LONE STAR FREIGHT:

Accessing Vulnerabilities and Building Resilience in Texas Logistics

WRITTEN BY

BENJAMIN DIERKER

OWEN ROGERS

2026

INSTITUTE FOR HOMELAND SECURITY

SAM HOUSTON STATE UNIVERSITY

TABLE OF CONTENTS

Abstract

Texas is the nation's logistics crossroads, home to world-class ports, energy corridors, and the most extensive highway network in the country. These assets power commerce nationwide but also present acute vulnerabilities to disruption, theft, and inefficiency. As the state continues to grow in population and economic output, the security and integrity of its supply chains become a matter not only of economic importance but of homeland security.

This paper examines the state of freight logistics systems in Texas through the lens of resilience, efficiency, and security. While national challenges such as driver shortages, detention times, and inadequate freight parking are well documented, their effects are amplified in Texas due to the state's concentration of trade, energy, and cross-border movement. The report identifies both structural barriers – including congestion on critical corridors and limited parking infrastructure – and "soft costs" such as theft, detention inefficiencies, and driver retention challenges. Together, these factors create systemic risks that threaten supply chain reliability and increase costs to businesses and consumers.

Disruptions to Texas supply chains carry cascading consequences. A hurricane impacting the Gulf Coast, a cyberattack on freight management systems, or an intentional act targeting cargo or transport hubs can quickly ripple through national supply networks. These risks are not hypothetical – Texas's geography, trade volume, and reliance on freight trucking make it particularly exposed. For example, bottlenecks on I-35 or port slowdowns in Houston have national implications for energy distribution, manufacturing, and food systems.

In assessing these vulnerabilities, the paper draws on state and federal data as well as industry analysis to map the scale of the challenge and propose targeted remedies. Policy recommendations include enhancing freight parking capacity to reduce safety and security risks; deploying advanced technologies such as telematics and real-time cargo tracking; improving cross-jurisdictional communication during disruptions; and investing in driver recruitment, training, and retention strategies. These solutions address immediate inefficiencies while simultaneously fortifying the state's resilience against deliberate attacks or natural disasters.

Ultimately, securing Texas's supply chain is about more than efficiency – it is about safeguarding the lifelines of the state and the nation. By strengthening infrastructure and addressing soft vulnerabilities, Texas can mitigate cascading risks, enhance economic competitiveness, and support homeland security priorities. This paper underscores that freight resilience is not a narrow industry concern but a public safety and national security imperative.

Introduction

The economic strength of Texas is built largely upon its infrastructure. Without its highways, ports, and pipelines, Texas' energy reserves and geographic advantages would be inconsequential. These assets sustain the state's industry, energy abundance, and agricultural distribution, but also enable Texas to serve as a national leader supplying and facilitating resource movement for the rest of the country. As the population and output expands, the importance of maintaining and expanding its infrastructure remains paramount. But physical infrastructure is not all that must be maintained, the very process by which freight is moved is a complex interchange between technology, public policy, and physical infrastructure. In the years ahead, freight volumes are expected to increase significantly, while new threats and opportunities are emerging as technology advances. Protecting the Texas-based logistics and freight network is a matter of national security.

The modern world of manufacturing, business, and industry relies on logistics. Through specialization and increased efficiency, the global economy entirely depends on the infrastructure and coordination of freight movement. When the Suez Canal was blocked in 2021 for six days, it led to global supply chain disruptions, highlighting our dependence on vulnerable systems.[1] Geopolitical tensions and foreign conflict could easily cause further such disruptions, necessitating the need for change.

Such large-scale and high-profile incidents can also cast such a long shadow that they divert focus away from everyday inefficiencies and challenges that add up to significant economic costs. Lack of adequate parking for individual over-the-road truckers, common or organized theft of trailers or intermodal containers, or simple driver retention struggles can seem inconsequential in isolation, but when tolled cumulatively are as large or larger in overall impact as a single geopolitical disruption. While efforts for supply chain resilience are a responsibility of individual companies, the infrastructure that facilitates this trade must also be safeguarded.

This report illustrates Texas' strategic importance within the national logistics network, examines potential vulnerabilities, inefficiencies, and challenges, and details recommendations to strengthen the infrastructure that facilitates the trucking industry. Importantly, some of these are purely in the public domain, such as road maintenance, while others require a policy framework that encourages and works with the private sector, such as prudent regulatory policy or targeted permitting reforms to avoid bureaucratic red tape and restrictions on economic activity.

---

[1] Wan, Z., Su, Y., Li, Z., Zhang, X., Zhang, Q., & Chen, J. (2023). Analysis of the impact of Suez Canal blockage on the Global Shipping Network. Ocean & Coastal Management, 245, 106868. https://doi.org/10.1016/j.ocecoaman.2023.106868.

Strategic Importance of Texas Logistics

Texas is host to the nation's largest highway network, the largest rail network by rail miles, the largest liquid and natural gas pipeline network, and three of the five largest U.S. ports by tonnage.[2,3,4,5] While impressive, operating and maintaining all of this transportation infrastructure is no small task, and it takes many thousands of people coordinating with one another every day and managing their systems effectively. Any disruptions or outside issues can also cause cascading problems across the network. That is why improving the resilience and security of Texas' freight network is so important.

Texas highways are perhaps the most important transportation method in the state, facilitating both long-haul movement and crucial last-mile operations to tens of millions of the state's residents. The state leads the nation in total highways and trucking tonnage.[6] Whether the truck is carrying Amazon products or precursor chemicals for heavy industry, Texas highways are crucial for the economy at large. According to TxDOT, $1.6 trillion in freight is moved on Texas highways every year.[7] By value, Texas accounts for almost 18 percent of U.S. manufactured exports.[8]

---

[2] TxDOT. (2020). The State of Highways in Texas. https://ftp.txdot.gov/pub/txdotinfo/tpp/2050/meeting-materials/round-02/highway-intro.pdf.

[3] Association of American Railroads. (2023). AAR State Rankings 2021. https://www.aar.org/wpcontent/uploads/2023/03/AAR-State-Rankings-2021.pdf.

[4] PHMSA. (2025, November). Gas Distribution, Gas Gathering, Gas Transmission, Hazardous Liquids, Liquefied Gas (LNG), and Underground Natural Gas Storage (UNGS) Annual Report Data. https://www.phmsa.dot.gov/data-and-statistics/pipeline/gas-distribution-gas-gathering-gas-transmission-hazardo

[5] Bureau of Transportation Statistics. (2025, May 20). Tonnage of Top 50 U.S. Water Ports, Ranked by Total Tons. https://www.bts.gov/content/tonnage-top-50-us-water-ports-ranked-total-tons.

[6] Ibid 2.

[7] TxDOT. (2019). Texas Trucking. https://ftp.txdot.gov/pub/txdot/move-texas-freight/resources/fact-sheets/trucking.pdf.

[8] Office of the United States Trade Representative. (2025). Texas Exports and Foreign Investment. https://ustr.gov/map/state-benefits/tx.

Vulnerabilities And Inefficiencies

Texas' trucking and freight infrastructure faces both physical and operational challenges. Congestion on major corridors, persistent delays, and limited infrastructure all contribute to higher costs and reduced reliability. Because Texas is a national freight hub, even localized disruptions can ripple across the country. These vulnerabilities are both logistic and economic. Understanding and addressing these inefficiencies is critical to strengthening efficient and safe trucking.

Commercial Trucking

Commercial trucking is the foundation of overland freight transit in the United States. The trucking industry employs almost 3.6 million drivers, and 8.4 million people are employed in jobs relating to trucking activity.[9] The Bureau of Labor statistics counted 285,490 trailer and light-truck drivers in the state in 2023.[10] Simply put, these workers are essential to the functioning of the economy. However, the entire trucking industry has been under significant pressure in recent years. An aging workforce, driver shortages, and outside issues like parking, theft, and bottlenecks have all taken their toll.

According to the American Transportation Research Institute (ATRI), the average age of a truck driver in the United States is 47 years old, and more than 20 percent of drivers are over the age of 60.[11] Older generations are significantly overrepresented compared to the national workforce.[12] Additionally, despite slight improvements in recent years, the trucking industry is still short at least 60,000 drivers.[13] Driver shortages are closely related to another major problem: turnover and retention.

---

[9] Costello, B. (2025). *Economics and Industry Data*. American Trucking Associations. https://www.trucking.org/economics-and-industry-data.

[10] U.S. Bureau of Labor Statistics. (2024, April 3). May 2023 State Occupational Employment and Wage Estimates. https://www.bls.gov/oes/2023/may/oes_tx.htm#top.

[11] Huffman, A., & Murray, D. (2025, July 15). Evolving Truck Driver Demographics: Issues and Opportunities. https://truckingresearch.org/2025/07/evolving-truck-driver-demographics-issues-and-opportunities/.

[12] The National Transportation Institute. (2025, February 20). Driver Market Forecast - 2025. https://driverwages.com/driver-market-forecast-2024-full-forecast-nti/.

[13] Campbell, C. (2023, October 16). Trucking driver shortage falls significantly to 60K, ATA reports. https://www.truckingdive.com/news/truck-driver-shortage-2023-ata-conferencecostello/696710/.

The driver shortage is closely linked with the massive turnover statistics in the industry. According to ATRI, the overall average turnover rate was 48 percent in 2024.[14] However, there are some sources that claim the reality is higher, especially for larger truck companies.[15] Between 1996 and 2023, the average annual turnover rate for large carriers was almost 93 percent, and almost 78 percent for small carriers.[16]

In any other industry, this level of turnover would be alarming and extremely destabilizing, but in the trucking industry, it has become an "accepted obstacle."[17] There are numerous studies examining the reasons for high turnover and potential improvements that can be made. One study found that how drivers are paid affects retention and safety.[18] Others have tied turnover to less predictable schedules for drivers or argued that raising pay can actually save companies money from turnover.[19] [20]

Additionally, Auto insurance and premium costs soared in the 2010s, hitting small carriers especially hard.[21] These costs are expected to increase as auto-accidents continue to rise.[22]

---

[14] Leslie, A., & Murray, D. (2025, July). An Analysis of the Operational Costs of Trucking: 2025 Update. https://truckingresearch.org/2025/07/an-analysis-of-the-operational-costs-of-trucking-2025-update/.

[15] American Trucking Associations. (2022, March 25). The truth about trucking turnover. https://www.trucking.org/news-insights/truth-about-trucking-turnover.

[16] Committee on National Statistics, Division of Behavioral and Social Sciences and Education, Transportation Research Board, & National Academies of Sciences, Engineering, and Medicine. (2024). 4 Driver retention and turnover in long-distance trucking. In Pay and working conditions in the long-distance truck and bus industries: Assessing for effects on driver safety and retention (pp. 45-68). Washington, DC: The National Academies Press. https://doi.org/10.17226/27892.

[17] Harrison, H. D., & Pierce, J. (2009, March). Examining Driver Turnover and Retention in the Trucking Industry. https://www.imiproducts.com/wpcontent/uploads/2018/04/cifts_examining_driver_turnover.pdf.

[18] Federal Motor Carrier Safety Administration. (2023). FMCSA regulatory agenda for FY 2023. https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/2023-04/Art Forum 2023 FMCSA Regulatory Agenda for FY2023 508.pdf.

[19] United States Government Accountability Office. (2019, March). GAO-19-161 AUTOMATED TRUCKING Federal Agencies Should Take Additional Steps to Prepare for Potential Workforce Effects. https://www.gao.gov/assets/gao-19-161.pdf.

[20] Trick, S., Peoples, J., & Ross, A. (2021). Driver turnover in the trucking industry: What's the cost of reducing driver quit rates? *Research in Transportation Economics*, *89*, 101129. https://doi.org/10.1016/j.retrec.2021.101129.

[21] Leslie, A., & Murray, D. (2023, June). An Analysis of the Operational Costs of Trucking: 2023 Update. https://truckingresearch.org/wp-content/uploads/2023/06/ATRI-Operational-Cost-of-Trucking-06-2023.pdf

[22] Ibid.

Increased litigation and “nuclear verdicts” are also a major cause of rising insurance costs. These can intersect with federal policy and the geopolitical setting Texas rests in naturally with an international border. Illegal immigration and unlicensed drivers can apply upward pressure on insurance premiums, necessitating close coordination with law enforcement and federal authorities as well as state policy that tackles root causes and prevents rent seeking or market exploitation by private companies in order to protect its citizens and the economy as a whole.

These trends carry significant implications for the nation and Texas. As one of the country’s largest freight hubs, the state must lead in addressing these challenges on a policy level.

Congestion and Bottlenecks

Texas’ freight network is broken down into four directional tiers, each with a distinct function in the type and function of freight movement. The West-East corridor comprising the I-10 and I-20 are the main arterials for long-haul freight, transporting cross-state and interstate cargo between the El Paso border crossing all the way to Louisiana's border. [23] The North-South route connects trade from the south up to Texas metropolitan cities through highways like the I-69, I-45, and I-35 before running through the Mid-West. Within the North-South route, the I-35 is the busiest and is expected to increase in freight volume given projected increases in transport of automotive and food stuff.[24] In order to prevent congestion and freight bottlenecks between metros, Texas has a network of regional connectors which allow trucks to bypass dense metro cores. However, despite these connectors, highway congestion is a major issue in the state, and has been highlighted by TxDOT.[25] In 2025, the Texas A&M Transportation Institute (TTI) released a new Urban Mobility Report, finding that the 2024 yearly delay from congestion cost the commuter 63 hours and $1,480.[26] The biggest cities in Texas, Dallas-Fort Worth, Houston, San Antonio, and Austin averaged 62 hours and $1,445 per commuter. This may not be significantly higher than other large cities, but it still represents a major loss in productivity and high costs for citizens. In total, the report estimates that delays cost consumers $224 billion in 2022.

Traffic delays and congestion similarly translate into losses for commercial trucking. Trucks remain the most popular way to move freight in the United States, accounting for almost 65

---

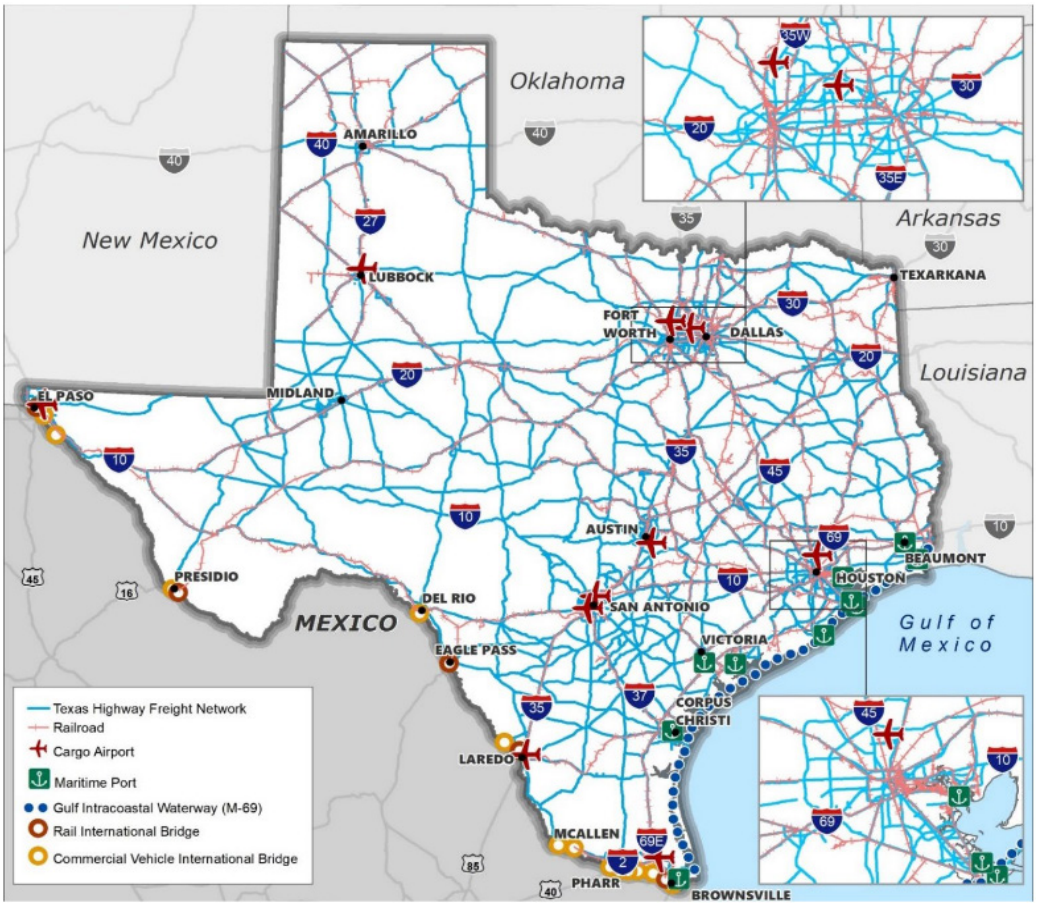
[23] ReferencesEXECUTIVE SUMMARY. (n.d.). Texas Department of Transportation. https://ftp.dot.state.tx.us/pub/txdot/get-involved/statewide/i-10-corridor/i10-executive-summary.pdf

[24] TxDOT. (2023, March). Texas Delivers 2050. https://ftp.txdot.gov/pub/txdot/move-texas-freight/resources/texas-delivers-2050.pdf.

[25] TxDOT. (2016). Texas Clear Lanes: The Challenge. https://www.txdot.gov/texasclearlanes/challenge.html.

[26] Schrank, D., Albert, L., Jha, K., & Eisele, B. (2025, August). 2025 Urban Mobility Report . https://mobility.tamu.edu/umr/report/.

percent of domestic freight shipments.[27] Texas sees more inbound and outbound freight traffic than any other state.[28] The FHWA created a list of the top 100 most congested freight bottlenecks and congested corridors.



Texas Multimodal Freight Network
TxDOT Planning and Programming Division[29]

---

[27] Bureau of Transportation Statistics. (2024, August 9). Freight Shipments by Mode. https://www.bts.gov/topics/freight-transportation/freight-shipments-mode.

[28] Oak Ridge National Laboratory, National Transportation Research Center. (2025, August 15). Freight Analysis Framework version 5: Summary statistics. https://faf.ornl.gov/faf5/SummaryTable.aspx.

[29] TxDOT. (2023, March). Texas Delivers 2050. https://ftp.txdot.gov/pub/txdot/move-texas-freight/resources/texas-delivers-2050.pdf.

Cumulatively, 16 Texas highways made the most recent list in 2021.[30] Put together, these 16 highways averaged 286,604 truck crossings per day, had over 4.5 million hours of delays, and had a total congestion cost of $251 million. These congested highways are among the busiest in the nation.

A common correction for congestion is simply more infrastructure. Governments will extend freeway lanes or promote alternative transit methods for local commuters, but still end up with massive traffic jams on highways and streets, particularly during rush hours. Various studies have been conducted to examine what exactly works in the fight against congestion. TTI has identified 89 solutions for congestion.[31] These solutions range from simple changes to massive infrastructure projects. For relieving congestion on major interstates for commercial traffic, a few solutions stand out.

To meaningfully alleviate freight-related congestion, Texas can adopt a mix of operational and infrastructural strategies proven effective for high-volume truck corridors. Expanding ramp metering on interstates would help regulate traffic flow at key merge points.[32] At ports and intermodal terminals, truck appointment systems, extended gate hours, and virtual queuing can help reduce peak demand and prevent shoulder queuing. Truck appointment systems have consistently been shown to manage congestion and reduce wait times, such as Port Houston's Express Pass.[33,34]

Incentivized off-hour delivery programs in large cities could reduce urban congestion.[35] Managed lanes have been gaining in popularity nationwide, with designated freight eligibility by

---

[30] Federal Highway Administration. (2021). 2021 National List of Major Freight Highway Bottlenecks and Congested Corridors. https://ops.fhwa.dot.gov/freight/freight_analysis/mobility_trends/national_list_2021.htm.

[31] Texas A&M Transportation Institute. (2024). How to Fix Congestion. https://policy.tti.tamu.edu/congestion/how-to-fix-congestion/.

[32] Federal Highway Administration. (2020, March 12). About Ramp Metering. https://ops.fhwa.dot.gov/freewaymgmt/ramp_metering/goals_benefits.htm.

[33] Nature Publishing Group. (2025). Truck Appointment Systems and Port Congestion Management. https://www.nature.com/research-intelligence/nri-topic-summaries/truck-appointment-systems-and-port-congestion-management-micro-294967.

[34] Salinas, S. (2024, May 13). Port Houston's Express Pass. https://porthouston.com/port-houstons-express-pass/.

[35] Volpe National Transportation Systems Center. (2018, May). Primer for Improved Urban Freight Mobility and Delivery: Operations, logistics, and technology strategies (Report No. FHWA-HOP-18-020). U.S. Department of Transportation, Federal Highway Administration. https://ops-dr.fhwa.dot.gov/publications/fhwahop18020/fhwahop18020.pdf.

time of day.[36] [37] Combined with freight signal priority and corridor management on major connectors, trucks could operate with more predictable travel times and fewer delays.[38] Collectively, these measures would strengthen the speed and reliability of trucking in Texas but ultimately represent just a fraction of the available methods and infrastructure projects for congestion relief.

Parking

Federal regulations exist that dictate how long commercial truck drivers can drive without rest. To simplify, truck drivers are allowed 14 hours to complete their workday, but are prohibited from driving for longer than 11 hours within that 14 hour period.[39] Naturally, this means commercial truckers spend a lot of time resting. Ideally, a load can be handed off at a transit hub as the driver completes their workday, ensuring the load never stops moving for long. However, for long distance hauls this isn't always feasible. Safe parking for truckers and their rigs is essential. In Texas, 140,000 trucks need parking every day.[40]

TxDOT is aware of the parking problem, and has included it in the "Assessment of Innovative and Automated Freight Strategies and Technologies" report.[41] Despite needing 140,000 parking

---

[36] U.S. Department of Transportation, Federal Highway Administration. (2022). Managed lanes: A primer (Publication No. FHWA-HOP-05-031). https://ops.fhwa.dot.gov/publications/managelanes_primer/.

[37] Poole, R. (2017, July 27). The Evolution of Managed Lanes. https://reason.org/commentary/the-evolution-of-managed-lanes-2/.

[38] U.S. Department of Transportation, Federal Highway Administration. (2020, May 13). Integrated corridor management and freight opportunities (Report No. FHWA-HOP-15-018). https://ops.fhwa.dot.gov/publications/fhwahop15018/index.htm.

[39] Federal Motor Carrier Safety Administration. (2022, March 28). Summary of hours of service regulations. U.S. Department of Transportation. https://www.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations.

[40] Middleton, D. (2021). Making Space for Big Rigs: TTI Helps TxDOT Evaluate Technologies to Facilitate Truck https://researcher.tti.tamu.edu/making-space-for-big-rigs-tti-helps-txdot-evaluate-technologies-to-facilitate-truck-

[41] Morgan, C. A., Borowiec, J. D., Kruse, C. J., Monsreal, M., Perkinson, D. G., Prozzi, J., Rutter, A., Villa, J. C., Warner, J., Brydia, R., Glover, B., Habermann, J., Huntsman, B., Kang, D. H., Katsikides, N. B., Kuzio, J., Lee, D., Metsker-Galarza, M., Miller, M., Olson, L., Sharma, S., Steadman, M., Sunkari, S., Voigt, A., & White, L. D. (2021, June). Assessment of innovative and automated freight strategies and technologies—Phase II final report (Tech. Rep. No. FHWA/TX-21/0-6837-01-R1). Texas A&M Transportation Institute. https://static.tti.tamu.edu/tti.tamu.edu/documents/0-6837-01-R1.pdf.

spots, currently the state only has around 27,000.[42] A lack of parking spots means that more time is wasted by drivers looking for safe places to park. Approximately 63 percent of drivers reported they have parked in unauthorized locations, often on ramps and road shoulders.[43] [44] These create additional risks, such as increased vulnerability to criminal activity and fatal road accidents.

Most of the 27,000 parking spots are concentrated in metropolitan areas, but 70 percent of parked-truck accidents still occur in urban areas, underscoring the need for increased investment.

The lost productivity and increased congestion from a lack of parking is costing drivers 9,300 revenue miles per year and $4,600 in pay, according to TxDOT.[45]

Theft and Loss

Criminal theft of cargo is a growing issue for freight transport, and has even generated recent congressional hearings.[46] In 2024, there were 3,625 reported theft incidents totaling over $454 million in lost value, with the most targeted location being distribution centers and warehouses.[47]

---

[42] Trucking Lab. (2025, February). Truck Parking in Texas: Key findings and data. https://myrigparking.com/reports/Texas%20Truck%20Parking%20022025.pdf.

[43] Ibid.

[44] TxDOT. (2024, December 4). Truck parking workshop presentation. https://www.txdot.gov/content/dam/docs/division/tpp/truck-parking-studies/truck-parking-workshop-presentation-120424.pdf.

[45] TxDOT. (2024, July). Safe Truck Parking Factsheet. https://www.txdot.gov/content/dam/docs/division/tpp/truck-parking-studies/truck-parking-tool-kit/truck-parking-action-plan-public-fact-sheet-july2024.pdf.

[46] U.S. Senate Committee on Commerce, Science, and Transportation. (2025, February 27). Grand theft cargo: Examining a costly threat to consumers and the U.S. supply chain https://www.commerce.senate.gov/index.php/2025/2/grand-theft-cargo-examining-a-costly-threat-to-consumers-and-the-u-s-supply-chain_2_2.

[47] Keller, M. (2025, January 21). 2024 Supply Chain Risk Trends Analysis. https://www.cargonet.com/news-and-events/cargonet-in-the-media/2024-theft-trends/.

Total economic losses have been estimated at $15-35 billion annually.[48] Texas is the second most-targeted state after California, and saw a 39 percent surge between 2023 and 2024.[49,50]

A trend of continued theft is likely to continue into 2025. Truck stops were targeted most frequently after warehouses, with 135 semi-tractors and 204 semi-trailers stolen in Q1 of 2025.[51] Many of the trucking and logistics challenges are interrelated, as parking shortages can push trucks to unsafe and unguarded lots, increasing exposure to theft.

Cargo theft is increasingly driven by coordinated criminal groups exploiting physical and digital vulnerabilities. The Federal Bureau of Investigation classifies cargo theft under “Transnational Organized Crime.”[52] A recent highly publicized case involved two truckloads of celebrity-branded tequila, which was stolen en route after thieves used stolen identities, fake carriers, and spoofed GPS to divert the shipments.[53] With fraud and theft schemes becoming more elaborate and advanced, many carriers are seeking increased government support, including through new laws and increased law enforcement.[54]

Cybersecurity incidents have also disrupted freight carriers, with ransomware and system outages cascading into delays and impacted customers. In 2020, Forward Air, a large carrier, was forced to shut down its network due to a ransomware attack that ultimately cost the company millions of dollars.[55] In October 2023, Estes, another major freight carrier, suffered a significant cyberattack that significantly disrupted operations.[56] Other analyses warn that the number of these attacks are rising, and that phishing, API abuse, and identity fraud will remain

---

[48] American Trucking Associations. (2025b, June). Congress Must Address Rampant Cargo Theft & Fraud. https://www.trucking.org/sites/default/files/202506/Cargo%20Theft%20Issue%20Brief.pdf.

[49] Supply Chain Digest. (2025, January 29). US Cargo Theft Soared in 2024, Latest Report from CargoNet Finds. https://www.scdigest.com/ontarget/25-01-29_cago_thefts_2024_soar.php.

[50] Ibid 48.

[51] Keller, M. (2025). 2025 First Quarter Supply Chain Risk Trends Analysis. https://www.cargonet.com/news-and-events/cargonet-in-the-media/2025-q1-theft-trends2/.

[52] Federal Bureau of Investigation. (2025d). Cargo Theft. https://www.fbi.gov/investigate/transnational-organized-crime.

[53] Transport Topics. (2025, October 6). Guy Fieri’s Tequila Stolen in Double Brokering Scheme. https://www.ttnews.com/articles/guy-fieri-double-brokering.

[54] Ibid 48.

[55] Abrams, L. (2021, September 29). Trucking giant Forward Air reports ransomware data breach. https://www.bleepingcomputer.com/news/security/trucking-giant-forward-air-reports-ransomware-data-breach/.

[56] Campbell, C. (2023, November 22). Timeline: How Estes responded to a cyberattack . https://www.truckingdive.com/news/estes-express-lines-cyberattack-timeline/700491/.

persistent threats to the industry for years to come.[57] There are even concerns a hacker could use a simple antenna to hack into a truck's braking system, compromising not only the payload, but the safety of the driver.[58]

Non-criminal losses are dominated by detention, crashes, and process failures. Driver detention is the time a driver spends beyond the agreed-upon time to load or unload a truck or trailer. While most trucking companies charge detention fees, over half of the invoices are never paid. In 2023, this led to annual direct expenses at $3.6 billion, and $11.5 billion in lost productivity from hundreds of millions of detention hours.[59] Female drivers are also far more likely to experience detention times than male drivers, an area of concern for the industry.[60]

Crashes are also a major cause of losses. The most recent data is from 2023, where crashes decreased slightly, but accidents still generate significant losses and can lead to litigation.[61] Like criminal losses, crashes are typically concentrated around urban areas, with more movement on interstates and highways.[62] Damages to cargo also frequently occur during packing due to poor weight distribution and inaccurate documentation.

Solutions to losses and damages are simple: tighten discipline for docking, visibility, and safe driving. Enforcement of documentation protocols and proper procedures is also critically important. Losses, delays, and crashes are not just damaging to the individuals affected, but have a major impact on the efficiency and cost for the entire industry. Minimizing these disruptions is crucial for managing new growth effectively. Finally, strong law enforcement and zero tolerance policies with regard to organized or felony-scale theft is a basic prerequisite for safe and efficient supply chains. While this falls outside of the transportation policy sphere, it is

---

[57] National Motor Freight Traffic Association. (2024, January). 2024 Trucking Cybersecurity Trends Report. https://nmfta.org/wp-content/media/2024/01/NMFTA-2024-Trucking-Cybersecurity-Trends-Report.pdf.

[58] Ibid.

[59] Leslie, A. (2025, August 5). New Research Documents Substantial Financial and Safety Impacts from Truck Driver Detention. https://truckingresearch.org/2024/09/new-research-documents-substantial-financial-and-safety-impacts-from-tr
uck-driver-detention/.

[60] Leslie, A., & Murray, D. (2024, September). Costs and Consequences of Truck Driver Detention: A Comprehensive Analysis. https://truckingresearch.org/wpcontent/uploads/2024/09/ATRI-Costs-and-Consequence
s-of-Truck-Driver-Detention-09-2024.pdf.

[61] Federal Motor Carrier Safety Administration. (2024, April 26). Motor Carrier Safety Progress Report. https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/202407/March%202024%20progress_report_20240426%20

[62] Texas Department of State Health Services. (2025, January). 2023 Commercial Motor Vehicle Traffic Incidents Texas. https://www.dshs.texas.gov/sites/default/files/injury/EMST-Registries/Data/DSHS-EMSTR-CMV-DataBrief-Jan20

a necessary intersection that all robust public policy depends on. Interagency coordination is required to mitigate losses, but also to ensure forward-looking planning, such as for emergency management and response.

Extreme Weather Events

In recent years, Texas has confronted multiple extreme weather events that have caused both a tragic loss of life and severe economic consequences. In particular, Winter Storm Uri in 2021 exposed weaknesses in the energy grid, while Hurricanes Harvey in 2017 and Beryl in 2024 caused billions in damages and significant loss of life. While some damages are unavoidable, strategic improvements can still be made.

As already discussed in an IHS paper, Texas energy generation facilities have been susceptible to cold temperatures, compromising the safety of thousands.[63] Winter Storm Uri not only cut power to millions of Texans, but also severely disrupted transportation of freight and people.[64] IHS released a brief detailing the effects of the storm on the transportation sector.[65] The lack of transportation hindered attempts to restart gas generators, and overall exposed the fragility of supply chain systems against disruptions. TxDOT has made increased preparations for a future Winter Storm, but severe weather still means slowed logistics.[66,67] There are myriad related transportation strains that come with weather events, including ice on roadways, fleet fueling needs, downed power lines or trees blocking roadways, and flooding.

---

[63] Dierker, B. (2024, June). A unique win-win: Bolstering Texas' energy security by leveraging existing infrastructure to effectively decarbonize (Report No. IHS/CR-2024-1002). Institute for Homeland Security. https://www.aii.org/wp-content/uploads/2024/06/A_Unique_WinWin_IHS_Aii.pdf.

[64] Texas Division of Emergency Management. (2021). Winter Storm Uri. https://www.tdem.texas.gov/disasters/winter-storm-uri.

[65] McEntire, D. A. (2022). Transportation and logistics problems experienced during and after Winter Storm Uri: Preparedness and planning lessons for the public and private sectors. Institute for Homeland Security, Sam Houston State University. https://ihsonline.org/Portals/0/Tech%20Papers/McEntire_Transportation_and_Logistics_Problems_Winter_Storm_Uri.pdf.

[66] Macias-Cervantes, L. (2024, November 12). Statewide winter readiness means preparations, partnerships. https://www.txdot.gov/about/newsroom/stories/2024/statewide-winter-readiness-means-preparations-partnershi

[67] Somasekhar, A. (2025, January 21). Texas ports, pilots suspend some operations as winter storm hits. Reuters. https://www.reuters.com/world/us/texas-ports-pilots-suspend-some-operations-winter-storm-hits-2025-01-21/.

Hurricanes and tropical storms are perhaps the greatest threat to Texas freight infrastructure. Between 1980 and 2024, Tropical Cyclones accounted for 56.9 percent of total costs from billion-dollar events, according to NOAA.[68] This averages out to more than $5 billion every year.

Case Studies

To illustrate the vulnerabilities and successes in Texas's freight network, the paper reviews several multiple scenarios with direct trucking impacts.

Hurricane Beryl

Hurricanes strike Texas regularly. In fact, a hurricane makes landfall in the state once every three to four years.[69] Hurricane Beryl hitting Texas in 2024 underscored how quickly freight systems can be paralyzed. Making landfall over Matagorda Bay southwest of Houston, the storm brought heavy winds and rain. The storm surge pushed huge amounts of water into coastal bays, leading to flooding in industrial zones, rail lines, and low lying sections of road.

The most immediate symptom was power loss across the Houston region. Hurricane Beryl knocked out power for almost 3 million customers, leading to disabled crane systems, yard equipment, and fuel pumps. Power outages also affect freight traffic from railways, leading to delays in distribution centers, intermodal terminals, and freight relay operations.

Maritime ports are severely affected by hurricanes like Beryl. Local ports were put under Port Condition Zulu, halting vessel movement.[70] Ports at Houston, Galveston, and Corpus Christi were closed for multiple days, leading to significant delays across the nation.[71] Waterways were also closed by the U.S. Coast Guard.[72]

Surface freight felt the shock quickly. TxDOT-reported closures and flooding affected key connectors in the Houston area, including segments around I-45, while shoulder queuing near

---

[68] National Centers for Environmental Information. (2025, January). Billion-dollar weather and climate disasters: Texas Summary. https://www.ncei.noaa.gov/access/billions/state-summary/TX.

[69] KTLO. (2017, August 25). History of hurricanes in Texas, by the numbers. https://www.ktlo.com/2017/08/25/history-of-hurricanes-in-texas-by-the-numbers/.

[70] SAFETY4SEA. (2019, September 7). USCG terms on port conditions explained . https://safety4sea.com/uscg-terms-on-port-conditions-explained/.

[71] World Ports Organization. (2024, July 10). Port Houston resumes operations after Hurricane Beryl. https://www.worldports.org/port-houston-resumes-operations-after-hurricane-beryl/.

[72] Mahoney, N. (2024, July 8). Hurricane Beryl shutters Texas coastal shipping lanes. FreightWaves. https://www.freightwaves.com/news/hurricane-beryl-shutters-texas-coastal-shipping-lanes.

distribution centers appeared as facilities waited for power and water to recede.[73] Railways were also affected, with carriers issuing service advisories and recovery work.[74]

Even where direct damage was limited, the interdependencies between the grid, ports, fuel systems, and freight terminals ensured that costs still reached the billions.

Money is not the only cost from hurricanes. Rebuilding necessary infrastructure and making repairs takes significant time. Meanwhile, billions of dollars in lost productivity is forgone. The thousands of damaged homes and businesses require huge amounts of construction materials and labor to repair. Damaged businesses may be out of commission for weeks or months while critical equipment is replaced. AccuWeather estimated the total cost of Beryl to be about $30 billion in economic losses.[75] Bigger storms, like Hurricane Harvey in 2017, have costs in the hundreds of billions, but even smaller storms reinforce the lesson of cascading effects across infrastructure.

The inevitable possibility of a future hurricane underscores that Texas intermodal freight movement is vulnerable to forces outside of our control. The highways, ports, and railways that sustain the economy cannot move out of the way. It is essential to build infrastructure resilience so that when disaster strikes, Texas can persevere.

AllianceTexas Smart Port

The AllianceTexas Smart Port is an inland intermodal freight logistics hub located north of Fort Worth. As one of the largest inland ports in the United States, the hub provides intermodal transport connections for rail, trucks, and even air cargo.

In October 2024, the U.S. Department of Transportation (DOT) awarded $80 million as part of its INFRA (Nationally Significant Multimodal Freight & Highway Projects program) grant program to integrate technology to improve resilience and efficiency.[76] The entire “Smart Port” Project will

---

[73] Roads & Bridges. (2024, July 8). Hurricane Beryl Closes Roads in Texas. https://www.roadsbridges.com/road-traffic-safety/news/55094035/hurricane-beryl-closes-roads-in-texas.

[74] BNSF Railway. (2024, July 8). UPDATE: Hurricane Beryl impacts and recovery efforts. https://www.bnsf.com/news-media/customer-notifications/notification.page?notId=update-hurricane-beryl-impacts-and-recovery-efforts.

[75] AccuWeather. (2024, July 9). Severe weather advisory – July 9, 2024. https://corporate.accuweather.com/newsroom/severe-weather-advisories/severe-weather-advisory-july-9-2024/.

[76] AllianceTexas Mobility Innovation Zone. (2024, October 24). USDOT Awards $80 Million Grant to Launch Hillwood’s AllianceTexas Smart Port. https://www.alliancetexasmiz.com/news/usdot-awards-80-million-grant-to-launch-hillwoods-alliancetexas-smart-port/.

cost $262 million in a public-private partnership between local governments, TxDOT, and developers.[77]

The Smart Port project is meant to upgrade the infrastructure and technology to elevate the port into a massive freight logistics hub. The creation of an elevated connector between the hub and State Highway 170 to pull heavy truck movements off local roads and interstates is already in TxDOT project materials.[78] The project will also help connect truck access between the airport and intermodal facilities.

The North Central Texas Council of Governments, one of the main partners of the plan, describes the Smart Port as a game changer for connection and regional tracking/visibility of goods moving through the region. The BNSF Railway Alliance Intermodal Facility, as it is known today, already sees 4.2 million trucks every year, and is expected to double by 2035.[79]

Additionally, the developers have promised additions of a microgrid energy backup, an EV truckport for short to medium-range transport, and integration of new advanced communications infrastructure to facilitate connected-freight tools.[80]

The AllianceTexas Smart Port highlights several lessons for future freight management projects in Texas and beyond. Most important is the need for physical infrastructure to advance parallel to technology. Shared-data platforms and connected-freight innovations advance the status quo, but it is the bridges, roads, connectors, and railways that relieve congestion and expand capacity. Freight relay hubs should be designed with the whole network in mind, propagating efficiency improvements across entire regions.

Equally important is the effective implementation and governance of digital systems. Dozens of world events in recent years have demonstrated the fragility of the global supply chain, so enhanced physical and digital security is critical. As with any major infrastructure investment, externalities and community impacts should be studied and managed. Finally, success should be measured empirically to fully realize impacts and collect data for future endeavors.

---

[77] Ibid.

[78] TxDOT. (2024, July 5). SH 170 from east of I-35W to Intermodal Parkway – hearing announcement, July 25, 2024. https://www.txdot.gov/projects/hearings-meetings/fortworth/2024/sh170-072524.html.

[79] NCTCOG. (2024, November). NCTCOG Wins $80 Million Grant For Smart Port. https://www.nctcog.org/getmedia/35520ae6-da8b-495a-b331-968a50db51dc/Nov.pdf.

[80] Ibid 76.

Building Resilience

Infrastructure Expansion/Modernization:

According to the American Society of Civil Engineers (ASCE), Texas is ranked slightly better than average in infrastructure, but significant gaps remain.[81] Almost 90 percent of roads in the state are in good condition, but ASCE emphasizes that the immense economic and population growth in the coming years will strain highways and increase congestion further. However, it does conclude with a positive note, saying "Overall, Texas is working diligently to keep its transportation system moving."[82]

The state is well aware of this expected growth, as well as its own shortfalls. TxDOT has operated the Unified Transportation Program (UTP) for over 20 years, allocating construction dollars and resources to infrastructure projects.[83] Texas Clear Lanes, TxDOT's Top 100 Congested Road Segments, Connecting Texas 2050, and other initiatives aimed at roadways are also important strategic efforts. These projects are essential to manage the growth and problems facing the Lone Star state. Persistent funding and research will be necessary to stay one step ahead.

It is also vital to build strong, resilient infrastructure. Soft costs can arise unintentionally and years down the road based on fixed, permanent infrastructure investments. Bridge height can be a facilitator or limiter of last-mile truck movement, while the capacity of sewers and storm drains can impact whether water is effectively rerouted, or if flooding will take place. Hurricanes are and will continue to make landfall in Texas. Building strong roadways, bridges, and structures can reduce the need for costly repairs, saving significant resources in the long-term. Working in concert with emergency management and law enforcement personnel, even in the planning and design phase of building physical infrastructure, will go a long way in functional human-centered resilience.

Technology and Innovation:

The introduction of new technologies and safety practices has influenced the freight sector significantly. For truck drivers, Artificial Intelligence can analyze data from dash-cameras to reduce risk and improve safety.[84] A comparison of different technologies found that new systems can almost always detect a distracted driver and make necessary alerts to dangers in

---

[81] American Society of Civil Engineers. (2025, March 15). Texas Infrastructure Report Card: ASCE. https://infrastructurereportcard.org/state-item/texas/.

[82] Ibid.

[83] TxDOT. (2025). Unified Transportation Program (UTP). https://www.txdot.gov/projects/planning/utp.html.

[84] Jones, W. D. (2025, September 6). How Nauto's AI dashcam reduces driver risk and accidents. https://spectrum.ieee.org/ai-dashcam-driver-safety-nauto.

less than 5 seconds.[85] These will likely help apply downward pressure to insurance premiums, but to fully realize both safety and economic efficiency, policymakers must be well informed and ensure the policy frameworks in place encourage innovation without providing overly prescriptive rules.

There has also been significant development in driverless technology in recent years, with driverless taxis powered by AI already operating in certain cities. Earlier this year, the first driverless trucks began operating on highways in Texas.[86] However, the road to profitability for the technology is still being paved, and there are concerns about wider adoption. Texas may be ahead of the curve, but widespread use is still years away. Regulatory, liability, labor, cybersecurity, and physical security issues must all be addressed before driverless trucks become commonplace.

Freight innovation isn't just happening during the transport stage, intermodal hubs are being equipped with new technologies and processes designed to increase efficiency. The AllianceTexas port project is an excellent example of how innovation is being applied to the logistics side of freight transport. By employing technology alongside infrastructure upgrades, Northern Texas is setting itself up for future success.

---

[85] Hull, L. (2025, April 2). Nauto AI safety system soars in performance study by Virginia Tech Transportation Ins (VTTI): Nauto. Nauto. https://www.nauto.com/blog/nauto-ai-safety-system-soars-in-performance-study-by-virginia-tech-transportation-

[86] Hawkins, A. J. (2025, May 1). Aurora's driverless trucks are making deliveries in Texas. The Verge. https://www.theverge.com/news/659518/aurora-autonomous-truck-first-delivery-texas.

Recommendations

Expanding safe truck parking should be a top priority for the state. Texas highways accommodate millions of commercial truck routes every year, yet there are significant shortfalls in parking, leading to lost productivity for both freight haulers and drivers. Public-private partnerships between local governments, TxDOT, and truck stop operators can alleviate this crucial safety and efficiency issue. The integration of new technology into facilities can also improve efficiency and promote coordination.

1. Expand secure truck parking capacity statewide through intentional development and public–private partnerships.

Ports, inland terminals, and strategic freight corridors require special measures to increase resilience after severe weather or infrastructure disruptions. A coordinated recovery plan should standardize operations during and after hurricanes and other disruptions. At the same time, investments in resilient infrastructure will reduce costs in the long-term from replacements. Frequently replaced infrastructure such as signal boxes should be elevated, and backup power at ports and terminals would ensure critical operations can resume quickly.

2. Implement target freight congestion mitigation strategies.

TxDOT and regional partners should deploy proven congestion reduction tools, including ramp metering on major freight corridors, terminal truck appointment, and virtual queuing systems. Off-hour delivery programs, freight-prioritized traffic management along critical corridors, and managed lanes would improve reliability, reduce delays, and improve efficiency without large-scale roadway expansion.

3. Develop a unified freight resilience and recovery framework for post-storm operations and hurricane-resistant design.

Reducing the inefficiencies caused by detention also offers major productivity gains. Much of this is upon individual freight operators or clients, but Texas can still enact policy changes to promote speedier loading and unloading. Grant programs or incentives tied to fair detention practices could encourage better practices, particularly among large distribution centers and intermodal freight facilities.

4. Establish statewide detention standards with incentives for compliance.

Freight security must also evolve alongside improvements to infrastructure. Cargo theft remains a costly threat both in Texas and nationwide, particularly at warehouses and freight centers. A statewide initiative to improve security could combine retrofits, license plate readers, and a centralized intelligence network would significantly reduce the likelihood of theft. Strong law enforcement and prosecutorial focus is also called for.

5. Create a state-wide cargo-theft prevention program for law enforcement, carriers, and insurers.

Congestion and bottlenecks remain as the arguably largest barrier to efficient freight movement. While large infrastructure projects will have the largest impact on congestion, targeted small adjustments and fixes can alleviate some of the pressure.

These are among the first-round of recommendations to address inefficiencies and challenges facing Texas-based truckers and the nationwide logistics industry that passes through or relies upon the Lone Star State. The interconnectedness of infrastructure, business, security, and public policy ensure that any one solution will have both positive and negative ripple effects throughout other sectors across the state. That requires close coordination and careful planning. Finally, there are secondary reforms needed that may be larger in scope than this report has handled, or which must come secondarily to the reforms discussed here precisely because they will be most effective once the dust settles from implementing a first-round policy or industry reform.

Conclusion

Texas stands at the crossroads of American commerce, both literally and figuratively. Located in the middle of the country, the state facilitates freight movement from coast to coast while also operating its own major industries. It is the fastest growing state in the nation, and at the forefront of transportation innovation. The state's numerous highways, ports, and pipelines not only sustain the economy, but also underpin the entire nation's trade. Strengthening this system requires intentional and coordinated investments into technology and infrastructure.

TxDOT is already leading in this effort through initiatives such as the Unified Transportation Program, Texas Clear Lanes Initiative, and the Connecting Texas 2050 long-term plan. These programs reflect the forward-thinking framework already in place. Continued attention, investment, and strategic coordination will be critical to keeping momentum and scaling for higher demand.

This report has shown that Texas' infrastructure is still vulnerable to congestion, weather disruptions, theft, and workforce strain. Persistent bottlenecks on major interstates, an aging and shrinking driver workforce, and a severe shortage of safe truck parking all threaten the reliability of the commercial trucking sector, the most significant mode of freight transport. At the same time, the region's vulnerability to tropical storms necessitates strong infrastructure solutions that can recover quickly after shocks.

Case studies such as hurricane scenarios and the AllianceTexas Smart Port demonstrate both the risks and future of Texas logistics. Ultimately, even efficient infrastructure becomes meaningless if it cannot survive extreme conditions. Hurricanes are and will continue to be a sad reality for many Texans. Building resilient infrastructure has the potential to save billions of dollars in the long-run, not to mention protecting the lives and livelihoods of Texas' residents. Innovative projects like the AllianceTexas Smart port show how coordination and technology can enhance efficiency and resilience.

Taken together, these lessons reaffirm the importance of the practical measures introduced earlier in the paper. Expanding secure freight parking will reduce risks to safety. Integrating advanced telematics and real-time tracking systems enhance visibility and coordination, while strengthened cross-jurisdictional communications improves recovery speed and reliability during disruptions. Continued investment in driver recruitment, training, and retention will ensure a stable and skilled workforce to support future demand.

Ultimately, securing the freight network is about more than improving efficiency. Freight resilience is not merely a transportation issue, but a strategic one. Strengthening supply-chain resilience is critical for protecting the economic and national security interests of the United States. Through innovation and careful planning, Texas can ensure that its logistics backbone remains ready to meet the demands of the future.

Author Biographies

Benjamin Dierker is the Executive Director of the Alliance for Innovation and Infrastructure, specializing in economic, administrative, and legal aspects of American energy, transportation, infrastructure, and innovation. His goal is to analyze and explain the economic and legal realities underpinning public policy at the state and federal level. He strives to bring a balanced, accurate, and accessible perspective to enable students, specialists, the public, and elected representatives to make the best-informed decisions on these critical issues.

Mr. Dierker is a graduate of Texas A&M University, where he earned a Bachelor of Arts in Economics and a Master of Public Administration at the Bush School of Government and Public Service. He then earned his Juris Doctor from the Antonin Scalia Law School at George Mason University. He is admitted to practice law in Washington, D.C. and South Carolina.

Email: bdierker@aii.org

https://www.linkedin.com/in/benjamin-r-dierker

Owen Rogers is a Public Policy Associate with the Alliance for Innovation and Infrastructure, conducting original research and building subject matter expertise in energy markets, technology and innovation, and system-wide infrastructure matters. He is a graduate of the University of Arizona with a bachelor's degree in Public Management and Policy with particular focus on GIS and related innovative systems.

https://www.linkedin.com/in/owen-rogers-41132b2b8/

The Institute for Homeland Security at Sam Houston State University is focused on building strategic partnerships between public and private organizations through education and applied research ventures in the critical infrastructure sectors of Transportation, Energy, Chemical, Water/Wastewater, Healthcare, and Public Health.

The Institute is a center for strategic thought with the goal of contributing to the security, resilience, and business continuity of these sectors from a Texas Homeland Security perspective. This is accomplished by facilitating collaboration activities, offering education programs, and conducting research to enhance the skills of practitioners specific to natural and human caused Homeland Security events.

Institute for Homeland Security

Sam Houston State University

Dierker, B. & Rogers, O. (2026). Lone Star Freight: Assessing Vulnerabilities and Building Resilience in Texas Logistics. (Institute for Homeland Security Report No. 2026-1031).

https://doi.org/10.17605/OSF.IO/3W2XB

INSTITUTE FOR HOMELAND SECURITY
SAM HOUSTON STATE UNIVERSITY