



February 12,
2019

PORT HOUSTON
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Port Houston Update

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Discussion Topics



- Port Houston 2018 Highlights
- Focus: Houston Ship Channel
- Development Plans



Breakfast!

Lots of Work Behind the Scenes



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Economic Activity

Energy Corridor...

Med Center...

West Texas
Production...

Texas
Triangle



ON

Port Houston... Behind the Scenes



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1899

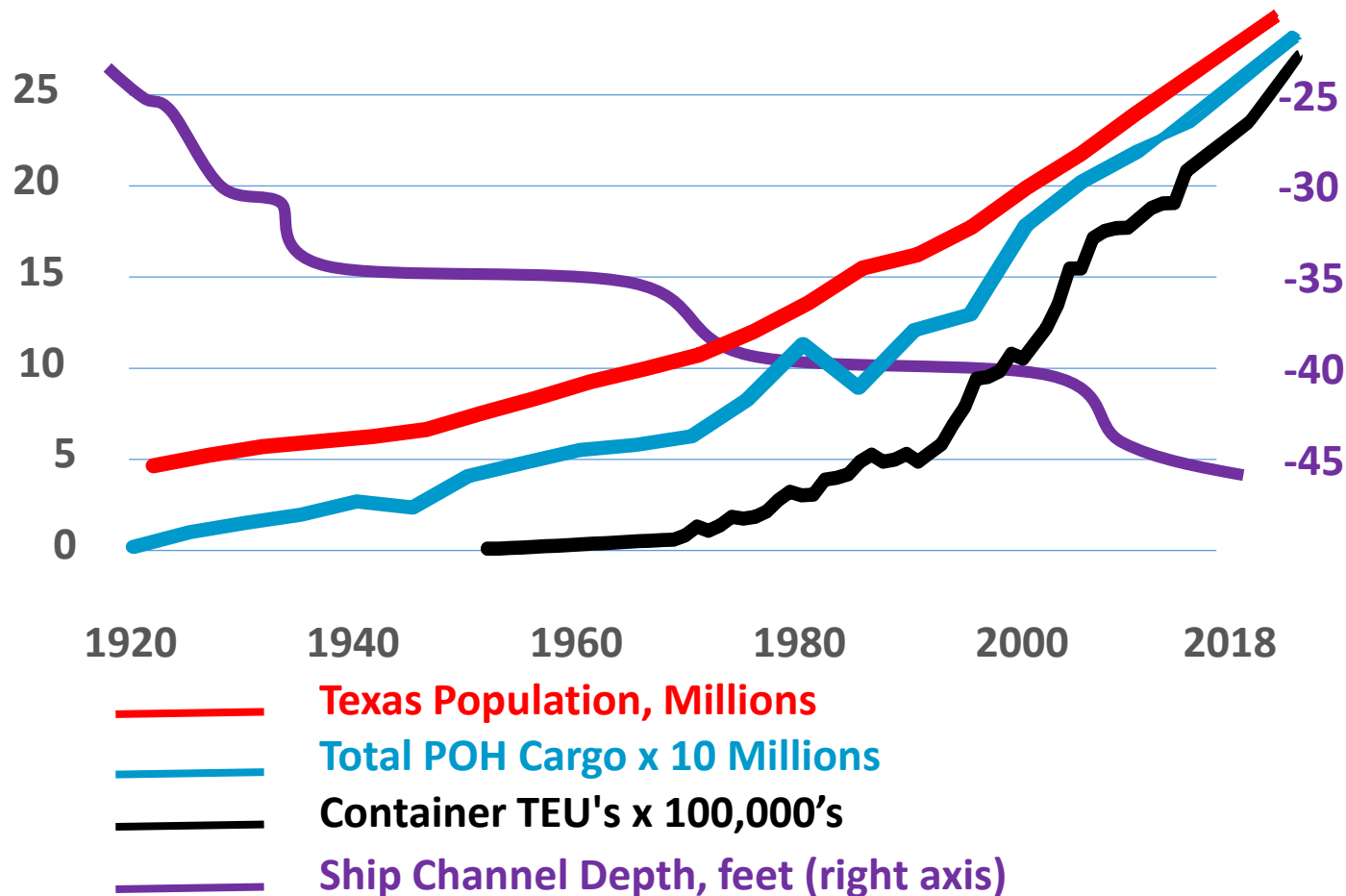


Largest Cargo. This is a scene on Buffalo Bayou. The barge was loaded October 30, 1899, from Houston Converting Plant, with 5,300 Lowery bales of cotton, weighing 1,285,861 pounds. Loaded on Steamship Catania, in Boliver Roads, for Boston, and not touching Galveston wharves. Capacity of barge, 650 tons. This is the largest cargo of cotton ever loaded on Buffalo Bayou. See steamship, page 11.

2019



Port Houston's Success: Growth supported by Innovation



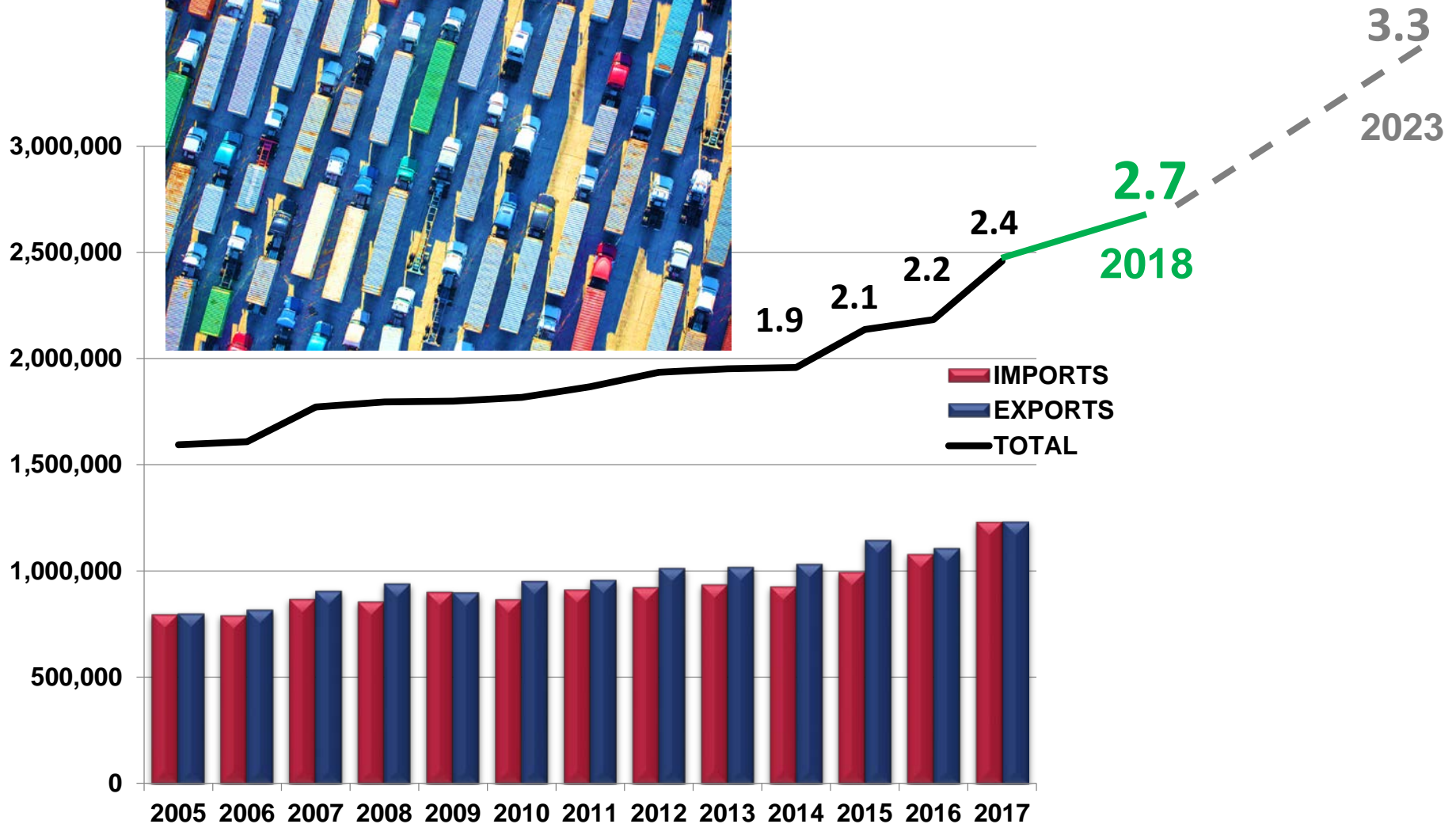
Containers



Container Growth



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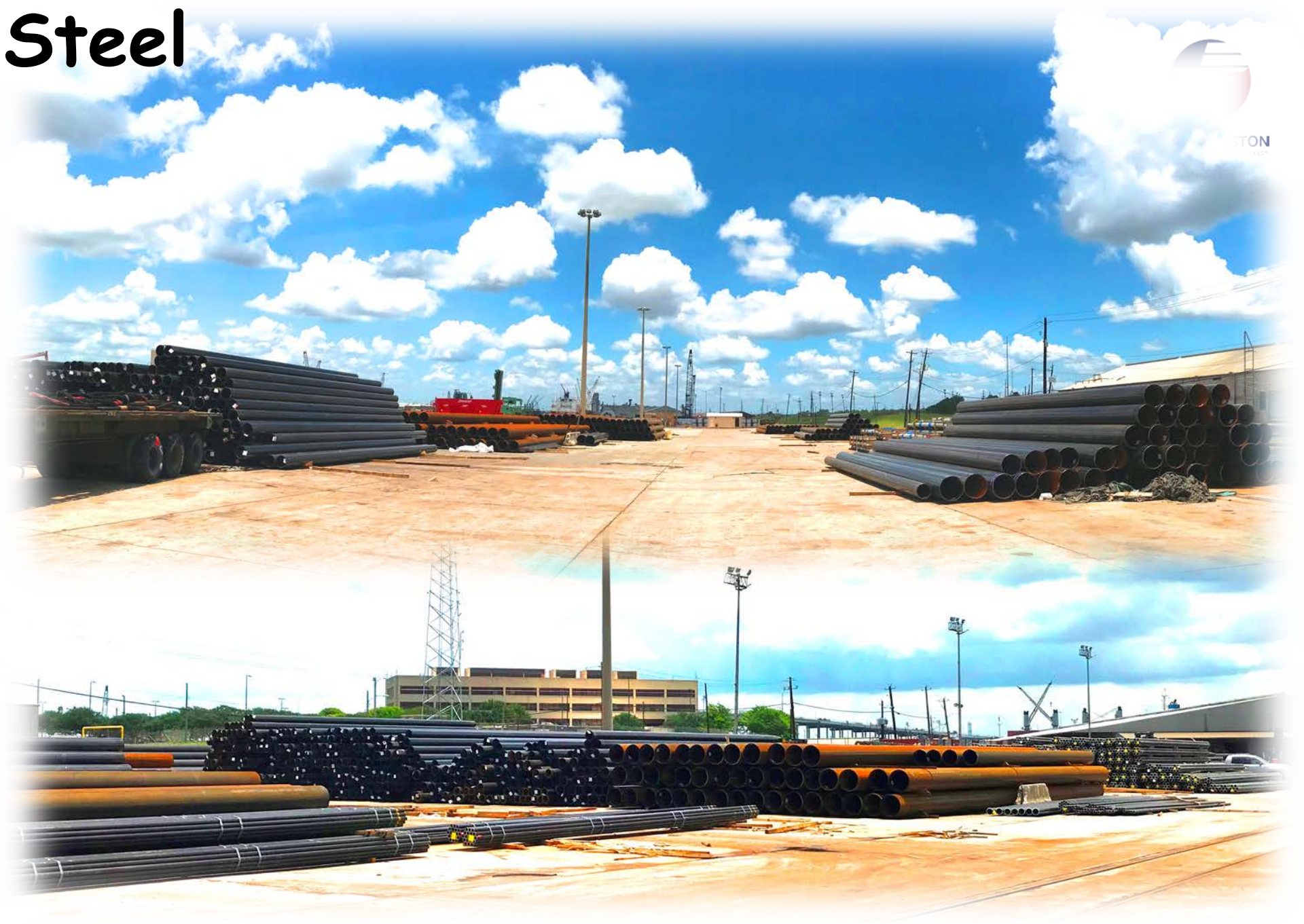
Note: Totals include empty containers

Source: PHA Accounting, PHA Market Development

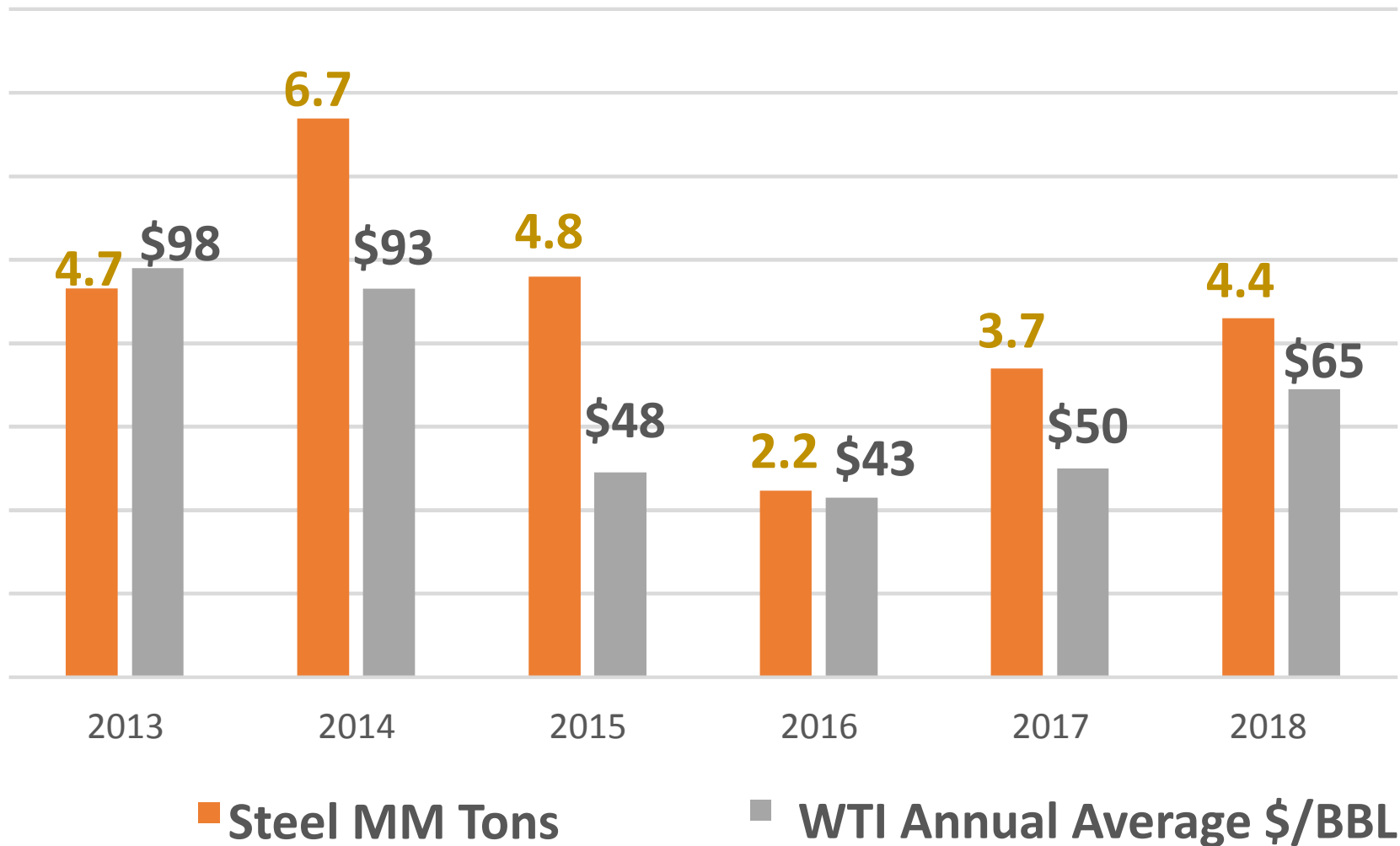
Steel



PORT OF
HOUSTON
TX



Steel up 21%



2018 Built: Container Yard 6 South @ Bayport



2018 Built: Container Yard 1 and East End at Barbours Cut



Rehabilitating Old City Docks



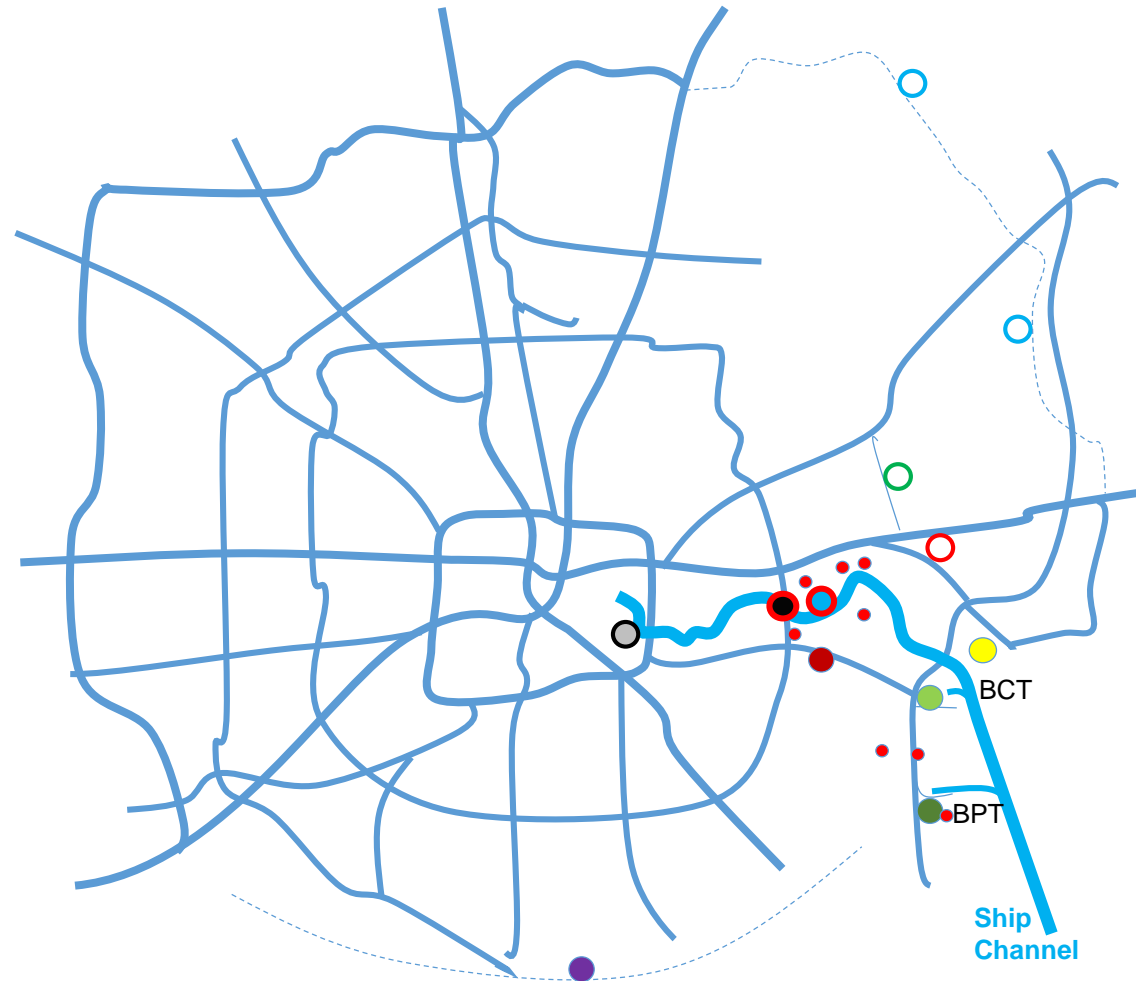
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Priority: Freight Mobility

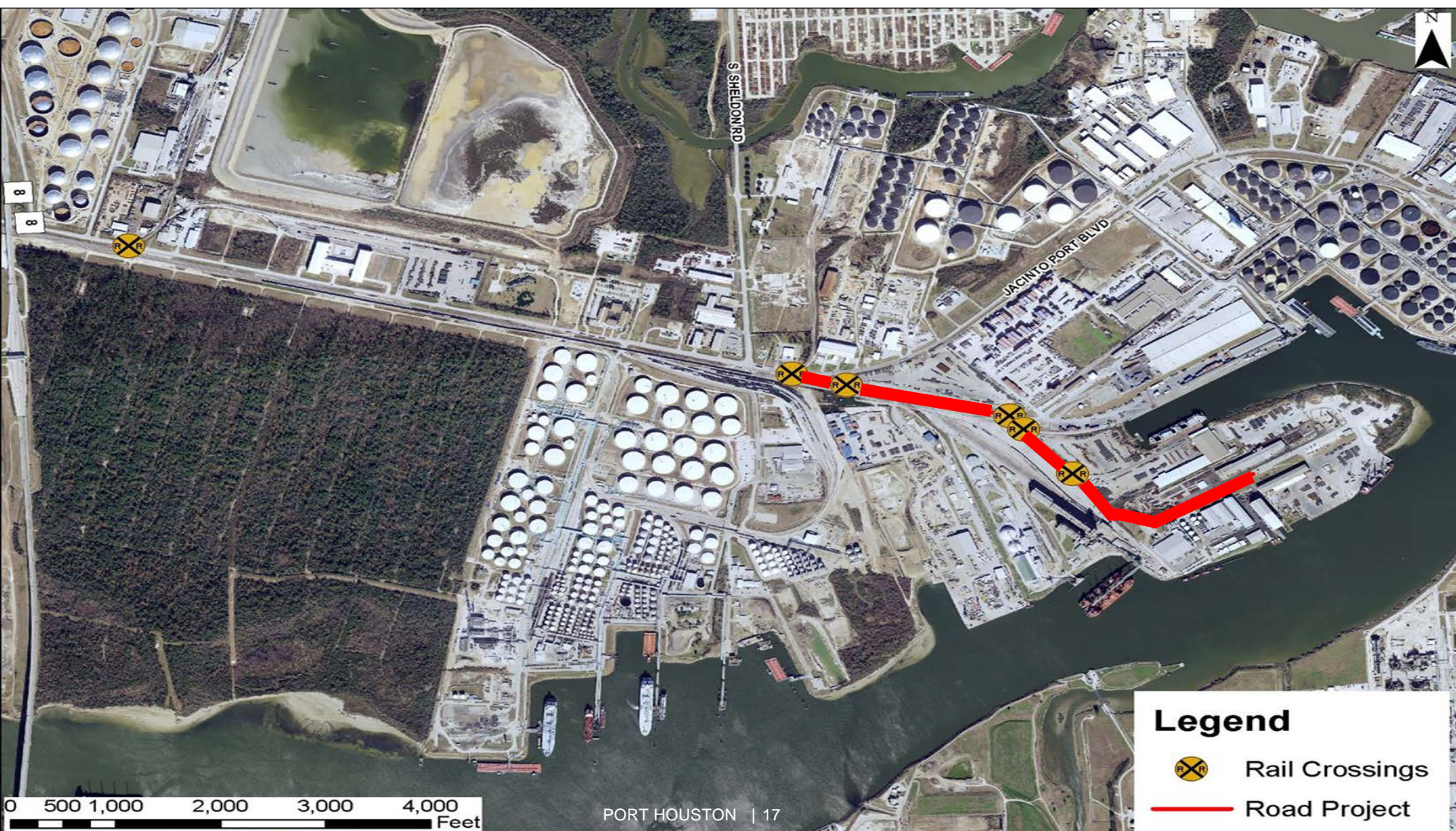
Example Current & Potential Area Projects

- 99 Sections H & I
- Crosby-Lynchburg Improvements
- SH 330 Connectivity
- Peninsula Road Expansion
- RR Double-track at Broadway
- BW-8 Bridge Expansion
- SH 225 Expansion & Connectors
- Container Barges
- BCT Blvd to 146 connectors
- Bayport Port Road and RR Spur
- I-69 / 99S bypass
- Other road and rail improvements
- ✕ Inland distribution (not shown)



Project Start: Peninsula Road improvement

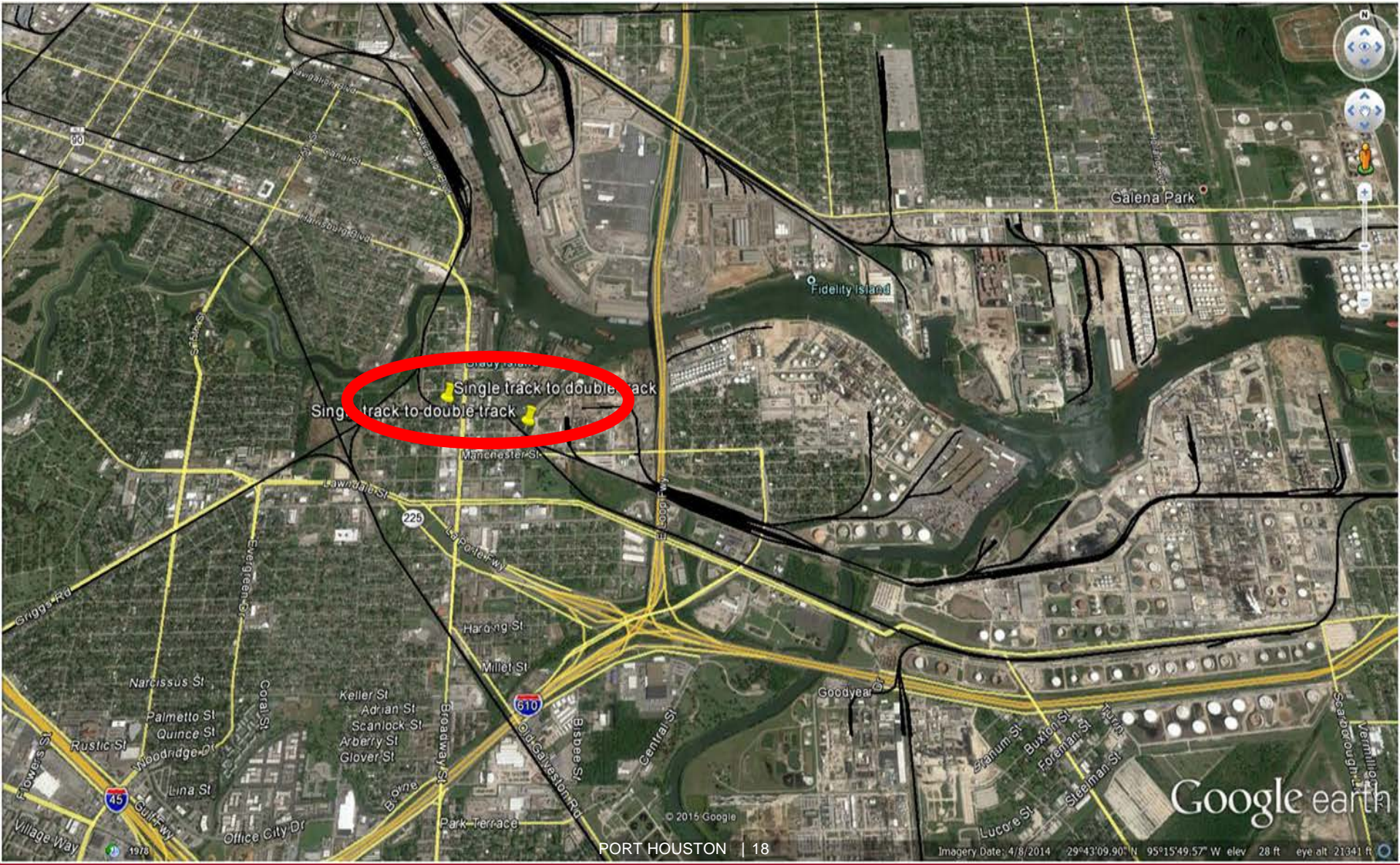
Working with TxDOT and Harris County



Legend

-  Rail Crossings
-  Road Project

Project Start: Broadway Double Track



Future is Bright, Supported by Fundamentals

**Real Gross Area Product Forecast
Houston-The Woodlands-Sugar Land MSA
\$ Billions***

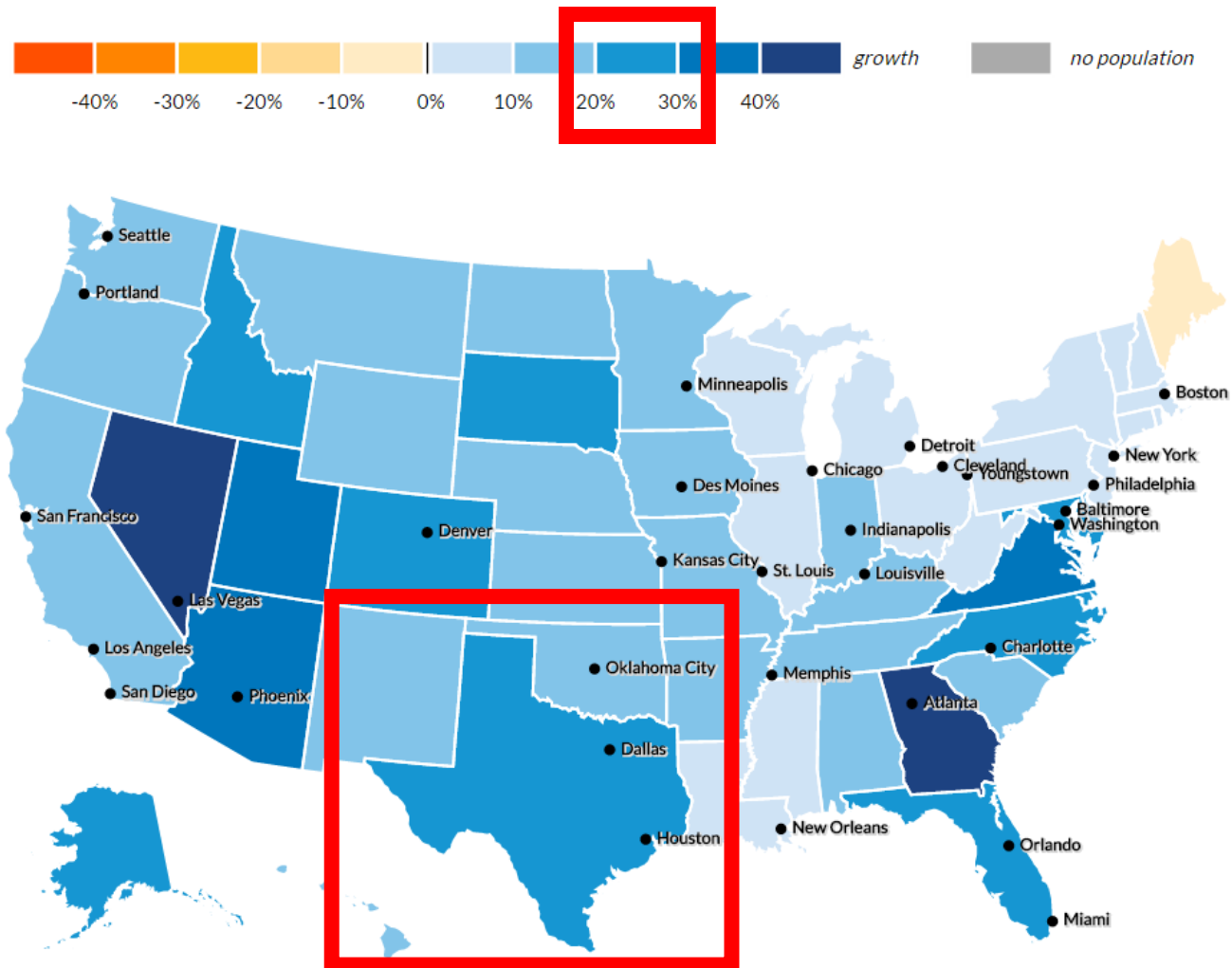


Source: 2018 Perryman Economic Forecast
*'09 Constant Dollars

Population Driving Imports



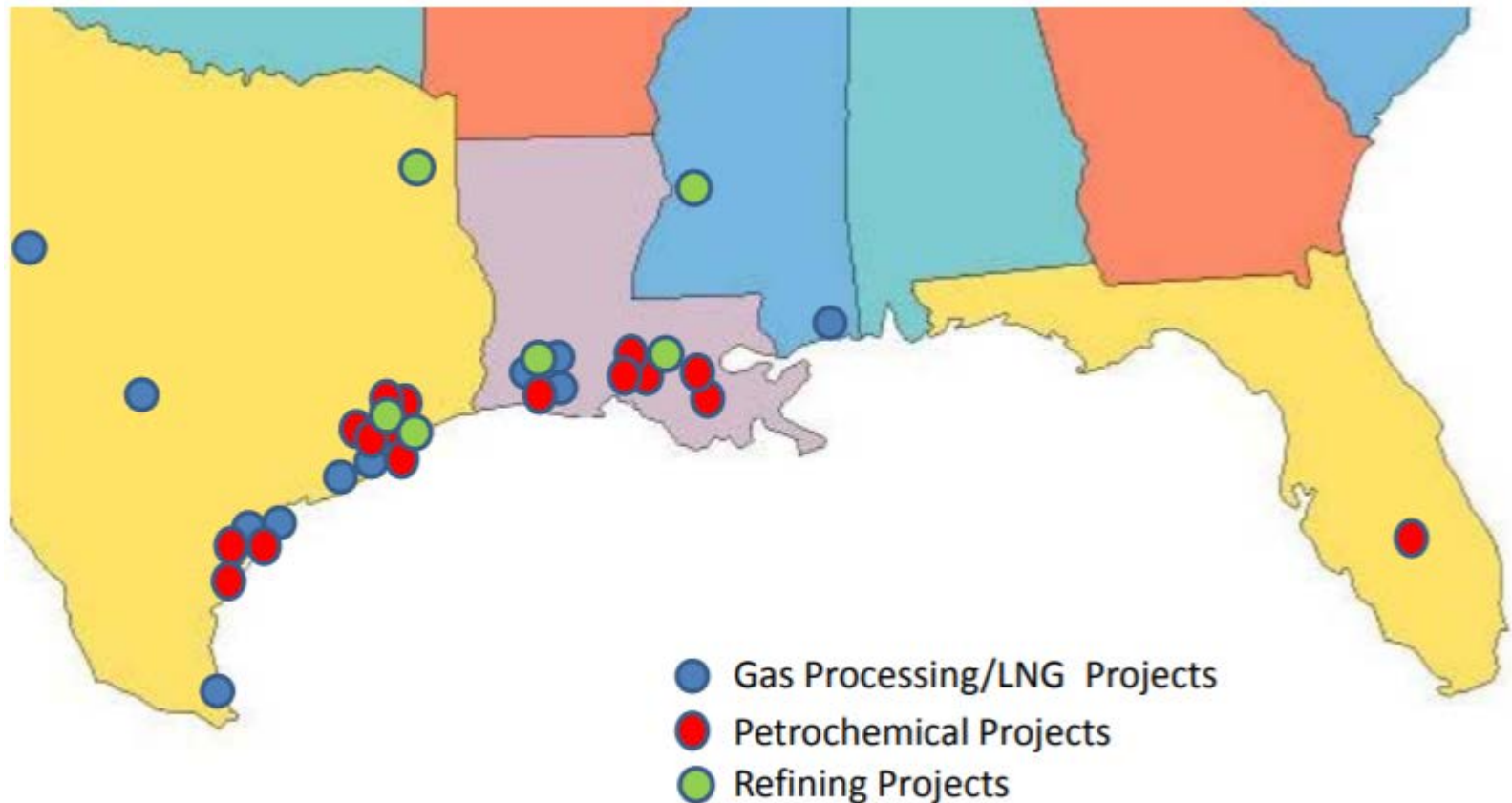
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Map Source: Urban Institute Mapping America's Futures

Manufacturing Driving Exports

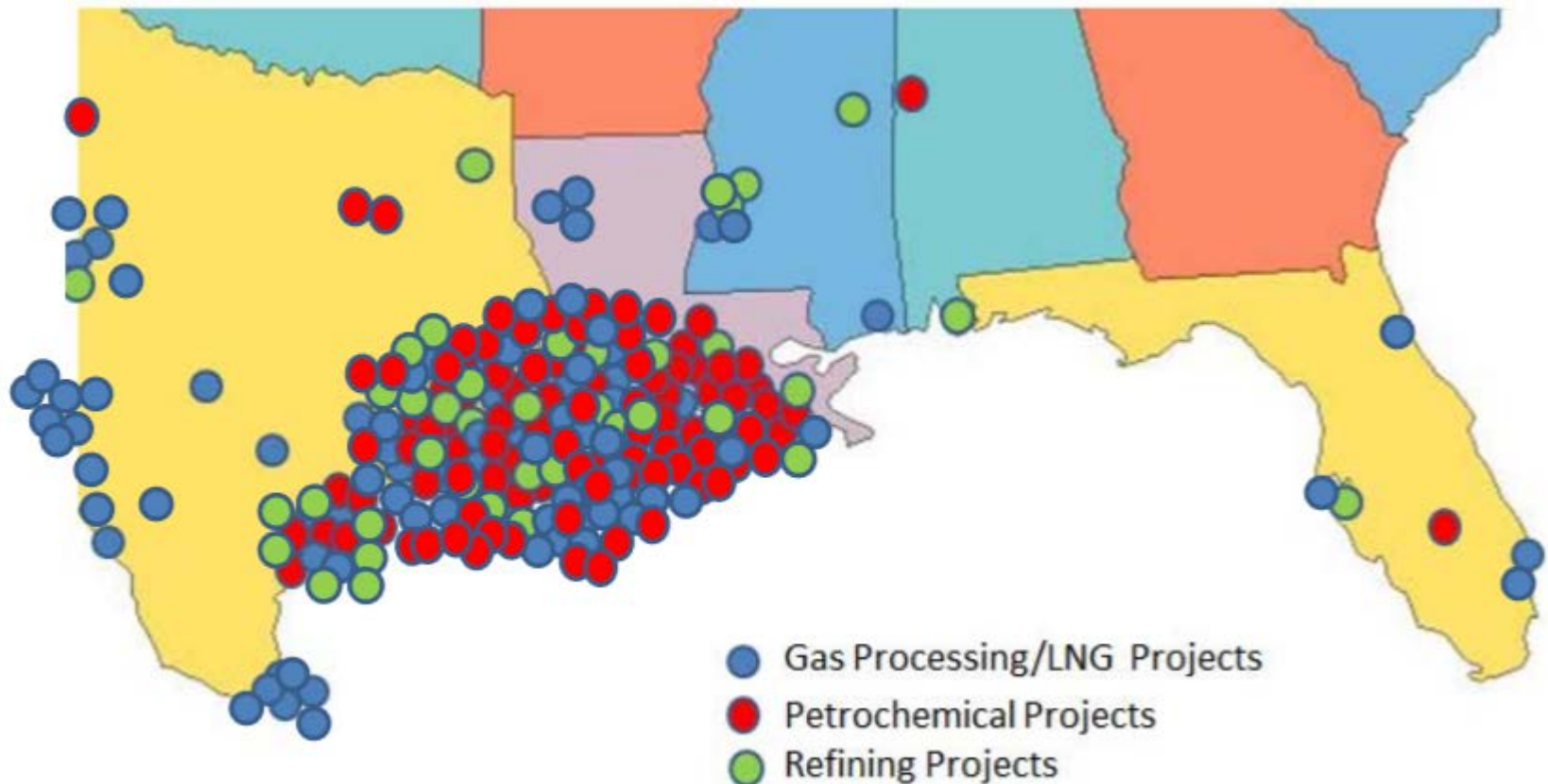
New Petrochemical Project Announcements – USGC 2012



Source: Lee Nichols, Hydrocarbon Processing Magazine, Energy Construction Form 3/16

Manufacturing Driving Exports

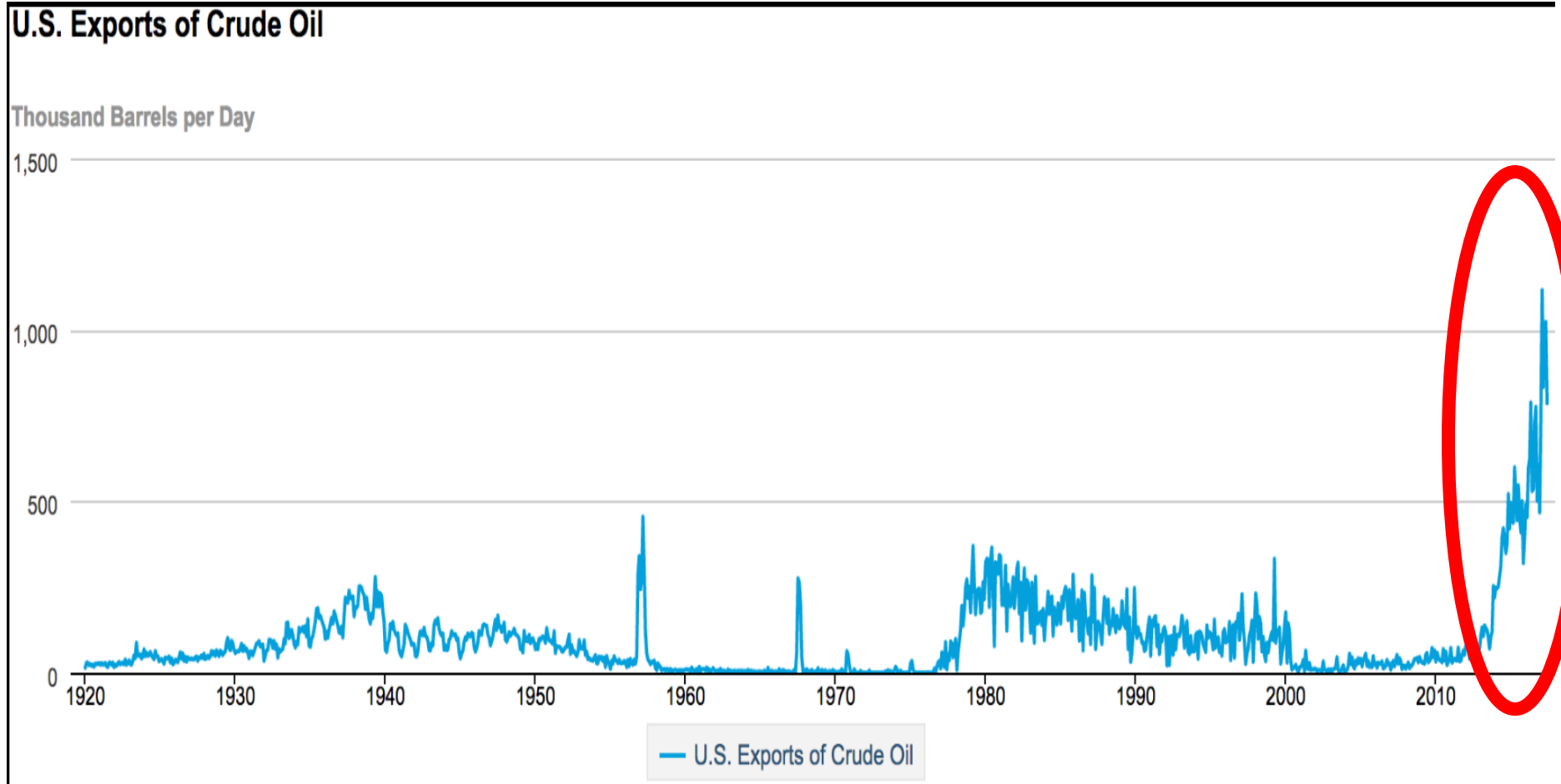
New Project Announcements – Through Q1-2016



Source: Lee Nichols, Hydrocarbon Processing Magazine, Energy Construction Form 3/16

Energy Sea Change

US Crude Oil Exports Since 1920





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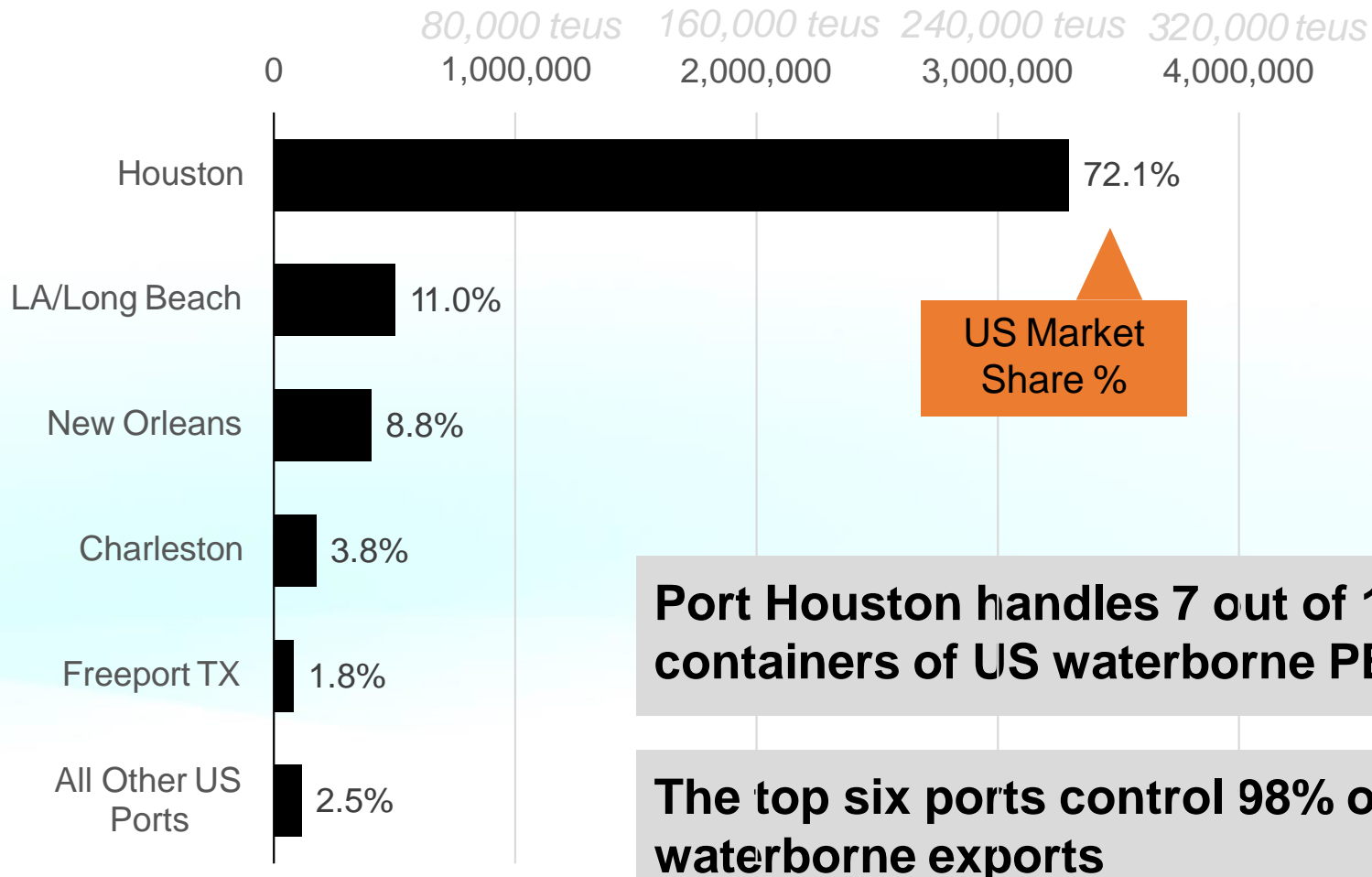


PORT HOUSTON DOMINATES US POLYETHYLENE EXPORT

Graph: US Waterborne PE Exports by Port

Units: Metric Tons; Time: 12 months to Oct 2018 (latest available data)

Source: Customs Data from Census Bureau



POLYETHYLENE EXPORT GROWTH

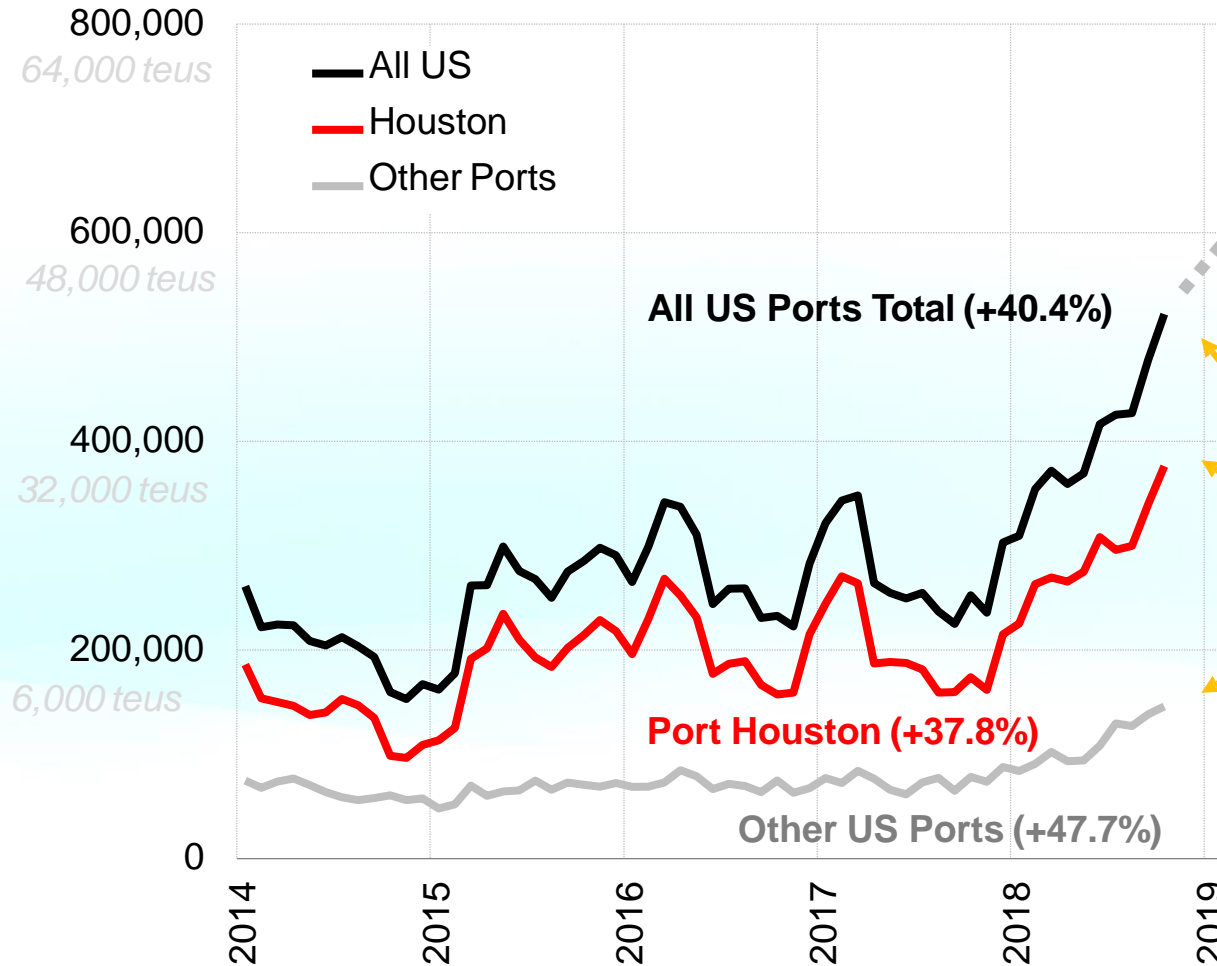


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Graph: US Waterborne Export of Polyethylene (PE) Resin

Monthly Metric Tons through Oct 2018 (latest available data)

Source: Customs Data from Census Bureau



Future PE
Export Growth

US PE export has exploded in 2018, as predicted.

Port Houston PE tonnage has increased twice as much as all other US ports combined in 12 months to Oct 2018

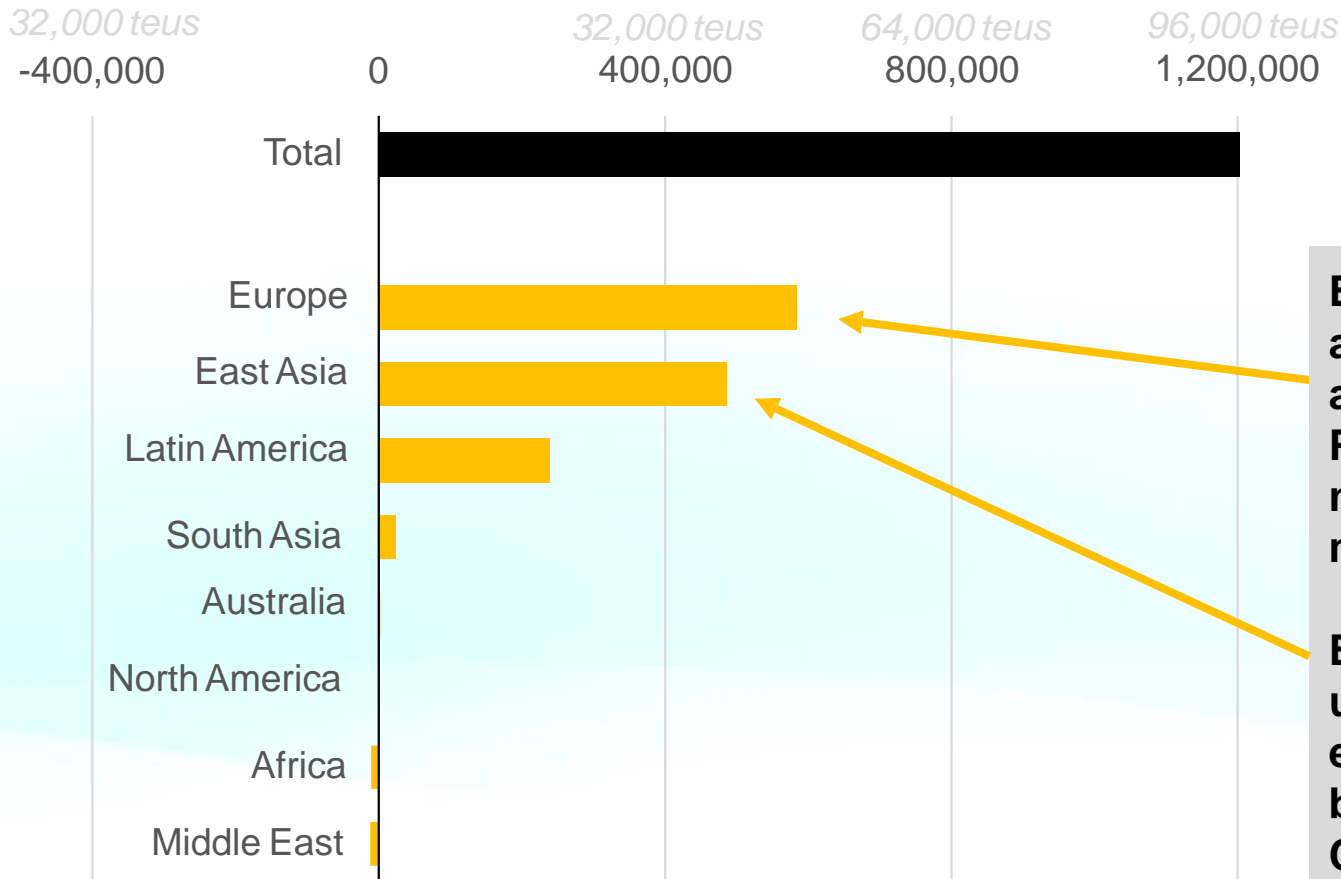
Percentage change reflects 12 months to Oct 2018 vs. 12 months to Oct 2017

POLYETHYLENE EXPORT TRADELANE GROWTH

Graph: Growth in US PE Exports by Tradelane

Based on Metric Tons in 12 months to Oct 2018 minus 12 months to Oct 2017

Source: Customs Data from Census Bureau



Europe has been absorbing significant amounts of incremental PE exports. This was not anticipated by market experts.

East Asia has been underperforming expectation. This may be due to tariffs in China.



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NEW MANUFACTURING PROJECTS ARE GROWING OUR ECONOMY & CREATING JOBS



333
new
chemical
industry
projects due
to shale gas*



\$202 billion
in new capital investment



431 thousand
direct & indirect jobs by 2025
355K add'l jobs generated by household spending



\$292 billion
in new economic output





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Texas chemistry...



At **\$166B**, is the
2nd largest
manufacturing
industry in the state



Makes Texas the
largest
chemistry producing
state



Provides
77,560 direct jobs
and another
435,150 related jobs



Generates
\$8.1B in payroll
across
1,108 establishments



Has an average wage of
\$104,800,
47% higher than
the average
manufacturing wage



Generates **\$750M**
in state & local taxes,
and **\$3.3B** in
federal taxes



Invests \$5.5B
to build & update
equipment and
facilities



Ships \$46.1B
in products to
customers around
the world



Generates an
additional
38,810 jobs
in plastics
& rubber products



RESPONSIBLE CARE
OUR COMMITMENT TO SUSTAINABILITY

americanchemistry.com

PORT HOUSTON CONTAINER BALANCE

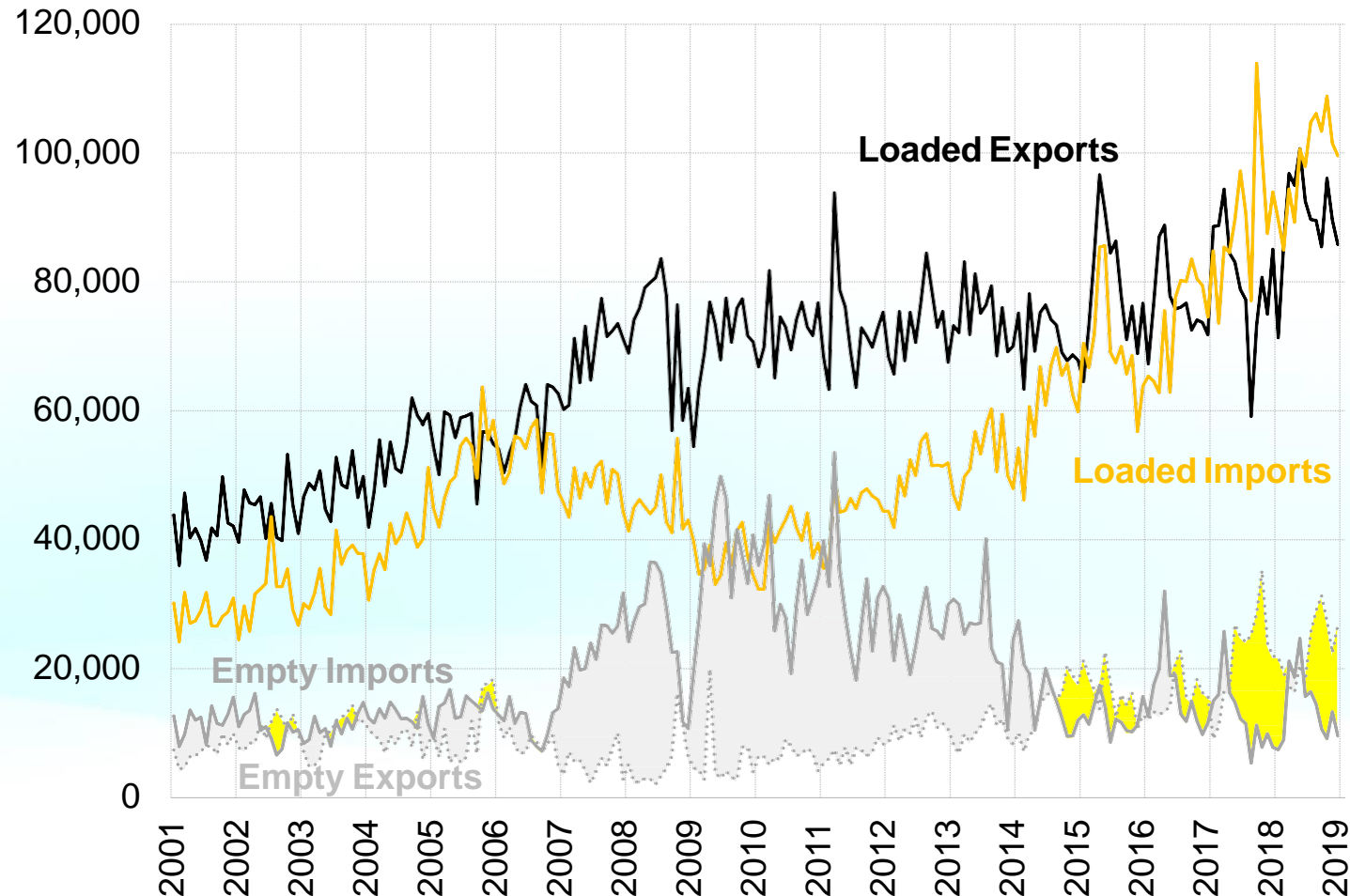


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Graph: Port of Houston Container Volume by Type

Source: PHA Accounting

Units: Monthly TEUs

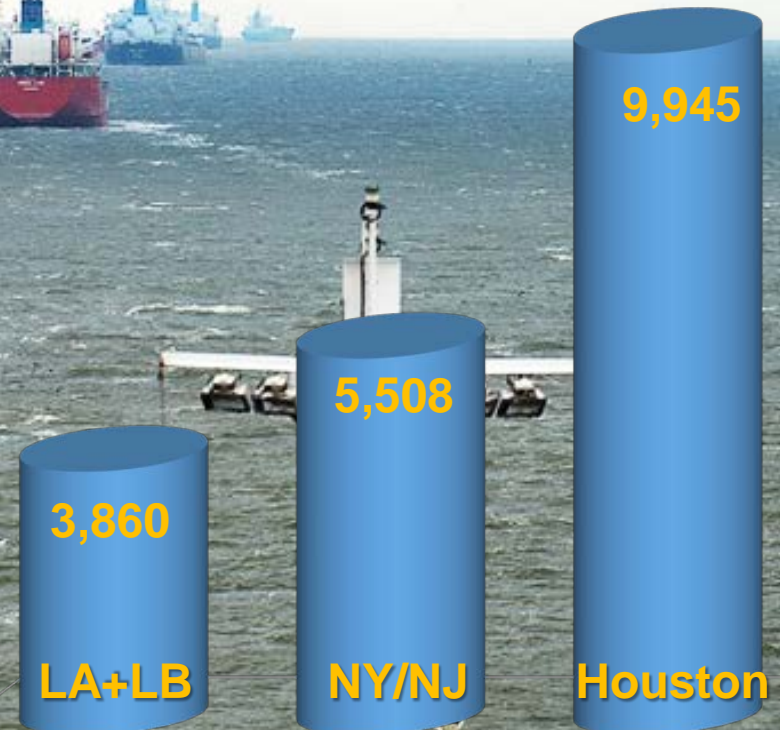


Today, loaded imports exceed loaded exports

Priority: Houston Ship Channel

Houston—USA's Busiest Channel

Houston:
22,000 ship moves
200,000 barge moves



Deep Draft Ship Calls



Sept 10, 2018

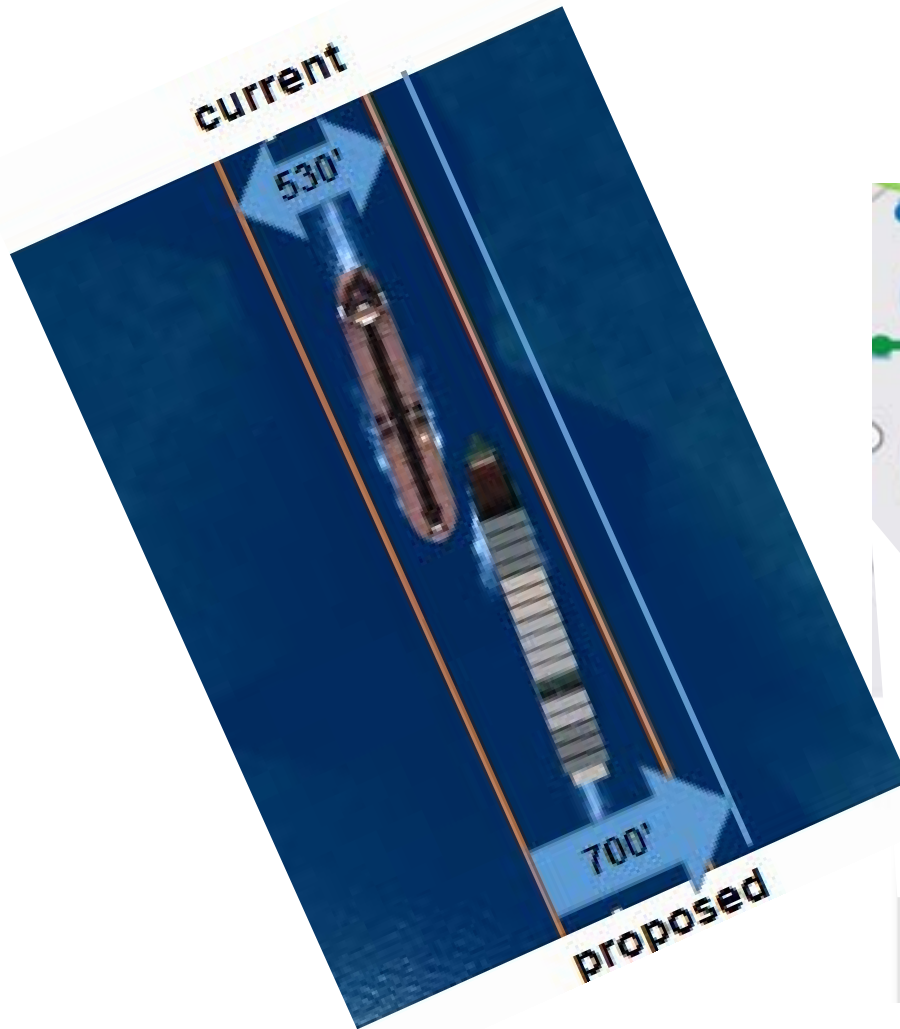
USACE "Megastudy" Current Plan



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Revised Plan features include a flaw that does not satisfy needs of industry or pilots



Federal Recommended Plan



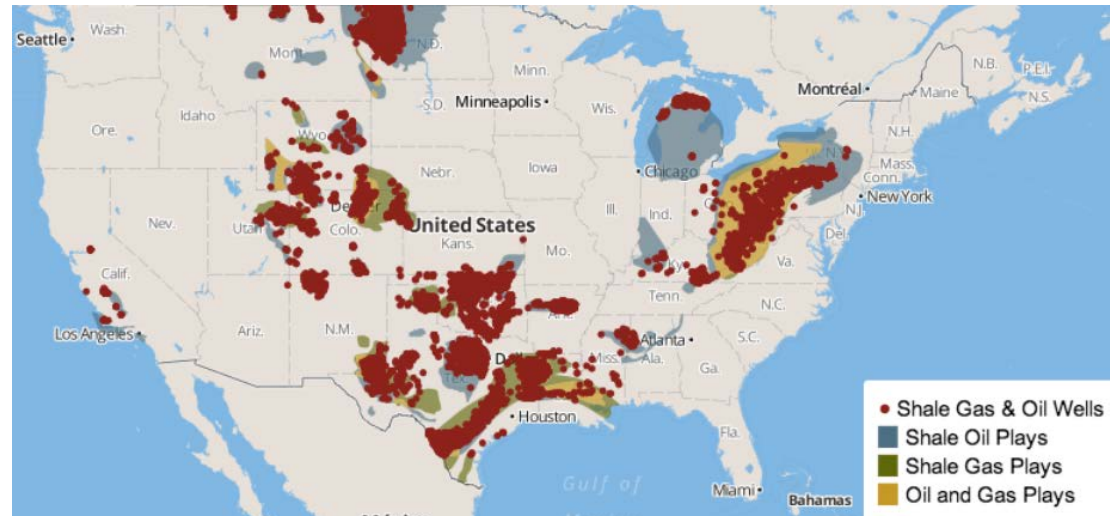
Widening is necessary for safety and efficiency

Industry Inputs: Cannot constrain national economic growth

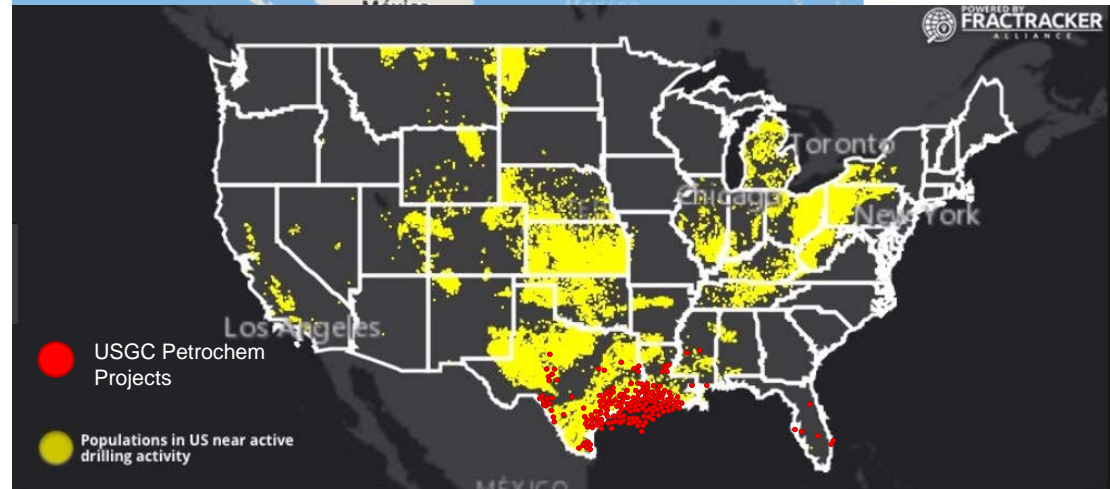


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Oil & Gas Plays in the “Shale Revolution”



Manufacturing, Population and Jobs supported by Oil & Gas Drilling and Production



Update on Sediment Capture & Control

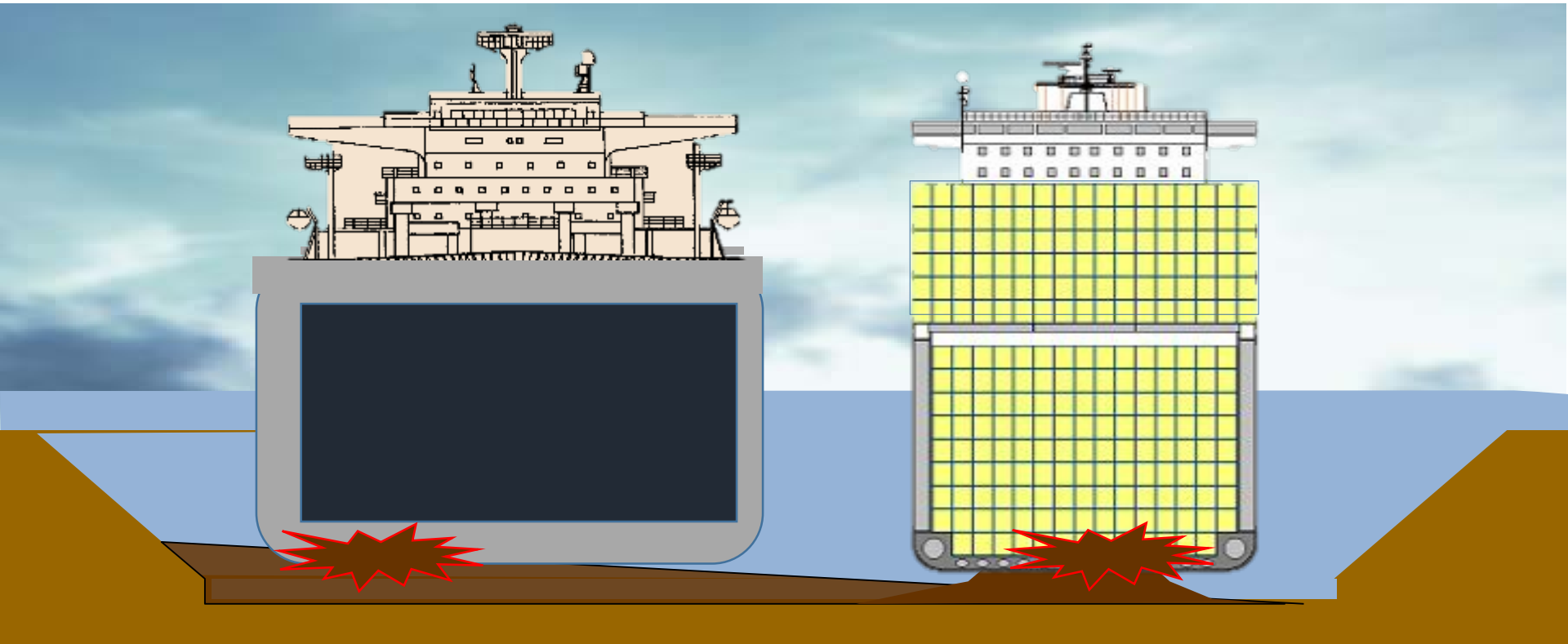
Before Harvey



After Harvey

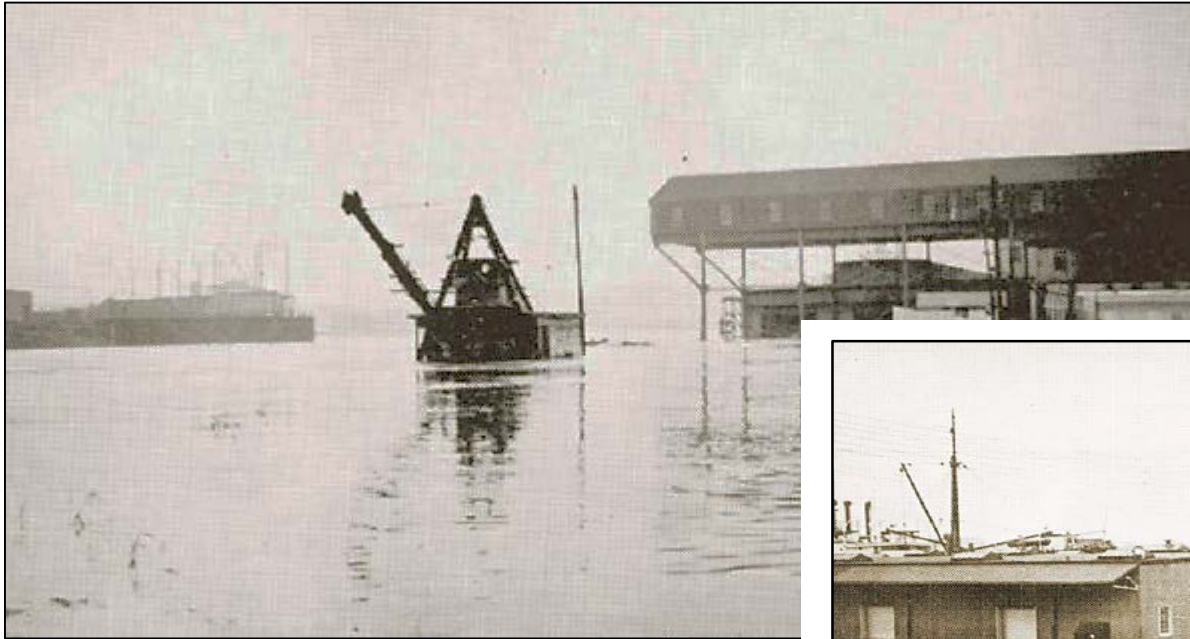


Cost of Draft Restrictions



- *1 foot Shoaling can cost shipping over \$300 million per year*
- *3 feet can cost Container ships \$1 million in revenue for each ship call*
- *Extra costs translate into higher prices for goods*

1935 Flood-Turning Basin Terminal



“Shipping was tied up for days, and all of Texas suffered as a result ”

“tons of mud and wreckage were dumped into the channel”

“serious navigation hazards”



Key Q: How to include Sediment Capture and Control in Flood Control Projects?

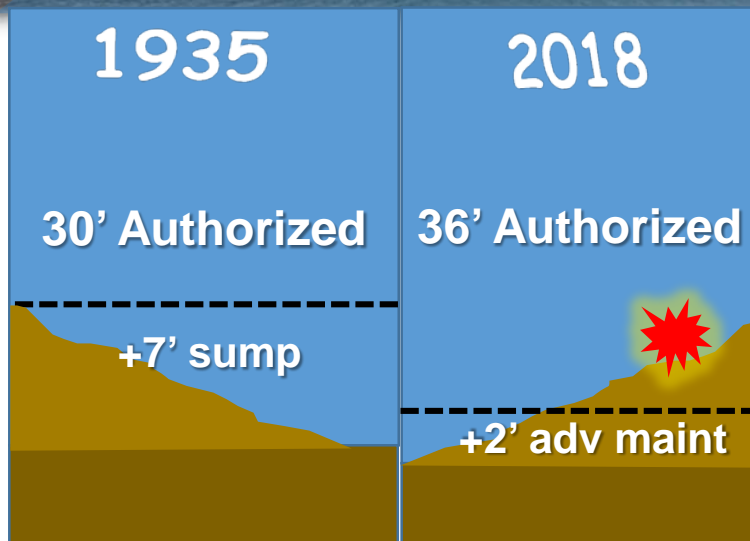


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Mitigation on the Channel Side

Land side: Driving Toward Success



Flood Control "Options" for SCC:

- Detention basins
- Enlargement and rectification of channels
- Construction of control works
- Diversions and soft solutions
- Source control management

**Mitigation on
the Land Side**

SCC Working Group Established

- Initial members:
 - HCFC
 - CoH Resilience Office
 - PHA
 - USACE (invited)
- Focus areas
 - Technology
 - Policy
 - Funding

HCFC = Harris County Flood Control District

CoH = City of Houston

PHA = Port of Houston Authority

USACE = US Army Corps of Engineers

Legend

- Port of Houston Authority Container Terminals
- Port of Houston Authority City Docks
- Port of Houston Authority Other Terminals (General Cargo)
- Railroads
- Freeways & Highways
- Houston Ship Channel

Terminal Locations:

- A** Turning Basin Terminals
- B** Public Grain Elevators 1 and 2
- C** Woodhouse
- D** Bulk Terminal
- E** Jacintoport
- F** Care Terminal
- G** Barbour's Cut Container Terminal
- H** Bayport Container Terminal

Design Program Highlights



All - Rail Switch Replacements

All - Fender Replacements

TB Wharf Rehabilitations

TB Transit Shed Utilities and Facilities

TB Lower Level Road and Utilities Redesign

TB Transit Shed Re-Roof / Re-Skin

TB Wharf 33 and Dredging

Care Roof Replacement

Jacintoport Transit Shed Refurb

WH Concrete Road

WH Wharves Rehab

BW-8 Yard, Land Access and Wharves

BCT CY2 Mid-South Yard Reconstruction

BCT Maintenance Complex

BCT Intersection @ 146

BCT CY 3 Reconstruction

BCT West Yards

BCT Channel Widening

BPT Truck Gate Lanes

BPT Wharf 6 CPS & Power

BPT Wharf 4-5 Strengthening

BPT SS Building

BPT / BCT Move Cranes

BPT East Empty Yard Utilities and Boundaries

BPT Wharf 7

BPT East End



A satellite map of the Port of Houston area. A red outline highlights Morgan's Point, a peninsula in the upper center. Another red outline highlights Bayport, a large industrial area in the lower center. The map shows various roads, including highways 225 and 146, and bodies of water like Galveston Bay and Bayou Area. Labels for 'Barbours Cut' and 'Bayport' are overlaid in large white text. A semi-transparent grey box containing the text 'Container Terminals' is positioned over the central part of the map. The Port of Houston logo is in the bottom right corner.

Barbours Cut

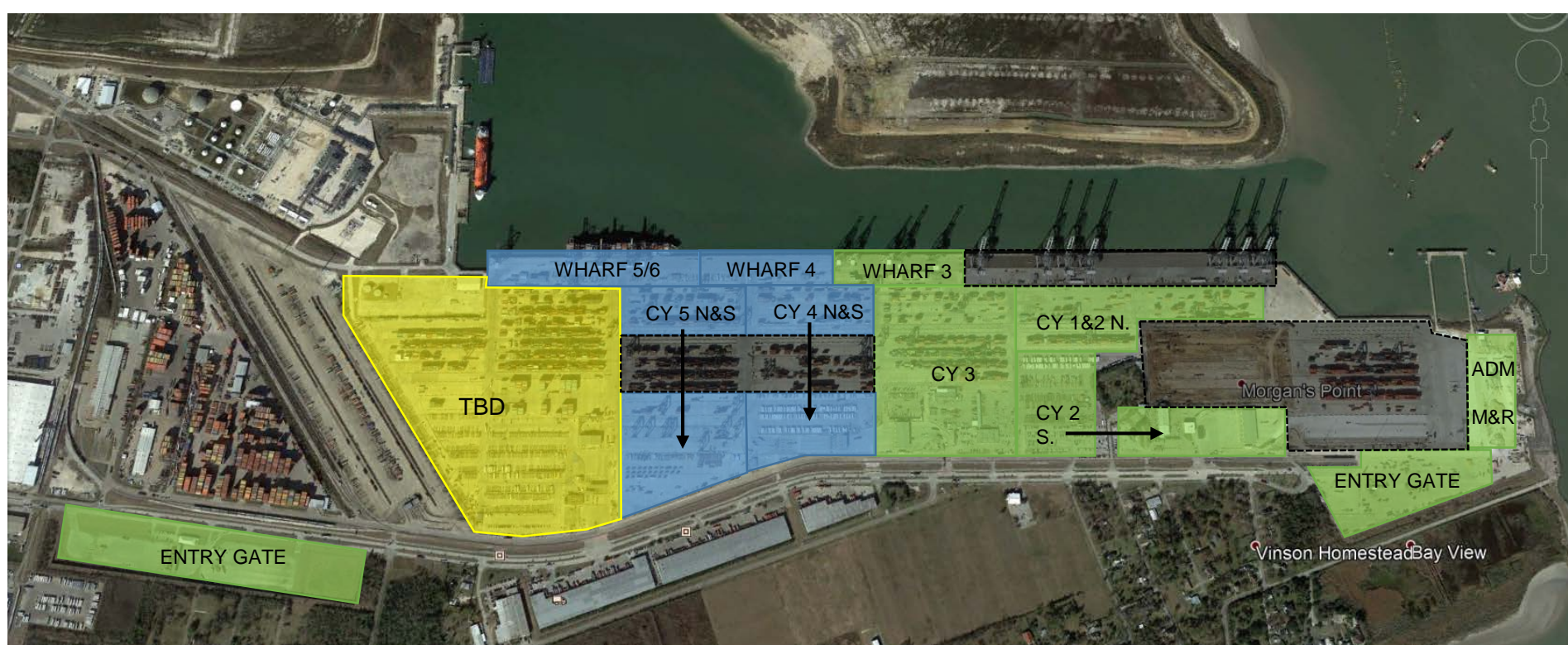
Container Terminals

Bayport



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BCT CAPEX Phasing Plan

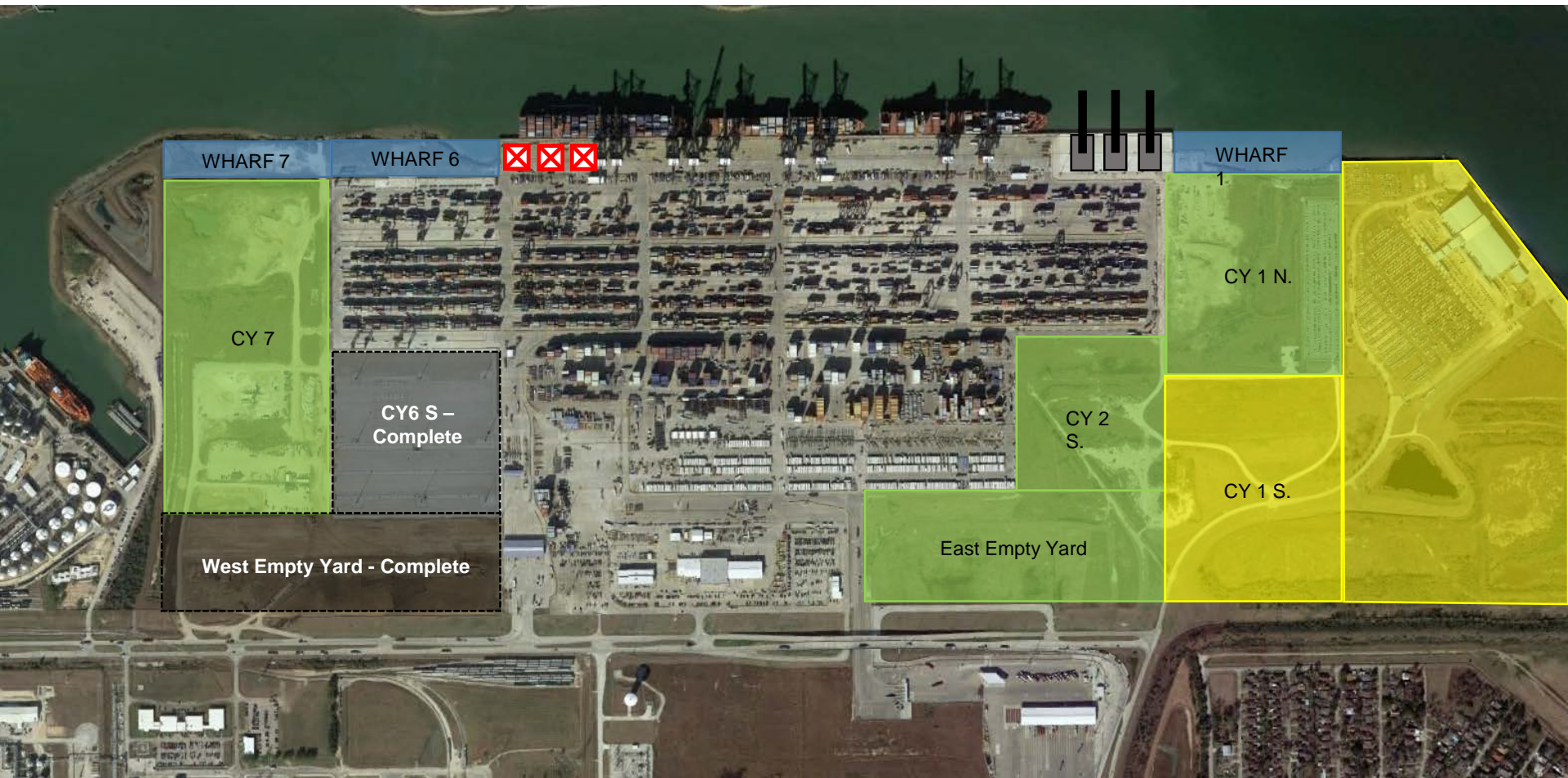




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Bayport CAPEX Phasing Plan



Turning Basin Rehabs



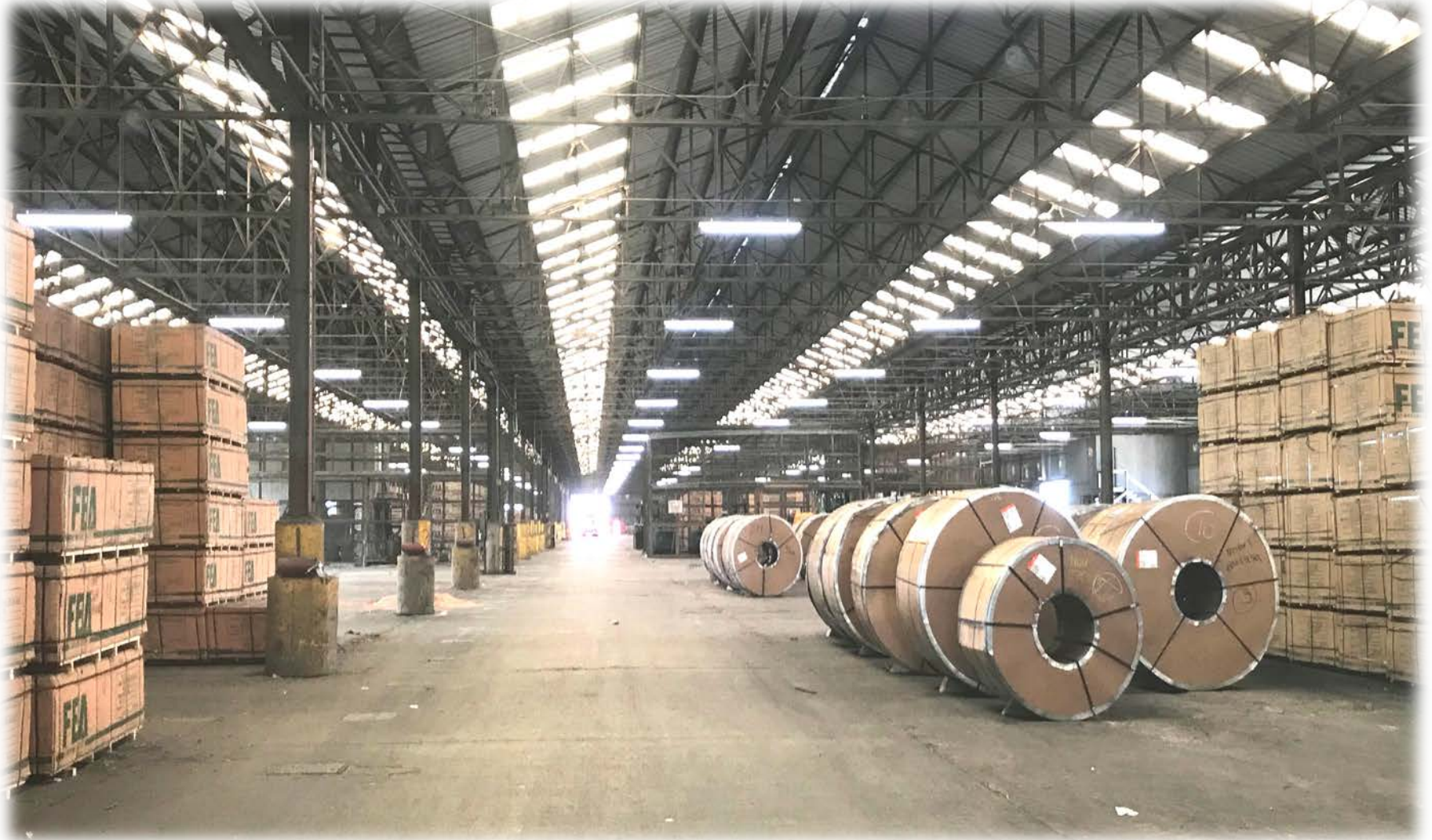
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Turning Basin Rehabs

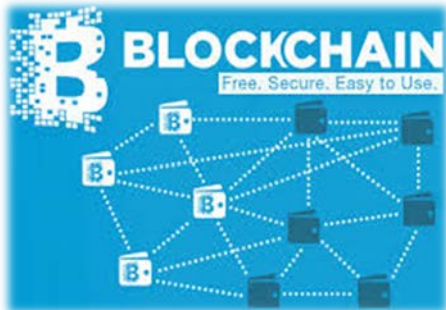
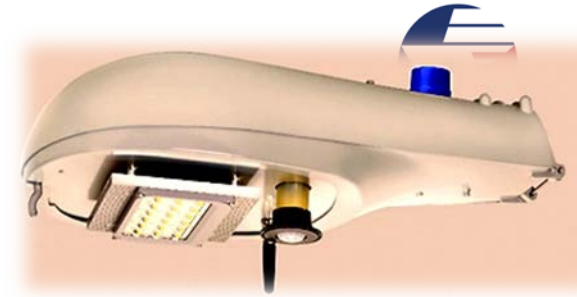


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Evaluating New Tech

Deployed
↑
Emerging
↓
Conceptual



Intelligent Transportation Systems

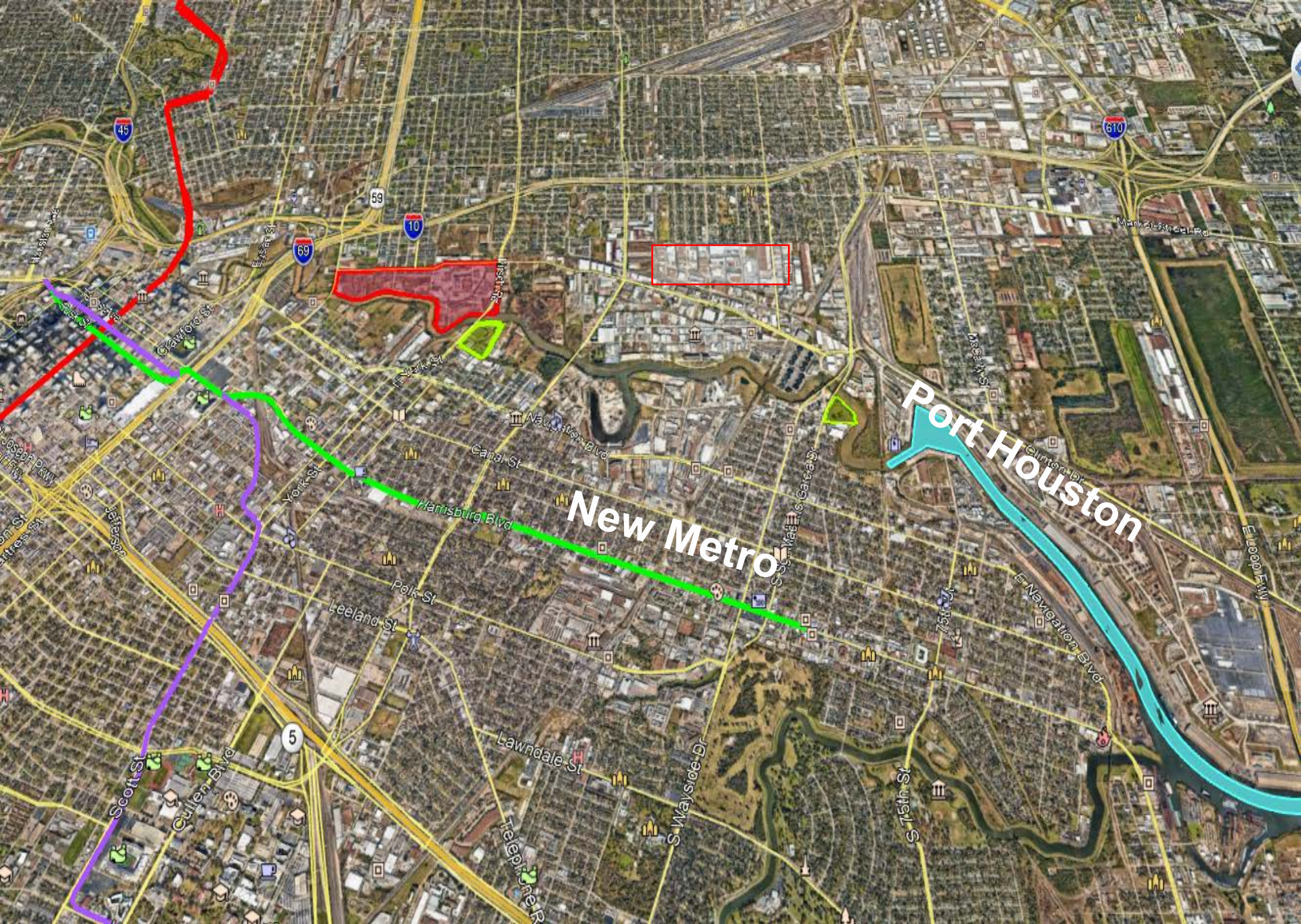


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Priority: Awareness and Connection to Community





Houston, Buffalo Bayou and East End...



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What If... Turning Basin Innovation Complex



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Conceptual For
Illustrative
Purposes Only



Source: SWA Group

Oct 20, 2018

Berm Planting & Dedication



Within sight of the Terminals



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Communities, Port and Industry Working Together



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THANK YOU

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