



West Texas Solar & LFL Event: October 26, 2023

IBRWG Meeting

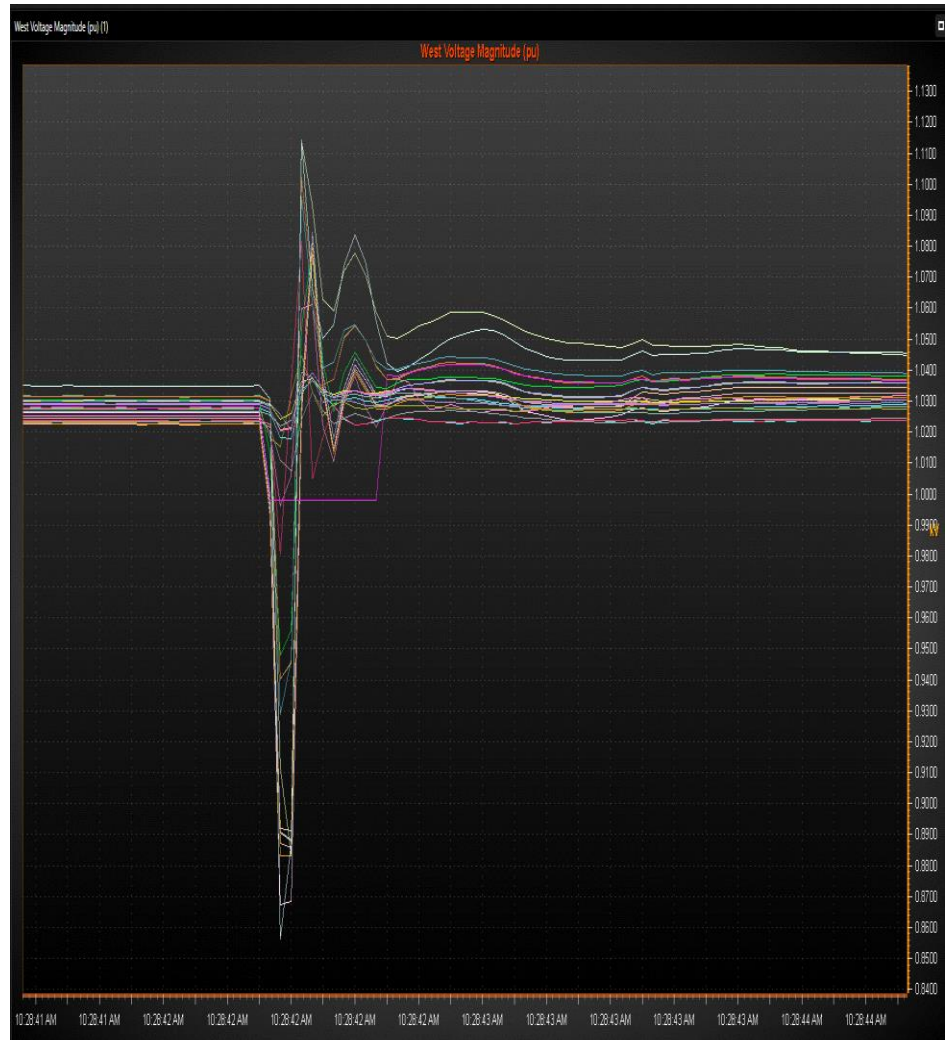
November 10, 2023

West Texas Solar Event Summary

- On October 26, 2023, at 10:28 AM CDT, a 138 kV line at a switching station in West Texas experienced an unbalanced (Phase-A to ground) fault
- The event resulted in a loss of approximately 140 MW of IRR generation, 144 MW of conventional generation, and 179 MW of Large Flexible Load (LFL) consumption
 - All IRR generation lost was solar
 - Several of the LFLs involved in the event reduced consumption without breaker operation
- System frequency dropped to 59.972 Hz and returned to 60 Hz within approximately 10 seconds
- This event is not classified as NERC reportable; however, ERCOT staff intends to investigate the loss of IRR generation and LFL consumption further

Real Time PMU Voltage

- Lowest West Texas PMU voltage recorded was 0.85 pu on a 138 kV line
- An erroneous connection was made between an energized section of the bus and ground resulting in the fault
- Protective devices isolated the fault in approximately 4 cycles (~66 ms)



Real Time PMU Frequency

- Single PMU in West Texas picked up the lowest freq. of 59.85 Hz during the fault
- System frequency never fell below 59.972 Hz



Past Events Comparison

Facility ID	Capacity (MW)	Odessa 2021		Odessa 2022		January 23rd, 2023		October 26th, 2023
		MW Loss	Root Cause	MW Loss	Root Cause	MW Loss	Root Cause	MW Loss
Plant A	180	28	Unknown	0	N/A	6	Several inverters went into "Idle Mode" for unknown reasons	6
Plant F	50	48	Inverter Underfrequency	47	Unknown	17	AC Overcurrent	16
Plant K/L	158	153	Momentary Cessation	130.6	Momentary Cessation	74	Momentary Cessation and overcurrent	109
Plant N/O	160	23	Unknown	49.5	Unknown; Inaccurate fault code	30	Unknown; Possible PPC Interaction	3
Plant P	158	9	N/A	10.2	AC Overcurrent	1.5	AC Overcurrent	6
Totals	706	261		237.3		128.5		140

- Several of the facilities involved with the October 26 event were also involved in both Odessa events and the January 23, 2023 event
- Note that with the most recent event, and other small events we have been keeping track of, ERCOT has observed a disproportionate deviation in frequency to the amount of generation lost
 - In the October 26th event, there was only a net drop of 105 MW of generation (140 MW (IRR) + 144 MW (Conv.) – 179 MW (Load) = 105 MW), but there was a 0.035 Hz drop in frequency
 - PMUs monitoring lines to solar facilities are showing excessive drops in active power during fault and recovering to pre-disturbance output within 1 second

Event Progress

- RFIs were sent to the QSEs of all the LFLs that tripped or reduced consumption in response to this event and the QSE of the conventional generator that reduced following the fault
- A list of questions have been sent to all IRRs involved with this event to investigate the root cause of each trip

Next Steps

- Evaluation of RFI & Questionnaire responses
 - Reasons for inverter and LFL trips/MW reduction
 - LFL ride through capability?
- Evaluation of received PMU/DFR data
- Possible follow-up calls with impacted Generators and Loads

Questions?