



Extreme Cold & Winter Weather | Update #3

REPORT TIME & DATE: 12:00 PM EST | Thursday, February 18, 2021

REPORT DISTRIBUTION: Public

EXECUTIVE SUMMARY

An arctic air mass is 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 directed utilities to implement controlled power outages across Texas to manage load since early Monday. The Southwest Power Pool (SPP), and the Midcontinent Independent System Operator (MISO) also implemented controlled outages on Monday and Tuesday. The arctic air mass is expected to continue impacting the region through the remainder of the week.

Electricity Sector Summary

- As of 10:30 AM EST, February 18, the Energy Emergency Alert (EEA) Level 3 for ERCOT remains in place due to operating reserves falling below the required minimum as high demands related to ongoing severe winter weather event. Generation resources are strained due to cold weather tripping units, natural gas supply curtailments, and some wind power generation outages. ERCOT had instructed utilities to shed firm load and implement controlled outages. On February 17, a substantial amount of generation capacity was returned to service in Texas and a significant number of customers have been restored.
 - As of 9:30 AM EST, there were about 486,000 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 the controlled power outages, many 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, and MISO has issued a Maximum Generation Alert through 4 PM EST, February 20, 2021.

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 18, 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

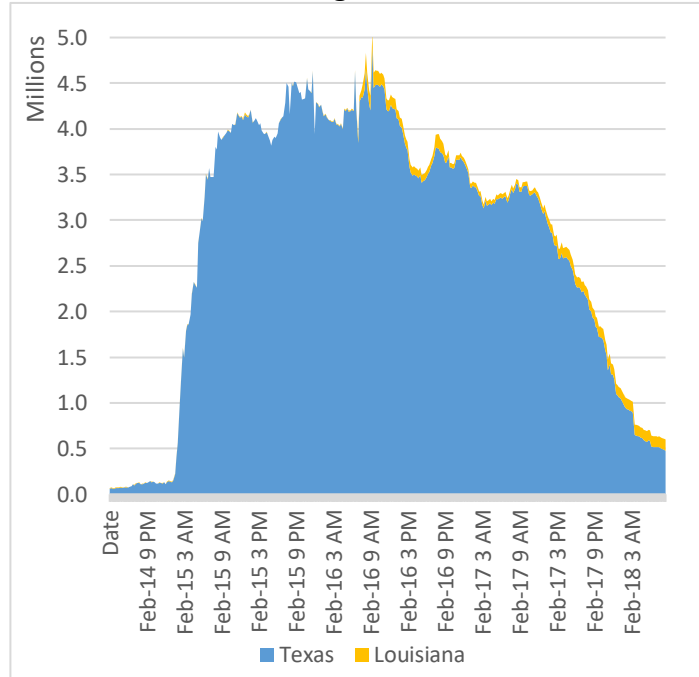
POWER OUTAGES

- As of 9:30 AM EST, there were at least 607,000 power outages across Texas and Louisiana, including 486,000 outages in Texas.
- In addition, there are 106,123 customers out in Oregon as of 9:30 AM EST due to a winter storm, which affected the region over the weekend.

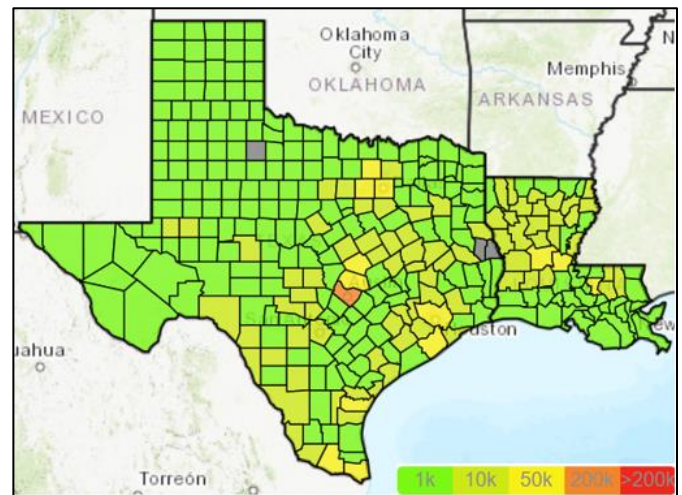
Texas and Louisiana Customer Power Outages <i>as of 9:30 AM EST 02/18/2021</i>				
State	Current Outages	% of State Without Power	Peak Outages	% Restored from Peak
Texas*	486,010	4%	4,893,204	90%
Louisiana	120,999	18%	211,496	43%
Total	607,009	-	-	-

*Total outages, including both controlled outages and storm-related outages. Outage information for Pedernales Electric is unavailable as of 9:30 AM EST on February 18 and is not included in the Texas total.

Outage Chart

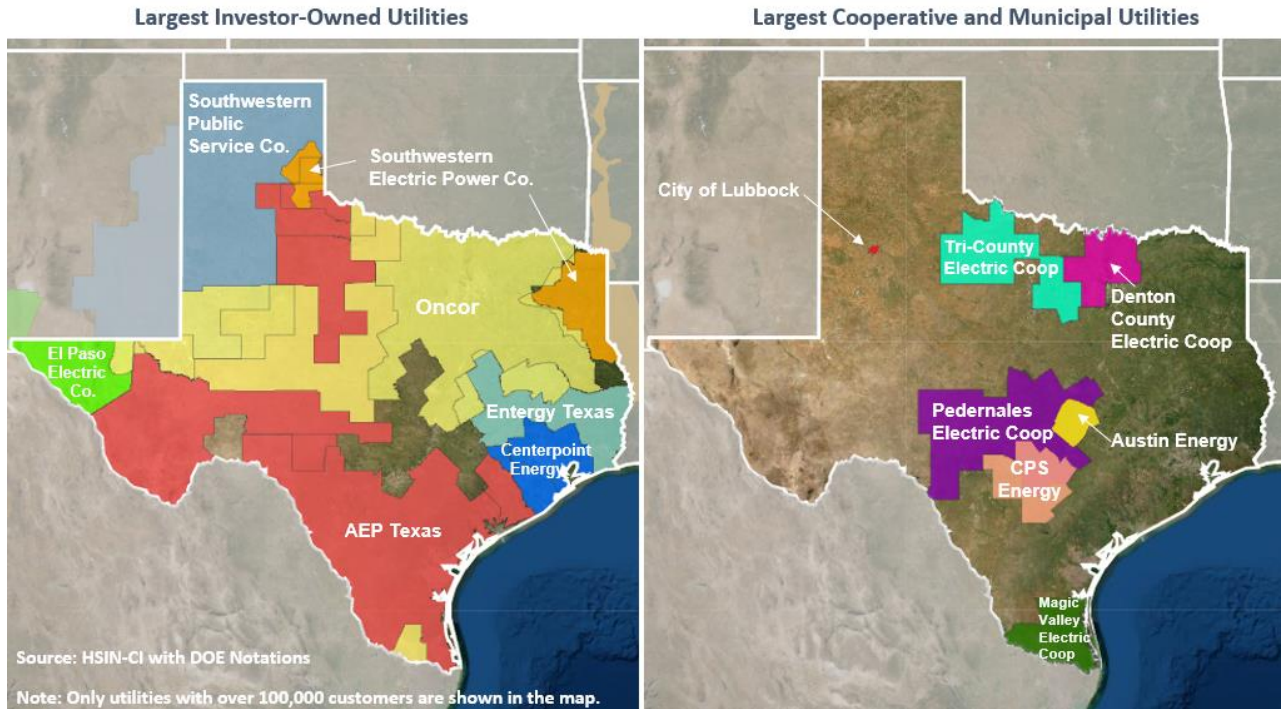


Outage Map



ELECTRICITY OVERVIEW

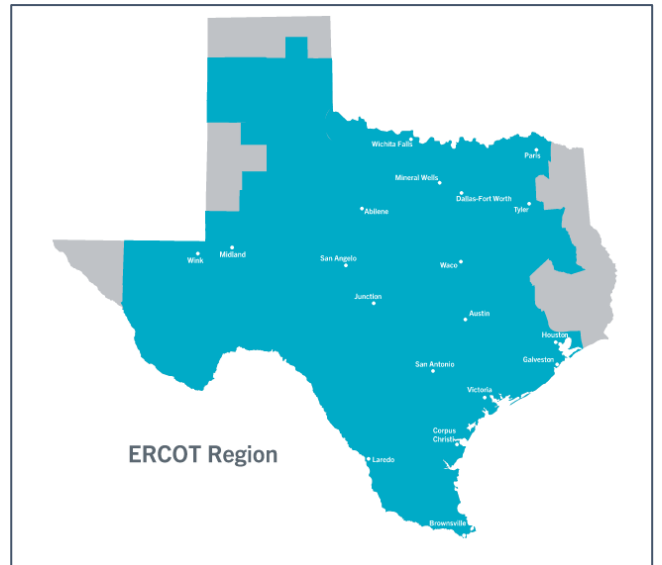
- **ERCOT:** As of 9:30 AM EST on February 18, ERCOT remains in EEA Level 3.
- **SPP:** SPP remains in EEA Level 1. Generation is sufficient to meet demand across the region and to fully satisfy operating reserve requirements.
- **MISO:** MISO has terminated its load shed directives and has issued a Maximum Generation Alert for its South Region through 4 PM EST on February 20, 2021. MISO has also extended its Conservative Operations and Cold Weather Alert through February 20, 2021 at 4 PM EST.



REGIONAL DETAILS

OVERVIEW

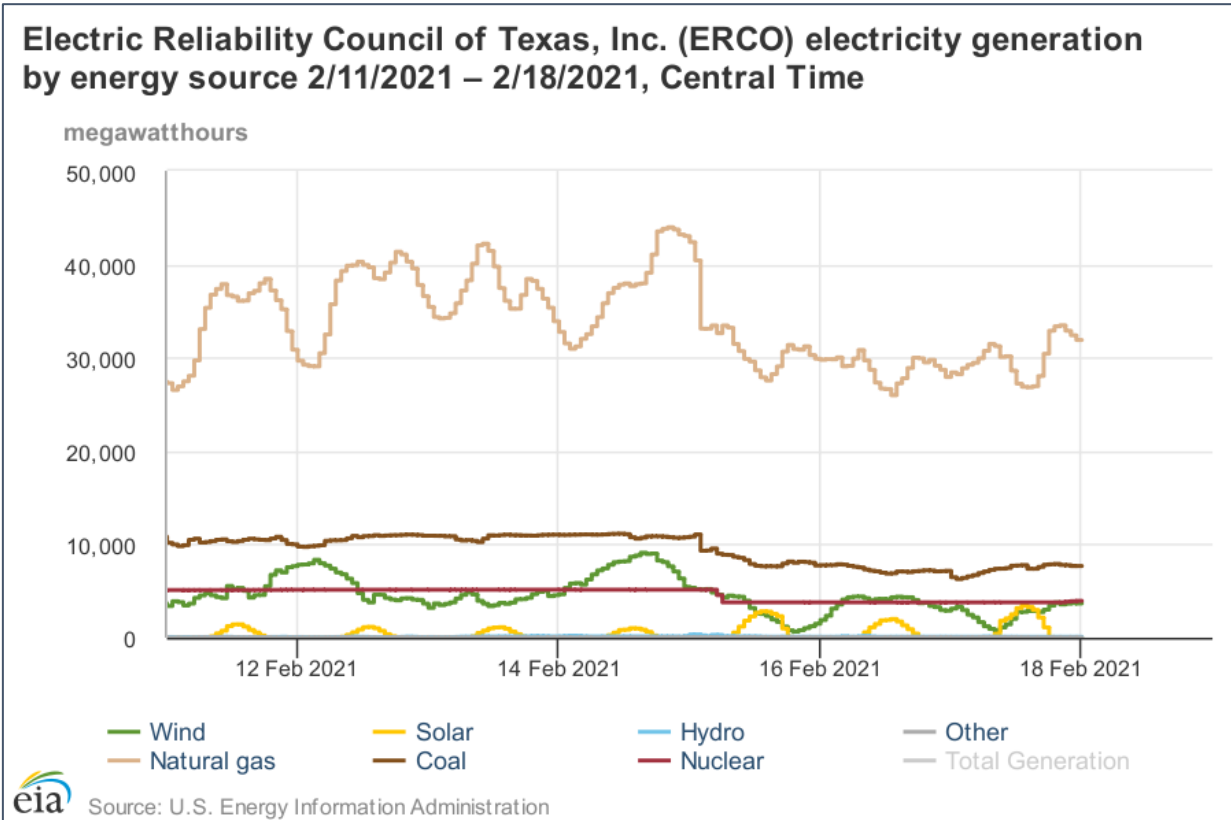
- ERCOT remains in EEA Level 3.
- On the evening of February 17, ERCOT announced that it had restored approximately 8,000 MW (about 1.6 million households) since the morning of February 17. This included restorations at a rate of 1,000 MW per hour starting in the afternoon of February 17.
- ERCOT first implemented an EEA 3 at 2:25 AM EST on February 15. At that time, ERCOT instructed utilities within ERCOT's service area in Texas to shed firm load and implement controlled outages due to generation inadequacy.
- 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 6 PM EST February 17, ERCOT had reported that 43,000 MW of generation capacity has been forced offline, with 26,500 MW being thermal and 17,000 MW 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**

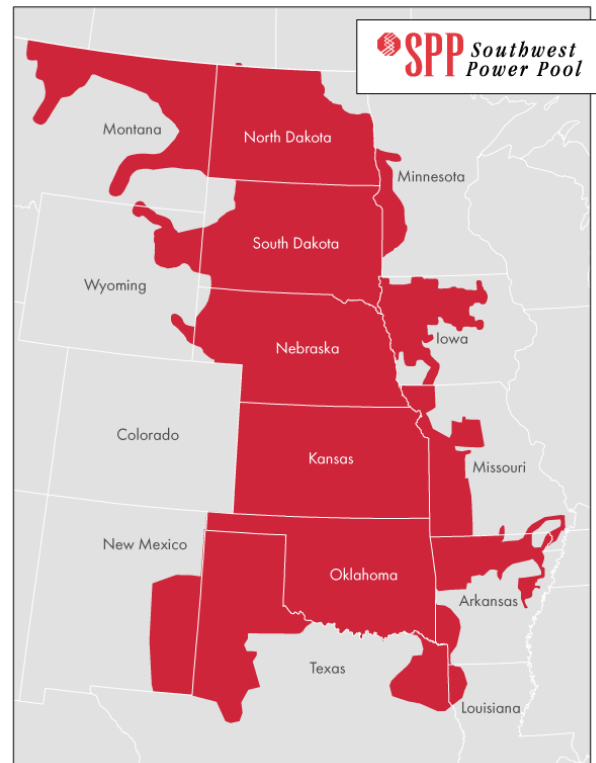
- MISO declared a Maximum Generation Emergency Event Step 2c at 6 PM EST on February 17, before returning to a Maximum Generation Alert at 9:30 EST on February 17. The Maximum Generation Alert remains in effect through 4 PM EST on February 20.
- MISO has extended its Conservative Operations and Cold Weather Alert through February 20, 2021 at 4 PM EST.
- Due to extreme winter weather and temperature, generation and transmission failures have occurred in the Western Load Pocket of MISO. To alleviate transmission overloads, MISO directed Entergy Texas to perform interruptible load shed on February 15 and additional load shed was required on February 16.
- 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 11:59 PM EST on February 17, SPP declared an EEA Level 1. Generation is sufficient to meet demand across the region and to fully satisfy operating reserve requirements.
- SPP dropped down to the EEA Level 1 after previously declaring an EEA Level 2 at 7:20 PM EST February 17.
- SPP continues to urge customers to conserve electricity but is not directing any interruptions to service at this time.
- SPP previously declared the EEA Level 3 on February 16 for the entire balancing authority area and issued load-shed instruction for capacity deficiency.
- SPP has 14 member states in the central and western U.S. regions 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 U.S. 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

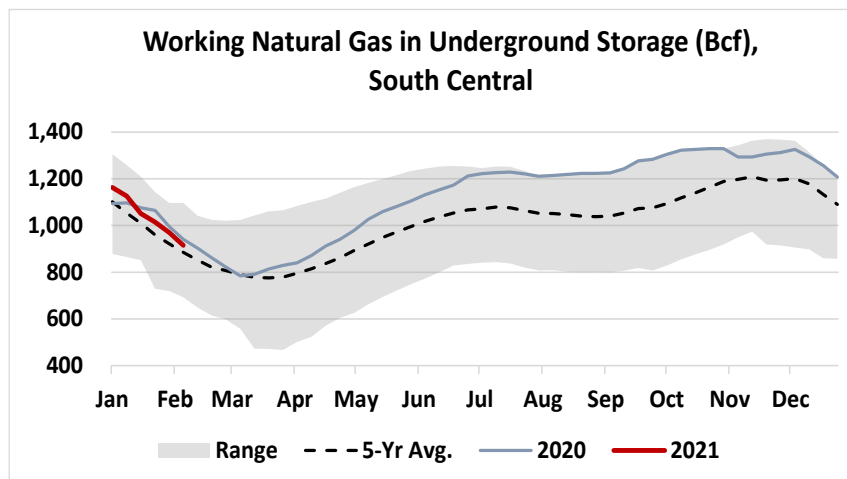
- Some natural gas processing plants and compressor stations across Texas have reportedly shut-in due to weather conditions.

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.
- The week ending February 19th 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 915 Bcf on February 5, 4.3% above the five-year average for this time of year.
- According to [EIA’s Form 191](#) data, Texas has 30 active natural gas storage facilities.



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 (OFO).

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

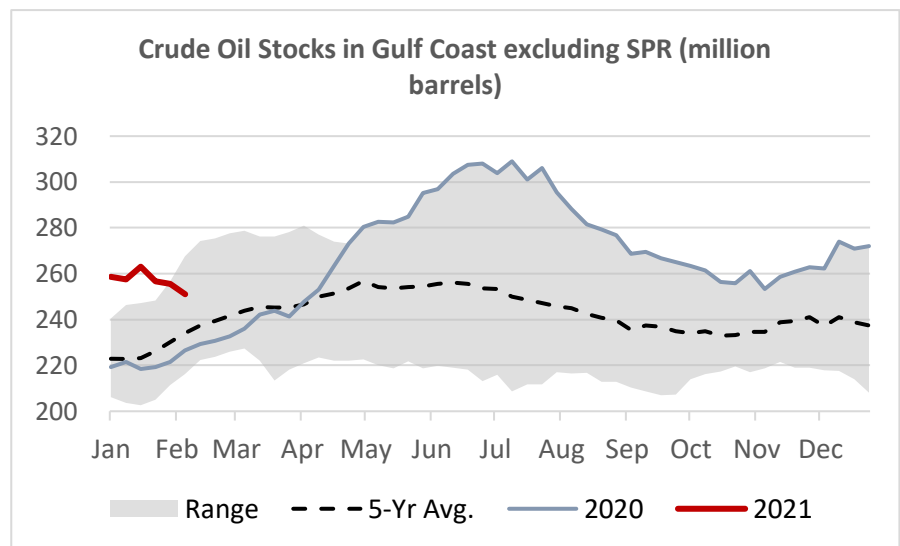
- As of February 18, refinery shutdowns, rate reductions, or process unit outages have been reported at refineries representing approximately 5.7 million barrels per day (b/d) of refinery capacity. Full or near-full refinery shutdowns have been reported at several refineries, accounting for approximately 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 251 million barrels for the week ending February 5, 7.2% 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 as of 3:30 PM EST 02/16/2021				
State/Territory	Details	Effective Dates		Status
		Start	End	
Multi-State	<u>Regional Emergency Declaration</u> (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
West Virginia	<u>State of Emergency</u> - Affecting Eight Counties in Northern and North Central WV. <u>State of Preparedness</u> for the rest of the state.	2/16	3/18	Active
Virginia	<u>State of Emergency</u>	2/11	3/13	Active
Oregon	<u>State of Emergency in the Willamette Valley</u>	2/13	Continuing	Active
Maryland	<u>Declaration of Transportation Emergency and Commercial Motor Vehicle Safety Regulation Waiver</u>	2/19	2/23	Preliminary
Nebraska	<u>Executive Order</u> - Emergency Motor Carrier Relief Due to Extreme Cold Temperatures	2/15	2/19	Active
New York	<u>HOS Waiver</u>	2/17	3/1	Active

Illinois	<u>Illinois Department of Transportation- Declaration of Emergency.</u>	2/16	2/20	Active
Iowa	<u>State of Disaster Emergency</u>	2/15	3/17	Active
Pennsylvania	<u>HOS Waiver</u>	2/27	2/28	Active
Tennessee	Executive Order by the Governor- Energy Emergency	2/16	2/26	Active
Kentucky	<u>Kentucky Transportation Cabinet Declaration of Emergency-</u> Assistance for power restoration and delivery of gasoline, propane, and diesel fuels	2/11	2/21	Active
Mississippi	<u>HOS Waiver</u>	2/14	2/21	Active
	<u>State of Emergency</u>	2/14	2/21	Active
Alabama	<u>HOS Waiver</u>	2/14	3/16	Active
	<u>State of Emergency</u>	2/14	Continuing	Active
Louisiana	Emergency Order- Implementation of Emergency Gas Shortage Plan	2/15	2/20	Active
	<u>State of Emergency</u>	2/11	3/12	Active
Oklahoma	<u>Federal Emergency Declaration</u>	2/18	Continuing	Active
	<u>State of Emergency</u>	2/12	Continuing	Active
Texas	<u>Texas Department of Public Safety Emergency Notice – Assistance for delivery of Propane and Home Heating Oils</u>	2/10	2/15	Active
	<u>Federal Emergency Declaration</u>	2/11	Continuing	Active
	<u>State Disaster Declaration</u>	2/12	Continuing	Active

Sources: State government, White House, and FMCSA websites.