

Vegetation-Related Transmission Outage Report

2020 Annual Report

May 11, 2021

RELIABILITY | RESILIENCE | SECURITY









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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security

Because nearly 400 million citizens in North America are counting on us

The North American BPS is divided into six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners and Operators participate in another.



MRO	Midwest Reliability Organization
NPCC	Northeast Power Coordinating Council
RF	ReliabilityFirst
SERC	SERC Reliability Corporation
Texas RE	Texas Reliability Entity
WECC	Western Electricity Coordinating Council

Executive Summary

This report summarizes the vegetation-related transmission outages that have been reported to the ERO Enterprise in 2020.

Reliability Standard FAC-003-4 requires that applicable Transmission Owners and Generator Owners submit applicable Sustained Outages caused by vegetation to their REs on a quarterly basis.

In 2020, the REs reported 30 vegetation-related outages due to vegetation contact from outside the right-of-way (ROW). The majority of the outages were caused by weather-related activities in the area. The registered entities have taken appropriate actions to remediate the issues and minimize reoccurrence.¹

Four Full Notices of Penalty were filed in 2020 that involved vegetation encroachments or contact from inside the ROW.

¹ For more information, refer to the Vegetation Management Reports at: https://www.nerc.com/pa/comp/CE/Pages/CMEP%20and%20Vegetation%20Reports.aspx

Introduction

The goal of the Transmission Vegetation Management Reliability Standard is "to maintain a reliable electric transmission system by using a defense-in-depth strategy to manage vegetation located on transmission ROWs and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of vegetation-related outages that could lead to cascading."

FAC-003-4 requires applicable registered entities to manage vegetation located on transmission ROWs and minimize encroachments from vegetation located adjacent to the ROW.

Additionally, the Reliability Standard requires the applicable registered entities to submit all Sustained Outages of applicable lines to their REs on a quarterly basis through Periodic Data Submittals.

Each of the reportable Sustained Outages are categorized in the Reliability Standard as one of the following:

- Category 1A Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, which are identified as an element of an Interconnection Reliability Operating Limit (IROL) or Major WECC Transfer Path, by vegetation inside or outside of the ROW;
- Category 1B Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, not identified as an element of an IROL or Major WECC Transfer Path, by vegetation inside or outside of the ROW;
- Category 2A Fall-ins: Sustained Outages caused by vegetation falling into applicable lines, which are identified as an element of an IROL or Major WECC Transfer Path, from within the ROW;
- Category 2B Fall-ins: Sustained Outages caused by vegetation falling into applicable lines, not identified as an element of an IROL or Major WECC Transfer Path, from within the ROW;
- Category 3 Fall-ins: Sustained Outages caused by vegetation falling into applicable lines from outside the ROW;
- Category 4A Blowing together: Sustained Outages caused by vegetation and applicable lines, which are identified as an element of an IROL or Major WECC Transfer Path, blowing together from within the ROW; and
- Category 4B Blowing together: Sustained Outages caused by vegetation and applicable lines, not identified as an element of an IROL or Major WECC Transfer Path, blowing together from within the ROW.

The REs submit the aggregated report to NERC.

Sustained Outages in 2020

Registered entities reported 30 Sustained Outages in 2020 that were from vegetation fall-ins from outside the ROW. These outages were largely due to various weather-related events.

Eighteen of the outages were due to adverse weather activities in the area. There were no known weather-related issues in 12 of the reported outages.

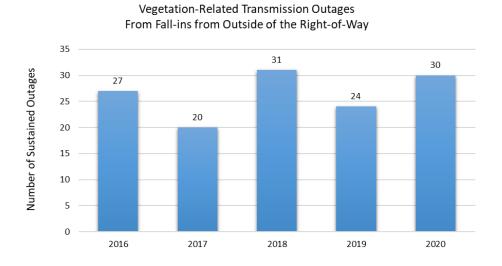


Figure 1: Five-Year Vegetation-Related Sustained
Outages from Outside the ROW

The majority of the outages happened on 230 kV transmission lines, which are the most common voltage class in the United States.

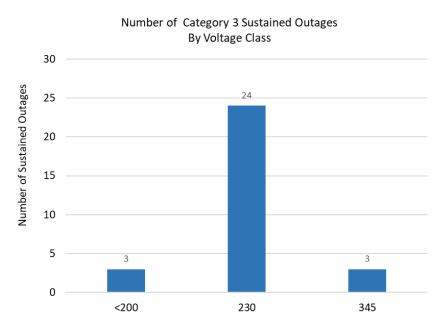


Figure 2: Vegetation-Related Sustained Outages by Voltage Class and Outage Category in 2020

Nearly 60% of the Category 3 outages reported in 2020 occurred in the Eastern Interconnection compared to 80% from 2019². Sustained outages in Western Interconnection rose by 23% in 2020 compared to 2019. As noted in Figure 4, the 2020 weather and climate disasters could have been contributing factors to some of these sustained outages.

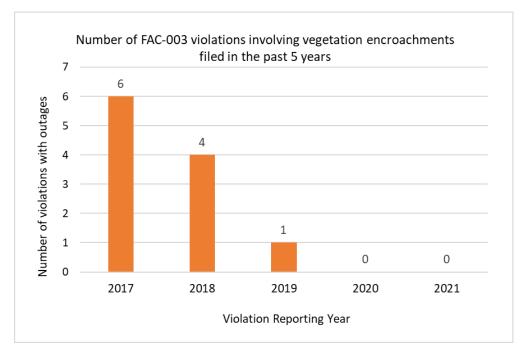


Figure 3: Five-Year Vegetation-Related Sustained Outages
Resulting in FAC-003 Violations

² Vegetation-Related Transmission Outages - Annual Report 2019, available at: https://www.nerc.com/pa/comp/CE/ReportsDL/Vegetation-Related%20Transmission%20Outages%20-%20Annual%20Report%202019.pdf

U.S. Selected Significant Climate Anomalies and Events for 2020



Coldest winter (Dec-Feb) since 1999. Coldest year since 2012. The lowest known mean sea level pressure on record for AK vas observed at Shemya on Dec 31 — 924.8 mb (27.31 in.).





CONUS drought coverage expanded throughout much of 2020 with a minimum extent of 9.6% occurring on Feb 18 and maximum coverage of about 50% on Dec 22. Drought conditions expanded or intensified across much of the western U.S. and southern to central High Plains throughout 2020. D3 and D4 drought coverage in Dec was the largest CONUS extent since Aug 2012.



It was the most-active wildfire year on record across the West. The 3 largest wildfires in CO history and 5 of the 6 largest wildfires in CA history occurred during 2020.



The Death Valley temperature observation of 130°F on Aug 16 was the hottest CONUS temperature in 2020 and 3rd-warmest temperature on record for any month across CONUS.



Aug 10 severe weather, associated with a derecho, stretched from SD to OH with most damaging impacts across IA. This was one of the costliest weather disasters across the U.S. in 2020.



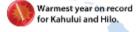
Overnight EF-3 and EF-4 tornadoes on Mar 2-3 caused more than \$1 billion in damage and multiple fatalities across the greater-Nashville metro area.



More than 140 tornadoes were reported during the Apr 12-13 tornado outbreak from TX to MD. This multi-billion dollar disaster was associated with the most fatalities during a tornado outbreak since Apr 2014.



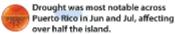
12 named U.S. landfalling tropical cyclones occurred during 2020, breaking the annual record of 9 landfalls set in 1916. It





was the most-active North Atlantic hurricane season on record.

2020 was the 5"-warmest year on record; the average U.S. temperature was 54.4°F, 2.4°F above average 2020 U.S. precipitation average was 30.28 in., 0.34 in. above average, ranking in the middle third of the historical record.



Meass Note: Material provided in this map was compiled from NOAA's State of the Climate Reports. For more information please visit http://www.nodc.noaa.gov/setc

Figure 4: 2020 Selected Significant Weather events in U.S.³

FAC-003 remains an area of focus for the 2021 ERO Enterprise Compliance Monitoring and Enforcement Implementation Plan.4

³ National Oceanic and Atmospheric Administration, National Centers for Environmental Information, National Climate Report – Annual 2020, available at https://www.ncdc.noaa.gov/sotc/national/202013

⁴ For 2021 ERO Enterprise Compliance Monitoring and Enforcement Implementation Plan, visit https://www.nerc.com/pa/comp/CAOneStopShop/ERO%20CMEP%20Implementation%20Plan%20v2.0%20-%202021.pdf

Conclusion

The ERO Enterprise will continue to monitor and review all reported vegetation related outage issues and work with various internal and external groups to identify and mitigate risk.