



## Extreme Cold & Winter Weather | Update #5

**REPORT TIME & DATE:** 12:00 PM EST | Saturday, February 20, 2021

**REPORT DISTRIBUTION:** Public

### EXECUTIVE SUMMARY

An arctic air mass has receded 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. The Electric Reliability Council of Texas (ERCOT) has returned to normal conditions after balancing generation and load to restore 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. Temperatures in Texas are expected to remain moderate throughout next week.

#### Electricity Sector Summary

- As of 9:30 AM EST, February 20, ERCOT remains in normal grid conditions, with operating reserve margins within the acceptable range. Enough generation capacity was returned to service in Texas to restore the customers that were impacted by the controlled outages.
  - As of 9:30 AM EST, there were about 78,000 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 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.
- As of 9:30 AM EST, February 20, SPP is not under an Energy Emergency Alert (EEA) but is remaining in a period of conservative operations until 11:00 PM EST, February 20. The MISO system is also steady and stable with sufficient generation and transmission resources online.

#### 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 20, 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 regular unity of effort calls with electricity and oil and natural gas partners and is in 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>.

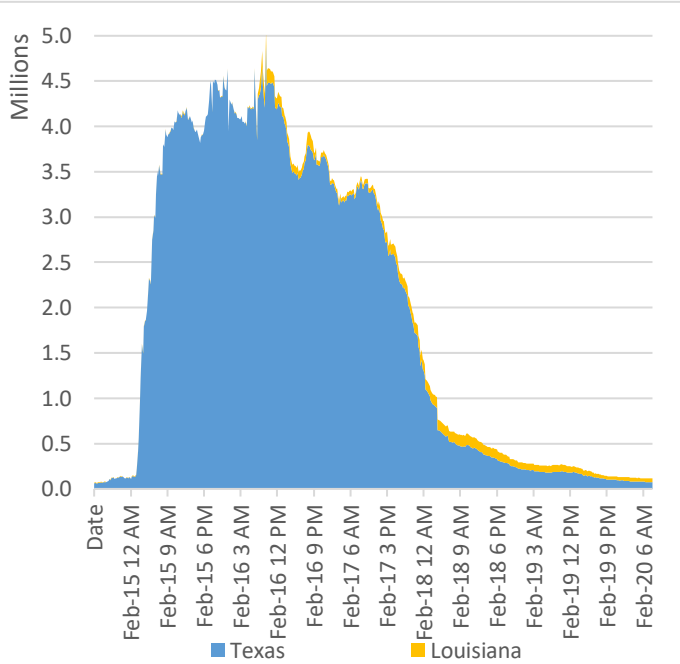
**ELECTRICITY SECTOR**

**POWER OUTAGES**

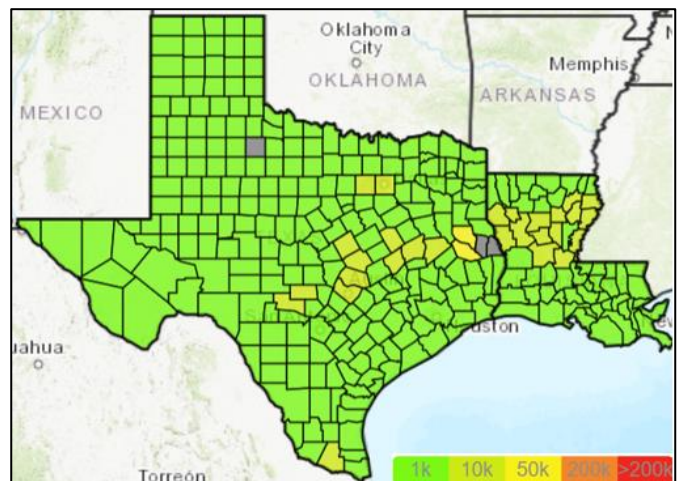
- As of 9:30 AM EST, there were approximately 115,000 power outages across Texas and Louisiana, including 78,000 outages in Texas. Although some customers remain out due to associated issues from the controlled power outages, most of the remaining customers are without power in Texas and Louisiana due to damaged infrastructure from the ongoing winter weather.

Texas and Louisiana Customer Power Outages <i>as of 9:30 AM EST 02/20/2021</i>				
State	Current Outages	% of State Without Power	Peak Outages	% Restored from Peak
Texas	77,572	<1%	4,893,204	98%
Louisiana	37,468	2%	211,496	82%
<b>Total</b>	<b>115,040</b>	-	-	-

**Outage Chart**

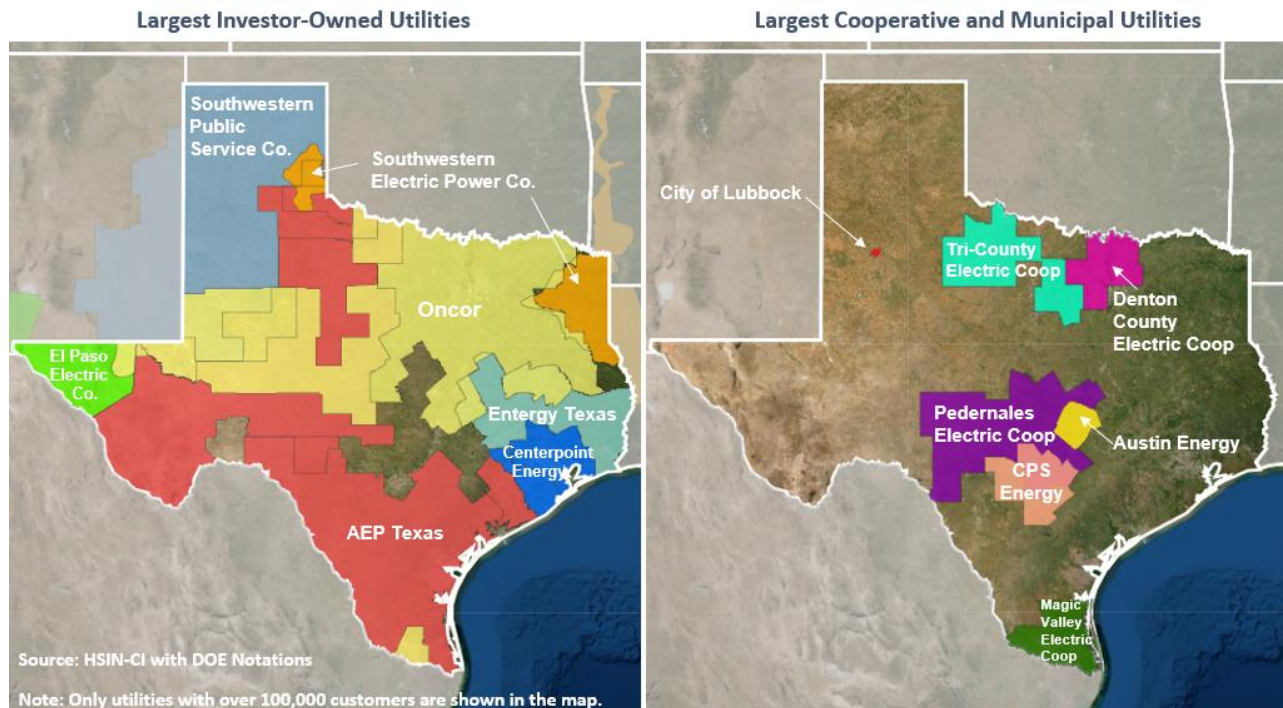


**Outage Map**



**ELECTRICITY OVERVIEW**

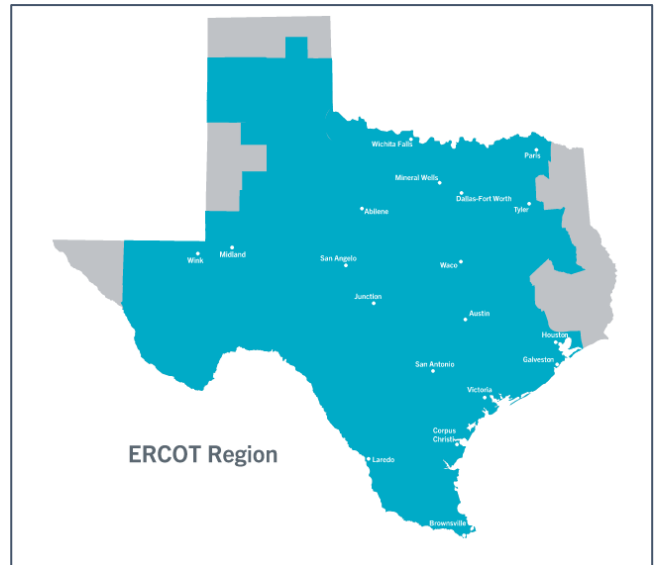
- **ERCOT:** As of 9:30 AM EST, February 20, ERCOT remains under normal conditions. Customer outages in Texas are now below 100,000.
- **SPP:** As of 9:30 AM EST, February 20, SPP is not under an EEA but will remain in a period of conservative operations until 11:00 PM EST February 20.
- **MISO:** As of 9:30 AM EST, February 20, the MISO system is steady and stable with sufficient generation and transmission resources online. MISO has extended its Conservative Operations and Cold Weather Alert through February 20 at 4 PM EST.



## REGIONAL DETAILS

## OVERVIEW

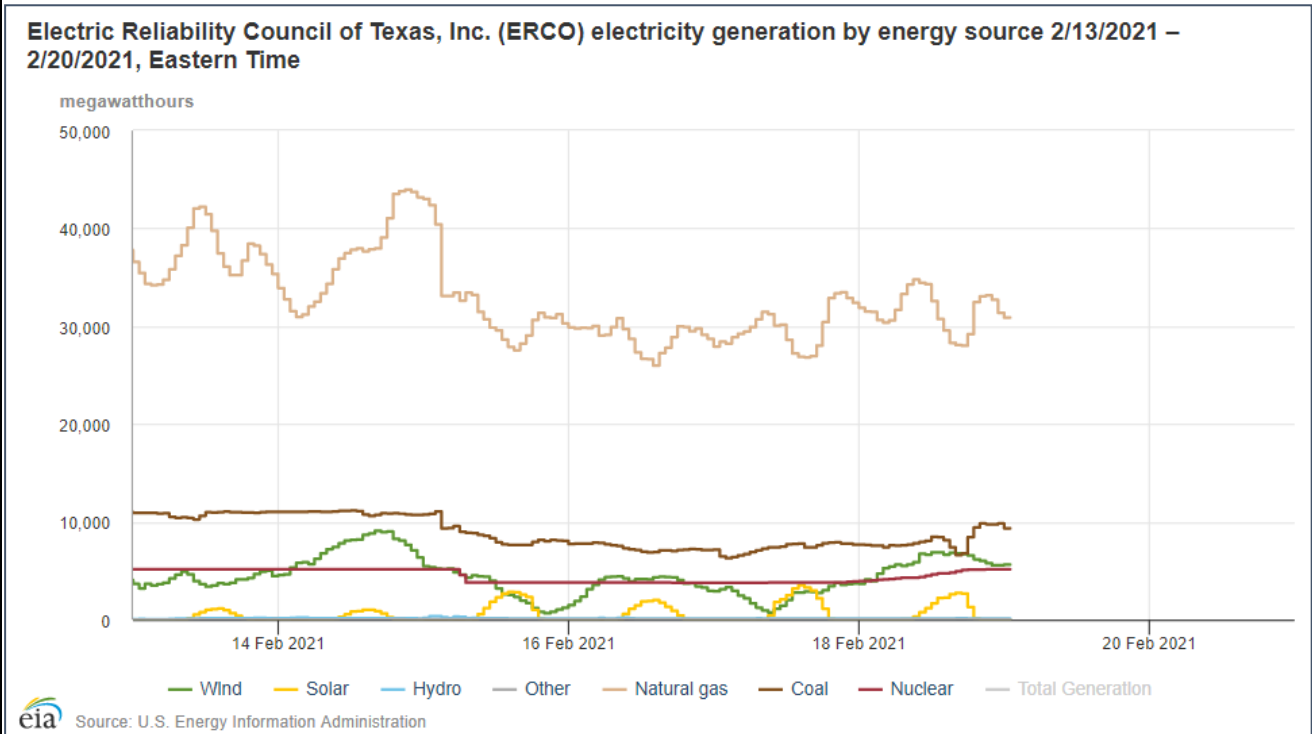
- As of 11:30 AM EST on February 20, ERCOT remains in normal conditions.
- ERCOT is working with large industrial customers to return facilities to service when they are ready to come back online. Some facilities have already returned to service, while others are expected to remain offline for a longer period of time.
- 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. During the cold weather, electric generators were affected by mechanical issues, low supply of natural gas due to well "freeze offs," lower-than-normal solar generation due to heavy cloud cover, and limited wind generation due to icing on the turbines.
- **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%
    - *Total combined thermal generation (Natural Gas, Gas, Coal, Nuclear) was about 72%*
    - *Total combined renewable generation (Wind, Solar) was about 27%*

- February 2021 Generation:** The chart below shows electricity generation by source in ERCOT in the month through the prior day.



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

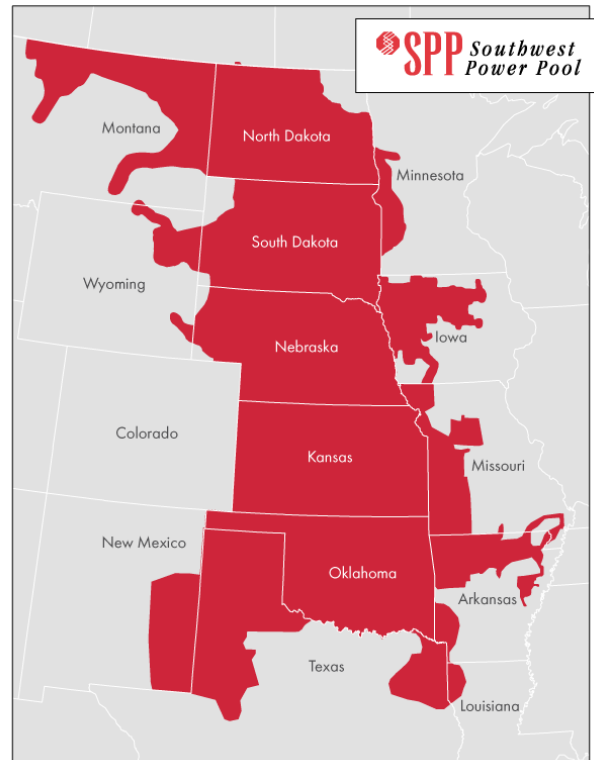
- As of 11:30 AM EST, February 19, the MISO system is steady and stable with sufficient generation and transmission resources online.
- MISO has extended its Conservative Operations and Cold Weather Alert through February 20 at 4 PM EST.
- MISO is the independent system operator and regional transmission organization for much of the Midwest, with 15 U.S. member states, including a small portion of Texas not covered by ERCOT.



SPP

OVERVIEW

- As of 10:30 AM EST February 19, SPP is no longer under an EEA, but will remain in a period of conservative operations until February 20 at 11:00 PM EST.
- 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 U.S., 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 19<sup>th</sup> is projected to have the largest withdrawal from storage in the history of the South Central Region.

### NATURAL GAS STOCKS

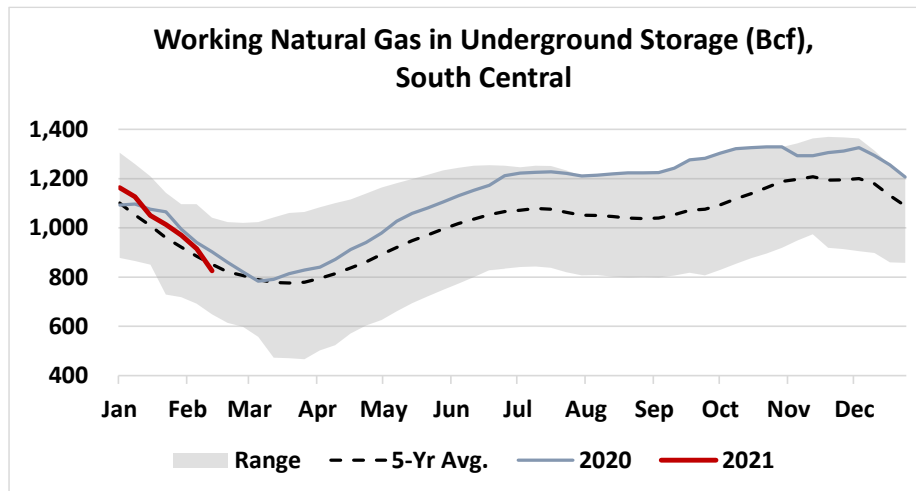
- Natural gas stocks in the U.S. South Central region stood at 826 Bcf on February 12, 3.0% below the five-year average for this time of year. Natural gas stocks for the week ending February 19





are expected 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 18, the Texas Railroad Commission (TRC) extended an emergency order temporarily prioritizing natural gas deliveries to natural gas utilities for residences, hospitals, schools, churches, and other human needs customers through February 23, 2021.

**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**

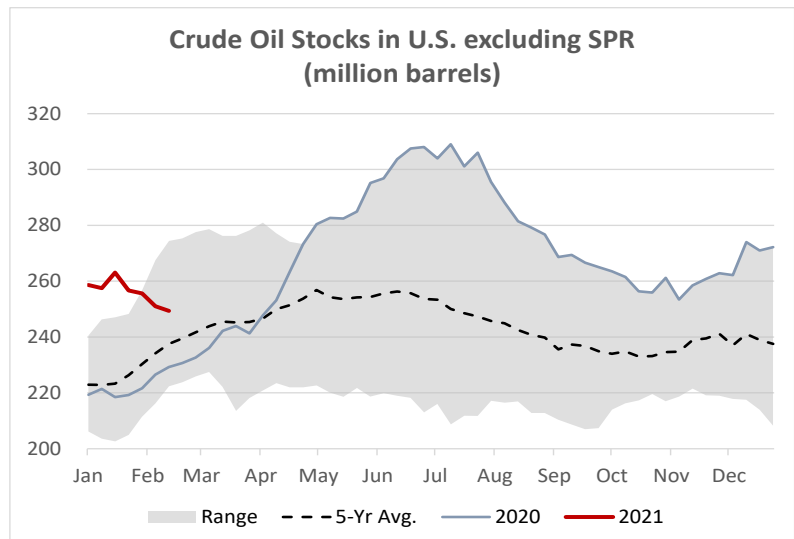
- As of February 20, refinery shutdowns, rate reductions, or process unit outages have been reported at refineries representing approximately 5.7 million barrels per day of refinery capacity. Full or near-full refinery shutdowns have been reported several refineries, accounting for approximately 20% 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 02/20/2021</i>				
State/Territory	Details	Effective Dates		Status
		Start	End	
Texas	<a href="#">HHS Public Health Emergency</a>	2/17	Continuing	Active
	<a href="#">Texas Department of Public Safety Emergency Notice</a> – Assistance for delivery of Propane and Home Heating Oils	2/10	2/15	Expired
	<a href="#">Federal Emergency Declaration</a>	2/11	Continuing	Active
	<a href="#">State Disaster Declaration</a>	2/12	Continuing	Active
Louisiana	<a href="#">Federal Emergency Declaration</a>	2/18	Continuing	Active
	Emergency Order- Implementation of Emergency Gas Shortage Plan	2/15	2/20	Active
	<a href="#">State of Emergency</a>	2/11	3/12	Active
Oklahoma	<a href="#">HOS Waiver</a>	2/10	3/12	Active
	<a href="#">Federal Emergency Declaration</a>	2/18	Continuing	Active
	<a href="#">State of Emergency</a>	2/12	Continuing	Active

Emergency Declarations and HOS Waivers for All Other States <i>as of 10:30 AM EST 02/20/2021</i>				
State/Territory	Details	Effective Dates		Status
		Start	End	
Multi-State	<a href="#">Regional Emergency Declaration</a> (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	<a href="#">HOS Waiver</a>	2/12	3/14	Active
North Dakota	<a href="#">HOS Waiver</a>	2/12	3/14	Active
Connecticut	<a href="#">HOS Waiver</a>	2/13	2/19	Expired
New Mexico	<a href="#">New Mexico Department of Public Safety- Declaration of Emergency Notice</a>	2/15	2/20	Active



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

Sources: State government, White House, and FMCSA 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.