

Philadelphia Energy Solutions



Presentation Organization

Transaction Description

Vision & Key Drivers

Future of the Refineries

Future of Philadelphia Energy Solutions

Q & A

History of the Transaction

Sunoco, Inc. makes corporate Decision to exit production sector

- Chemicals Businesses Sold to Braskem, Honeywell & Goradia
- Tulsa & Toledo Refineries Sold to Holly Frontier & PBF
- Eagle Point and Marcus Hook Converted to Terminal Operations
- SunCoke Spun Off

Carlyle and Sunoco evaluate many different types of transaction

- Corporate transactions involving many Sunoco businesses
- Marcus Hook alone and in combination with Philadelphia
- Final Focus on the Philadelphia Site

What Drives the Vision?

The Regional Refining Business ...

- 330,000 BPD Refining Complex is the Largest on the Eastern Seaboard
- Over \$1 Billion recently invested in upgrades
- The Complex supplies 26% of the regional fuel requirements
- The Refineries are fully compliant with all regulatory Requirements

The Philadelphia Site Itself ...

- The 1,400 acre site spans the Schuylkill, 10 Minutes from Center City
- Rivers, Docks, Power, Natural Gas, Permits – Industrial Infrastructure
- Substantial room for new business facilities development

Abundant, Inexpensive Marcellus Shale Gas ...

- Exploiting its energy content for fuel uses
- Exploiting its building block molecules as chemical feedstock

Structure of Philadelphia Energy Solutions

Joint Venture ownership structure

- 2/3 Carlyle Group Investment Funds & Co-investors
- 1/3 Sunoco Inc (Now owned by Energy Transfer Partners)

Synergistic Partners Suited to the JV

- Transaction principals have successful refinery acquisition history
- Carlyle ideally suited for Aggressive Capital Growth Businesses
- Sunoco Professionals know present assets and business thoroughly
- Transaction itself becomes the agent for change

Advantages of the JV Structure

1. Created An “Acquisition” in a friendly environment
2. Preserved Investment Capital for betterments & new business
3. Sunoco repatriated 100% of its working capital
4. Sunoco’s asset realization deferred to success of JV
5. Created optimum balance of new ideas and historic knowledge

Coalition Building Key to Transaction Success

The Philadelphia site was on the way to closure

- 850 employees facing loss of employment
- The largest fuel supplier in Northeast market on verge of shutting down
- Core regional industrial facility slated for “Gentrification”

Support obtained from many constituencies

- Federal Government
- State Government
- Local Government
- Philadelphia Business Community
- United Steel Workers

Financial Structure

J P Morgan intermediates both Crude and Product

- Keeps \$1.5 Billion off PES balance sheet
- Eliminates “Trading Risk” – PES focused on refining value-added

Massive Scale/Complexity of intermediation forces attention to detail

- Highly integrated JPM and PES commercial teams
- 385 different tanks factor into business every day

Crude Slate Change is Pivotal

Building Proprietary High Speed Unit Train Unloading Facility

- On PES's Philadelphia Site
- 2 Unit Trains a day, 120 cars per train, 7800 feet long
- 140,000 BPD Capacity

Already Bringing Stranded Midcontinent Crude to Philadelphia Complex

- Bakken By Rail
- GCC By Water

Crude Slate Change is Pivotal



Crude Slate Change is Pivotal



Other Business Improvement Plans

For the refining business:

- Improvement made to resid cracking capability
- Mild Hydrocracking to improve overall yields and diesel quality
- Low sulfur bunker fuel

For new businesses:

- Natural Gas is the driving force
- Electric Power
- Hydrogen
- Agrichemicals

In Conclusion

- It Has Been A Pleasure To Talk to You a Bit About Our Deal
- I Have a Few Minutes Left to Take Some Questions

Urban Freight Transport: The Final Frontier (and our role as the pioneers...)

José Holguín-Veras,

William H. Hart Professor

**Director of the VREF's Center of Excellence
for Sustainable Urban Freight Systems**

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- ❖ What could we do to improve urban freight?
 - ❖ Public sector interventions
 - ❖ Research needs
- ❖ An example: The Off-Hours Delivery Project in New York City


What is the freight system?

The freight system

❖ The conglomerate of all the economic entities involved in the generation, transportation, consumption, and transformation of cargo

❖ Key agents:

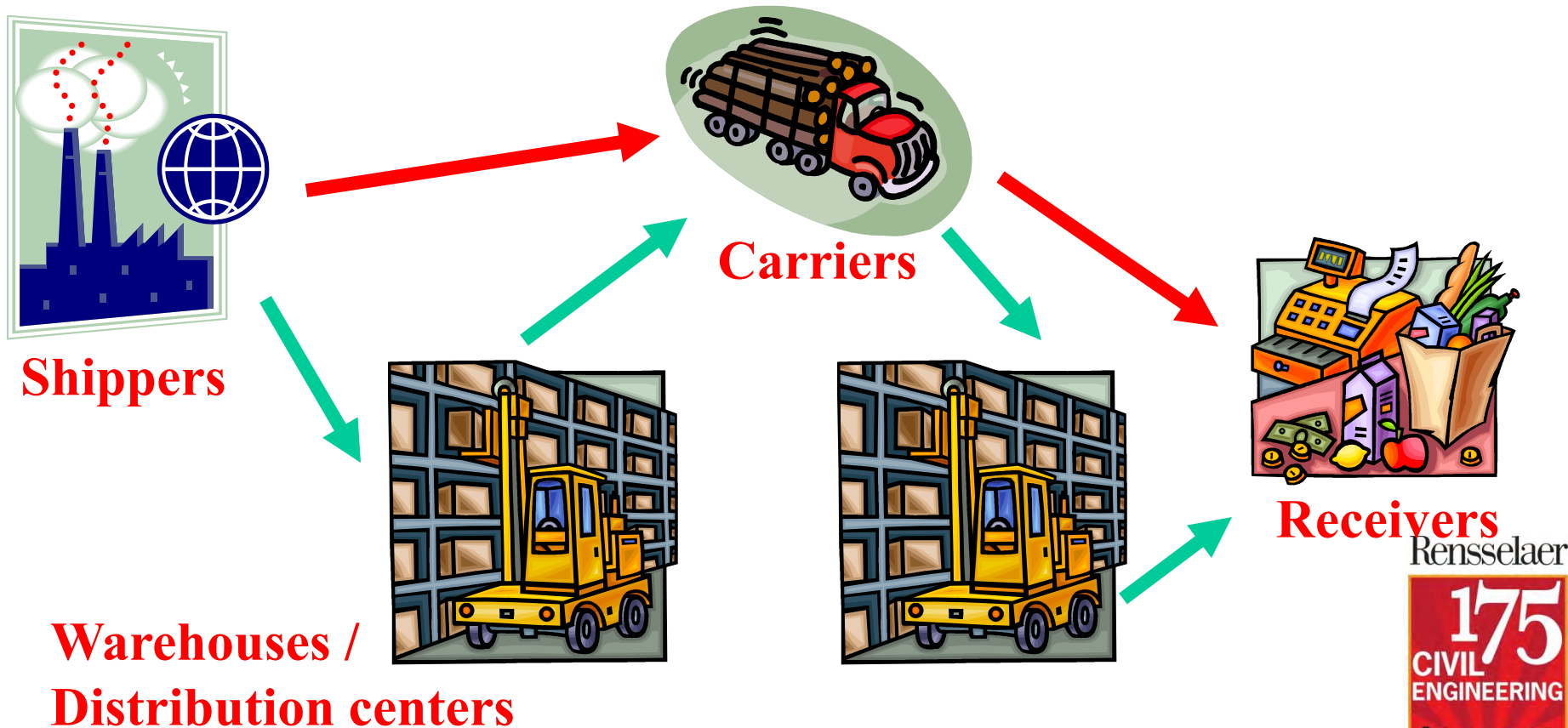
**These are key to
behavior change**



- ❖ Producers, the ones that manufacture/produce the goods
- ❖ Shippers, the ones that send the goods
- ❖ Receivers, the ones that use the goods transported
- ❖ Carriers, the ones that transport the goods
- ❖ Ancillary functions: warehouses, distribution centers, etc.

There are many players and ways to interact

- ❖ Interactions among players determine truck traffic patterns (Shippers, warehouses, distribution centers, carriers and receivers, 3PLs, 4PLs)



Relatively low efficiency, due to market forces ⁶

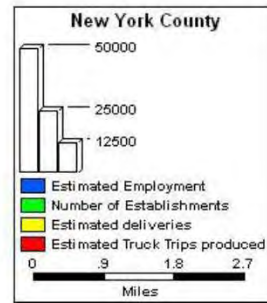
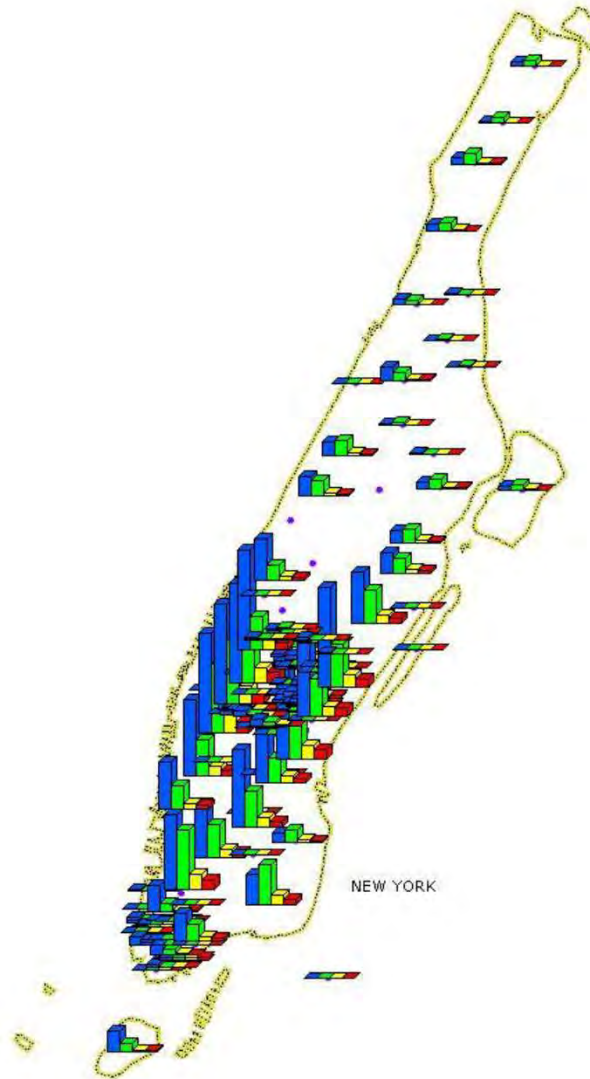
- ❖ Although current trucking practices are efficient from the private company perspective, they are very inefficient from the system point of view
- ❖ Surveys show that about:
 - ❖ 25% of the truck trips are empty
 - ❖ Only 20% of the truck capacity is utilized
- ❖ Increasing this efficiency will translate into more livable cities and a more productive economy

NYMTC REGION

County	Area	Population	Establishments	Estimated employment	Estimated daily deliveries received	Percentage of total deliveries received per day	Estimated daily truck trips produced	Percentage of total truck trips produced per day
BRONX	42.15	1,332,650	7,754	91,787	19,900	4%	14,048	4%
BROOKLYN	70.88	2,465,326	23,262	232,199	58,114	13%	40,883	12%
NASSAU	287.96	1,334,544	24,142	314,287	62,828	14%	46,956	14%
MANHATTAN	23.09	1,537,195	40,415	692,260	113,069	26%	76,874	23%
PUTNAM	245.91	95,745	1,731	14,937	4,040	1%	3,298	1%
QUEENS	109.71	2,229,379	23,276	290,156	55,737	13%	46,390	14%
RICHMOND	58.74	443,728	4,268	49,668	10,136	2%	8,182	2%
ROCKLAND	192.39	286,753	4,547	60,963	11,600	3%	8,895	3%
SUFFOLK	926.81	1,419,369	26,787	357,405	69,234	16%	52,788	16%
WESTCHESTER	465.79	923,459	15,127	204,525	38,498	9%	30,477	9%
Grand Total	2,423.43	12,068,148.00	171,309.00	2,308,184.50	443,155.77	100%	328,790.82	100%

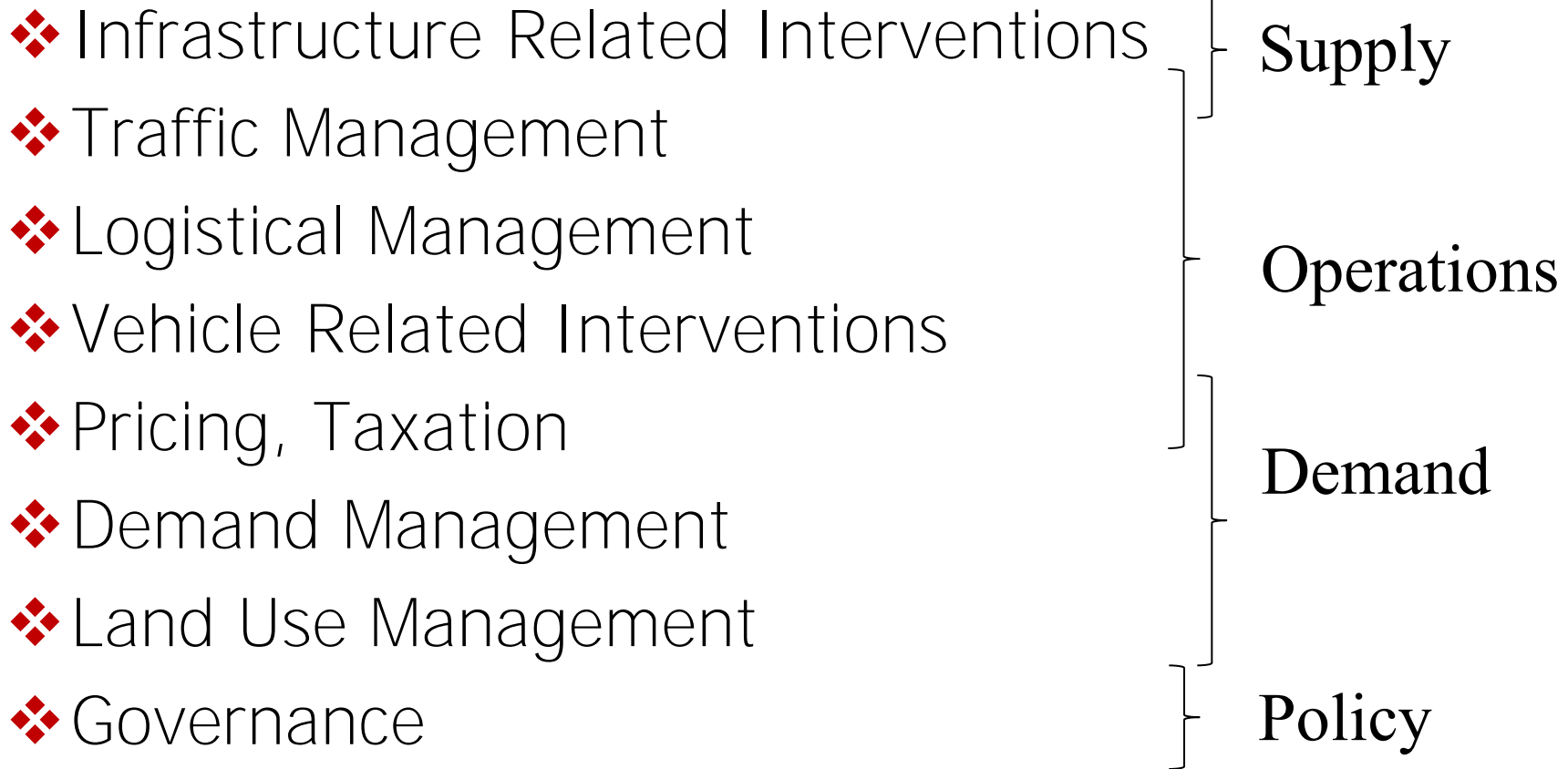


New York County



What Could the Public Sector
and Academia Do?
The Short Answer is: A Lot...

Range of interventions (from NCFRP 38)



Traffic Management

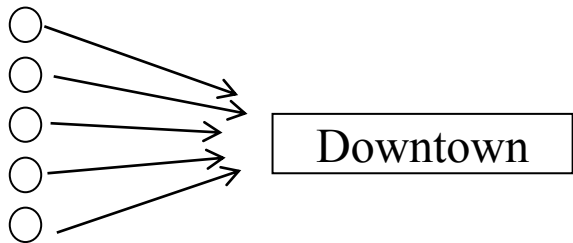
- ❖ Access Time Restrictions
- ❖ Vehicle Size Restrictions
- ❖ Truck Traffic/Route Regulations:
 - ❖ Advisory, Statutory, Freight Routes
- ❖ Lane Management:
 - ❖ Multi-use lanes, exclusive truck lanes
- ❖ Traffic Signals and Signs
- ❖ General Infrastructure Investments

**To be considered
very carefully,
they could make
things worse**

❖ Pick-up/Delivery to Alternate Destinations

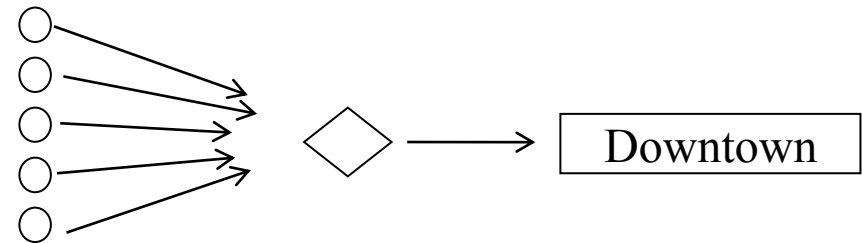


❖ Joint Delivery Service / Urban Consolidation Centers



Carriers

a) Current condition



Carriers

JDS

b) With JDS doing the last leg of deliveries

❖ Intelligent Transport Systems, Improve last leg

Pricing, Taxation

- ❖ Carefully use freight road pricing
 - ❖ Of limited effectiveness to reduce congestion
 - ❖ Could produce significant revenues to finance improvements
- ❖ Foster differentiated parking charges
- ❖ Make sure that vehicle license fees reflect externalities produced by vehicles, age, condition, etc.

Freight loading zone (Waikiki, Hawaii)





Demand / Land Use Management

- ❖ Promote off-hour deliveries using incentives
- ❖ Foster: mode shift whenever possible, receiver-led consolidation of deliveries
- ❖ Promote staggered work hours
- ❖ Foster clustering of warehouses, terminals, and distribution centers
- ❖ Foster the location of terminals at the fringe of urban areas
- ❖ Relocate large traffic generators to places where they can grow and generate less impacts

**To be considered
very carefully,
they could make
things worse**

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- ❖ Create industry advisory groups
- ❖ Create freight quality partnership
- ❖ Share best practices
- ❖ Conduct regular meetings with industry

Research Needs

- ❖ Infrastructure Related
- ❖ Traffic Management
- ❖ Logistical Management
- ❖ Vehicle Related
- ❖ Pricing, Taxation
- ❖ Demand Management
- ❖ Land Use Management
- ❖ Governance

Freight demand modeling, behavior, economics, game theory...

Traffic models, consideration of tour behavior, behavior, economics, policy...

Freight demand modeling, behavior, consideration of tour behavior, economics, policy...

Governance structures, multi-stakeholder decision making...

The Off-Hours Delivery Project

Part of a project that has been, at times...

- ❖ A science mystery
- ❖ A political thriller
- ❖ A melodrama
- ❖ A comedy
- ❖ A Greek tragedy
- ❖ **A good drama with a happy ending...**

The experience with time of day pricing

- ❖ Theory and empirical evidence agree that cordon time of day pricing are of limited effectiveness in moving urban delivery traffic to the off hours
- ❖ 2001 Port Authority of New York and New Jersey Time of Day Pricing Initiative
 - ❖ 20.2% of carriers changed behavior, though mostly by increasing productivity (not by reducing facility usage)
 - ❖ Only 9.0% of the sample increased rates, increases were relatively small, about 15%
 - ❖ 69.8% of the carriers that did not change behavior indicated **it was due to "customer requirements"**
 - ❖ Almost no change in facility use
- ❖ The same was found in London

There is a market failure

- ❖ Markets typically find the most efficient outcome
- ❖ When they do not, there is a market failure
→ rationale for public sector intervention
- ❖ Off-hour deliveries are beneficial to Society
 - (+) Huge environmental impacts due to less pollution
 - (+) Carriers / Regular hour travelers (cars, buses, trucks) benefit
 - (-) Increased noise at night could be easily mitigated
 - (-) However, receivers accrue additional costs
- ❖ The market failure: carrier savings are not large enough to compensate for the receiver costs
- ❖ The solution is to either:
 - ❖ Compensate the receivers for additional costs, or
 - ❖ Develop technologies/systems to allow receivers to do OHD at lower costs (so that compensation could work)

Project Concept

Interlocking components

- ❖ Demand modeling/behavioral/economic components
 - ❖ Analyses of most promising industry segments
 - ❖ Freight trip generation analyses
- ❖ Technology component
 - ❖ GPS to assess performance (cell phones, own systems)
- ❖ Network modeling component
 - ❖ Mesoscale traffic model to assess local impacts
 - ❖ Regional model to assess networkwide impacts
- ❖ Industry/Agency outreach component
 - ❖ To get feedback from all involved
- ❖ Small scale pilot test component
 - ❖ **To assess real life impacts...**

**JHV aged
twenty years**



Pilot Test Results

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Pilot Test

- ❖ Initial efforts delayed by Wall Street collapse, **skepticism on the part of the industry...initially a huge challenge** because of lack of precedents
- ❖ Original plan: Sysco and Whole Foods
- ❖ Foot Locker/New Deal Logistics asked to join test
- ❖ Three separate stages to accommodate them:
 - ❖ Foot Locker (10 stores)/NDL (Oct. 2 -Nov.14, 2009)
 - ❖ Whole Foods (four stores) (Dec. 28, 2009-Jan. 31, 2010)
 - ❖ Sysco (twenty one stores) (Dec. 21, 2009-Jan. 23, 2010)
- ❖ About 35 receivers, 20 trucks/vendors
 - ❖ Half doing staffed OHD
 - ❖ Half doing unassisted OHD

Participants in Pilot Test



Regular vs. Off-Hour Deliveries



Typical results from satisfaction surveys

Scale:

**1= Very favorable,
5= Very unfavorable**

❖ Whole Food Vendors: 1.55

❖ Participating drivers:

❖ Travel speeds = 1.33

❖ Congestion = 1.11

❖ Parking = 1.11

❖ Stress levels = 1.11

❖ Time to deliver goods = 1.38

❖ Time to complete the route = 1.44

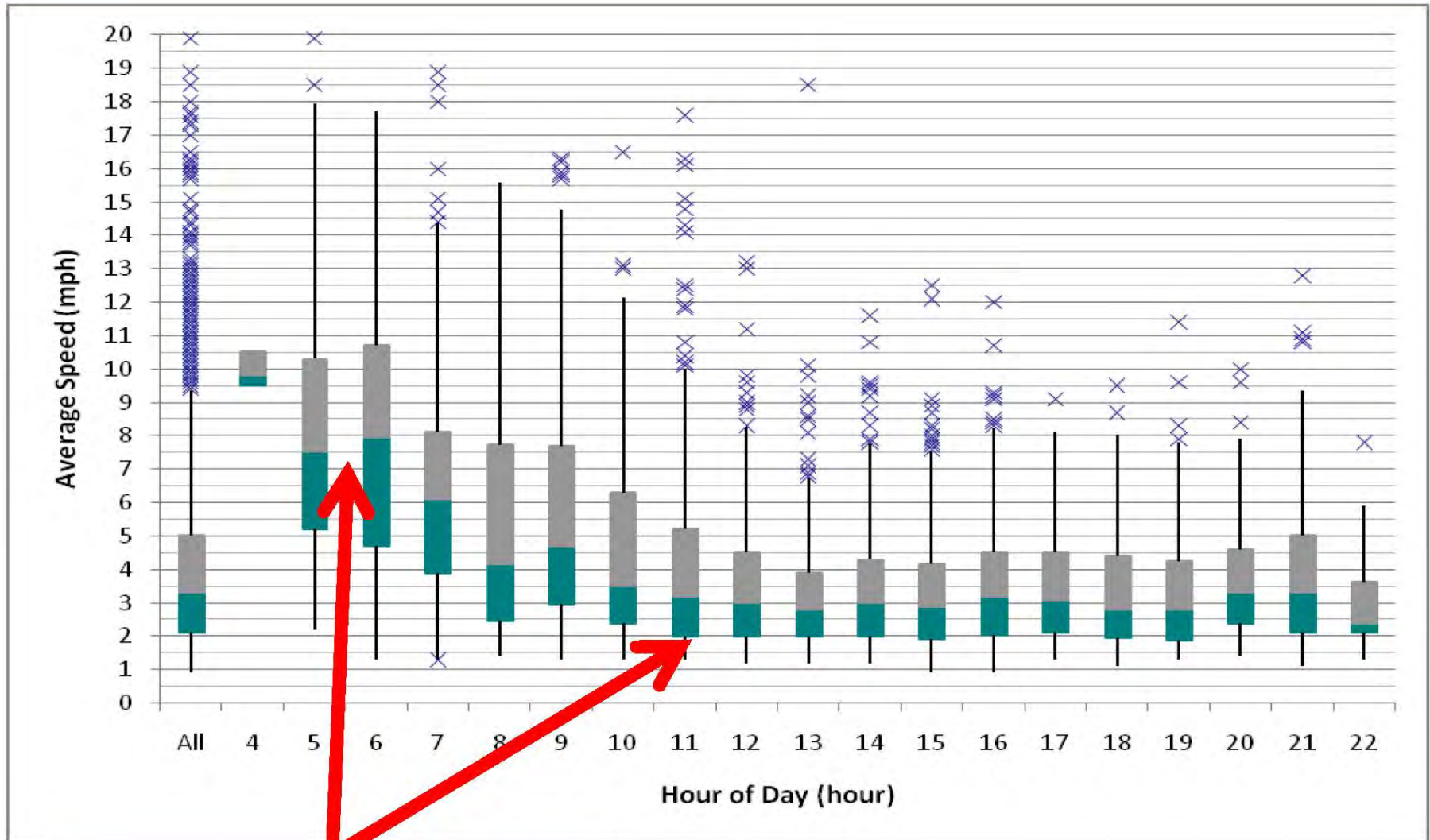
❖ **Driver's feeling of safety = 1.86**

❖ Sysco's customers:

❖ Impression of off-hour deliveries = 1.50

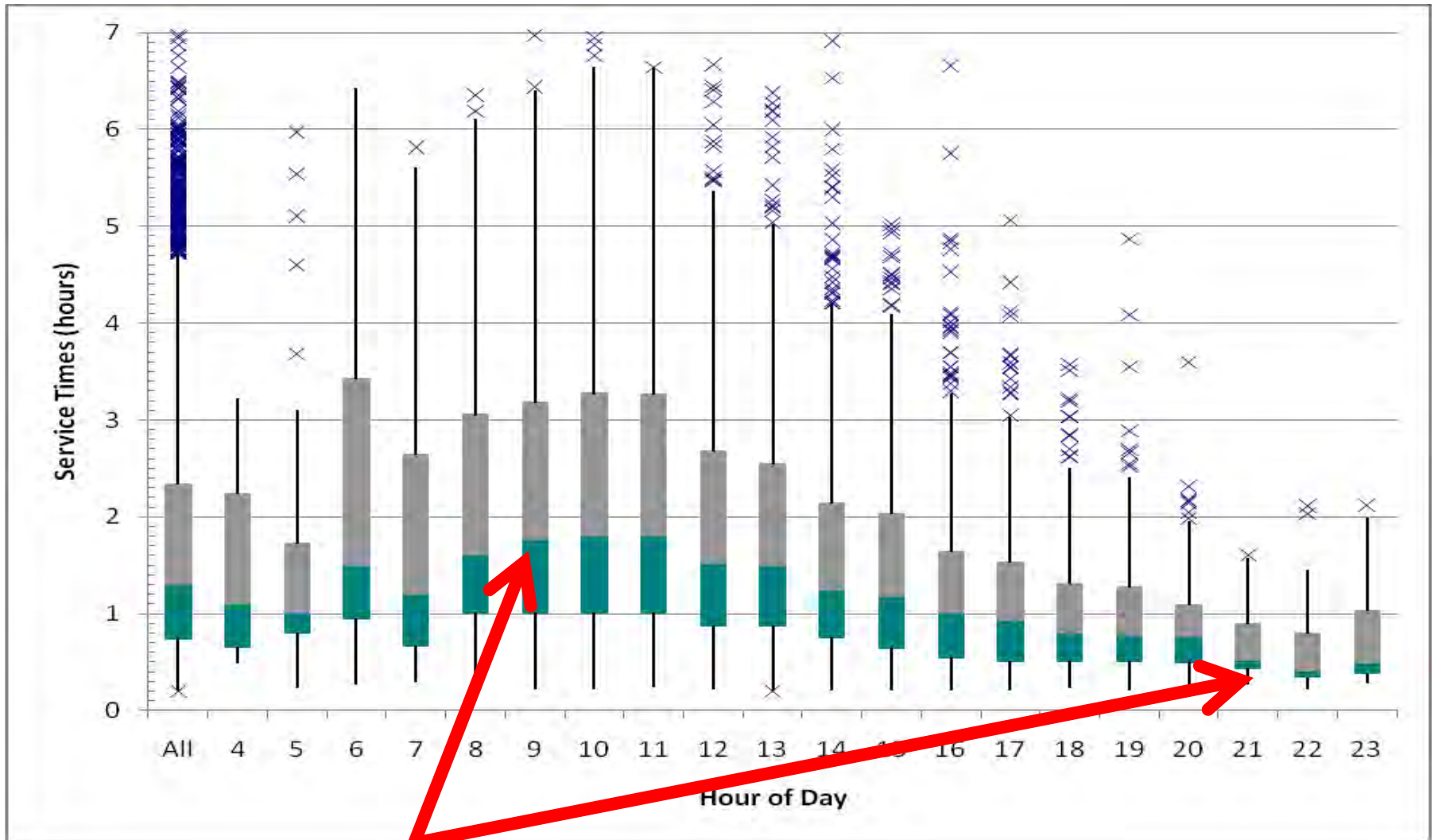
❖ How likely are you to accept off-hour deliveries = 1.42

Average space mean speeds



More than twice as fast

Average service times



More than three times as fast

After the end of the pilot

- ❖ All of the receivers doing staffed OHD reverted back to the regular hours
- ❖ Almost all the receivers doing unassisted OHD remained in the off-hours
 - ❖ The reason: reliability of OHD
 - ❖ **“Our locations will continue to receive ‘night drops’ even though this program has ended as our managers now favor the dependability of night drops vs. late day time deliveries. Thanks again for the program.” Nick Kenner, Managing Partner, Just Salad LLC**

The Economic Bottom Line

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Economic Impacts

- ❖ Implementing various forms of off-hour delivery policies in Manhattan leads to:
 - ❖ Travel time savings to all highway users of about 3-5 minutes per trip
 - ❖ Travel time savings to carriers that switch to the off-hours of about 48 minutes per delivery tour
 - ❖ Savings in service times (per tour) could be in the range of 1-3 hours
- ❖ Depending on the extent of the policies, economic savings are between \$100 and \$200 million/year in travel time savings and pollution reduction

Environmental Pollution Reductions

Scenario		CO	HC	NOx	PM ₁₀
Incentive	% OHD	Reduction (metric tons)	Reduction (metric tons)	Reduction (metric tons)	Reduction (kilograms)
\$5,000	6.49%	101.196	24.047	3.004	20.29
\$10,000	14.10%	169.582	28.535	8.223	48.81
\$15,000	20.90%	202.749	39.972	11.824	69.99
\$20,000	25.34%	253.141	56.559	15.044	90.09
\$25,000	29.07%	383.813	55.764	26.333	149.86

How the Adventure Ended...

A Huge Success...Widely Reported in the Press

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ALLIANCE

Truckinginfo

the web site of Heavy Duty Trucking magazine's

NEWS TRUCKS & TRAILERS WASHINGTON REPORT CLEAR & SIMPLE OPERATIONS MAINTENANCE DRIVERS ARCHIVES

News

7/7/2010 New York to Ramp Up

The New York City Department of Transportation has expanded deliveries, rather than peak-hour deliveries.

The pilot program, which ran from last September through July, delivered between 7 p.m. and 6 a.m. The DOT found that the parking, reduced congestion and significant savings. Business percent and a reduction in parking tickets and fines, which are "It's physics. The have the space."

But retailers exp and retailers freq said she thinks re

"Right now you've understand that it

New York Delivers at Night

William B. Cassidy | Sep 7, 2009 4:00AM GMT
 The Journal of Commerce Magazine - News Story
 States | Regulation | Trucking | United States

The latest Manhattan project uses incentives to get freight off streets during peak hours

East side, west side, congestion is choking traffic all around New York City. A pilot project that encourages off-peak deliveries may help the city clear traffic jams believed to cost New York City \$13.4 billion a year.

This week, Rensselaer Polytechnic Institute researchers start to work with shippers, consignees and trucking firms in a month-long test of a program they say could cut daytime truck deliveries in Manhattan by as much as 20 percent for some companies.

The program uses a key incentive — money — to convince businesses to take off-hour deliveries, in hopes they will reschedule at least a portion of the estimated 2.8 million truck trips a day in and around New York City.

"We're talking about a policy that is being designed to be business-friendly," said Jose Holguin-Veras, an expert in freight transportation networks and professor in Rensselaer's Department of Civil and Environmental Engineering in Troy, N.Y. "Only those companies for which it makes sense financially would do it."

And if off-peak distribution can make it in New York, it can make it anywhere, Holguin-Veras said. "Barcelona is considering this type of program, and London is, too. They're very interested in what we find in New York," he said.

Shifting even a portion of the city's truck deliveries to off-peak hours would have a significant impact on congestion, he said. "You don't have to move every single truck to nighttime delivery. If you move only 10 percent or 20 percent, the congestion savings will be significant."

Fleets Say They Discovered Time, Cost Bonanza Through New York's Night-Delivery Experiment

By Michele Frutsch
 Staff Reporter

When Joe Killeen heard that New York City needed participants for its trial off-hours delivery program, he did more than volunteer his Keany, N.J., trucking firm, New Deal Logistics. Killeen persuaded eight Foot Locker stores he supplies in Manhattan to volunteer, which meant the retail outlets agreed to substitute night deliveries for the daytime shoe shuttles New Deal normally

runs under the Hudson River. "Instead of leaving here at 7 o'clock in the morning and spending an hour and a half trying to get through the Holland Tunnel, [trucks were] on the other side... in 25 minutes," Killeen said of the night trips.

For carriers in the pilot program, which lasted from October 2008 through January 2010, the results were dramatic. Off-hour deliveries improved average travel speeds by as much as 75%, according to the analysis submitted to one of the program's

funders, the Research and Innovative Technology Administration, or RITA, of the U.S. Department of Transportation.

Adding to the off-hours benefit, data generated by Global Positioning System devices on the trucks showed that trucks delivering between 7 p.m. and 6 a.m. averaged 30 minutes at a receiver's site, compared with an average of 100 minutes during the day on streets clogged with traffic and lacking space to park.



More than 100,000 truck deliveries, like this one in New York City every day. A pilot program tested

crain's

Article can be found at

Nighttime

City's Departmen p.m. and 6 a.m.

By Jeremy Smerd

Published: July 1, 20

It seemed like a no-brain pilot program:

Now that the program are continuing their n

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10 BIG IDEAS TRANSPORTATION

DELIVER A FIX FOR TRAFFIC JAMS

BY JOSH SANBURN

THE NEXT TIME YOU'RE STUCK in traffic, blame all that stuff you buy online.

E-commerce sales jumped 15% last year, to \$186 billion in the U.S., and the daily volume of shipments for FedEx and UPS has grown every year since 2009. Moreover, to keep pace with demand for faster deliveries, many of the rigs dispatched by Amazon, eBay and Fresh Direct leave before they're fully stocked.

In other words, there are now more trucks, and more traffic, than ever. That increase helps explain why urban commuters waste at least 52 hours each year in stop-and-go jams, according to the Texas Transportation Institute.

There are a number of ways to address this problem, including a push for off-peak

delivery (see sidebar). But one of the most promising new solutions is actually an old idea: bikes. In recent years, a growing number of cities have welcomed such services, partly to help the environment and partly to skirt—and alleviate—congestion. For example, B-Line, based in Portland, Ore., works with companies like Office Depot to transport parcels via electric tricycles, which can carry up to 600 lb. (270 kg) of freight at a time. CEO Franklin Jones says his six-bike, 15-person company has replaced 20,000 truck and van deliveries since it started in 2009, and B-Line plans to expand to Seattle later this year. Similar companies have launched in Boston, Vancouver and London, where bike deliveries from UPS were essential during the

crush of the 2012 Olympics. The most inventive option, however, comes from Brussels. Last September, courier TNT Express loaded packages into a mobile trailer during the middle of the night, then towed it to a place near a populated area (but out of traffic zones). Come daybreak, messengers on electric tricycles took the packages to their destinations. If implemented on a wider scale, the strategy could lead to fewer trucks, reduced costs per stop and lower CO₂ emissions.

Although bikes can't fix delivery backups by themselves—they struggle with larger shipments—Hani Mahmassani, of Northwestern University's Transportation Center, sees their potential. "They're the best way to beat the traffic," he says.



THE NIGHT-DROP-OFF SOLUTION

Bikes are great for delivering smaller packages, but what about the bulk items forcing trucks into rush-hour traffic? The answer, say most transportation experts, is simple: give businesses incentives to deliver during off-peak hours—perhaps to storage lockers like the ones Amazon offers. Here's how Manhattan could benefit if at least 20% of all package drop-offs occurred after 10 p.m., according to Jose Holguin-Veras of the Rensselaer Polytechnic Institute:

1. LESS CURBSIDE CLOGGING
 Drivers could save three to five minutes of travel time each day, thanks to fewer trucks that would drive and park along busy streets.

2. LOWER PRICES
 Holguin-Veras estimates that trucking companies pay at least \$500 per truck each month in parking fines, which aren't levied at night. There's also less traffic after hours, meaning that trucks can get better gas mileage. Reducing that overhead would trim delivery costs across the board.

3. MORE ECO-FRIENDLY VEHICLES
 Because they make less noise—crucial during night deliveries on residential streets—electric vehicles could become more attractive.

TIME magazine listed the OHD project as a "Top 10 Ideas" March 25th, 2013

The Impacts of the Project...

- ❖ NYC adopted off-hour deliveries as part of its sustainability strategy!

planNYC

UPDATE APRIL 2011

**A GREENER,
GREATER
NEW YORK**



The City of New York
Mayor Michael R. Bloomberg

The Impacts of the Project...

- ❖ In June 2012 the Federal Highway Administration (FHWA) and Environmental Protection Agency (EPA) issued \$450,000 in grants for small to medium size cities to implement off-hours goods movement /delivery programs based on the NYC pilot



U.S. Department of Transportation
Federal Highway Administration

- ❖ Numerous cities are considering off-hour delivery programs: Boston, Washington, Atlanta, etc.

- ❖ ITS-NY (Intelligent Transportation Society) 2011 Project of the Year in Freight Management



- ❖ Numerous research awards:
 - ❖ Robert E. Kerker Award
 - ❖ Milton Pikarsky MS Award to Ms. Brenda Cruz
 - ❖ Best Paper Award for UTC Region II
 - ❖ Student of the Year Award to Mike Silas
 - ❖ etc

Ongoing Work

Ongoing work

- ❖ USDOT/RITA provided funds for a larger implementation project focusing on:
 - ❖ Unassisted deliveries:
 - ❖ Technologies/systems that enable OHD without the need for staff of the receiving business would produce the same benefits as regular OHD, at minimal cost
 - ❖ To address the liability concerns of receivers
 - ❖ Large Traffic Generators:
 - ❖ Large buildings/establishments generate hundreds of truck trips per day
 - ❖ About 80 such buildings → 4% of the truck traffic
 - ❖ Adding large establishments → 8% of truck traffic
 - ❖ They could implement OHD very cost effectively and without inconveniencing the receivers

Chief conclusions

- ❖ Removing the constraints imposed by receivers (either by providing financial incentives, or using unassisted OHDs) works as it is
 - ❖ More effective than freight road pricing
 - ❖ A truly win-win-win-win-win policy:
 - ❖ Benefits regular hours travelers
 - ❖ Benefits the environment, improves quality of life
 - ❖ Benefits the business community, enhances economy
 - ❖ Noise impacts could be easily mitigated → electric trucks, low-noise truck technologies/practices
 - ❖ Benefits participants in OHD
 - ❖ Political appeal, implementable as a voluntary program

There is power to tap...

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Our Industry Advisory Group...



The Center of Excellence for Sustainable Urban Freight Systems (SUFS)

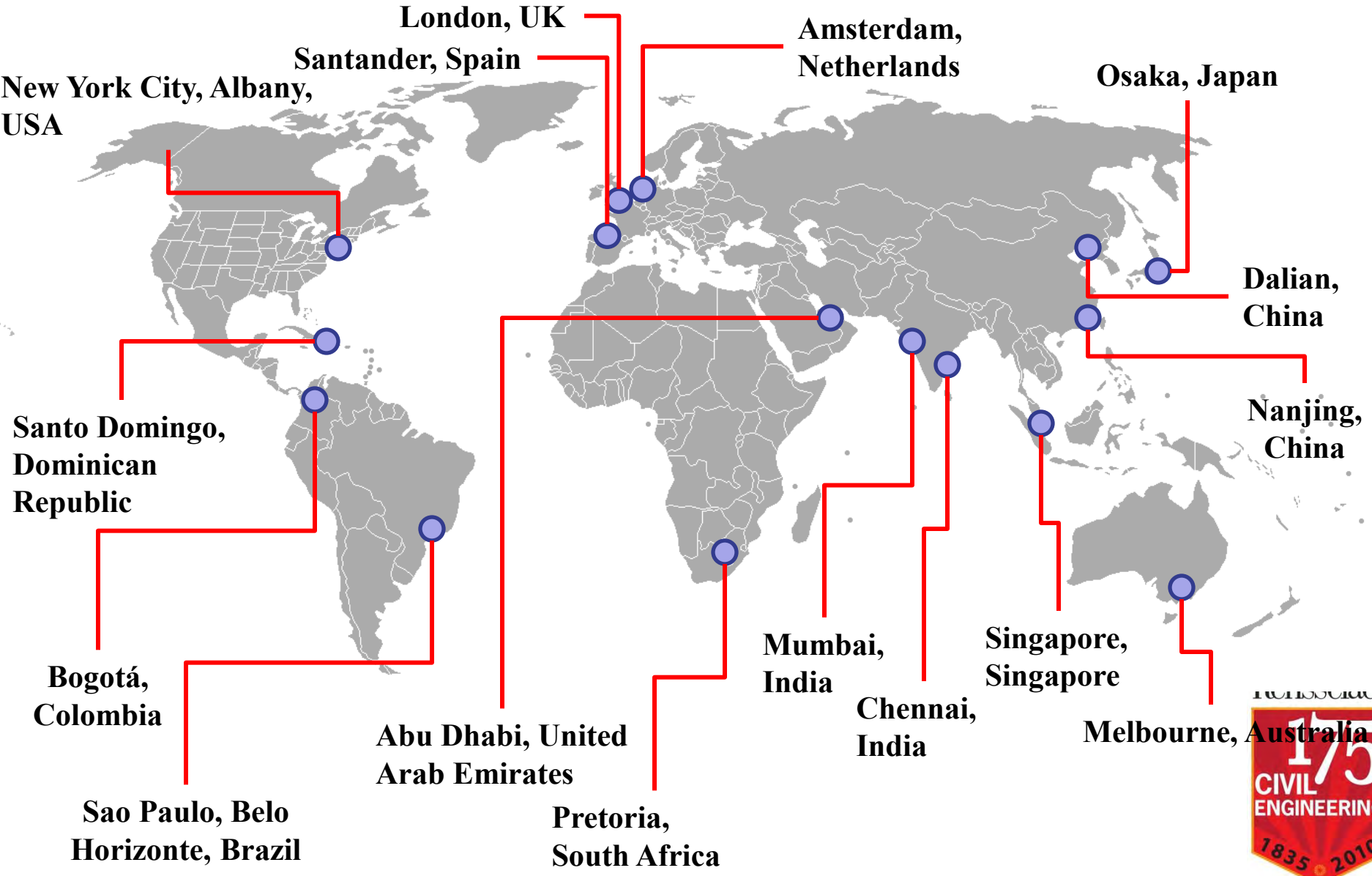
To jumpstart an integrative and participatory process— involving cities, private sector, and researchers—that will lead to the implementation of new UFS paradigms that:

- ❖ Are sustainable
- ❖ Increase quality of life
- ❖ Foster economic competitiveness and efficiency
- ❖ Enhance environmental justice

Core Research Partners: Group Leaders



City Partners



Thanks!

José Holguín-Veras,

William H. Hart Professor

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for Sustainable Urban Freight Systems**

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Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan



**DVRPC Regional
Freight Committee**

**Suzann Rhodes, FAICP
April 16, 2013**

**CDM
Smith**

Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan

Purpose:

To explain to provide an overview of Pennsylvania's Comprehensive Freight Movement Plan (CFMP)

- To receive input from DVRPC's freight stakeholders:
 - Your issues, concerns, opinions, ideas, needs, and recommendations
 - To improve freight mobility
 - To support economic prosperity in your region and throughout Pennsylvania

Today's Presentation

1. Brief explanation LRTP and CFMP
2. Why do a statewide freight plan
3. MAP-21 recommendations and incentives
4. CFMP planning process (outreach and analysis)
 - a. Goals and objectives
 - b. PA freight assets
 - c. Examples of products and data
5. Schedule LRTP and CFMP


Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan

Develop shared vision for Pennsylvania's transportation future

- Update current Mobility Plan from 2030 to 2040
 - Refresh vision, goals, and objectives
 - Develop performance measures and targets (MAP-21 compliant)
 - Identify multimodal needs
 - Develop financial forecasts
 - Conduct programmatic investment scenarios
 - Develop project prioritization process

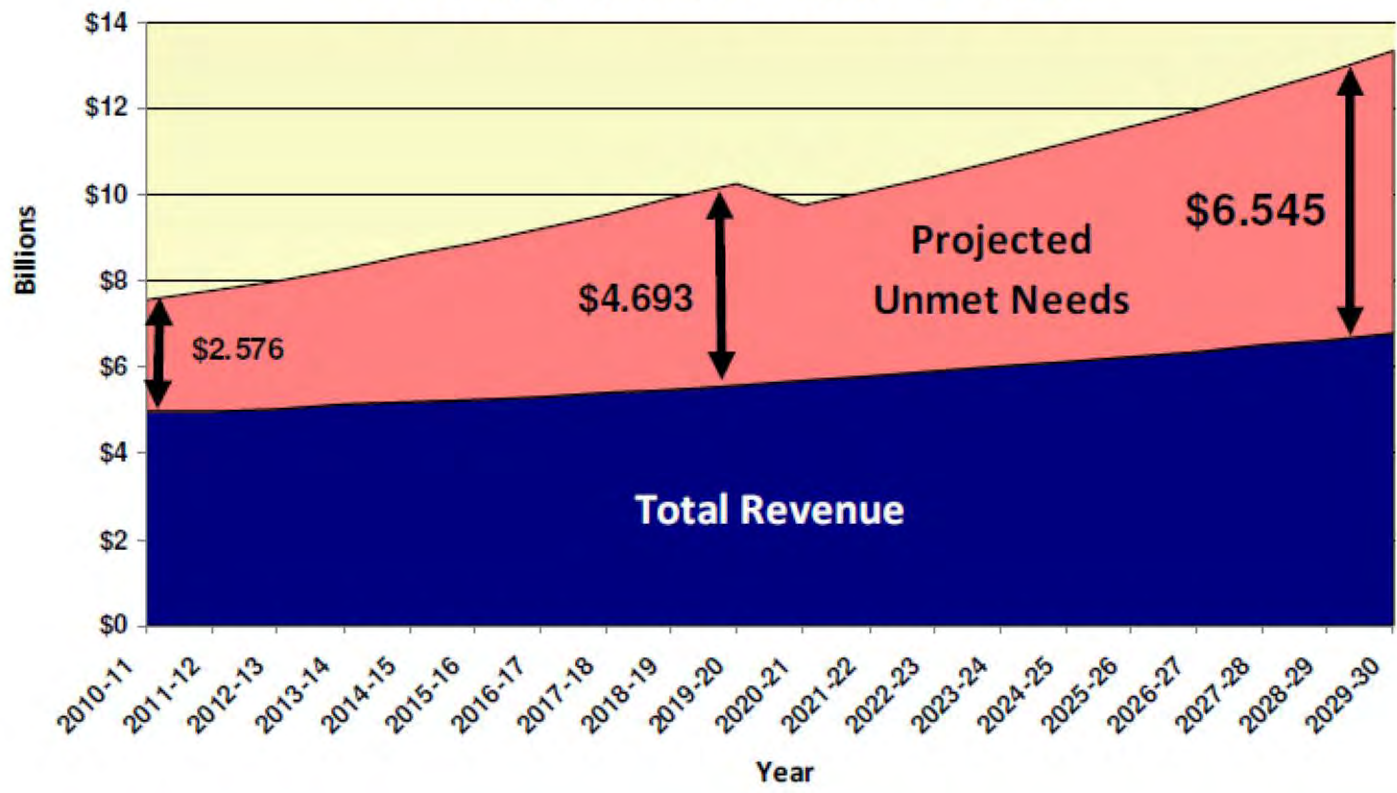
- Develop Comprehensive Freight Movement Plan
 - Identify freight rail, trucking, waterway and port, and intermodal needs
 - Identify projects to improve freight efficiency on Interstate and strategic roadways
 - Comply with MAP-21 recommendations – approval to use 90/95% funding option

Programmatic Investment Scenarios

- LRTP  **Cohesive Investment Strategy**
- Investment Scenarios combine essential elements
 - Goals & objectives
 - Needs
 - Funding
 - Priorities
- Programmatic Investment Scenario
 - Menu of **strategic** investment choices
 - Different emphasis
 - Portray alternatives/explain outcomes
 - Understand consequences

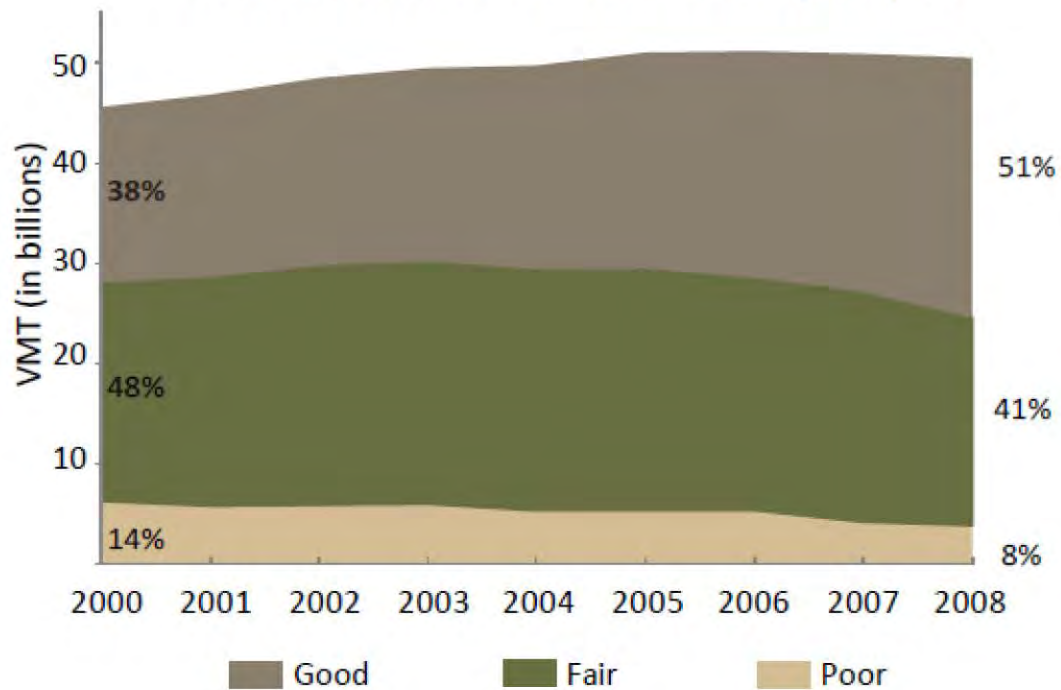
Revenue and Needs (Highway and Bridge)

Pennsylvania Highway and Bridge Projections, 2010-30
Total Revenues & Unmet Needs



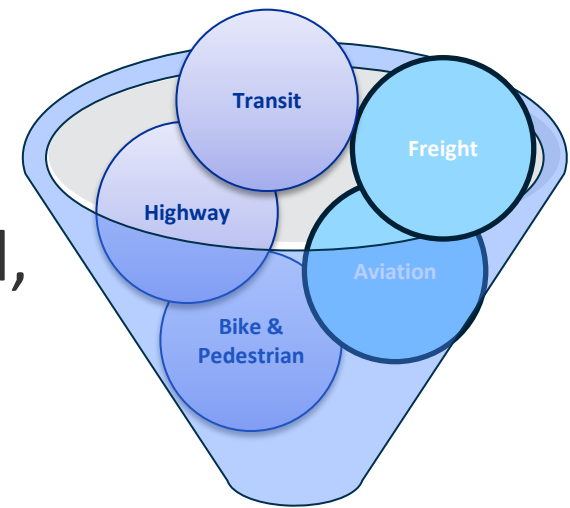
Pavement Conditions

VMT on PennDOT-owned Roadways, by IRI



Project Prioritization Approach

- Evaluate a project's ability to address
 - ✓ Goals and Objectives
 - ✓ Performance Measures
- Transparent, coordinated, documented, and automated process
- Ability to compare projects across the state
- Ability to **compare projects across modes**



Comprehensive Freight Movement Plan

- Pennsylvania's FIRST Freight Plan
- **Integrated with LRTP**
- Focus
 - Economic development
 - Improve freight efficiency
- Meet MAP-21 Guidance
 - Qualify for incentives
 - Projects identified and prioritized



Why care about freight / why do a freight plan

- Freight shares Pennsylvania's transportation infrastructure with passengers
 - As stewards of the system – we are responsible for accommodating all users
- Freight
 - Supports the economy of the region and state
 - Supports manufacturing
 - Provides jobs
 - Is the economy in motion
 - Impacts public and private infrastructure



July 6, 2012 - [Public Law 112-141](#), Moving Ahead for Progress in the 21st Century Act (MAP-21)

- Interim guidance/rules not yet official
- “States are encouraged” – not required
 - develop freight plans that are comprehensive and include both immediate and long-term freight planning activities and investments

Guidance for State Freight Plans

- Section 1118 (State Freight Plans)
- Section 1117 (State Freight Advisory Committees)
- Section 1116 of MAP-21 (Prioritization of Projects to Improve Freight Movement)

MAP-21 Guidance on Freight Plan

- **Identify**
 - Significant trends, needs and issues
 - Facilities/projects as critical to economic growth
 - Facilities critical to export movements / goals
- **Address**
 - Heavy vehicle routes (mining, agriculture, energy and timber)
 - Facilities with mobility issues, such as bottlenecks
- Show innovative technologies and operational strategies have been considered to improve safety and efficiency of freight movements
- **Prioritize investments in these facilities**
 - Investments that support strategic goals: e.g. safety, state of good repair, livability and sustainability
 - Improvements result in efficient freight movement
- **Describe policies, strategies and performance measures to guide freight investments**
- **Describe how the plan supports national freight goals**

MAP-21 Guidance on Freight Plan

Why comply if plan and projects approved by FHWA:

- State can increase federal share to 95% on Interstate
- 90% on other facilities

Preliminary Outline for MAP-21 Freight Plan

1. Strategic Goals
2. Economic Context of Freight Transportation
3. Freight Policies, Strategies and Institutions
4. State Freight Assets
5. Conditions & Performance of the Freight System
6. Freight Forecast
6. The State's Decision-Making Process
7. Overview of Trends, Needs and Issues
8. Strengths and Problems
9. The State's Freight Improvement Strategy
10. Implementation Plan

Comprehensive Freight Movement Plan Planning Process Multimodal Analysis and Outreach



Multimodal Analysis Process – Outreach Comprehensive Freight Movement Plan

- Active engagement of public and private sector stakeholders
 - Outreach
 - Interviews with private sector (MAP-21)
 - Web site <http://www.paontrack.com>
 - Webinars – April 25, 2013 1-4 p.m.

<https://attendee.gotowebinar.com/register/1086444281232037632>

- Continual feedback and involvement LRTP Advisory and Executive Committee



Multimodal Analysis Process

Comprehensive Freight Movement Plan

Freight Analysis:

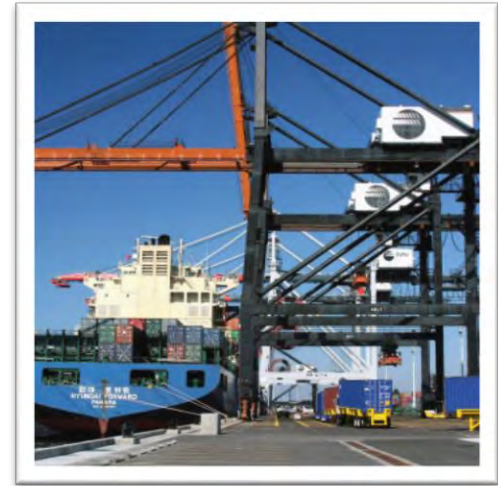
1. Determine the **market requirements** for capacity and performance
2. Assess the **functional capabilities** of the infrastructure
3. Examine **physical condition** and state of repair
4. Identify **gaps** between demand and condition, capacity, functionality, and performance
5. Define related projects to **close the gaps** and improve efficiency
6. Identify and **prioritize projects** by mode and region



Multimodal Analysis Data and Information Sources

Comprehensive Freight Movement Plan

- TranSearch Data
 - (License also for MPOs/RPOs + buffer areas (e.g. New Jersey))
 - Statewide and regional
 - County to county
 - Commodity by mode
 - Inside and outside PA
- ATRI – 600,000 trucks with transponders
- FAF – FHWA data
- PennDOT data bases and studies from PA and elsewhere
- Site visits and private sector interviews



Pennsylvania Freight Assets

HIGHWAYS

- 5th nationally in total mileage of state-owned roadway (39,860 miles)
- 6th in vehicle miles traveled
- 6th in total Interstate mileage (1,319 miles)

BRIDGES

- 3rd in number of state-owned bridges (25,000)
- 4th oldest bridge inventory in the nation



Pennsylvania Freight Assets

FREIGHT RAIL

- 4 Class 1 railroad
 - CSX
 - Norfolk Southern
 - Canadian Pacific
 - Bessemer and Lake Erie Railroad
(Canadian National)

- 5th largest rail system in the nation
- 60 railroads operating 6,000 miles of track
- Largest short-line and regional rail lines in the nation



Pennsylvania Modal Facts

AVIATION

- 134 public use airports
- 313 private use airports

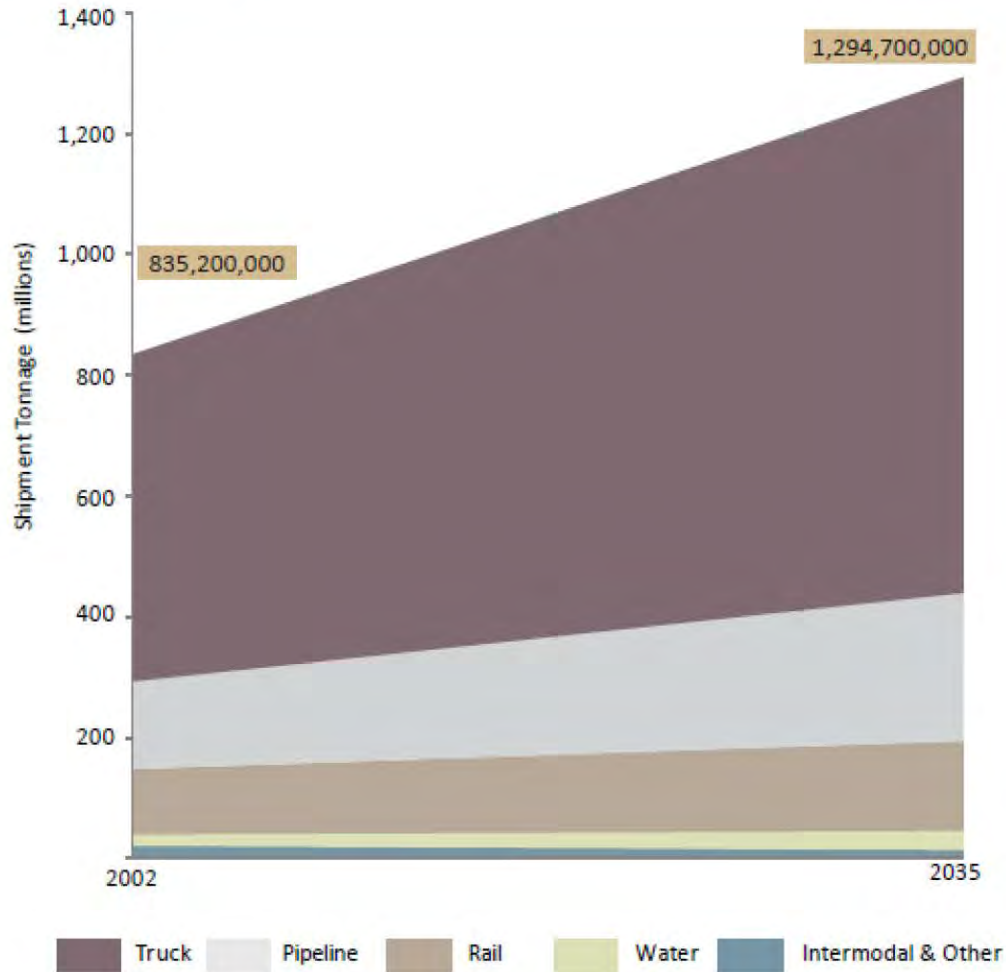
Water PORTS

- **Total trade**
 - Philadelphia ranked 21st nationally (34.0 MT)
 - Pittsburgh ranked 22nd nationally (33.8 MT)
- **Total foreign trade**
 - Philadelphia ranked 18th nationally (21.5 MT)
 - Pittsburgh ranked 124th nationally
- **Total domestic trade**
 - Pittsburgh ranked 8th nationally (33.8 MT)
 - Philadelphia ranked 22nd nationally (12.5 MT)

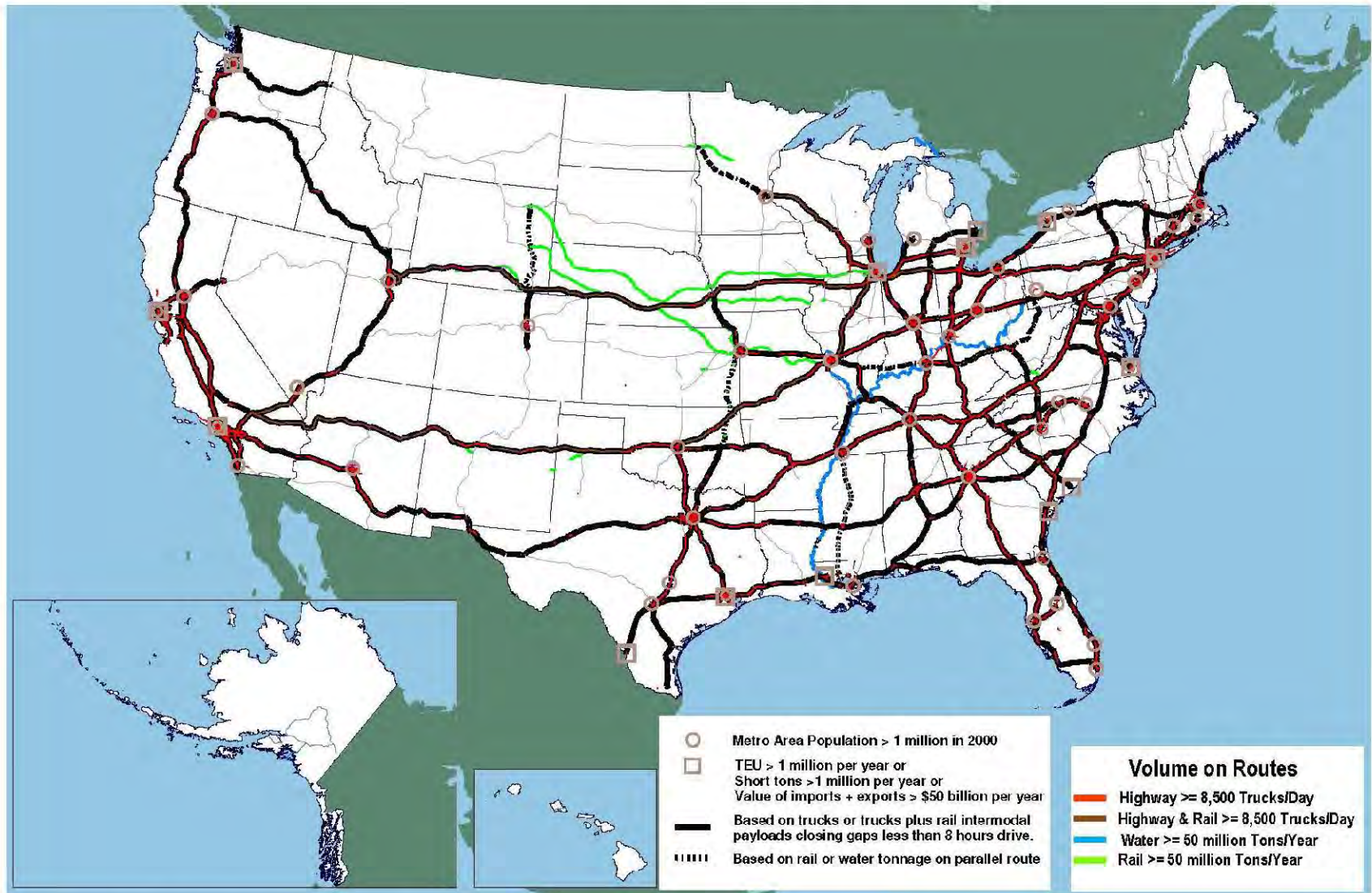


Image courtesy of Philadelphia Regional Port Authority

Freight Tonnage by Mode



Major Freight Corridors



Note: Highway & Rail is additional highway mileage with daily truck payload equivalents based on annual average daily truck traffic plus average daily intermodal service on parallel railroads. Average daily intermodal service is the annual tonnage moved by container-on-flatcar and trailer-on-flatcar service divided by 365 days per year and 16 tons per average truck payload.

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, 2008.

America's Marine Highway Corridors

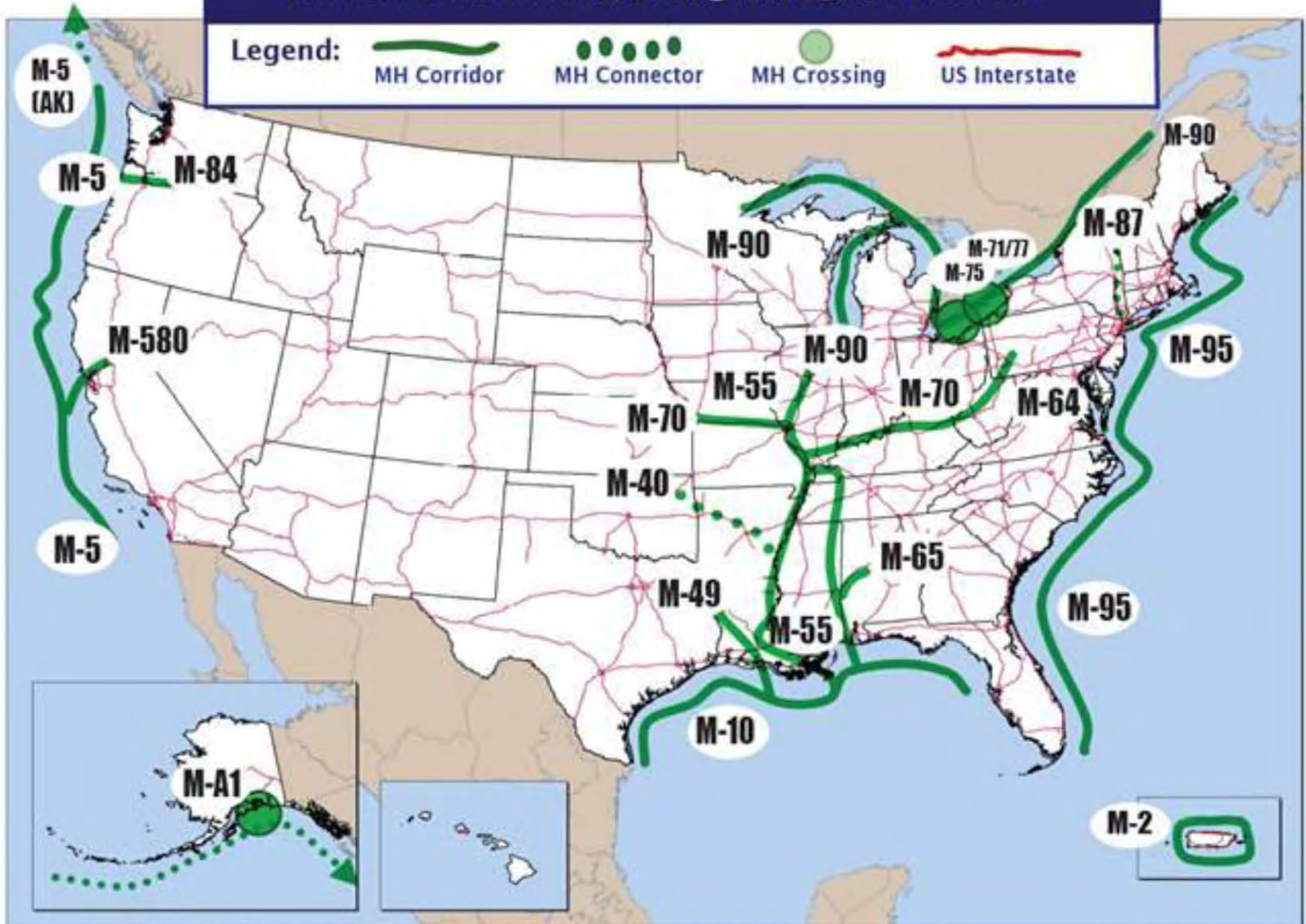
Legend:

 MH Corridor

 MH Connector

 MH Crossing

 US Interstate

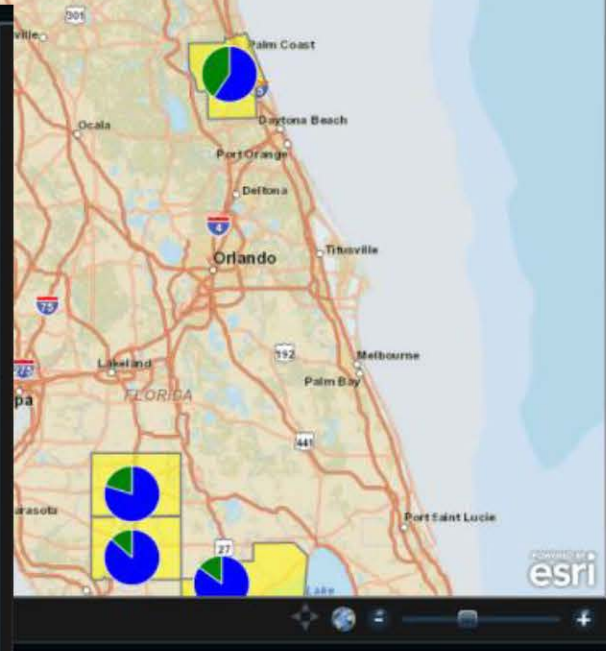


Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan

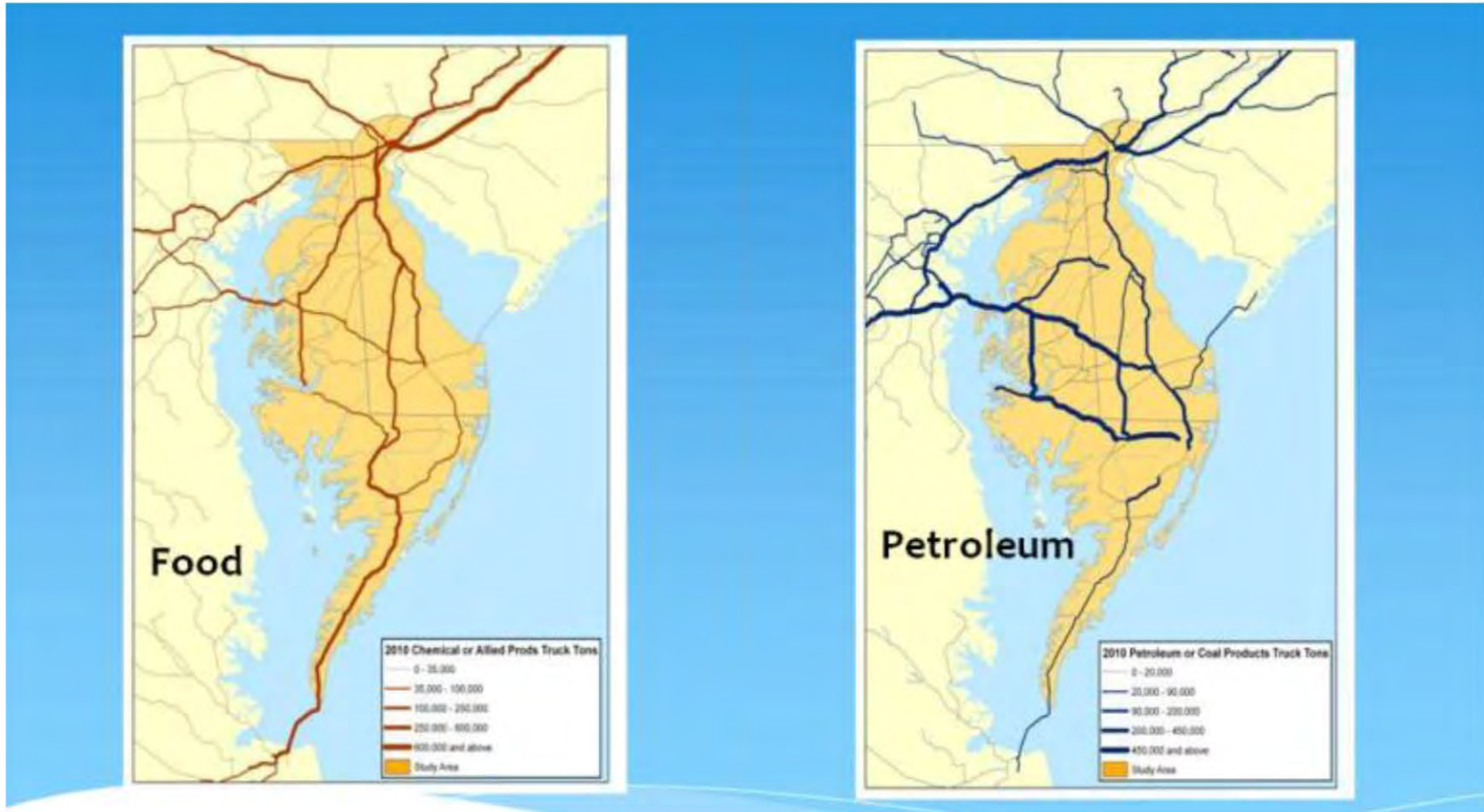
Examples:

- **Analysis and approach**
 - Infrastructure Condition and performance
 - Supply chain view
- **Products and deliverables you can expect**

Freight Analysis Example - TranSearch



Freight Analysis Example - TranSearch



Source: I-95 corridor coalition study

Example - deliverables

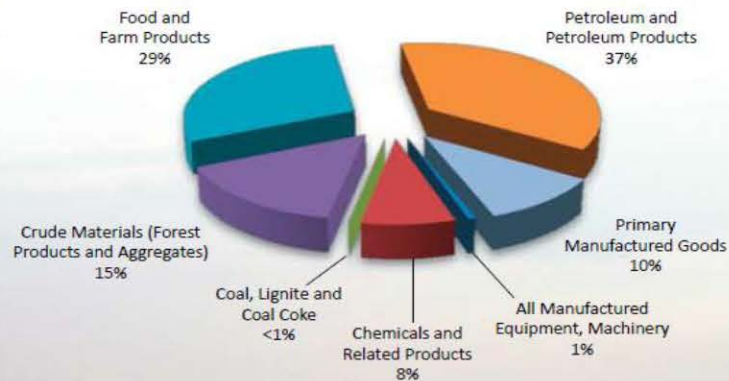
Ohio State Rail Plan



The Mighty Mississippi

Over 175 million tons of freight flowed through the Mississippi River between New Orleans and the Ohio River in 2008, of which nine million tons originated or terminated in one of four primary ports on the river in Mississippi. Grain shipments comprise the largest share of Mississippi River commerce overall, but the petroleum products are the largest commodity group handled by Mississippi's ports, followed by farm products, forest products and aggregates.

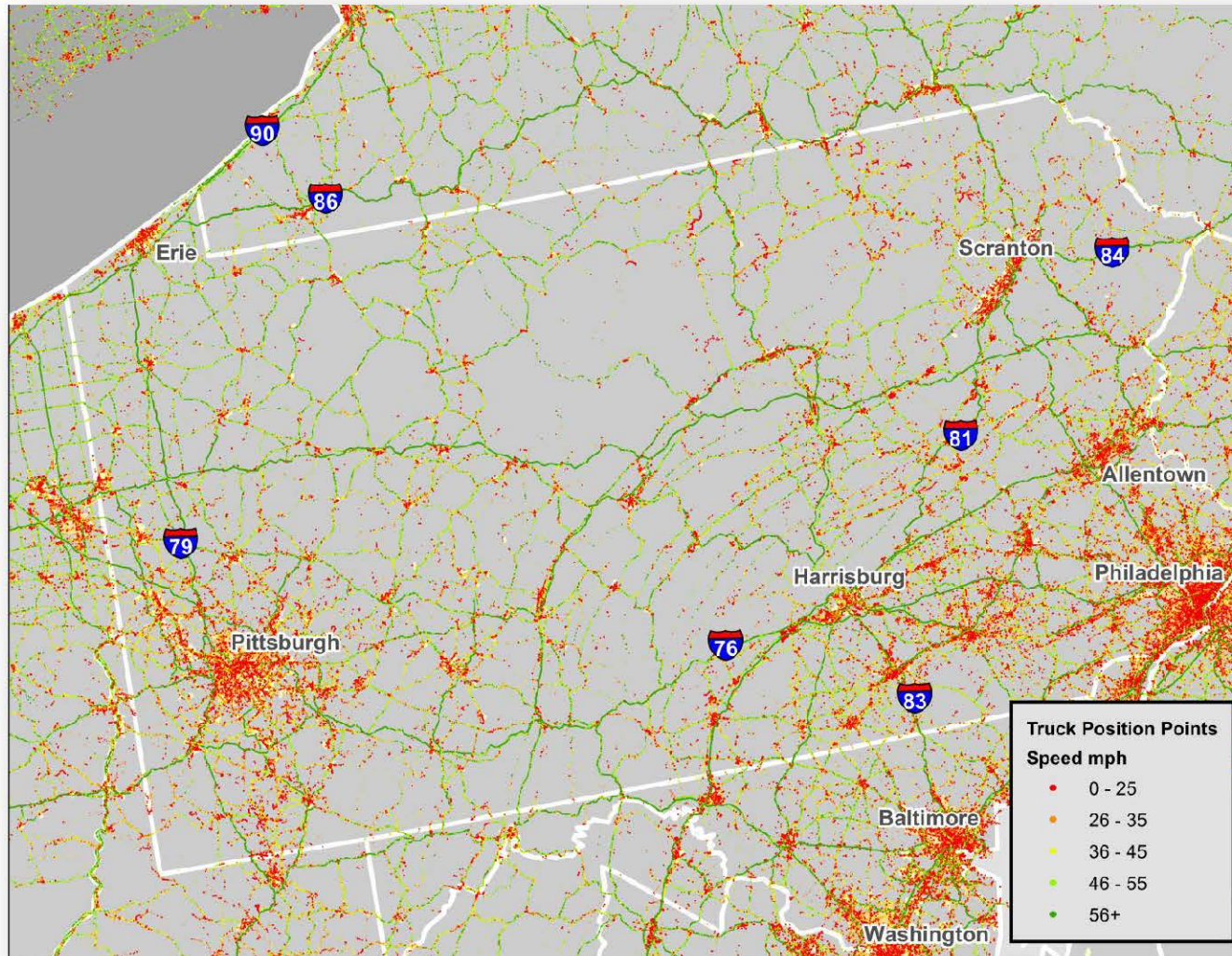
Mississippi River Corridor Commerce by Commodity Group - 2008



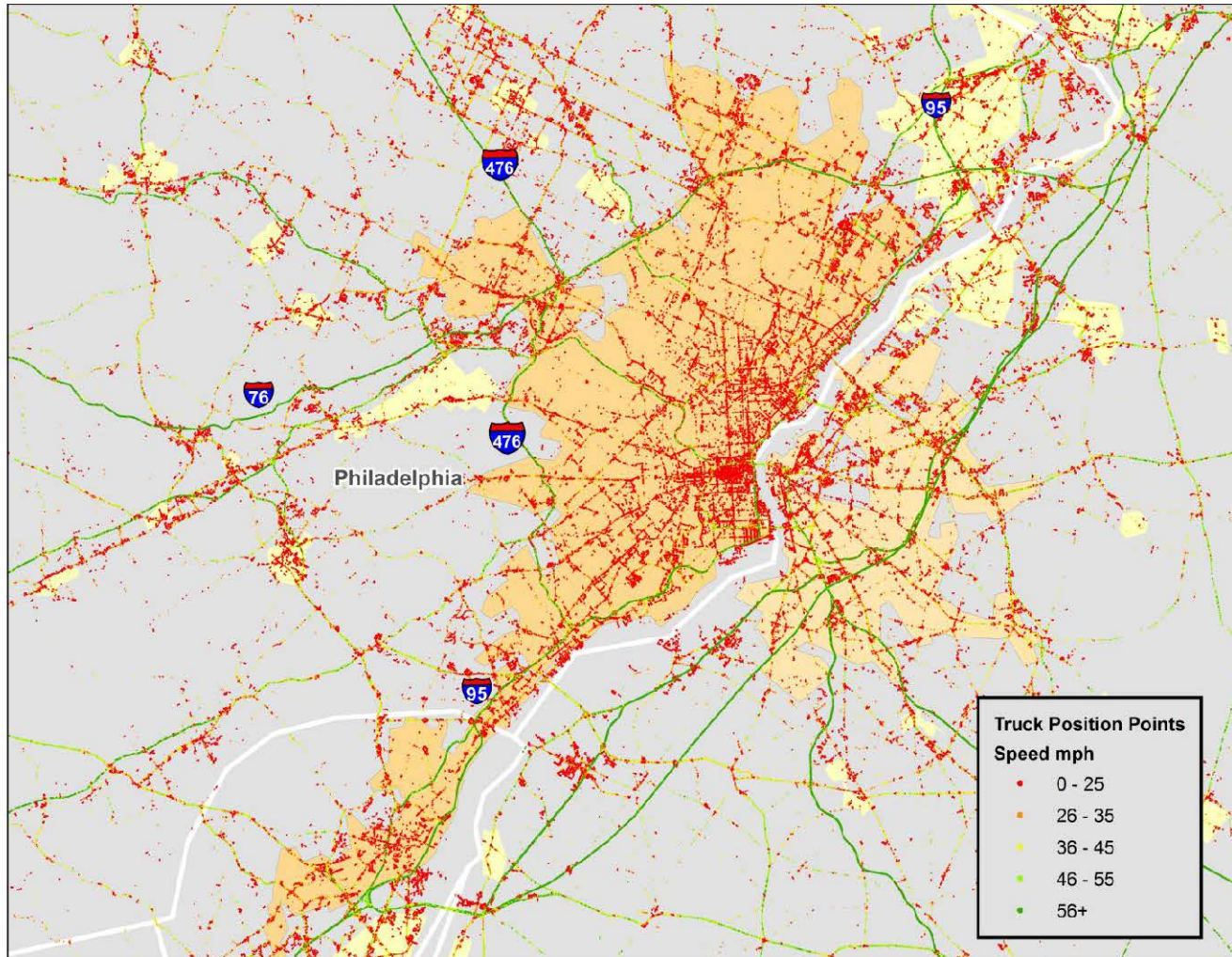
Source: USACE Waterborne Commerce in the United States, 2008



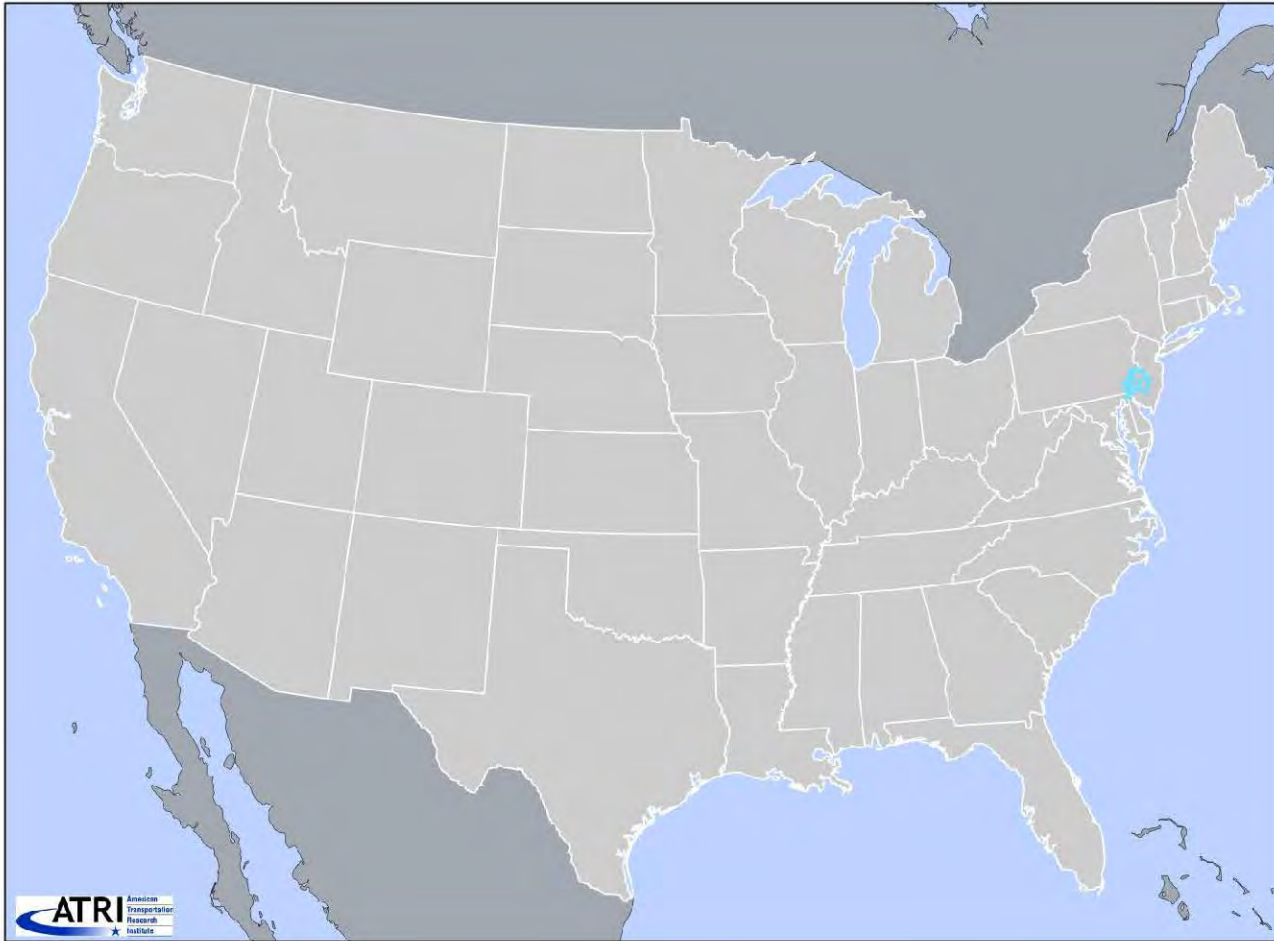
Pennsylvania Truck Position Points by Speed



Philadelphia truck positions by speed (mph)



Philadelphia 2,000 truck sample



Phila. Same 2,000 trucks after 24 hours



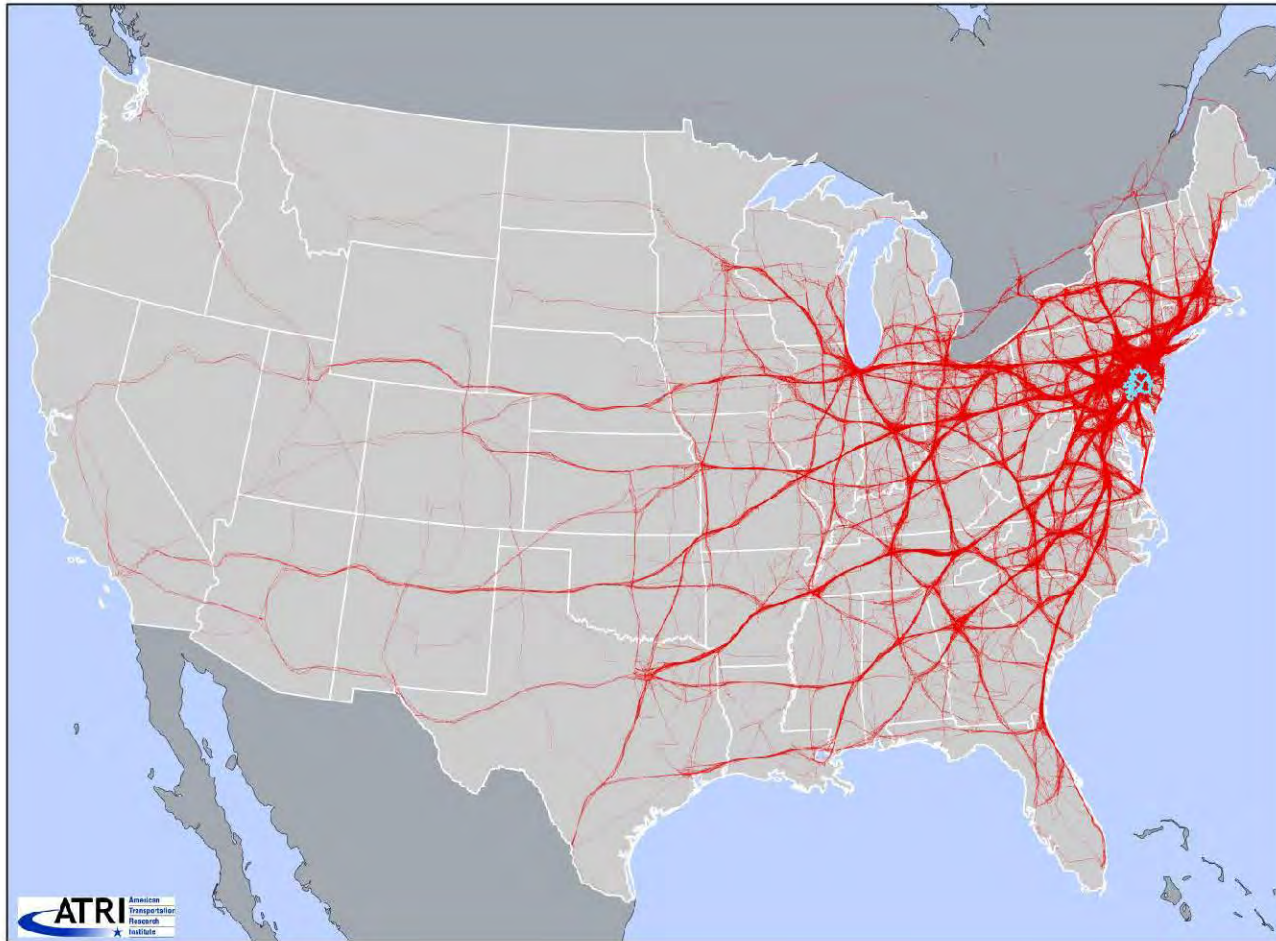
Phila. Same 2,000 trucks after 48 hours



Phila. Same 2,000 trucks after 72 hours



Phila. Same 2,000 trucks after 5 days



Phila. Same 2,000 trucks after 7 days



Pittsburgh 2,000 Truck Sample



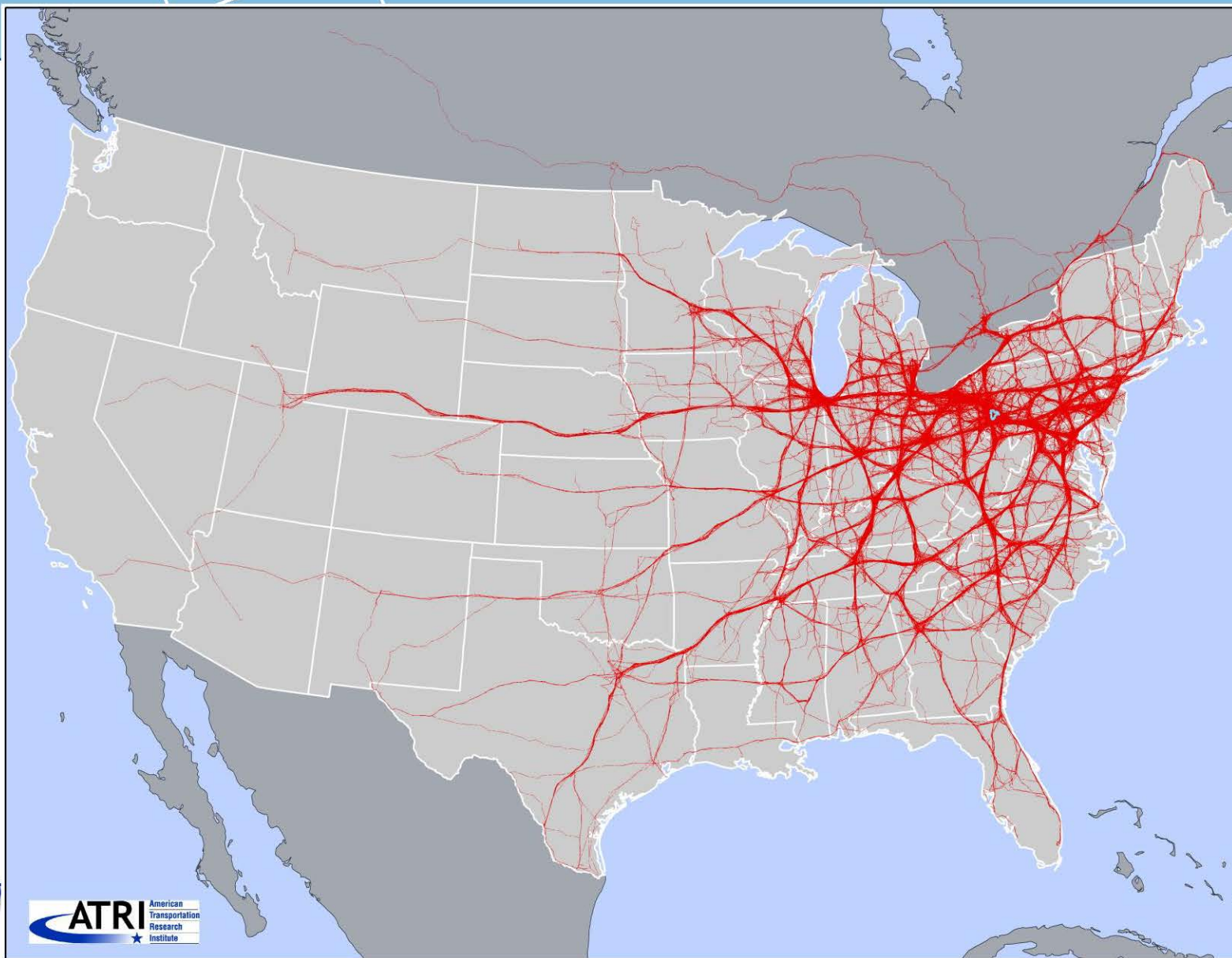
Pgh. Same 2,000 Trucks After 24 Hours



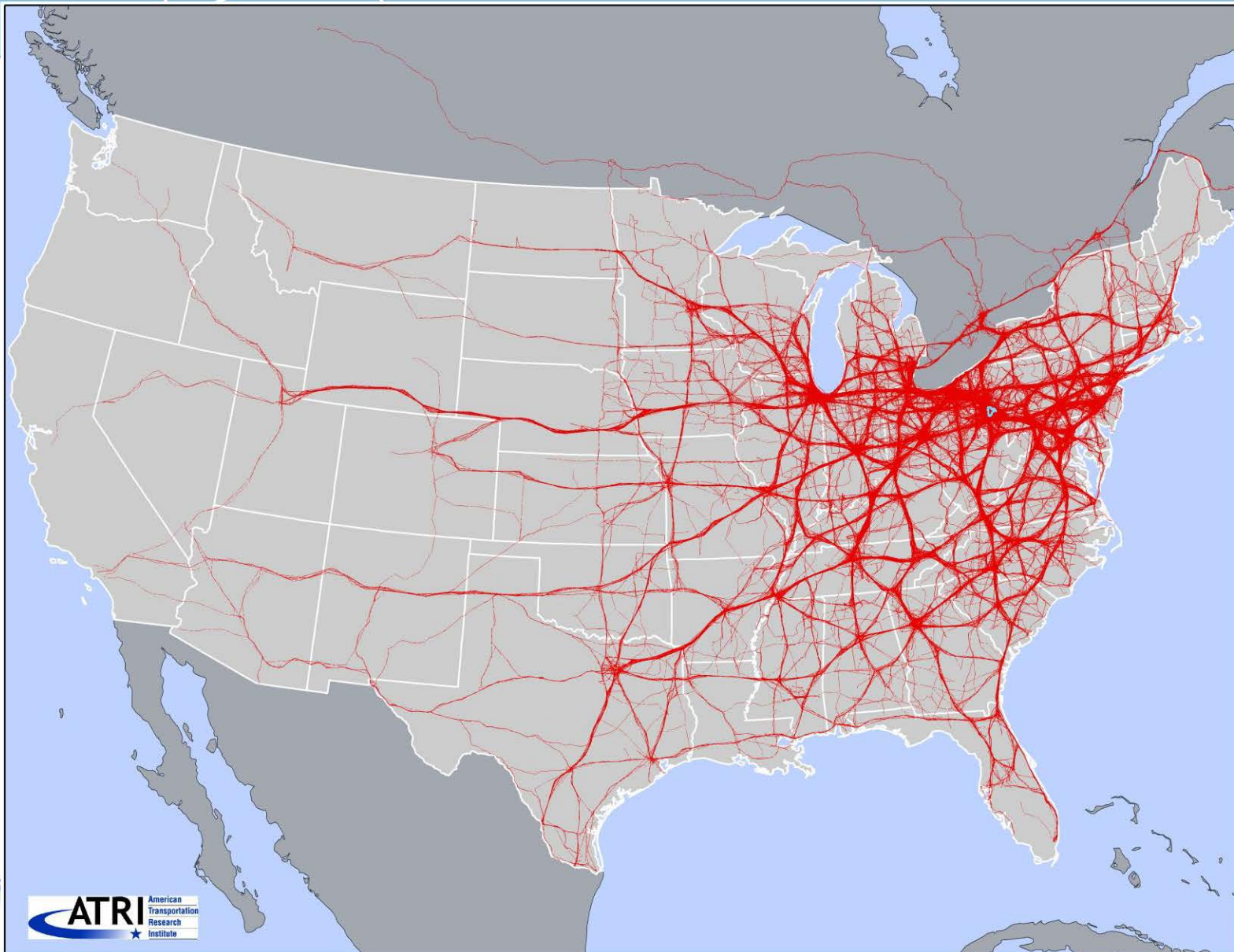
Pgh. Same 2,000 Trucks After 48 Hours



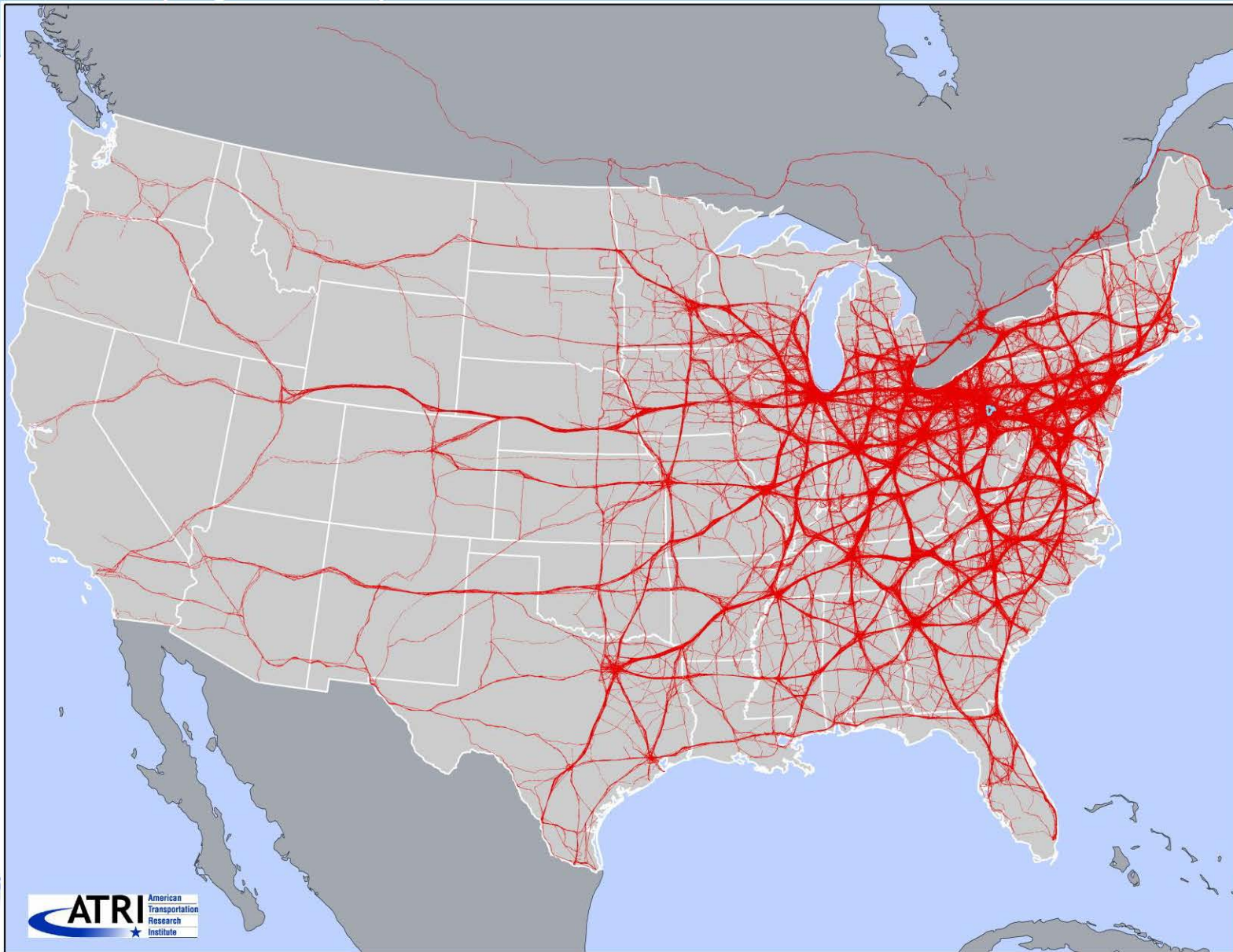
Pgh. Same 2,000 Trucks After 72 Hours



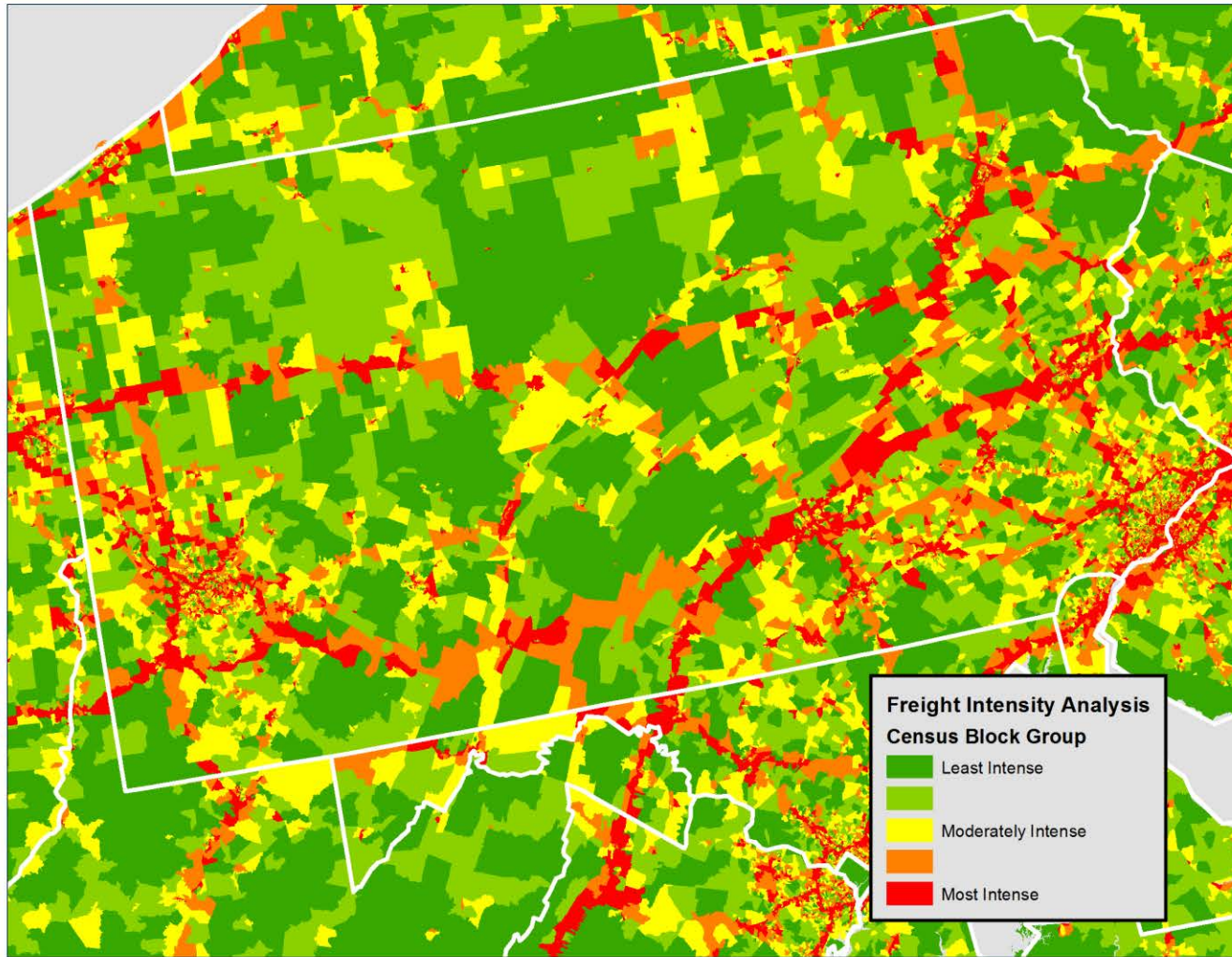
Pgh. Same 2,000 Trucks After 5 Days



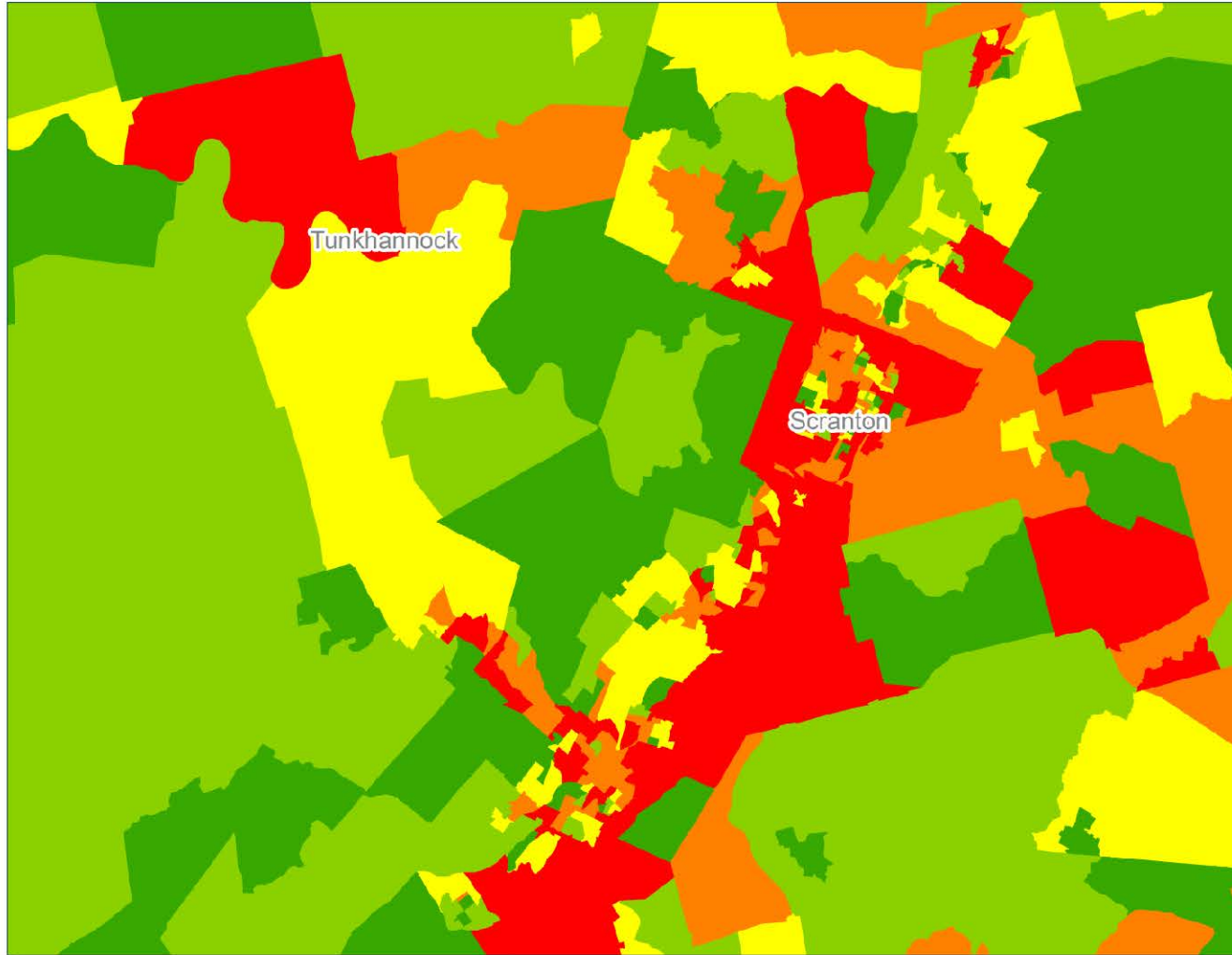
Same 2,000 Trucks After 7 Days



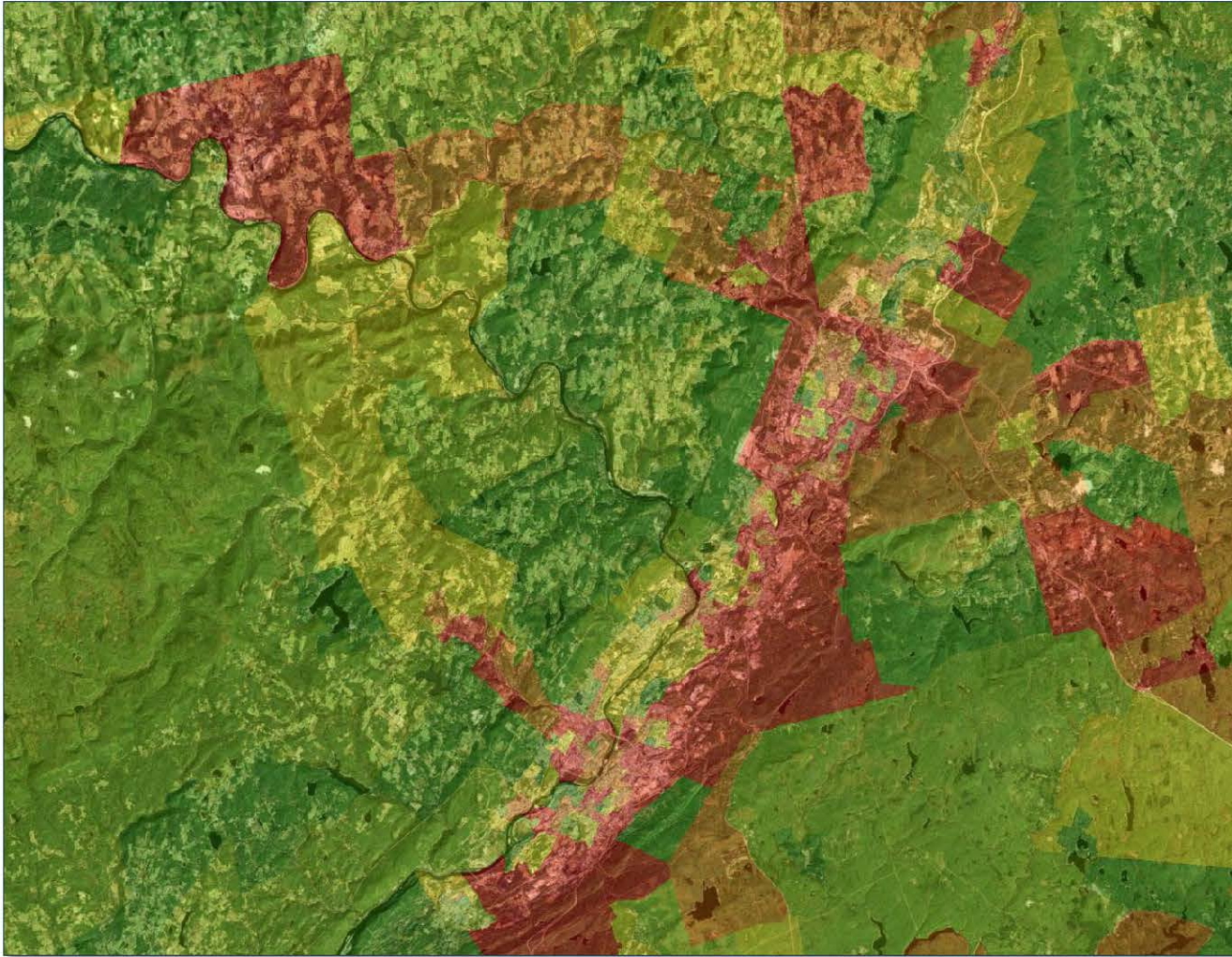
Pennsylvania Truck Freight Intensity by Census Block



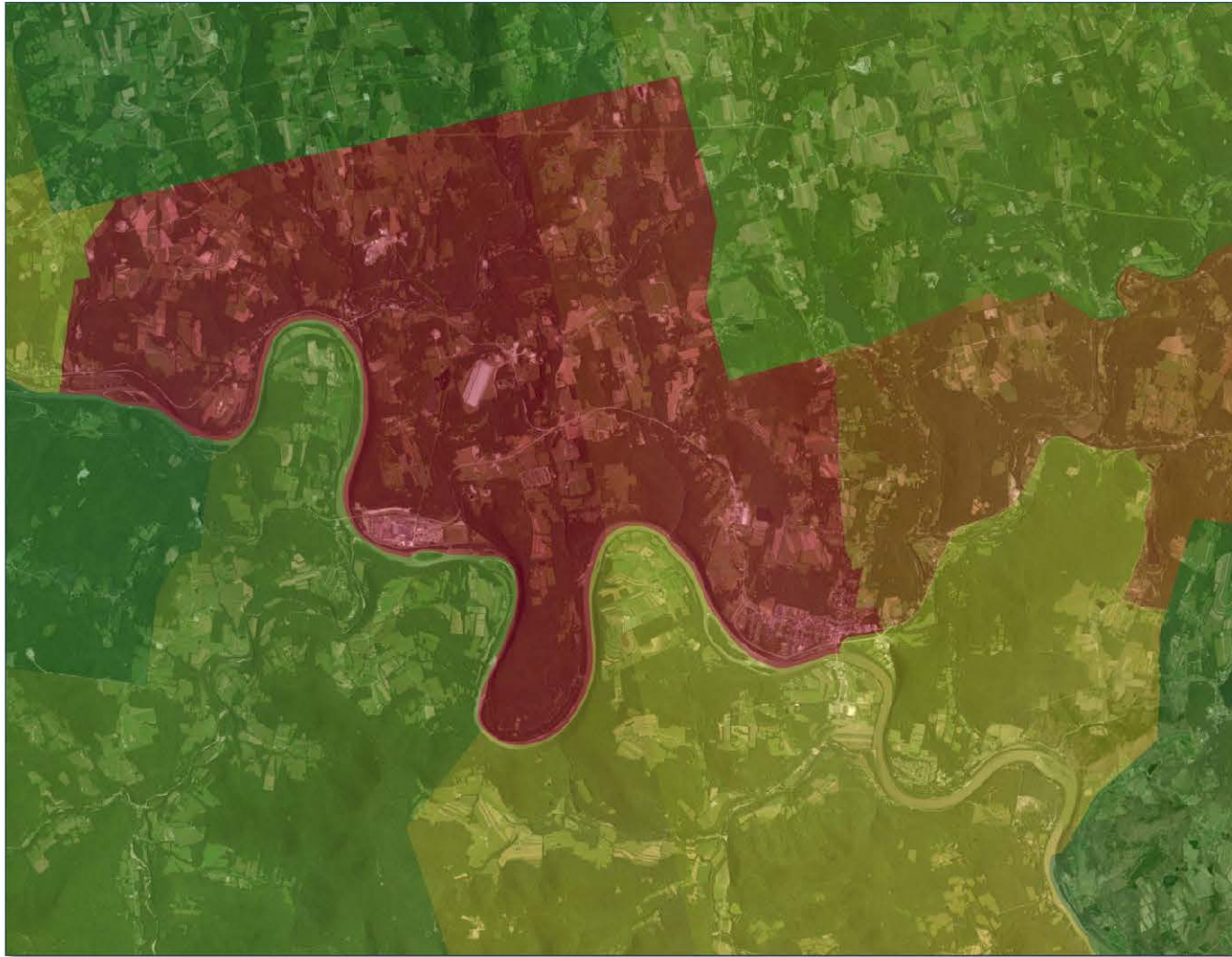
Pennsylvania Truck Freight Intensity – census block (cont.)



Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan



Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan



Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan



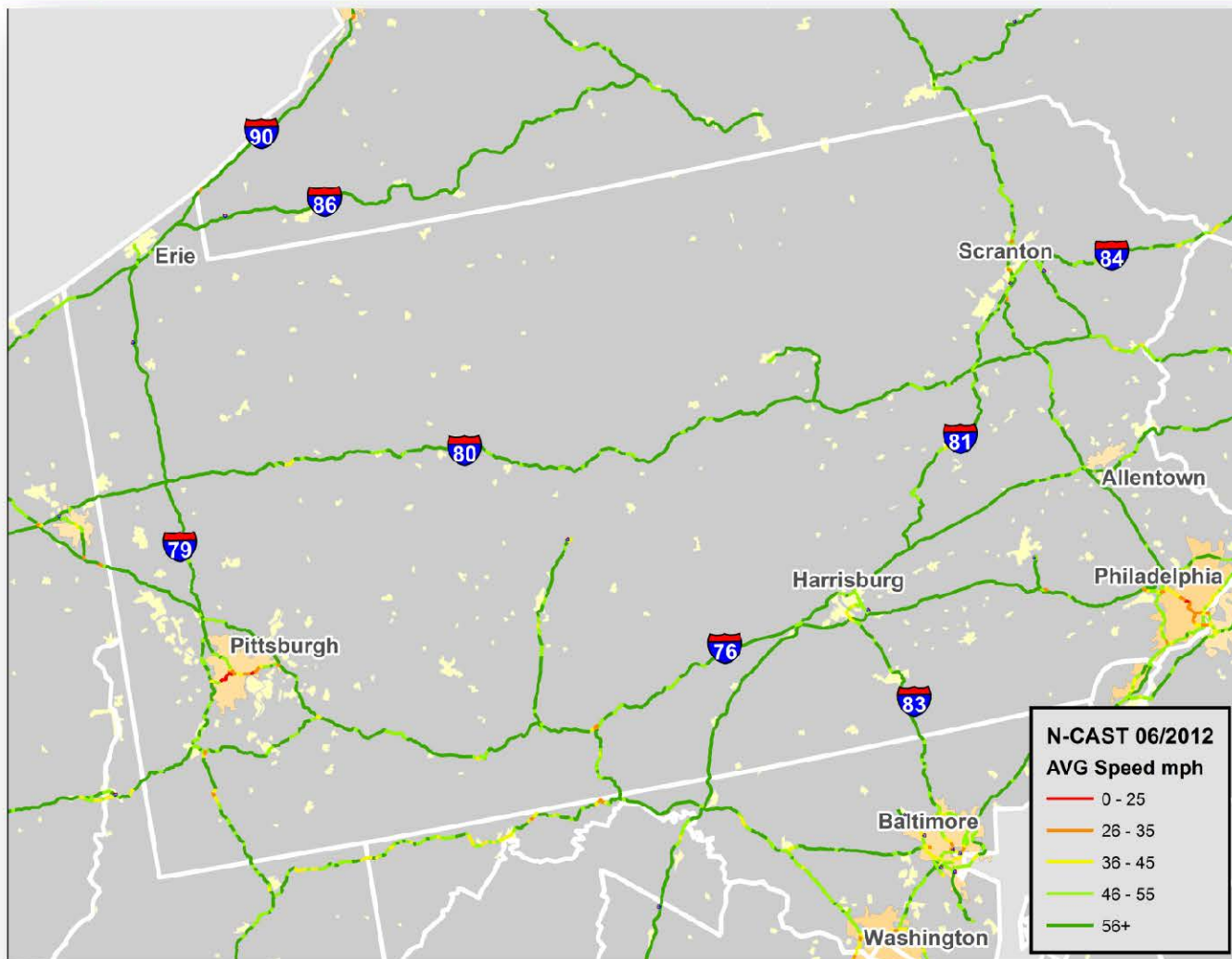
Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan



Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan

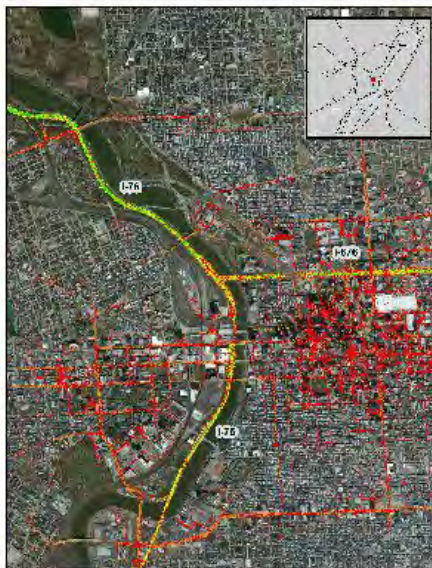


Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan



Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan

Philadelphia, PA: I-76 at I-676



Summary

National Ranking by Congestion Index	25
Average Speed	37
Peak Average Speed	30
Nonpeak Average Speed	39
Nonpeak/Peak Ratio	1.33

Average Speed by Time of Day I-76 at I-676



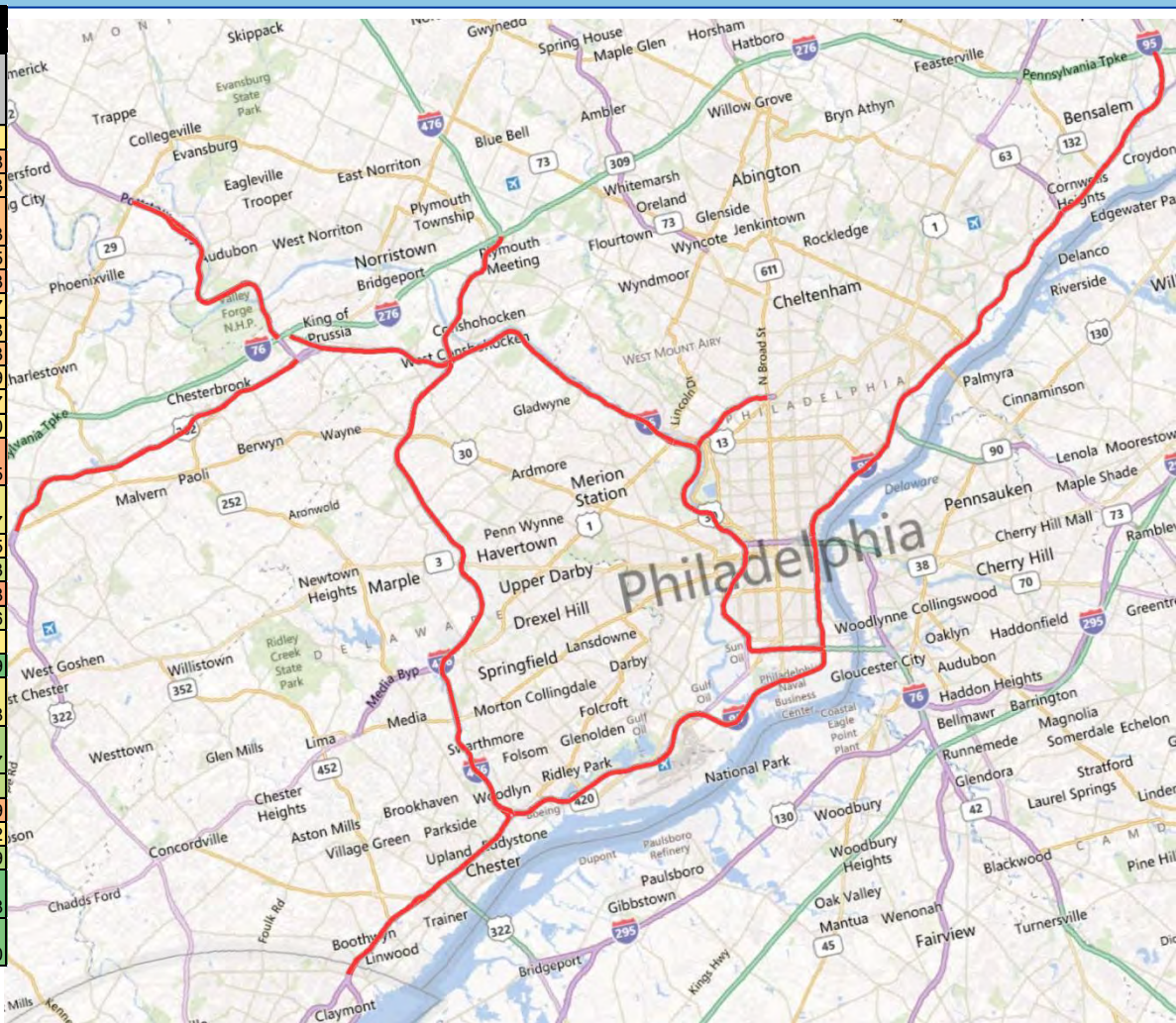
Freight Performance Measures Analysis of 250 Freight Significant Highway Locations – CY 2010

Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan

Philadelphia, PA: April - June 2010

Travel Time Index

Freeway Section	Length (mi)	Morning Peak (6a-9a)	Midday (9a-4p)	Evening Peak (4p-7p)	Average Peak Period
I-76 WB: I-476 to I-276	4.88	1.09	1.09	1.45	1.31
I-76 EB: I-276 to I-476	4.87	1.42	1.23	2.01	1.68
I-76 EB: I-476 to US 1/City Ave	7.93	1.41	1.29	1.79	1.53
I-76 WB: US 1/City Ave to I-476	7.94	1.53	1.32	1.70	1.63
I-76 EB: US 1/City Ave to I-95	10.67	1.39	1.38	1.83	1.55
I-76 WB: I-95 to US 1/City Ave	10.69	1.50	1.48	1.98	1.73
I-476 SB: PA 3 to I-95	9.19	1.23	1.17	1.55	1.37
I-476 NB: I-95 to PA 3	9.15	1.42	1.15	1.44	1.43
US 422 EB: PA 29 to I-76	7.81	1.79	1.15	1.13	1.63
US 422 WB: I-76 to PA 29	7.79	1.11	1.09	1.58	1.39
US 1 SB: SR 611 to I-76	2.71	1.49	1.48	1.21	1.37
US 1 NB: I-76 to SR 611	2.73	1.24	1.41	1.45	1.30
I-95 SB: PA 63/Woodhaven to I-675	12.7	1.92	1.22	1.43	1.75
I-95 NB: I-675 to PA 63/Woodhaven	12.65	1.08	1.12	1.51	1.27
US 202 SB: US 422 to US 30	10.08	1.08	1.06	1.61	1.35
US 202 NB: US 30 to US 422	10.05	1.30	1.09	1.16	1.23
I-476 SB: I-276 to I-76	4.47	1.87	1.54	1.48	1.78
I-476 NB: I-76 to I-276	4.47	1.12	1.11	1.38	1.26
I-476 SB: I-76 to PA 3	7.46	1.07	1.09	1.57	1.31
I-476 NB: PA 3 to I-76	7.45	1.08	1.06	1.09	1.09
I-95 NB: Delaware State Line to I-476	6.74	1.21	1.09	1.43	1.28
I-95 SB: I-476 to Delaware State Line	6.79	1.09	1.09	1.26	1.17
I-95 SB: I-676 to I-76	3.54	1.06	1.17	1.31	1.21
I-95 NB: I-76 to I-676	3.56	1.08	1.20	2.17	1.69
I-95 SB: I-76 to I-476	11.45	1.09	1.32	1.54	1.32
I-95 NB: I-476 to I-76	11.49	1.12	1.51	1.34	1.19
I-95 NB: PA 63/Woodhaven to I-276	6	1.08	1.07	1.09	1.08
I-95 SB: I-276 to PA 63/Woodhaven	5.98	1.07	1.08	1.16	1.10



Schedule – Key Milestones

- **Stakeholder Participation – Ongoing**
 - Stakeholder Meetings
 - Advisory Committee Meetings
 - Executive Team Meetings
- **Project website**
- **Vision, Goals, and Objectives – Spring 2013**
- **Existing Inventory – May - June 2013**
- **Performance Measures – May- June 2013**



Schedule – Key Milestones

- **Multimodal Needs** – September 2013
- **Base-line Revenue Projections** – June 2013
- **Alternative Investment Scenarios** – January 2014
- **Project Prioritization** – February 2014
- **Draft LRTP and Comprehensive Freight Plans** – April 2014
- **Final LRTP and Comprehensive Freight Plans** – June 2014



Pennsylvania Long Range Transportation Plan and Comprehensive Freight Movement Plan

Hand outs

- Goals and objectives
- 3 ways to be involved and comment form

Discussion:

- Goals and objectives
- Your top 3 concerns

Goals in the National Freight Policy established in 23 U.S.C. 167

- Improving the contribution of the freight transportation system to economic efficiency, productivity, and competitiveness
- Reducing congestion on the freight transportation system
- Improving the safety, security, and resilience of the freight transportation system
- Improving the state of good repair of the freight transportation system
- Using advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight transportation system
- Reducing adverse environmental and community impacts of the freight transportation system

Draft Goal Area: Economic Development

Draft Goal

Encourage sustainable economic growth and development, and facilitate local, national, and global commerce.

Draft Objectives

- ✓ **Reduce congestion and bottlenecks** on key freight corridors and on/ at intermodal connections
- ✓ **Increase travel time reliability** on key freight corridors and on/ at intermodal connections
- ✓ **Increase access** to jobs/ labor/ transportation choices in urban and rural areas

Sample Strategies

- ✓ **Coordinate** with Planning Partners and local governments
- ✓ **Link transportation and land use**

Draft Goal Area: Stewardship

Draft Goal

Advance triple bottom line for all investments to maximize financial, environmental, and social benefits while managing costs.

Draft Objectives

- ✓ **Enhance quality of life and livability** for system users
- ✓ **Minimize environmental impacts**
- ✓ **Reduce agency and user costs**

Sample Strategies

- ✓ **Incorporate economic impact criteria** to inform project prioritization decisions and ensure that fundamental goals and priorities are achieved
- ✓ **Utilize Public/ Private Partnerships** to expand the available pool of capital and tap into private innovation and state-of-the-art approaches
- ✓ **Align with Planning Partners** on system expansion opportunities

Draft Goal Area: System Preservation

Draft Goal

Promote timely and cost-beneficial “non-worst first” preservation of multimodal assets.

Draft Objectives

- ✓ **Maximize good and minimize poor pavement lane-miles**
- ✓ **Reduce** number of new and existing **structurally deficient bridges**
- ✓ **Support state-of-good repair initiatives** for transit and all other modes

Sample Strategies

- ✓ **Define state-of-good repair** for interstate/ NHS/ and local system
- ✓ **Develop inventory of all statewide assets** including condition and maintain over time
- ✓ **Implement enterprise asset management and programming tool** to inform investment decisions

Draft Goal Area: Safety

Draft Goal

Improve statewide safety for highway and non-highway modes.

Draft Objectives

- ✓ **Reduce** statewide transportation system **fatalities**
- ✓ **Reduce serious injury crashes** statewide
- ✓ **Design a safer system** through programmatic, beneficial and low-cost design modifications
- ✓ **Improve statewide safety** for highway and non-highway modes

Sample Strategies

- ✓ Implement the **Highway Safety Manual**
- ✓ Incorporate **cost-benefit analysis** to evaluate crash mitigation measures
- ✓ **Invest in technologies** that enhance safety across all modes
- ✓ **Encourage separation of commercial and personal vehicles** on the system wherever possible
- ✓ **Improve project selection process and funding eligibility** for safety projects

Draft Goal Area: Personal and Freight Mobility

Draft Goal

Expand, improve, and integrate modal connections.

Draft Objectives

- ✓ **Improve system operational efficiency** for passengers and freight
- ✓ **Ensure multimodal access** for aging and disadvantaged populations

Sample Strategies

- ✓ Invest in **strategic capacity enhancements**
- ✓ Develop a **systematic approach to prioritize and enhance intermodal connections**
- ✓ Provide current and dependable traveler information to passengers and freight to guide route choice intermodal connections
- ✓ Encourage investment in **roadside and vehicular technologies** that improve operational efficiency

Draft Goal Area: Customer Service

Draft Goal

Cultivate departmental and stakeholder collaboration and encourage public engagement.

Draft Objectives

- ✓ **Respond to** public and stakeholder concerns
- ✓ **Continuously collect and integrate** public and stakeholder feedback

Sample Strategies

- ✓ **Integrate NextGen** within PennDOT
- ✓ **Improve communication and coordination** with municipalities and Planning Partners
- ✓ **Engage with users** and non-users affected by agency decisions
- ✓ **Use technology** to make the prioritization, management, financing and operation of the transportation system more transparent and understandable

QUESTIONS

