



Operators Ensure Grid Security in Severe Weather Events

The ERCOT region experienced the loss of more than 7,000 megawatts (MW) during the early morning hours of Wednesday, Feb. 2, 2011, due to problems related to unprecedented cold temperatures and high winds. ERCOT, the state grid operator, must balance electrical load with available generation at all times so load reductions were necessary to avoid a statewide blackout.

ERCOT's load forecast was on target, but more than 50 power generating units that ERCOT had expected to be available failed to come online or stay online, and others were unable to produce at their full capacity because of complications from the weather. In most cases, extremely cold ambient temperatures, along with windy conditions, combined to cause problems with instrumentation and control systems used, such as plant transmitters, transducers, or valves that compromised larger power plant operational capability.

Timeline of Events

Wednesday, Feb. 2:

- Between 12 - 5:20 A.M. – More than 50 generation units disabled – representing >7000 MW
- 4:30 A.M. – “Non-spinning “ (offline) resources called on but available generation was not sufficient to meet system needs
- 5:20 A.M. – ERCOT declared an Energy Emergency Level (EEA) Level 2 condition system-wide and deployed load resources (market-based demand response programs) in an effort to address the deficiencies in the system.
- 5:43 A.M. – ERCOT increased the emergency condition to EEA Level 3. Based on procedures for EEA Level 3 conditions, ERCOT issued instructions to generation units, curtailed Emergency Interruptible Loads, and called for 1,000 MW of firm load to be curtailed.
- 6:04 A.M. – ERCOT issued call for another 1,000 MW of firm load to be curtailed.
- 6:23 A.M. – ERCOT issued instructions for additional 2,000 MW of firm-load curtailment for a total of 4000 MW of firm-load curtailment to address the power shortages.

After ERCOT declared the EEA Level 3 condition, transmission and distribution service providers implemented their plans for rolling outages in their service territories to maintain system stability.

During the morning and afternoon of Feb. 2, ERCOT issued appeals for energy conservation. ERCOT also provided instructions to restore firm load as generating capacity became available and the loads moderated.

- 1:07 PM. – All curtailed firm-load recalled.
- 1:57 P.M. – ERCOT reduced the emergency level back down to EEA Level 2B and restored load resources.
- 2:01 P.M. – To ensure it could maintain system stability, ERCOT remained in EEA Level 2A from 3:13 P.M. on Feb. 2 through 10 A.M. on Feb. 3, 2011. After ERCOT cancelled EEA Level 2A, Emergency Interruptible Loads were returned to service.

Due to the cold weather, ERCOT set a new winter peak record of 56,334 MW, 7-8 P.M., on Feb. 2.

Rio Grande Valley Event

As temperatures remained below freezing in most of the ERCOT region on Thursday, Feb. 3, ERCOT experienced instability in the electrical system in the South Texas region. Several generating units tripped off line in South Texas, resulting in low voltage conditions. Per plan, transmission operators curtailed approximately 300 MW of firm-load, resulting in rolling outages in communities in South Texas, beginning shortly after 10 P.M. South Texas transmission operators managed the situation with controlled rotating outages until most of the load in the area was restored at 1:05 A.M. on Feb. 4, 2011.