

Regional Airport System Plan (RASP) 2040



Kale Driemeier

Transportation
Planner

Office of Freight and
Aviation

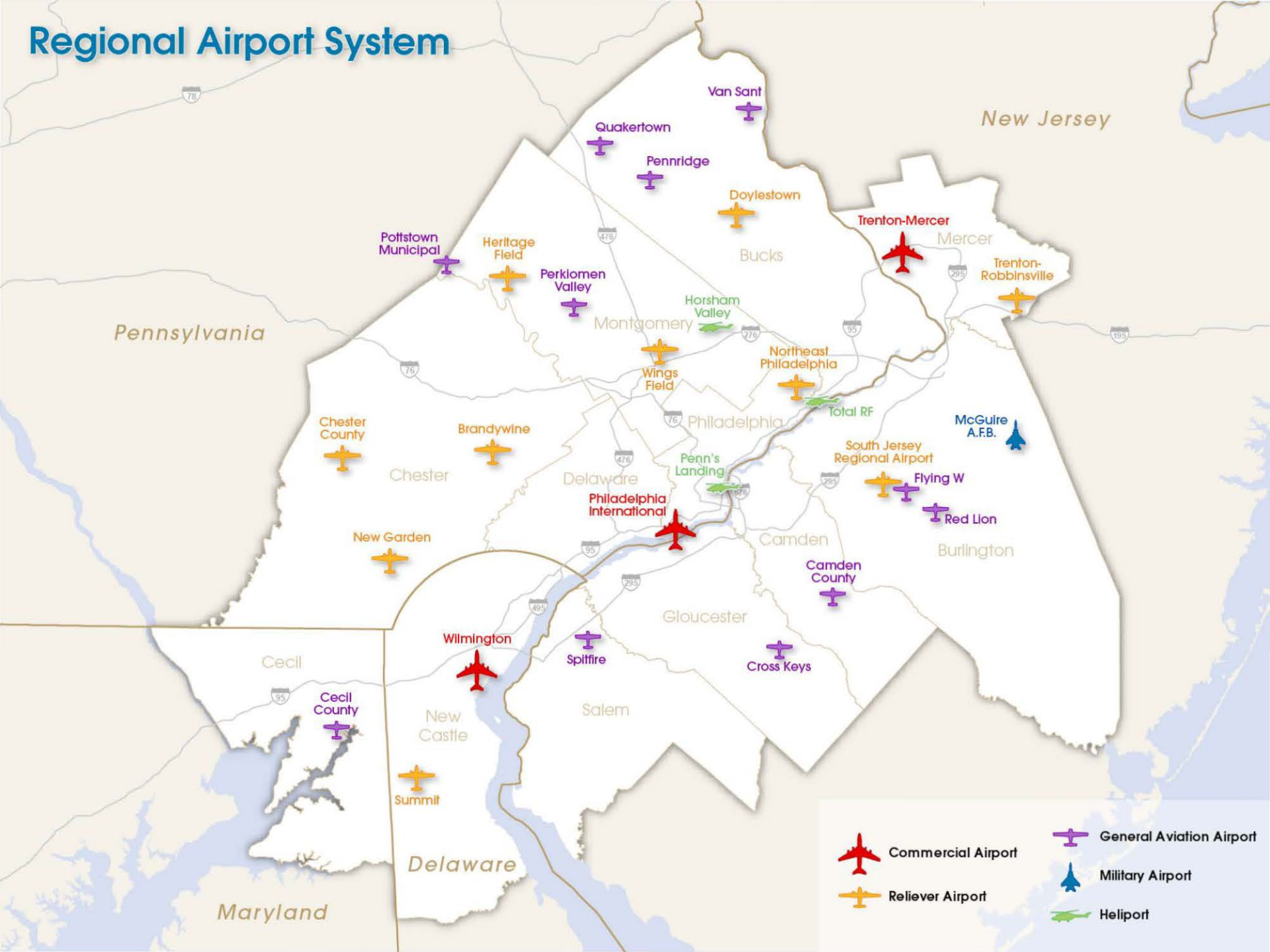
October 15, 2014



GENERAL BACKGROUND

- **Four States:**
 - Pennsylvania (five-county DVRPC planning area)
 - New Jersey (four-county DVRPC planning area plus Salem County)
 - Delaware (New Castle County)
 - Maryland (Cecil County)
- **27 total facilities:**
 - 3 commercial airports
 - 10 reliever airports
 - 11 general aviation airports
 - 3 heliports

Regional Airport System



	Commercial Airport		General Aviation Airport
	Reliever Airport		Military Airport
			Heliport

WHAT IS THE RASP?

- Funded by FAA
- Guides development of aviation facilities in the region to ensure air mobility and economic development.
- First RASP was written 1980-1982 for Year 2000. Most recent RASP was for Year 2035.
- Incorporates input from a 15-member RAC subcommittee.



RASP PRIORITIES

The priorities stated in the 2040 RASP are:

- 1.** Expand commercial capacity within the region;
- 2.** Preserve public use general aviation and reliever facilities;
- 3.** Sustain and improve infrastructure to attract more users;
- 4.** Improve community outreach to inform the public of the importance of airports to the local and regional economy;
- 5.** Improve efforts to attract students to careers in aviation fields.

PLAN RECOMMENDATIONS

1. Expand commercial capacity within the region:

- Philadelphia International: establish non-stop service to Asia and South America by American Airlines or foreign flag carrier.
 - This will allow both passenger and cargo accessibility to the Delaware Valley from all major global trade centers.
 - One-third (3.7 billion tons) of cargo by volume that entered the United States in 2010 was shipped on passenger jets.
- Trenton-Mercer: a direct bus link between the airport terminal and the Trenton Transit Center.

PLAN RECOMMENDATIONS

2. Preserve public use general aviation and reliever facilities:

- Airport zoning enactment around the following facilities:
 - Chester County
 - New Garden
 - Northeast
 - Wings Field
 - Pennridge
 - Perkiomen Valley
 - Quakertown
- Explore possibility of public acquisition of Spitfire.

PLAN RECOMMENDATIONS

- 3. Sustain and improve infrastructure to attract more users:**
 - Ensure ADA compliance of facilities (All).
 - Explore possibilities for Public-Private Partnerships (P3) and community hanger approach (All).
 - Transient hangars to attract greater corporate jet traffic (Reliever).
 - Add Jet-A to attract Medivac services, especially for airports near hospitals (GA).
 - Achieve runway design guidelines at South Jersey, Brandywine, and New Garden.
 - Seawall restoration and pier expansion at Penn's Landing Heliport.

PLAN RECOMMENDATIONS

4. Improve community outreach to inform the public of the importance of airports to the local and regional economy:
 - Many airports do this through community days or other annual events.
 - In addition, it is recommended that there be greater involvement by pilots and airport operators in local government; this can range from attending government meetings to seeking elective office.

PLAN RECOMMENDATIONS

5. Improve efforts to attract students to careers in aviation fields:
 - Flying offers a plethora of both hands-on career and hobby activities.



QUESTIONS?

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(last day is Oct. 24)

PHILADELPHIA REGIONAL PORT AUTHORITY

Competing and Thriving in the Marine
Terminal Industry

Philadelphia Regional Port Authority



Piers 78 / 80

Pier 82

Pier 84

Pier 96

Pier 98

Pier 100

Pier 122

Pier 124

SouthPort

Pier 98 Annex

Walt Whitman Bridge

Packer Avenue
Marine Terminal

Delaware River
40' MLW main river channel

 *Future Port Expansion Area*



Future Port Expansion Area

Tioga Port
Administration Building



Allegheny Ave.

Delaware Ave.

Tioga Marine Terminal

Delaware River



Total Cargo Statistics

	<u>August</u> <u>2013</u>	<u>August</u> <u>2014</u>	<u>% Change</u>	<u>August 2013</u> <u>Year-To-Date</u>	<u>August 2014</u> <u>Year-To-Date</u>	<u>% Change</u>
Containers						
Containers (TEUS)	36,439	43,215	18.60%	239,150	303,284	26.82%
Containers (Metric Tonnage)	234,887	260,769	11.02%	1,633,527	1,952,015	19.50%
Breakbulk						
Steel	28,391	29,105	2.51%	166,137	243,584	46.62%
Fruit	20,174	16,220	-19.60%	170,229	155,416	-8.70%
Forest Products	50,541	62,195	23.06%	320,807	343,831	7.18%
Cocoa Beans	12,231	6,187	-49.42%	107,949	86,400	-19.96%
Project Cargo	3,508	3,229	-7.95%	29,140	27,489	-5.67%
Sugar	9,848	0	-100.00%	33,327	9,985	-70.04%
Other	0	0	0.00%	138	220	59.42%
Breakbulk Total	124,693	116,936	-6.22%	827,727	866,925	4.74%
Ro/Ro						
Automobiles (Units)	11,635	15,523	33.42%	88,569	104,806	18.33%
Auto (Metric Tonnage)	16,190	22,272	37.57%	123,926	146,057	17.86%
Ro/Ro Total	16,190	22,272	37.57%	123,926	146,057	17.86%
Bulk						
Liquid Bulk	92,120	180,566	96.01%	846,332	974,040	15.09%
Bulk Total	92,120	180,566	96.01%	846,332	974,040	15.09%
Grand Total	467,890	580,543	24.08%	3,431,512	3,939,037	14.79%

Fibria Project

- In April of 2012, as part of Pennsylvania Governor Tom Corbett's trade mission to Brazil, PRPA and DRS met in Sao Paulo with Fibria.
- In March of 2012, PRPA engaged the Pilots Association of the Bay & River Delaware to certify suitability of river channel and terminal berth and overall accessibility of the Tioga Marine Terminal.
- On January 14, 2013, we made our presentation to the Commonwealth of Pennsylvania for funding for the rail improvements necessary for this project.
- On June 6, 2013, the Commonwealth delegated \$13 million to PRPA for the rail improvement project.

Fibra Berth Dredging

- Berth 3 dredging completed March 2014
- Additional dredging performed at Berth 2
- We are currently at 41' + 1' from berth to edge of Federal navigation channel
- Delaware River will soon be dredged to 45' to the Ben Franklin Bridge
- With a 6' tide deeper draft vessels can make it to Tioga Marine Terminal



Fibra Berth Dredging

The first vessel discharged on July 20, 2014. PRPA agreed to make certain landside infrastructure improvements to TMT. The list improvements includes the following:



Fibria Tioga Improvements

- Concrete Floor (300,000 sf).
- Demolish the refrigeration units, insulated walls and foundations.
- Demolish the steel structures on the west dock to allow rail loading.
- Rail dock overhead canopy extension.
- Ship apron concrete pad.
- Ship apron asphalt mill and overlay paving.



Fibria Tioga Improvements

- Tire scrubbers at each waterside door.
- Electrical upgrades (lighting, emergency exit, etc.).
- Concrete repairs on the rail loading dock .
- Rail crossover and turnout to allow for operational efficiencies.
- New overhead doors (25).



Tioga Rail Upgrades

•Tioga Marine Terminal (TMT) was restricted from receiving 89'-9" rail cars due to the following restrictions:

- The reverse 'S' curve near Allegheny Avenue
- The main turnout into TMT
- The degree of curvature of the at-grade crossing at Delaware Avenue
- Perceived clearance issues on-site



Tioga Rail Upgrades

- PRPA replaced the turnout and at-grade crossing -- \$475,000 December 2012
- Conrail modified the track at the reverse 'S' curve
- May 6, 2013 – Conrail ran 89'-9" cars through the reverse 'S' curve, over the new turnout & crossing and through TMT. – Passed
- PRPA request confirmation that the clearance bureaus of NS and CSX have updated records.



Tioga Marine Terminal Weight Restriction Issues

TMT has been limited to rail car weights not exceeding 263,000 pounds due to limitations of the rail track servicing the facility.

Over time some of those restrictions have been corrected and the final impediment to allowing 286,000 pound rail cars is the Richmond Street Bridge.

As part of the I-95 widening project, the bridge is being replaced. In February 2015 TMT will be allowed to advertise 286,000 pound rail car capacity.

PRPA will look to the clearance bureaus of NS and CSX to update their records at that time.

Tioga Marine Terminal Plate 'F' Rail Car Clearance

Multiple studies have been performed since 2007 in an effort to determine what are the necessary steps to allow taller rail cars to access Tioga Marine Terminal. Presently the tallest rail car allowed to TMT is restricted to 15'-0". This restriction is due to several bridges within the Port Richmond Industrial Corridor.

- Tioga Marine Terminal is presently limited to Plate 'C' rail cars which do not exceed the 15' height.
- Tioga Marine Terminal would benefit from higher rail car clearances. Economy of scale makes the terminal more competitive.
- Fibria request Plate 'F' rail cars which measure 17'-0" from the top of rail.
- On June 18, 2013 PRPA issued a notice-to-proceed to Conrail to design the Port Richmond Industrial Corridor track improvements. The scope includes: surveying, rock probes, preliminary design, final design and preparation of the bid package.

Port Richmond Industrial Track Samples of Clearances



Clarissa Street (MP 7.41) Looking west



Fifth Street (MP 9.12) Looking west



York Road (MP 8.07) Looking west



Erie Avenue (MP 8.35) Looking west

Port Richmond Industrial Track Clearances

Existing Plate "C" Clearance 15'

Need Plate "F" Clearance 17.33'

Milepost	Structure	Min. Vertical Clearance	Required Track Lowering
7.50	Lycoming Street	16.90'	0.43'
7.80	York Road	15.84'	1.49'
8.35	Erie Avenue	16.25'	1.08'
8.80	Sedgley Avenue	17.07'	0.26'
8.85	Amtrak	15.74'	1.59'
8.90	Glenwood Avenue	16.11'	1.22'
9.12	Fifth Street	16.77'	0.56'
9.31	Berks Industrial Track	16.22'	1.11'
9.78	Cambria Avenue	16.16'	1.17'
9.93	Somerset Street	15.91'	1.42'

*

*NOTE: Berks Industrial Track is an abandoned bridge and Conrail is considering demolition or jacking it up in lieu of lowering.

Delaware River Main Channel Deepening

U.S. Army Corps of Engineers
Philadelphia District

Philadelphia Regional Port Authority



- Increase authorized depth of Delaware River federal navigation channel from 40 to 45 feet - **Reaches AA, A, B, C, D (river portion), Reach E (Delaware Bay portion)**
- Follow 40-foot channel alignment 102.5 miles from Philadelphia/Camden to deepwater in Delaware Bay
- Current project cost: \$303 million
- Non-federal sponsor (35% cost share): Philadelphia Regional Port Authority
- Federal share(65% cost share): Corps of Engineers

Port Beneficiaries

- 80 percent container and dry bulk cargo
- 20 percent Crude Oil and Petroleum products



Construction Completed to Date

- Reach C - September 2010
- Lower Portion of Reach B - January 2012
- Reach A - February 2013
- Reach D - May 2013

Hydraulic Dredge



Hopper Dredge



Bucket Dredge



Construction Calendar Year 2014

- Lower Reach A
- Reach AA
- Lower Reach E – Broadkill Beach, Delaware

Lower Portion of Reach A

- Dredging in July 2014
- SW of Philadelphia Airport to Chester (~3 miles)
- Estimated Quantity: 400,000 cubic yards
- Placement of Material: Corps - Fort Mifflin Site, PA
- Dredging Method: Bucket and Hopper
- Contractor: Great Lakes Dredge & Dock Co
- Cost: \$14.1 million

Reach AA

- Dredging began in August 2014
- Ben Franklin Bridge to Walt Whitman Bridge (~2.5 miles)
- Estimated Quantity: 650,000 cubic yards
- Placement of Material: Corps - Fort Mifflin Site, PA
- Dredging Method: Bucket Dredge
- Contractor: Great Lakes Dredge & Dock Co.
- Cost: \$25.4 million

Lower Reach E - Broadkill Beach

- Construction to Start - Spring 2015
- South end of project (~15 miles)
- Estimated Quantity: 1.9 million cubic yards
- Placement/Beneficial Use: Broadkill Beach, Delaware
- Dredging Method: Hopper Dredge
- Contractor: Weeks Marine Inc.
- Cost: \$63 million



The Remaining Work

- 2015 to completion (currently on track for 2017)
- Reach B
- Channel Dredging
- Marcus Hook Anchorage
- Rock Removal
- Upper Reach E

NICHOLAS WALSH

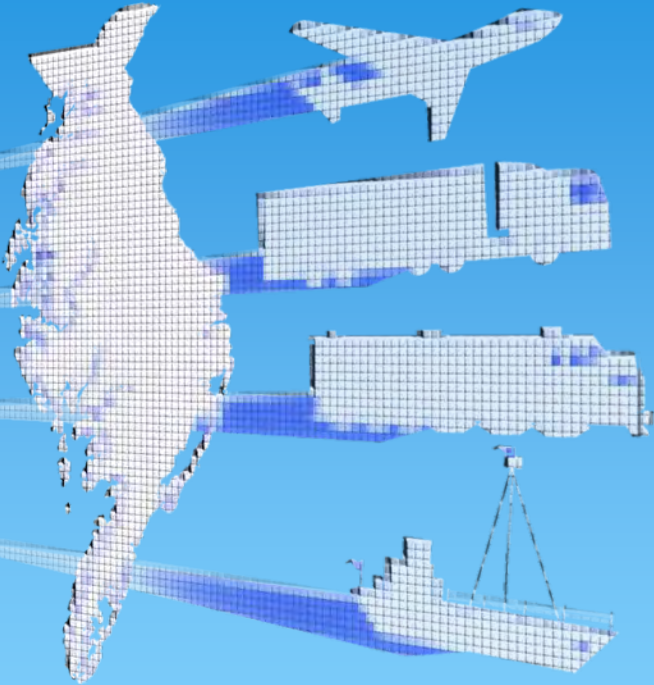
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DELMARVA FREIGHT PLAN

Delmarva Freight Plan Scenario Analyses

*An Overview for the
DVRPC Freight Advisory Committee
Goods Movement Task Force*

October 15, 2014



Delaware Department
of Transportation



Maryland Department
of Transportation



Dover/Kent
County MPO



VANTAGE POINT
DEVELOPMENT ADVISORS, LLC

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
ENGINEERS · ARCHITECTS · PLANNERS
WRALLP.COM

Agenda / Introduction

Introduction

**Background
Efforts**

**Scenario
Planning**

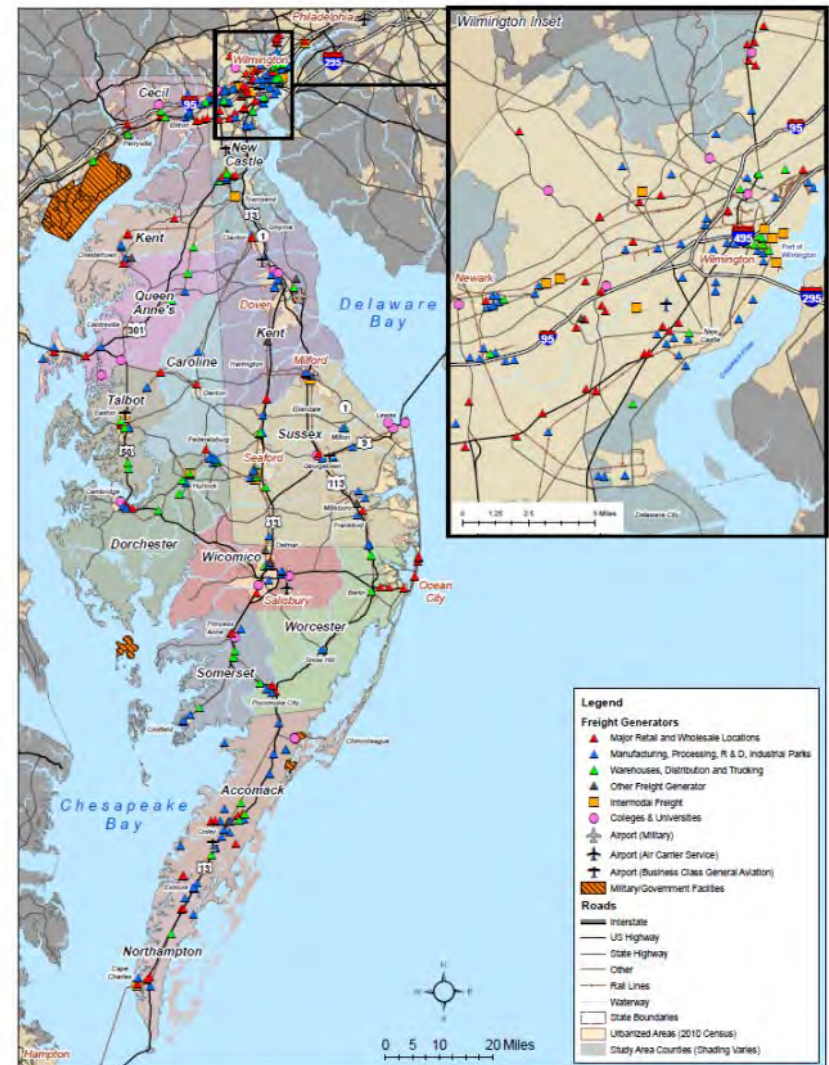
**Project
Implications**

**Summary &
Next Steps**

Introduction

What is the Delmarva Freight Plan?

- **Multi-state, multi-MPO, multi-modal** evaluation of Delmarva's freight system
- Aimed at **compliance w/ MAP-21** and National Freight Policy goals & objectives
- Identifies projects to satisfy criteria for accessing certain **federal funding options**
- Integrates **commodity flow modeling** using a Cube Cargo
- Integrates quantitative **performance-based scenario planning** alongside a qualitative review of freight focus areas



Background Efforts

Introduction

Background Efforts

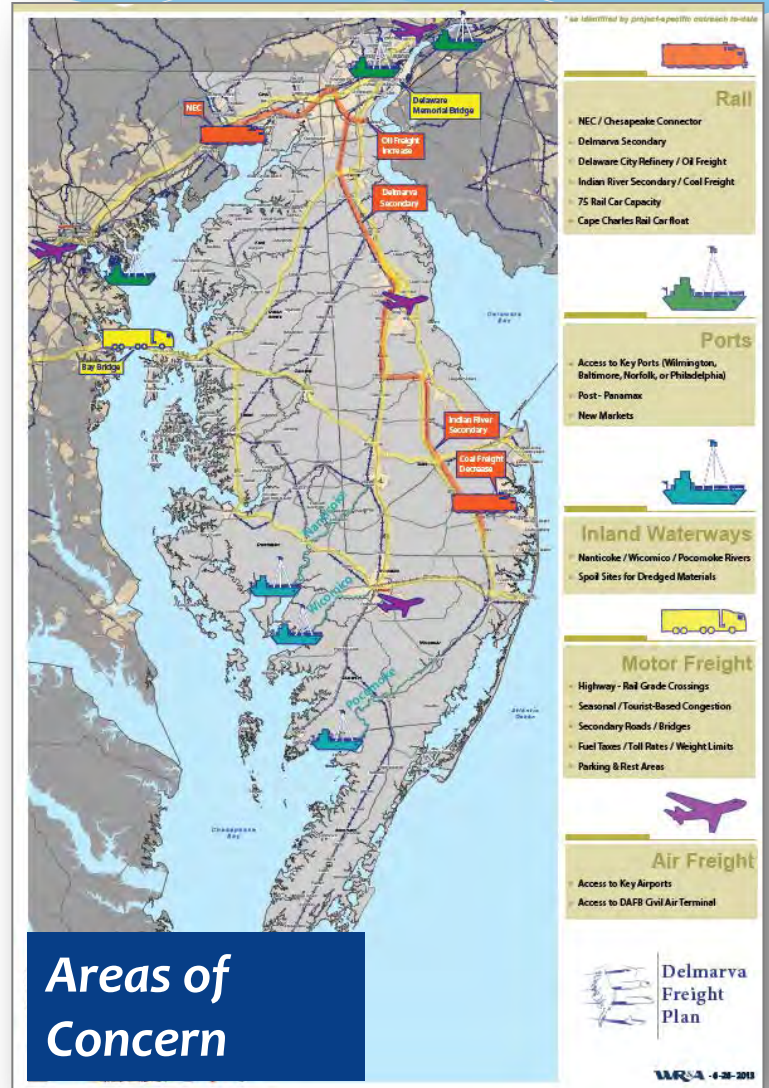
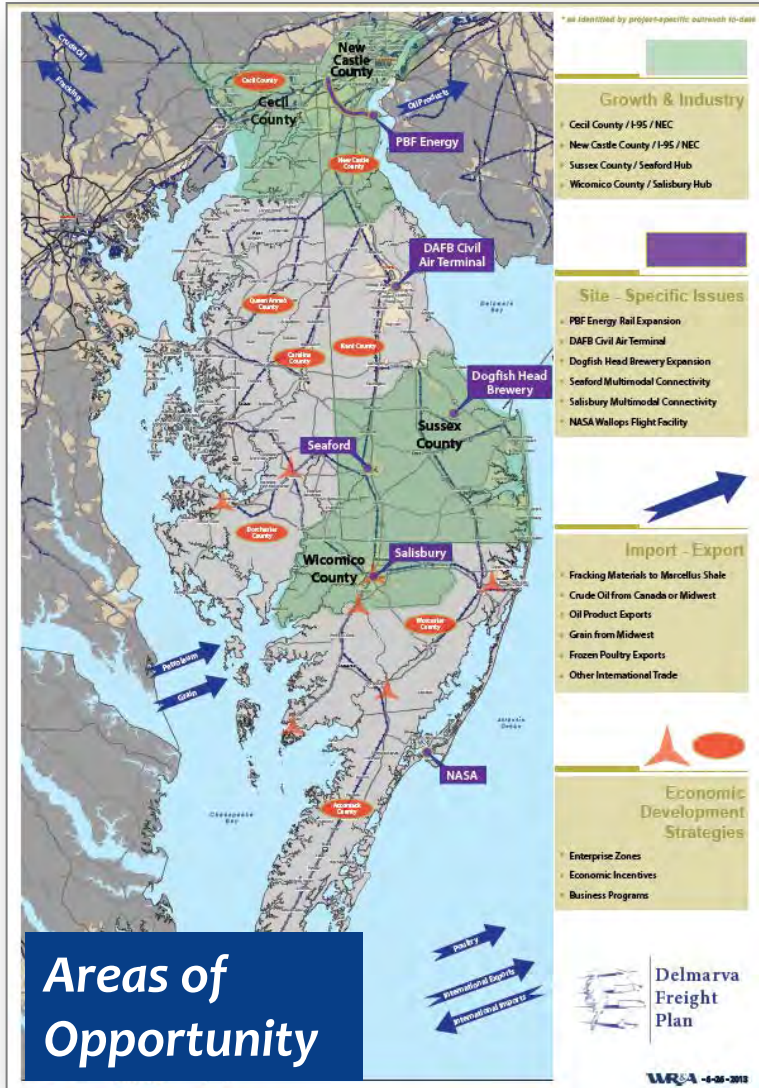
Scenario Planning

Project Implications

Summary & Next Steps

DELMARVA FREIGHT PLAN

Stakeholder Outreach



DELMARVA FREIGHT PLAN

Commodity Flow Data

Data Sources



Transearch
(county-level detail, truck/water)



U.S. Department of Transportation
Federal Highway Administration

FAF 3 (air/pipeline, import/export)

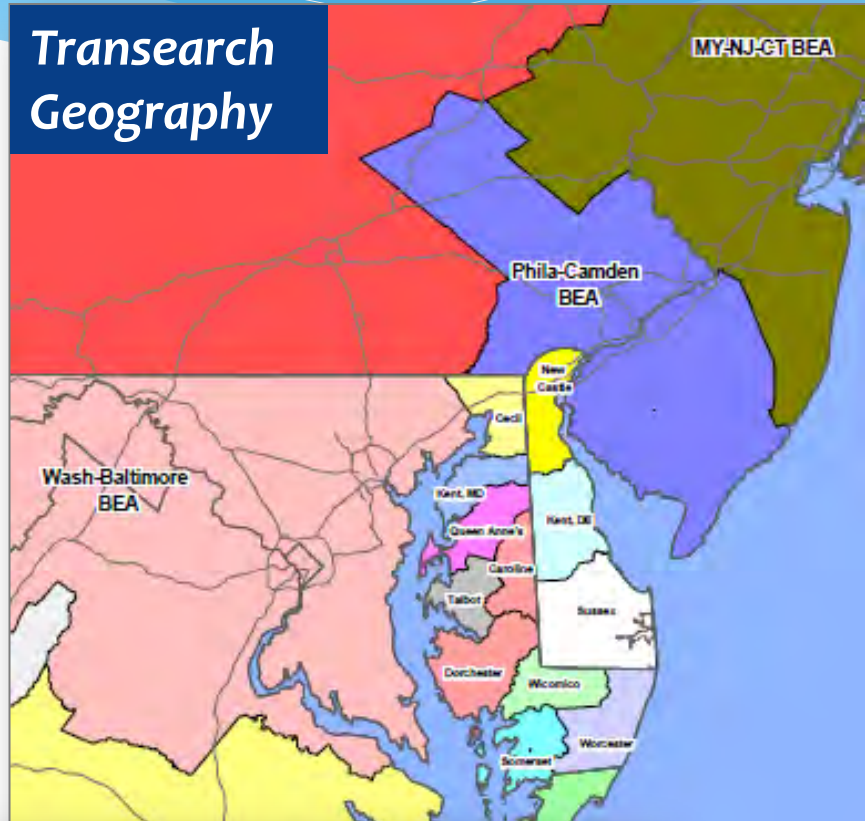


Surface Transportation Board

Rail waybill sample data



Inter-county flows, model groups



Commodity Flow Data

Data interpretation...

Example 1: Multi-stop

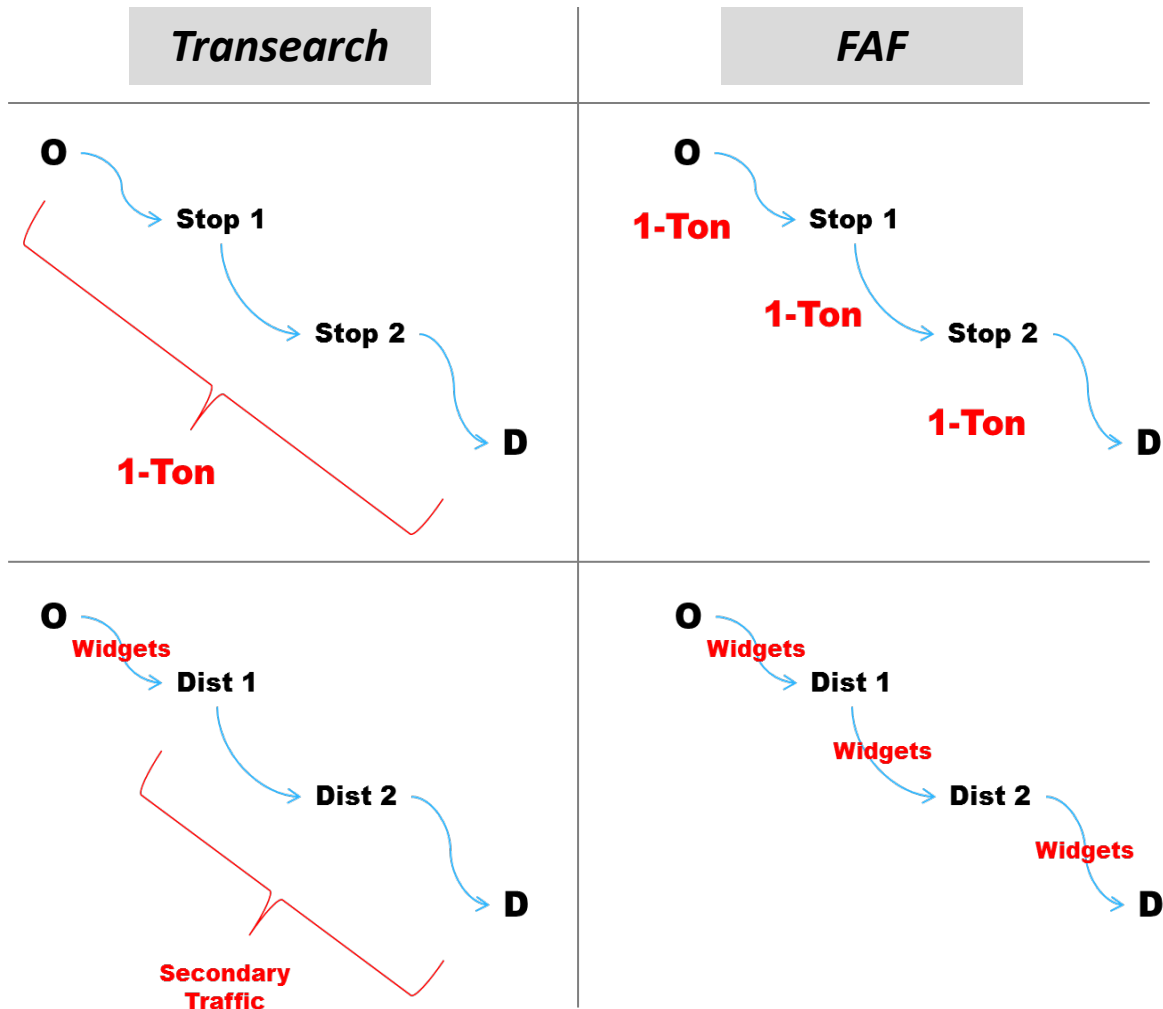
Transearch = 1-trip per O-D (unless mode changes);

FAF = 1-trip for each intermediate stop...multiple tons for same O-D

Example 2: Dist. Centers

Transearch = Secondary Traffic out of distribution centers.

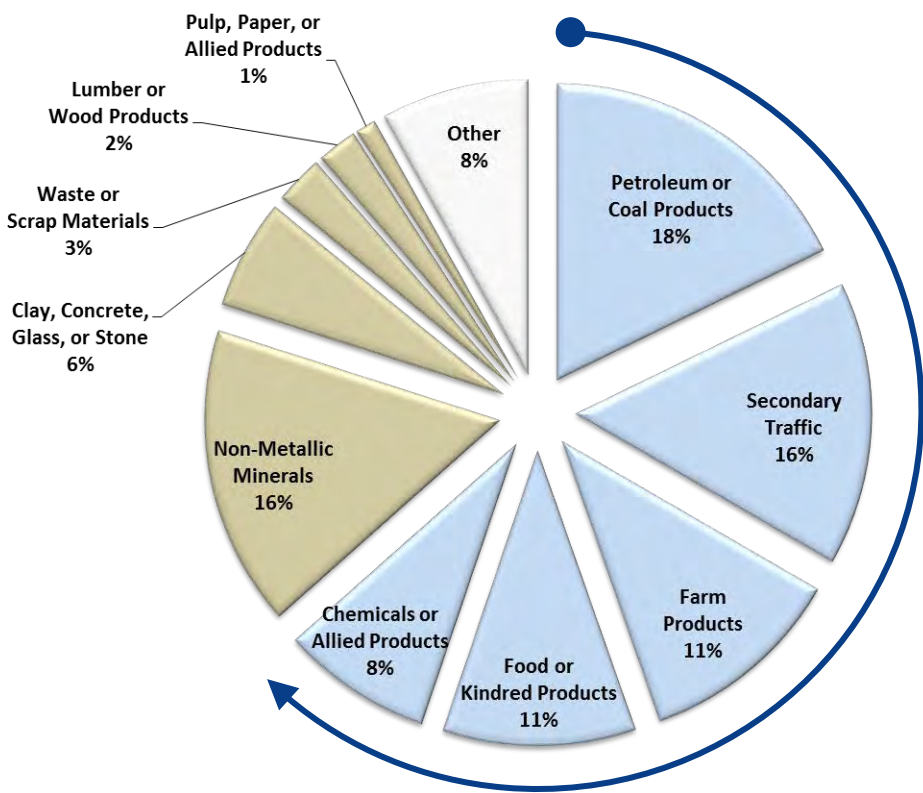
FAF = commodity-specific out of distribution centers



DELMARVA FREIGHT PLAN

Commodity Flow Data

Key Economic / Industry Factors

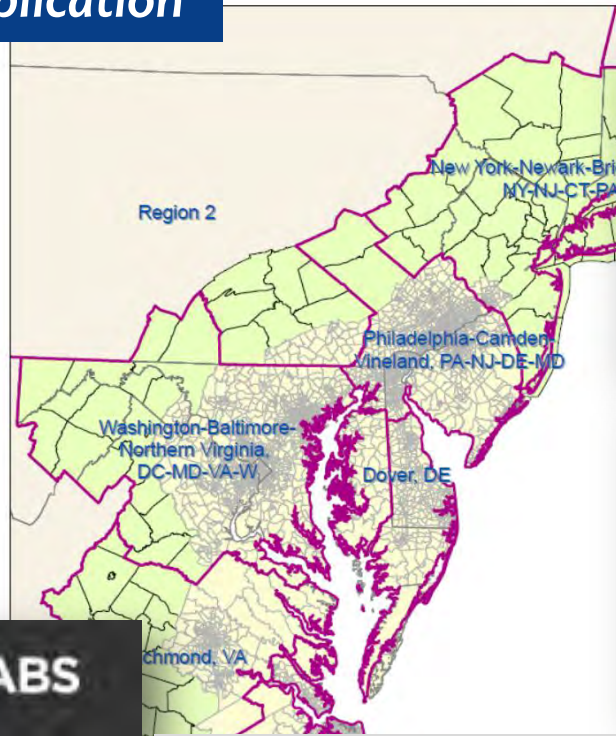


- Freight traffic in the Delmarva region is highly-concentrated
- > 60% of total freight in 5 core groups:
 - Petroleum or Coal Products
 - Secondary Traffic
 - Farm Products
 - Food or Kindred Products
 - Chemicals or Allied Products
- 80-90% in top 10 commodity groups
 - Non-Metallic Minerals
 - Clay, Concrete, Glass, or Stone

DELMARVA FREIGHT PLAN

Cube Cargo Model

Model Development and Application



Quantitative tool for:

- Performance measurement
- System-wide or corridor-level assessments
- Industry or commodity-specific flow characteristics
- Scenario planning

Scenario Planning



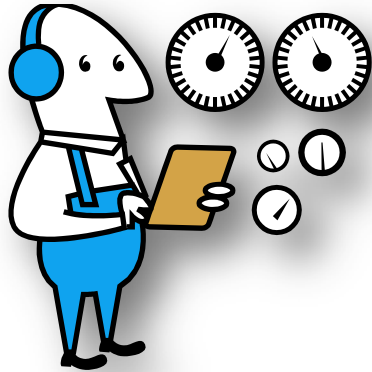
Scenario Assumptions

***Scenarios are methodically-constructed stories...not alternatives;
their overall goal is to explore ongoing “What if” issues***

- | | | |
|----|------------------------|--|
| 1. | Baseline | <i>(2011 “Existing”)</i> |
| 2. | Baseline | <i>(2040 “Future”)</i> |
| 3. | Multimodal Constraint | <i>(Trendline Growth)</i> |
| 4. | Multimodal Constraint | <i>(Accelerated Employment Growth)</i> |
| 5. | Multimodal Enhancement | <i>(Trendline Growth)</i> |
| 6. | Multimodal Enhancement | <i>(Accelerated Employment Growth)</i> |

DELMARVA FREIGHT PLAN

Scenario Assumptions



Background (or Trendline) Growth:

- Population & Households
- Employment

Accelerated Growth:

- Targeted Industries
- Market Shifts
- Proportional Impacts
- Productivity Factors

Regional Shifts:

- Indian River Power Plant
- Delaware City Refinery
- Port of Wilmington
- Post-Panamax

Rail Operations:

- NS / Northern New Castle Co.
- NS / Delmarva Secondary
- NS / Indian River Secondary
- Shortline Rail (MDDE or BCRR)
- Intermodal Access

Barge Operations:

- Wicomico & Pocomoke Rivers
- Nanticoke River

DELMARVA FREIGHT PLAN

Scenario Assumptions

Growth possibilities (or decreased rate of decline):



**Food Mfg @
13% Trendline vs.
31% Accelerated**

**Primary Metals @
-32% Trendline vs.
-24% Accelerated**

Trendline ≈ No-Build + 28-30%
Accelerated ≈ No-Build +36-38%

DELMARVA FREIGHT PLAN

Scenario Assumptions

Future constraint possibilities:

- Decreased rail access on the Peninsula
- Less barge capacity due to less dredging
- Bridge constraints
- Car float constraints
- Increased reliance on truck mode

Multimodal Constraint Scenario



What would the future look like if freight transportation on the peninsula was constrained by a loss or reduction of key multimodal elements or opportunities?

For example, WHAT IF...

- 1 ... freight rail access across/along the NEC continues to be restricted to a narrow window of time?
- 2 ... coal freight demand to the Indian River power plant ceased?
- 3 ... at-grade rail / highway crossing conflicts increased?
- 4 ... the NS Delmarva Secondary became a shortline railroad (from Porter to Pocomoke City)?
- 5 ... the NS Indian River Secondary became a shortline railroad (from Harrington to Frankford)?
- 6 ... the BCRR car float operations permanently ceased?
- 7 ... Wicomico River barge travel was restricted due to funding / dredging constraints?
- 8 ... Pocomoke River barge travel was restricted due to funding / dredging constraints?
- 9 ... oil and gas imports/exports had fewer transport options?
- 10 ... truck volumes and roadway maintenance needs increased substantially?

Constraint Scenario w/ Trendline Growth:

What would this future look like in 2040 with trendline economic or demographic changes?

Constraint Scenario w/ Accelerated Employment:

What would this future look like in 2040 with an accelerated employment growth in certain industries?

DELMARVA FREIGHT PLAN

Scenario Assumptions

Multi-modal improvement possibilities:

- Expanded or improved rail facilities (e.g., Chesapeake Connector, weight/speed improvements)
- Improved bridges
- Increased carfloat capacity
- Enhanced intermodal facility access

Multimodal Enhancement Scenario



What would the future look like if freight transportation on the peninsula was enhanced or expanded by key multimodal elements or opportunities?

For example, WHAT IF...

- 1 ... a completed Chesapeake Connector expanded freight rail access along/across the NEC?
- 2 ... coal freight losses to the Indian River power plant were offset by other/new rail demand?
- 3 ... the NS Indian River Secondary became a shortline railroad (from Harrington to Frankford)?
- 4 ... the peninsula's rail network was enhanced (e.g., removal of speed/weight restrictions or bottlenecks)?
- 5 ... the Seaford Rail Bridge was reconstructed?
- 6 ... a new intermodal facility was strategically located (e.g. near Newark, Seaford, Delmat, or Salisbury)?
- 7 ... BCRR car float operations were stabilized or expanded?
- 8 ... Post-Panamax shipping trends directly impacted the region (e.g., via Baltimore or Norfolk)?
- 9 ... short sea shipping opportunities or the marine highway concept flourished?
- 10 ... the Port of Wilmington developed a new container facility?
- 11 ... oil and gas imports/exports had more transport options?
- 12 ... higher freight volumes increased conflicts with other users (e.g., barges versus recreational water or waterfront property access; or trucks versus seasonal tourism)?

Enhancement Scenario w/ Trendline Growth:

What would this future look like in 2040 with trendline economic or demographic changes?

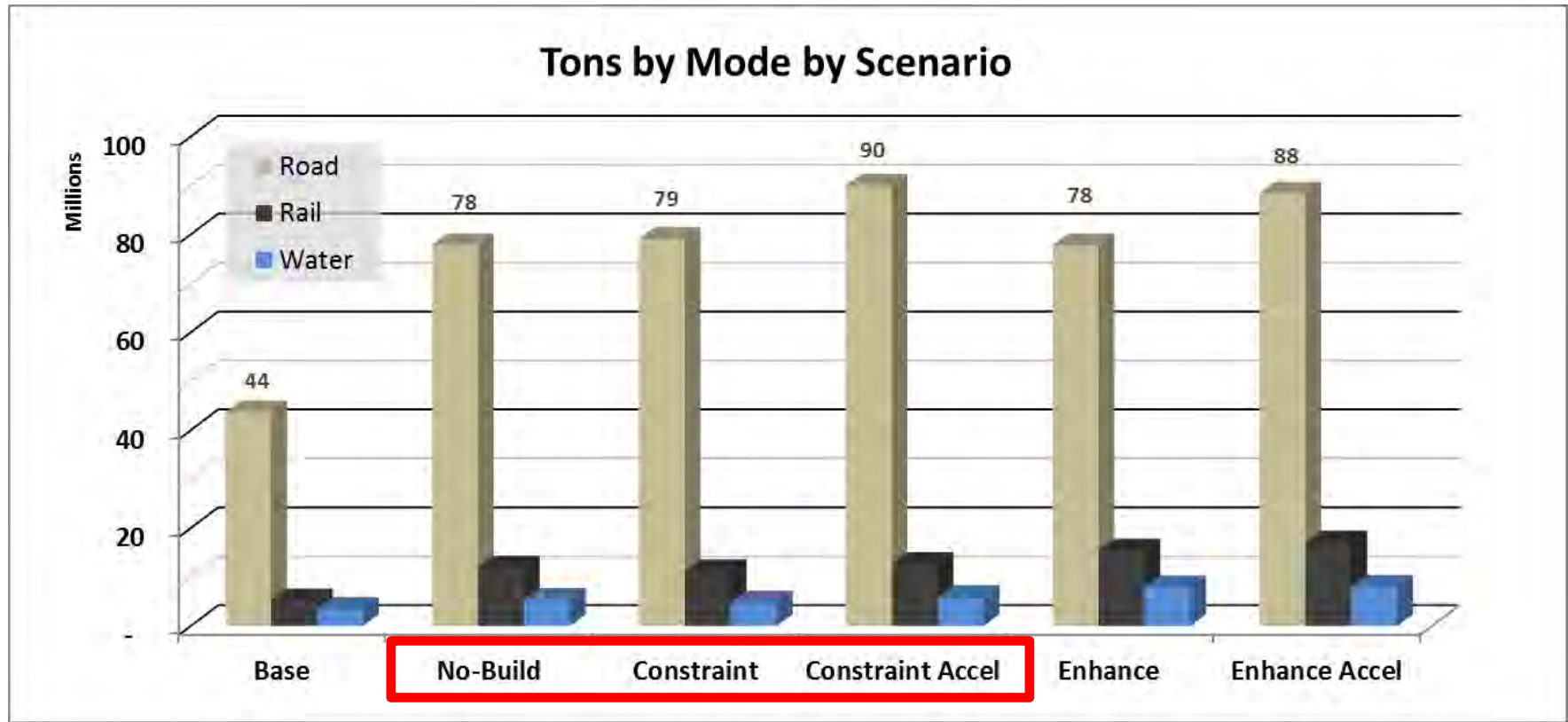
Enhancement Scenario w/ Accelerated Employment:

What would this future look like in 2040 with accelerated employment growth in certain industries?



DELMARVA FREIGHT PLAN

System Summary



Δ Truck Tons:

+78%

+2%

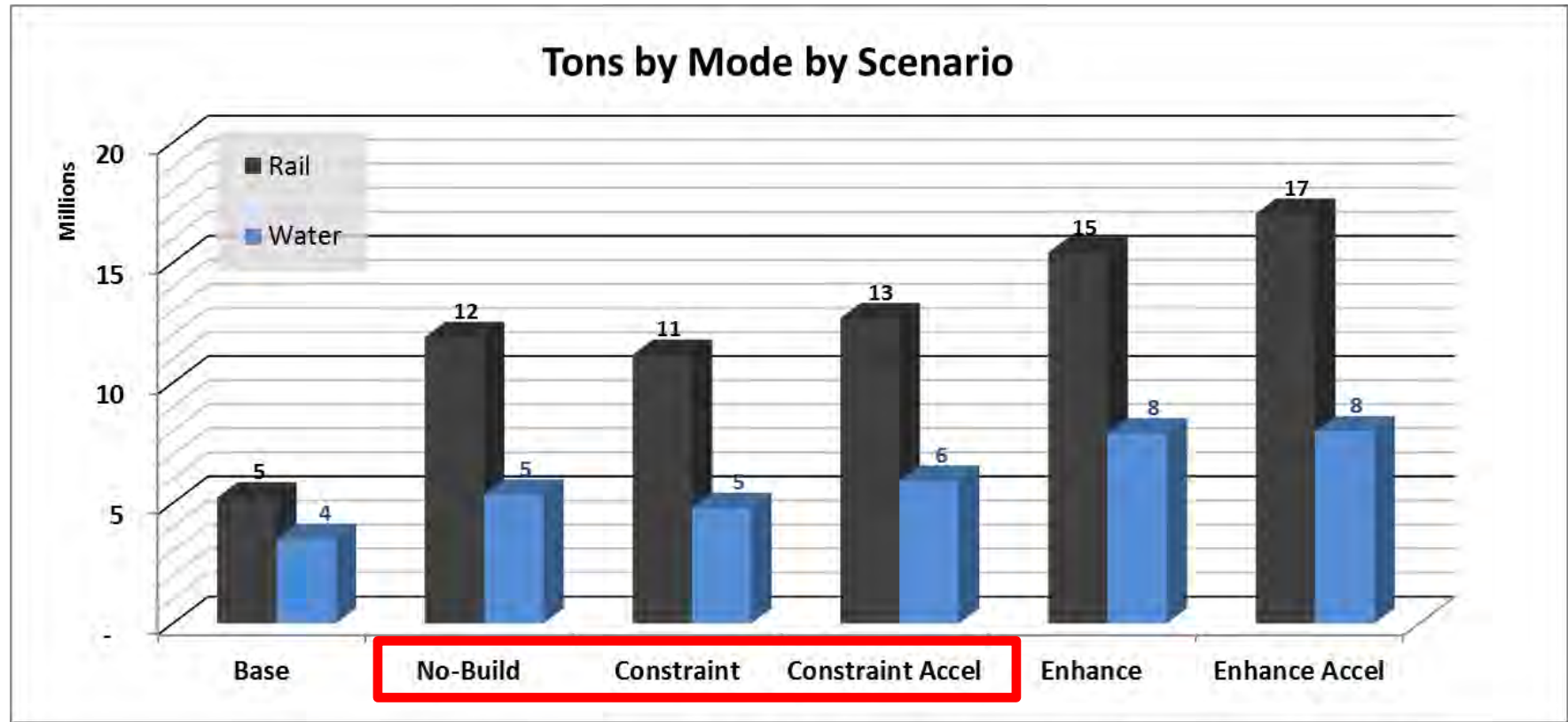
+16%

+0%

+14%

DELMARVA FREIGHT PLAN

System Summary



Δ Rail Tons:

+127%

-6%

+7%

+30%

+43%

Δ Water Tons:

+53%

-10%

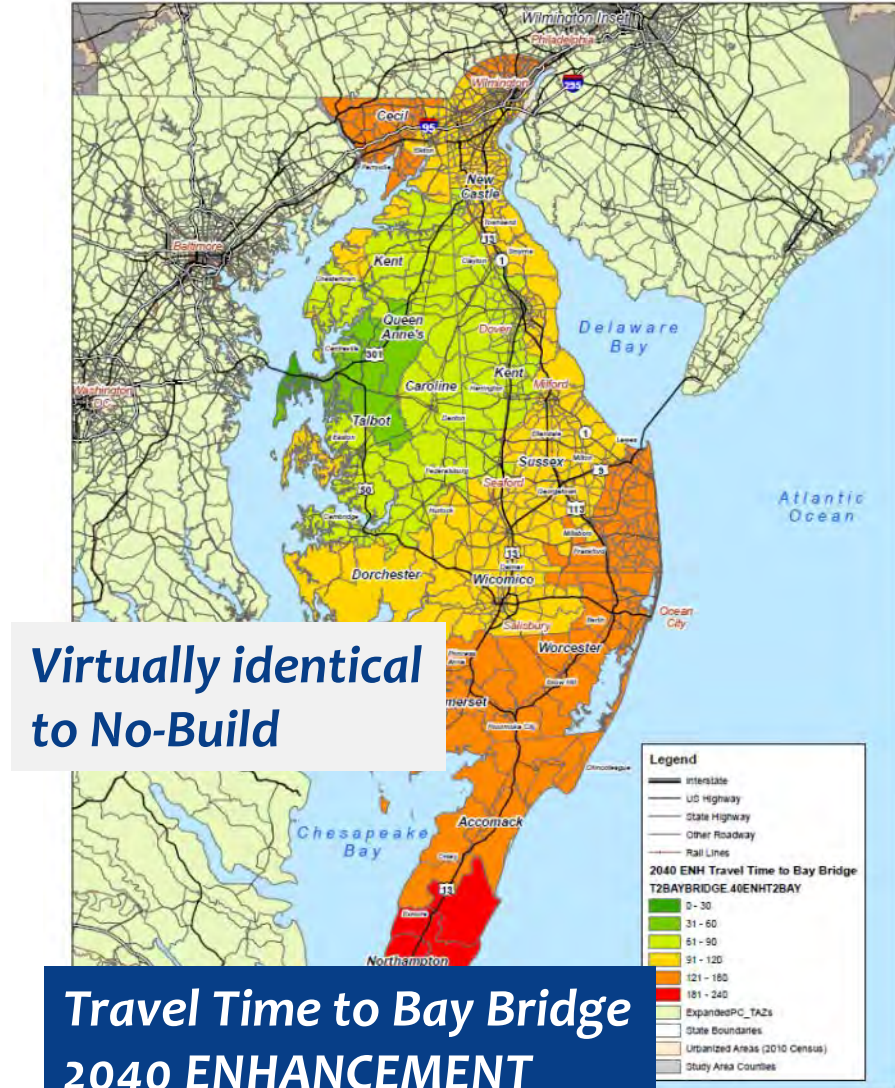
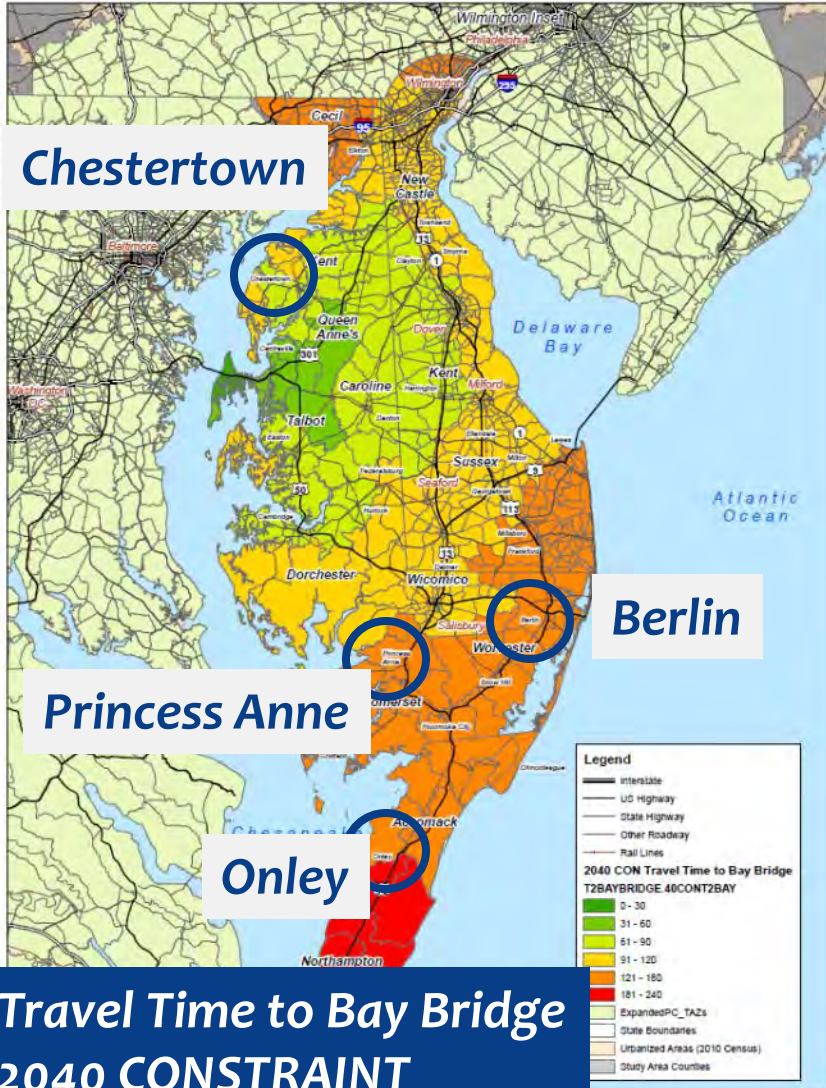
+11%

+47%

+49%

DELMARVA FREIGHT PLAN

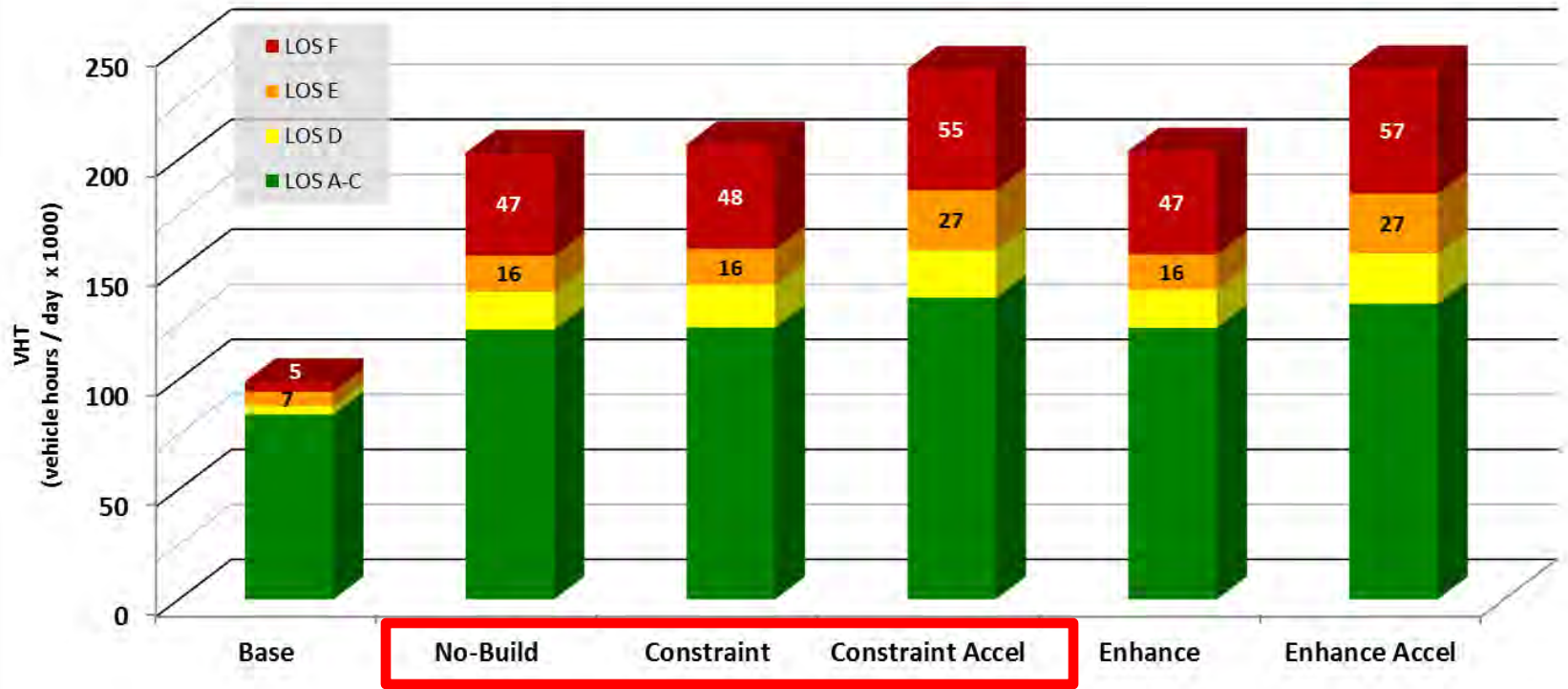
System Summary



DELMARVA FREIGHT PLAN

System Summary

Systemwide Truck VHT by LOS



Project Implications

Introduction

Background
Efforts

Scenario
Planning

Project
Implications

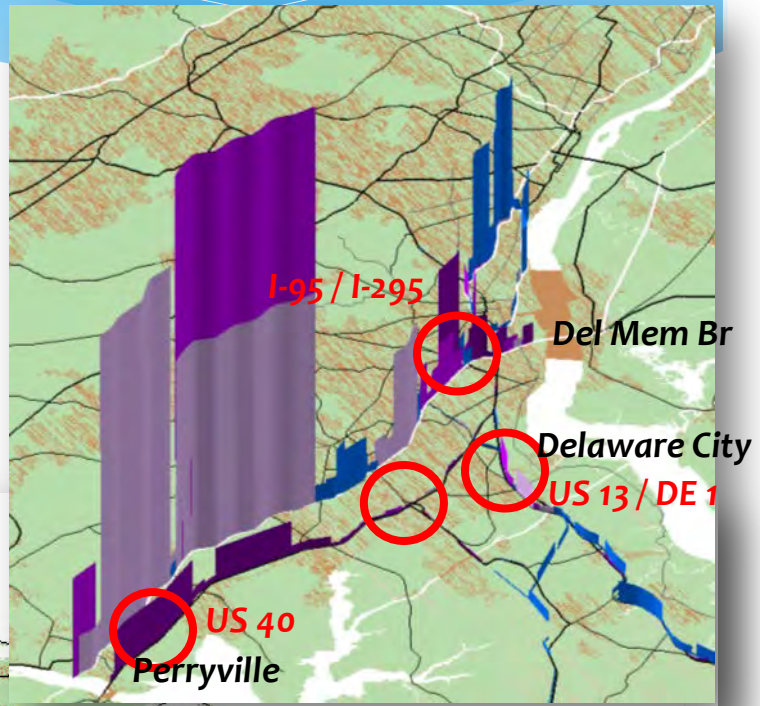
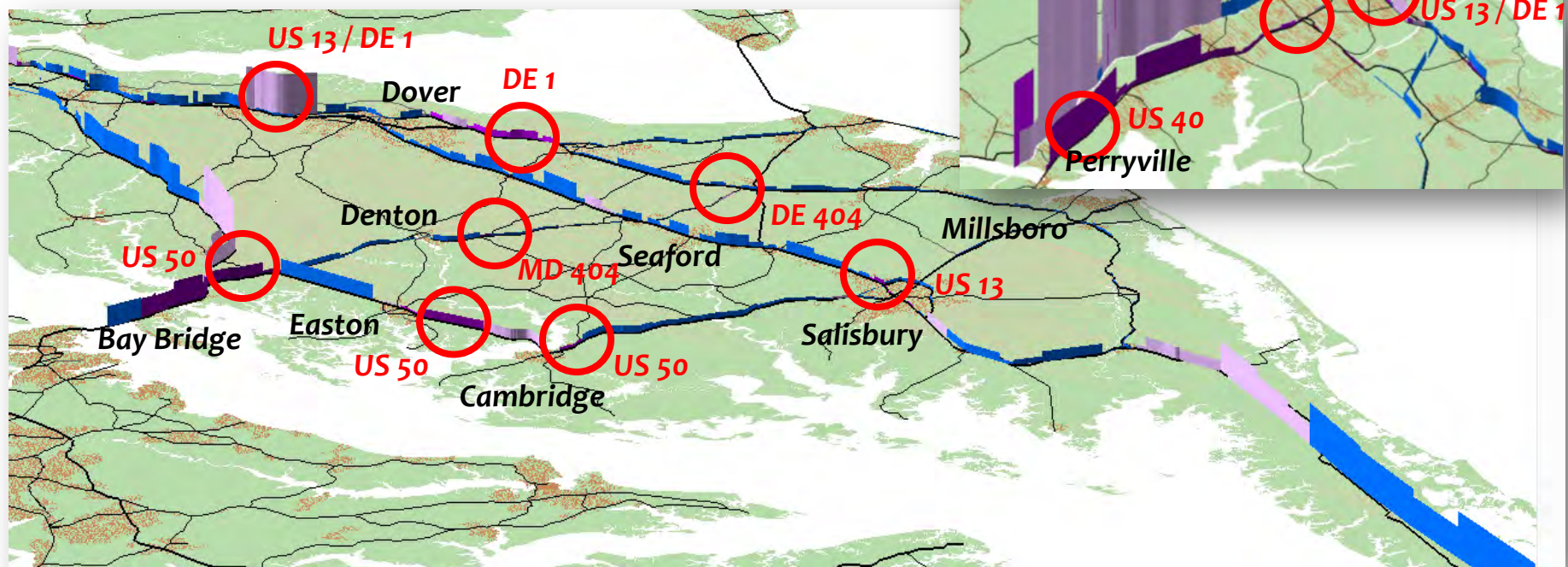
Summary &
Next Steps

DELMARVA FREIGHT PLAN

Segment Details

**For Primary Corridors:
Truck VHT by LOS (2040 NO-BUILD)**

**Identify Key Corridor Segments
w/ High VHT at Poor LOS**

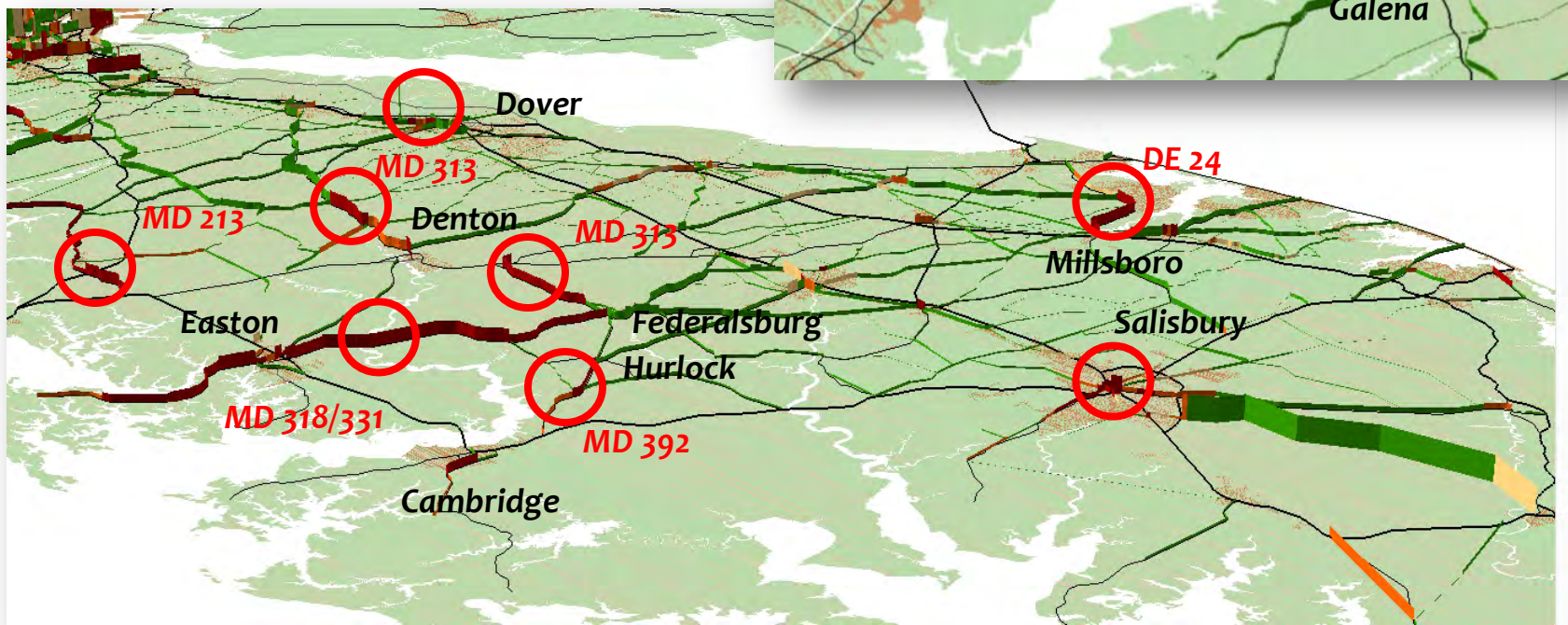
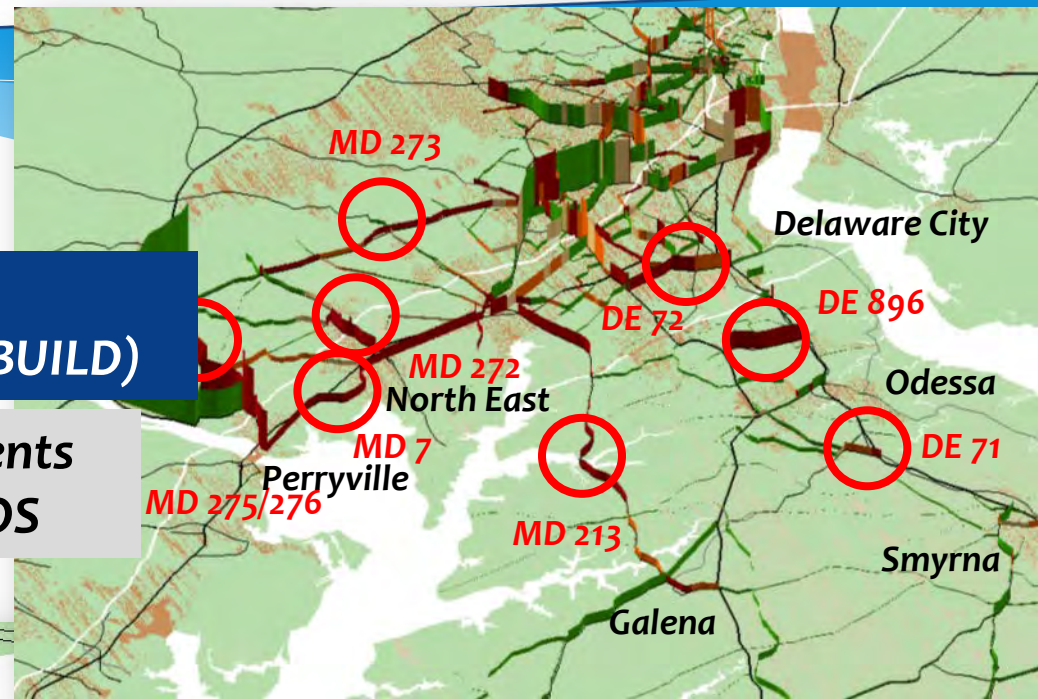


DELMARVA FREIGHT PLAN

Segment Details

**For Secondary Corridors:
Truck Volume by LOS (2040 NO-BUILD)**

**Identify Connecting Road Segments
w/ High Truck Volume at Poor LOS**

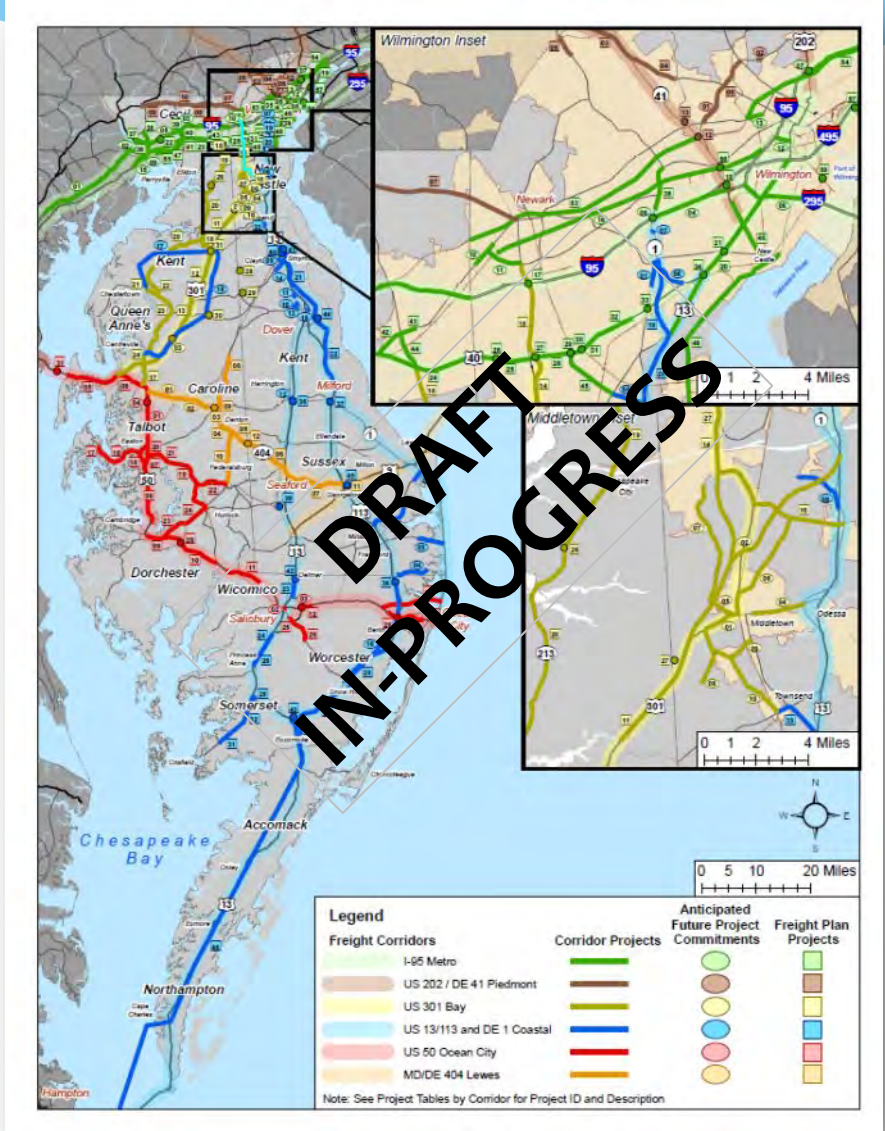


DELMARVA FREIGHT PLAN

Project Influence

Ongoing efforts as of OCT. 2014:

- Compilation of project candidates
 - Anticipated project commitments
 - Current “aspirations”
 - New freight plan needs
- Screening or prioritization possibilities
 - Data oriented elements
 - Tiered corridor issues
 - Focus area impacts
 - Scenario influence
 - Broader details (by mode, region, etc.)
- Model feedback
- Policies, focus areas, other plan tie-ins



Summary and Next Steps

Introduction

Background Efforts

Scenario Planning

Project Implications

Summary & Next Steps

DELMARVA FREIGHT PLAN

Summary

Anticipated strengths of the approach including support for:

- **MAP-21 emphasis** on Freight Planning
- **Project evaluation** to help pursue freight-specific funding options (e.g., 95% match)
- **Project screening and prioritization**, especially “data-oriented” elements
- **Scenario testing** to assess which projects may benefit “more potential futures”
- **Future tasks** / ongoing scenario planning (e.g., flooding impacts)

Anticipated next steps:

- Finalize project and policy perspectives
- Explore implications for long-term performance monitoring
- Formalize the draft plan for public/stakeholder reviews (est. December 2014)

Thank You!

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LNG As an Alternative Fuel

“Fueling the Future”

**David Kailbourne
CEO
REV LNG, LLC**



LNG: What is it? = Liquid Natural Gas (LNG)



- LNG is simply natural gas in a LIQUID FORM
- Natural Gas (methane) cooled to -260 degrees Fahrenheit, 0 LBS Pressure
- Once cooled it is stored at 1/623 original size, High BTU Energy concentration, extremely light weight.
- LNG is cost efficient to transport over medium and long distances
- LNG is a clear, colorless, safe, in its non toxic liquid form
- Used in the USA since late 1950's, used in large scale deployment in other countries
- **Creates USA Jobs and reduces dependence on imported foreign oil**
- **Made with USA gas, by USA workers, and used by USA citizens**
- **Safe, Abundant, Economical, Local and Environmentally Friendly**



CNG: What is it? = Compressed Natural Gas

- CNG is.....



Diesel vs. LNG

Diesel Concerns

- Dependent on imported foreign oil
- Price fluctuation and supply variability
- Environmentally unfriendly in both air emissions, spills and pooling
 - High Co 2, No2, Sox emissions
- Refinery capacity limitations in USA will hold price high
- Imported Oil does not grow jobs locally in Pennsylvania + USA

LNG Advantage

E+E Effect

- Low Price and Low Price Volatility
 - 30% discount to Diesel
- USA largest Natural Gas Reserves in World, enough supply for centuries
- Environmentally Clean, odorless, non toxic, and non corrosive liquid
- Safe storage, safe transport.
 - Non toxic,
 - No spill concerns bc it dissipates
 - High and narrow ignition temperature



Who We Are:

- We are a Ulysses, PA based Full service “Well to Wheel” LNG fuel distributor
- One of the very first companies to use LNG in transportation fleet logistics
- REV LNG supplies “Instant Infrastructure Private Fuel Islands” business model
- Our sister company was first company in state of PA to transition diesel fleet to LNG founded by Preston Hoopes 2012 PA Governors Award winner.
- Own and Operate 25 LNG Class 8 Trucks with millions of safe, documented over the road LNG miles



What We Do

REV LNG provides all the equipment for a private fuel island in your fleets yard, we own, service, insure, and maintain all the equipment. There is no CAP EX to customer, you pay a per gallon fee , fill it up... and Go!

Source → Transport → Dispense



Transport Services

In-Yard Storage & Dispenser

“Instant Infrastructure” = Private Fuels Island



- Experienced, Insured, Proven, Credible
- Bundle & Single Services
- Service Model and Price per Gallon Model, No CAPEX

LNG Tankers = Virtual Pipeline



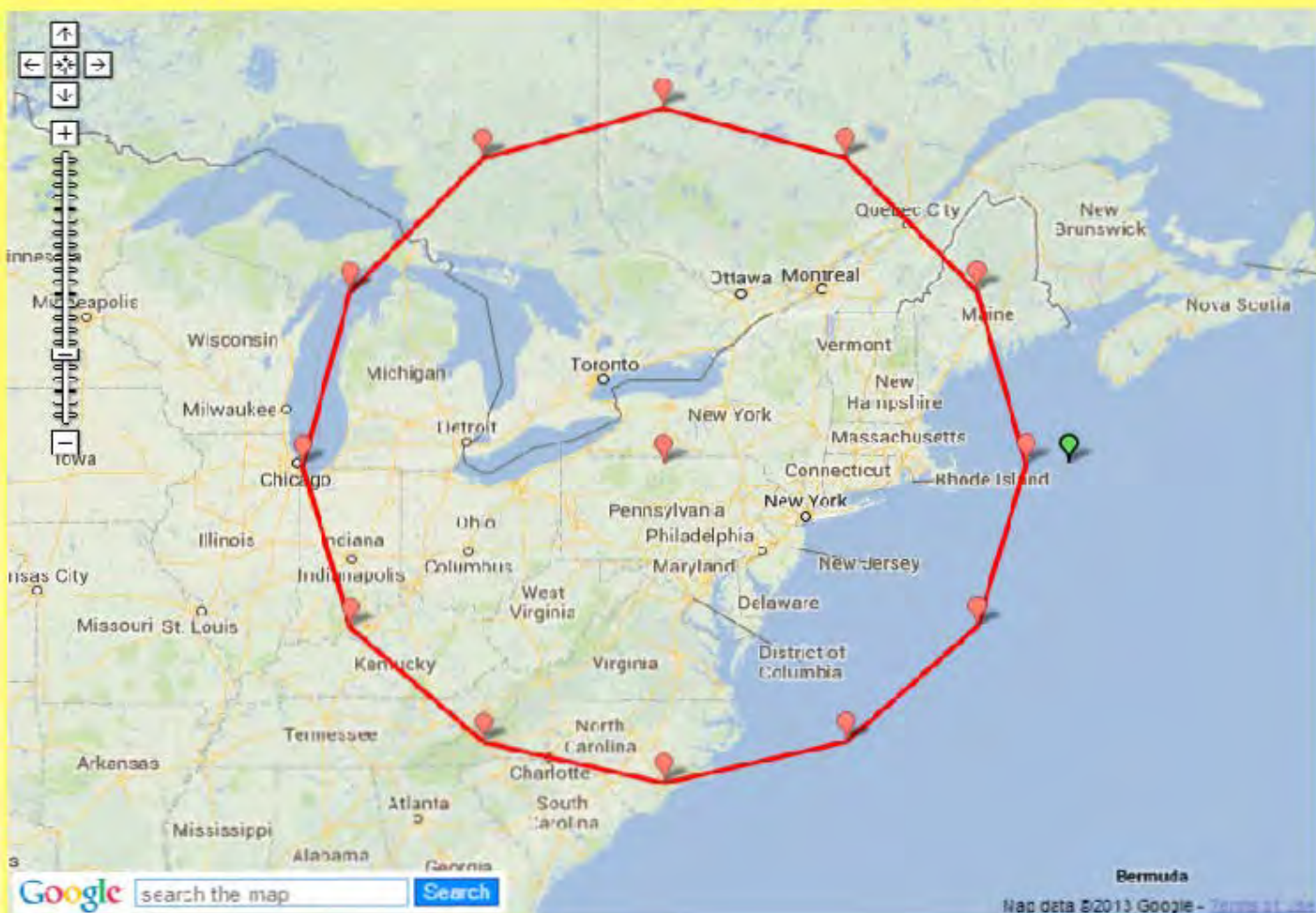
- 10,300 LNG Gallons (day cab)
- = 6000 Diesel Gallons
- = 826 MCF
- 45 minutes to load/unload
- Higher volumes = less truck trips = cost savings for the customer
- Less trucks on road means great safety and public acceptance and less congestion
- Critically important in High Horsepower applications Ex.= Drill Rigs, Frac Spreads, Marine Applications, Mining Applications
- REV LNG uses LNG Tractors to pull LNG tankers = 91% less noise and 27-93% improved air quality vs diesel tractor

500 Mile Radius Distribution

REV LNG Integrated Model

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Select Zip Codes by a Radius or Modified Polygon



Address:

Radius: Miles

Polygon Coordinates:
(11.83717, 58.070175),
(45.450139,-69.36945),
(48.094796,-72.919135),
(49.062808,-77.768095),
(48.094796,-82.517055),
(45.450139,-86.166741),
(11.83717, 87.166016),
(38.224801,-86.166741),
(35.580143,-82.517055),
(34.612132,-77.768095),
(35.580143,-72.919135),
(38.224801,-69.36945),
(11.83717, 58.070175)



Who are the LNG CUSTOMERS: **\$120,000,000,000+** Diesel Sales 2013

3.8 million Class VIII 18 Wheelers

60% of market is “RETURN TO BASE”

“Instant Infrastructure” perfect application
- Saves time, money, and increases efficiency



Big Volume Markets Most Appropriate for LNG: RAIL



Big Volume Markets Most Appropriate for LNG: Long Haul Trucking



PA is very large market for LNG

Business and Citizens Benefit Together in Economics and the Environment

2012 Combined Market Size for Fuel Revenues \$200,000,000,000+

Big Volume Markets Most Appropriate for LNG: Marine



Big Volume Markets Most Appropriate for LNG: Industrial & Energy

- Drilling Rigs
- Farms & Food Processing
- Asphalt Plants

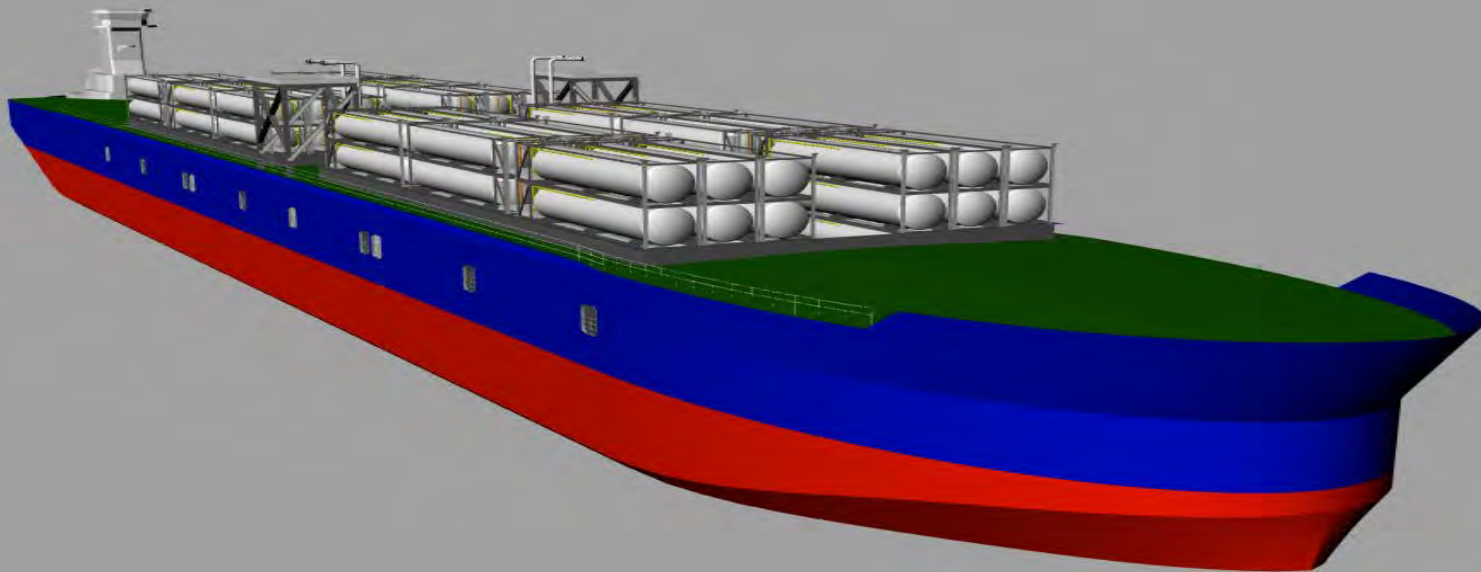


Philadelphia Region: Future Energy Hub



Philadelphia Region: LNG Opportunities

- Proximity to Marcellus and Utica shale gas reserves
- Existing refining and heavy industry infrastructure
- Marine, Rail, and Fleet Opportunities for LNG
- First mover opportunity in ISO exports





- LNG is established, proven, safe, and growing alternative to Diesel
 - Proven Economic and Environmental Benefits for the Markets
 - REV LNG is a “Well to Wheel” Distributor of LNG
 - Proven and established player
 - Handles all 3 parts of the Supply chain
 - Can service on and off road applications
 - Small Scale Production in PA /MI is goal directly on E+P Co. Pad
 - LNG produced by PA Company, with PA Natural Gas, With PA workers, and distributed to PA citizens who share in economic and environmental benefits
-

THANK YOU
QUESTIONS?

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