with transmission interconnect capacity
    - Utilizing existing interconnect capacity at PPA wind farms
    - Potential for customers to add behind the meter generation
    - Entering generator interconnect queue in 2023/2024 timeframe
5. Customer engagement and communications
6. Draft SPP studies on Resource Adequacy Requirements are expected to be completed by end of year. This will provide better insight on capacity requirements

Production Model Assumptions

Production Model – Market Assumptions+

- Forecasted market prices are driven by Natural Gas prices and are very volatile
- Market prices are approximately 18-30% higher than last year's Rate Outlook
- Market prices at GGS are ~20+% lower than projected prices for load

Production Model – Fuel Assumptions

Percent Changes Compared to Last Year's Rate Outlook

- CNS fuel rates increased 3.8 – 10.6%
- GGS fuel rates increased 5 – 6%
- Sheldon fuel rates increased 12 – 14.5%
- BPS fuel rates are 30 - 45% higher

Next Steps:

1. Complete production modeling with shown assumptions
   - Determine potential impacts due to increased load (New load brings new revenues and expenses)

2. Complete Budget and Rate Outlook process for 2024-29

3. Continue with next steps to address projected Capacity and Energy requirements

4. Finalize Resource Adequacy submittals to Southwest Power Pool

5. Communicate results with Board & customers

THE POWER OF PEOPLE

Questions

Stay connected with us.

Nebraska Public Power District
Always there when you need us