

THE DROWNING SOUTH

## A RISING FORTRESS IN SINKING LAND

A massive sea wall around a Louisiana gas facility poses a question: How far will the fossil fuel industry go to protect itself from climate impacts it helped cause?



By [Steven Mufson](#)

Photos and videos by [Ricky Carioti](#)

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## PLAQUEMINES PARISH, La. —

**T**he marshes that blanket this pancake-flat parish south of New Orleans stretch for miles, strewn with small streams that flow into the Gulf of Mexico. A lone four-lane road goes south past a Navy air base, an idle industrial site, a coal export terminal and a handful of small storm-battered communities.

Then, suddenly, a gigantic facility rises from the wetlands. Cranes dot the skyline. They hover over crews that are installing a jumble of pipes, pumps, storage tanks and two 720-megawatt power plants — equipment needed to freeze natural gas into a liquid form so it can be shipped around the world.

It might seem like a risky location for a \$21 billion liquefied natural gas plant, given this region’s ferocious hurricanes and sea levels that are rising faster than almost anywhere else on the planet. But the company building this plant, Arlington, Va.-based Venture Global, says it has an answer to these threats: a 26-foot-high steel sea wall that surrounds the 632-acre site, twice the size of Washington’s National Mall.

The fortress highlights a crucial tension for this region of the country. The sea is rising here and the land is rapidly sinking, in large part driven by decades of oil and gas drilling and the planet-warming emissions that come from the burning of those fossil fuels. That is accelerating the destruction of wetlands, which serve as a critical barrier, and speeding up flooding across the coast, often with less advantaged communities most vulnerable.

### THE DROWNING SOUTH



Seas are rising across the South faster than almost anywhere. The Post explores what that means on the ground.



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At the same time, the Gulf is seeing a boom in facilities like this one. Local and business leaders and some geopolitical strategists argue they help not only the local economy but also the United States’ ability to meet the world’s energy

demand — even if that makes the region, and the projects themselves, more vulnerable.

“It highlights the irony that they’re having to armor these facilities at considerable expense to guard against extreme weather that is their own doing,” said Bradley Campbell, president of the Conservation Law Foundation, an environmental advocacy organization.

To overcome the elements, Venture Global is armoring its investment with hundreds of pilings buried 220 feet into the ground, and with the steel wall descending 60 feet underground and rising 26 feet above. The pilings, which stabilize storage and liquefaction tanks, must reach below wet sediments.

The company says these fortifications will protect the facility, known as Plaquemines LNG, from whatever the Gulf of Mexico can deliver.

“During the operations of Plaquemines LNG, stormwater management systems will enable the efficient and safe management of flood plain storage and stormwater flows within the Plaquemines area,” Venture Global spokeswoman Jessica Szymanski said. “Regulators concluded Plaquemines would not cause any significant impacts to the surrounding area during any storm surge events.”

But the company is taking enormous risks in building a gas plant in low-lying Plaquemines Parish, said five environmental scientists interviewed by The Washington Post. A large storm could overtake the facility, they say, flooding it and spreading debris, or it could simply be cut off from the land.



Alexander Kolker, a professor at the Louisiana Universities Marine Consortium, gives a walking tour of the levee system surrounding Venture Global's Plaquemines LNG export facility on Feb. 26.

“Sure they may have massive flood walls, but the facility may evolve into becoming an island surrounded by open water,” said Torbjörn E. Törnqvist, a professor at Tulane University’s department of earth and environmental sciences.

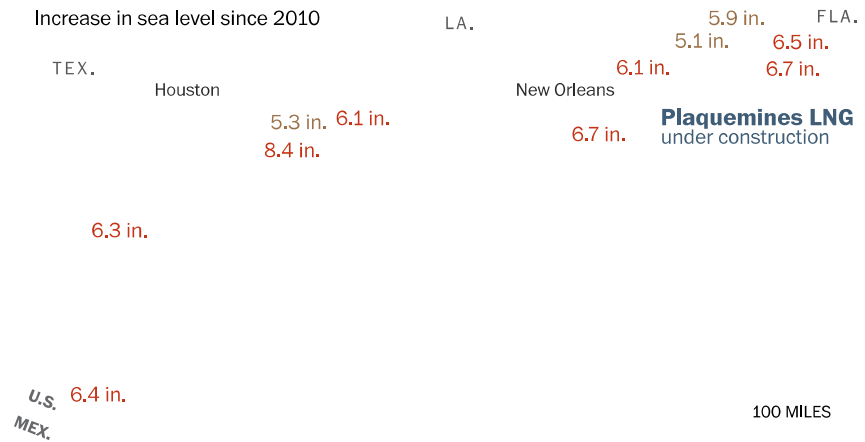
The Gulf has become the epicenter of the fight over America’s contribution to climate change, and its impacts. President Biden recently paused the construction of new LNG facilities — a move former president Donald Trump has promised to reverse if he wins this fall. (The Plaquemines facility, which is near completion, is unaffected by Biden’s policy, which itself has been temporarily stayed by a federal court.) Texas and Louisiana alone produce more than 90 percent of the nation’s LNG exports.

But the region also leads the way in rising seas. According to a Post analysis of satellite data, sea level in the Gulf Coast since 2010 is growing at twice the global average rate.

### **Export terminals in the path of surging sea levels**

Most LNG export terminals are in an area that has seen the fastest rates of recent sea level rise since 2010.

LNG terminals	Operating	Under construction	Planned	MISS.	ALA.
Tide gauges					



Sources: Washington Post analysis, LNG terminal data via Sierra Club U.S. LNG Export Tracker

JOHN MUYSKENS/THE WASHINGTON POST

The facilities ring a portion of the coast where sinking land, or subsidence, makes a rising Gulf of Mexico more dangerous. The federal tide gauge at Grand Isle, La., just across a bay from Plaquemines Parish, has registered nearly 7 inches of sea level rise since 2010, according to the Post analysis.

Despite these risks, the construction of terminals along the Gulf Coast is accelerating, partly because of the enormous profits that can be made shipping liquefied natural gas to Europe and other markets. Eight U.S. LNG export plants are already up and running, and federal regulators have approved seven others that are under construction, many of them with barriers meant to protect against the rising sea.

The U.S. Army Corps of Engineers is developing an ambitious plan for a 60-mile “spine” of concrete sea walls, earthen barriers, floating gates and steel levees along the Texas coast. In Port Arthur, Tex., an energy company called Sempra is erecting levees 20.6 feet above sea level to protect one of its LNG export plants.





An aerial view of the ongoing construction at the Plaquemines LNG export facility in Port Sulphur, La.

Ivor van Heerden, former deputy director of the Louisiana State University Hurricane Center, said federal and state agencies that issued permits for these facilities failed to take the full risks of future sea level rise or land subsidence into account. Nor did they fully evaluate the hurricane threat, he said, including the potential for storm surge to overtop the plant's sea wall, flooding the interior and dispersing toxic chemicals into surrounding wetlands and communities.

"The concerns about overtopping are not just hypothetical," said van Heerden, who has done work for the Sierra Club, an opponent of new LNG plants. When Hurricane Ida hit the Gulf Coast in 2021, it flooded the then-largely undeveloped site of the Plaquemines LNG plant and nearby communities. It also disrupted more than 94 percent of the nation's oil refining and gas production, and damaged a Phillips 66 refinery in Plaquemines Parish beyond repair.



An \$80 million reconstruction project of the Shell Island barrier island, pictured, at the southern end of Barataria Bay has added several hundred acres of new land off the coast of Plaquemines Parish. (Drew Angerer/Getty Images)

## AN OPPORTUNITY AND A RISK

With just 23,000 people, Plaquemines Parish is a shallow strip of marshland that juts into the Gulf of Mexico, with the levee-lined Mississippi River running down its center. The lone highway passes landmarks such as the Belle Chasse naval air base, Ben & Ben Becnel father-son sellers of produce, boat houses, furnished log cabins for rent and Vulcan Materials limestone sales.

The plant is, according to the company, the fourth largest infrastructure project in the world, in terms of dollars invested. At its center is a giant liquefaction plant, fed by two pipelines that carry gas from up to 15 miles away. The facility has 7,000 feet of frontage on the Mississippi River, where the liquefied gas will be transferred onto as many as three double-hulled carrier ships at a time.

The site of the Venture Global plant offers a deep shipping channel, proximity to natural gas supplies and support from local leaders. Van Heerden and other experts argue, though, it also poses a number of risks that were not closely analyzed by federal agencies during the permitting process.



To begin with, much of the site sits slightly above or just below sea level, according to federal documents. This low elevation — combined with high groundwater — creates a risk of concrete degrading and steel piping corroding, according to the project’s final Environmental Impact Statement.

In addition, the Venture Global plant both contributes to an epidemic of sinking land here and will be steadily undermined by it. Since 1932, the state has lost more than 1,900 square miles of land, an area equal to the state of Delaware, according to the National Oceanic and Atmospheric Administration. According to NOAA, such valuable coastal wetlands “are Louisiana’s first line of defense during hurricanes and storms.”

But during construction, Venture Global destroyed 368 acres of wetlands by draining them and filling them in to build on top, according to the Army Corps, the Federal Energy Regulatory Commission and the company. Venture Global has agreed to finance wetland restoration undertaken elsewhere by buying credits from private “mitigation banks” that fund the creation of new wetlands.



A small community of houses along a canal next to Plaquemines LNG.

Van Heerden knows all about these storms. Before Hurricane Katrina struck New Orleans in 2005, he used computer models to warn the city and its surrounding parishes that they faced the risk of deep flooding because of multiple levee breaks.



In 2022, the Sierra Club hired van Heerden to review the safety and environmental impacts of the Plaquemines LNG plant. His report concluded that state and federal agencies failed to adequately review three potential factors — “climate change and accelerating sea level rise; hurricanes and their associated surges; and thunderstorms ‘on steroids.’” (Van Heerden is not a Sierra Club member and his contract with the Sierra Club has expired.)

If a hurricane such as Ida hit the LNG facility, van Heerden wrote, it could overtop the steel flood wall and dislodge industrial equipment. Such flooding, he added, “would pollute adjacent wetlands with construction materials and petrochemicals, thus harming water quality, severely stressing the coastal wetlands, and endangering surrounding residents and communities.”



Pipelines raised above the levee system surrounding Venture Global's facility.

While Venture Global declined to make officials available for interviews, it has insisted its steel wall is designed to withstand a once-in-500 years storm. FERC “reviewed its design thoroughly during the permitting of the project,” the company said.

Experts interviewed by The Post, however, said that 2019 analysis by FERC and other agencies — completed during the Trump administration — was deficient.

Richard Glick, who served as a FERC commissioner under Trump and as chair during Biden’s first two years in office, said his predecessor Neil Chatterjee pushed strongly to hasten LNG permit approvals. Glick dissented strongly from the approval of the Plaquemines LNG facility, saying the agency didn’t properly study the climate implications.

“The commission had a reputation for being a rubber stamp for these projects and I don’t think the commission did anything before I was chair that would disavow that reputation,” Glick said.

Chatterjee disagreed, hailing FERC staff and saying that “the benefits, both environmental and energy security, of the facilities themselves have proven self evident.” FERC declined to comment.



About five miles north of the Plaquemines LNG site, the Black community of Ironton has been hammered by numerous floods and hurricanes. (The Washington Post)

## THE TOWN THAT HURRICANE IDA BROKE

About five miles north of the Plaquemines LNG site, the Black unincorporated community of Ironton has seen this story play out before. Over the years, it has existed near coal export terminals and an oil refinery that has now closed its doors, while being repeatedly hammered by floods and hurricanes.

Before Hurricane Ida, there were about 50 homes in Ironton, which was founded nearly a century and a half ago by formerly enslaved people. Only eight homes, all elevated on stilts, survived the storm; a dozen other families now live in state-provided mobile homes. Many in the community — which didn't get piped running water until 1980, followed by a sewer system, paved roads and streetlights — believe their basic needs have been neglected.

Now Ironton is contending with the LNG plant construction. Nearly every day, large trucks rumble past residents' homes kicking up dirt and debris, on their way to deliver crushed stone, gravel, concrete and asphalt to the enormous construction site.

Critics say the building of the facility follows a history in the United States where people of color have often disproportionately suffered the consequences of energy development and industrial pollution.

“The build out of LNG is reproducing the same racist siting patterns and economic destruction patterns that started post-World War II,” said Robert D. Bullard, a professor at the Bullard Center for Environmental and Climate Justice at Texas Southern University. “Ironton is a textbook case of those toxic trade-offs.”

Venture Global said that “from its inception, Venture Global has made community investment and engagement a core principle engrained in the company’s DNA” and noted that it is providing training opportunities to local residents.

Ironton residents say they look forward to less traffic once Venture Global finishes construction and starts operating the LNG plant, possibly later this year. But at that point, people living near the industrial complex could start experiencing other impacts, including the type of conventional air pollution that comes out of industrial facilities like these.



Ironton resident Cassandra Wilson outside St. Paul Missionary Baptist Church. When Hurricane Ida hit the state, her family lost everything.

The scars of past hurricanes remain visible across Plaquemines Parish, and some in Ironton fear what could happen when the next one hits.

Up the road from Ironton, Phillips 66 shut down its oil refinery — which had operated for five decades and employed 900 workers — after Hurricane Ida struck in 2021.

Ida also flooded and demolished much of Ironton, ripping coffins from the ground and dumping them on front yards.

Cassandra Wilson has lived in the town her entire life, and when Ida approached, her family fled to Texas. When they returned, they found snakes and high water marks. “We lost everything,” Wilson said. “The only stuff we were able to salvage was the three days of clothing.”

Since returning to Ironton, Wilson has lived in a small camper van provided by the state. It has a bathroom, queen size bed and two bunk beds for her 14- and



15-year-old children.

“There is nothing that’s going to run me out of my community,” Wilson said.



Ironton resident Haywood St. Cyr Jr., left, and Rev. Haywood Johnson Jr., pastor of St. Paul Missionary Baptist Church, walk through the property that was damaged in flooding.

During Hurricane Ida, at least ten feet of water flooded the Saint Paul Missionary Baptist Church, with its small bell tower and light blue, yellow and rose-colored windows.

Earlier this year, Rev. Haywood Johnson stood inside and pointed to several layers of soggy floorboards, which tell the story of the church’s flood history, similar to geological core samples. One of these layers dates back to the early 1920s — four decades after the church was first built — followed by another put down in 1958. Another layer followed after Hurricane Isaac hit in 2012.

Following Ida, community members started rebuilding the church, but the Federal Emergency Management Agency, which is paying for the reconstruction, ordered them to hold off until the structure could be lifted at least 12 feet off the ground. Rev. Johnson said it would be raised close to 15 feet with an elevator and an entrance on a new third floor.

“We always say that God only gives you a warning about things, especially with the environment,” said Johnson. “Some people don’t take notice of it. But I have.”

Venture Global says its LNG plant will help Ironton and other communities in the area by creating 6,000 construction-related jobs for people all over the region. They include skilled workers as well as bus drivers who ferry workers from a remote parking lot to the construction site. The company says about 300 to 400 permanent jobs will be created.

Venture Global also said in an email that it was “in constant contact with the Ironton community.” It said it wanted “to see where we can best help repair and rebuild the community from flooding impacts.”

Audrey Trufant Salvant, a retired member of the parish council who lives in Ironton, said Venture Global was currently doing a drainage study.

“They have really been a good neighbor,” said Trufant Salvant, who was suggested by the company. “I don’t want to make it sound as though we’ve been bribed. The community was devastated and we were left to fend for ourselves.” She said an improved drainage system would enable people to move back into their homes “much sooner.”



“When they designed this, whoever did, did not think what the repercussion would be. They were only looking for the profits,” said Rose Jackson, a onetime resident of Ironton.

Rose Jackson, now in her early 80s, was part of the coalition that fought an additional proposed coal terminal several years ago. While she now lives up the road from Ironton, she retains ties close to her hometown, where some of her relatives live and where forbearers have their names chiseled into a cornerstone of the church.

“When they designed this, whoever did, did not think what the repercussion would be. They were only looking for the profits,” said Jackson. The Plaquemines LNG plant will “have a horrible effect. It is so congested. The traffic is unbelievable, I mean for miles.”





A sea wall protects the community of Myrtle Grove.

## AN UNCERTAIN FUTURE FOR EXPORTING GAS

As it anchors itself to Plaquemines Parish and other low-lying parts of the Louisiana coast, Venture Global now finds itself at the nexus of a fierce climate battle: Whether it should export liquefied gas at all.

“The issue of climate change is very real, but so is the surging demand for electricity in the developing world,” said J. Robinson West, a managing director at the Boston Consulting Group and veteran oil expert. “If this LNG isn’t available and renewables will be very slow in coming, then developing nations will turn to coal and residual fuel oil, which would be a serious mistake.”

But environmentalists have argued that these exports are enlarging not only America’s carbon footprint, but the world’s. The activists have focused on the company’s proposed Calcasieu Pass 2 project, which would rival the Plaquemines terminal in size and which the Biden administration paused along with other new LNG projects so that the Energy Department could study their climate impacts.



Venture Global has said it will fight these delays, and it has powerful allies on its side.

In Louisiana, the company has bipartisan support — from senior House Republican Reps. Garret Graves and Steve Scalise, and former senator Mary Landrieu (D), who advises a gas industry advocacy group and argues that natural gas is better than alternative fossil fuels. Natural gas plants, she said, are “helping the global climate. Period.”

Regardless of who holds the White House, it is unlikely to affect the nearly completed Plaquemines gas export facility. It has nearly all the permits it needs. Only the forces of nature and climate change hold sway over its future.



Kolker, the Louisiana Universities Marine Consortium professor, said “the kinds of challenges we are experiencing in Louisiana are the kinds of things that people will experience across the country in the coming decades.”

On a grassy berm earlier this year, Alex Kolker — a professor at the Louisiana Universities Marine Consortium — sidestepped some fire ants and stood looking at the Venture Global plant. Overhead some osprey, a hawk and a bald eagle glided among the nearby tupelo, sweet gum and oak-hackberry forest trees. Many of the trees were dead from salt water inundation.

“Yes, Louisiana has its particularly intense challenges with land loss and storms and the oil industry,” Kolker said. However, he noted, “the kinds of challenges we are experiencing in Louisiana are the kinds of things that people will experience across the country in the coming decades.”

The state is a test case of whether human engineering can protect a vast swath of coastline against rising seas and more intense storms.

Last November, Louisiana broke ground on a \$2.3 billion project to shunt some of the muddy flows of Mississippi under and past Ironton into degraded wetlands to the west. The project is being financed largely with settlement money from the 2010 Deepwater Horizon oil disaster, and aims to halt losses of wetlands by mimicking the Mississippi River’s historic path.

If the project is successful in restoring wetlands, it could further help buffer the Plaquemines LNG facility from storms.



Venture Global's Plaquemines LNG export facility.

Stephane Hallegatte, a senior climate change adviser at the World Bank and co-author of a report about rising seas, said the race is on between nature and adaptation.

“Even a very small change in average level of the sea can make a disaster 10, or 100 times more likely,” said Hallegatte. “Will people realize that risk is increasing and improve defenses before a disaster occurs? Or do we all realize this only when we get flooded?”

#### About this story

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#### CORRECTION

A previous version of this article misidentified Alex Kolker as a Louisiana State University professor. He is a professor at the Louisiana Universities Marine Consortium. The article has been corrected.

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Steven Mufson covers the business of climate change for The Washington Post. Since joining The Post in 1989, he has covered economic policy, China, diplomacy, energy and the White House. Earlier, he worked for The Wall Street Journal. In 2020, he shared the Pulitzer Prize for a climate change series "2C: Beyond the Limit." [✕ @StevenMufson](#)

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Ricky Carioti is an award-winning photographer and has worked for The Washington Post since 2002.

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