WECC

November 13, 2025, Wyoming Disturbance UFLSWG

Dave Grover
Senior Reliability Specialist

Electric Reliability & Security for the West

July 14, 2026

Antitrust Policy

- Participants are reminded of their obligations under the WECC Antitrust Policy and the NERC Antitrust Compliance Guidelines.
- Read the full Antitrust Statement on wecc.org.

Meeting Disclosures

- Confidential or proprietary information should not be discussed in open session.
- This webinar is being recorded and will be posted publicly.
- By participating, you give your consent for your name, voice, image, and likeness to be included in that recording.
- WECC strives to ensure the information presented today is accurate and reflects the views of WECC.
- However, all interpretations and positions are subject to change.
- If you have any questions, please contact WECC's legal counsel.

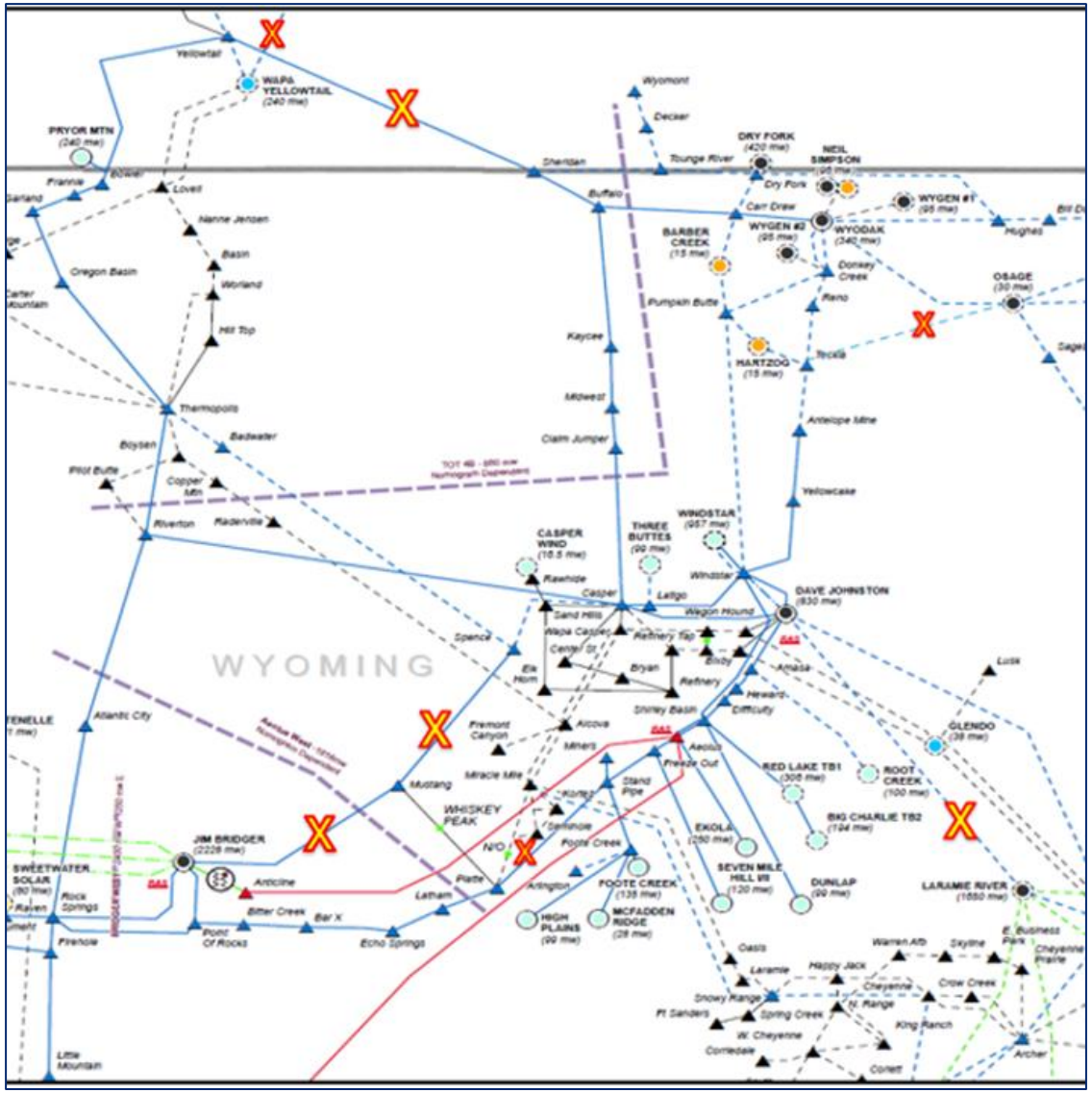
Detailed Report and Presentation

- November 13 Wyoming Disturbance | Western Electricity Coordinating Council
- 2026-06-16 November 13 Wyoming Disturbance Presentation | Western Electricity Coordinating Council
- wecc.org

The Disturbance

- At 1232 hrs. MST, the Aeolus-Clover 500 kV line was switched out.
  - In 344 milliseconds, the voltage dropped from 1.0 pu to ~0.28 pu.
  - The Aeolus-Anticline 500 kV line tripped correctly on Zone 1.
  - During the next 270 milliseconds, thirteen 230 kV lines in the area tripped.
  - Following these trips, NE Wyoming and Rapid City, South Dakota, islanded from the rest of the WI.
    - Within 6 seconds, this island collapsed.
  - *Overall, protection systems operated as expected.*
    - *One exception was for a UFLS relay, which has been fixed.*

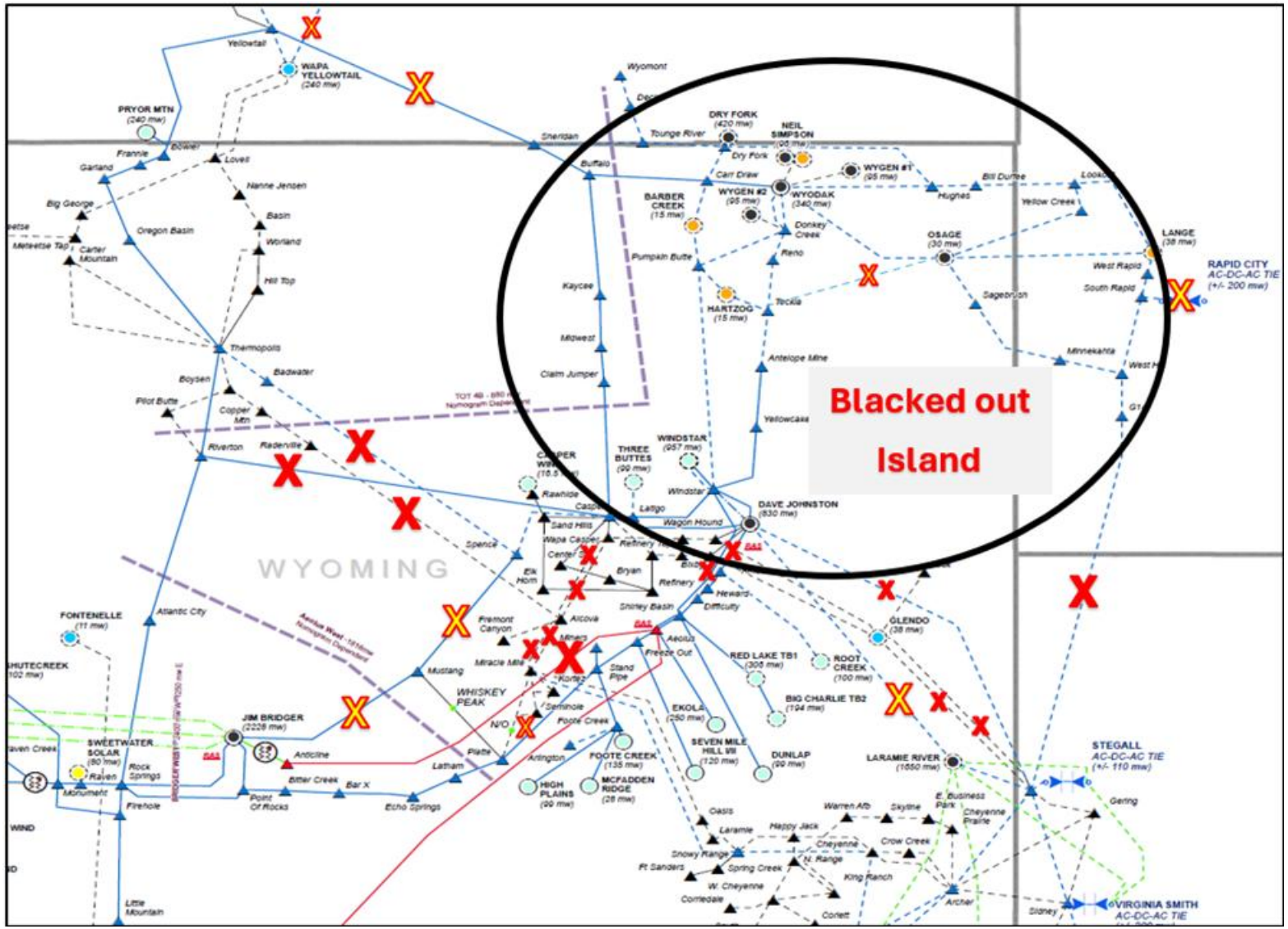
Event Area


WYOMING
WAPA YELLOWTAIL (240 mw)
PRYOR MTN (240 mw)
DRY FORK (420 mw)
NEIL SIMPSON
WYGEN #1 (95 mw)
WYGEN #2 (95 mw)
WYODAK (240 mw)
BARBER CREEK (15 mw)
OSAGE (30 mw)
HARTZOG (15 mw)
CASPER WIND (16.5 mw)
THREE BUTTES (99 mw)
WINDSTAR (957 mw)
DAVE JOHNSTON (830 mw)
JIM BRIDGER (2228 mw)
SWEETWATER SOLAR (80 mw)
WHISKEY PEAK
RED LAKE TB1 (306 mw)
ROOT CREEK (100 mw)
BIG CHARLIE TB2 (194 mw)
GLENDO (38 mw)
EKOLA (250 mw)
SEVEN MILE HILL WR (120 mw)
DUNLAP (99 mw)
FOOTE CREEK (135 mw)
MCFADDEN RIDGE (28 mw)
HIGH PLAINS (99 mw)
LARAMIE RIVER (1650 mw)
Yellowtail
Wyomont
Decker
Sheridan
Tongue River
Dry Fork
Carr Draw
Buffalo
Hughes
Donkey Creek
Reno
Pumpkin Butte
Trickle
Antelope Mine
Yellowcake
Keycee
Midwest
Claim Jumper
Thermopolis
Basin
Worland
Hot Top
Oregon Basin
Nannie Jensen
Badwater
Boysen
Pilot Butte
Copper Mtn
Riverton
Riderville
Casper
Rawhide
Lingo
Sand Hills
Wagon Mound
Refinery Tap
Refinery
Shirley Basin
Difficulty
Alcova
Fremont Canyon
Miners
Miracle Mile
Mustang
Pleasant Valley
Freeze Out
Stand Pipe
Foote Creek
Arlington
Latham
Platte
Bitter Creek
Bar X
Point Of Rocks
Echo Springs
Rock Springs
Rawlins
Creston Junction
Atlantic City
Little Mountain
Oasis
Laramie
Happy Jack
Snowy Range
Ft Sanders
Spring Creek
W. Cheyenne
Cheyenne
N. Range
Crow Creek
King Ranch
Archer
Corlett
Warren Afb
Skyline
E. Business Park
Cheyenne Prairie

Impact

- Within 6 seconds of opening the Aeolus-Clover 500 kV line:
  - 33 BES transmission lines were outaged.
  - ~1,120 mw of load was lost.
  - 4,583 MW of generation was lost.
  - Service to over 250,000 was interrupted.
  - Frequency in WI fell to 59.758 Hz.
  - NE Wyoming and Rapid City were outaged.

The Disturbance



Generation Tripped

- Total generation loss of 4,583 consisted of coal, natural gas, photovoltaic, and wind resources
- Majority of the generation trips were due to:
  - Overfrequency
  - Underfrequency
  - Overvoltage
  - Undervoltage
  - Combinations of UF/UV
  - And “Unknowns”…

Load Tripped

- Total load loss of ~212 MW by UFLS relays
- Tripping occurred at the following frequencies:
  - 59.1 Hz
  - 58.9 Hz
  - 58.7 Hz
  - 58.5 Hz
  - 58.3 Hz

PRC-006 & WECC UFLS Program (1)

1a. UFLS Entities participating in the Coordinated Plan are required to shed their first block of load as soon as frequency has declined to 59.1 Hz, with additional minimum requirements for further load shedding steps as set forth in the following table:

Load Shedding Block	Percent of Balancing Authority Area Load Dropped	Frequency Set-Point (Hz)	Tripping Time*
1	5.3	59.1	no more than 14 cycles
2	5.9	58.9	no more than 14 cycles
3	6.5	58.7	no more than 14 cycles
4	6.7	58.5	no more than 14 cycles
5	6.7	58.3	no more than 14 cycles

PRC-006 & WECC UFLS Program (2)

1b. UFLS Entities participating in the Northwest Power Pool sub-area Coordinated Plan are required to shed their first block of load as soon as frequency has declined to 59.3 Hz, with additional minimum requirements for further load shedding steps as set forth in the following table:

Load Shedding Block	Percent of NWPP Sub-Area Load Dropped	Frequency Set-Point (Hz)	Tripping Time*
1	5.6	59.3	no more than 14 cycles
2	5.6	59.2	no more than 14 cycles
3	5.6	59.0	no more than 14 cycles
4	5.6	58.8	no more than 14 cycles
5	5.6	58.6	no more than 14 cycles

Questions & Discussion

ELECTRIC RELIABILITY & SECURITY FOR THE WEST

ENGAGE WITH WECC