

# Hurricane Ida Landfall Causes Major Damage, Disruptions to Supply Chains and Infrastructure along the US Gulf Coast as Peak Atlantic Storm Season Begins



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## EXECUTIVE SUMMARY

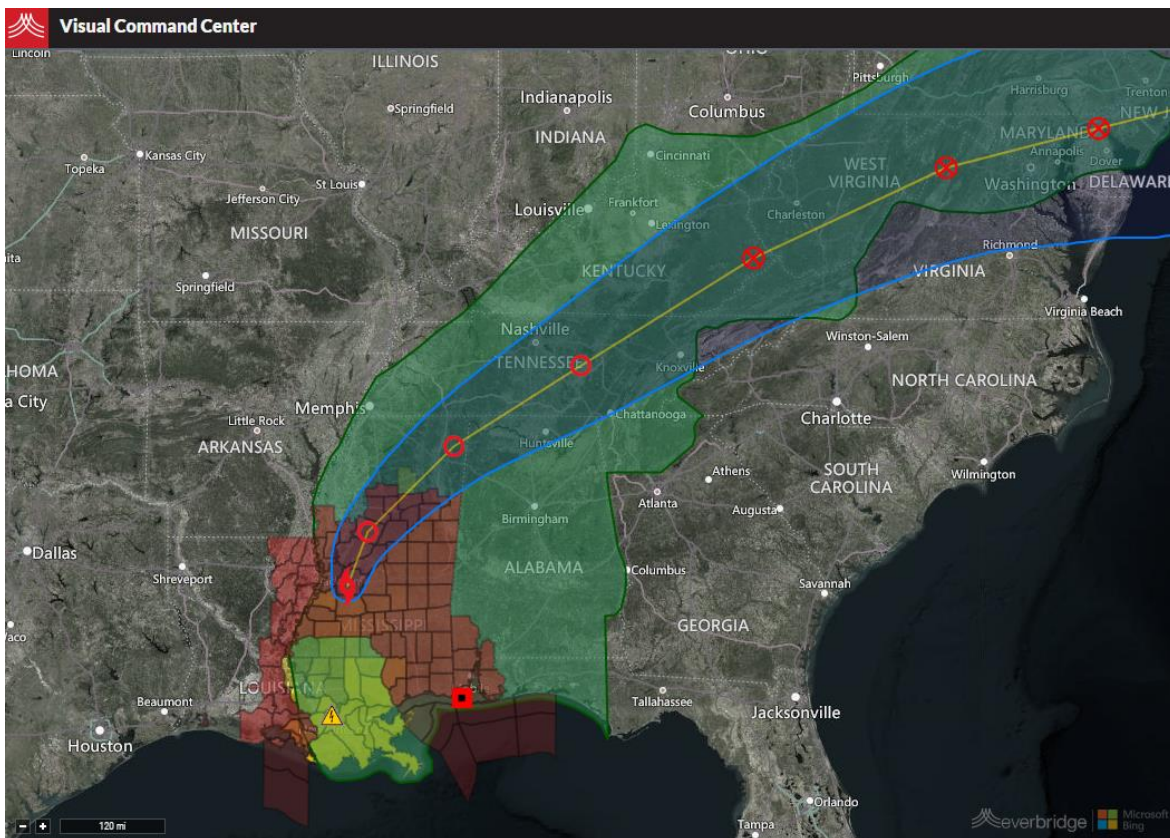
Hurricane Ida made landfall near Port Fourchon, LA, at 12:55 PM EDT on Sunday, August 29, as a Category 4 hurricane. At landfall, Ida was packing maximum sustained winds around 150 miles per hour, equaling 2020's Hurricane Laura as the strongest storm to ever make landfall in Louisiana. Ida caused major damage and flooding across southeastern Louisiana and southwest Mississippi, while also forcing the evacuation of hundreds of thousands of residents across both states. Thousands of structures have been damaged or destroyed and at least one death has been blamed on the storm thus far. Ida also caused a myriad of supply chain and infrastructure disruptions. This includes the closure of ports, airports, and roads across the region; the temporary shutdown of oil and gas operations in the Gulf of Mexico and along the U.S. Gulf Coast; and the temporary stoppage of railroad activity in affected areas. Over one million people in Louisiana are without power, including the entirety of New Orleans, and several hundred thousand residents are without water or under a boil water advisory. Ida has weakened into a tropical depression and is forecast to bring heavy rains to parts of the South and east coast in the coming days.

## KEY JUDGEMENTS

- Catastrophic damage has been reported in areas near landfall in Houma, LA, and damage estimates remain ongoing across the region.
  - Recovery efforts may be stalled by a lack of passable roads across southeastern Louisiana. In Lafourche Parish, all roads were deemed impassable on Sunday due to storm damage, debris, and flooding.
- Ida continued a growing trend of storms exhibiting rapid intensification in the Gulf of Mexico strengthening from a Category 1 hurricane to a Category 4 in a matter of hours.
  - Rapid intensification has become more common as ocean waters have warmed, allowing for the process to occur more frequently.
  - The quick-changing severity of a storm can pose significant problems for preparations on land, as residents are often left with little to no time to adequately prepare or evacuate.

- Officials have warned that extended power outages, potentially weeks in duration, are likely throughout the region as utility equipment suffered major damages, including to all eight transmission lines that feed power to New Orleans.
  - Extended power outages will disrupt travel and business operations across the region and could make it difficult for people to return to the area.
- Significant supply chain disruptions should be expected in the region though the duration remains to be seen.
  - Oil and gas production is likely to resume normal operations in the coming days following inspections for damage; however, refinery disruptions may persist due to the extended power outages and potential damage to facilities.
  - Rail traffic remains suspended but could also resume in the next few days; however, officials have warned that freight delays may take extra time to normalize due to an already strained network caused by COVID-19 disruptions.
  - As such, fuel prices may rise in the coming days and weeks, and businesses relying on cross-country rail freight should anticipate delays.
- The threat of additional disruptive storms will remain high in the coming weeks, as the peak of Atlantic storm season will continue throughout September. As such, residents and businesses along the coasts of the Atlantic Ocean and Gulf of Mexico should prepare and/or review emergency plans and contingencies.

### Hurricane Ida Contextual Layers



*Contextual layers produced by Everbridge's Tactical Resolution Team conveying Hurricane Ida impacts as of August 30, 2021. Yellow areas show power outages and green areas show flash flood watches. Red polygons show Tropical Storm Warnings*

## HURRICANE IDA IMPACTS

### LOUISIANA

Before the storm's arrival, President Joe Biden and Louisiana Governor John Bel Edwards declared states of emergency in anticipation of the extensive storm surge and damage to follow Ida. The hurricane was initially predicted to be the strongest storm to hit the state since 1865 and coincided with the 16th anniversary of the state's most deadly storm, Hurricane Katrina. Ida originally made landfall near Port Fourchon, LA, southwest of Grand Isle, on Sunday, August 29, at approximately 11:55 AM local time, as a Category 4 hurricane. At the time of landfall, Ida was exhibiting maximum sustained winds of 150 miles per hour. A second landfall was recorded around 2:00 PM near Galliano, LA. The storm underwent a rapid intensification shortly before making landfall, a major contributing factor in the resulting extensive damage.

At least four hospitals were damaged, while 39 other medical facilities were operating on generator power, according to the Federal Emergency Management Agency (FEMA). Extensive amounts of fallen trees and debris have been reported in the French Quarter of New Orleans, trapping residents in their homes. Significant structural damage has also been reported in Chalmette, where a New Orleans Regional Transit Authority (RTA) ferry broke loose from its mooring. In Bridge City, an Entergy transmission tower collapsed into the Mississippi River. Complete damage information is immediately unclear, as excess amounts of debris and standing water make many locations inaccessible, particularly areas outside of levee systems. In Lafourche Parish alone, officials estimate re-entry will be delayed for a week or longer.

The most catastrophic damage is believed to have occurred in Grand Isle, parts of which experienced as many as seven feet of storm surge. Approximately 40 people who did not evacuate are trapped on Grand Isle. Significant flood disruptions have also been reported in New Orleans, where around 50 roadways are inundated; most credit for the high waters is due to a power-related drainage pump failure along the west bank of the Mississippi River in Algiers. Officials estimate the standing water in Algiers specifically will linger as power outages persist. Flooding related to levee overflow and damage was also indicated in Lafitte, Jean Lafitte, and Braithwaite. River flooding continues to exacerbate conditions initially caused by storm surge and heavy rainfall, with the following rivers currently in or predicted to reach flood stage over the coming days — Amite, Bayou Liberty, Bogue Falaya, Natalbany, Tangipahoa, Tchefuncte, and Pearl rivers.

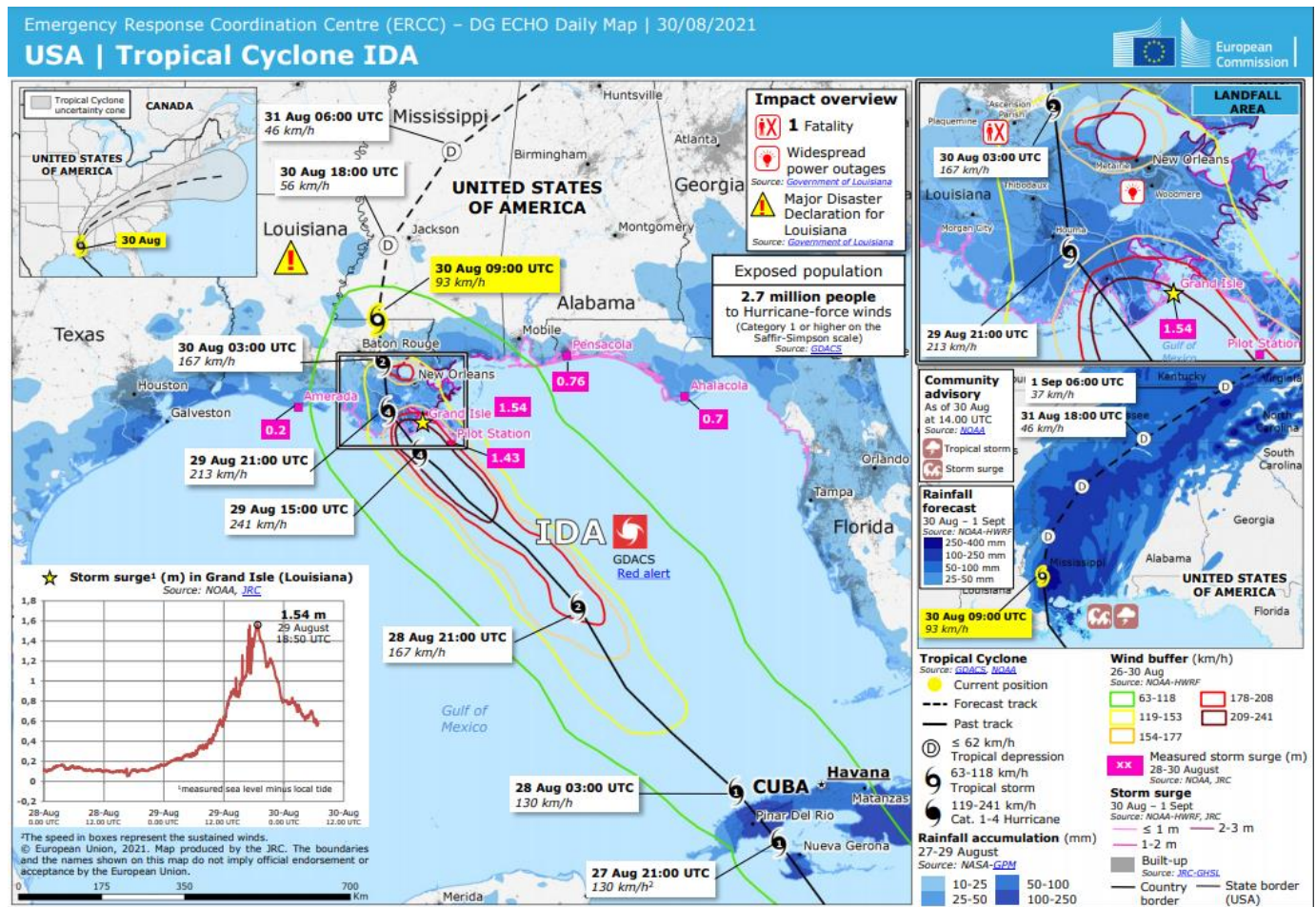
Hundreds of thousands were ordered to evacuate before Ida's arrival. Approximately 295,000 people remain evacuated in Assumption, Calcasieu, Iberia, Jefferson, Jeff Davis, Lafourche, Plaquemines, Orleans, St Charles, St John the Baptist, St Mary, St Martin, Tangipahoa, and Terrebonne parishes as of this writing. Thousands were placed under curfews in Acadia, Assumption, Iberia, Jefferson, Lafayette, Lafourche, Plaquemines, St Martin, St Mary, St Tammany, Tangipahoa, Terrebonne, Washington, and West Baton Rouge parishes.



Transportation disruptions continue, particularly in Baton Rouge, New Orleans, and Lafayette. Ferry, streetcar, and Amtrak service was suspended in New Orleans, while bus service was disrupted in Baton Rouge and Lafayette. Additionally, flights were canceled through at least Monday, August 30, at Louis Armstrong New Orleans International Airport (MSY) and Lafayette Regional Airport (LFT), particularly for Delta and United airlines. The Louisiana Department of Transportation & Development advises motorists not to travel, citing widespread road closures persist across the state, most notably along Interstate 10.

At least one confirmed death attributed to Hurricane Ida in Louisiana resulted from a tree falling on a home; Governor Edwards indicated the casualty count is anticipated to increase “considerably” during a morning briefing on Aug 30. At least 150 rescues have been performed by Crowdsourcing Rescue out of the 1,000 requests received. As of 4:00 AM local time in Slidell, at least 15 people had been rescued from their roofs. Approximately 4,900 Louisiana National Guardsmen have been activated in the last 72 hours, with 195 high-water vehicles, 73 rescue boats, and 34 helicopters. More than 2,000 FEMA employees have been deployed to Alabama, Florida, Georgia, Louisiana, Mississippi, and Texas, including seven FEMA Incident Management Assistance Teams in Louisiana and Mississippi. Over 900 search and rescue personnel from 16 states were active as of 3:00 AM local time on Monday, August 30.

## Hurricane Ida Overview



Source: Emergency Response Coordination Centre (ERCC)

## MISSISSIPPI

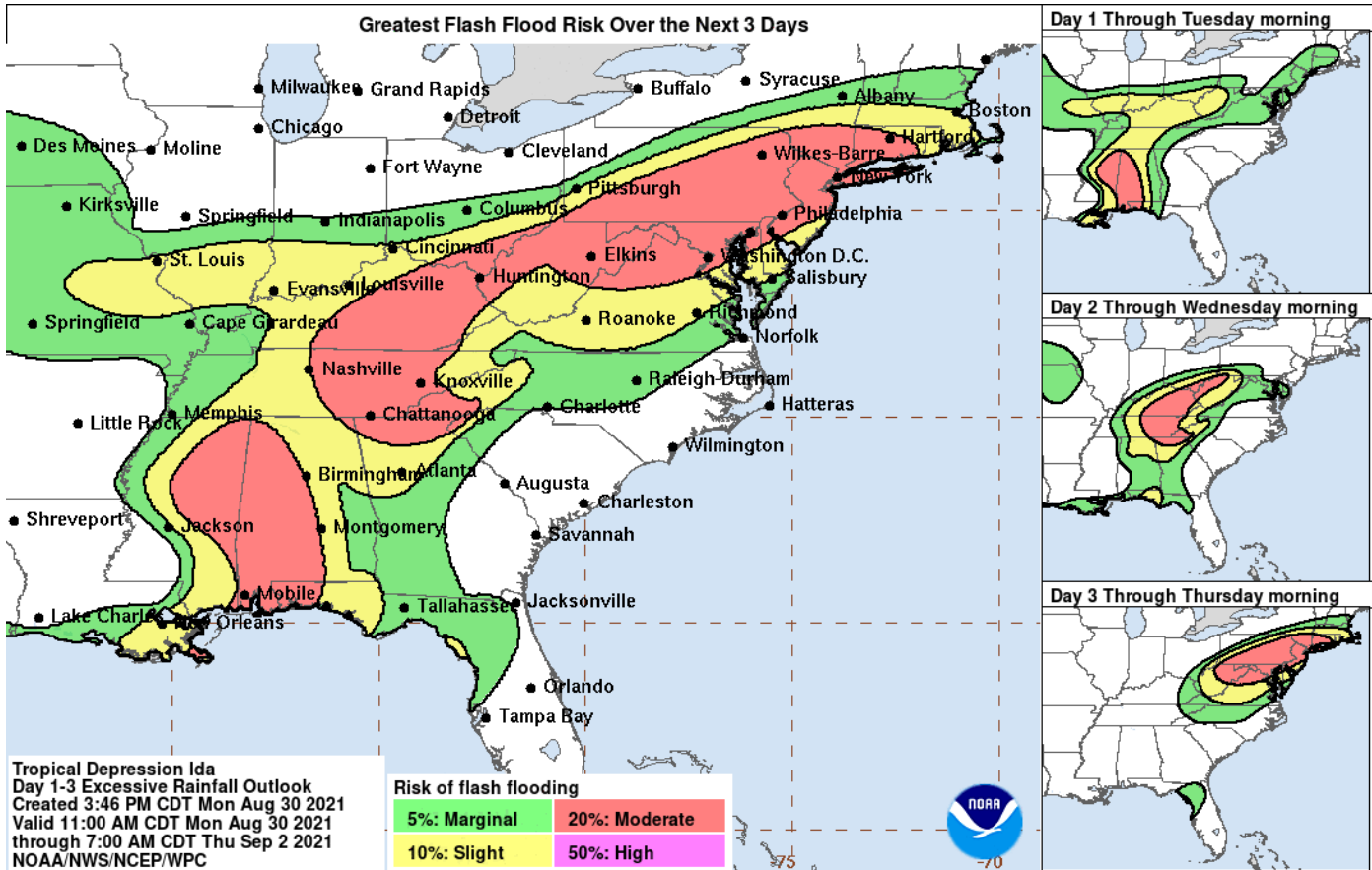
After making landfall along the southeast Louisiana coast and then traveling north through New Orleans, Ida was placed near Jackson, MS, as a Tropical Storm, exhibiting maximum sustained winds of 60 miles per hour following a weakening during movement inland. Governor Tate Reeves declared a state of emergency as the storm approached Louisiana. Evacuation orders were issued to thousands of residents in Hancock and Jackson counties, the vast majority impacting those in low-lying and flood-prone areas. Furthermore, thousands are under curfew in Harrison, Hancock, and Adams counties. The majority of curfew and evacuation orders are to remain in place until further notice. All incoming and outgoing United, Southwest, and American Airlines flights have been canceled at Jackson-Medgar Wiley Evers International Airport (JAN), though flights may resume as soon as Tuesday.

Widespread flooding has been reported in southern Mississippi, particularly around Biloxi, Gulfport, Ocean Springs, and Pascagoula. Several motorists have become stranded, and numerous roadways have been closed or deemed impassable due to high waters, most notably along Highway 90 between Bay St. Louis and Henderson Point. Significant storm surges were reported in the Bay St. Louis and Waveland areas, with each receiving more than six feet, as well as Pascagoula, which received over three and a half feet. River flooding threatens to worsen conditions initially caused by storm surges and heavy rainfall. The following waterways are currently in or predicted to reach flood stage over the coming days — Biloxi River, East Hobolochitto Creek, Jourdan River, Wolf River, Tchoutacabouffa River, and West Hobolochitto Creek River. Multiple structures have reportedly been damaged, although the full extent of flooding remains unknown at this time. At least two possibly storm-related tornadoes have been reported in Waveland and Moss Point. As of this writing, no casualties have been reported from any of the storm-related disruptions in Mississippi. Flood watches and warnings remain ongoing in the area.

## ALABAMA

As Tropical Storm Ida continues movement north through Mississippi, Alabama has been largely spared from the storm's impact. Nonetheless, Governor Kay Ivey declared a state of emergency for multiple counties in southern and western Alabama, including Baldwin, Bibb, Choctaw, Clarke, Colbert, Conecuh, Dallas, Escambia, Fayette, Franklin, Greene, Hale, Lamar, Lauderdale, Lawrence, Marengo, Marion, Marengo, Mobile, Monroe, Perry, Pickens, Sumter, Tuscaloosa, Walker, Washington, Wilcox, and Winston counties before Ida's arrival. While initially avoiding the storm's center, Ida's bands still resulted in storm surge and heavy rainfall, leading to flooding in coastal Alabama, particularly the Gulf Shores, Dauphin Island, and Mobile Bay areas. Between two and three and a half feet of storm surge was recorded at every coastal observation point between the border of Mississippi east to the border of Florida. Numerous roadways, most notably the Bankhead Tunnel, have been closed or deemed impassable due to rising water. Multiple possibly storm-related tornadoes have been reported in Suggsville, Manila, Saraland, Calvert, Troy, and Antioch. Damage to structures has been apparent, although no total damage estimates have been immediately indicated. As of this writing, no casualties have been reported from any of the storm-related impacts in Alabama. Flood watches and warnings remain ongoing in the area.

## Ida Flash Flood Risk August 30-September 2



## SUPPLY CHAIN AND INFRASTRUCTURE IMPACTS

There have been a wide variety of infrastructure and supply chain disruptions caused by Hurricane Ida, several of which began before the storm reached land. Beginning on Thursday, August 26, oil and gas production platforms in the Gulf of Mexico started to evacuate and shut in platforms in anticipation of the storm passing through the region. At the height of the storm on Sunday, an estimated 96 percent of Gulf oil production (1.7 million barrels of oil per day) and 94 percent of natural gas production (2.1 million cubic feet) had been paused. This included the shutdown, evacuation, or movement of at least 288 platforms (51 percent), 11 rigs (100 percent), and ten dynamically positioned rigs (67 percent). Platforms and rigs will have to be inspected for potential damage before they can be repopulated and resume normal operations.

The Gulf Coast is a major U.S. hub for oil and gas production, both in regard to the aforementioned production platforms and along the coast with numerous refineries that make up approximately 45 percent of U.S. refinery capacity. As of Monday, an estimated 2.1 million barrels per day (bpd) in refinery capacity is offline due to Ida.



This includes Valero's 215,000 bpd refinery in St Charles and its 135,000-bpd refinery in Meraux. Phillips 66 shut down its 250,000-bpd Alliance refinery in Belle Chasse and Royal Dutch Shell announced that its 225,000-bpd refinery in Norco has also been shut down. Meanwhile, after initially announcing some of its 500,000-bpd facility in Baton Rouge would remain online, ExxonMobil announced on Monday afternoon that it had shut down the facility due to power outages. Similarly, Marathon shut down its 565,000-bpd facility in Garyville.

Ida has also caused a temporary disruption along the portion of the Colonial Pipeline between Houston, TX, and Greensboro, NC. Two lines of the pipeline, one which carries gasoline, and another that carries distillates, were shut down on Saturday. Both lines remain shut down; however, Colonial expects to restart the impacted lines on Monday night. The Louisiana Offshore Oil Port (LOOP), located in Galliano, LA, has also temporarily stopped operations. The LOOP is used as a port to offload and temporarily store crude oil that is being transported on tankers. Approximately ten to 15 percent of domestic and foreign oil that comes into the U.S. travels through the LOOP, which also connects via pipeline to approximately 50 percent of all U.S. refining capacity. Non-refinery plants across the region have also reported disruptions. This includes the Shell chemical plant in Geismar, Cornerstone's acrylonitrile (ACN) and melamine plants, Westlake's chemical plants in Geismar and Plaquemine, and Dow Chemical plants in Taft and Plaquemine.

Port closures also began prior to Ida making landfall, with initial closures beginning across Louisiana and Mississippi on Saturday afternoon. As of Monday, all major ports across the Louisiana coast remain closed. This includes the following ports: Baton Rouge, New Orleans, Plaquemines, South Louisiana, St Bernard, and the Venice Port Complex. There is presently no estimate for when ports are expected to resume operations. Officials will need to assess for damages before reopening; however, this process could begin as soon as Monday afternoon or Tuesday. In Mississippi, the ports of Biloxi, Gulfport, Pascagoula, and Bienville all remain closed as of Monday. In neighboring Alabama and Florida, the ports of Mobile, Panama City, Pensacola, and St Joe all remain operational but with some restrictions.

Rail disruptions were also reported prior to Ida making landfall. In anticipation of the storm, the city of New Orleans began closing their floodgates on Friday, with all floodgates eventually closed by Saturday. In response to that, Union Pacific (UP) announced that rail interchanges with eastern rail carriers would be stopped. In addition, UP temporarily suspended operations at its Avondale intermodal terminal. Several other rail carriers reported operational disruptions as well. Kansas City Southern (KCS) suspended mainline operations and interchanges between New Orleans and Baton Rouge, as well as between Gulfport and Hattiesburg in Mississippi. Norfolk Southern announced that its New Orleans intermodal facility would be closed on Monday, but that it was expected to resume operations on Tuesday. BNSF suspended all rail operations between Lafayette, LA, and New Orleans as of Saturday. Ida has also forced the U.S. Postal Service (USPS) to temporarily suspend all retail and delivery operations in ZIP codes that begin with the following three numbers: 700, 701, and 704-708 until further notice.

In Louisiana and Mississippi, Ida has caused widespread power outages due to extreme winds and damaged equipment. Early Monday morning, Louisiana peaked with approximately 1.17 million utility customers without power. That number has since fallen to slightly over one million customers without power.

Affected locations include the entirety of New Orleans and Orleans parish, which lost power on Sunday night. This was due in part to Entergy reporting that all eight of its major transmission lines into New Orleans suffered “catastrophic” damage. This, in turn, forced the New Orleans Sewage and Water Board (SWBNO) to use backup power systems, such as turbines and generators, to power the city’s pumping stations that are used to control flooding across the city. The power issues were not only confined to the New Orleans area, however, as officials have estimated that 14 parishes suffered outages involving at least 80 percent of customers. According to Jefferson Parish Emergency Management Director Joe Valiente, the entire power grid has collapsed in around ten parishes and there are concerns it could take upwards of six weeks to repair and fully restore electricity. In Mississippi, over 110,000 utility customers, mainly in the coastal southwestern area of the state, were without power as of Monday afternoon.

In addition to the power outages, several Louisiana parishes reported telecom disruptions due to the storm. Jefferson, Lafourche, Orleans, St Tammany, St Charles, and Tangipahoa parishes have all reported 9-1-1 telecom outages. Likewise, on Sunday, New Orleans temporarily stopped emergency medical service (EMS) on Sunday due to storm impacts. Moreover, AT&T has announced that only 60 percent of its wireless network is operating normally in Louisiana due to a combination of storm damage and power outages. There are no current estimates for when 9-1-1 services or wireless service is expected to resume.

The storm damage has also led to widespread boil water advisories and water outages across southern Louisiana. Jefferson Parish is the worst affected area due to the water system suffering significant damage. On Sunday night, officials estimated the parish was losing approximately 250,000 gallons per hour. As of Monday, over 312,000 residents were without water, including over 240,000 in Jefferson Parish. Other parishes that reported outages included Ascension, Lafourche, Plaquemines, St Helena, St James, St Tammany, and Terrebonne. In addition, nearly 330,000 residents were under a boil water advisory, including 188,000 people in Jefferson Parish. Other parishes reporting advisories included St Charles, St James, St Tammany, and Terrebonne.

## ASSESSMENT

Despite making landfall weaker than the Category 5 initially projected, Hurricane Ida still ranked as one of the three strongest storms to make landfall in Louisiana when it came ashore Sunday morning as a Category 4 storm with maximum sustained winds of 150 miles per hour. Even with no levee systems failure, excessive rainfall accompanied by storm surge will likely result in severe flash flooding in Louisiana and Mississippi and moderate flooding in Alabama, continuing for an extended period, if not worsening, as rivers in the region continue to rise.

Extensive damage has been reported along the southeastern Louisiana coast, particularly in Jefferson Parish, where the storm made landfall, and in Orleans and Lafourche parishes. Aerial footage indicates widespread, catastrophic damage, as was initially forecast; however, excess debris, standing water, and currently downed phone and other communications have prevented authorities from reaching these areas and assessing the full extent of the damage. As roadways are cleared by authorities and areas become accessible, structural damage estimates and casualties are anticipated to increase significantly. As rescue and recovery operations continue, hundreds of thousands remain under evacuation and or curfews in southern Louisiana and Mississippi.



The U.S. Health and Human Services Secretary Xavier Becerra has declared public health emergencies for Louisiana and Mississippi to ease health professionals' ability to provide care to those impacted by Ida.

Exceptionally high wind gusts contributed to the widespread damage observed along the southeastern Louisiana coast. Peak gusts up to 172 miles per hour were reported in Port Fourchon where the storm hit at 1:30 AM local time on Monday, August 30; simultaneously, 111 mile-per-hour winds were reported as far north as Mandeville. Unlike Hurricane Laura, which made landfall in Louisiana as a Category 4 storm last year, the heavy winds were much more widespread, akin to Laura's successor, Hurricane Delta.

Ida has since weakened to a tropical depression and is likely to dissipate in the next few days. Despite this weakening, Ida is still anticipated to pose a flood threat to Tennessee Valley, already recovering from catastrophic flooding last week and, the Mid-Atlantic and Northeast. While the previously mentioned heavy winds that have crippled infrastructure in the region will continue to diminish, lingering gusty conditions cannot be ruled out in southeastern Louisiana, southern Mississippi, and southern Alabama through Monday night.

Ida continued the troubling trend of tropical storms undergoing rapid intensification in the Gulf of Mexico just prior to landfall in recent years. According to the National Hurricane Center (NHC), rapid intensification occurs when a storm has an increase in wind speed of at least 35 miles per hour in 24 hours. On Saturday, Ida was a Category 1 hurricane with winds around 85 miles per hour. Less than 24 hours later, winds had increased nearly 65 miles per hour to 150 miles per hour. The storm followed a similar path and intensification of Hurricane Laura last year, which is tied with Ida as the strongest hurricane to ever make landfall in Louisiana. The rapid intensification process is particularly dangerous to coastal communities that can see potential impacts significantly change in a short amount of time, making it more difficult for residents to safely evacuate or prepare in enough time.

Meteorologists warned of the potential for Ida to rapidly intensify last week due to the above-average water temperatures currently being exhibited in the Gulf. Some of the warmest water was just offshore of Louisiana, which allowed for the storm to strengthen up to the point of landfall. Historically, storms have often weakened as they approach land. Ocean temperatures have steadily risen over the last 40 years, which has allowed for the frequency of rapid intensification to increase significantly over the past few years. Rapid intensification of tropical cyclones, particularly those in the Gulf of Mexico, is likely to increase in frequency in the coming years as ocean temperatures continue to rise. Officials have yet to find a better method for preparing for these storms, highlighted by New Orleans Mayor LaToya Cantrell noting that she would ask FEMA for new guidance on approaching evacuation alerts for future storms so that residents could be better protected and prepared.

The U.S. Gulf Coast represents an important supply chain hub for the country and damage and disruptions from Ida may cause significant reverberations in the coming days and weeks. Most immediately, it remains unclear how long electricity restoration across southeastern Louisiana will take; however, officials have warned it could be multiple days or weeks for a large part of impacted populations, including the greater New Orleans area, to regain power. There have yet to be reports of major damage to production platforms and rigs in the Gulf and it is likely that most of them will repopulate workers and resume operations in the next few days.

As such, it is unlikely that any significant shortages in oil and gas products will materialize. Refineries and other chemical plants along the coast may be disrupted longer if significant damage is reported or the facilities are located in areas dealing with extended power outages. Nevertheless, temporary price increases in gasoline and natural gas prices may be reported in the next few weeks due to the short-term disruptions, in combination with the upcoming Labor Day weekend, when demand for gas has increased.

There are likely to be noticeable supply chain impacts due to the widespread road closures and rail disruptions throughout the region. New Orleans is a major railway hub with almost every major railroad company having routes that traverse through the region. U.S. rail capacity was already strained due to COVID-19-related backlogs. Cross-country freight that normally goes through the region has been significantly impacted as interchanges between western and eastern railroads remain closed as of this writing. Affected rail companies have warned that customers should expect delays of at least 24 hours, though officials have advised it could take multiple weeks, or even months, for cross-country railway operations to fully recover from the short-term shutdowns. For local supply chains within Louisiana, problems are further complicated by the widespread closure of local roads and interstates due to storm damage. This will make it difficult for utility crews and other disaster aid to reach impacted areas and begin repairs that can restart the overall supply chain. As such, there are likely to be significant delays in shipments and last-mile deliveries that involve the southeastern Louisiana corridor in the immediate future.

The peak of the Atlantic storm season remains ongoing, and the possibility of additional storms in both the Gulf of Mexico and along the eastern United States is high. As of this writing, meteorologists indicate environmental conditions are conducive to a 20 percent chance for storm formation within the Atlantic over the next five days. Individuals and businesses affected by Ida are advised to exercise caution and heed all instructions from local authorities due to widespread debris and damage. The public in the Mid-Atlantic and Northeast should expect additional rainfall and possibly minor flooding caused by remnants from Ida in the coming days and heed instructions and warnings from local authorities. Motorists are reminded to avoid driving through flooded roadways. Meanwhile, residents and businesses along the U.S. Gulf Coast and eastern coast are advised to review emergency plans and procedures in preparation for additional storms. The U.S. Department of Homeland Security (DHS) has created guidance documents to help in such planning. The guidance can be viewed at the following link: <https://www.ready.gov/hurricanes>.

## About “Tactical Resolution”

The Everbridge Tactical Resolution Service is a prototype program designed to give Everbridge clients an even richer and deeper understanding of operational conditions before, during, and after select critical events. The team will supplement Everbridge’s current Risk Intelligence by delivering enhanced operational details about a threat or disruption with deep levels of fidelity and resolution. This team will track a disruptive situation and provide frequent updates until there is resolution and recovery from the incident. For more information contact your customer success manager or account team.