

ERCOT statements on the Texan power crisis 2021

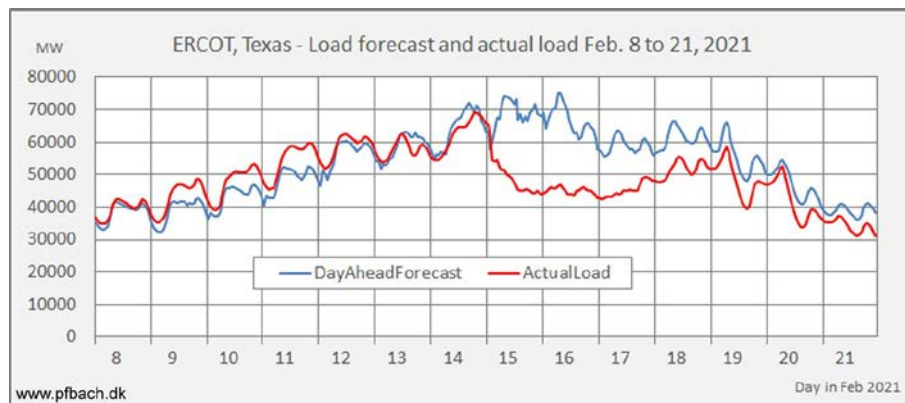


Fig. 1 – The ERCOT electricity demand increased dramatically from Feb. 9. Please note, that the forecasts were based on previous day's actual load until Feb. 13.

Preparations

AUSTIN, TX, Feb. 14, 2021 – The Electric Reliability Council of Texas (ERCOT) is asking consumers and businesses to reduce their electricity use as much as possible Sunday, Feb. 14 through Tuesday, Feb. 16.

"We are experiencing record-breaking electric demand due to the extreme cold temperatures that have gripped Texas," said ERCOT President and CEO Bill Magness. "At the same time, we are dealing with higher-than-normal generation outages due to frozen wind turbines and limited natural gas supplies available to generating units. We are asking Texans to take some simple, safe steps to lower their energy use during this time."

Here are some tips to reduce electricity use:

- Turn down thermostats to 68-degrees.
- Close shades and blinds to reduce the amount of heat lost through windows.
- Turn off and unplug non-essential lights and appliances.
- Avoid using large appliances (i.e., ovens, washing machines, etc.).
- Businesses should minimize the use of electric lighting and electricity-consuming equipment as much as possible.
- Large consumers of electricity should consider shutting down or reducing non-essential production processes.

Given the prolonged, below-freezing temperatures, conservation measures should be implemented safely and within reason.

ERCOT has the tools and procedures in place to maintain a reliable electric system during tight grid conditions. If power reserves drop too low, ERCOT may need to declare an Energy Emergency Alert, or EEA. Declaring an EEA allows the grid operator to take advantage of additional resources that are only available during scarcity conditions. There are three levels of EEA, and rotating outages are only implemented as a last resort to maintain reliability of the electric system.

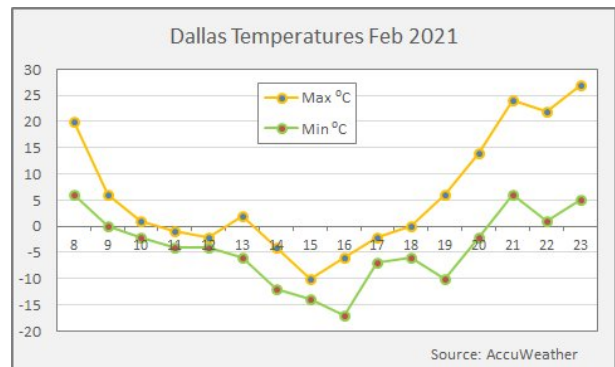


Fig. 2 - The cold wave

February 14, 2021

Extract of letter to David G. Huizenga,
Acting Secretary of Energy,
United States Department of Energy

Request for Emergency Order Under Section 202(c) of the Federal Power Act

Background

ERCOT is in the beginning stages of an unprecedented cold weather event brought on by a rare, southward excursion of the jet stream into the South Central United States. Temperatures for Sunday and Monday in many parts of Texas are forecasted to drop well below the lowest temperatures experienced in several decades, and abnormally low temperatures are expected to persist for several more days. This weather event will impact the entire ERCOT region and is expected to result in record winter electricity demand that will exceed even ERCOT's most extreme seasonal load forecasts. ERCOT's meteorologist has issued a weather report warning that "this period will go down in Texas weather history as one of the most extreme events to ever impact the state."³ These unusually low temperatures, coupled with forecasts of heavy snowfall and freezing rain, are also expected to have a negative impact on the availability of the generation supply in the ERCOT region. In order to maintain the reliability of the broader electric system, ERCOT believes that it may need to initiate rotating outages of as much as 4,000 MW on Sunday, Monday, and Tuesday, and perhaps even later in the week.

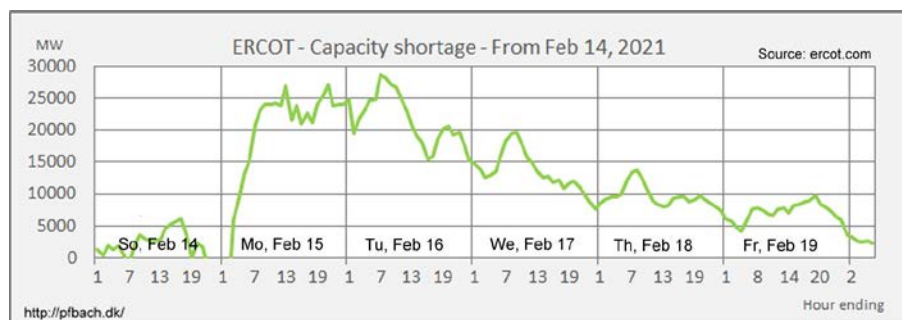


Fig. 3 – The gap between day-ahead forecast and actual load

Execution

AUSTIN, TX, Feb. 15, 2021 – The Electric Reliability Council of Texas (ERCOT) entered emergency conditions and initiated rotating outages at 1:25 a.m. today.

About 10,500 MW of customer load was shed at the highest point. This is enough power to serve approximately two million homes.

Extreme weather conditions caused many generating units – across fuel types – to trip offline and become unavailable.

There is now over 30,000 MW of generation forced off the system.

"Every grid operator and every electric company is fighting to restore power right now," said ERCOT President and CEO Bill Magness.

Rotating outages will likely last throughout the morning and could be initiated until this weather emergency ends.

AUSTIN, TX, Feb. 15, 2021 – The Electric Reliability Council of Texas (ERCOT) is beginning to restore some of the power lost due to the winter weather event in Texas.

As of 4 p.m., approximately 2,500 MW of load is in the process of being restored – enough power to serve 500,000 households.

"ERCOT and Texas electric companies have been able to restore service to hundreds of thousands of households today, but we know there are many people who are still waiting," said ERCOT President and CEO Bill Magness. "It's also important to remember that severe weather, mainly frigid temperatures, is expected to continue, so we're not out of the woods."

At this time, the grid operator is instructing transmission owners to shed approximately 14,000 MW of load, down from 16,500 MW earlier today.

At approximately 1:25 a.m. this morning, ERCOT entered its third and highest level of emergency operations because electric demand is exceeding the available supply. Controlled outages are occurring to protect the electric grid from uncontrolled, cascading outages.

While the grid operator was already contending with frozen wind turbines and limited gas supplies to generating units on Feb. 14, a significant number of additional generating units tripped offline when the weather worsened overnight.

Approximately 34,000 MW of generation has been forced off the system during this event.

Controlled outages will likely last throughout the evening and into tomorrow as ERCOT works to restore the electric system to normal operations.

AUSTIN, TX, Feb. 17, 2021 – The Electric Reliability Council of Texas (ERCOT) continues to restore power as quickly and safely as possible. During the overnight hours, ERCOT was able to restore approximately 3,500 MW of load, which is roughly 700,000 households.

"We know millions of people are suffering," said ERCOT President and CEO Bill Magness. "We have no other priority than getting them electricity. No other priority."

However, some of that was lost when the Midwest went into a power emergency of their own, and ERCOT was no longer able to import approximately 600 MW.

As of 9 a.m., ERCOT is instructing local utilities to shed 14,000 MW of load representing around 2.8 million households.

"Although we've reconnected more consumers back to the grid, the aggregate energy consumption of customers (those recently turned back on and those already on) is actually lower this morning compared to yesterday because it's less cold," said ERCOT Senior Director of System Operations Dan Woodfin. "However, we are anticipating another cold front this evening which could increase the demand."

"The ability to restore more power is contingent on more generation coming back online," said Woodfin. Since the winter storm began on Monday, approximately 185 generating units have tripped offline for one reason or another. Some factors include frozen wind turbines, limited gas supplies, low gas pressure and frozen instrumentation.

As of 9 a.m., approximately 46,000 MW of generation has been forced off the system during this extreme winter weather event. Of that, 28,000 MW is thermal and 18,000 MW is wind and solar.

AUSTIN, TX, Feb. 17, 2021 – The Electric Reliability Council of Texas (ERCOT) continues to make progress on restoring power to the electric system.

"We are working around the clock to restore power to Texans," said ERCOT President and CEO Bill Magness. "We made progress today, but it will not be good enough until every person has their power back."

Since this morning, ERCOT has been able to restore approximately 8,000 MW, which is about 1.6 million households. This afternoon, there was sufficient generation available to begin restoring 1,000 MW every hour.

"We're at a point in the restoration where we're going to keep energizing circuits as fast as we safely can until we run out of available generation," said ERCOT Senior Director of System Operations Dan Woodfin. "We hope to make significant progress overnight."

It is possible that by morning, as load increases, local utilities may be able to go back to rotating outages versus keeping power off for extended periods of time.

As of 6 p.m., approximately 43,000 MW of generation has been forced off the system during this extreme winter weather event. Of that, 26,500 MW is thermal and nearly 17,000 MW is wind and solar.

AUSTIN, TX, Feb. 18, 2021 – The Electric Reliability Council of Texas (ERCOT) has made significant progress overnight restoring customer power, although some outages still remain throughout the state. Energy emergency conditions remain as the grid operator and transmission owners work to restore the remaining customers that are without power.

"We're to the point in the load restoration where we are allowing transmission owners to bring back any load they can related to this load shed event," said ERCOT Senior Director of System Operations Dan Woodfin. "We will keep working around the clock until every single customer has their power back on."

Customers that remain without power likely fall into one of these three categories:

- Areas out due to ice storm damage on the distribution system
- Areas that were taken out of service due to the energy emergency load shed that need to be restored manually (i.e., sending a crew to the location to reenergize the line)
- Large industrial facilities that voluntarily went offline to help during this energy emergency

Transmission owners are assessing how many customers are affected at this time.

While there is no additional load shed occurring at this time, a little over 40,000 MW of generation remains on forced outage due to this winter weather event. Of that, 23,500 MW is thermal generation and the rest is wind and solar. It is possible that some level of rotating outages may be needed over the next couple of days to keep the grid stable.

AUSTIN, TX, Feb. 18, 2021 – While emergency conditions remain in effect, the Electric Reliability Council of Texas (ERCOT) has been able to balance generation and load on the electric system without issuing any additional outages throughout the day.

"The generating units that were online this morning have remained on throughout the day," said ERCOT Senior Director of System Operations Dan Woodfin. "With generation holding steady, we are hopeful that more generation will continue to become available."

Due to more extreme cold weather, snow and ice, there is a possibility that some limited outages could be needed later this evening or in the morning to keep the grid stable when load increases at these times.

Meanwhile, electric companies continue to restore power in the field as quickly and safely as possible.

Customers that remain without power likely fall into one of these three categories:

- Areas out due to ice storm damage on the distribution system
- Areas that were taken out of service due to the energy emergency load shed that need to be restored manually (i.e., sending a crew to the location to reenergize the line)
- Large industrial facilities that voluntarily went offline to help during this energy emergency

As of 6:30 p.m., nearly 36,000 MW of generation remains on forced outage due to this winter weather event. Of that, approximately 21,400 MW is thermal generation and the rest is wind and solar.

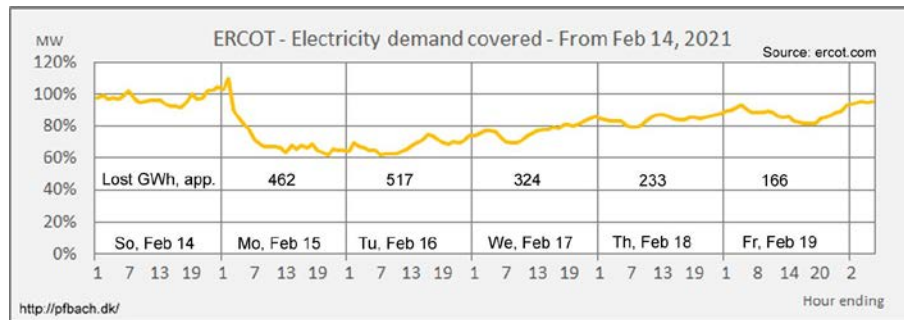


Fig. 4 - The restoration took several days

Restoration

AUSTIN, TX, Feb. 19, 2021 - The Electric Reliability Council of Texas (ERCOT) expects to come out of emergency conditions later this morning.

"There is enough generation on the electric system to allow us to begin to return to more normal operating conditions," said Senior Director of System Operations Dan Woodfin.

No additional outages were needed overnight to keep power supply and electric demand in balance, and only a few generating units tripped. Electric utilities continue to address remaining customer outages. Customers should contact their electric provider if they are without power.

Customers that are without power likely fall into one of these three categories:

- Areas out due to ice storm damage on the distribution system
- Areas that were taken out of service due to the energy emergency load shed that need to be restored manually (i.e., sending a crew to the location to reenergize the line)
- Large industrial facilities that voluntarily went offline to help during this energy emergency

As of 7:30 this morning, approximately 34,000 MW of generation remains on forced outage due to this winter weather event. Of that, nearly 20,000 MW is thermal generation and the rest is wind and solar.

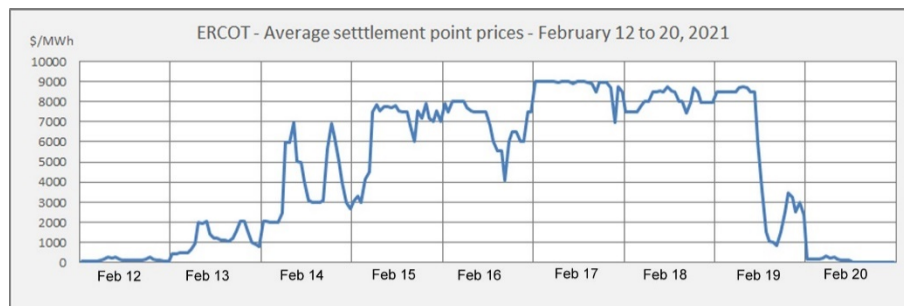


Fig. 5 - Spot prices up to more than 100 times the normal level