

TRADE | ECONOMIC DEVELOPMENT | SUPPLY CHAIN | WORKFORCE



TEXAS
GATEWAY OF THE AMERICAS VI
HOUSTON REGION

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Supply Chain & Logistics Technology
University of Houston



NETWORKED GLOBAL ECONOMY

SPANISH SOCIOLOGIST MANUEL CASTELLS

- ❑ Global economy is now characterized by the almost instantaneous flow and exchange of information, capital and cultural communication.
- ❑ Flows order and condition both consumption and production.
- ❑ Networks themselves reflect and create distinctive cultures. Both they and the traffic they carry are largely outside national regulation.

*There is no question that our current **global economy and community** have recently been presented **enormous challenges** but within those challenges there **lay many opportunities** for those willing to **adapt, collaborate and leverage a networked society.***



TEXAS GATEWAY TO AMERICAS EXPORTS

**SINCE 2002,
TEXAS LEADS
IN EXPORTS**



\$485.6 billion in exports in 2022 (U.S. Bureau of Economic Analysis).



Nearly equaled total for next four states *combined*: \$185.5 billion for California, \$122.2 billion for Louisiana, \$106.3 billion for New York and \$78.2 billion for Illinois.



Texas' dollar total for exports in 2022 exceeded the 2021 total by 29%.

Top Export Destinations: Mexico, Canada, China, South Korea, Netherlands

Driving Texas Exports:

- Business-friendly regulatory environment
- Low tax burden
- Strong infrastructure & global logistics network
- High level of collaboration among stakeholders

Texas Top Exports:

- Oil & gas/petroleum products
- Basic chemicals/resin, rubber & fibers
- Semiconductors/computer equipment
- Aerospace products
- Motor vehicle parts

Source: <https://businessintexas.com/ceo-blog/since-2002-texas-leads-in-exports/>

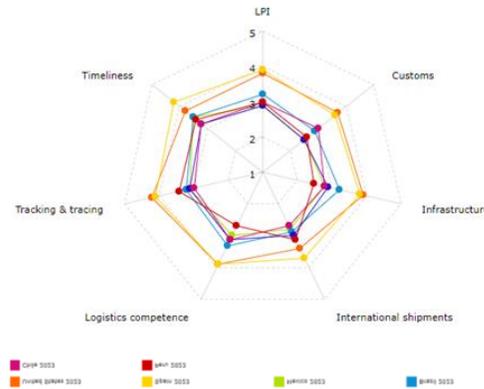
Source: <https://gov.texas.gov/business/page/trade-and-export>



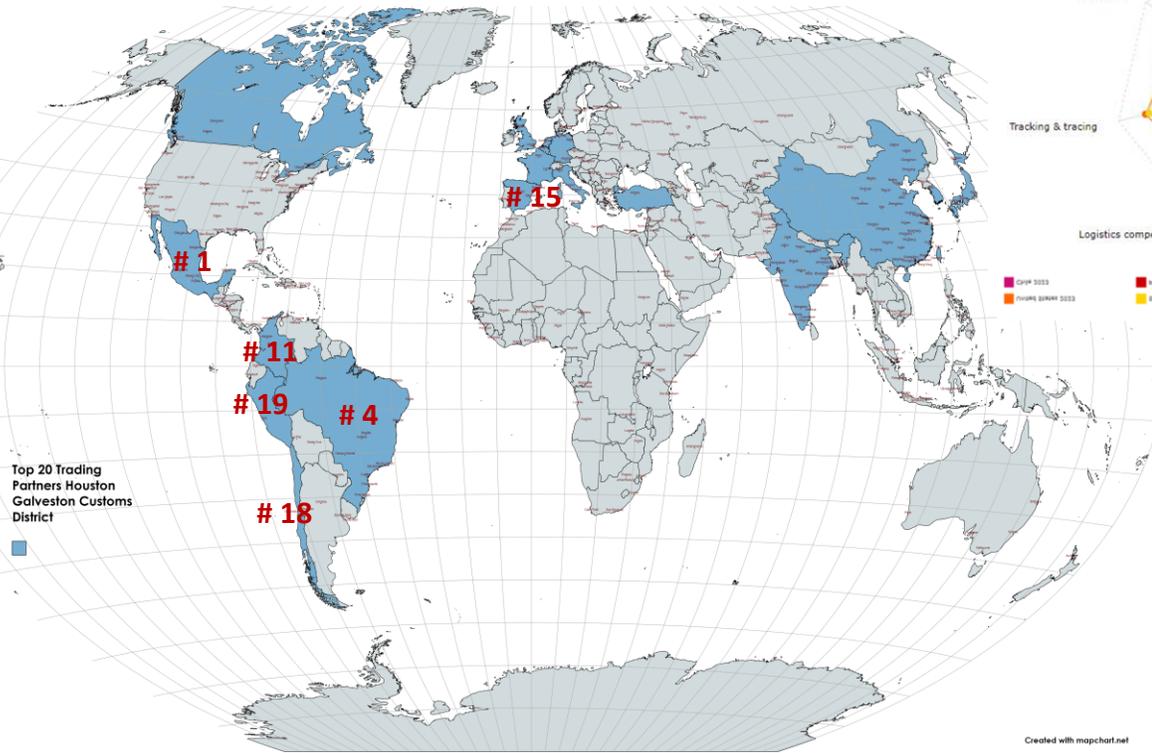
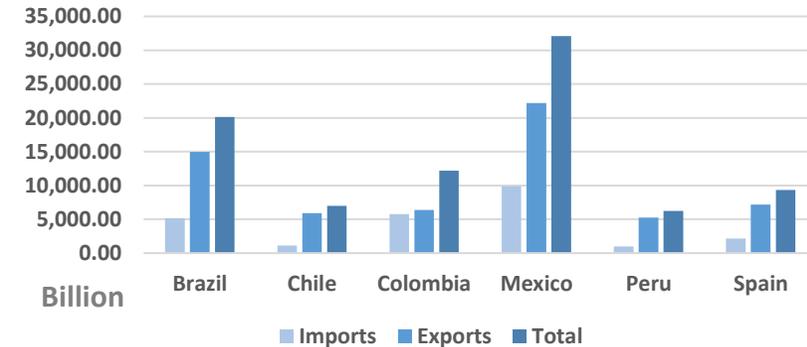
TOP TRADING PARTNERS HOUSTON GALVESTON CUSTOMS DISTRICT

Logistics Performance Index

United States 2023



2022 Imports and Exports to Galveston Customs District



Top 20 Trading Partners Houston Galveston Customs District

Created with mapchart.net

	Exports to Houston Galveston Customs	% Total
# 4	Mineral Fuels, Oil and Refined Products	60.90%
	Plastics and Plastic Products	10.60%
# 18	Mineral Fuels, Oil and Refined Products	61.70%
	Organic Chemicals	7.60%
# 11	Mineral Fuels, Oil and Refined Products	61.30%
	Organic Chemicals	14%
	Plastics and Plastic Products	10.90%
# 1	Mineral Fuels, Oil and Refined Products	73.10%
	Organic Chemicals	22.90%
# 19	Mineral Fuels, Oil and Refined Products	72.80%
	Plastics and Plastic Products	7.50%
# 15	Mineral Fuels, Oil and Refined Products	86.90%
	Plastics and Plastic Products	4.90%

Source: Adapted from Greater Houston Partnership. (2023 May). Global 23 Houston: International Trends and their Impact on the Region.

Source: <https://lpi.worldbank.org/international/scorecard/radar/C/USA/2023/C+ESP+2023+C+MEX+2023+C+BRA+2023+C+COL+2023+C+CHL+2023+C+PER+2023>



TEXAS GATEWAY TO AMERICAS CONSUMERS

150,000,000
CONSUMERS
WITHIN
1000 MILES



- ❑ 31 official ports of entry
- ❑ #1 port in the U.S. for waterborne foreign trade—Port of Houston
- ❑ #1 inland port along the U.S.-Mexico border—Port Laredo
- ❑ 34 foreign trade zones
- ❑ 380 airports – 26 commercial airports
- ❑ 3 Class I Rail lines – UP, BNSF, KCS
- ❑ 16 interstate highways

Texas's population in 2022 was 30,029,572, second only to California (39,029,342), not surprising given its consistent place in recent years among the nation's fastest-growing, largest-gaining states - US Census.

Source: <https://www.dot.state.tx.us/tpp/hwy/ihhwyfacts.htm>

Source: <https://gov.texas.gov/business/page/infrastructure>

Source: <https://www.txdot.gov/content/dam/docs/maps/texas-railroad-map.pdf>

Source: <https://www.census.gov/library/stories/2023/03/texas-population-passes-the-30-million-mark-in-2022.html>

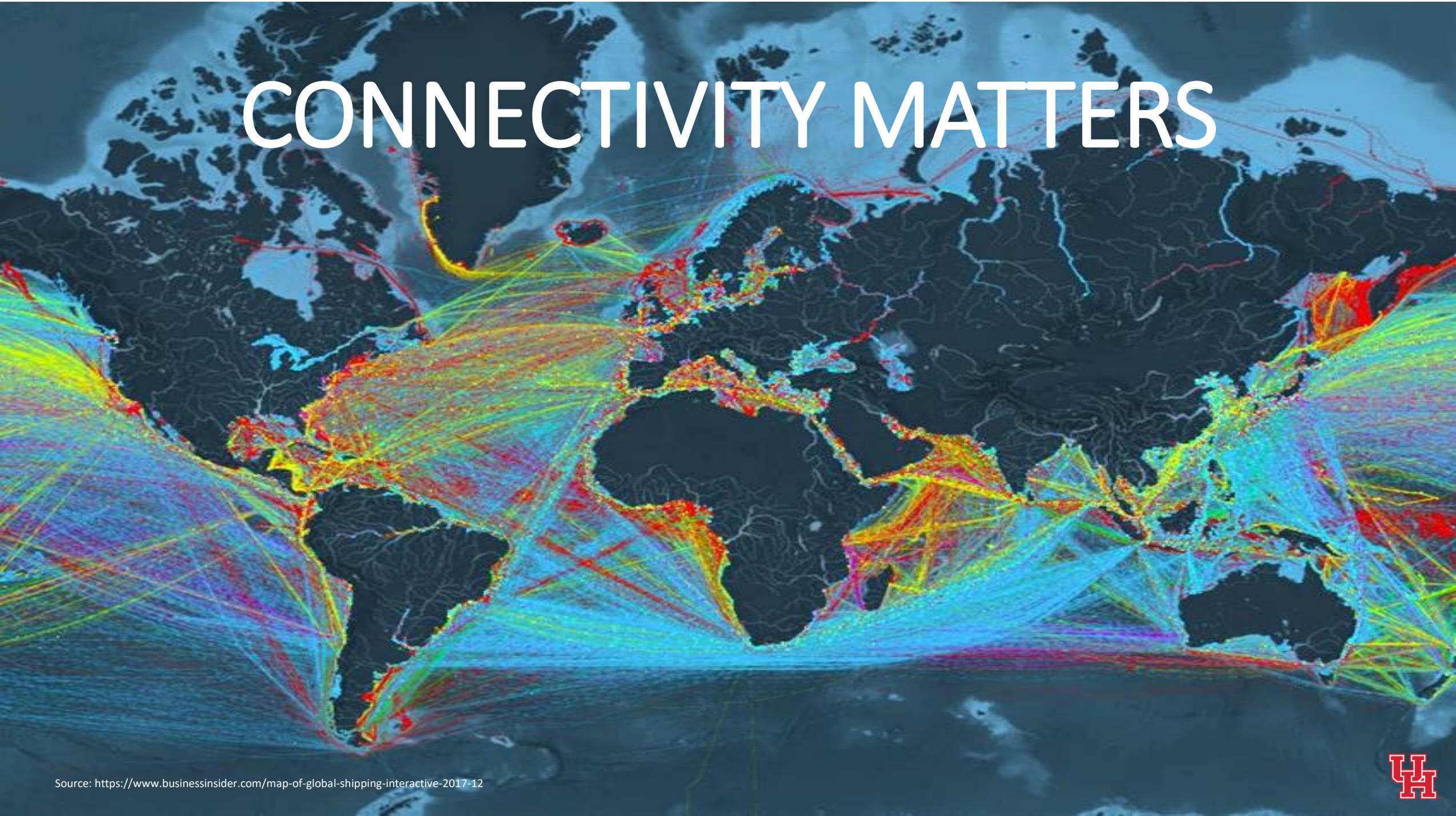
Source: <https://gov.texas.gov/uploads/files/business/PortsOfEntry.pdf>

Source: <https://businessintexas.com/ceo-blog/since-2002-texas-leads-in-exports/>

Source: <https://gov.texas.gov/business/page/trade-and-export>



CONNECTIVITY MATTERS



PORT HOUSTON GLOBAL CONNECTIVITY

Ports as Nodes in Shipping Network

Metric 1

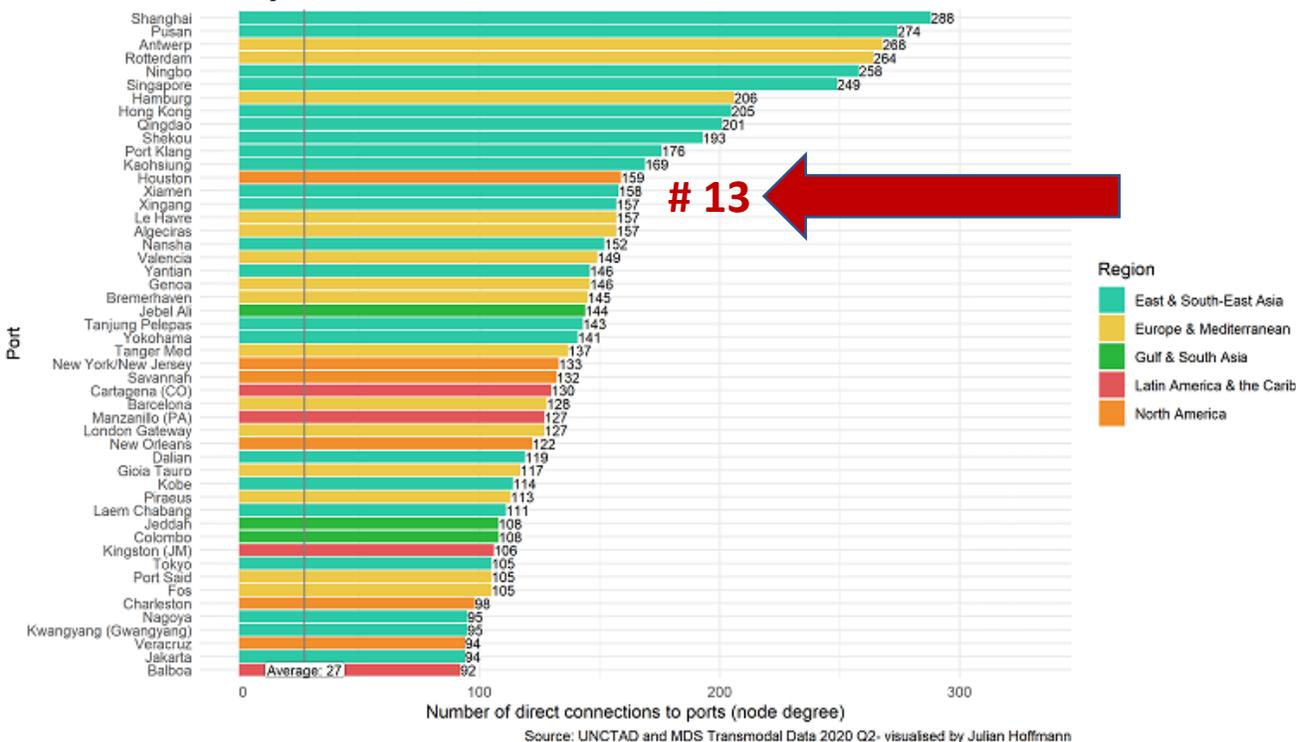
- Node Degree - Houston # 13/159
- Measured on direct port connections

Metric 2

- Node Betweenness – Houston #7/12,000
- How important is a port for trade between other ports that connect with each-other via transshipment

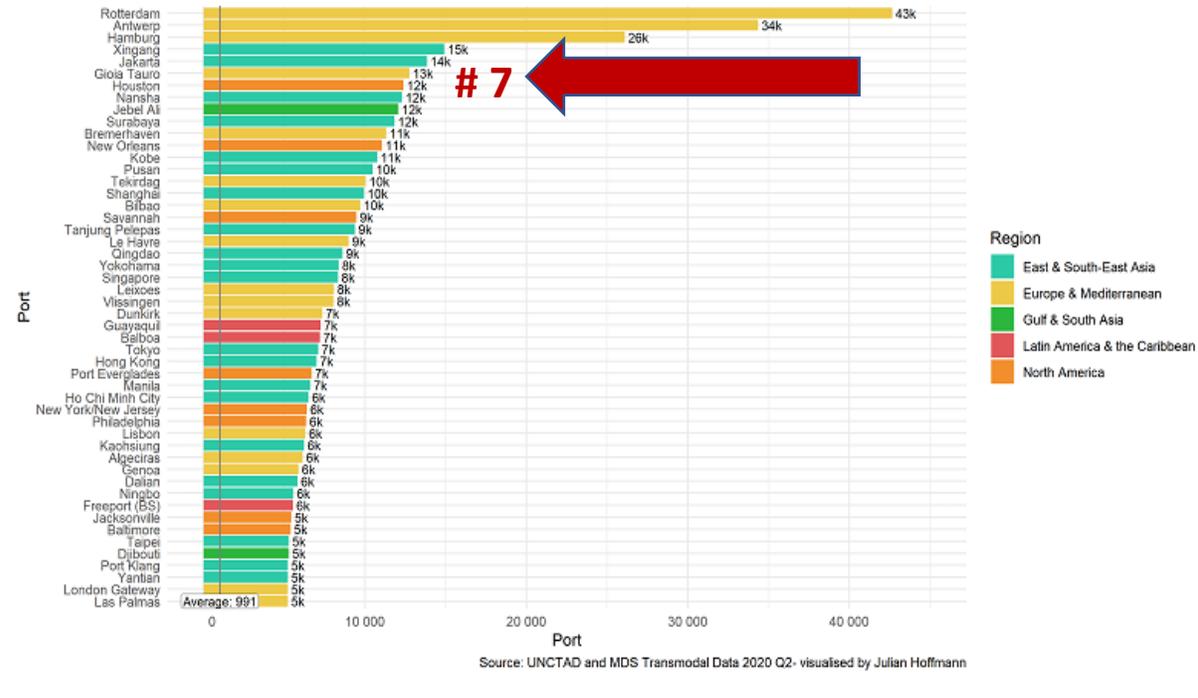
Top 50: Number of direct port connections

Node degree within the network



Top 50: Port Betweenness

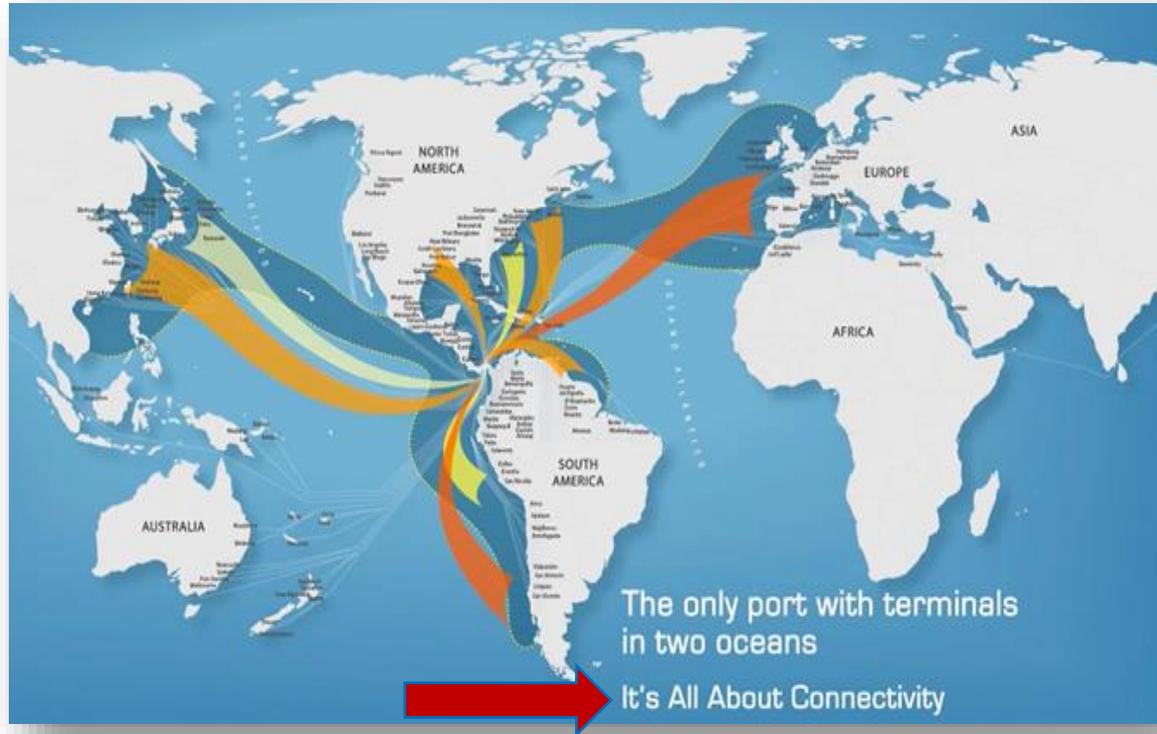
Node betweenness within the network. The betweenness centrality for each port is the number of 'shortest' paths between port pairs (minimum number of transshipments), that pass through them.



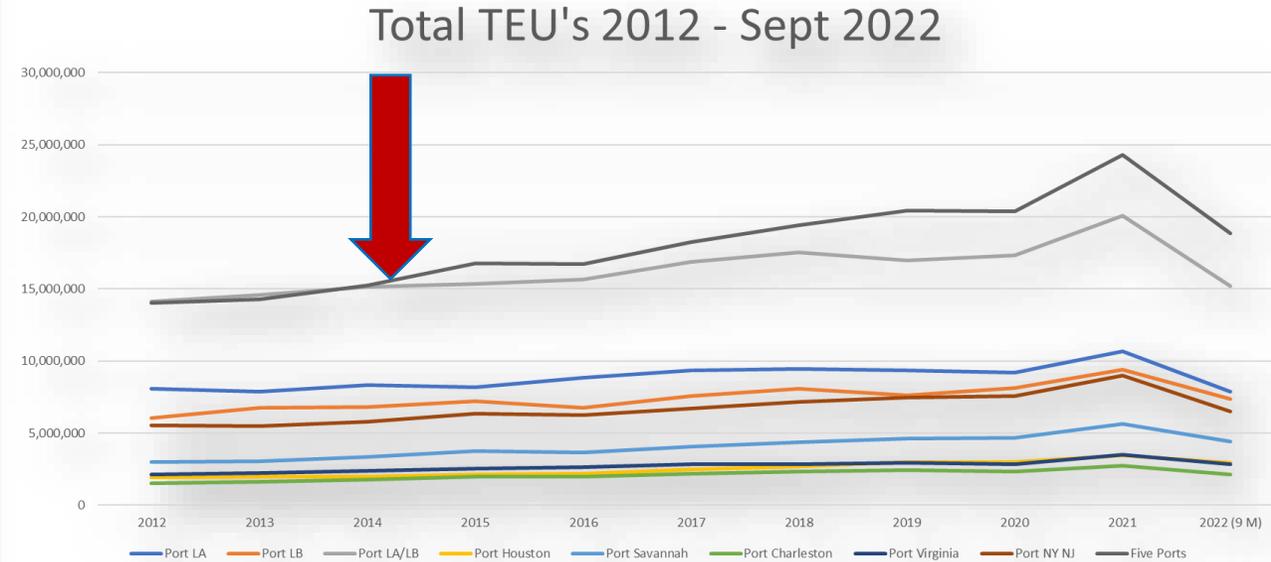
Degree of connectivity matters in a global interconnected economy.



CONNECTIVITY: IMPACT PANAMA CANAL EXPANSION



2014 - 2022 Trendline HOU, SAV, CHS, VI, NY/NJ



PORT OF HOUSTON CONTAINER TRAFFIC TEUs, 12-Month Total



Source: Port of Houston Authority

Source: Adapted by Margaret Kidd on October 22, 2022, from the following websites:

<https://www.portoflosangeles.org/business/statistics/container-statistics>

<https://polb.com/business/port-statistics/#yearly-teus>

<https://gaports.com/sales/by-the-numbers/>

<https://scspa.com/about/statistics/>

<https://porthouston.com/about-us/statistics/>

<https://www.panynj.gov/port/en/our-port/facts-and-figures.html>

<https://www.portofvirginia.com/tools/port-stats/>

<https://www.alports.com/financials/>

Source: John D. McCown. (2022, October 9). Monthly Data Set LA/LB TEU Through August 2022.

Source: https://www.houston.org/sites/default/files/2023-05/Global%20Houston-2023-Publication_Final_0.pdf

Source: <https://pancanal.com/en/maritime-services/trade-routes/>



CONNECTIVITY: TEXAS ECONOMIC DEVELOPMENT

U.S. Congress passed the **CHIPS for America Act** in 2022 to promote the research, development, and fabrication of semiconductors within Texas and the United States.

Samsung's new **\$17 billion chip manufacturing facility** in Taylor, Texas, north of Austin.

Texas Instruments (TI) new potential \$30 billion semiconductor fabrication plant in Sherman Texas.

Highlighted Companies Relocating Texas:

- Tesla
- Hewlett Packard
- Oracle
- Charles Schwab
- CBRE (Real Estate)

Source: <https://businessintexas.com/>

Source: <https://www.forbes.com/sites/greatspeculations/2022/05/26/texas-is-now-home-to-more-fortune-500-companies-than-any-other-state-and-im-not-surprised/?sh=5821ca2427d5>

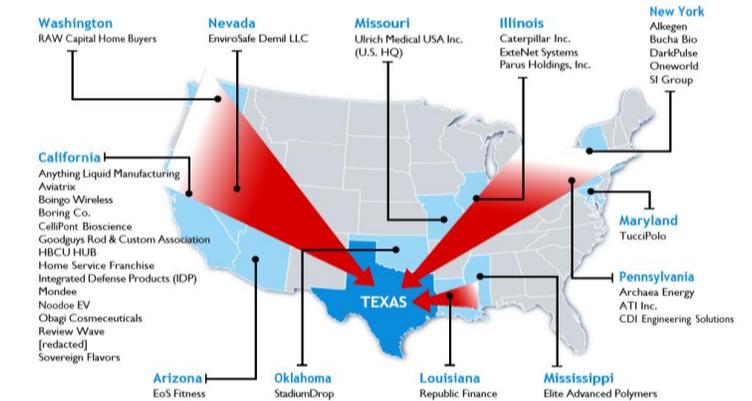
Source: <https://info.ytexas.com/hubfs/YTexas%202022%20Relo%20Tracker%20Report.pdf>

Source: <https://spectrumlocalnews.com/tx/south-texas-el-paso/news/2022/08/10/how-bipartisan-boost-to-semiconductor-industry-will-help-texas-economy->

Source: https://gov.texas.gov/uploads/files/business/HQ_Relocations_Texas_Map_Listing.pdf

2023 Headquarter Relocations to Texas as of September 6, 2023 – 15 (Texas Economic Development & Tourism)

2022 U.S. Company Headquarter Relocations to Texas



38

Office of the Governor | Texas Economic Development & Tourism
gov.texas.gov/business | @TexasEconDev

#1 STATE FOR CORPORATE EXPANSIONS AND LOCATIONS

Corporate Relocations to Texas

In 2021



62 Corporate Relocations to Texas in 2021



17 Origin States



3 Origin Countries



25 Corporate Relocations from California

Source: YTexas, U.S. Global Investors



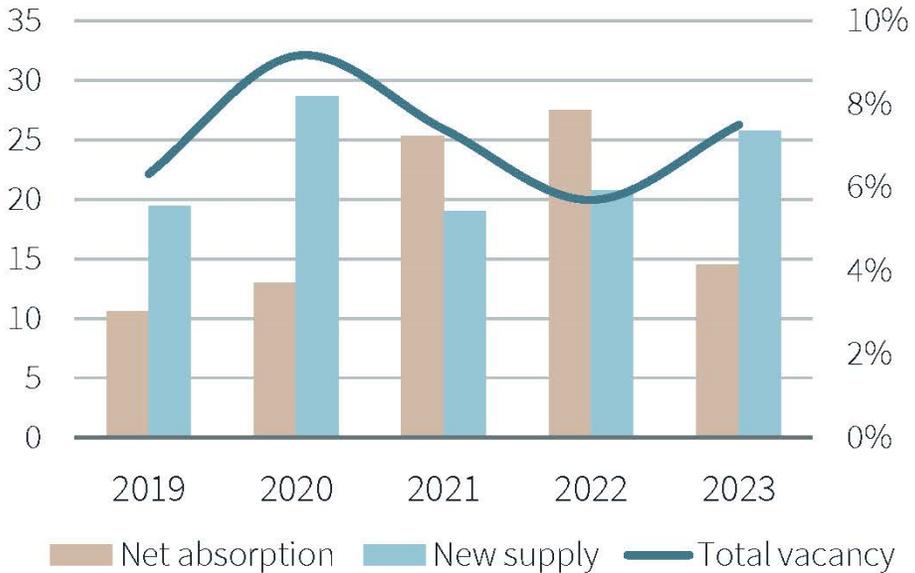
CONNECTIVITY: INDUSTRIAL REAL ESTATE HOUSTON REGION

Fundamentals

		Forecast	
YTD net absorption	14,578,897 s.f.	▲	
Under construction	21,699,792 s.f.	▼	
YTD deliveries	25,745,209 s.f.	▲	←
Total vacancy	7.5%	▲	←
Total availability	11.4%	▶	
Average asking rent	\$0.57 p.s.f.	▲	←
Concessions	Stable	▶	

Historical trends

S.f. (millions)



Source: <https://www.us.jll.com/content/dam/jll-com/documents/pdf/research/americas/us/q3-2023-industrial-insights/jll-us-industrial-insight-q3-2023-houston.pdf>

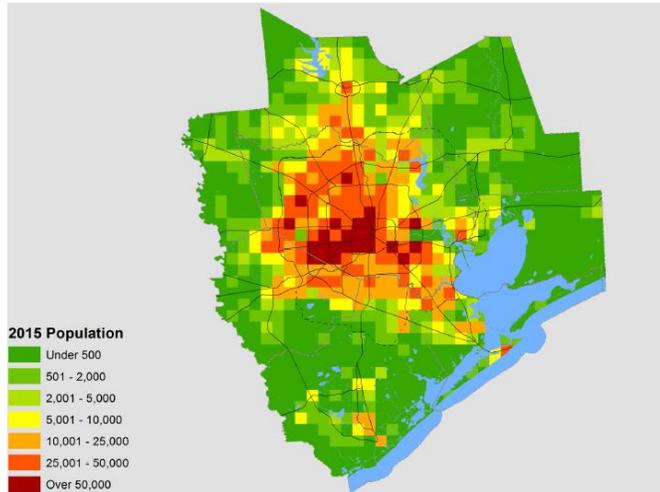


- ❑ Magnet for new-to-market companies
- ❑ Competitive rental rates
- ❑ Availability of land
- ❑ Deep labor pool
- ❑ Port Houston's continued expansion efforts

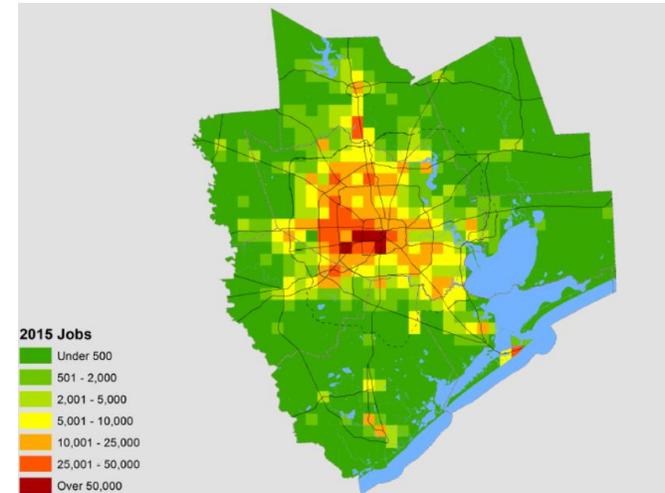


CONNECTIVITY: H-GAC REGIONAL POPULATION & JOB GROWTH

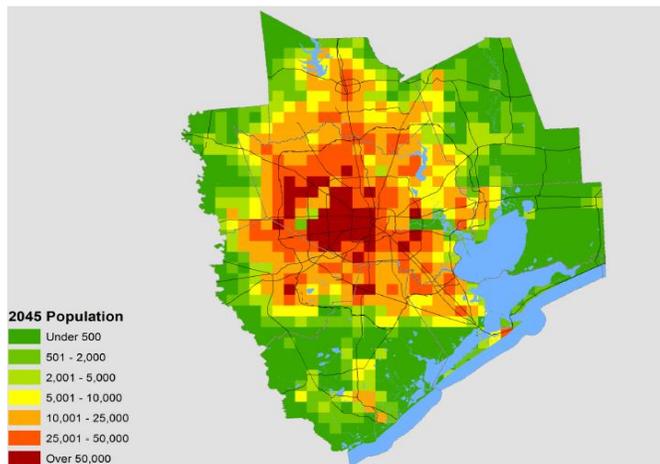
“We know where population will locate, where jobs will locate and where distribution infrastructure will be needed and where opportunities exist.”



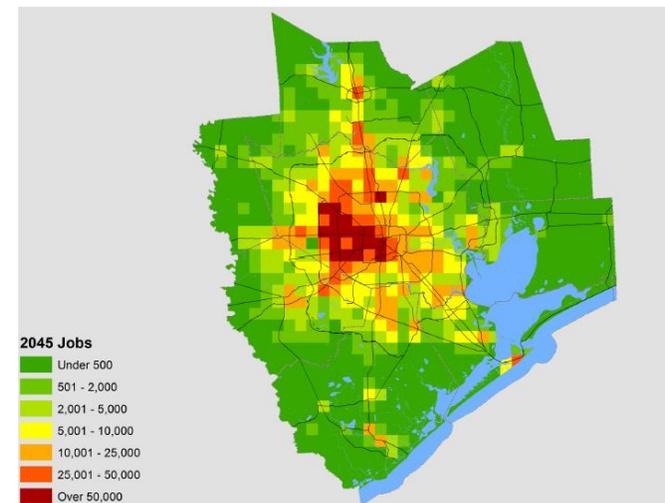
2015 Population



2015 Jobs



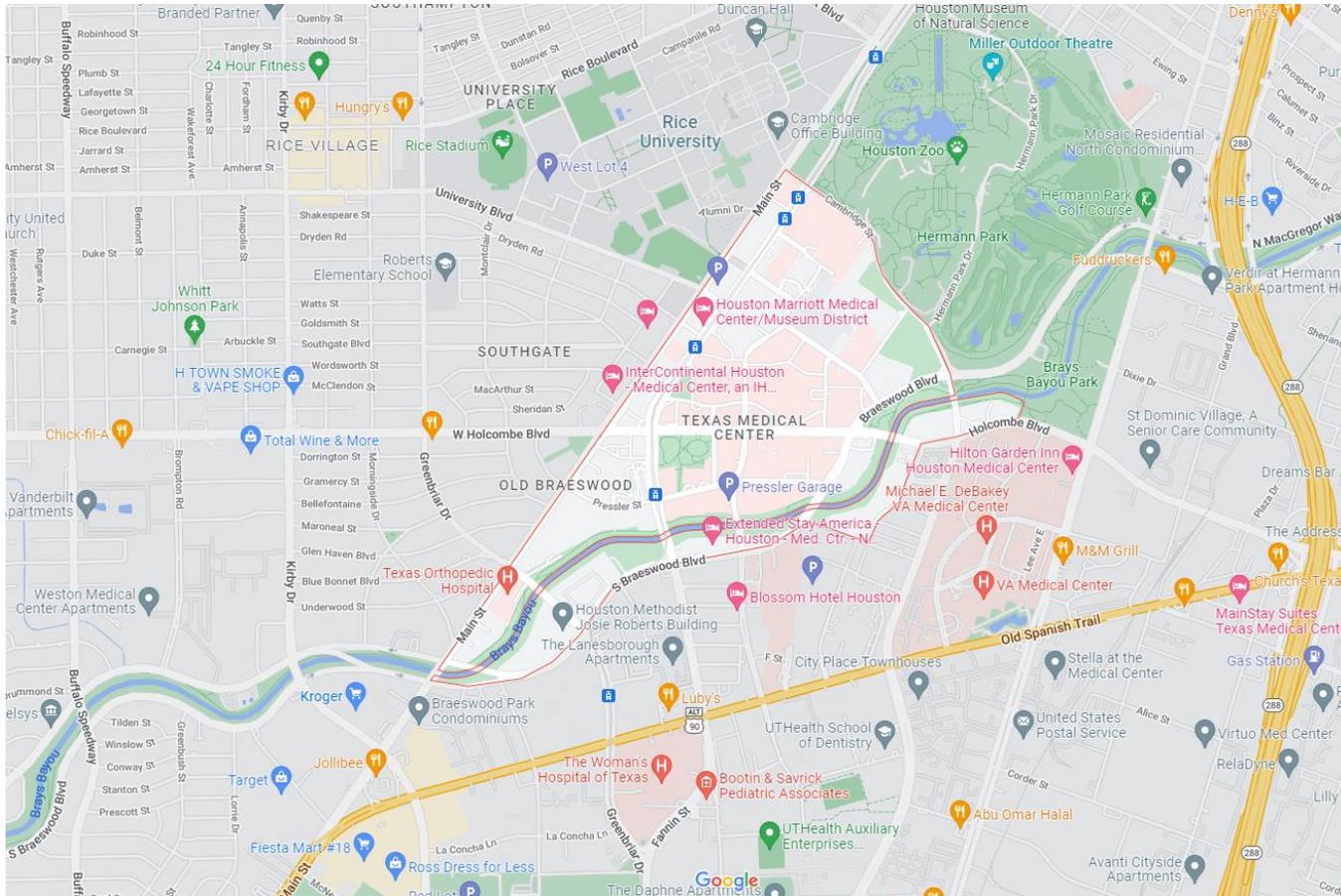
2045 Population



2045 Jobs

CONNECTIVITY: GROWTH OF TEXAS MEDICAL CENTER

THE GLOBAL LEADER IN HEALTHCARE



- TMC BioPort Announcement
- South of TMC Buffalo Speedway/Holmes Road
- Biomanufacturing and Medical Supplies
- Repatriation Critical Medical Supplies and New Cell and Gene Therapies, On-site Upskill Training Center
- Creating Over 100,000 New Jobs

Source: Google Maps

Source: https://www.houstonpublicmedia.org/articles/news/health-science/2022/09/20/433421/texas-medical-center-announces-new-center-for-biomanufacturing/?utm_source=rss-health-science-article&utm_medium=link&utm_campaign=hpm-rss-link



CONNECTIVITY: GROWING OPPORTUNITY LNG

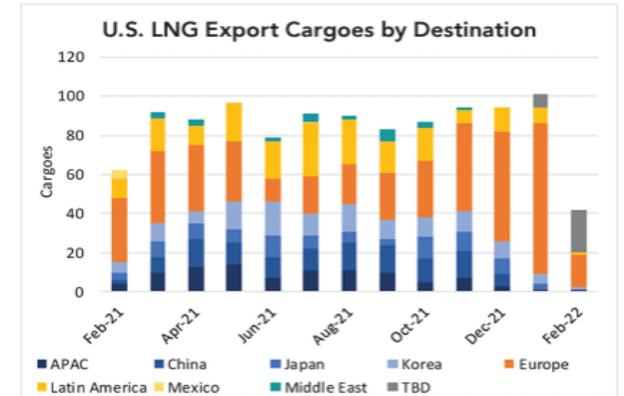
Meet Bryan Martinez, Supply Chain & Logistics Tech student, now as an SAP Master Data Intern at **Freeport LNG**.



OF THE 180 LNG CARGOES that departed the U. S. to date in 2022, **122 WERE SENT TO EUROPE.**

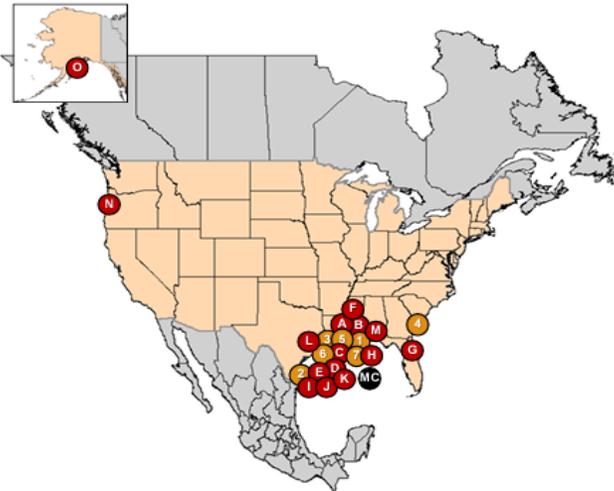
EUROPE HAS RECEIVED NEARLY 70% OF ALL U.S. LNG cargoes exported in 2022 to date.

THE U.S. LED LNG EXPORT GROWTH in 2021 with a year-on-year increase of **24 MILLION TONNES.**



Source: RBN Energy

North American LNG Export Terminals Approved, Not Yet Built



U.S. Jurisdiction & Status	
Orange dot	FERC - Approved, Under Construction
Red dot	FERC - Approved, Not Under Construction
Black dot	MARAD / U.S. Coast Guard

Export Terminals

UNITED STATES

APPROVED - UNDER CONSTRUCTION - FERC

1. Hackberry, LA: .71 Bcf/d (Sempra-Cameron LNG Train 3) (CP13-25)
2. Corpus Christi, TX: 0.72 Bcf/d (Cheniere-Corpus Christi LNG Train 2) (CP12-507)
3. Sabine Pass, LA: 0.7 Bcf/d Train 6 (Sabine Pass Liquefaction) (CP13-552)
4. Elba Island, GA: 140 MMcf/d (Southern LNG Company Units 7-10) (CP14-103)
5. Cameron Parish, LA: 1.41 Bcf/d (Venture Global Calcasieu Pass) (CP15-550)
6. Sabine Pass, TX: 2.1 Bcf/d (ExxonMobil - Golden Pass) (CP14-517)
7. Calcasieu Parish, LA: 4.0 Bcf/d (Driftwood LNG) (CP17-117)

APPROVED - NOT UNDER CONSTRUCTION - FERC

- A. Lake Charles, LA: 2.2 Bcf/d (Lake Charles LNG) (CP14-120)
- B. Lake Charles, LA: 1.08 Bcf/d (Magnolia LNG) (CP14-347)
- C. Hackberry, LA: 1.41 Bcf/d (Sempra - Cameron LNG Trains 4 & 5) (CP15-560)
- D. Port Arthur, TX: 1.86 Bcf/d (Port Arthur LNG Trains 1 & 2) (CP17-20)
- E. Freeport, TX: 0.72 Bcf/d (Freeport LNG Dev Train 4) (CP17-470)
- F. Pascagoula, MS: 1.5 Bcf/d (Gulf LNG Liquefaction) (CP15-521)
- G. Jacksonville, FL: 0.132 Bcf/d (Eagle LNG Partners) (CP17-41)
- H. Plaquemines Parish, LA: 3.40 Bcf/d (Venture Global LNG) (CP17-66)
- I. Brownsville, TX: 0.55 Bcf/d (Texas LNG Brownsville) (CP16-116)
- J. Brownsville, TX: 3.6 Bcf/d (Rio Grande LNG - NextDecade) (CP16-454)
- K. Brownsville, TX: 0.9 Bcf/d (Annova LNG Brownsville) (CP16-480)
- L. Corpus Christi, TX: 1.86 Bcf/d (Cheniere Corpus Christi LNG) (CP18-512)
- M. Sabine Pass, LA: NA Bcf/d (Sabine Pass Liquefaction) (CP19-11)
- N. Coos Bay, OR: 1.08 Bcf/d (Jordan Cove) (CP17-494)
- O. Nikiski, AK: 2.63 Bcf/d (Alaska Gasline) (CP17-178)

APPROVED - NOT UNDER CONSTRUCTION - MARAD/Coast Guard

- MC. Gulf of Mexico: 1.8 Bcf/d (Delfin LNG)

CANADA

For Canadian LNG Import and Proposed Export Facilities:

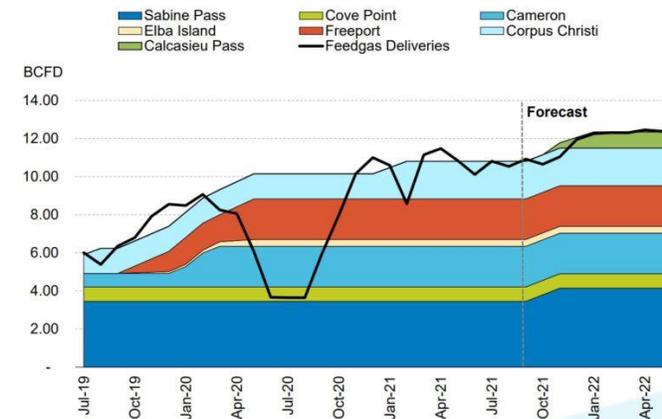
<https://www.nrcan.gc.ca/energy/natural-gas/5683>

As of May 29, 2020



U.S. LNG Exports: Steady Growth Expected to Continue

U.S. LNG Export Capacity vs. Feedgas Deliveries



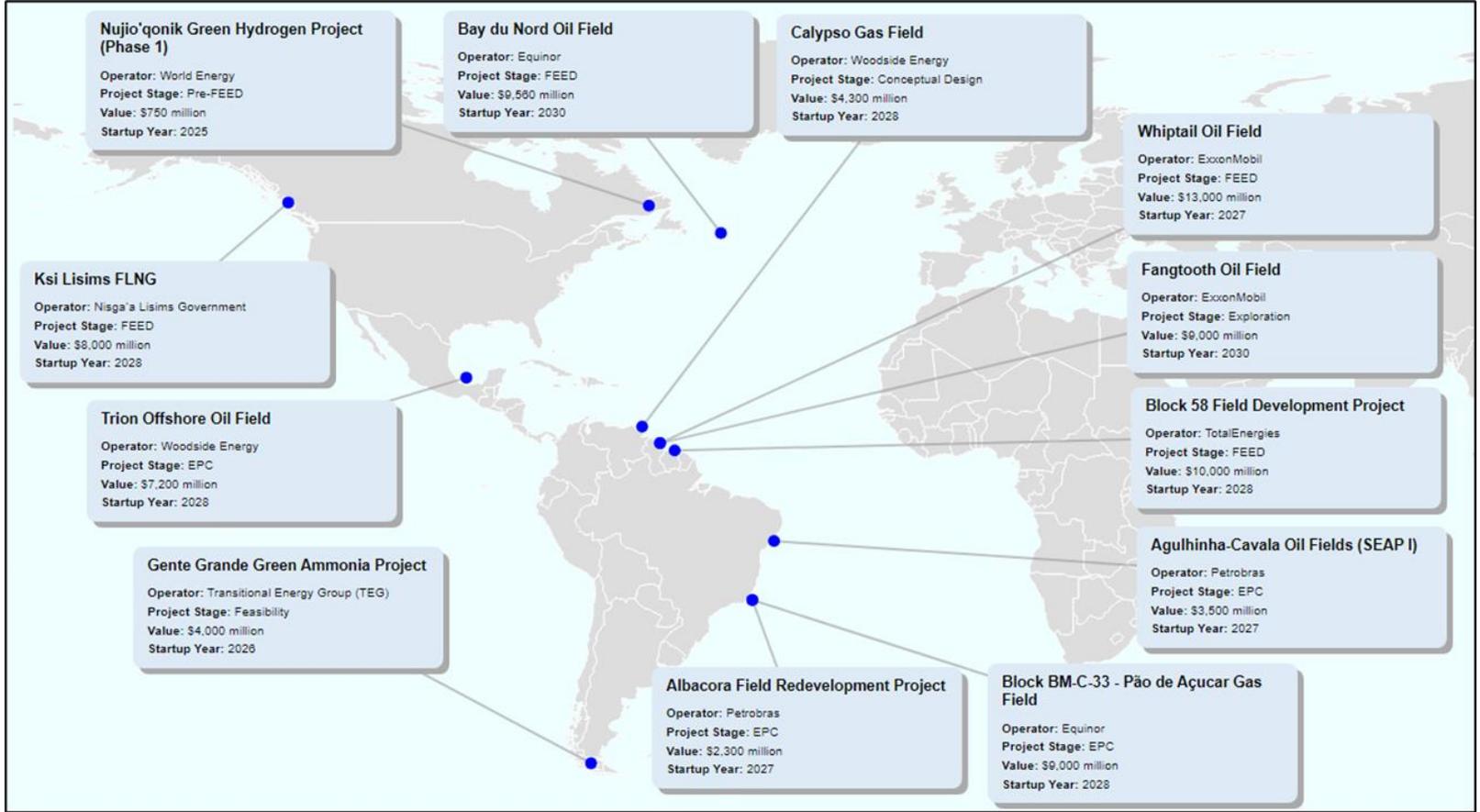
Data Source: Energy Ventures Analysis, EIA

2021-2022 Winter Outlook

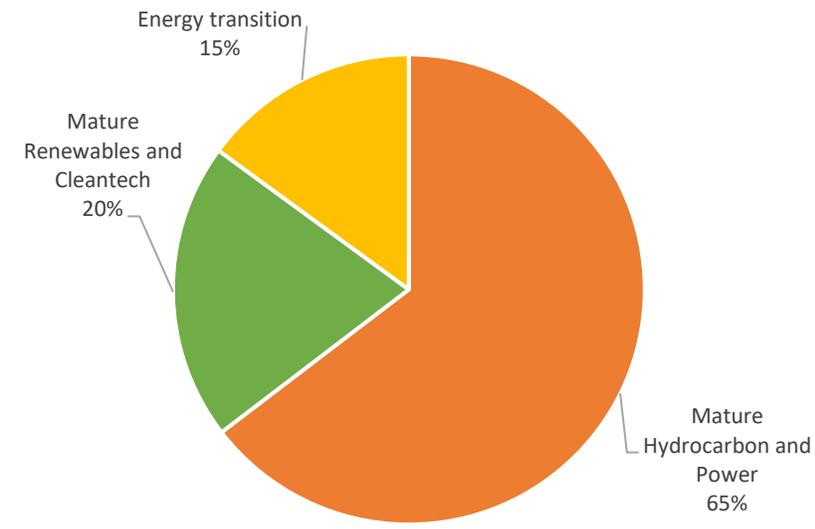
Source: <https://www.lngfacts.org/lng-export-markets/#1591194106721-209948f8-bb72>



OPPORTUNITIES NEAR-TERM NORTH & CENTRAL AMERICA



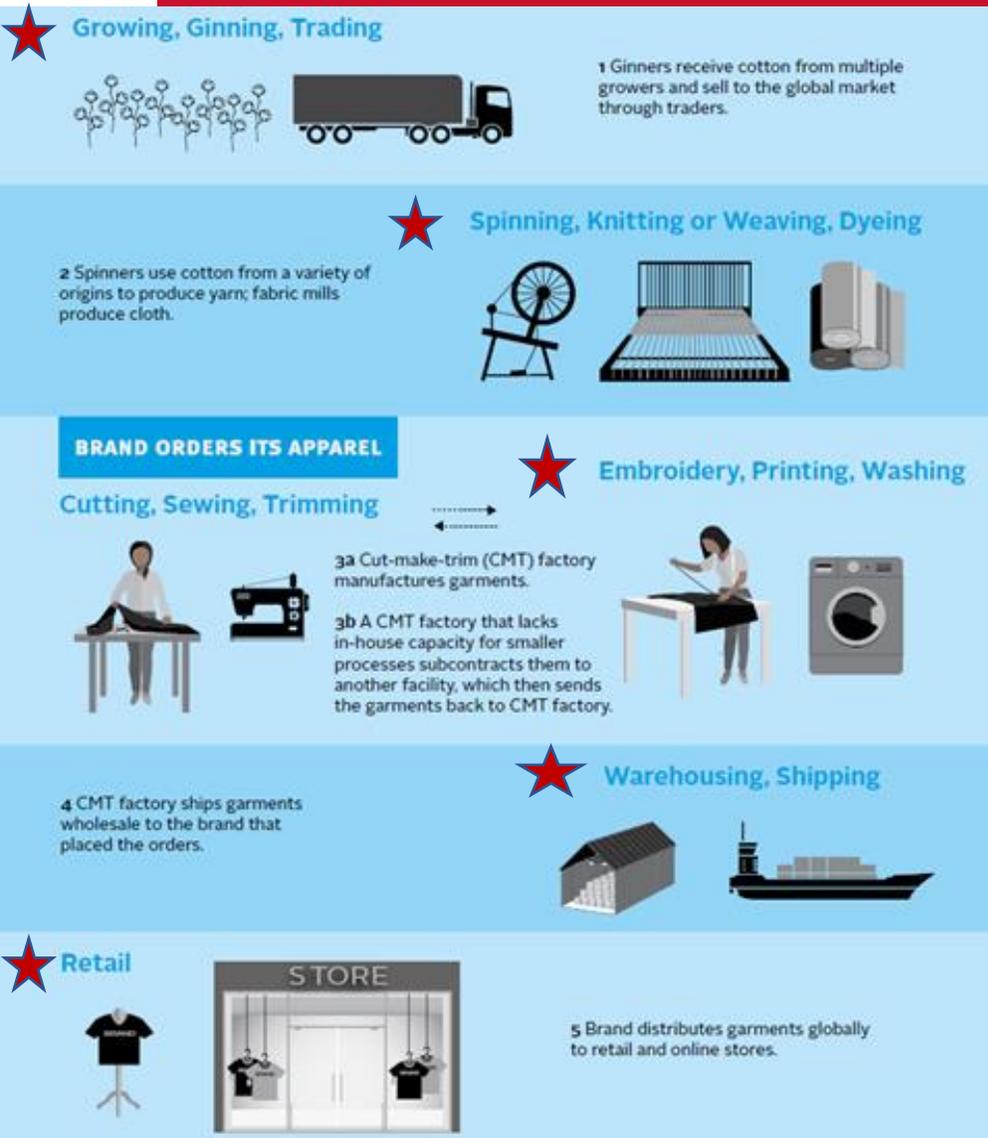
Key sectors by CAPEX (start-up by 2028)



Source: Energy Industries Council. (2023, Oct 11). Market Update Meeting North and Central America Advisory Board.
 Source: <https://www.energy.gov/articles/getting-most-out-solar-panels>
 Source: <https://www.energy.gov/eere/wind/how-do-wind-turbines-work>

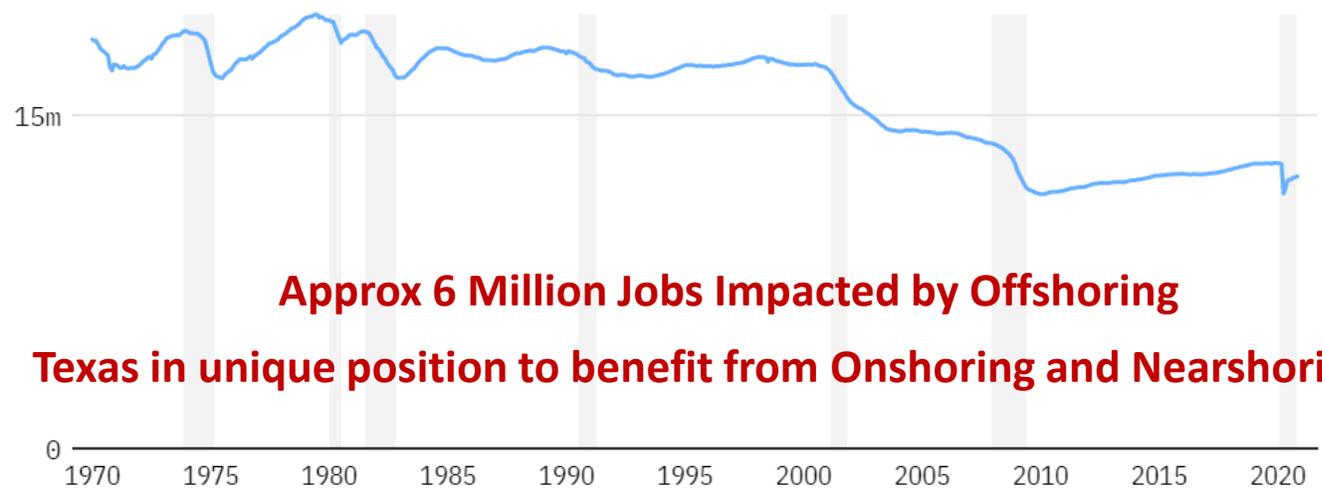


WHAT IS SUPPLY CHAIN? WHAT IS IMPACT US MANUFACTURING?



US manufacturing jobs are in long-term decline

Number of manufacturing jobs in the US, 1970–2020



Highlighted periods indicate US recessions

Source: US Bureau of Labour Statistics

INVESTMENTMONITOR

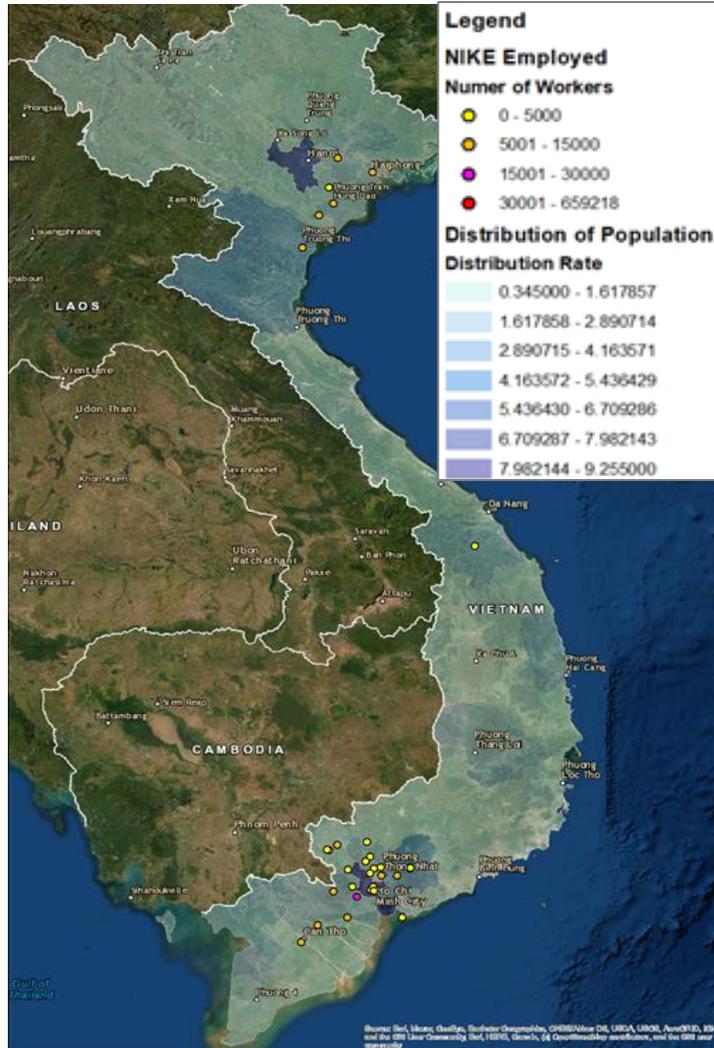
- 18.4 million jobs 1970
- 12.25 million jobs 2020
- COVID rethink near shoring, friend shoring and onshoring
- Economic and national security
- Need for strong tax incentives to return
- Automation solution for wage issue

Source: <https://www.investmentmonitor.ai/manufacturing/think-nearshoring-will-bring-back-us-manufacturing-jobs-think-again>

Source: <https://www.unpri.org/social-issues/the-potential-human-rights-issue-companies-face-when-making-a-t-shirt/479.article>



COMPELING NEED FOR ON SHORE, NEAR & FRIEND SHORE



- ❑ China Power Outages, Port & Manufacturing Closures, Population Lockdowns
- ❑ Vietnam COVID Lockdown
- ❑ 50% Nike Tennis Shoes Manufactured Vietnam

NEAR SHORING AND FRIEND SHORING

Logistics Challenges and Opportunities

Lessons learned during COVID – need for geographic diversification of suppliers and manufacturing. Mexico has a competitive advantage bordering the worlds largest consumer market, solving the headache:



- 1 Supply chain lead time, delays, costs and uncertainties
- 2 Availability and cost of trained or trainable labor
- 3 Compliance and incentives

Nearshoring as a Solution



Source: Adapted from The Nearshoring Company. (2023 Oct 12). How to Successfully Manufacture in Mexico.

Source: <https://www.bnsf.com/ship-with-bnsf/maps-and-shipping-locations/mexico/network-map.html>

Source: <https://lpi.worldbank.org/international/scorecard/radar/C/MEX/2023>



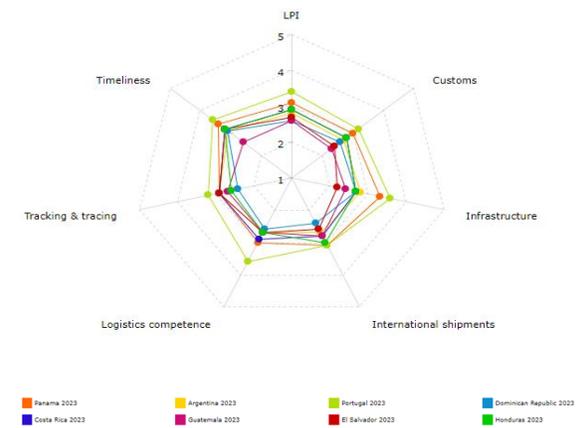
GRUPO CONSULAR IBERO AMERICANO TRADE USA



“More Opportunities for Near Shoring and Friend Shoring”



2022 US Exports and Country Exports to US



Source: <https://www.cia.gov/the-world-factbook/>
 Source: <https://lpi.worldbank.org/international/scorecard/radar/C+PAN+2023+C+ARG+2023+C+PRI+2023+C+DOM+2023+C+CRI+2023+C+GTM+2023+C+SLV+2023+C+HND+2023>
 Source: <https://apps.bea.gov/international/factsheet/>
 Source: Bureau of Economic Analysis. (2023, Oct 17). International Trade and Investment Country Fact. Retrieved from: <https://apps.bea.gov/international/factsheet/>



TRADE & MANUFACTURING = ECONOMIC DEVELOPMENT

**Project 11 –
Houston Ship
Channel**

**Port Freeport –
Channel Project**

**No State Tax
Educated
Workforce**

**Cost Living
Business Friendly
Environment**

**Highway 36A –
Expansion**

**152 Million
Consumers Within
1000 Miles**

**Corporate
Relocation
HPE, Oracle, Tesla,
Samsung + 100**

**On Shore
Near/Friend Shore
Energy Transition**

**Increased Trade
Panama Canal
Max 14,000 TEU's**

**Electric Vehicle Mfg. –
Autonomous Truck
Piloting Texas**



UNIVERSITIES KEY DETERMINATES FOR REGIONAL COMPETITIVENESS

In terms of workforce development and research that meets industry needs. Both UH and the SCLT Program are players in the development of a regional knowledge economy. The relationship between UH/SCLT and the regional supply chain ecosystem could be understood in terms of:

- ❑ Contributor to local economic development.
- ❑ Knowledge enterprise and supplier of human and intellectual capital.
- ❑ **Deliberative partnerships** between UH/SCLT with city, county, region, state, nation, and global stakeholders along with private entities **around projects of mutual benefit** .
- ❑ Spatial development of UH as a meeting point between the university, city, county, and supply chain ecosystem stakeholders for stimulating economic development and managing growth.

The collaboration between the regional supply chain ecosystem stakeholders along with global partners impacts the competitiveness for the Texas Gulf Coast and the State of Texas.



YTexas Summit 2022, L to R: Houston Business Journal President, Robert Charlet , Margaret Kidd, Program Director Supply Chain & Logistics Technology, University of Houston, and Howard Hughes, President, Jay Cross.

Collaboration is needed to support continued growth in **international trade** and new **manufacturing** in a **sustainable manner** for our region.

COLLABORATE INVESTMENT IN FUTURE OF SUPPLY CHAIN

INVENTORY FOR JUST IN CASE

WORKFORCE DEVELOPMENT

**ENERGY &
ENERGY
TRANSITION**

Supply Chain & Logistics Technology BS Degree, University of ...
STEM DEGREE

**WATERSIDE
INFRASTRUCTURE
CRITICAL LINK**

**STATE LEVEL
SUPPORT
WATERSIDE
INFRASTRUCTURE**

Watch on  YouTube

LOGISTICS AS SERVICE - AMAZON

**STREAMLINE
PERMITTING
INFRASTRUCTURE &
CAPITAL PROJECTS**

**TECHNOLOGY FOR VISIBILITY &
AUTOMATION**

**PUBLIC POLICY TO
SUPPORT LONG TERM
CAPEX INVESTMENT**

ON, NEAR, & FRIEND SHORE



<https://www.ttnews.com/newsmakers/investing-in-future-of-supply-chain>

<https://youtu.be/kJ-1f-QFge0>

COLLABORATE TO UPSKILL GLOBAL WORKFORCE

GLOBAL TRADE PROFESSIONAL CERTIFICATION



Supply Chain
& Logistics Technology
Cullen College of Engineering



NCBFAA
NATIONAL CUSTOMS BROKERS &
FORWARDERS ASSOCIATION OF AMERICA, INC.
VOICE OF THE INDUSTRY SINCE 1897

Imports and Exports

Headquartered in Washington, DC, the NCBFAA represents more than 1,000 member companies with 110,000 employees in international trade.

Nation's leading freight forwarders, customs brokers, ocean transportation intermediaries (OTIs), NVOCCs and air cargo agents, serving more than 250,000 importers and exporters.

Established in 1897 in New York, NCBFAA is the effective national voice of the industry.

Partnered with the University of Houston Supply Chain & Logistics program.

UNIQUE TO UNIVERSITY OF HOUSTON

Register Today: <https://dot.egr.uh.edu/programs/professional/national-customs-brokers-forwarders-association-of-america-certifications>



COLLABORATE TO EXPAND GLOBAL TRADE CONVERSATION

**5TH ANNUAL
CONFERENCE**
APRIL 2-4, 2024
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