

PRESENTATION TO:
FORT BEND COUNTY, TEXAS



**SH 36A DEVELOPMENT CORRIDOR
RAIL BUSINESS PLAN**



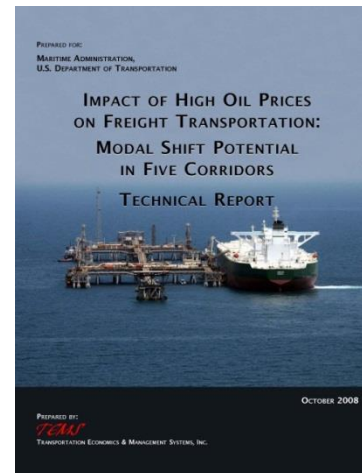
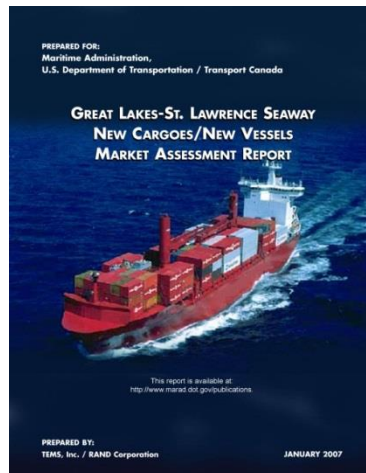
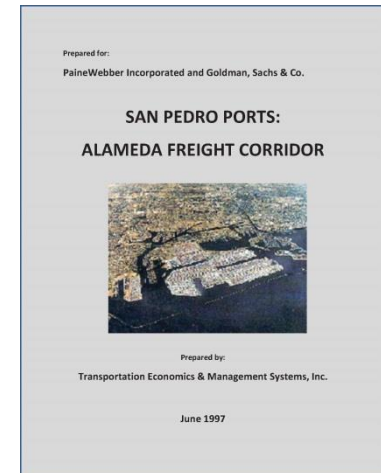
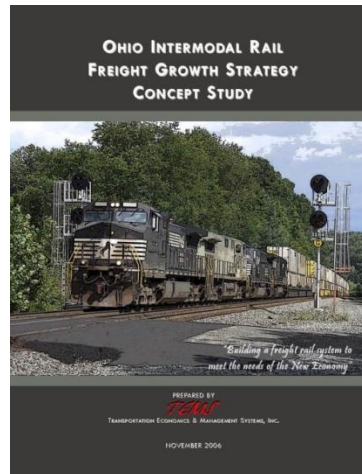
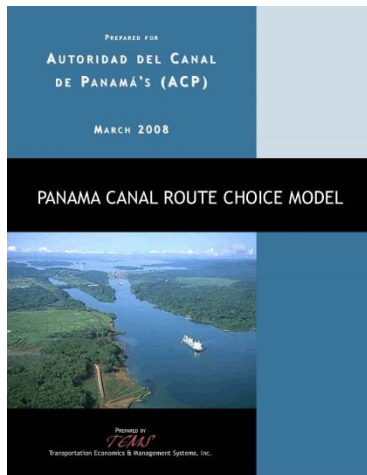
Presentation By

TEMS

Transportation Economics & Management Systems, Inc.

SEPTEMBER 24, 2014

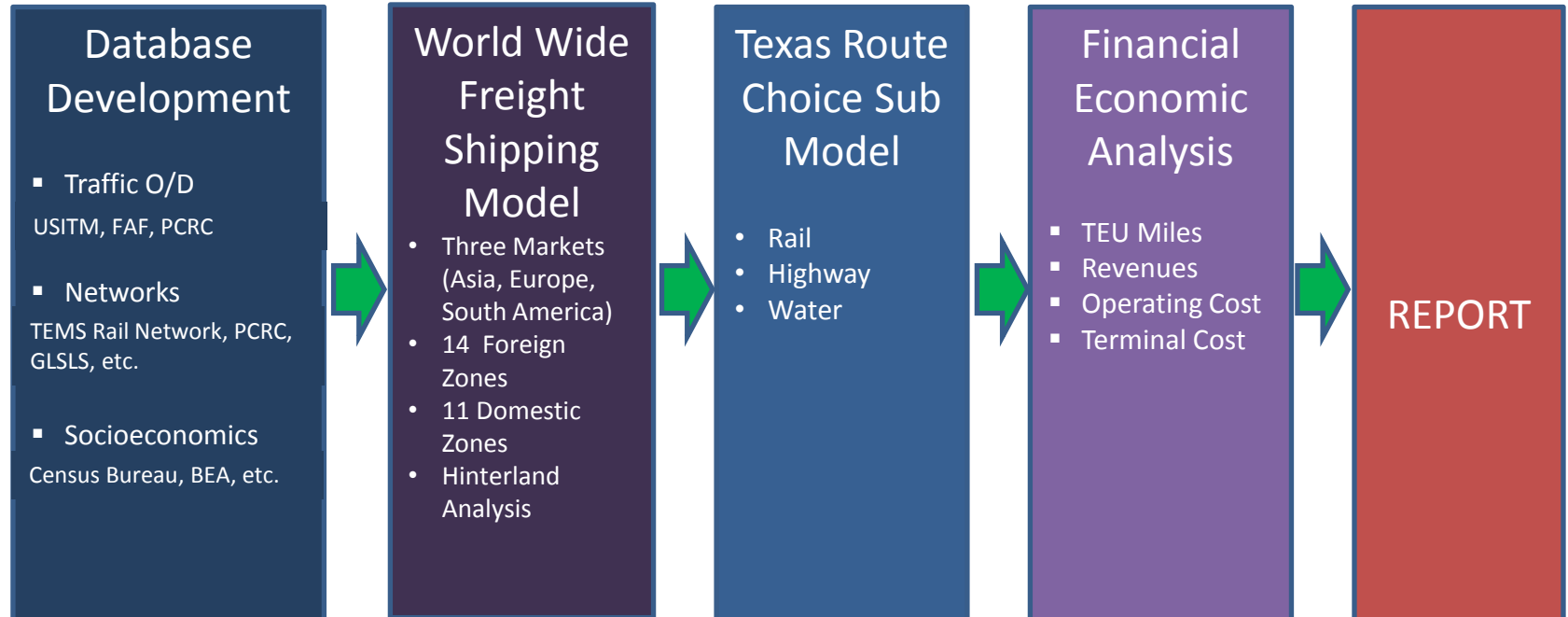
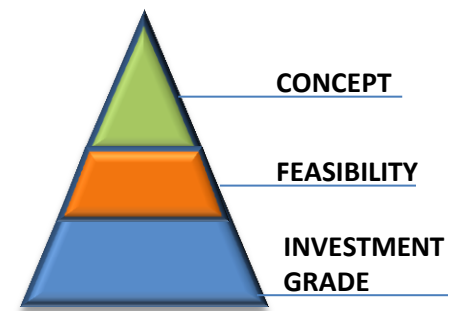
WHO IS TEMS: PREVIOUS TEMS STUDIES THAT WERE USED AS BASE FOR THE ANALYSIS



BUSINESS PLAN SH 36A

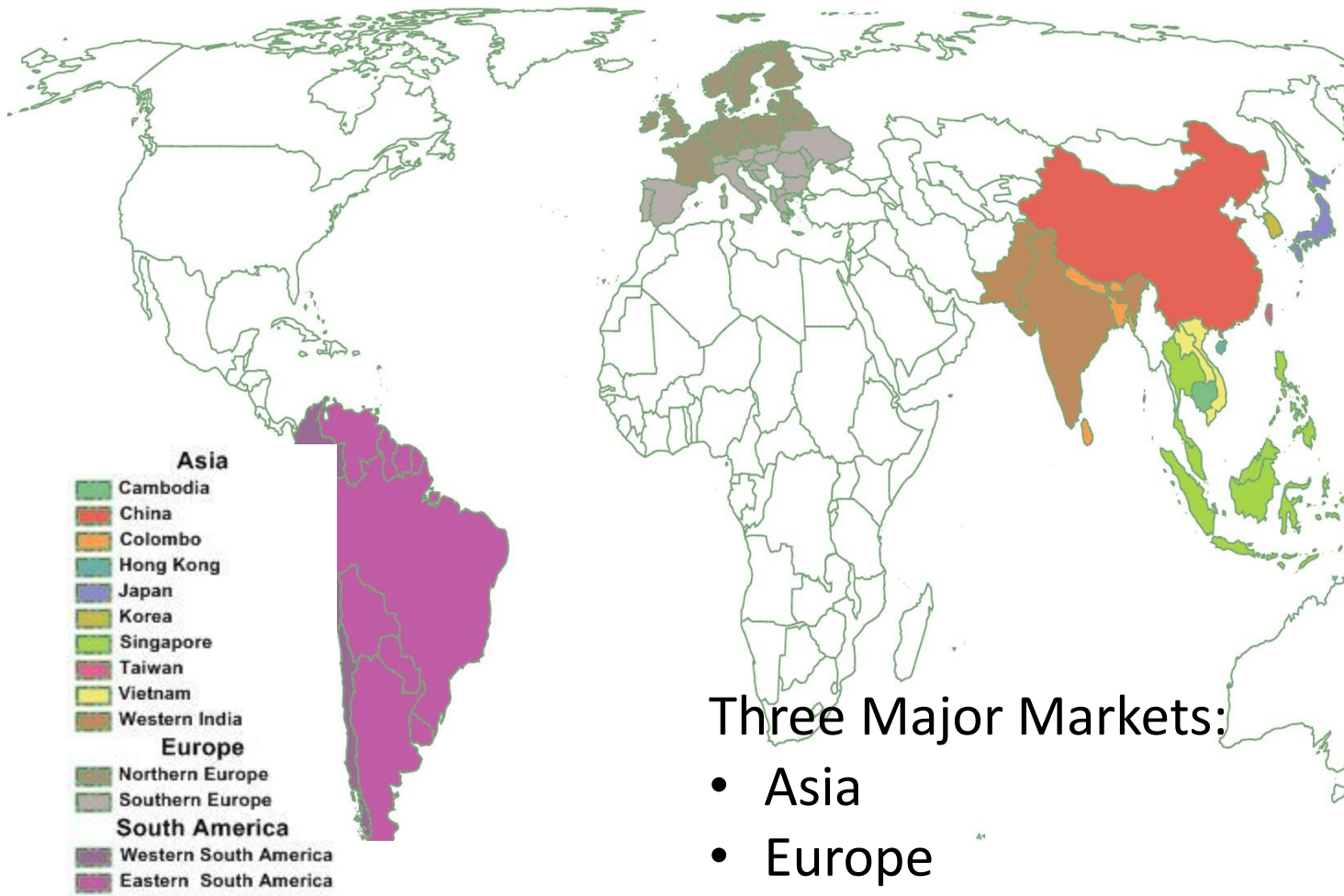
RAIL CORRIDOR ANALYSIS

FRAMEWORK



Texas Port and Inland Distribution Model

PANAMA CANAL MODEL: MAJOR MARKETS OF WORLDWIDE MODEL



Three Major Markets:

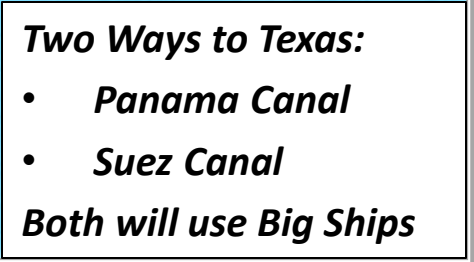
- Asia
- Europe
- South America

PCRC Model 2.1

A Route Choice Model
Developed for the
Panama Canal Authority



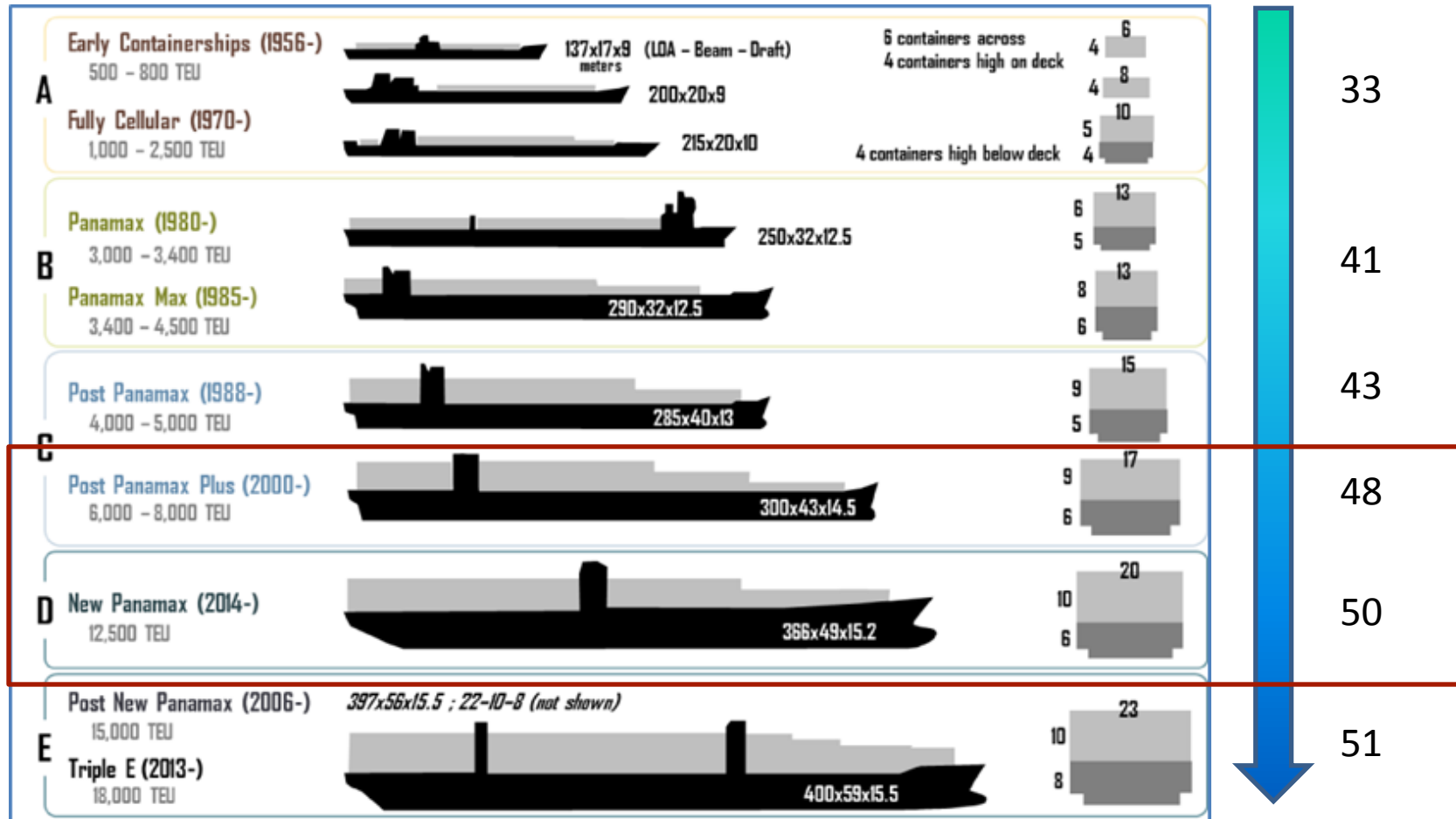
TRANSPORTATION ECONOMICS & MANAGEMENT SYSTEMS, INC.



PANAMA CANAL (60' WATER DEPTH) IMPACTS

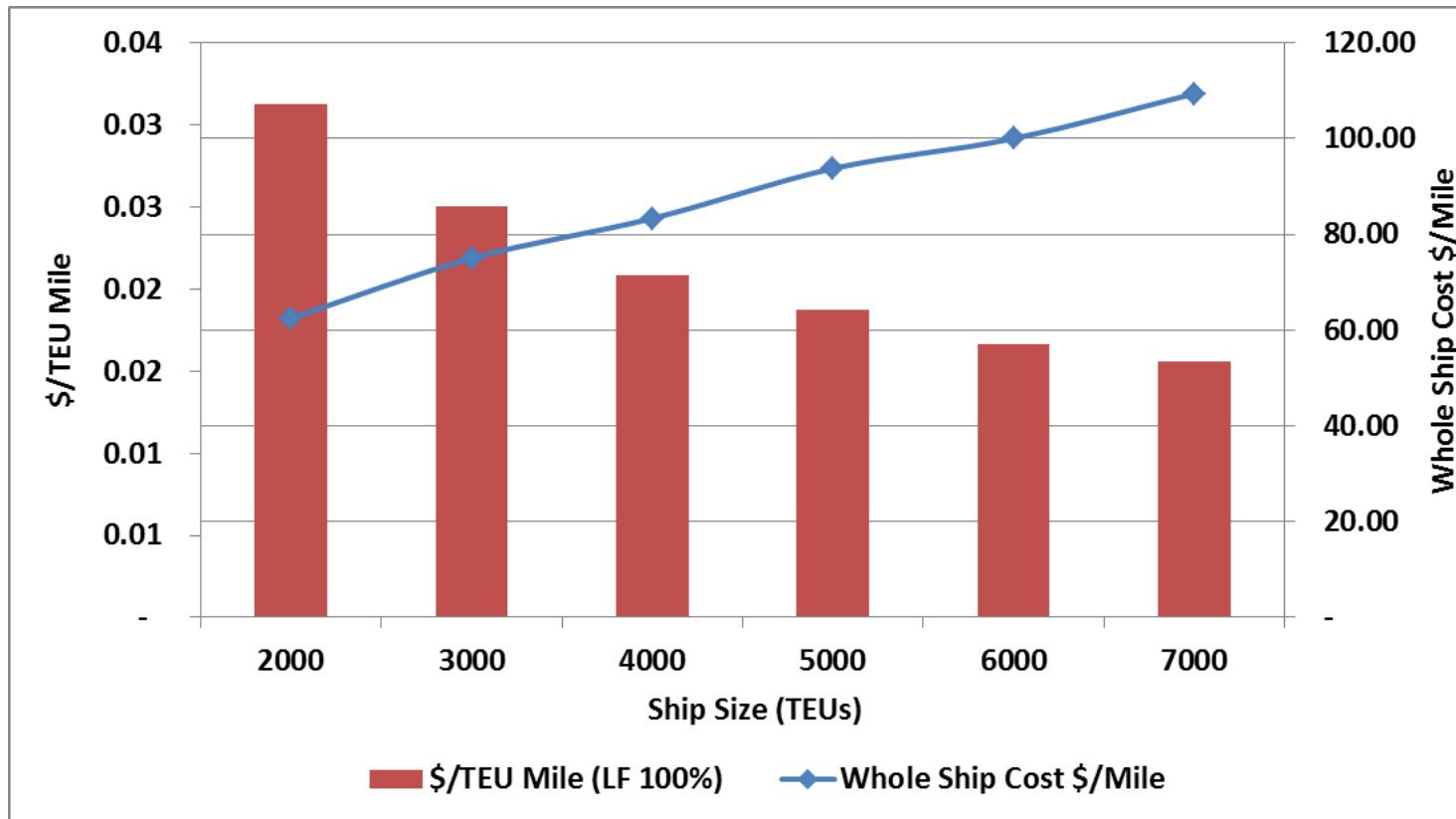


Water Depth(ft)



Capacity of New Panamax ship will increase 2-3 times, and requires 48-51 feet draft

PANAMA CANAL IMPACTS: SHIPPING \$/TEU

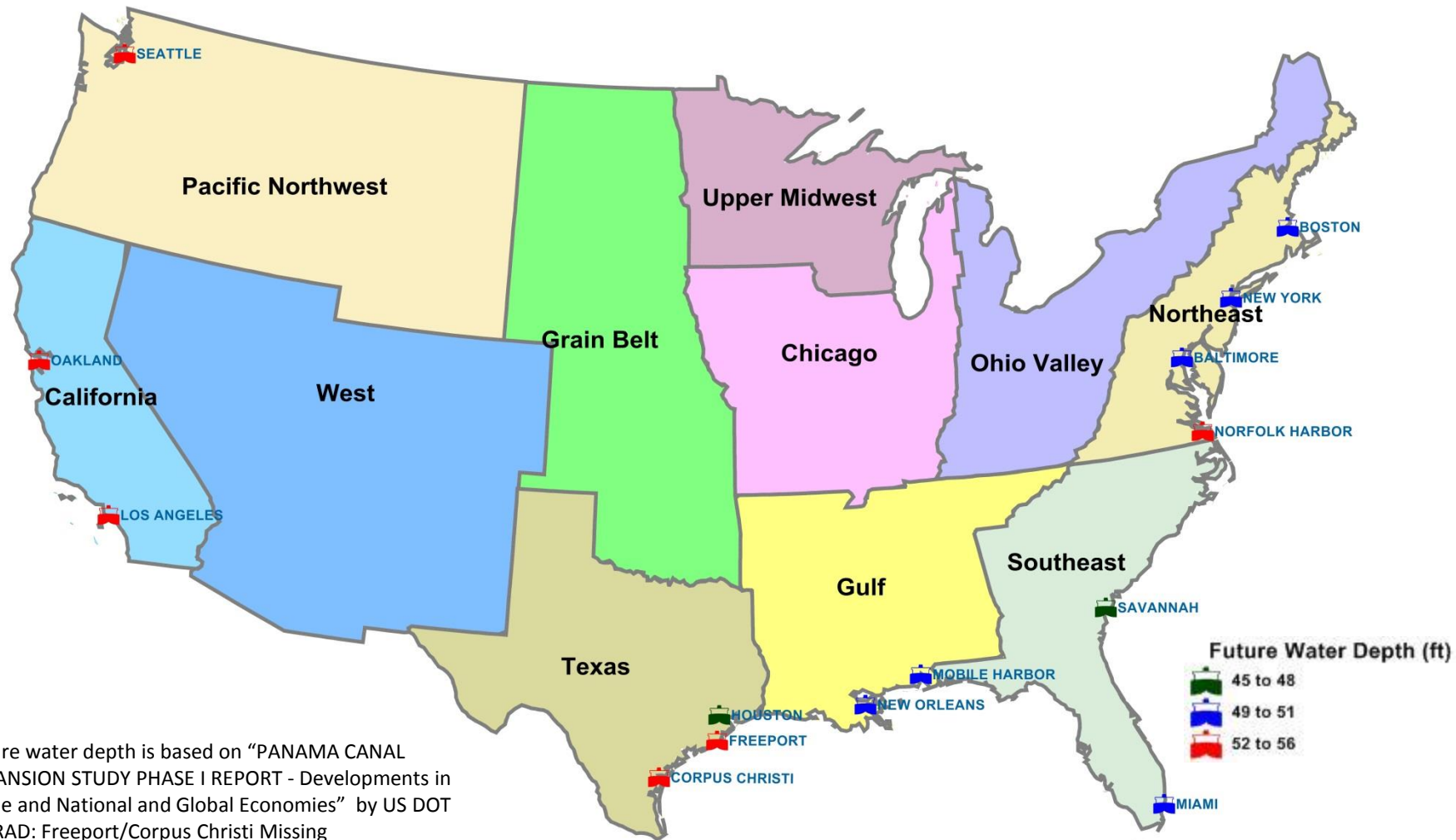


Source: Reproduced based on Figure 4.3 Impacts of Containership Size, Service Routes, and Demand On Texas Gulf Ports , TXDOT, 2001

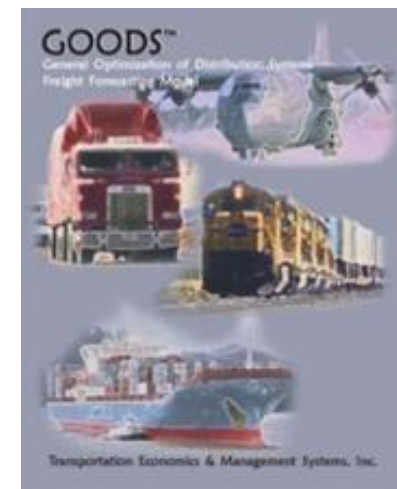
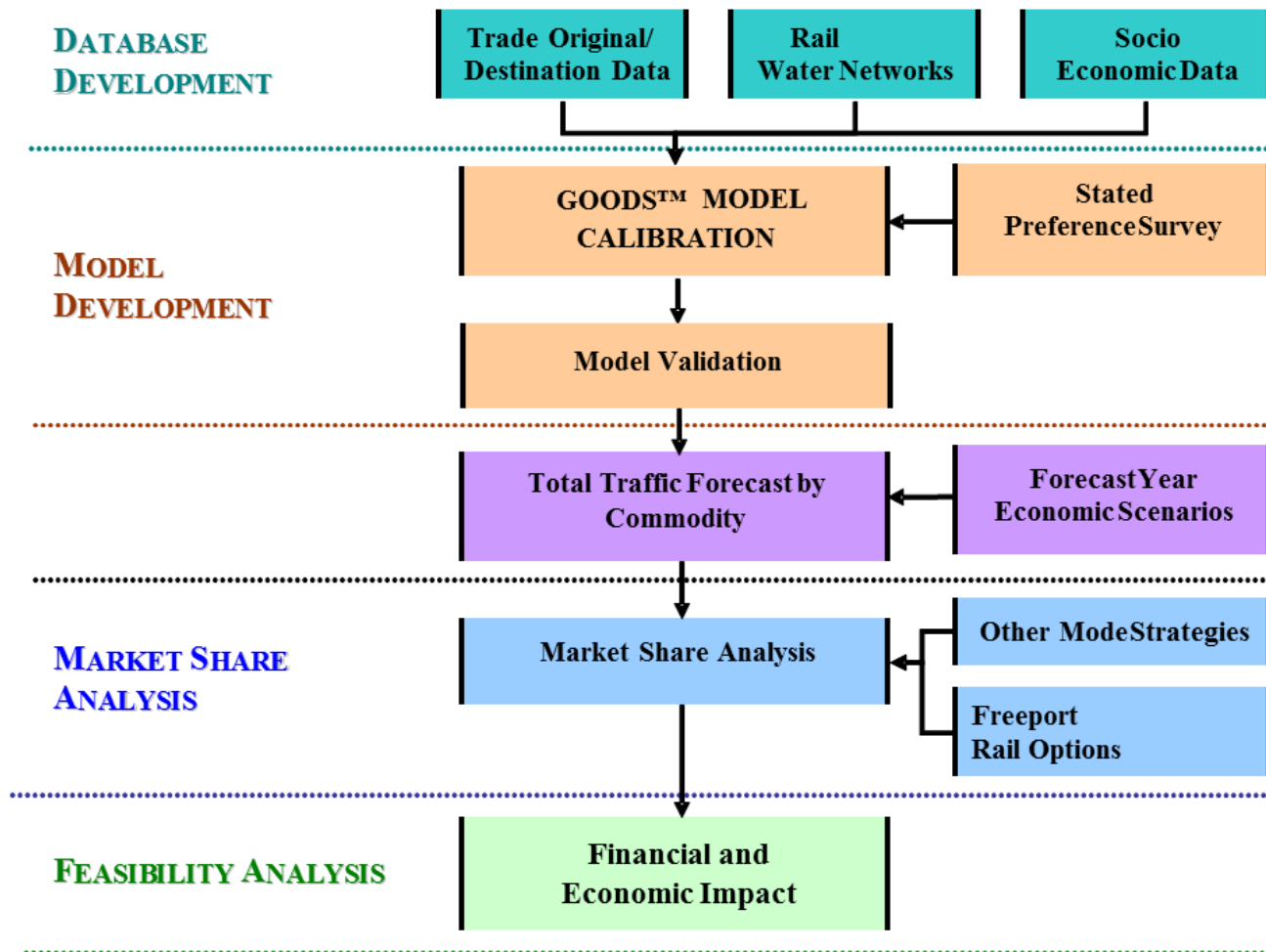
- 2015 Shipping cost will decrease from \$0.04/TEU·Mile to \$0.02/TEU·Mile (70% loading factor and inflation since 2001).
- This cuts shipping line-haul costs in half.
- Big Boats will be used for both Pacific and Atlantic shipping.

NATIONAL PORTS MODEL: PORT FUTURE

WATER DEPTHS AND INLAND MARKETS AREAS



GOODS™ MODEL STRUCTURE

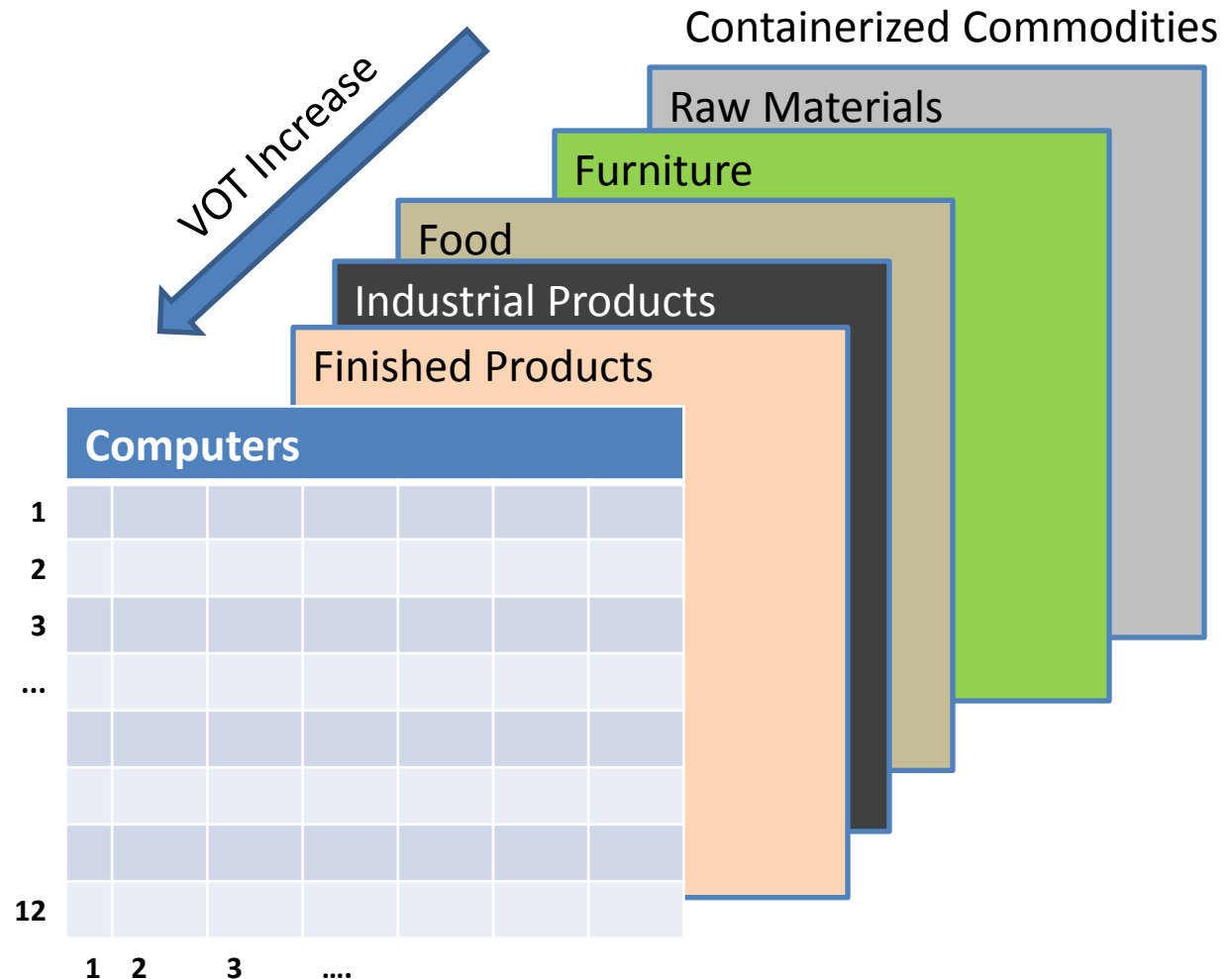


TRAFFIC DATABASE: MODEL USES SIX COMMODITY GROUPS



- **Source**



- US Inland Trade Monitor (USITM)
- Freight Analysis Framework (FAF)



COMPETITIVE RAIL AND SHIP TIMES



Shipping Time (days) From
Northeast Asia to Houston, TX

| Route |  |  | Total Time |
|------------------|---|---|------------|
| Pacific | 14 (20 mph) | 5 (14 mph) | 19 |
| Via Panama Canal | 21 (23 mph) | - | 21 |

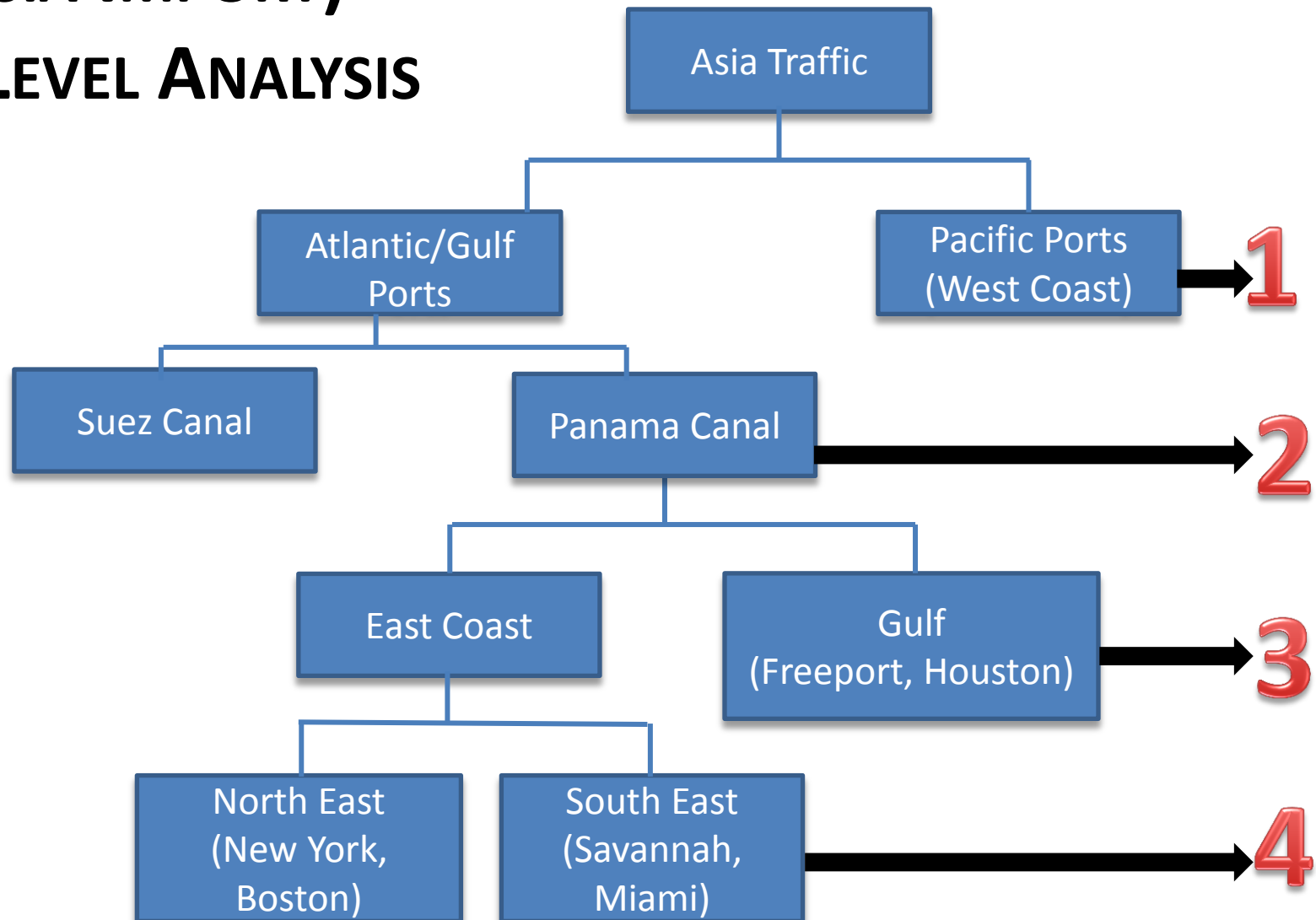
Future offers potential rail productivity and service gains. For example, speed improvement from average 14 mph to 40 mph (Amtrak speed).



Source: Parsons Brinckerhoff, Panama Canal Expansion Study, June 2012

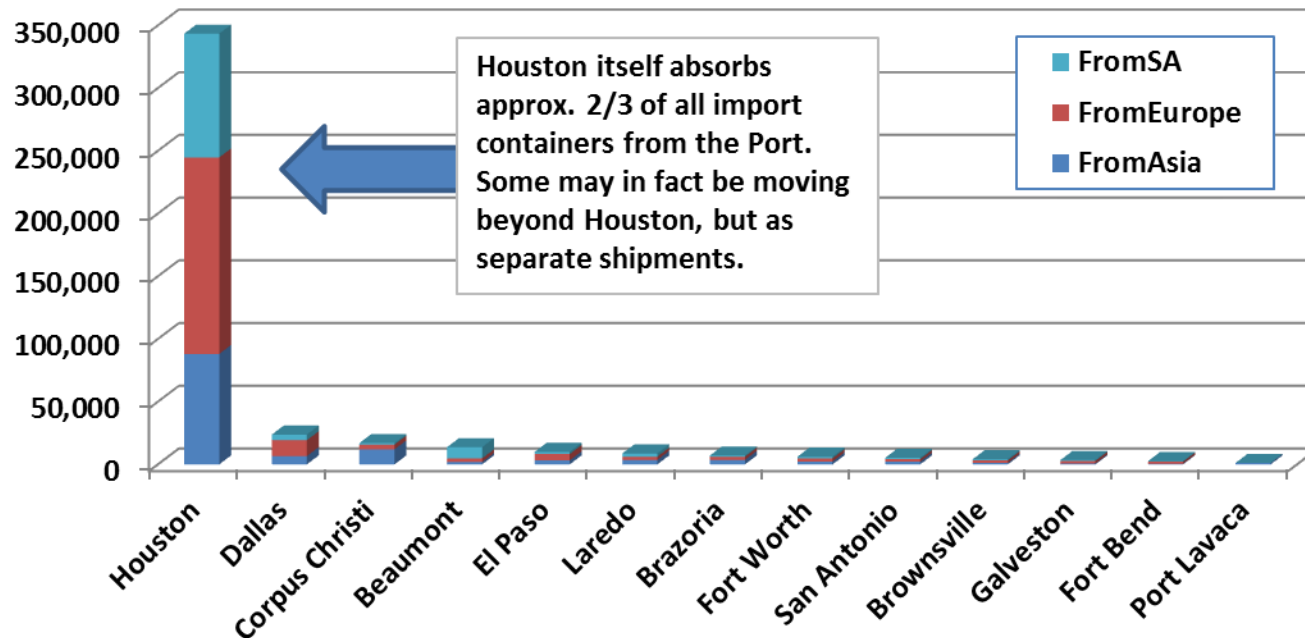
SIMPLIFIED ROUTE CHOICE MODEL (ASIA IMPORT)

4 LEVEL ANALYSIS



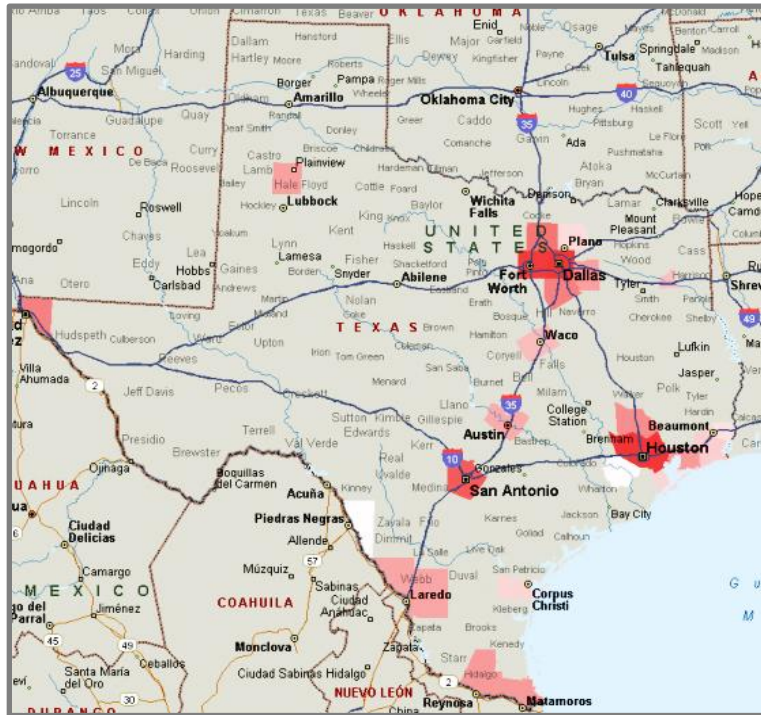
CURRENT MARKET:

2006 DISTRIBUTION OF HOUSTON PORT CONTAINERS WITHIN TEXAS

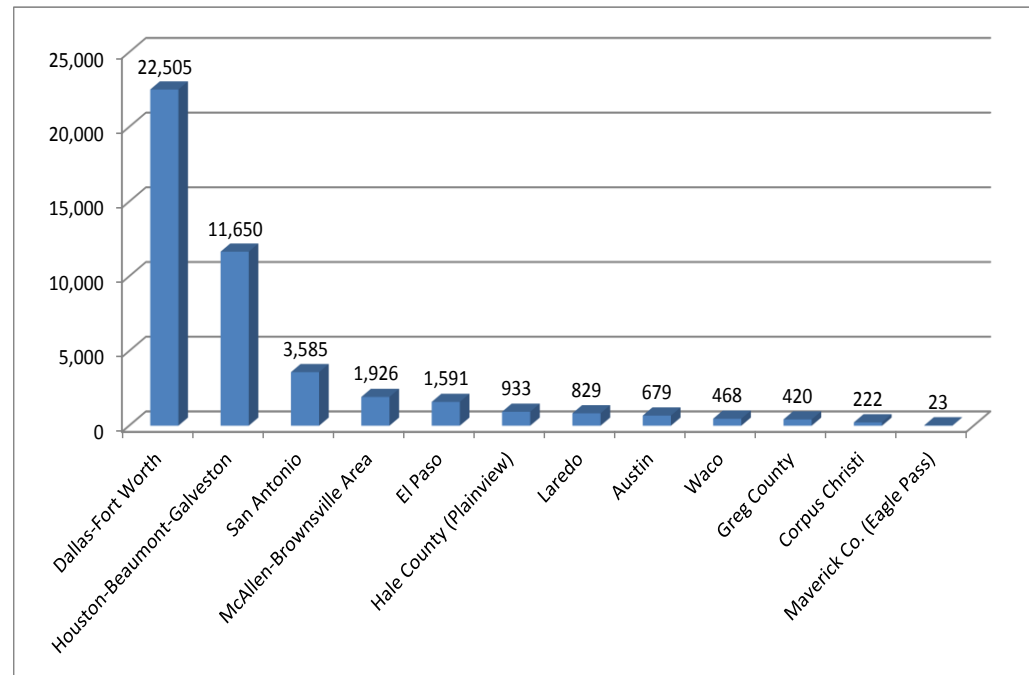


Yet very few containers from Houston go to Dallas-Fort Worth . . . Mostly they are reported from Europe, not Asia (consistent with Hinterland Analysis).

CURRENT MARKET: TEXAS INTERNAL DISTRIBUTION



Texas Warehousing and Storage Employment



Source : U.S. Census Bureau, June 2014

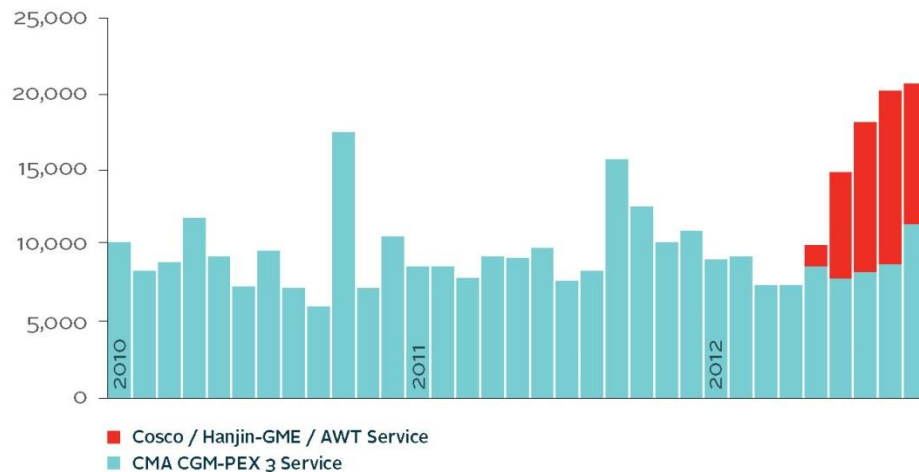
Dallas-Fort Worth has twice the Logistics Employment as Houston.

CURRENT PORT OF HOUSTON

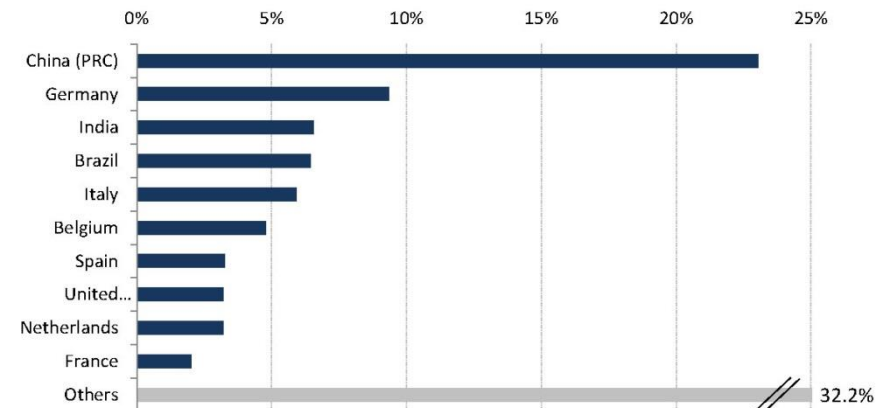
TRAFFIC DATA



- The largest Import is from Europe, and the second is from Asia
- Imports from Asia are increasing and China is the largest single importing country.



Source: PHA Market Development



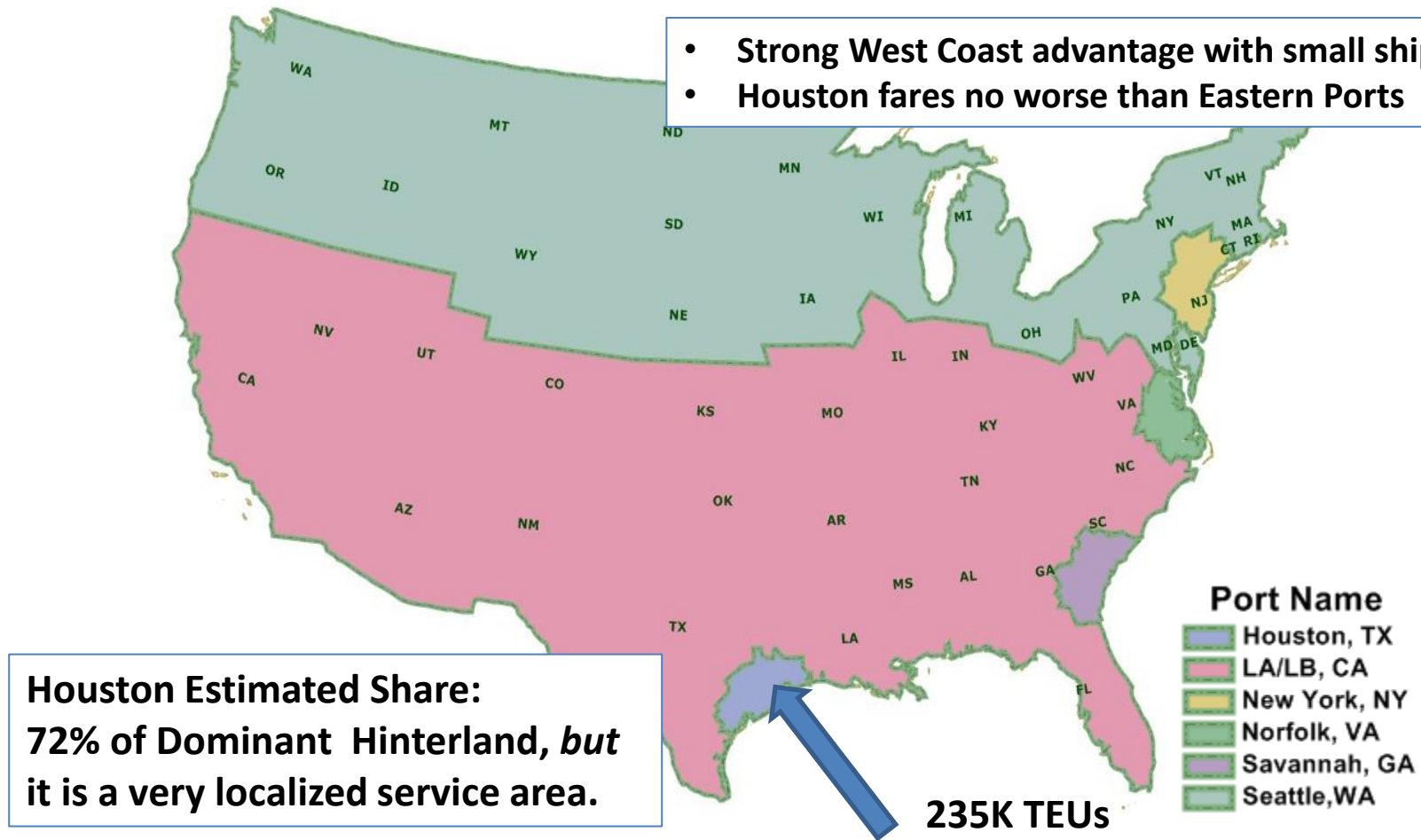
Source: PHA Market Development, Journal of Commerce/ PIERS data

Notes: Values include all Houston Ship Channel Terminals. Totals are estimated, not exact. See details below.

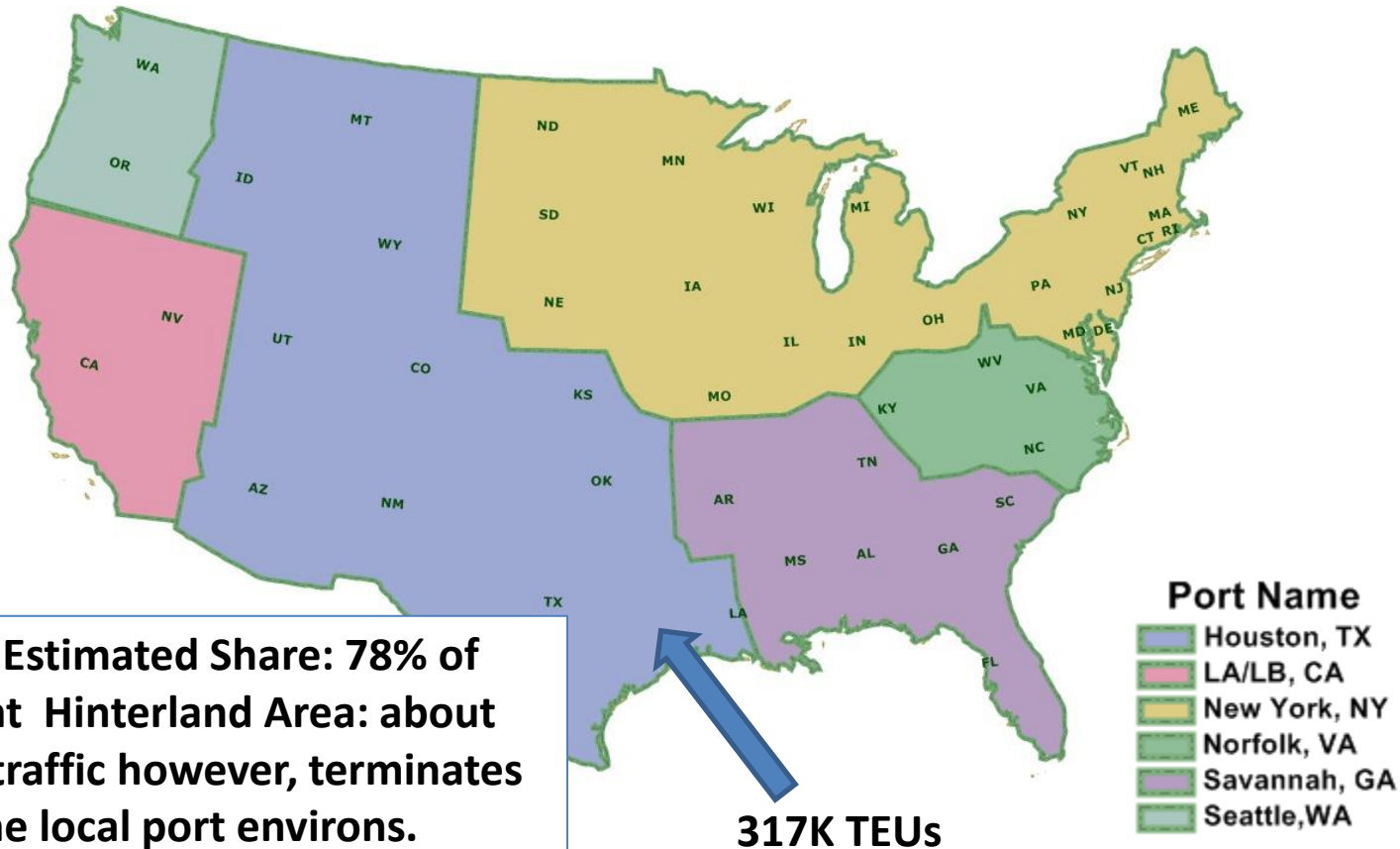
CURRENT MARKET – HINTERLAND ANALYSIS ASIA IMPORTS



- Strong West Coast advantage with small ships
- Houston fares no worse than Eastern Ports



CURRENT MARKET – HINTERLAND ANALYSIS EUROPE IMPORTS

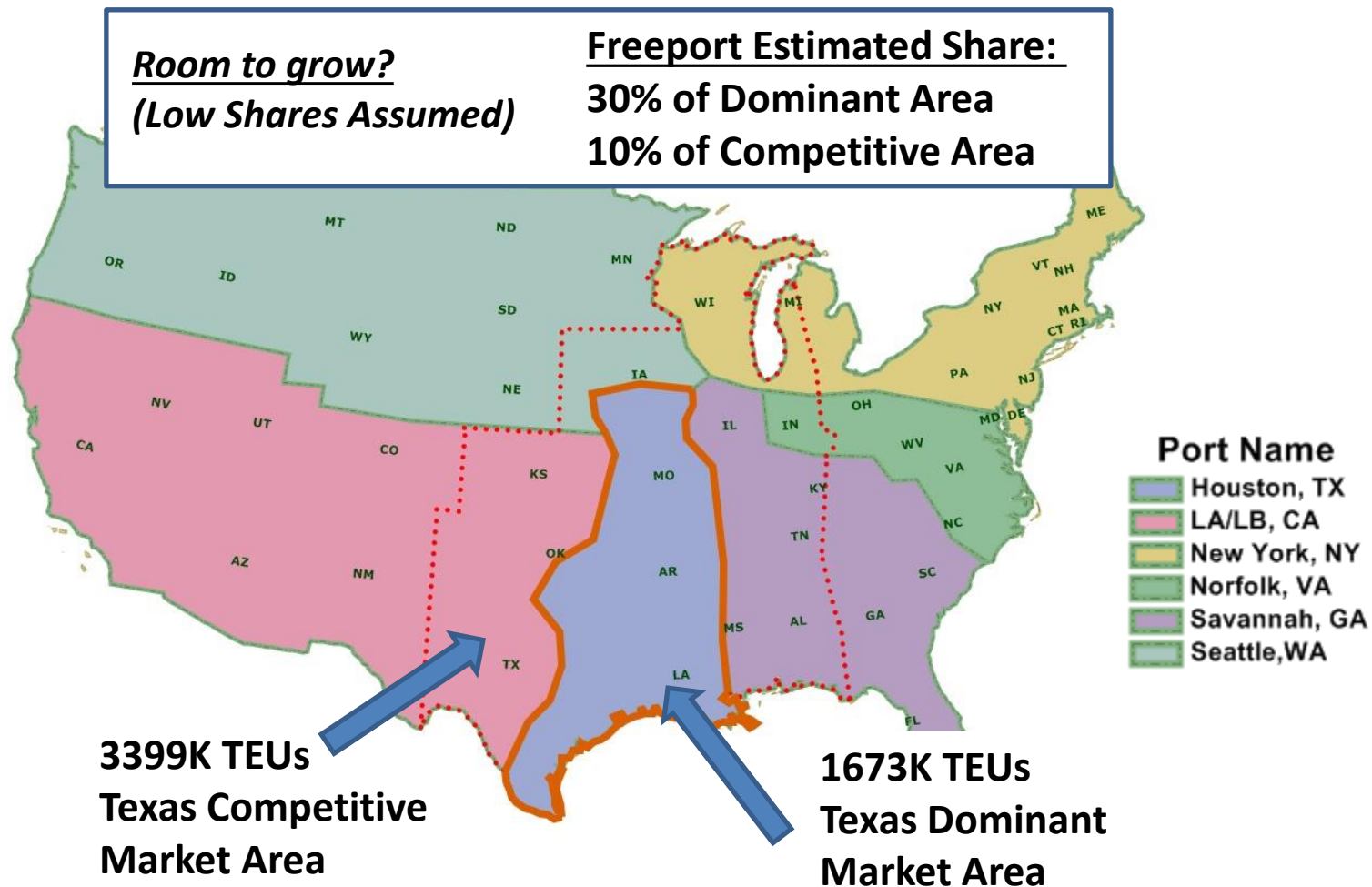




THE FREEPORT “BUILD” CASE

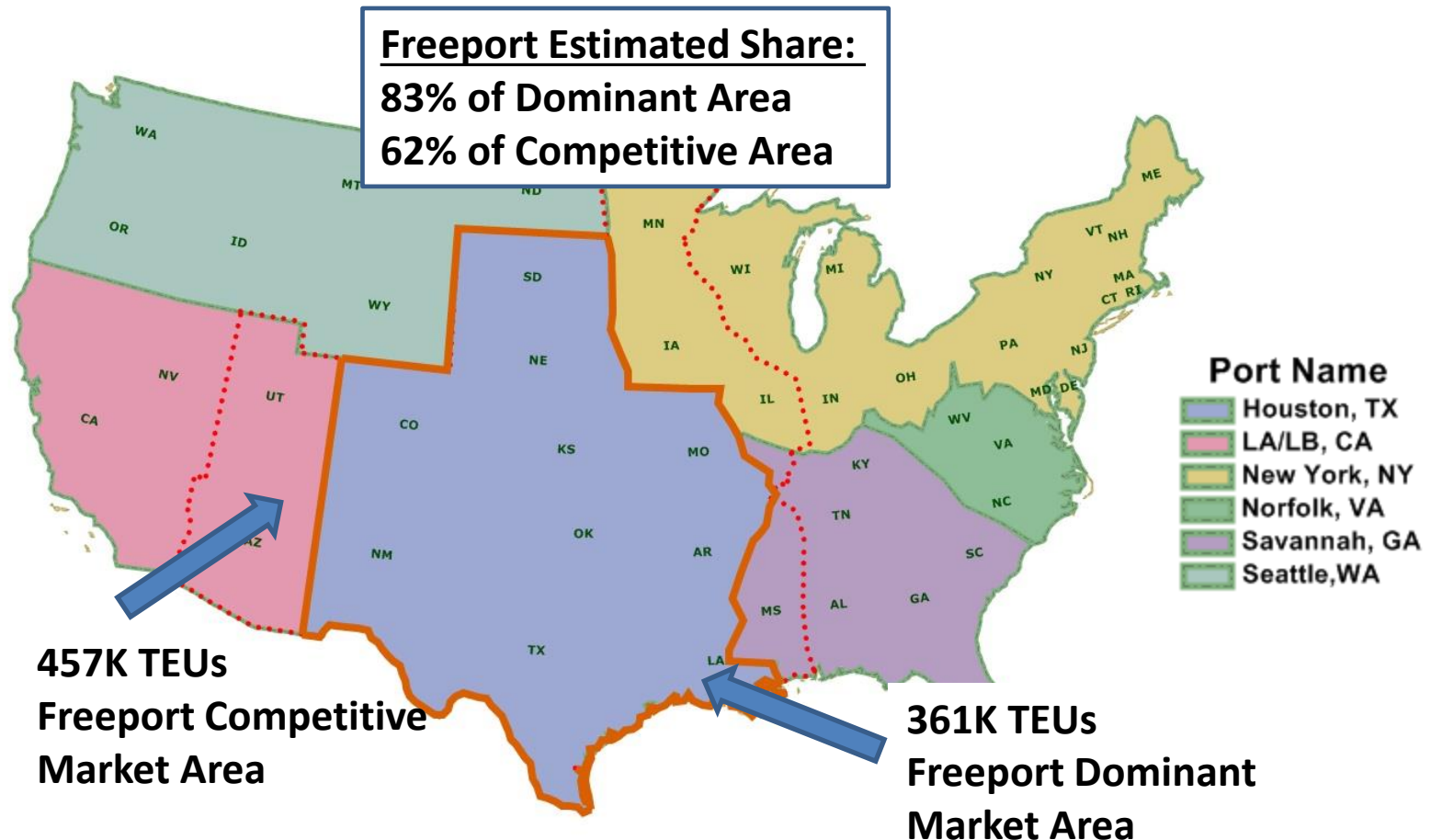
- Freeport will be fully developed as a container terminal that can handle big ships (56 ft.) Houston however remains at 45' channel.
- Effective intermodal links will be developed (rail links and inland ports) from Freeport to the key market areas of Dallas, Fort Worth, San Antonio and beyond
- Port of Houston can be served by
 - Second Port of Call
 - Transloads in Caribbean Port
 - Trucking from Freeport
 - COB from Freeport

“BUILD” BIG SHIP – ASIA IMPORTS (2015)



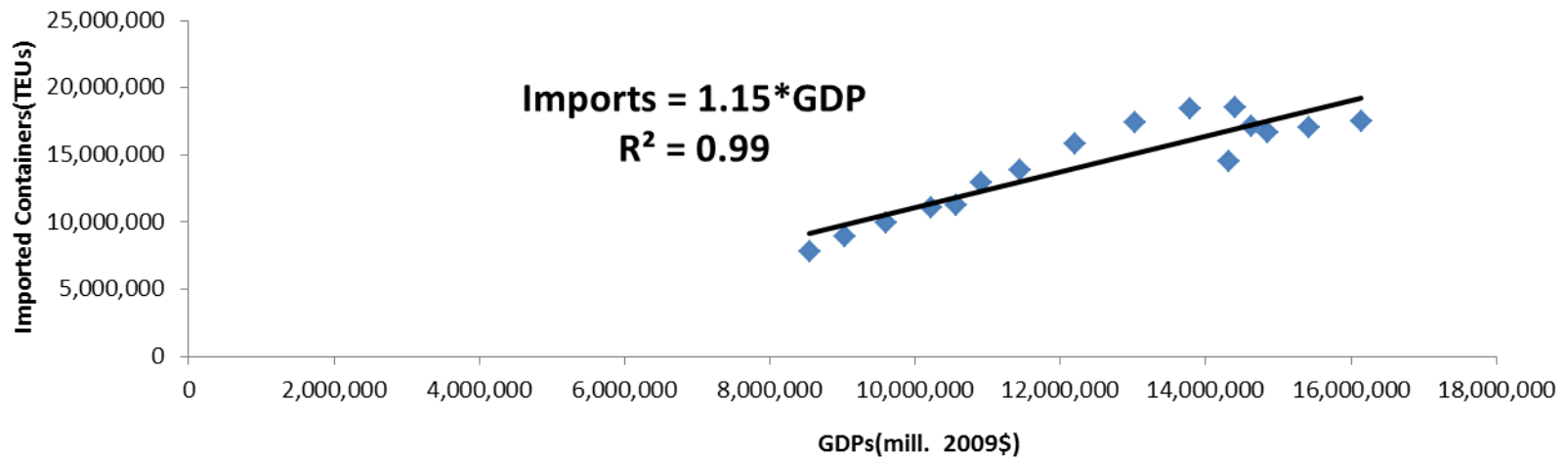
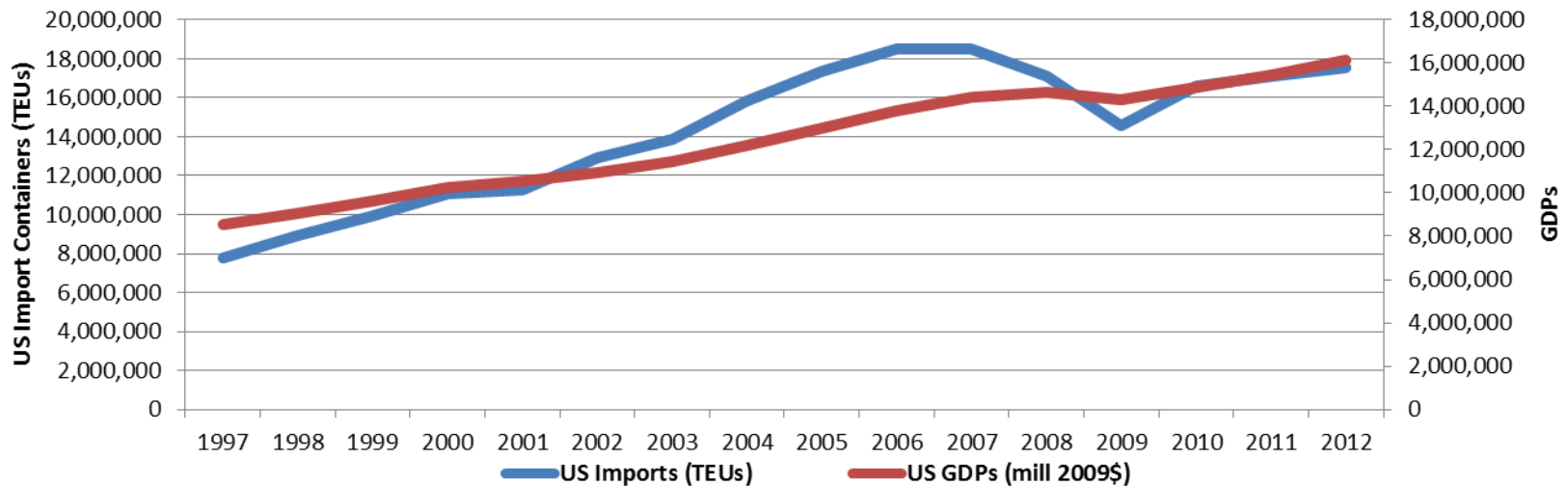
*Huge (7X) increase in Potential Texas Hinterland Total Market TEUs.
However, West Coast Ports retain >50% market*

“BUILD” BIG SHIP – EUROPE IMPORTS (2015)



Slight increase in Port Hinterland Total Market TEUs: Freeport Holds Share Against Increased Savannah and LA/LB Competition. Note however, that about half this European traffic is only bound for local port environs.

CONTAINER IMPORTS VS GDPs - NATIONAL TREND

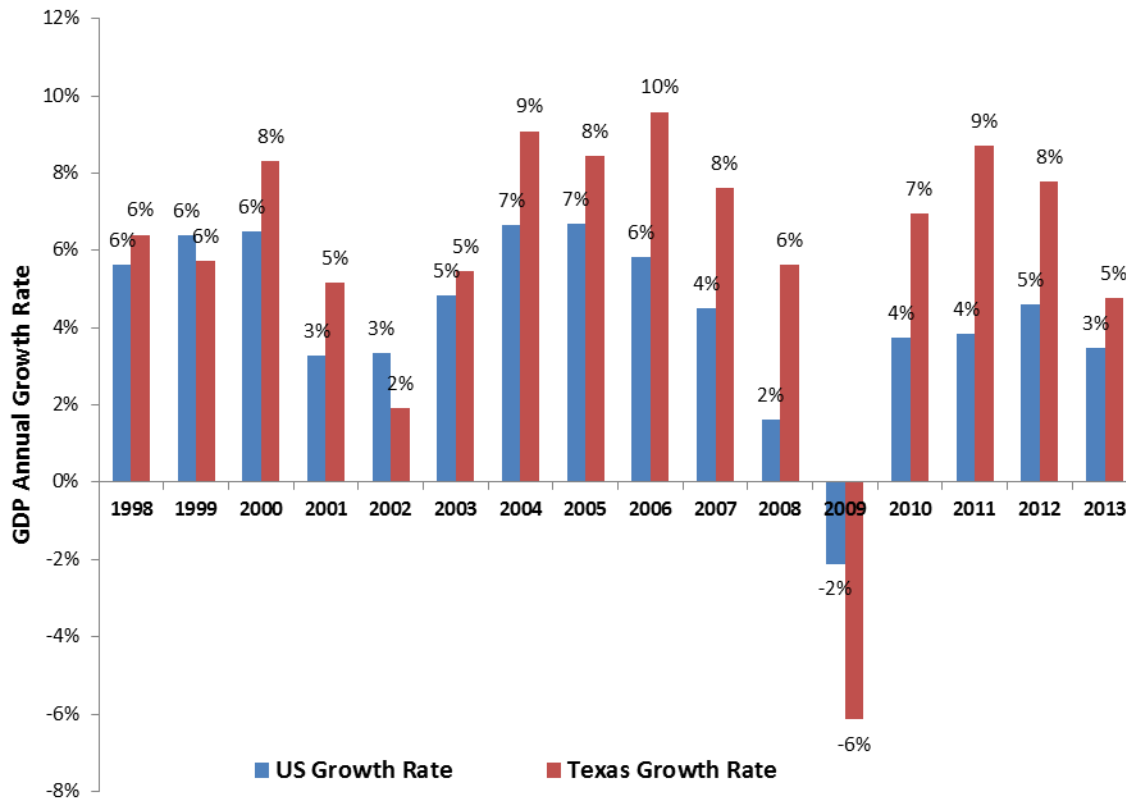


**Imports are closely related to GDP, which is used to forecast imports in the future.
Growth rate has been moderated by recent recession.**

TEXAS GDP GROWTH*



Texas GDP growth rate is significantly higher than US growth Rate. This growth rate is a key financial assumption that should be further assessed in future studies.

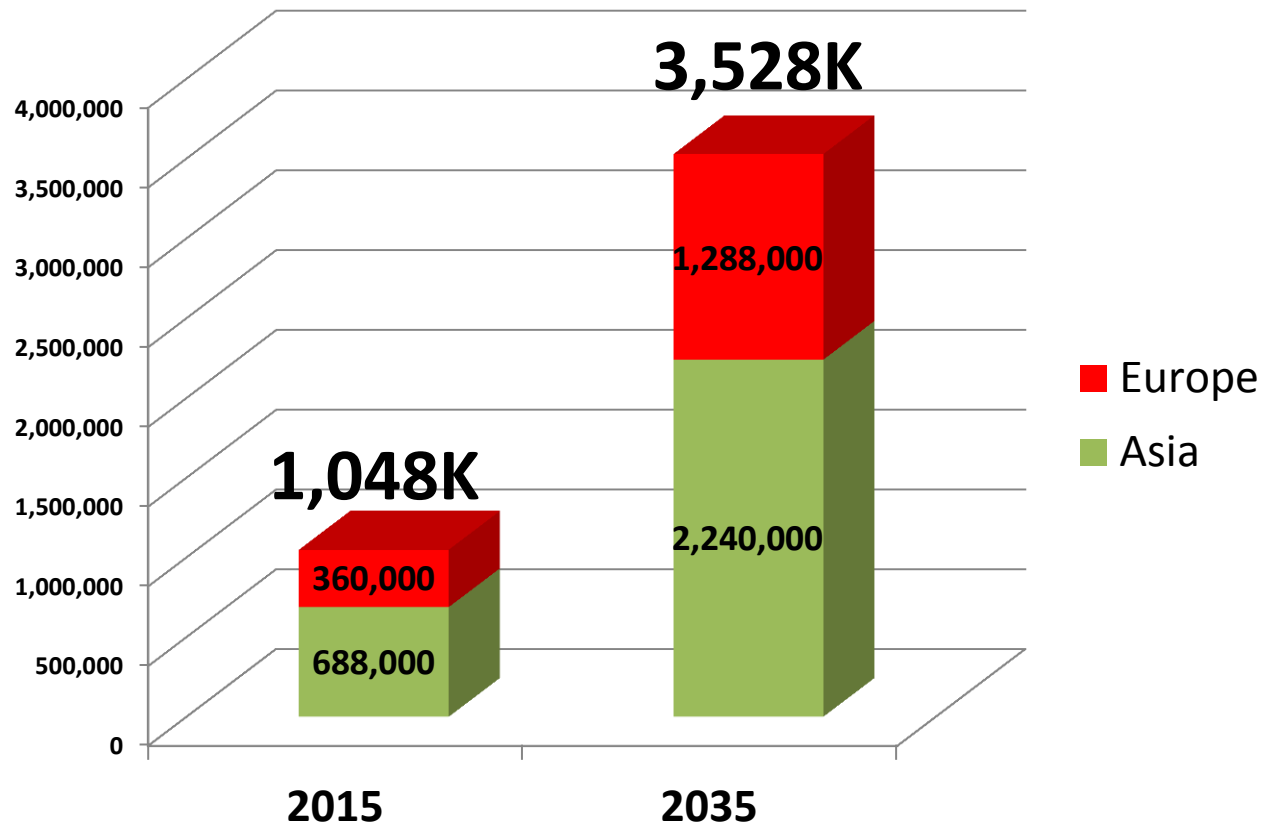


Forecast years assume Texas 7%, Grain Belt region 6%, and Midwest region 4% growth per year

Average growth rate 5.6%

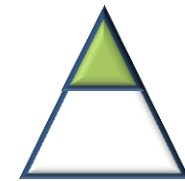
* Source: Bureau of Economic Analysis, 2014

OVERALL TEXAS BIG SHIPS MARKET FORECAST*



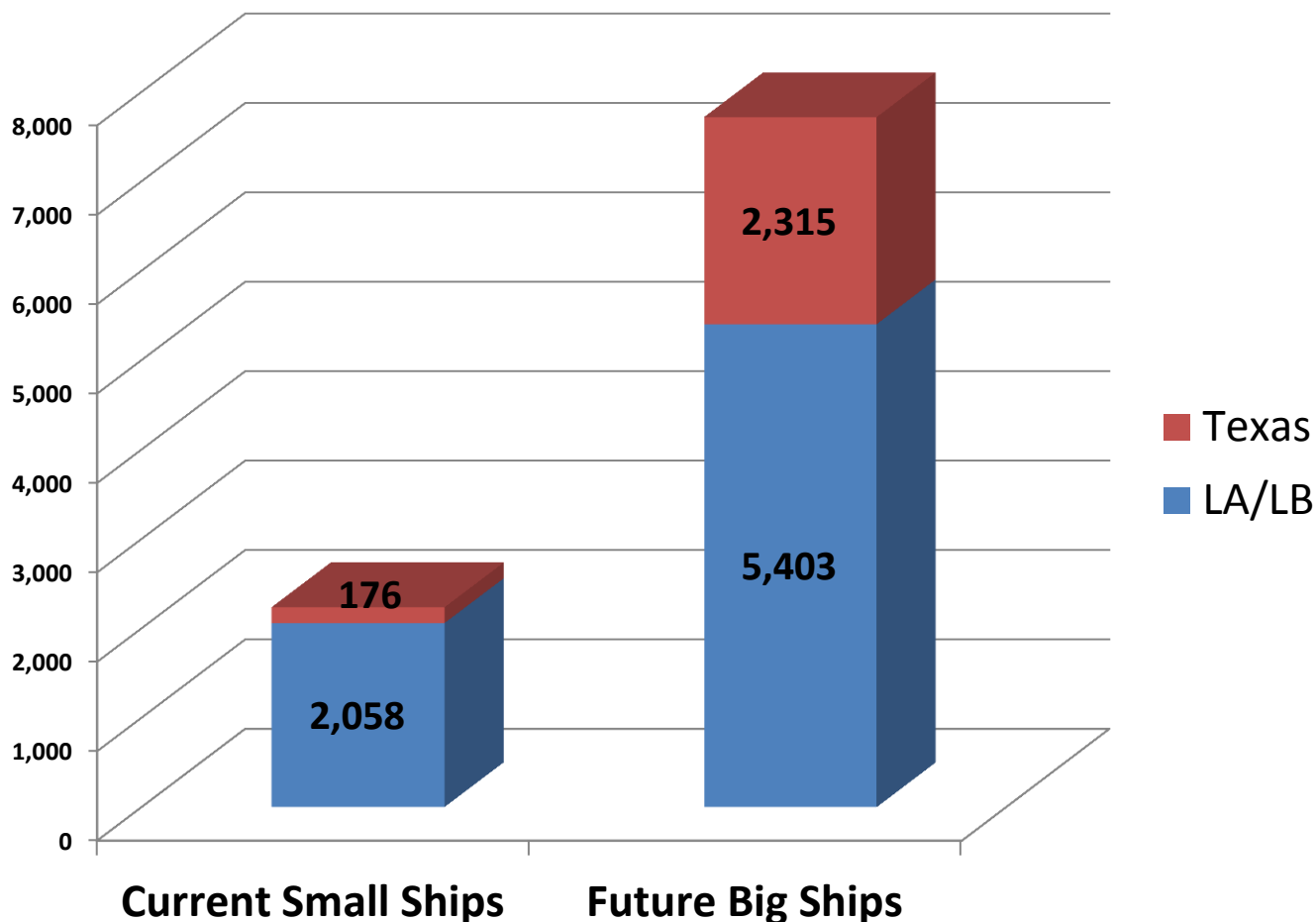
* There are an additional 60k South American and Caribbean containers at Freeport (Great White Fleet) and 185K more at Houston, not included in the above totals – Houston served by boat service topped off in Freeport.

TEXAS PORT MARKET SHARE OF ASIAN HINTERLAND TEUs GOES FROM 8% TO 30%

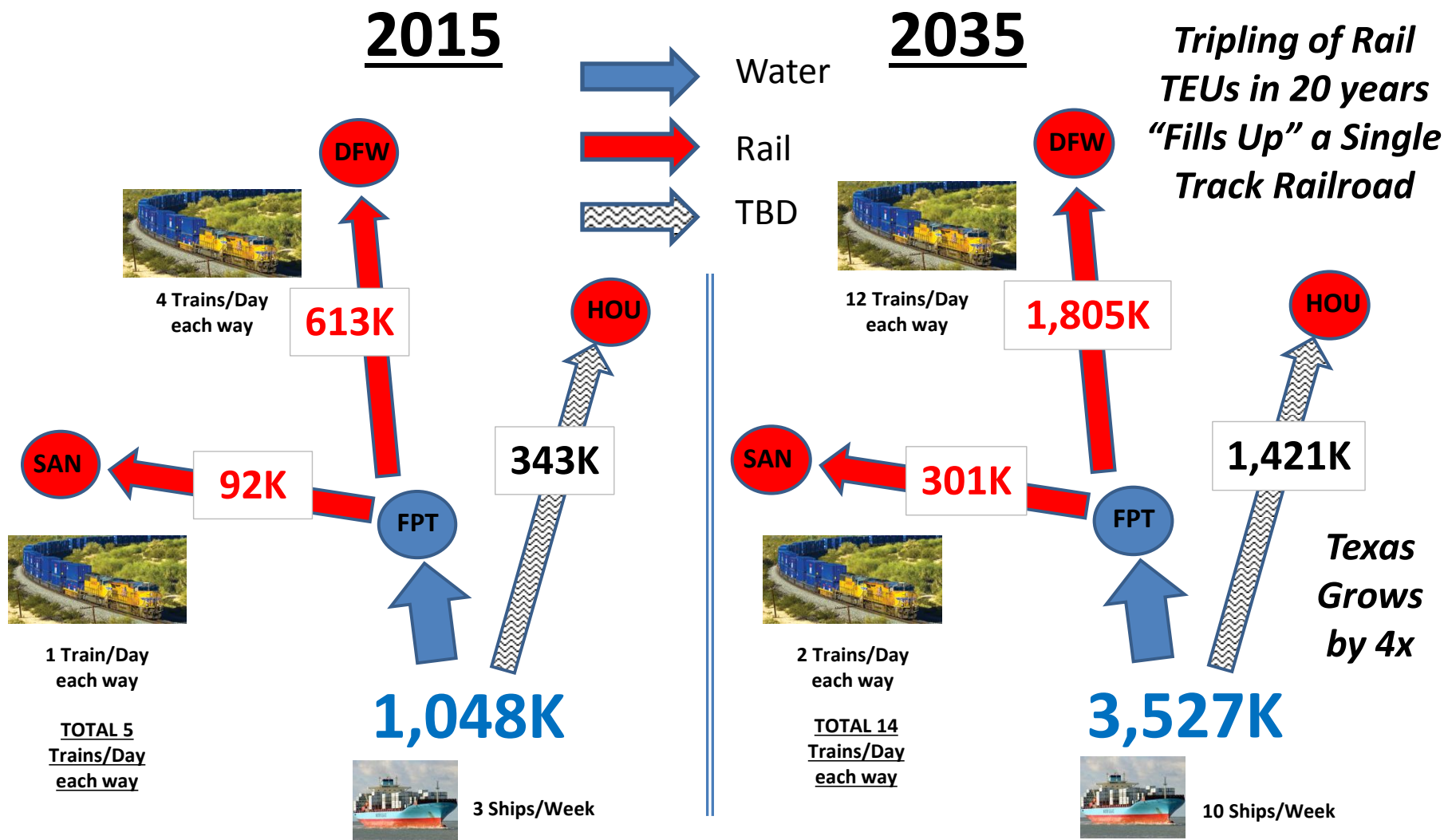


Texas Port Asian Traffic goes up by 10 times in 2035 compared to Today

LA/LB Asian Traffic into the Texas Port Hinterland more than doubles



TEXAS PORT TEUs: "BUILD FREEPORT"



Increase higher than US growth, but conservative compared to Texas State Rail Plan.

RISK ISSUE 1:

WEST COAST COMPETITIVE RESPONSE: INITIAL SWAG



- **Will average ship size maintain in the 7-8K TEU range? Most likely this is currently considered near optimal for the length of ocean haul. Biggest ships used for longer Gulf and East Coast movements.**
- **Will price wars between west coast and east coast ports happen? Not likely since the same carriers operate both lanes. Ocean carriers will naturally favor longer water routes.**
- **Railroad's competitive choices:**
 - **Rail may face capacity constraints**
 - **Reduce price and keep level of service. Unlikely, since it is losing proposition against low-cost water competition**
 - **Improve quality of service. This is more likely with improved service for high VOT goods such as computers and electronics, especially if this service improvement is supported on the water side of the movement.**

RISK ISSUE 1:

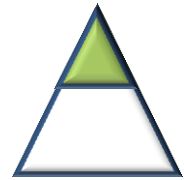
WEST COAST COMPETITIVE RESPONSE:

BETTER SERVICE

For example, Matson's "Smaller, Faster, Better" approach may become an effective competitive model for West Coast ports since the expanded Panama Canal option will only increase price pressure on both shipping lines and railroads. "Faster delivery supports higher price."

custommedia.bnppmedia.com/Custom/Home/Files/PDFs/Matson_adv.pdf





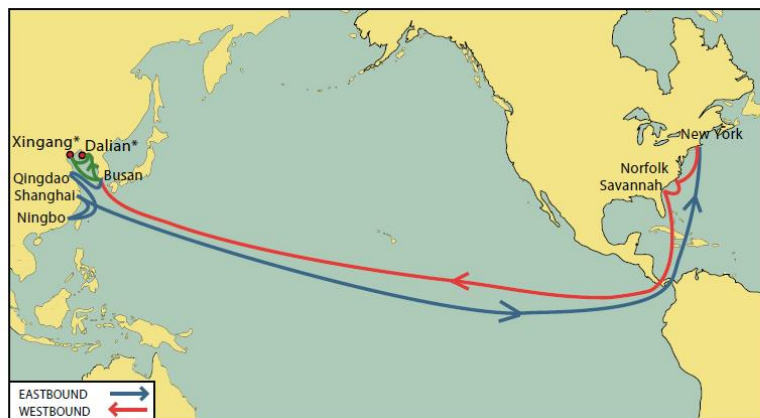
RISK ISSUE 2:

EAST COAST COMPETITIVE RESPONSE

SAVANNAH “SECOND PORT OF CALL”

- Most ships go to the big market at PANYNJ first and stop at Savannah on the way back.
- With a channel depth of only 47', Savannah will not be able to take a fully loaded Post-Panamax ship. This will likely “lock in” its “Second Port of Call” stature resulting in a competitive disadvantage.

Asia - North America
NCE: (G6 Service)



Port Rotation

| Origin | ETA/ETD |
|----------------|---------|
| Busan | SUN/MON |
| Qingdao | TUE/TUE |
| Ningbo | THU/THU |
| Shanghai (YAN) | FRI/SAT |
| New York | THU/FRI |
| Norfolk | SAT/SAT |
| Savannah | MON/TUE |
| Busan | SUN/MON |

Turnaround days
Weekly/Fixed Day Service

63

http://www2.nykline.com/liner/service_network/pdf/entire_network.pdf

RISK ISSUE 2:

EAST COAST COMPETITIVE RESPONSE



Savannah's competitive threat to Freeport is based on using KCS's *Meridian Speedway*: which brings Norfolk Southern rail service directly into Dallas.

- Port of Savannah can use it to bring European traffic into Dallas
- However, the Port of Freeport can also use it to bring Asian traffic into Atlanta

What is going to happen?



<http://www.nscorp.com/content/nscorp/en/ship-with-norfolk-southern/shipping-options/corridors/meridian-speedway.html>



RISK ISSUES SUMMARY

- **West Coast Ports:** Potential rail productivity gains are likely to be overridden by a likely compression of rail rate and profit margins. Price competition from vessel services will limit the railroads' ability to continue to invest in massive capacity expansion, so railroads will need to become more selective and focus on time sensitive traffic that is better able to bear the required rates. If the railroads allow congestion to overtake their networks they will risk even further container traffic losses to the Panama Canal and Suez.
- **East Coast Ports:** These ports are dredging and ship size will increase in both the European and Asian trade lanes. If Freeport is developed for big ships then Texas ports can hold market share against East Coast port competition. To the extent that East Coast Ports fail to dredge to 50' or deeper (Savannah is only going to 47') then Texas Ports likely can further increase their market share.



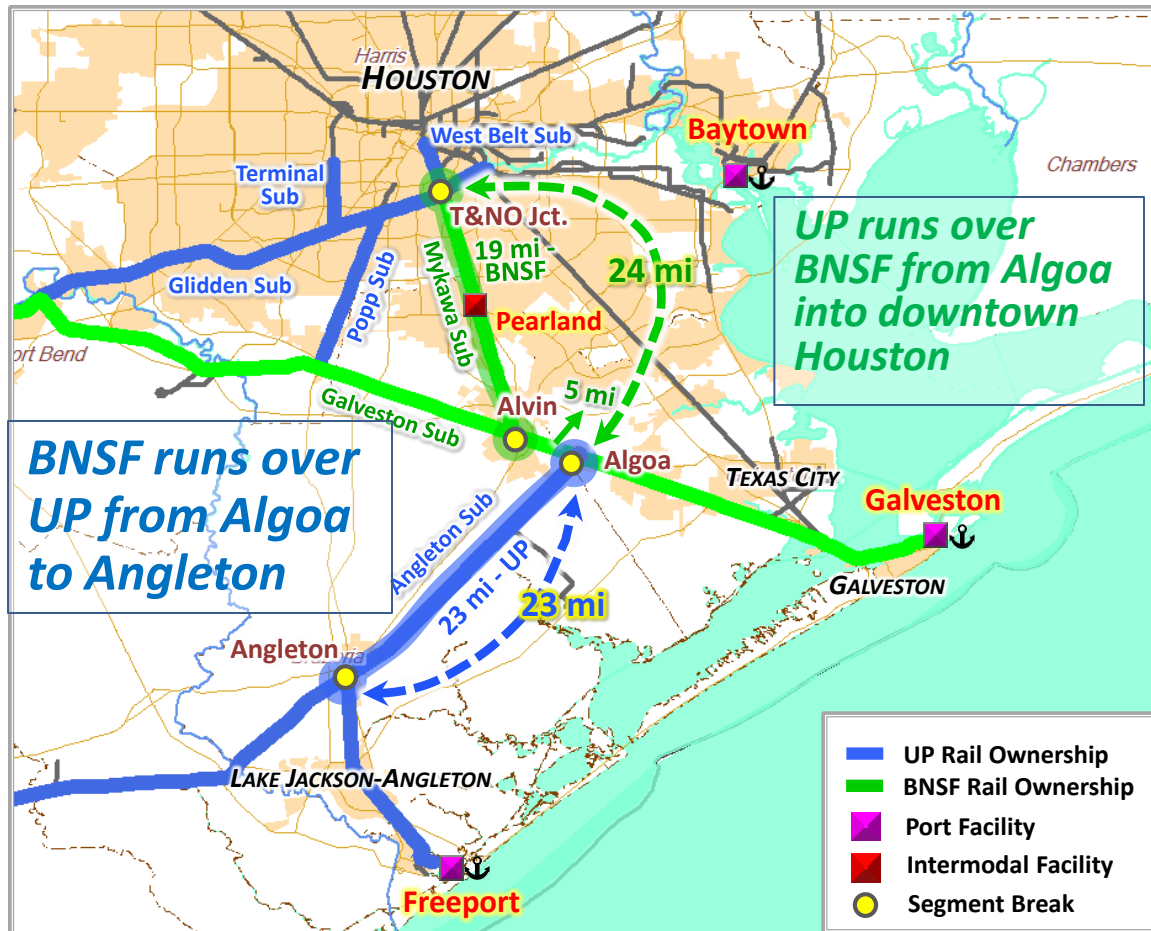
San Antonio (UP)



Location: 13001 IH-35 South, Von Ormy, TX 78202

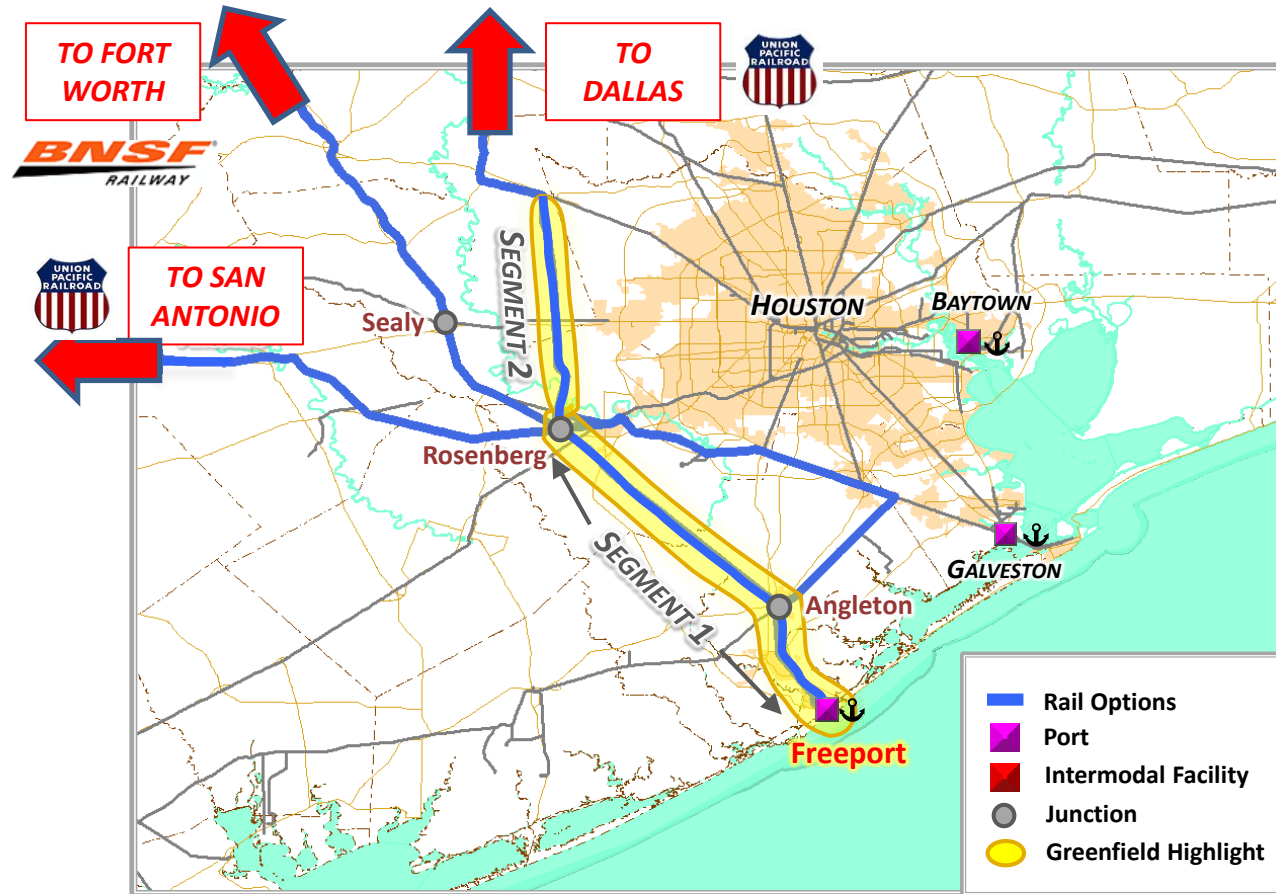
- ***Three Inland “Hub” ports are proposed.***
- ***It is suggested to initially contract with the railroads to provide needed terminal capacity at their existing ramp facilities***
- ***As traffic increases then seek to develop dedicated port facilities co-located with existing rail ramps or as close as possible***

BOTH BNSF AND UP USE TRACKAGE RIGHTS



- *Each railroad must pay the other for every train they run*
- *Railroads don't like making payments to direct competitors*
- *Railroads don't like making investments in their own lines that benefit direct competitors without cost sharing*
- *Railroads don't like investing in their competitor's rail lines*

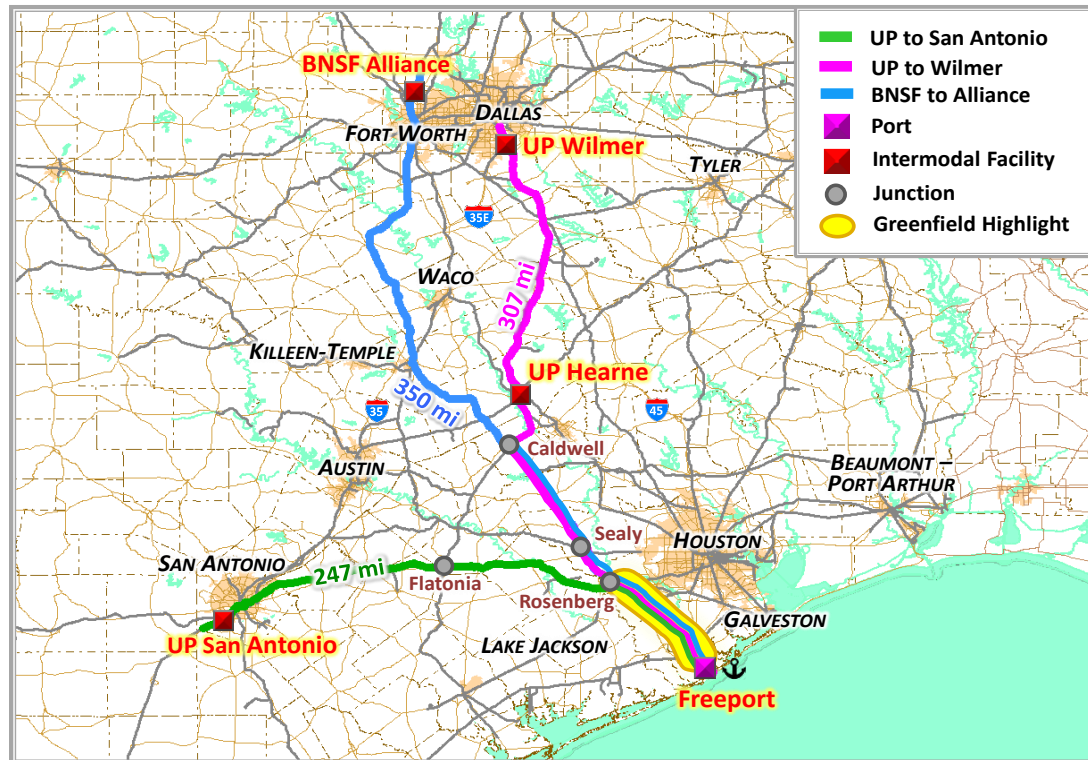
ROUTE SH 36A IS A POTENTIAL SOLUTION USING – TWO CORRIDOR SEGMENTS*



Three-way traffic split north of Rosenberg: only Dallas traffic would continue north along GF Segment 2

**** Only Conceptual Routes Shown, actual Alignments not yet located***

PROPOSED RAIL ROUTES AND MILEAGE



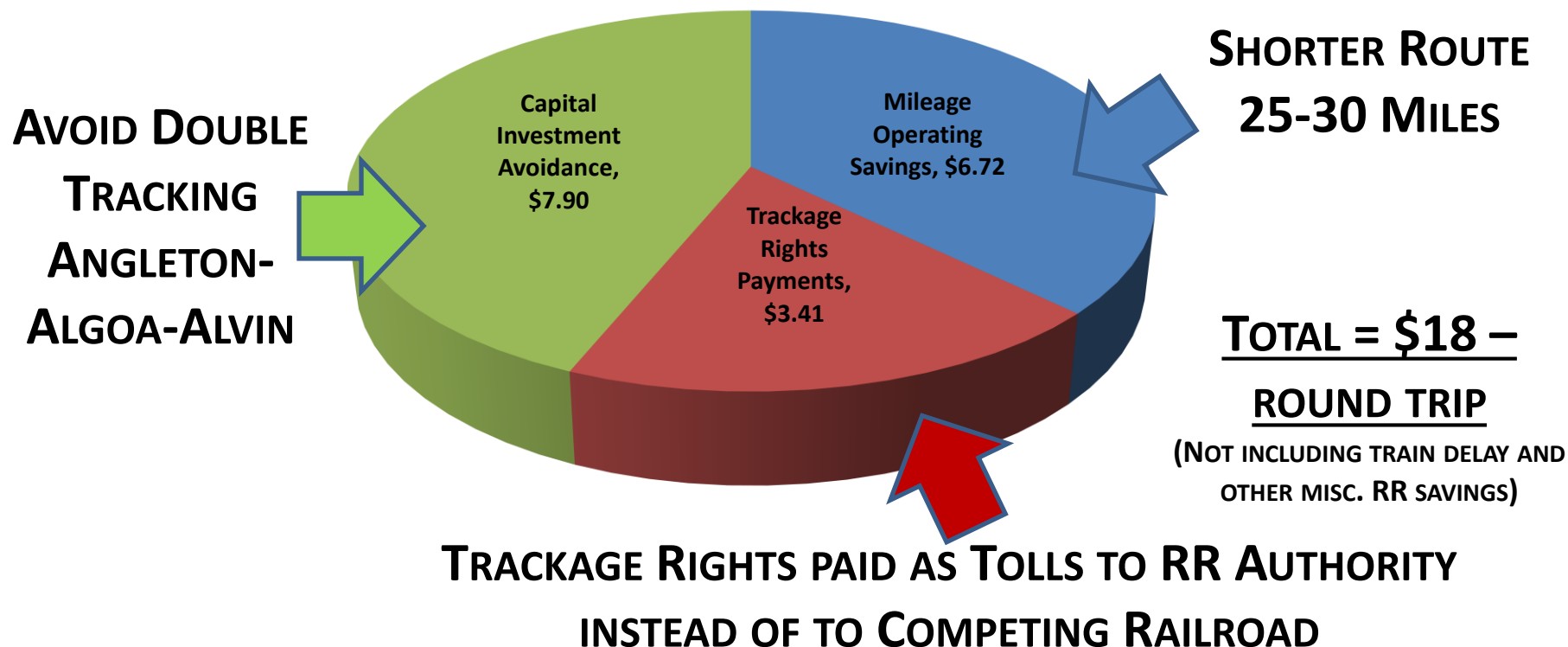
- *New Greenfield to Rosenberg eliminates 25-30 miles “dog leg” over Algoa.*
- *Extended improvements along the existing BNSF rail corridor from Rosenberg to Caldwell where UP trains would diverge to Hearne.*
- *This makes a new western Houston bypass route for UP that is shorter than UP’s existing route through the city*

RAILROAD ESTIMATED WILLINGNESS TO PAY



Estimated RR savings suggest it may be possible to charge up to \$18 per Loaded TEU* for round trip on the Rosenberg greenfield (Segment 1 or 1a). This would be:

- 64% of Alameda Corridor rate per TEU (\$10 less expensive per TEU)
- 29% of Alameda Corridor rate per TEU-mile



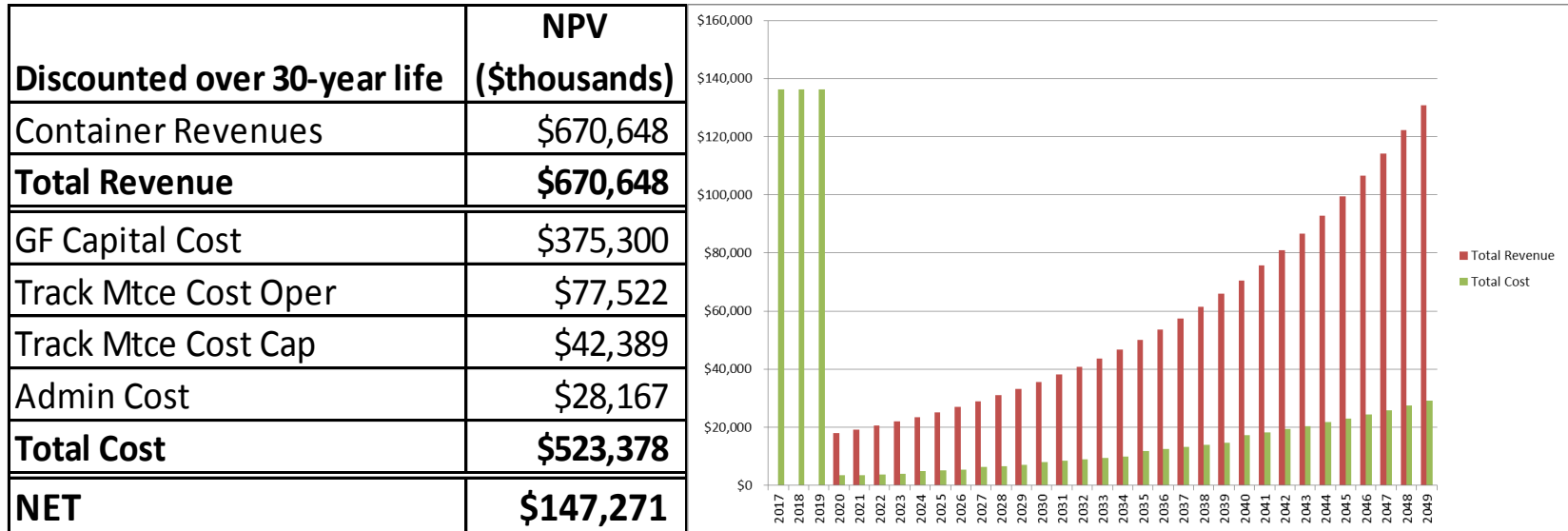


PRELIMINARY ANALYSIS SUGGESTS THAT:

- **Panama Canal will open in 2015.** . . . *TEMS believes that the opportunity for Freepost needs to be realized in the next 5 years, or else other competitive ports will establish Market Share. This will tend to lock in distribution patterns of major retailers and industrial consumers, and make it harder to shift traffic after that.*
- **The Study assumes a 2020 implementation date.** . . . *This reflects the urgency of capitalizing on the current market opportunity for Texas ports to gain control of their own hinterlands -- including the major cities of Dallas, Fort Worth and San Antonio -- rather than ceding control of these areas to LA/LB and Miami/Savannah. Moving promptly is necessary to send a clear signal to the marketplace of Freeport's intention, in conjunction with Houston, to fully develop its Port.*

PRELIMINARY FINANCIAL ANALYSIS

CONTAINER REVENUES ONLY



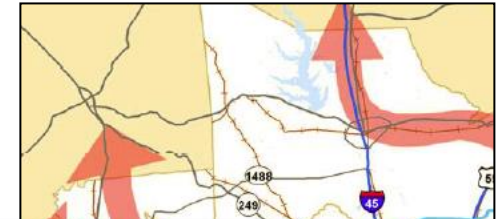
- **Conceptual Analysis undertaken from the point of view of the Freeport Railroad Authority, in nominal year of expenditure dollars**
- **Greenfield 56 Miles Freeport to NW Rosenberg (full-build Segment 1a independent of existing UP Freeport branch) est. cost \$409 million in operation by 2020**
- **At \$18 Toll per TEU, 4.4% interest and 1.4% inflation the NPV is \$147 million positive: theoretically, this analysis suggests that an infrastructure authority could fully service its Bonds without needing subsidy or grant assistance**
- **More study is needed to positively confirm costs and revenues, but suggests potential for a RRIF loan.**

SH 36A MAJOR FREIGHT OPPORTUNITIES*



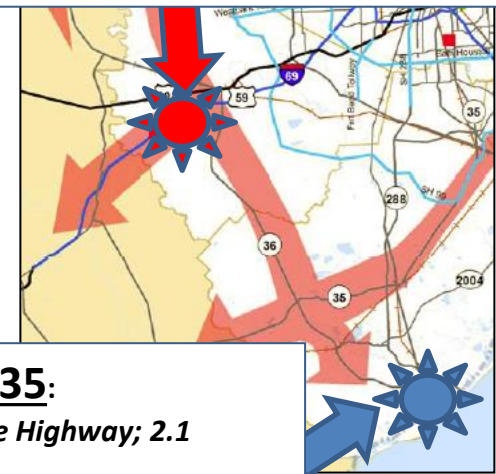
- **Current modeling suggests water penetration of local Houston market won't change much, due to added trucking cost from Freeport.**
 - Most new Freeport traffic goes to Dallas, Fort Worth, San Antonio and beyond – served today out of LA/LB.
 - As a result, rail volumes will continue to increase everywhere and UP and BNSF will still need to develop additional ramp capacity.
- **Rosenberg is well positioned in the future to become a major rail logistics hub. Shifting intermodal activity from UP Englewood and BNSF Pearland to Rosenberg would reduce rail congestion in downtown Houston.**
- **Overall, potential is 15,000 - 30,000 jobs likely in the SH 36A corridor, mostly consisting of distribution and industrial jobs.**

* As detailed on the following slides



Rosenberg Rail Intermodal 2035:

*Up to 1 Million TEUs on the Highway;
Houston Distribution Growth 25% Share of Rail TEUs
5,000-10,000 jobs*



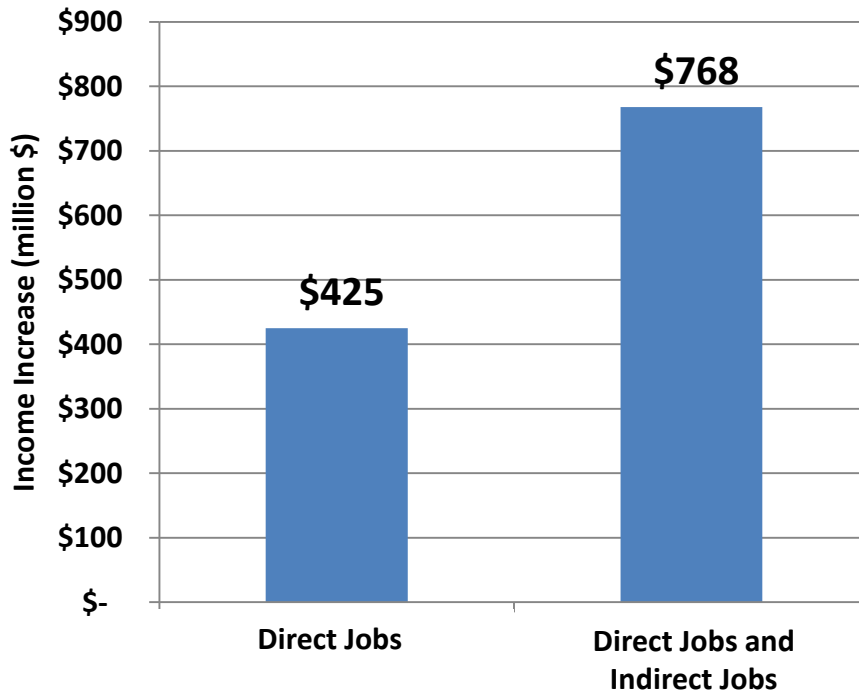
Port of Freeport 2035:

*Up to 1.4 Million TEUs on the Highway; 2.1 Million going out by Rail.
Port Operations, Import and Export Transload,
Houston Distribution Growth Share of Water TEUs
10,000-20,000 jobs.*

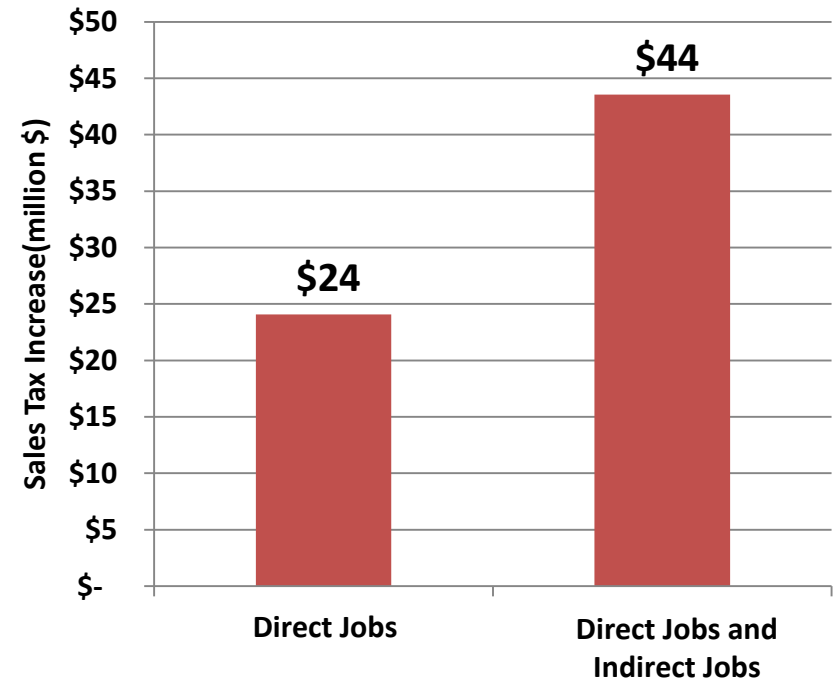
SH 36A ECONOMIC IMPACTS – INCOME AND SALES TAX INCREASE BY 2035



Total Income Increase
(million \$ per Year)



Total State Sales Tax Increase
(million \$ per Year)



THANK YOU

FOR MORE INFORMATION CONTACT

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