



Coastal Spine must balance storm protection with safe navigation and long-term economic vitality of the port of Houston

The Gulf Coast Protection District and the United States Army Corps of Engineers (“USACE”) are currently developing the Bolivar Roads Gate Complex, the largest component of the Galveston Bay Storm Surge Barrier System. The initiative is designed to prevent damage to homes, businesses, and the environment near and along the Houston Ship Channel as a result of flooding caused by storm surges. While the Greater Houston Port Bureau supports that mission, it is also committed to ensuring the gate design does not impede the safety and growth of a vital economic engine for the Houston area, the state, and the nation. The gate project was initially estimated to cost approximately \$35 billion. The USACE has indicated the cost could reach as high as \$57 billion upon completion, which is currently expected in about 20 years (Texas Tribune, Sept. 28, 2023).

Unlike other ports, the Houston region has no harbormaster. The channel is managed by the United States Coast Guard and USACE. The Houston Port Authority (Port Houston) is the non-federal sponsor and owns eight terminals out of more than 200 facilities in the Houston Ship Channel region.

Research and simulations of the twin 650-foot gates indicate that the current design does not work and fails in its dual goal of protecting the community and preserving the ever-expanding industrial complex along the Houston Ship Channel. In addition, the project compromises two-way traffic along the channel, which would be catastrophic to navigational safety and the economic vitality and growth of the nation’s busiest waterway.

In designing the project, careful consideration must also be given to the safe and efficient navigation of the Houston Ship Channel, as well as the economic benefits it provides.

1.5 MILLION

jobs in Texas



\$440 BILLION

in economic value statewide or about 20% of Texas GDP



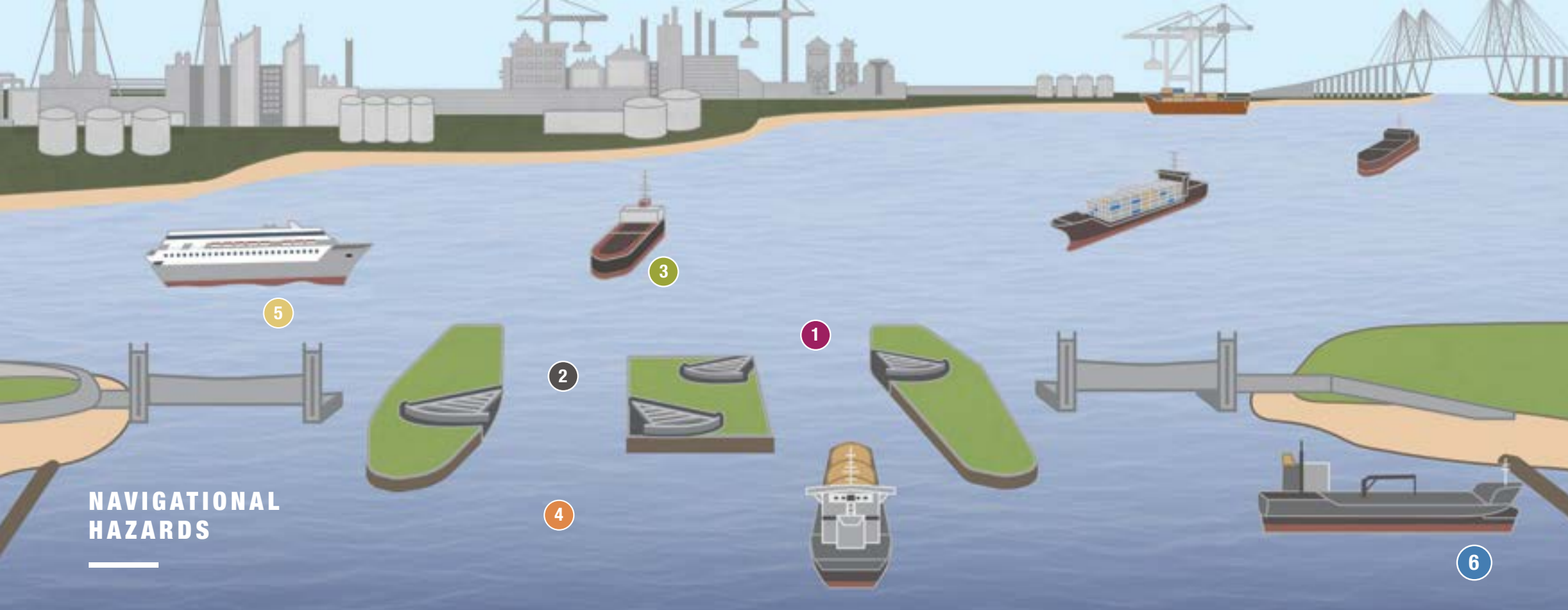
\$63 BILLION

in tax revenue each year for the nation

NEARLY \$1 TRILLION

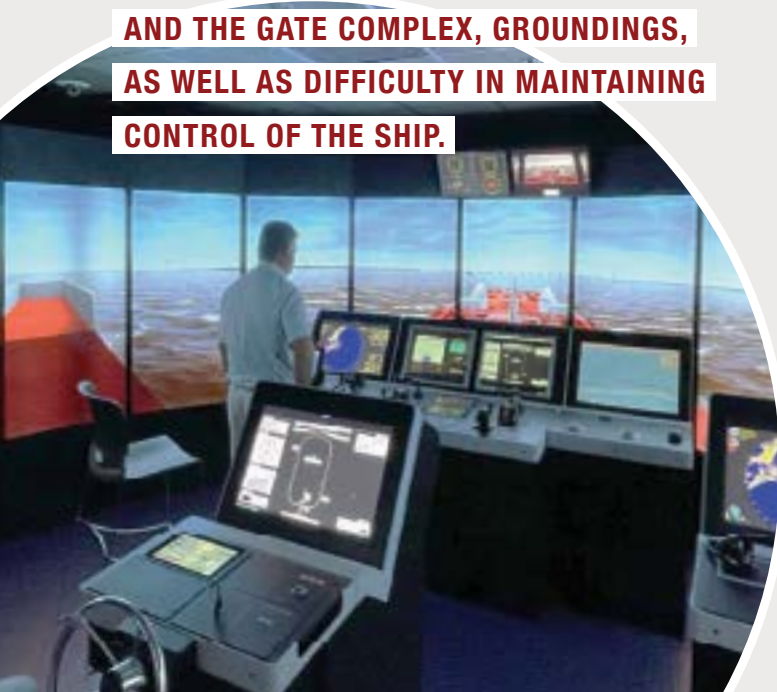
in economic activity annually for the U.S.





NAVIGATIONAL HAZARDS

THE SIMULATION MODELS CONCLUDED THAT THE LOCATION OF THE GATE COMPLEX POSES A HAZARD TO TRANSITING COMMERCIAL SHIPS. THE MAJORITY OF SCENARIOS RESULTED IN COLLISIONS BETWEEN VESSELS AND THE GATE COMPLEX, GROUNDINGS, AS WELL AS DIFFICULTY IN MAINTAINING CONTROL OF THE SHIP.



RESEARCH AND SIMULATIONS

To evaluate the navigational and commercial implications for vessels, the Greater Houston Port Bureau funded a study of the gate design that involved computerized simulations conducted by the Houston Pilots and the Galveston-Texas City Pilots.

The simulations were conducted at San Jacinto College's Maritime Technology and Training Facility in LaPorte, Texas. Over a six-day period, a total of 42 scenarios, involving more than 100 transits was conducted, which took into account variables such as weather conditions, vessel size, channel currents, and visibility. No other navigational simulations have been conducted for the current design.

GATE COMPLEX DESIGN

The working design calls for two gates that are 650' wide and 60' deep that can be closed in case of a severe storm.

The proposed gate complex would include construction of three asymmetrical islands at the Bolivar Roads entrance to the ship channel, with inbound traffic dedicated to one gate and outbound movements to the other.

A series of 300' wide vertical lift gates are also proposed that could be lowered in case of a severe storm.

In addition to ensuring two-way traffic and future growth of the Houston Ship Channel, it is essential that daylight restrictions for vessels do not exceed current limits, and the agency with operating authority be clearly defined.

KEY FINDINGS

The purpose of this research was to inform, solicit, and stimulate the local pilot's input on the gate complex, utilizing simulated commercial ship transit scenarios.

- 1 The 650' gates are too narrow, creating lateral forces on the vessel, and making it difficult to maintain a ship's heading and speed.
- 2 The design of the islands to which the gates are attached creates shipping hazards due to asymmetrical shearing forces and damage from contact with the 90-degree edges of the center island.
- 3 Visibility of the gates aboard large vessels is obstructed.
- 4 The gate complex, as currently designed, restricts the two-mile wide opening at Bolivar Road, resulting in swifter currents that are in excess of what is considered safe by the pilots.
- 5 The gates are located too far west, requiring a severe angle turn to align with the gates, which is problematic for commercial vessels and cruise ships leaving and entering Galveston Bay.
- 6 The loss of anchorage would impact the safety and efficiency of the ship channel.

COMMERCIAL AND PUBLIC SAFETY RISKS

- In case of an incident that results in the closure of the Houston Ship Channel, the impact would be substantial in commercial, human and environmental terms.
- Damage to a vessel could potentially lead to an environmental crisis, as well as posing a threat to the public and extended downtime associated with cleanup activities.
- Such a disruption in the supply chain would affect the delivery of vital consumer goods like fuel, medical supplies, food, and water, impacting the local community, the state, the country and the world.
- Vessels, including cruise ships with as many as 8,000 passengers aboard, would be required to make a severe-angle turn exiting and entering Galveston Bay, creating safety issues.



For more information contact the Greater Houston Port Bureau at (713) 678-4300 or info@txgulf.org

IMPACTS

Logistics and Competitiveness

- Two-way traffic on the channel, which is mandated by state law, would be compromised, especially during construction and maintenance.
- Without two-way traffic, there would be an increase in the number of ships waiting to enter and leave the port, affecting safety, increasing emissions and raising consumer prices due to more demurrage charges.
- As currently designed, the gate system only accounts for a 530-foot wide channel. Parts of the 52-mile waterway are already 700 feet wide and expansion of the rest of the channel is on schedule for completion in 2025. The gates must take into consideration growth over the next 50 or even 100 years.
- Once constructed, the gate complex will permanently define the overall channel depth, affecting future growth initiatives, and reducing the competitiveness of the nation's busiest waterway.
- The current proposal would eliminate anchorage used by 2,000 ships per year as safe harbor for stores, refueling and repairs.

Comprised of nearly 100 dedicated men and women who safely move more than 19,000 ships a year along the Houston Ship Channel, the Houston Pilots are committed to protecting people, homes, businesses and the environment. Consistent with that mission, the Pilots, as well as representatives from the maritime industry, must be consulted in the planning, engineering and design of a gate system that is safe, efficient and ensures continued economic growth of the port of Houston region.