SD-4: Reliability

Generation and delivery systems must perform at a high level to provide reliable service to customer-owners. The Energy Delivery, Energy Production and Marketing, and Nuclear Business Units of OPPD contribute to reliable electric service to customer-owners.

- OPPD shall assure all customer energy requirements are met through the use of its generation resources and purchase power portfolio 100 percent of the time.

- OPPD shall achieve generation reliability by:
  - Maintaining baseload unit equivalent availability factor at or above 90% on a three-year rolling average; and,
  - Maintaining unit availability above benchmark levels per industry measures such as the NERC* GADS*.

- OPPD shall achieve electric system reliability by:
  - Limiting the SAIDI* to 90 minutes. This is the average outage duration per customer per year excluding declared major storms; and,
  - Maintaining a reliable transmission and distribution system. This will be achieved through performing the necessary maintenance and upgrades in accordance with NERC standards.
OPPD shall assure all customer requirements are met through the use of its generation resources and purchase power portfolio 100 percent of the time.

- With the integrated market
  - OPPD purchases power, from Southwest Power Pool, to serve load
  - OPPD offers generation to Southwest Power Pool in a day-ahead auction

- Customer requirements met 100 percent of the time.
OPPD shall achieve generation reliability by:

Maintaining unit availability above benchmark levels per industry measures such as the NERC* GADS*.

**NERC**

The North American Electric Reliability Corporation (NERC) is a not-for-profit regulatory authority whose mission is to assure the reliability of the bulk power system in North America.

**GADS**

The Generating Availability Data System (GADS) tracks reliability information from stations throughout the United States. As of January 1, 2013, GADS became a mandatory industry program for conventional generating units that are 20 MW and larger.
OPPD shall achieve generation reliability by:

Maintaining baseload unit equivalent availability factor at or above 90% on a three-year rolling average.

- Equivalent Availability Factor (EAF):
  - A percentage of time a unit was available to generate over a total period of time. Outages and derates impact this factor.
  - If a unit is available for the entire month and is capable of full load during that time period, then its monthly EAF would be 100%.
  - The corporate EAF is megawatt weighted. Targets are established on both a 36-month and 12-month basis. By looking at a 36-month EAF you are able to normalize outages across the fleet.
OPPD shall achieve generation reliability by: Maintaining baseload unit equivalent availability factor at or above 90% on a three-year rolling average.

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EAF Projections (without Fort Calhoun)

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<td>3 - Year</td>
<td>84.7%</td>
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Current Reliability Programs

• Online
  – Vibration monitoring
  – Oil sampling
  – Infrared Thermography
  – Motor testing program
  – Ultrasonic testing
  – Acoustic testing
  – Long term trending of temperatures and performance metrics
  – Routine visual inspections
  – Boiler chemistry analysis and monitoring

• Outage
  – Boiler inspections- drum, burners, tube erosion inspections in furnace and backpass
  – Turbine NDE and inspections
  – Feedwater heater eddy current testing
  – Piping inspections
OPPD shall achieve electric system reliability by:

Limiting the SAIDI to 90 minutes. This is the average outage duration per customer per year excluding declared major storms.

- A highly reliability system is a major contributor to high satisfaction for residential, commercial, and industrial customers
Performance

2016 SAIDI is currently tracking at 77 minutes

• OPPD System performance exceeds national trends

Exhibit A
Programs for Reliability

• OPPD has dedicated programs to maintain reliability including
  – Ground Line Inspection and Treatment (GLIT)
    • Identified and proactively replaced poor condition wood poles
  – Transmission and Distribution Inspection Program (TDIP)
    • Identify and proactively replace distribution conductor and equipment
  – Vegetation Management
Utilizing Technology

Outage Management System

- OPPD’s OMS was upgraded in 2016
- The new system allows for better real-time tracking of outages and restoration

Distribution Automation

- A pilot Smartgrid system will go live by the end of 2016
- The pilot includes a ‘self-healing’ feature that will reduce outage time
- More accurate monitoring of system behavior will produce better tools to predict and address issues
OPPD shall achieve electric system reliability by:

Maintaining a reliable transmission and distribution system. This will be achieved through performing the necessary maintenance and upgrades in accordance with NERC standards.

• The Board of Directors received a NERC Compliance presentation from Doug Peterchuck on January 12th, 2016.
Compliance Results

• NERC and their regional entity completed an audit in February 2016.
• The audit found OPPD to be in full compliance
• The District has no active violations and is considered fully compliant by NERC
Recommendation

• The System Management Committee has reviewed and accepted this Monitoring Report for SD-4 and recommends that the Board find OPPD to be sufficiently in compliance with Board Policy SD-4.
Revisions

• Management is recommending to the Board that revisions be made to the policy as reflected on Exhibit B.