



Board Action

BOARD OF DIRECTORS

April 19, 2022

ITEM

SD-4: Reliability Monitoring Report

PURPOSE

To ensure full board review, discussion and acceptance of the SD-4: Reliability Monitoring Report.

FACTS

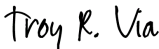
- a. The first set of Board policies was approved by the Board on July 16, 2015. A second set of Board policies was approved by the Board on October 15, 2015.
- b. Each policy was evaluated and assigned to the appropriate Board Committee for oversight of the monitoring process.
- c. The System Management and Nuclear Oversight Committee is responsible for evaluating Board Policy SD-4: Reliability.
- d. The System Management and Nuclear Oversight Committee has reviewed the SD-4: Reliability Monitoring Report and is recommending that OPPD be found to be sufficiently in compliance with the policy as stated.


ACTION

The System Management and Nuclear Oversight Committee recommends Board approval of the SD-4: Reliability Monitoring Report.

RECOMMENDED:

APPROVED FOR BOARD CONSIDERATION:

DocuSigned by:

181187221FA24AE...
 Troy R. Via
 Chief Operating Officer and
 Vice President – Utility Operations

DocuSigned by:

AC999FD0E56247E...
 L. Javier Fernandez
 President and Chief Executive Officer

TRV:mfh

Attachments: Exhibit A – Monitoring Report
Resolution



Exhibit A

SD-4: Reliability Monitoring Report

System Management & Nuclear Oversight Committee Report
Troy Via, Chief Operating Officer & Vice President – Utility Operations
April 19, 2022



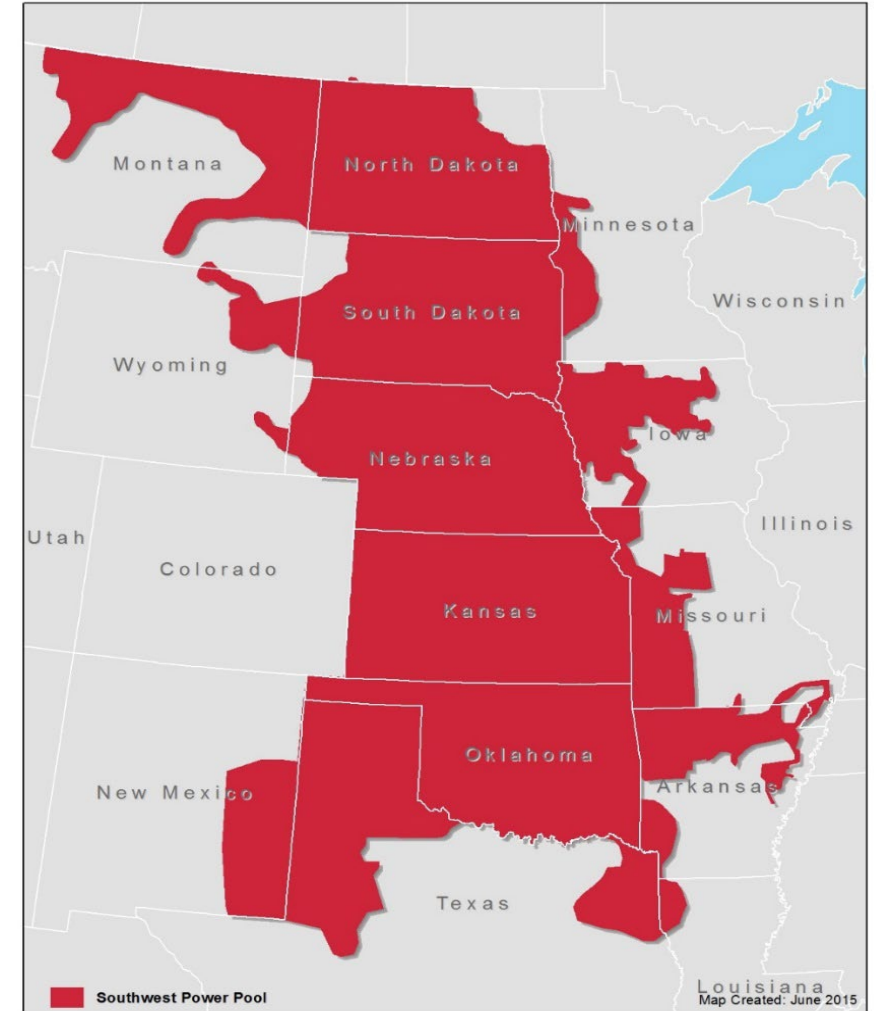
SD-4: Reliability

Generation and delivery systems must perform at a high level to provide reliable service to customer-owners. The Energy Delivery, Energy Production and Nuclear Decommissioning, and Financial Services 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.

SD-4: OPPD shall assure all customer requirements are met through the use of its generation resources and purchase power portfolio 100 percent of the time

- Resource planning assessments allow us to diligently plan for sufficient generation capacity/reliability in the future
- As required by SPP, OPPD plans for accredited generation resources to meet 112% of expected peak load
- Transmission reservations are in place to ensure firm delivery of electricity creating 'right of way' for electricity to get from OPPD generation to OPPD load
- The SPP integrated market provides real time access to liquid power markets
- Generation (both owned and purchased) supply requirements met 100% of the time¹

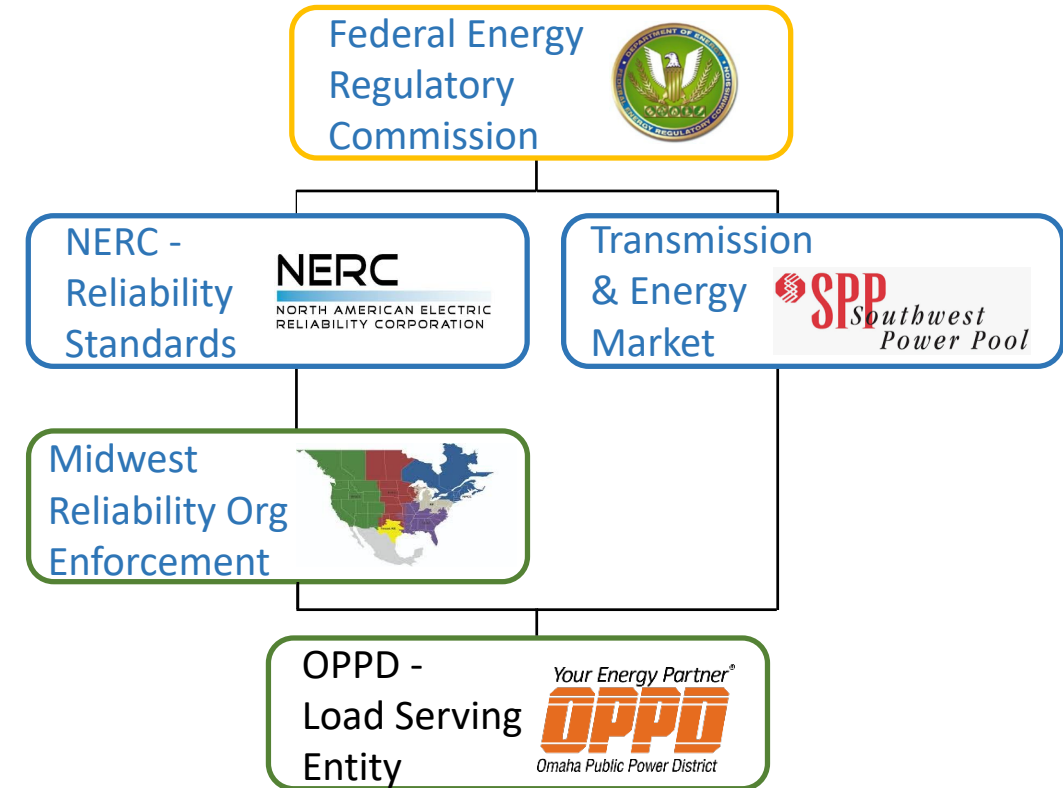


¹ 2021 Winter Storm Uri controlled outages were a result of a regional event, not OPPD's system or generation

Federal Regulatory Framework & Compliance

SD-4: System reliability will be achieved through performing the necessary maintenance and upgrades in accordance with NERC standards.

- MRO off-site audits (generally quarterly)
 - 2021 off-site audits → no enforceable violations
- MRO on-site audits (every 3-years)
 - Upcoming in June 2022
- OPPD performs continuous monitoring
- No enforceable NERC violations since the last SD-4 update



Strong Culture of Compliance



Positive Performance



Strong Regulatory Standing

Generation Reliability Metric

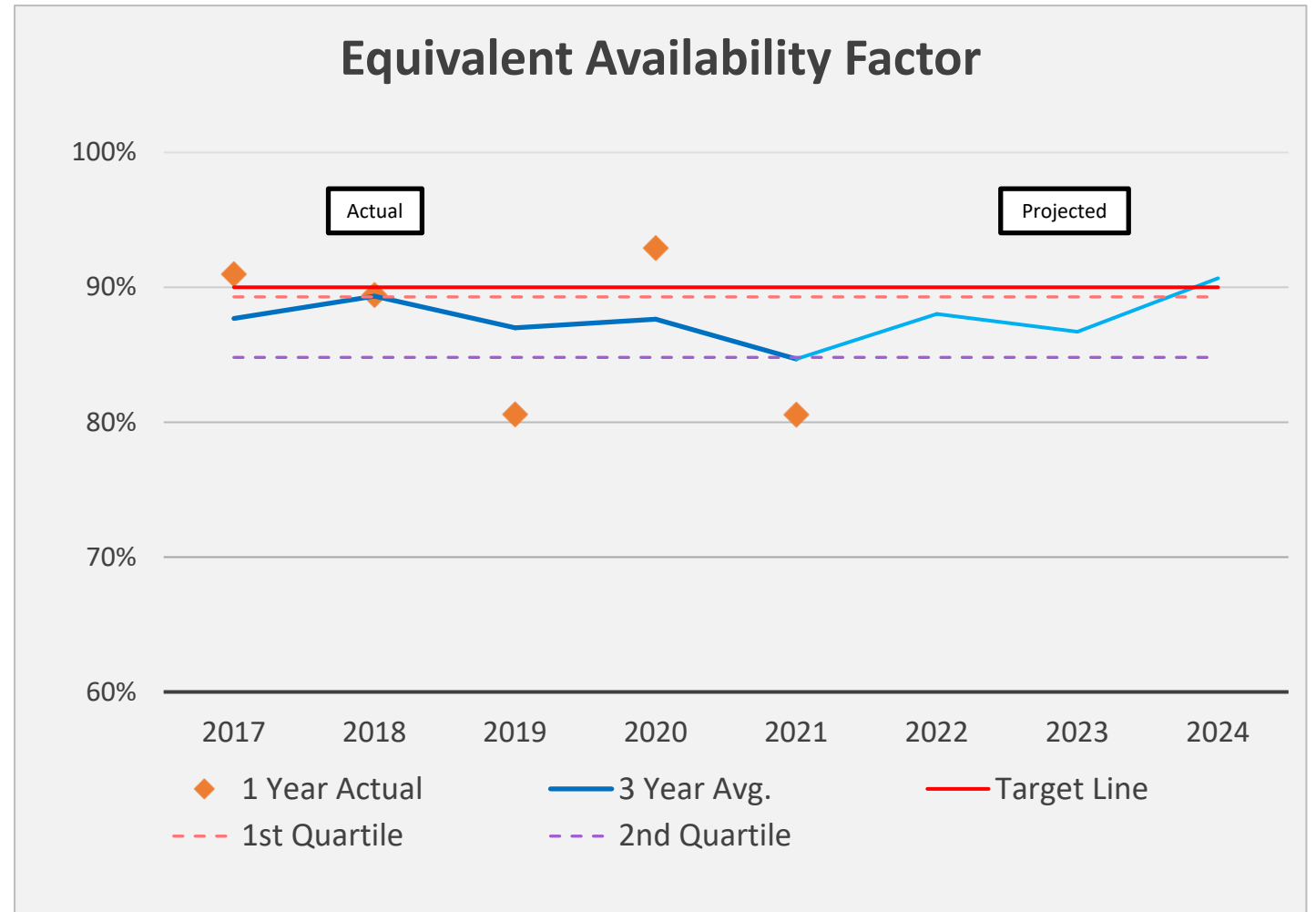
Equivalent Availability Factor (EAF):

- Percentage of time a unit was available
- OPPD's corporate EAF is megawatt weighted
- Goal established is a 3-year target to normalize outages
- Target based on top quartile NERC Generating Availability Data System (GADS) benchmarking
- EAF is impacted by all planned or forced generating unit outages and derates



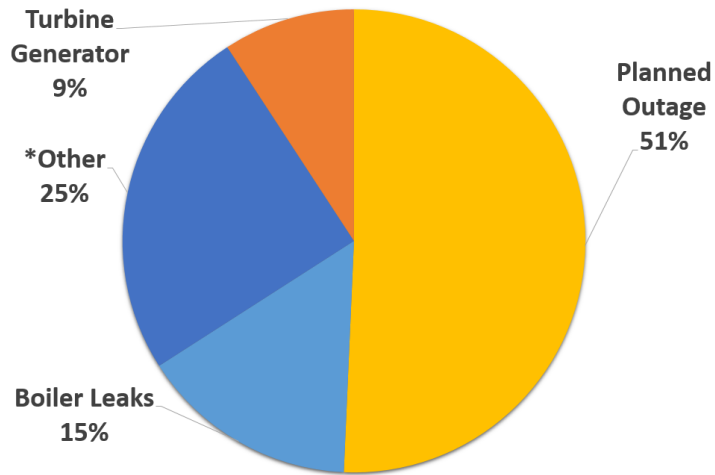
2021 Generation Performance

- OPPD long term goal to achieve generation reliability by maintaining baseload unit EAF at or above 90% on a three-year rolling average.
- 2021 year end was 84.7% vs a target of 86.6%.
- In 2021, 89% EAF represents top quartile of industry peers.



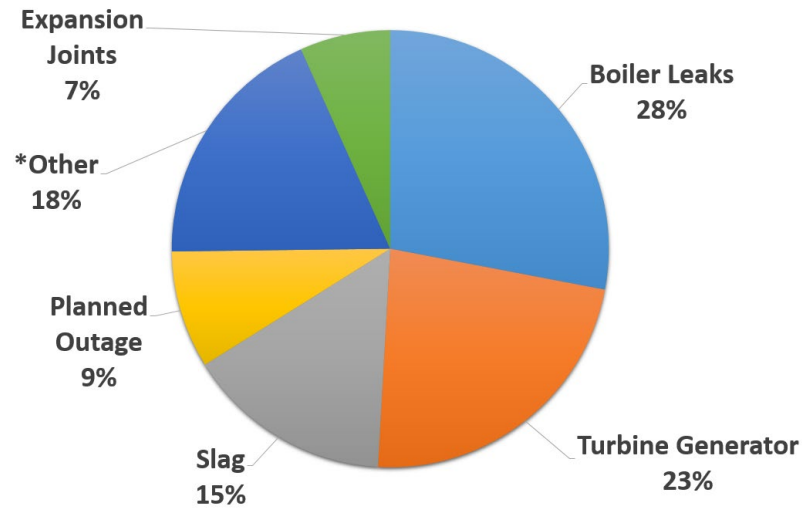
Generation Reliability Drivers

2019



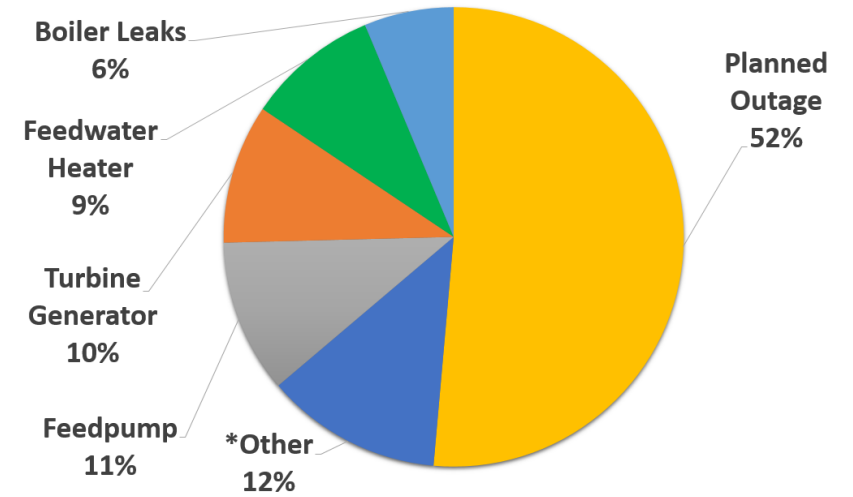
2,861,000 Equivalent Megawatt Hours
Unavailable

2020



1,042,000 Equivalent Megawatt Hours
Unavailable

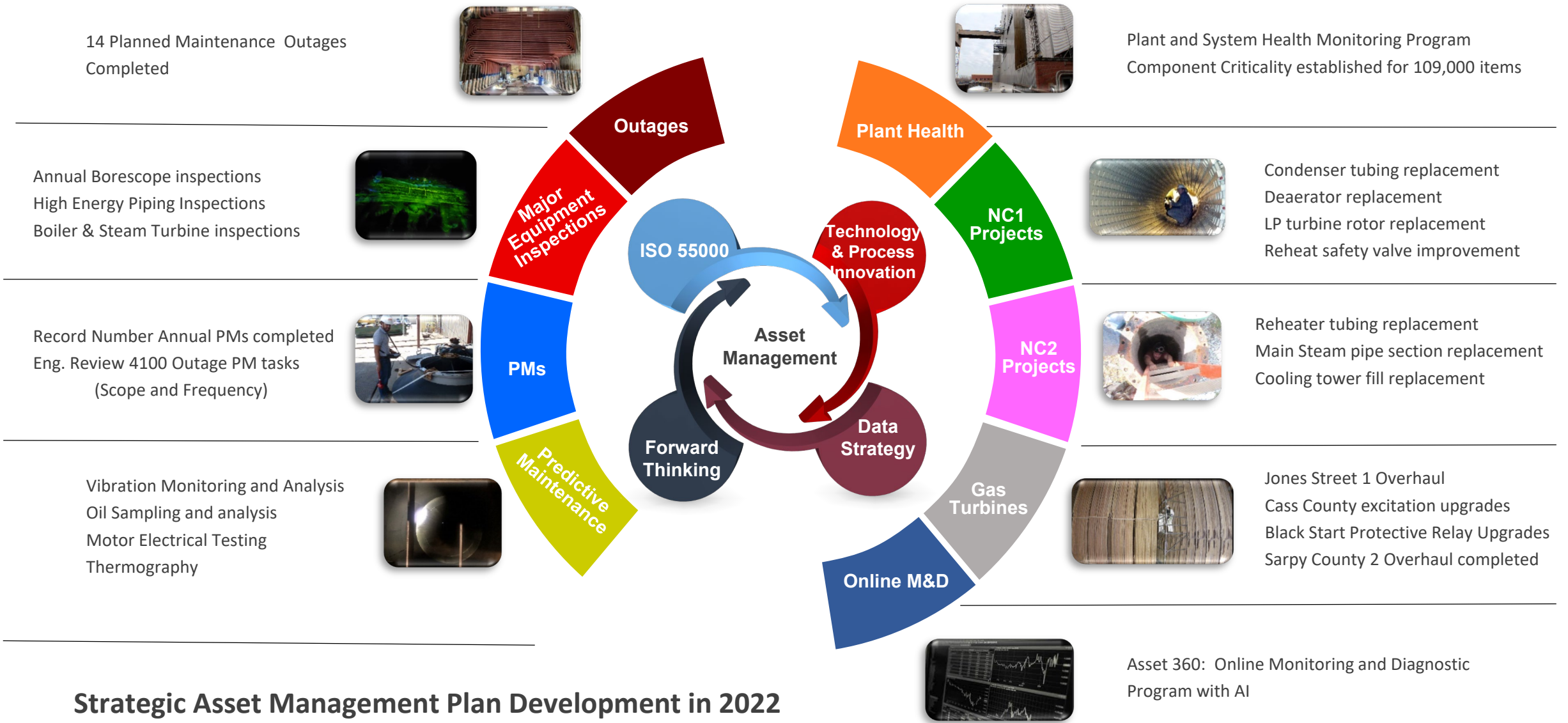
2021



2,855,233 Equivalent Megawatt Hours
Unavailable

*Examples of items classified as Other: Valve Issues, Mill Issues, Testing, Pump Issues, Fan Issues, Electrical Equipment, etc.

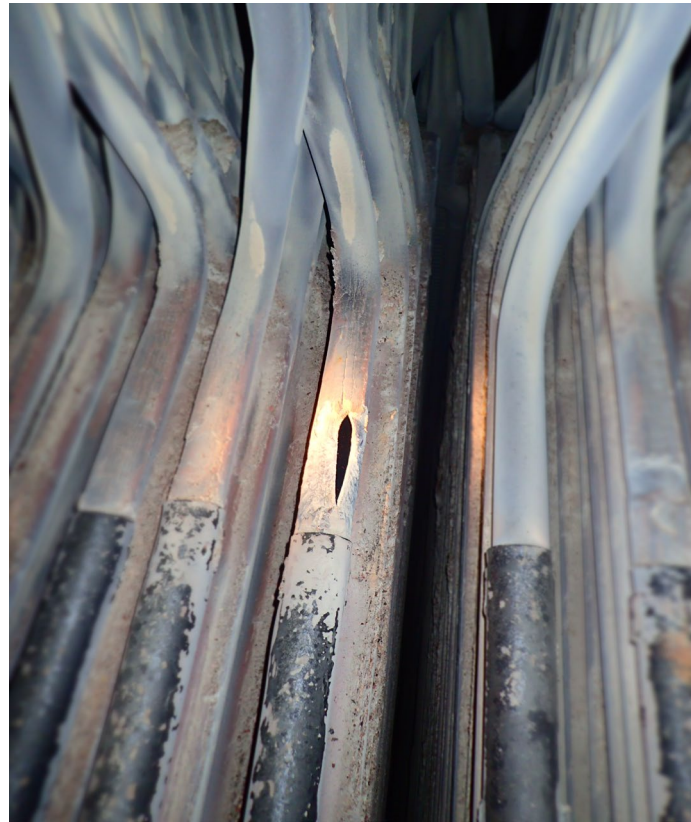
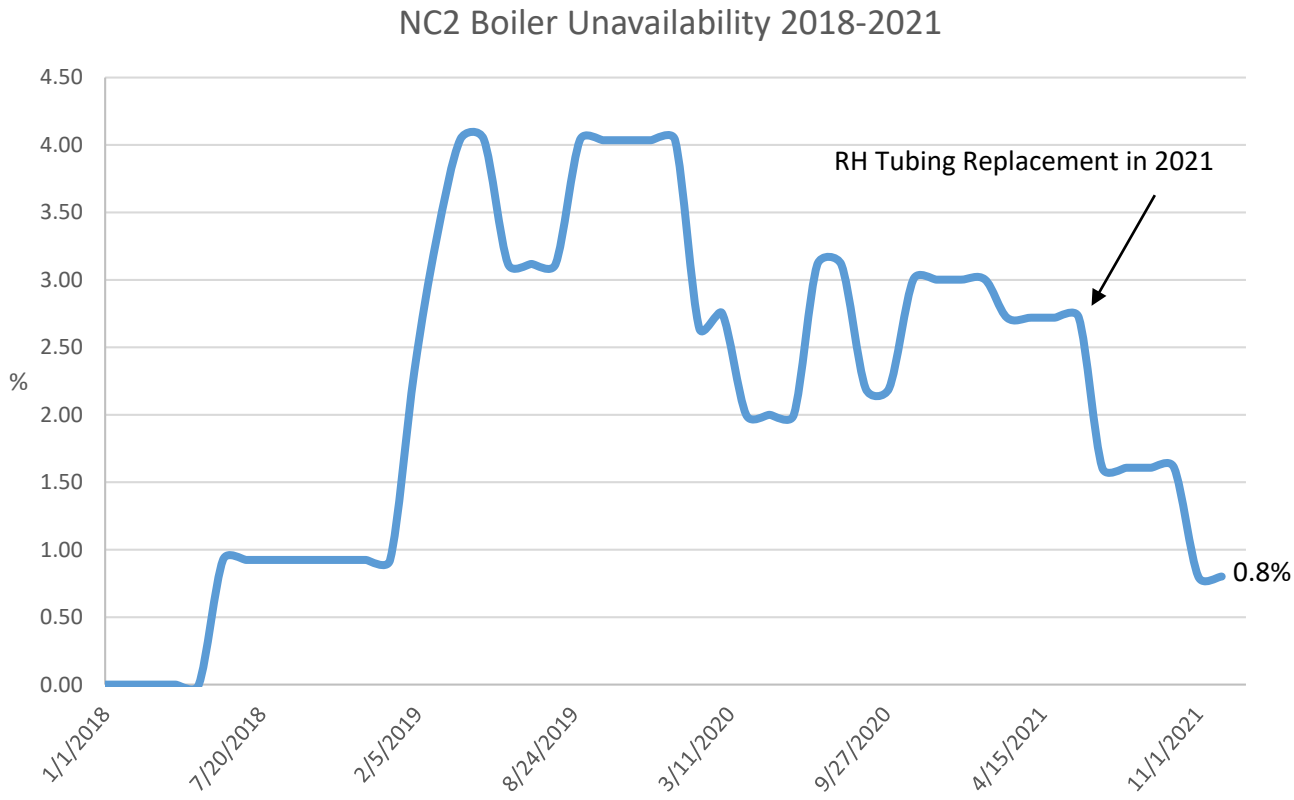
Asset Management - Reliability



Strategic Asset Management Plan Development in 2022

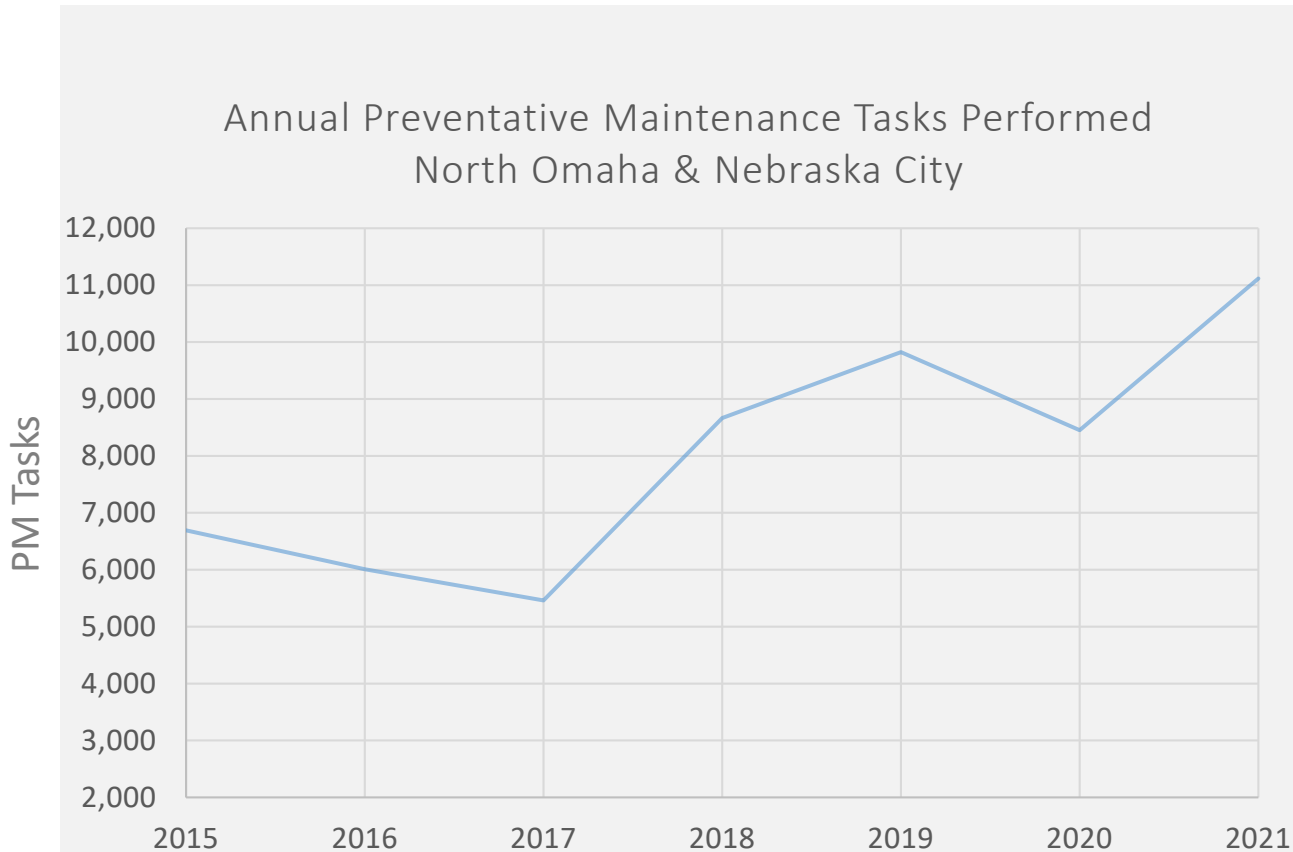
Boiler Reliability Progress in 2021

NC2 reheater tubing replacement impact



Reheat tube failures on NC2

Reliability Programs Growth



- Record Number Preventative Maintenance tasks performed
- Regular Plant / System Health Reviews
- Predictive Maintenance Program Growth
- Expanding Drone Inspection Capability
- Asset 360

System Reliability Metric

OPPD shall achieve electric system reliability by:

Limiting SAIDI to 90 minutes. This is the average outage duration per customer per year excluding Major Event Days (MEDs).

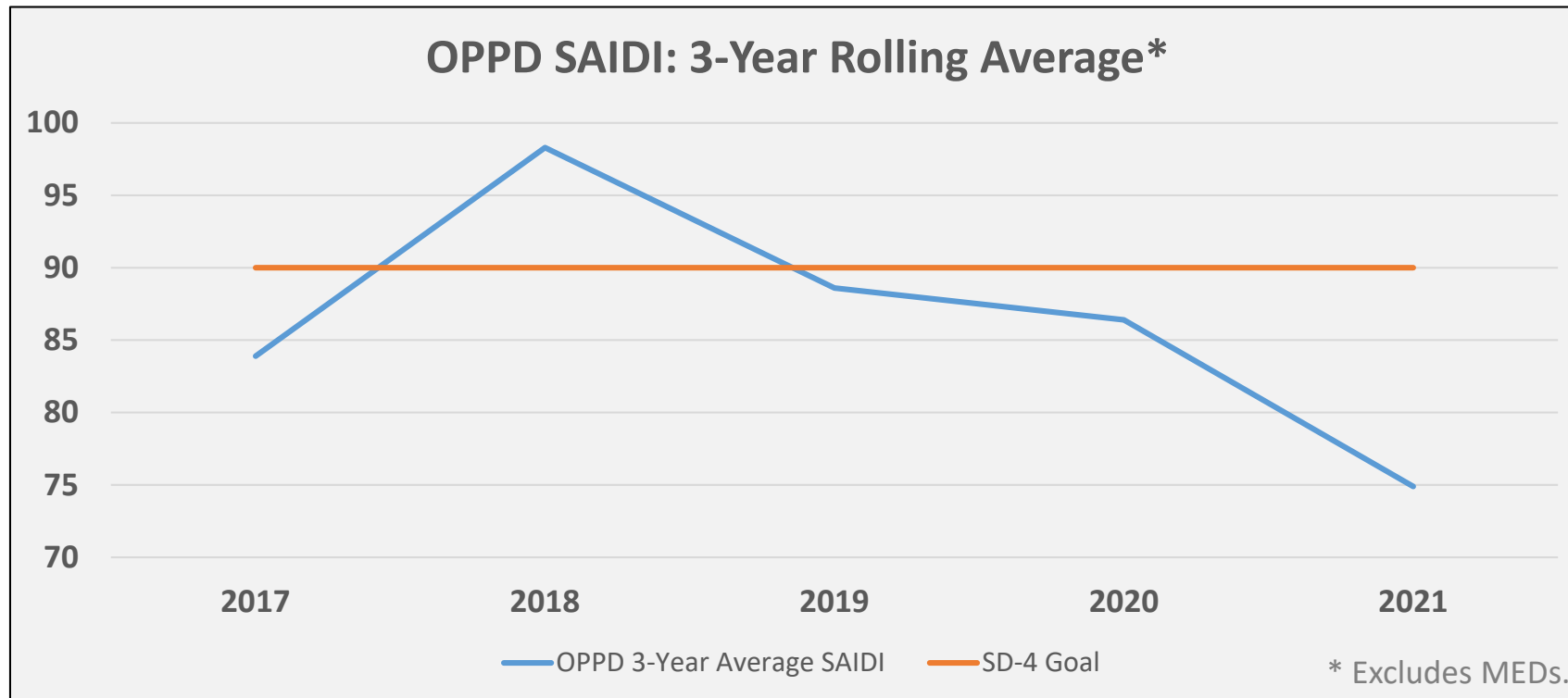
- SAIDI: System Average Interruption Duration Index
- Nationally recognized standard
- A SAIDI of 90 minutes = 99.98% availability, generally first quartile



System Reliability Metric: SAIDI

SAIDI at the end of 2021 was 74.9 minutes

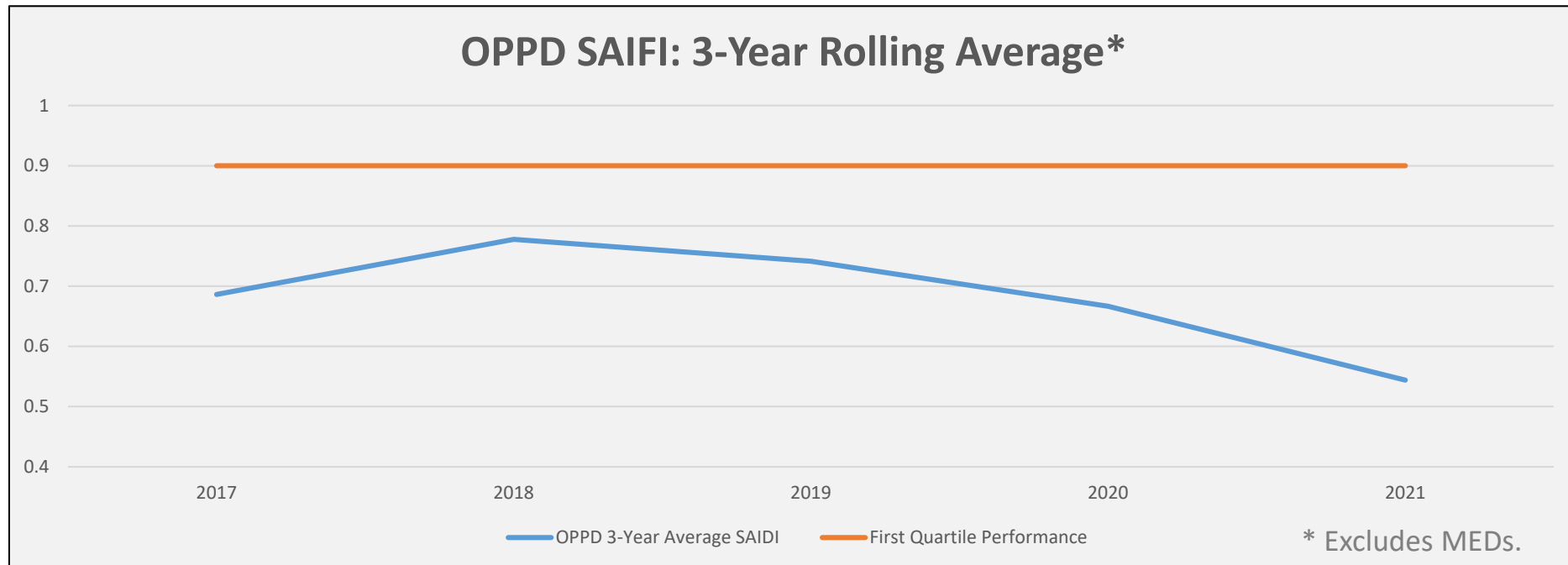
- System performance continued its positive downward improvement trend
- OPPD has Top Quartile Performance compared to benchmark



Outage Frequency (SAIFI)

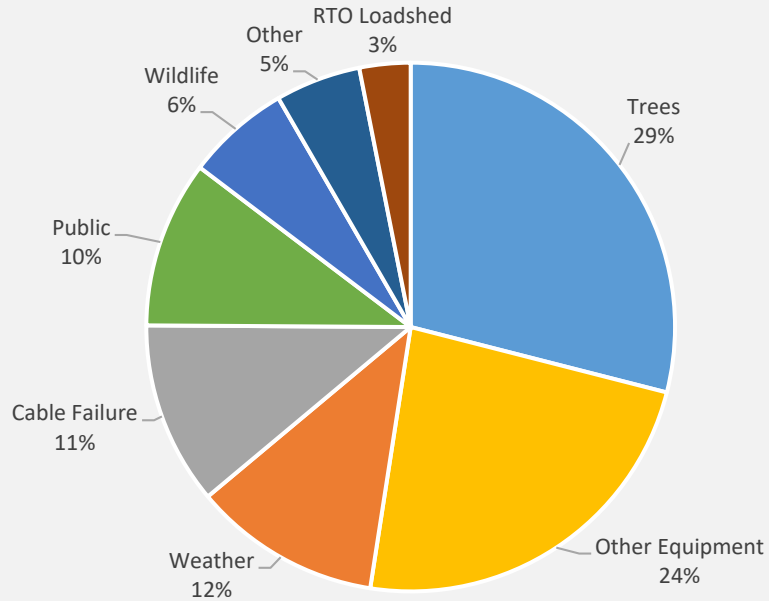
SAIFI at the end of 2021 was 0.54 incidents

- SAIFI (System Average Interruption Frequency Index) measures outage frequency >5 Minutes
- Per the IEEE Distribution Reliability Working Group annual benchmarking survey, a SAIFI of 0.90 or lower is generally first quartile performance. OPPD has Top Quartile Performance compared to the benchmark
- Improvements in SAIFI equate to a reduction in the frequency of outages

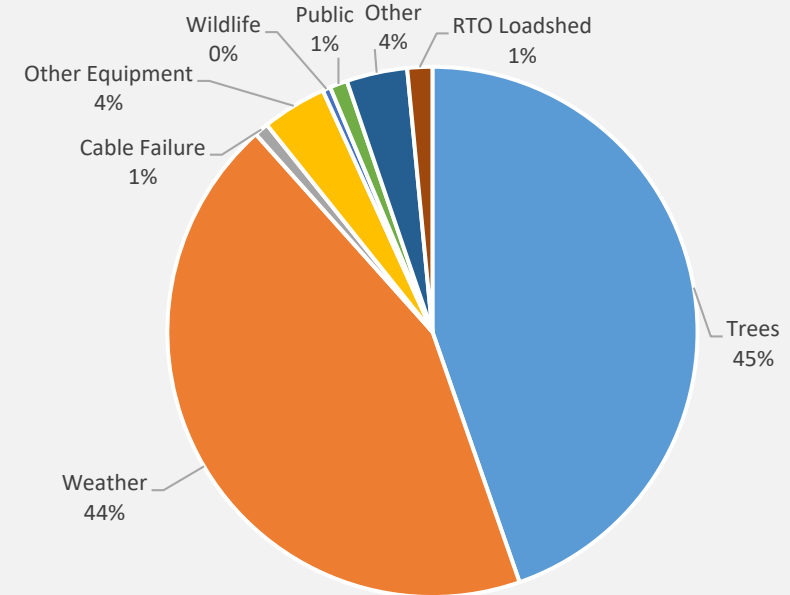


2021 Outage Causes

2021 Customer Outage Minutes By Cause EXCLUDING MEDs



2021 Customer Outage Minutes by Cause INCLUDING MEDs



- The top categories have remained consistent for several years.
 - Tree minutes increased in 2021, but Equipment and Cable experienced decreases
- The July storm accounted for 84% of customer minutes of interruption in 2021 when we include MEDs

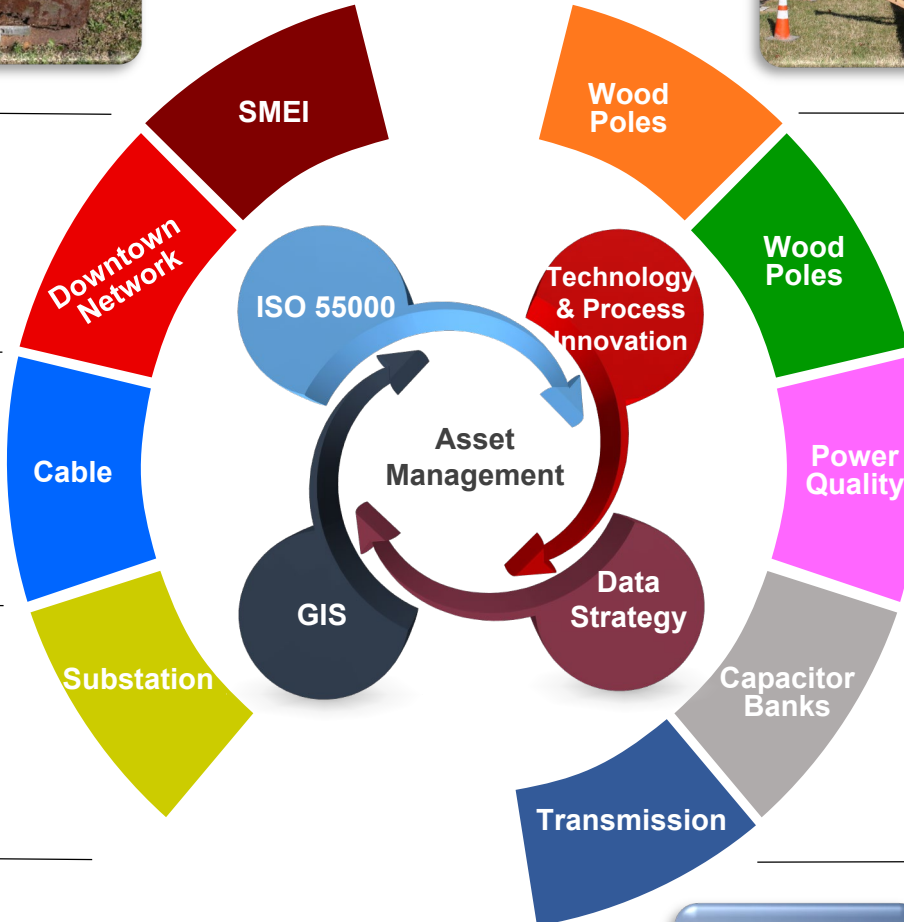
Asset Management - Reliability

Padmount equipment is inspected, painted, and replaced. Program is scheduled to increase in 2022



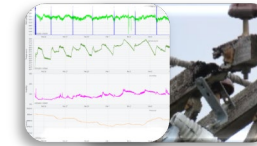
Proactive replacement of wood poles continues at a high pace

Downtown Network vaults have thermal inspections, equipment evaluated and replaced



Significant numbers of transmission and distribution poles are inspected on an annual basis

Proactive replacement of underground cable continued at a high pace in the metro and rural



Power quality continues to respond directly to customer concerns and take proactive steps to inspect and mitigate issues on poor performing circuits

Substation inspection and maintenance reviews continued, up to and including proactive replacement of power transformers



Proactive inspection and maintenance of capacitors provides steady VAR resources to the system

Annual transmission line inspections are completed by walk down, helicopter, and an increasing use of drones

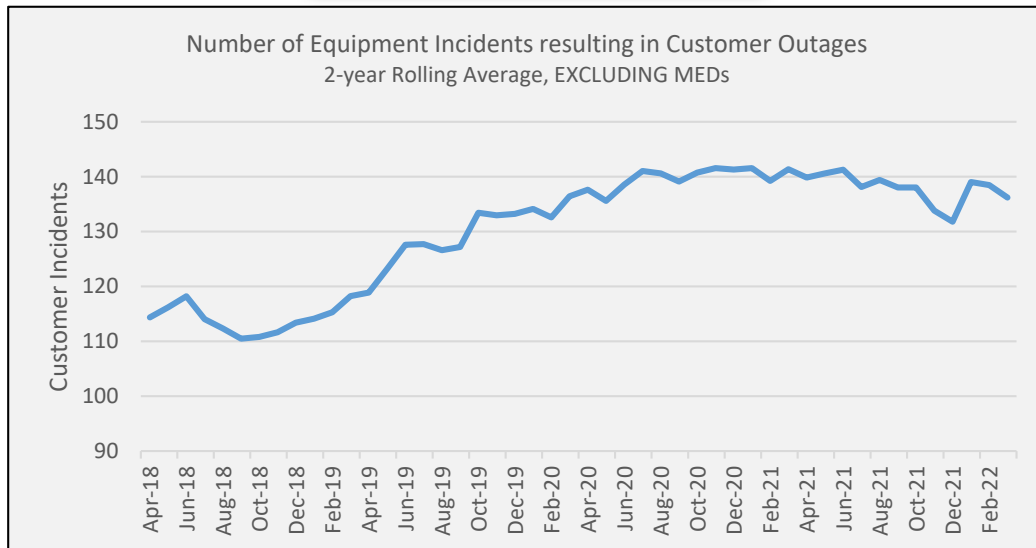


Strategic Asset Management Plan Development in 2022

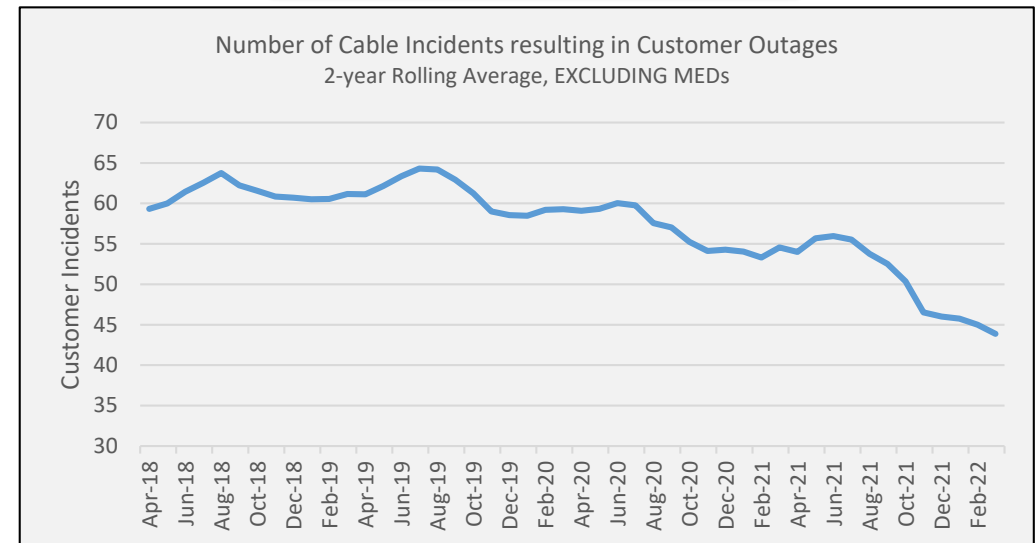
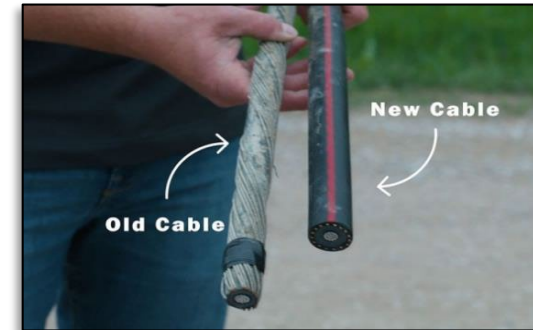
Program Effectiveness Examples

Equipment Inspection/Replacement & Cable Replacement have been continual targets for funding due to their impact on customer outages. Cable replacement continues to show very positive trends. Equipment failures resulting in customer outages was on the increase, but has stabilized due to program efforts and should start to see a reduction in incidents.

Equipment Inspection and Replacement

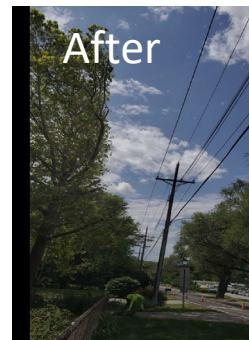
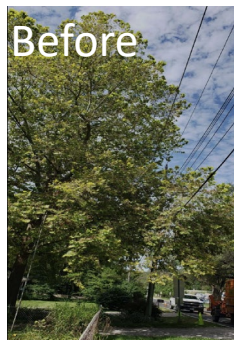


Proactive Cable Replacement

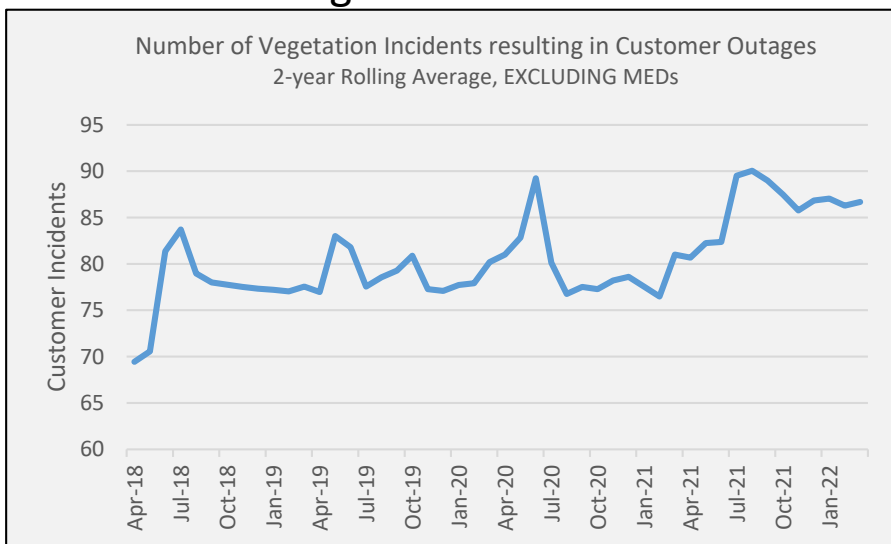


Program Effectiveness Examples

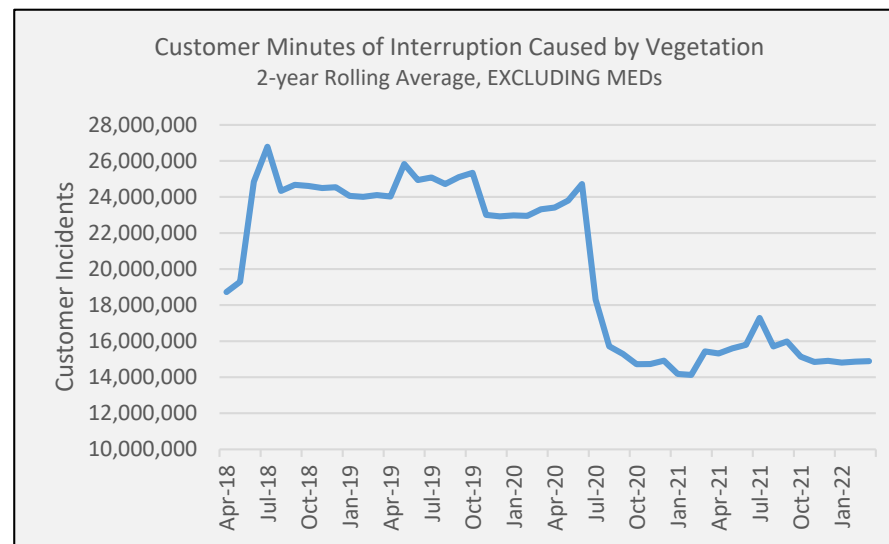
Vegetation Management continues to be a priority for reliability improvements. Increases in funding have resulted in a reduction in the customer minutes of interruption caused by vegetation interference. However, the frequency of incidents has shown a slight increase. Program improvements will continue to be evaluated and trends in performance will continue to be closely monitored to reduce the impact of vegetation on our customers.



Vegetation Incidents



Vegetation Customer Minutes of Interruption



Reliability Focus Areas 2021-2022

- **SE Nebraska / Rulo Area**
 - Over 12 miles of new construction to add stronger ties to this load area is completed.
 - Circuit inspections, improvements, and replacement of obsolete conductor
- **Palmyra/Unadilla**
 - Heightened vegetation management
 - Circuit inspections, improvements, and equipment replacements
 - New strong circuit ties to support system resiliency
- **Saunders County**
 - Installation of new Smart Communicating reclosers
- **Hooper and Nickerson**
 - Circuit inspections, rebuilds, and equipment replacements
 - Installation of new Smart Communicating reclosers
- **Metro Area**
 - Continued vegetation management, circuit inspections, equipment inspections, and replacement of aging equipment
 - Evaluation of overhead to underground conversion, undergrounding of new facilities, and system hardening against major storms

Recommendation

The System Management & Nuclear Oversight 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.



Williams/Via

DRAFT
RESOLUTION NO. 64xx

WHEREAS, the Board of the Directors has determined it is in the best interest of the District, its employees, and its customer-owners to establish written policies that describe and document OPPD's corporate governance principles and procedures; and

WHEREAS, each policy was evaluated and assigned to the appropriate Board Committee for oversight of the monitoring process; and

WHEREAS, the Board's System Management and Nuclear Oversight Committee (the "Committee") is responsible for evaluating Board Policy SD-4: Reliability on an annual basis. The Committee has reviewed the SD-4: Reliability Monitoring Report and finds OPPD to be sufficiently in compliance with the policy as stated.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Omaha Public Power District hereby accepts the SD-4: Reliability Monitoring Report, in the form as set forth on Exhibit A attached hereto and made a part hereof, and finds OPPD to be sufficiently in compliance with the policy as stated.