



Extreme Cold & Winter Weather | Update #4

REPORT TIME & DATE: 12:00 PM EST | Friday, February 19, 2021

REPORT DISTRIBUTION: Public

EXECUTIVE SUMMARY

An arctic air mass is beginning to recede after impacting the Central United States, bringing snow, ice, and extreme cold temperatures from the Canadian border as far south as Texas, causing record winter power demand and impacting power generation. While emergency conditions remain in effect on Friday, the Electric Reliability Council of Texas (ERCOT) has been able to balance generation and load to restore the majority of customers who were under controlled power outages across Texas since early Monday. The Southwest Power Pool (SPP) and the Midcontinent Independent System Operator (MISO) also implemented controlled outages on both Monday and Tuesday. The arctic air mass is expected to continue impacting the region through the remainder of the week, but temperatures are expected to begin to moderate throughout today and the weekend.

Electricity Sector Summary

- As of 11:00 AM EST, February 19, ERCOT downgraded their status to Energy Emergency Alert (EEA) Level 1, Conservation Needed, as operating reserve margins continue to improve. ERCOT downgraded their status to EEA 2 at 10:00 AM EST and they expect to come out of emergency conditions later this morning. Generation resources continue to be strained due to offline units tripped by cold weather, natural gas supply curtailments, and some wind power generation outages. Enough generation capacity was returned to service in Texas to restore the customers that were impacted by controlled outages.
 - As of 9:30 AM EST, there were about 189,000 power outages across Texas. This is down from more than 4 million customers without power on the afternoon of February 16.
 - Although some customers remain out of power due to associated issues from the controlled power outages, most of the remaining customers are without power in Texas and Louisiana due to damaged infrastructure from the ongoing winter weather.
- SPP has restored their controlled outages and downgraded their status to EEA Level 1, but they still have concern about sustaining the required Contingency Reserves. MISO has issued a Maximum Generation Alert through 4 PM EST, February 20.

Natural Gas Sector Summary

- Extreme cold temperatures have led to sharp increases in gas demands for home heating and electricity generation across much of the Central United States. At the same time, the cold has led to well freeze-offs and natural gas processing plant outages that have caused supply disruptions in several producing areas, especially in the U.S. South Central region (TX, OK, KS, LA, AR, MS, AL), which typically accounts for approximately 20-25% of total U.S. gas production.

Petroleum Sector Summary

- As of February 19, full or near-full refinery shutdowns have been reported at several refineries accounting for about 20% of total U.S. refinery capacity. The worst impacts are primarily concentrated in the Texas Gulf Coast region, but refinery issues extend across several states.

DOE ACTIONS

DOE ENERGY RESPONSE ORGANIZATION (ERO): ACTIVATED: Enhanced Watch

- DOE is coordinating with industry, interagency, and state partners to provide situational awareness and support restoration efforts.
- DOE is holding daily unity of effort calls with electricity and oil and natural gas partners and is in regular contact with the North American Electric Reliability Corporation.
- Following a formal petition from ERCOT on February 14, the Acting Secretary of Energy issued an emergency order pursuant to section 202(c) of the Federal Power Act to authorize the dispatch of additional generation units in the ERCOT region to help ensure reliability. This allows ERCOT to dispatch generation units they deem necessary to meet electricity demand from February 14 through February 19, 2021 even if they are in exceedance of limits for sulfur dioxide, nitrogen oxide, mercury, and carbon monoxide emissions, as well as wastewater release limits. A copy of the order and additional information can found at:

<https://www.energy.gov/oe/downloads/federal-power-act-section-202c-ercot-february-2021>.

ELECTRICITY SECTOR

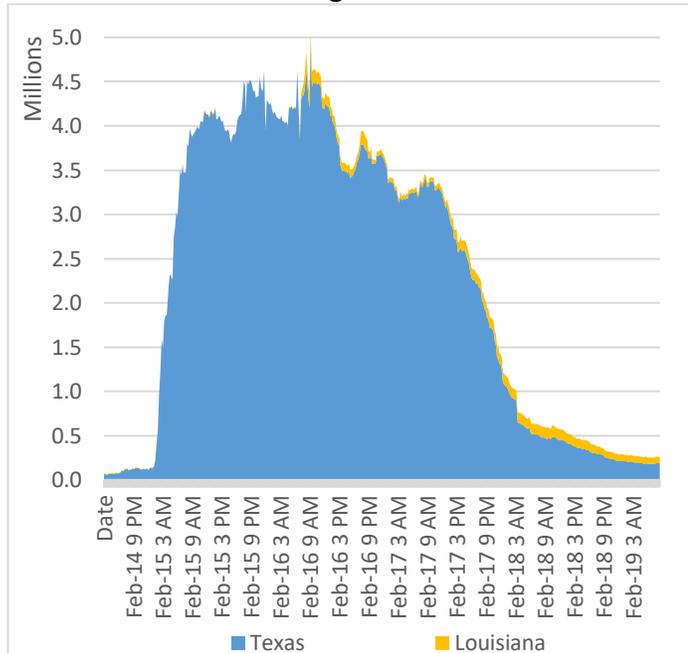
POWER OUTAGES

- As of 9:30 AM EST, there were approximately 263,000 power outages across Texas and Louisiana, including 189,000 outages in Texas.

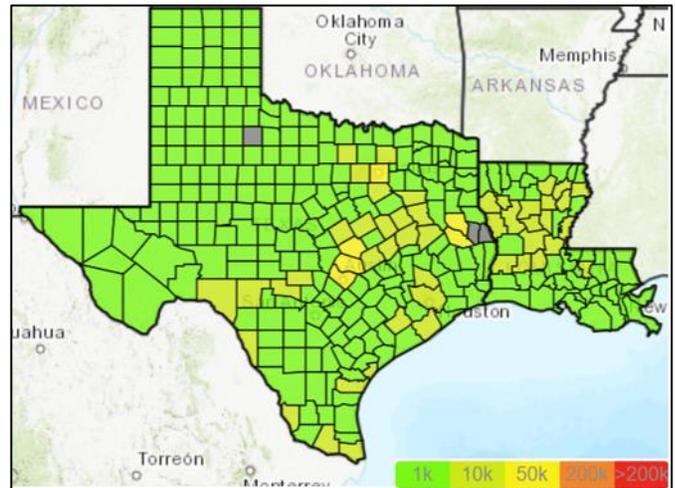
Texas and Louisiana Customer Power Outages <i>as of 9:30 AM EST 02/19/2021</i>				
State	Current Outages	% of State Without Power	Peak Outages	% Restored from Peak
Texas*	189,071	1.6%	4,893,204	96%
Louisiana	73,501	3%	211,496	65%
Total	262,572	-	-	-

*Total outages, including both controlled outages and storm-related outages.

Outage Chart

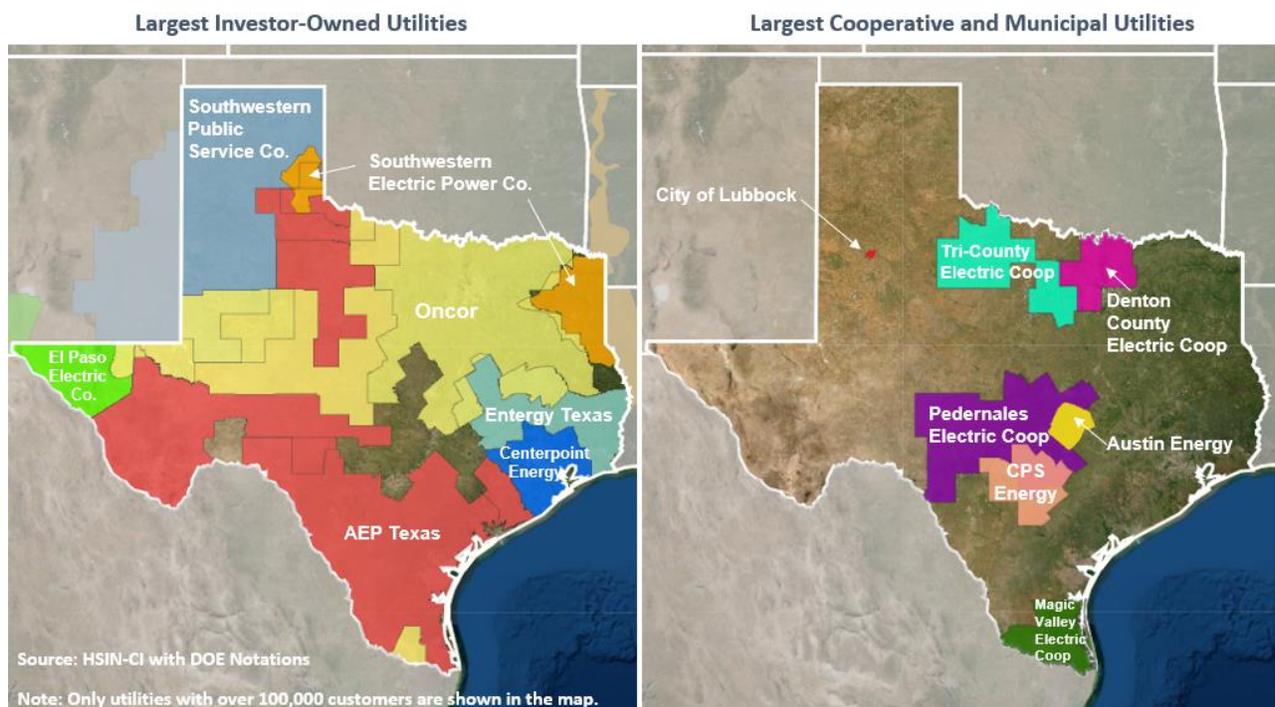


Outage Map



ELECTRICITY OVERVIEW

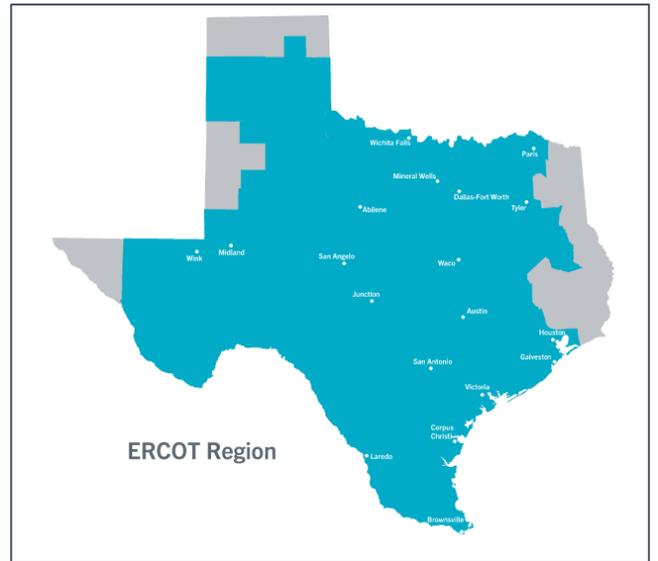
- **ERCOT:** As of 11:00 AM EST on February 19, ERCOT downgraded their status to EEA Level 1, Conservation Needed, as operating reserve margins continue to improve. ERCOT had downgraded their status from EEA 3 to EEA 2 at 10:00 AM EST and expects to come out of emergency conditions later this morning. There were no additional outages overnight.
- **SPP:** At 7:25 PM EST on February 18, SPP declared an Energy Emergency Alert EEA Level 1. All available generation resources were committed to meet forecasted electricity demand.
- **MISO:** MISO has issued a Maximum Generation Alert for its South Region through 4 PM EST on February 20. MISO has also extended its Conservative Operations and Cold Weather Alert through February 20 at 4 PM EST.



REGIONAL DETAILS

OVERVIEW

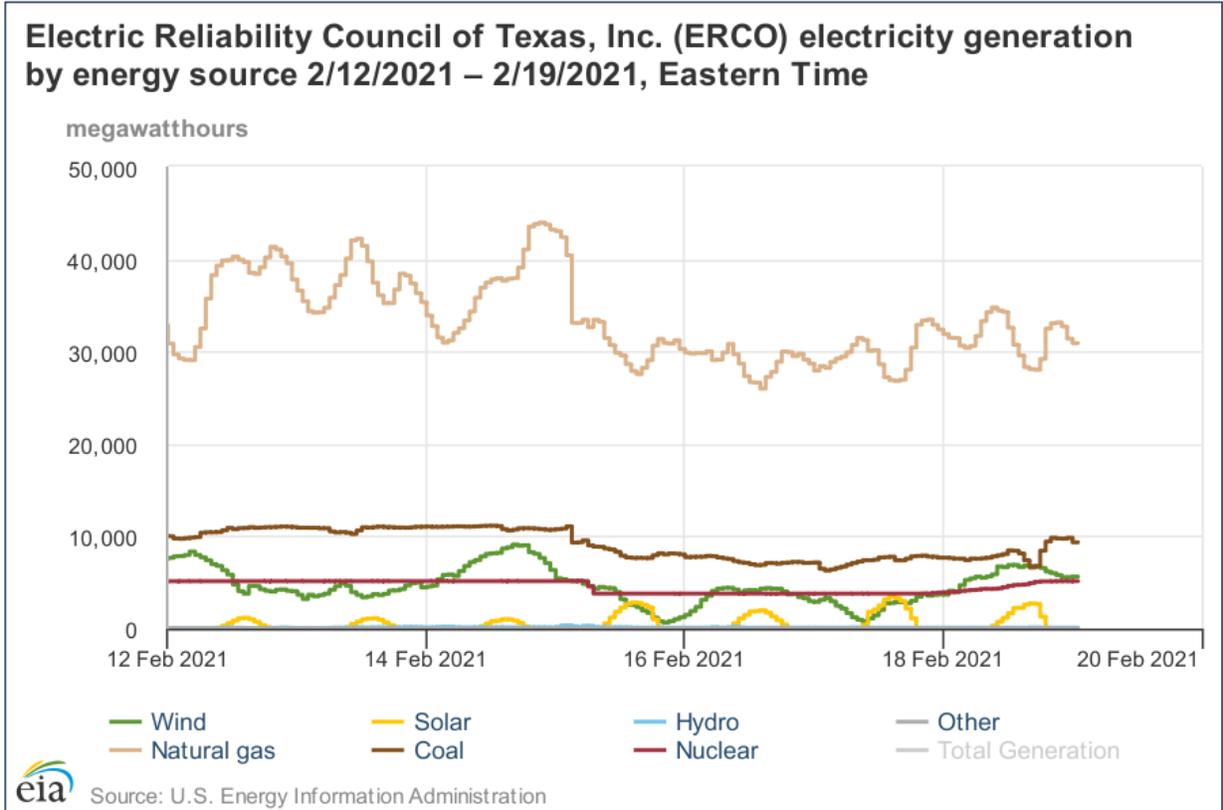
- As of 11:00 AM EST on February 19, ERCOT has moved to EEALevel 1, Conservation Needed, and expects to come out of emergency conditions later this morning.
- Customers outages remaining as of the morning of February 19 are likely due to ice storm damage on the distribution system, emergency load shed that needs to be restored manually, or large industrial facilities that voluntarily went offline for conservation.
- ERCOT is the independent system operator for the state of Texas, serving about 26 million people and about 90% of the state's electric load. ERCOT operates largely independently from the rest of country and is not subject to federal oversight.



GENERATION

- **Generation capacity offline:** As of 8:30 AM EST on February 19, ERCOT reported that approximately 34,000 MW of generation capacity remained on forced outage due to the winter weather. Of this, nearly 20,000 MW is thermal generation, and the rest was wind and solar.
- **Actual generation in January 2021:** For context, from January 1-31, 2021, ERCOT's actual generation included:
 - Gas (combined cycle): 10,744 GWh, 35%
 - Wind: 7,702 GWh, 25%
 - Coal: 6,803 GWh, 22%
 - Nuclear: 3,801 GWh, 12%
 - Solar: 732 GWh, 2%
 - *Combined thermal generation (Natural Gas, Gas, Coal, Nuclear) was about 72%*
 - *Combined renewable generation (Wind, Solar) was about 27%*

- **Ongoing generation issues:** Low supply of natural gas due to well “freeze offs,” low gas pressure, and frozen instrumentation, as well as lower-than-normal solar generation due to heavy cloud cover, and limited wind generation due to icing on the turbines constrained the electricity supply.



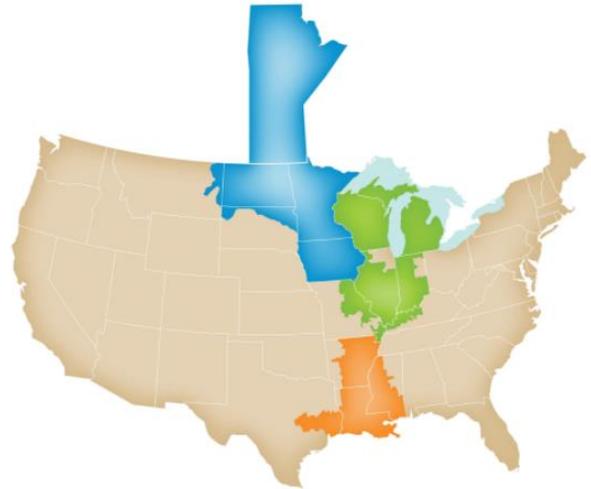
Source: [EIA Hourly Electric Grid Monitor](#)

Federal action: On the evening of February 14, the Acting Secretary of Energy issued an emergency order pursuant to section 202(c) of the Federal Power Act to authorize the dispatch of additional generation units in the ERCOT region to help ensure reliability. This allows ERCOT to dispatch generation units they deem necessary to meet electricity demand from February 14 through February 19, 2021 even if they are in exceedance of limits for sulfur dioxide, nitrogen oxide, mercury, and carbon monoxide emissions, as well as wastewater release limits.

MISO

OVERVIEW

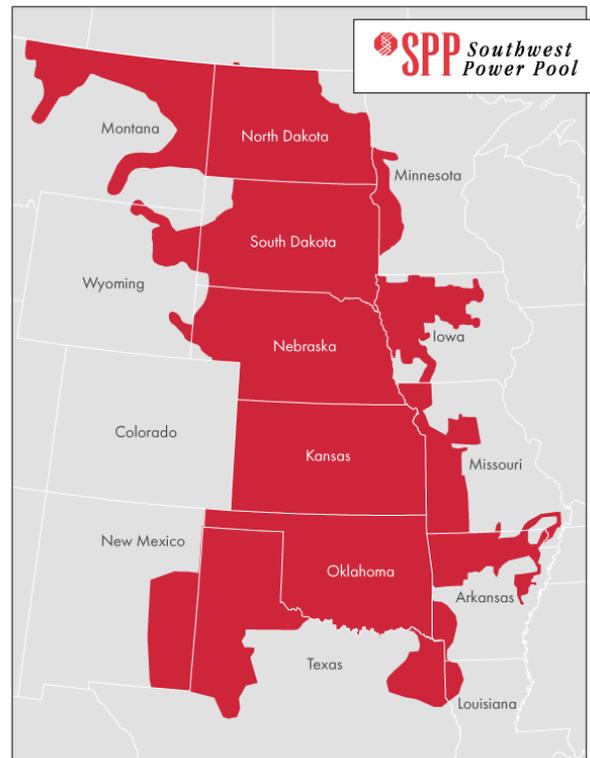
- MISO declared a Maximum Generation Alert at 9:30 EST on February 17 through February 20 at 4 PM EST with no further load shedding, after several rounds of Maximum Generation Emergency Event Step 2c between February 15-17 when they directed utilities to shed load in their Central, South, and Western regions due to extreme winter weather and temperature-related generation and transmission failures.
- MISO has extended its Conservative Operations and Cold Weather Alert through February 20 at 4 PM EST.
- MISO is the independent system operator and regional transmission organization for much of the Midwest, with 15 U.S. member states, including a small portion of Texas not covered by ERCOT.



SPP

OVERVIEW

- At 7:25 PM EST on February 18, SPP declared an EEA Level 1. All available generation resources were committed to meet forecasted electricity demand.
- SPP has 14 member states in the Central and Western United States and performs contract reliability coordination services in three additional states.



NATURAL GAS SECTOR

NATURAL GAS SUMMARY

Extreme cold temperatures have led to sharp increases in gas demands for home heating and electricity generation across much of the Central United States. At the same time, the cold has led to well freeze-offs and natural gas processing plant outages that have caused supply disruptions in several producing areas, especially in the U.S. South Central region (TX, OK, KS, LA, AR, MS, AL), which typically accounts for approximately 20-25% of total U.S. gas production.

NATURAL GAS PRODUCTION

- Wellhead freeze-offs due to below freezing temperatures have caused producers to cut back natural gas production in the South-Central United States, including in the Permian Basin in Texas and New Mexico, the Cana Woodford in Oklahoma, and the Denver-Julesburg in Colorado.
- Although production losses due to freeze-offs are temporary, output takes time to return to normal levels, and the cumulative reduction over several days could be substantial.

NATURAL GAS PROCESSING PLANTS

- Some natural gas processing plants and compressor stations across Texas have reportedly shut-in due to weather conditions.

NATURAL GAS STORAGE

- Suppliers are compensating for lost output and responding to the surge in gas demand and prices by withdrawing gas from storage facilities.
- This week ending February 19th, 2021 is projected to have the largest withdrawal from storage in the history of the South Central Region

NATURAL GAS STOCKS

- Natural gas stocks in the U.S. South Central region stood at 826 Bc/f on February 12, 3.0% below the five-year average for this time of year. Natural gas stocks for the week ending February 19 are expected to be 15%-20% lower than this week for the South-Central Region, due to this week's significant draws.
- According to [EIA's Form 191](#) data, Texas has 30 active natural gas storage facilities.

Source: EIA
South Central includes Alabama, Arkansas, Kansas, Louisiana,
Mississippi, Oklahoma, and Texas

NATURAL GAS PIPELINES

- Natural gas pipelines across the affected area have implemented severe/winter weather procedures and many lines have issued operational flow orders.

NATURAL GAS UTILITIES

- On February 12, the Texas Railroad Commission (TRC) issued an emergency order temporarily prioritizing natural gas deliveries to natural gas utilities for residences, hospitals, schools, churches, and other human needs customers.

LNG TERMINALS

- On February 17, Texas Governor Greg Abbott issued a letter to the TRC directing “all sourced natural gas be made available for sale to local power generation opportunities before leaving the State of Texas.” Following the letter from Governor Abbott, the TRC issued Notice to Operators.
- Texas Governor Greg Abbott has asked LNG export terminals to dial back operations.

PETROLEUM SECTOR

PETROLEUM SECTOR SUMMARY

Extreme cold temperatures and power outages have forced operators to shut down refineries in the U.S. Gulf Coast region. Additionally, extreme cold temperatures and well freeze-offs have led to production outages in producing areas.

REFINERIES

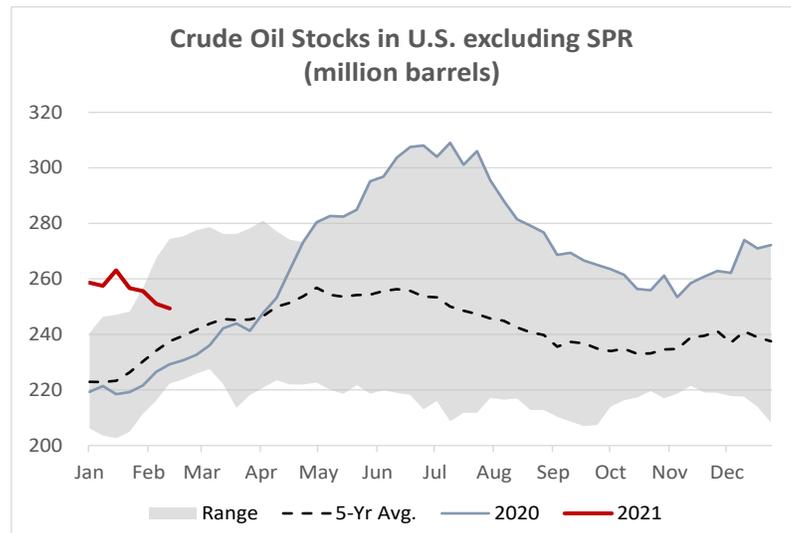
- As of February 19, refinery shutdowns, rate reductions, or process unit outages have been reported at refineries representing approximately 5.7 million barrels per day (b/d) of refinery capacity. Full or near-full refinery shutdowns have been reported several refineries, accounting for approximately 20% of total U.S. refinery capacity. The most severe impacts have been reported in the Texas Gulf Coast region.

PORTS

- Operations in the Houston Ship Channel resumed at 10:30 AM EST on February 17.

OIL STOCKS

- Crude oil stocks in the Gulf Coast (PADD 3) averaged 249 million barrels for the week ending February 5, 5.0% above the five-year average for this time of year.



EMERGENCY DECLARATIONS & WAIVERS

EMERGENCY DECLARATIONS

To provide vital supplies and transportation services to a disaster area in the United States, emergency declarations may be issued by the President, Governors of States, or the Federal Motor Carrier Safety Administration (FMCSA). These declarations trigger the temporary suspension of certain Federal safety regulations, including Hours of Service, for motor carriers and drivers engaged in specific aspects of the emergency relief effort. See [49 CFR 390.23](#) for the actual emergency regulation.

Emergency Declarations and HOS Waivers for TX, OK, LA <i>as of 10:30 AM EST 02/19/2021</i>				
State/Territory	Details	Effective Dates		Status
		Start	End	
Texas	HHS Public Health Emergency	2/17	Continuing	Active
	Texas Department of Public Safety Emergency Notice – Assistance for delivery of Propane and Home Heating Oils	2/10	2/15	Expired
	Federal Emergency Declaration	2/11	Continuing	Active
	State Disaster Declaration	2/12	Continuing	Active
Louisiana	Federal Emergency Declaration	2/18	Continuing	Active
	Emergency Order- Implementation of Emergency Gas Shortage Plan	2/15	2/20	Active
	State of Emergency	2/11	3/12	Active
Oklahoma	HOS Waiver	2/10	3/12	Active
	Federal Emergency Declaration	2/18	Continuing	Active
	State of Emergency	2/12	Continuing	Active

Emergency Declarations and HOS Waivers for All Other States <i>as of 10:30 AM EST 02/19/2021</i>				
State/Territory	Details	Effective Dates		Status
		Start	End	
Multi-State	Regional Emergency Declaration (AR, CT, DE, DC, IL, ID, IA, KS, KY, LA, MD, MA, MN, MO, MS, MT, NE, NJ, NY, NM, NC, ND, OH, OK, OR, PA, RI, SD, TN, TX, VA, WV, WI, WY)	2/17	3/4	Active
Montana	HOS Waiver	2/12	3/14	Active
North Dakota	HOS Waiver	2/12	3/14	Active
Connecticut	HOS Waiver	2/13	2/19	Active
New Mexico	New Mexico Department of Public Safety- Declaration of Emergency Notice	2/15	2/20	Active

West Virginia	State of Emergency - Affecting Eight Counties in Northern & North Central WV. State of Preparedness for the rest of the state.	2/16	3/18	Active
Virginia	State of Emergency	2/11	3/13	Active
Oregon	State of Emergency in the Willamette Valley	2/13	Continuing	Active
Maryland	Declaration of Transportation Emergency and Commercial Motor Vehicle Safety Regulation Waiver	2/19	2/23	Preliminary
Nebraska	Executive Order - Emergency Motor Carrier Relief Due to Extreme Cold Temperatures	2/15	2/19	Active
New York	HOS Waiver	2/17	3/1	Active
Illinois	Illinois Department of Transportation- Declaration of Emergency.	2/16	2/20	Active
Iowa	State of Disaster Emergency	2/15	3/17	Active
Pennsylvania	HOS Waiver	2/27	2/28	Active
Tennessee	HOS Waiver	2/16	2/26	Active
Kentucky	Kentucky Transportation Cabinet Declaration of Emergency - Assistance for power restoration and delivery of gasoline, propane, and diesel fuels	2/11	2/21	Active
Mississippi	HOS Waiver	2/14	2/21	Active
	State of Emergency	2/14	2/21	Active
Alabama	HOS Waiver	2/14	3/16	Active
	State of Emergency	2/14	Continuing	Active

Sources: State government, White House, and websites.

- On February 15, the Texas Commission on Environmental Quality was granted approval to temporarily [suspend](#) certain emissions requirements to the extent that compliance with requirements prevent, hinder, or delay necessary action in coping with this disaster. This suspension provides relief of natural gas generation and distribution emissions requirements. The suspension is in effect until terminated by the Office of the Governor or until the Texas disaster declaration is lifted or expires.