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U.S. LNG surge may have a flood problem

By **Mike Lee** | 06/08/2022 07:30 AM EDT



The Calcasieu Pass export terminal in Cameron, La. Mike Lee/E&E News. Flight provided by SouthWings

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CAMERON, La. — Almost two years ago, Hurricane Laura pushed a 17-foot-high wall of water onto the Louisiana coastline.

Hundreds of houses and businesses in this coastal town were simply washed away. The storm tide surged nearly 30 miles up the Calcasieu River and flooded large swaths of Lake Charles. It took weeks to restore the city’s electricity. Two months later, Hurricane Delta hit the same stretch of coastline.

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Two years later, the devastation is still apparent — a wrecked building still sits across the street from the Cameron Parish courthouse, and a shrimp boat lies canted on its side along the main highway. In Lake Charles, blue tarps still dot the roofs of neighborhoods that were hit by the storm.

Yet Cameron and Lake Charles are home to an industrial revival, as companies scramble to build new export terminals and expand existing facilities for the booming international trade in liquefied natural gas. Two export terminals are already running, and the Russia-Ukraine war has raised hopes that American LNG will help supply energy to Europe. In March, the Biden administration pledged (<https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/25/fact-sheet-united-states-and-european-commission-announce-task-force-to-reduce-europes-dependence-on-russian-fossil-fuels/>) to send more LNG exports to Europe, including 15 billion additional cubic meters of gas this year.

If all of the companies are successful over the next few years, five new export terminals could join the two existing operations between Lake Charles and Cameron.

Together, the facilities in the two communities would be able to export more than 15 billion cubic feet of gas a day. That's greater than the current U.S. export capacity and about one-eighth of U.S. natural gas production.

But a federal study from NOAA in February points out that the Gulf of Mexico from Texas to Louisiana is likely to see the highest sea-level rise in the contiguous United States. And flooding will likely become more intense and more frequent.

That is raising concerns that the growing LNG industry — which is becoming concentrated in the same vulnerable stretch of coastline — could exacerbate an ongoing land shrinkage problem. Louisiana's coastline is already losing hundreds of acres a year to storms, rising seas and erosion, and experts blame much of the damage on the region's oil and gas industry. The export plants will also create local air pollution and emit millions of tons of greenhouse gases that will help speed up climate change, further endangering the region, critics say (*Energywire* (<https://subscriber.politicopro.com/article/eenews/2019/10/15/la-oil-lawsuits-a-climate-reckoning-or-red-herring-023467>), Oct. 15, 2019).

“A hundred percent, we need jobs. What we don't need are jobs that are suicidal, that are going to wipe out the coast,” James Hiatt, an organizer for the Louisiana Bucket Brigade, said during a tour of the area in May.

The terminal operators say they've planned for the future and can withstand the storms and floods, and argue that they're bringing jobs and economic benefits to a hard-bitten part of the state. They also argue that American LNG can help replace dirtier fuels in other parts of the world.

“We do believe the world needs to transition to lower-carbon energy,” Brian Lloyd, vice president of external affairs and communications at Sempra Infrastructure, which operates one of the existing terminals, said in an interview.

Gas boom

The push for U.S. LNG is an echo of the shale drilling boom that revived the U.S. oil and gas industry 15 years ago. Then, exploration companies found so much gas, so cheaply, that it was worth the expense of exporting it. It costs billions of dollars to build the industrial refrigeration units that chill the gas to subzero temperatures, dramatically shrinking its volume so it can be loaded onto specially designed tankers.

Louisiana, because of its existing ports and proximity to major gas pipelines, became the seat of the export industry. The first modern cargo of LNG shipped from the lower 48 states was loaded onto a tanker in 2016 at Sabine Pass, about 35 miles west of Cameron (*[Energywire](https://subscriber.politicopro.com/article/eenews/2016/02/25/sabine-pass-first-lng-cargo-setting-sail-for-brazil-080252)* (<https://subscriber.politicopro.com/article/eenews/2016/02/25/sabine-pass-first-lng-cargo-setting-sail-for-brazil-080252>), Feb. 25, 2016).

The area around Lake Charles and Cameron was a natural fit for companies announcing recent expansions. There were already a handful of plants built prior to the shale-drilling boom that were designed to import LNG along the Calcasieu River Ship Channel, a 40-foot-deep passage that connects the two communities to the Gulf of Mexico.

Sempra Infrastructure, a subsidiary of the pipeline and electric conglomerate Sempra Energy, bought one of the existing import terminals near Hackberry, La.; expanded it to 502 acres; and named it Cameron LNG, for the surrounding parish. The first of three liquefaction units, known as trains, opened in 2019.

Venture Global LNG, based in Virginia, owns about 1,000 acres near Cameron at the mouth of the Calcasieu River and started building the first of three planned phases in 2019. The company exported its first cargo from the site in March and ultimately plans to build 18 trains on the full site, according to its website.

The five planned export terminals for the Lake Charles region are Commonwealth LNG; Tellurian Inc.’s Driftwood LNG; G2 Net-Zero; Energy Transfer’s Lake Charles LNG; and Magnolia LNG, owned by the Glenfarne Group in New York. They’re waiting on a combination of approvals — permits from the Federal Energy Regulatory Commission, long-term contracts to underpin their business plans and final investment decisions that will lock in the construction timeline.

The war between Russia and Ukraine has made it more likely that the projects will get to the finish line. European countries that relied on Russia for their gas supplies are beginning to look to the U.S. for their future supplies. It’ll still take time to determine how much LNG capacity is built on the Gulf Coast, said Charlie Riedl, executive director of the Center for Liquefied Natural Gas, a Washington trade group.

“Those contracts don’t happen quickly,” he said.

As the industry expands, it will largely stay centered in Louisiana. Three of the eight U.S. terminals that are operating are in the Bayou State, according to FERC data. Texas has two, and Georgia, Maryland and Alaska each has one.

Of the 15 future projects currently planned nationwide, six will be in Louisiana and six will be in Texas, according to FERC [data \(https://cms.ferc.gov/media/north-american-lng-export-terminals-existing-approved-not-yet-built-and-proposed-8\)](https://cms.ferc.gov/media/north-american-lng-export-terminals-existing-approved-not-yet-built-and-proposed-8).

Rising seas and environmental justice



A gas flare burns at Venture Global LNG’s Calcasieu Pass terminal. | Mike Lee/E&E News. Flight provided by SouthWings

The LNG terminals between Lake Charles and Cameron dwarf the surrounding landscape. Sempra’s Cameron LNG terminal alone would fill the National Mall in Washington from the Capitol to the Lincoln Memorial. The Calcasieu Pass terminal is surrounded by a flood barrier that’s more than 20 feet high.

On a recent aerial tour that the Louisiana Bucket Brigade organized for reporters and news photographers, flares could be seen burning at both the Cameron and Calcasieu Pass terminals.

Environmentalists say that the existing LNG plants are already starting to affect the local area. The Louisiana coast has been eroding for decades, partly because of dredging and construction related to oil and pipeline development. In Cameron Parish, the tree-covered sandbars known as cheniers are starting to lose their vegetation, too, and environmentalists are worried that the LNG boom will accelerate the trend.

The new facilities are likely to reshape the coast in a couple of ways, said Justin Kray, an urban planner and mapping expert who works for the Bucket Brigade. The amount of pavement and packed gravel on the sites means there's less marshland available to soak up rain and tidal surges the next time a storm hits, he said.

During hurricanes, the high walls surrounding some of the sites could divert stormwater onto surrounding buildings. And if the terminals wind up being built on both sides of the Calcasieu River channel, they could increase the speed of a tidal surge making its way inland, the way placing boulders on both sides of a stream can speed up a current, according to environmentalists.

Kray said the concern is serious enough that state or federal officials need to study the cumulative impacts of the proposed developments.

“That’s where I think it needs to be looked at — the cumulative impact, not just one point in isolation,” he said.

The NOAA study found that sea levels in the western Gulf of Mexico, which includes Louisiana, are likely to rise 23 inches by 2050. That’s nearly double the average for the country, which is 10 to 12 inches during the same period. And major floods — as much as 4 feet deep — are likely to become more frequent.

That means states and local governments need to start planning now for the impact, said William Sweet, a NOAA oceanographer who is one of the study’s authors.

“Louisiana is a spot where land is disappearing in front of our eyes,” he said in an interview.

The impacts are already being felt in North Lake Charles, a predominantly Black area of the city, said Roishetta Ozane, a community organizer with the environmental group Healthy Gulf. Neighborhoods that have never flooded before started seeing high water in the last two years, she said.

“These are Black folks who’ve owned their homes for years,” Ozane said. “They’re old — they can’t afford to move.”

At least one court case is challenging the impact of LNG development. The U.S. Court of Appeals for the District of Columbia Circuit ruled in August that FERC hadn’t fully studied the greenhouse gas emissions from two proposed terminals in Brownsville, Texas, and sent the case back to the commission for another review. The decision also faulted FERC for not fully analyzing the impact on low-income Hispanic residents in the area (*Energywire* (<https://subscriber.politicopro.com/article/eenews/2021/08/04/court-orders-new-nepa-review-for-texas-lng-plants-279163>), Aug. 4, 2021).

Net benefit?

LNG companies say their operations won’t harm the local environment, worsen erosion or increase flooding. And they’re supported by Louisiana’s state regulators, who’ve historically taken a hands-off approach to the energy industry.

Commonwealth LNG, which plans to build an export terminal on the opposite side of the ship channel from the Calcasieu Pass terminal, has plans for a 26-foot levee. The barrier is designed to protect against future storms and higher ocean levels, along with the impact of waves during storms, company spokesperson Lyle Hanna said in an email.

The company is working to mitigate the loss of wetlands the terminal will cause, in part by purchasing offset credits, Hanna said. The cumulative effect of having two terminals in the path of future floods will be minimal, he said, since they’ll still be a half-mile apart.

“In the event of a storm surge, water would pass on both the seaward and inland sides of the facilities,” Hanna wrote.

Cameron LNG doesn’t have a levee around its terminal. The terminal is far enough inland that it sits 8 feet above sea level, and its equipment is elevated even farther to put it out of reach of storm surges. The plant suffered minimal damage during Hurricane Laura, said Sempra Infrastructure's Lloyd.

“We’re a company that believes climate change is real,” he said. “That goes into part of our mentality as we build our facilities.”

Lloyd and other LNG proponents argue that the industry will be a net benefit for coastal Louisiana. While the plants emit large amounts of greenhouse gas pollution, they'll ultimately help lower emissions worldwide by providing gas to countries in Asia and Europe that would otherwise burn coal for electricity — an argument that environmentalists challenge.

The companies say they're also working to reduce their emissions. Cameron signed a preliminary deal in May to capture some of the emissions from its plant, and it's asking federal regulators for permission to use grid power instead of natural gas turbines to run its future liquefaction trains. Future phases of Venture Global's Calcasieu Pass terminal will also be able to capture some of their carbon dioxide emissions. Another project, G2 Net-Zero, will use a zero-emissions power plant to produce a variety of industrial gases, along with LNG.

The first phase of the G2 plant, which will focus on ammonia and other gases, could open in 2023, G2 Chair Chas Roemer said in an interview. The project could start exporting LNG within five years.

The company has studied the potential water flow, and its operation will be designed to withstand high water, Roemer said. He argues the world needs new sources of fuel and power, despite the growth of renewable forms of generation.

“You’ve got to balance every issue in its entirety — we can provide a tremendous amount of clean energy and be good stewards at the same time,” Roemer said.

Two other export terminals — Energy Transfer's Lake Charles LNG terminal and Glenfarne's Magnolia project — are being built on existing import terminals near the city of Lake Charles. Both sites are far enough from the coast that they're well above sea level.

"Being able to leverage existing infrastructure not only reduces the environment impact to the site, but it also provides us with cost advantages over other projects," Vicki Granado, a spokesperson for Energy Transfer, said in an email about the Lake Charles site.

Driftwood LNG, owned by Tellurian, has begun construction on its 1,200-acre site, even while it awaits financing that will allow it to finish construction. Officials from Tellurian didn't respond to requests for comments, nor did Venture Global, which owns the Calcasieu Pass terminal.

'Our children are here'

Despite environmental opposition, the industry has support from many politicians and residents in southwest Louisiana, and Louisiana's Democratic governor, John Bel Edwards, is enthusiastic about its future.

“As Louisiana pursues a goal of net-zero emissions by 2050, projects that feature carbon capture and sequestration allow our state to sustain industry without sacrificing our long-term carbon-reduction goals,” Edwards said in a statement in December.

The state Coastal Protection and Restoration Authority also argues that sea-level rise will be lower than the NOAA estimates — a little more than 12 inches, compared with the federal agency's estimate of 23 inches. The CPRA is aware of the potential for floods to push their way up the Calcasieu Ship Channel, but the agency expects the LNG companies to “self-mitigate” their own risks. State regulators and the Army Corps of Engineers are in charge of overseeing the flood risk to the broader area.

“We do include these [facilities] in our analysis looking at future flood risk, and in our theory they show relatively little risk because they are self-mitigated,” said Stuart Brown, the assistant administrator for strategic planning at the coastal agency.

The LNG operators have been good neighbors, said Curtis Fountain, who chairs Cameron Parish's elected board, which is known as the police jury. Cameron LNG built a stormproof community center for the nearby town of Hackberry, Fountain said, and the companies' workers have volunteered to rebuild storm-damaged homes and businesses in the area.

Like a lot of local officials, Fountain has ties to the oil industry. He worked at the Department of Energy's Strategic Petroleum Reserve site in Hackberry until he retired.


He's all too aware of the rising water and the storm damage in the parish, but he said the industry could help stabilize communities that have lost jobs and population as Louisiana's conventional oil industry declined.


“Everybody says, ‘Why do you live down there?’ Where am I going to move?” he said. “Our jobs, our children are here.”


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