A National View of Freight Transportation

Delaware Valley Regional Planning Commission

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National Freight Transportation

- National demand for freight transportation
  - Growing economy demands freight movement
    - 118 million households
    - 7.5 million businesses
    - 88,000 Government Organizations
  - US Gross Domestic Product Growth
    - Estimated at 3% per year
  - Population growth
    - 300 to 380 million – 2035

National Freight Transportation

- Global connectivity
  - Increasingly important
  - Foreign trade
    - Grew faster then overall economy 1980 to 2005
    - Quadrupled in real value during this time
- US transportation system moved:
  - 53 million tons worth $36 billion a day in 2002
  - Tons estimated to almost double by 2035

National Freight Transportation

- Population and Economic growth create growth in transportation demand
- 2002 to 2035
  - Shipments by Weight almost doubles
  - Shipments by Value more then doubles
  - **Number of trucks nearly doubles**

International Trade

- International trade is growing
  - 1950 to today value of merchandise has increased 16 fold
    - Inflation adjusted
  - Trucks move most exports and imports between International gateways and inland markets

International Trading Partners

- Canada is top trading partner
- China and Mexico Follow
  - China trade doubled 1998 to 2006
- Trucks carry 2/3rd of the value of goods traded with Canada and Mexico
- 1998 to 2006 import & export growth
  - Mexico 85% & 66%
  - Canada 72% & 52%

Freight Transportation Network

- Roads 1980 to 2005
  - Route miles increased by 3.9%
  - Vehicle miles traveled increased 96%
- Rail 1980 to 2005
  - 20% drop in rail miles
  - 81% increase in rail shipments (ton/miles)

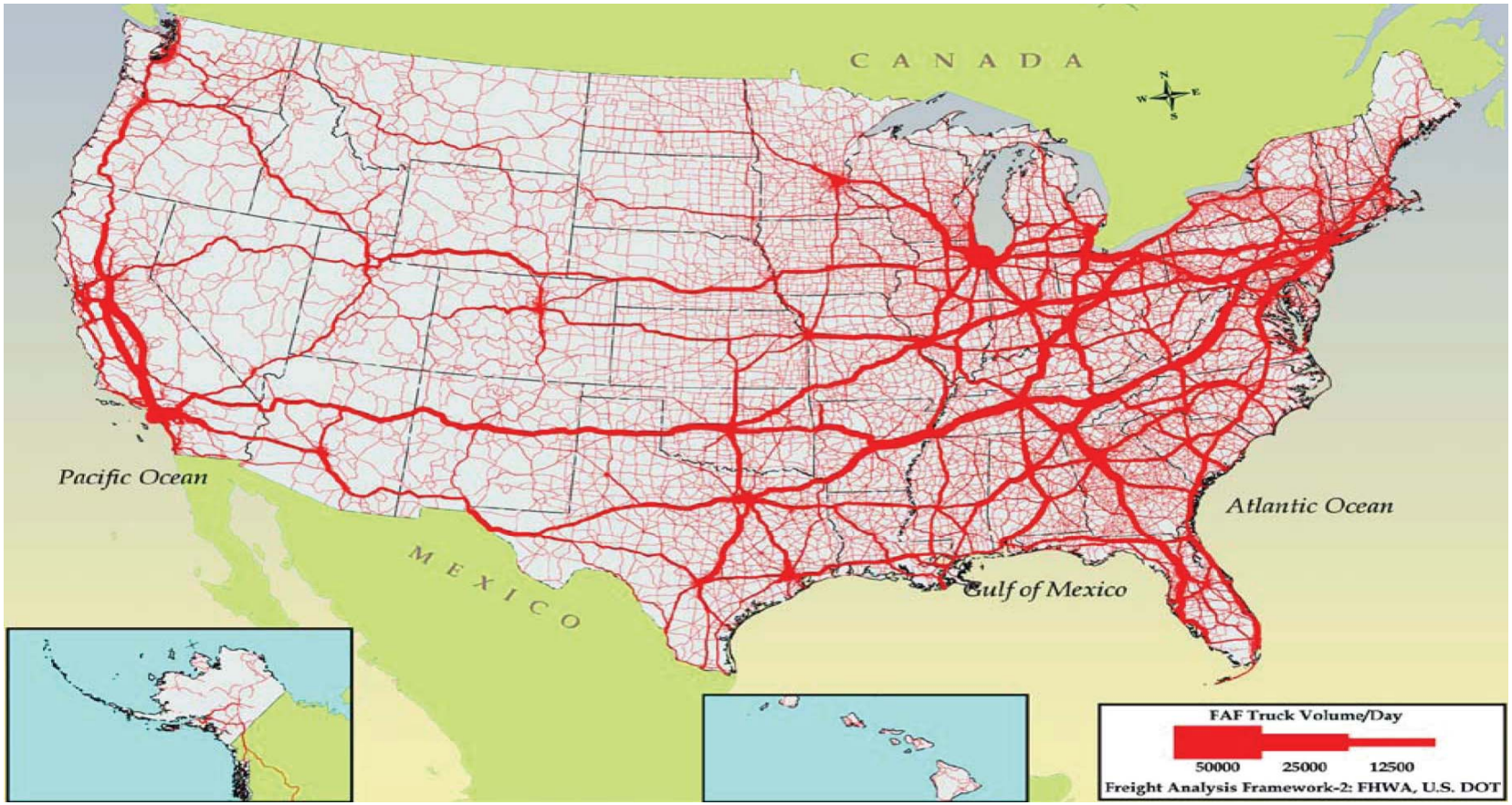
Trucks

- 46% Commercial vehicle increase 1980 -2005
- Truck Travel increasing slightly faster then other vehicles (auto's etc.)
- ½ of all trucks travel within 50 miles of base
  - 3/4th stay within state
- Long haul trucks concentrated on major routes

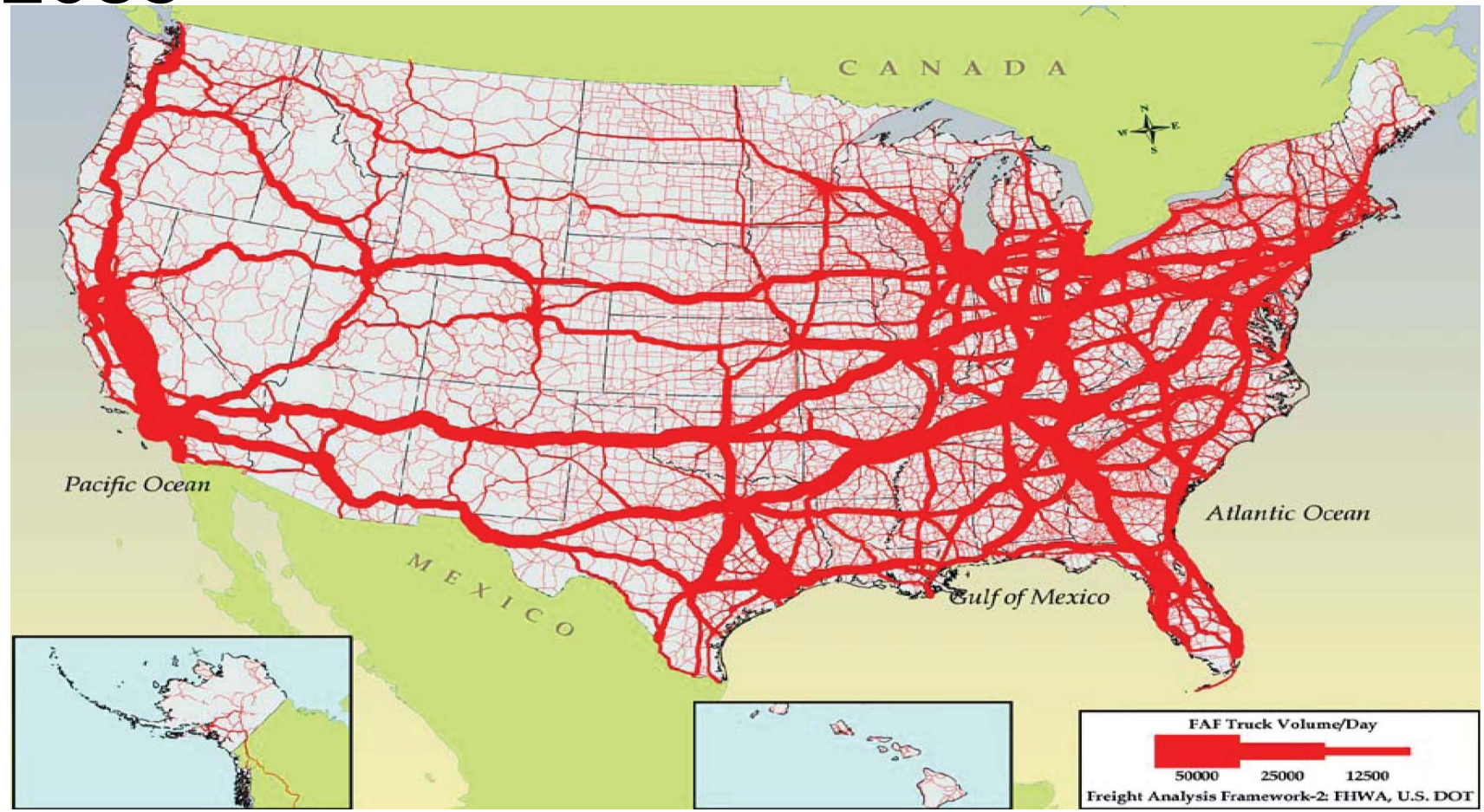
Trucks Continued

- Concentration of trucks on selected routes
  - About 4,000 miles of NHS carry more then 10,000 trucks a day - 2002
    - Every 4th vehicle is a truck on the 4,000 miles
  - In 2035 NHS segments with > 10,000 trucks a day will exceed 14,000 miles
    - Again every 4th vehicle is a truck on the 14,000 miles

Average Daily Long Haul Truck Traffic 2002



Average Daily Long Haul Truck Traffic 2035



Multi Modal Perspective 2002

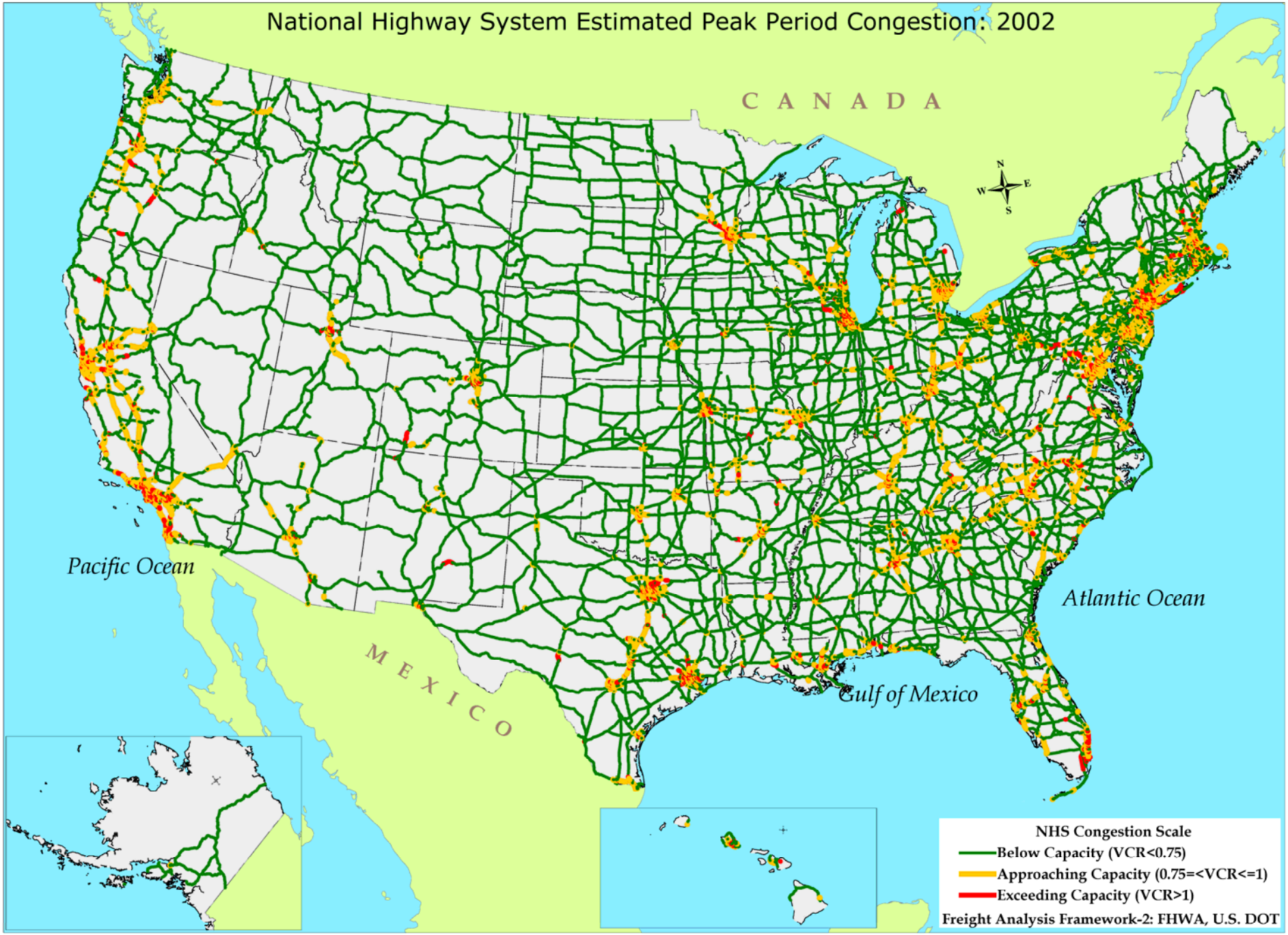
Congestion

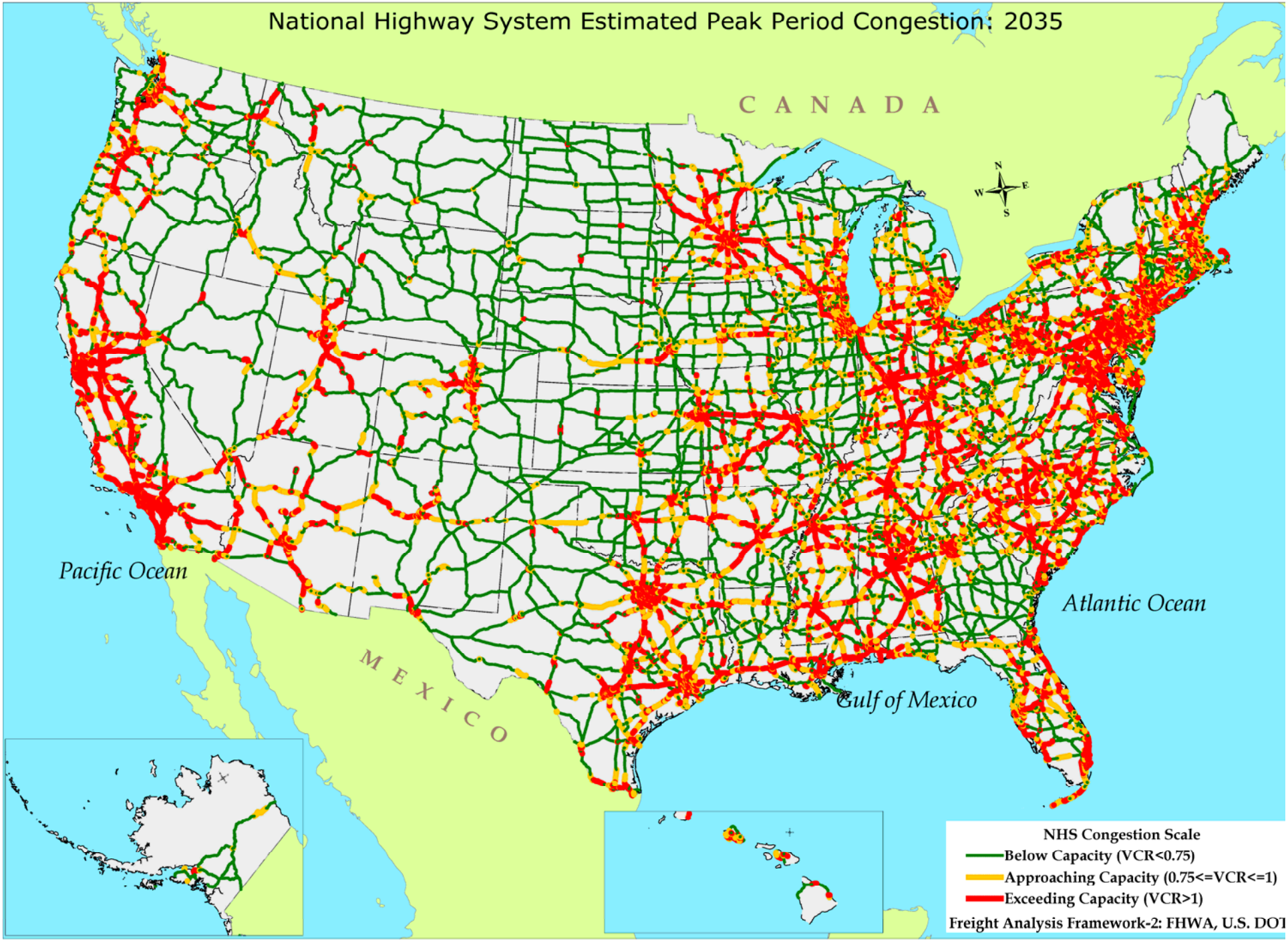
- Recurring congestion for all vehicles
- Concentrated in Major urban areas
  - 2002 11% of NHS
    - Traffic slowing over 10,600 miles on NHS
    - Stop and go conditions on additional 6.700 miles
  - 2035 congestion expands to 40% of NHS
    - 20,000 miles on NHS slow
    - Stop and go on additional 45,000 miles

Congestion

Recurring = 45% Non-recurring = 55%

- Recurring (bottlenecks) = 40%
- Poor Signal Timing = 5%
- Non-recurring (special events) =5%
- Non-recurring Work Zones = 10%
- Weather = 15%
- Incidents (crashes etc.)=25%


National Highway System Estimated Peak Period Congestion: 2002
CANADA
MEXICO
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
N
W
E
S
NHS Congestion Scale
Below Capacity (VCR<0.75)
Approaching Capacity (0.75=<VCR<=1)
Exceeding Capacity (VCR>1)
Freight Analysis Framework-2: FHWA, U.S. DOT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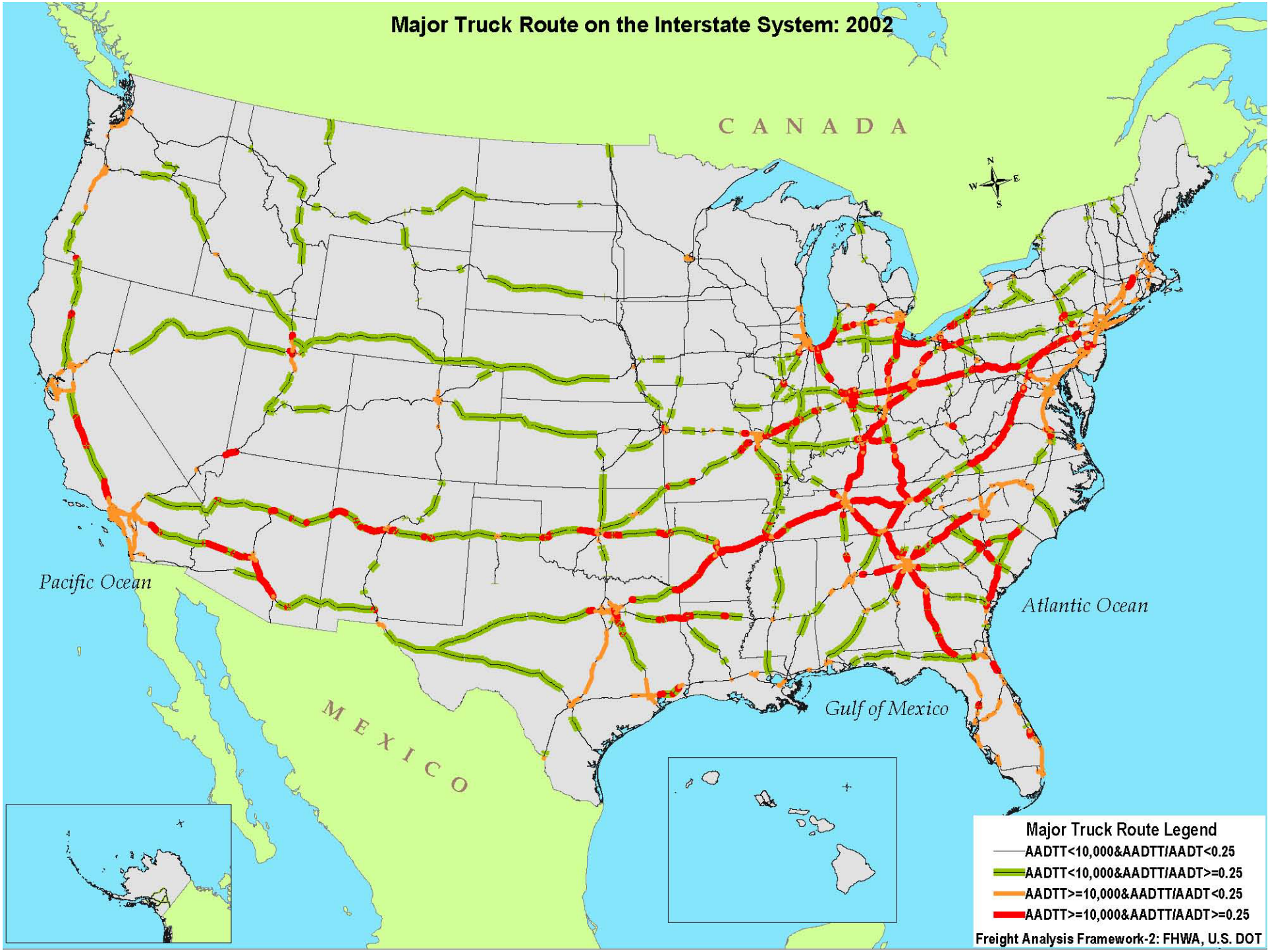
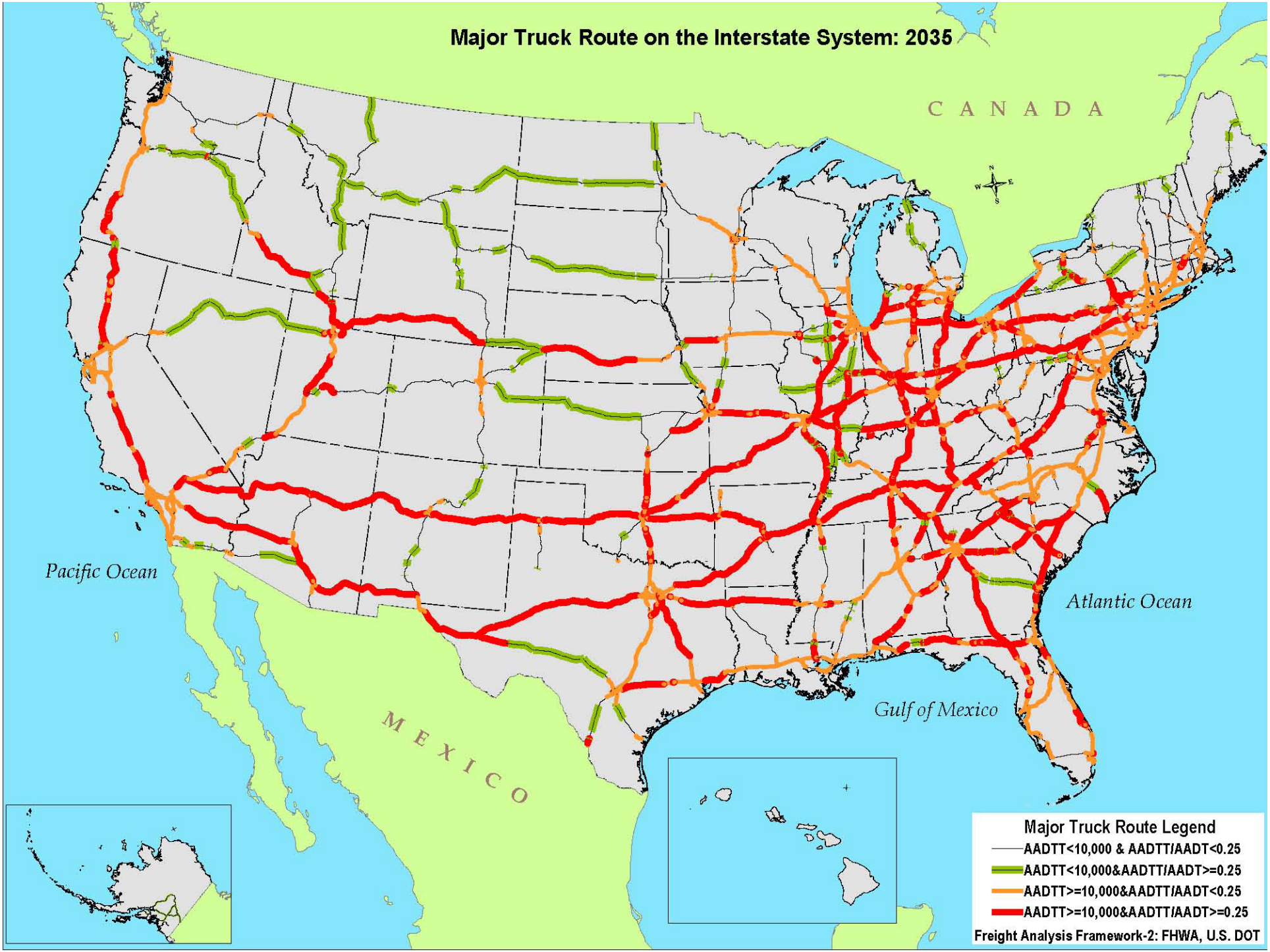
Trucks & Congestion

- Recurring congestion on segments carrying more then 10,000 trucks per day
  - 2002 slow or stopped traffic on 6,300 miles of NHS
  - Increase from 2002 to 2035 expected to be 4 times
  - 2035 Slow traffic on 4,800 miles of NHS
  - 2035 Stop and go on and additional 23,300 miles of NHS

Major Truck Route on the Interstate System: 2002




Major Truck Route on the Interstate System: 2035
CANADA
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
MEXICO
Major Truck Route Legend
AADTT<10,000 & AADTT/AADT<0.25
AADTT<10,000&AADTT/AADT>=0.25
AADTT>=10,000&AADTT/AADT<0.25
AADTT>=10,000&AADTT/AADT>=0.25
Freight Analysis Framework-2: FHWA, U.S. DOT

Freight Safety

- While freight activities increase fatalities related to these activities have declined or remained stable
- Most injuries among rail and highway but substantial declines
- Number of crashes have also decreased in all modes

Energy Consumption

- 2005 trucking is 65% of freight related energy consumption (energy intensity improved over 35 years)
- Class 1 Rail – 8% (Energy Intensity improved)
- Water - 18% Less energy efficient
- Pipeline (natural gas) - 9%
- Where will energy come from in 2035?

Environment

- Air Quality
  - Major gateways face serious challenges – impacts can affect the Nation
  - Trucks largest contributor to emissions
  - EPA requires Ultra Low Sulfur Diesel (ULSD) beginning in 2006 reduces Nox emissions
  - Emissions of PM10 expected to decline by 1/2 over next 20 years - Trucks produce 2/3rd of PM10
  - Is this good enough?

Measuring Speed & Reliability of Trucks

- Current project with the Motor Carrier and Communications Industries
- Capturing data from more then 300,000 trucks cross country
- Focus on 25 corridors
- Speed and reliability displayed for various time periods – Crystal Jones FHWA

Strategic Objective - Global Connectivity:

"Facilitate a more efficient domestic and global transportation system that enables economic growth and development"

Desired Outcomes

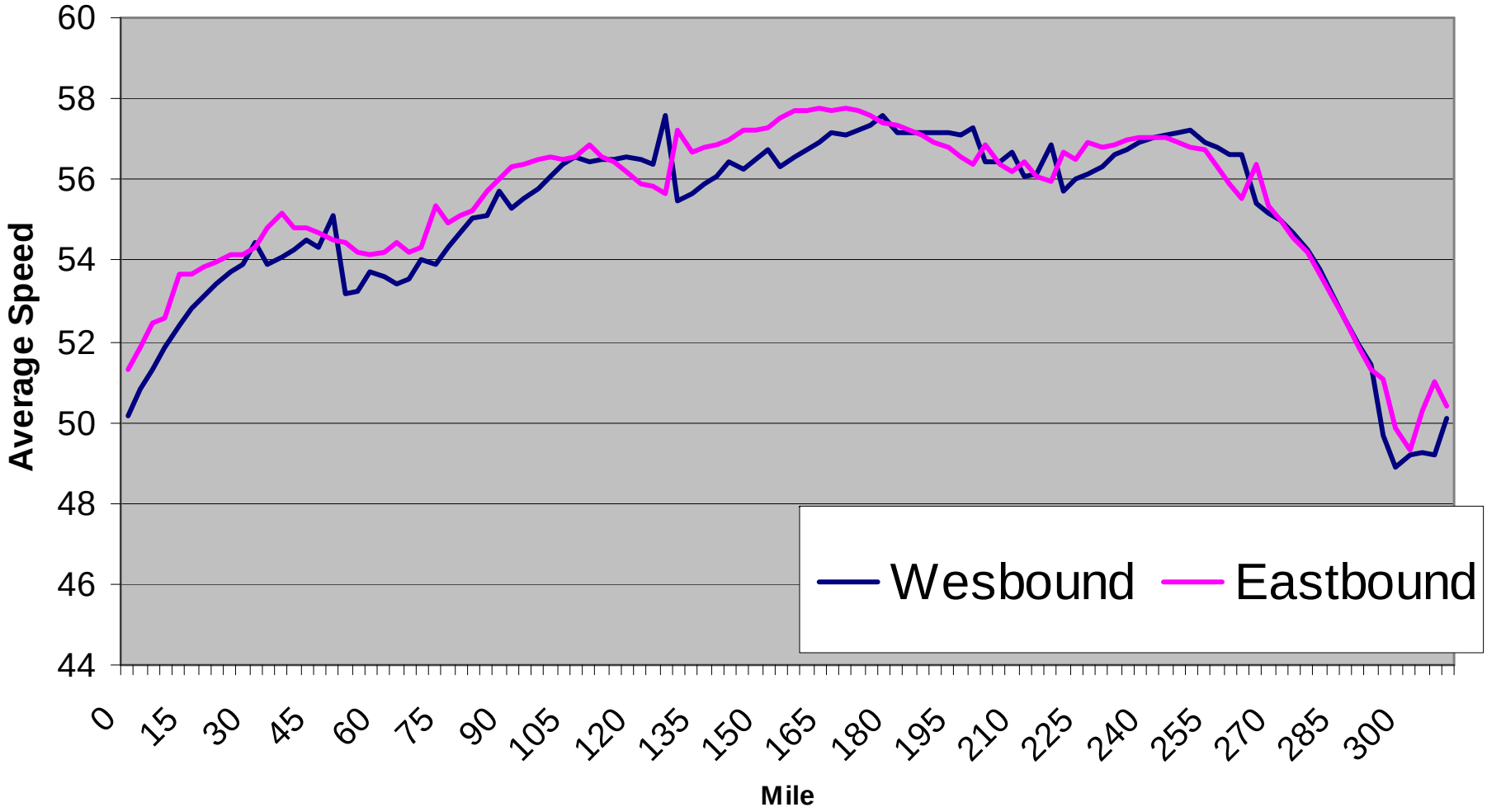
- Reduce/Remove transportation-related barriers to trade
- More efficient movement of cargo throughout the supply chain

Goals

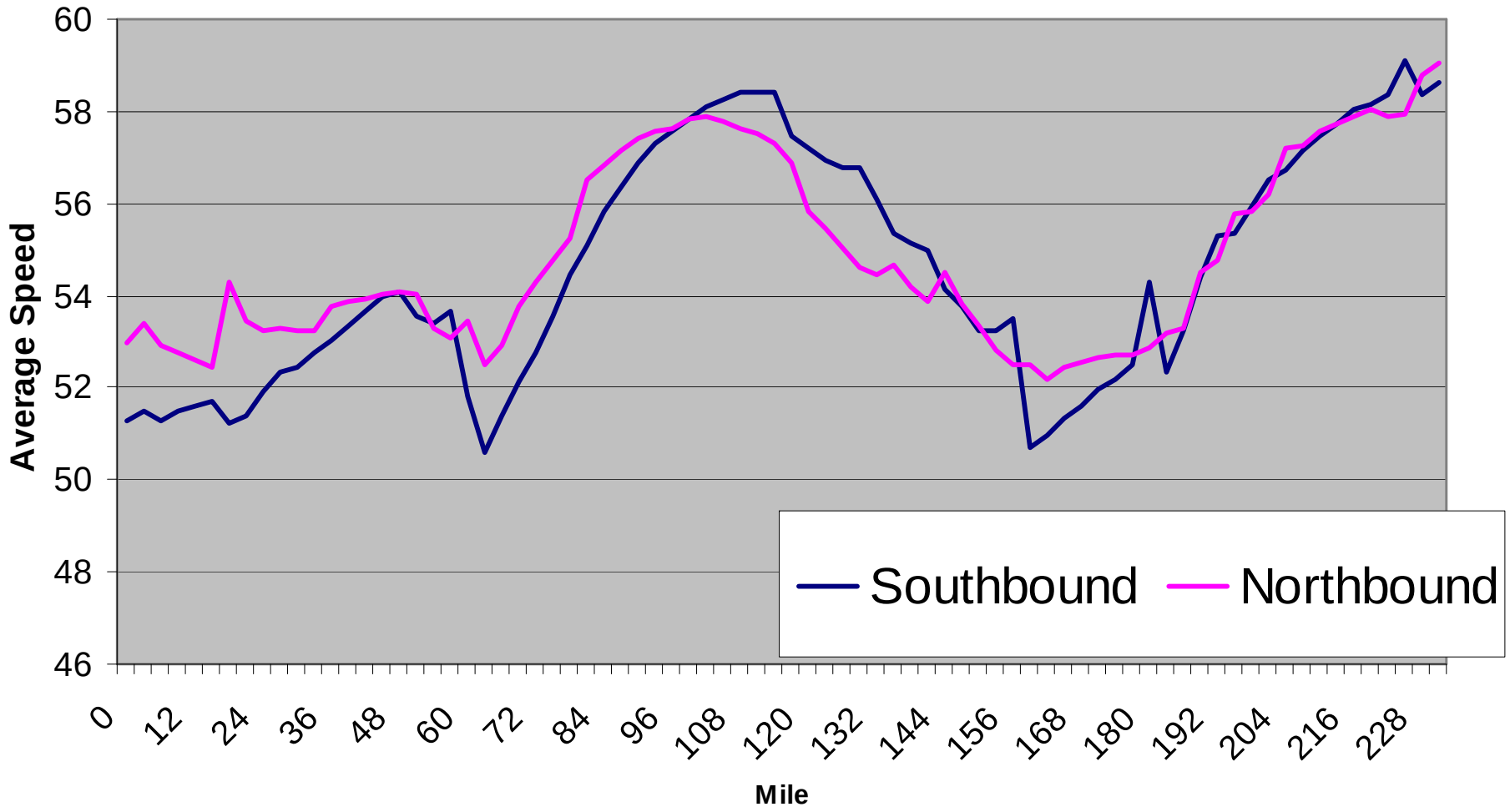
- To reduce travel time in key highway freight corridors
- To reduce delays of commercial vehicles processed at National Highway System border crossings

JANUARY 2008 (North-East)

I-80 (Pennsylvania)



I-81 (Pennsylvania)



Data Applications

- State/MPO Performance Measurement
- Recurring Congestion and Delay
- Non-Recurring Congestion and Delay
  - Weather
  - Work Zone
  - Incidents
- Other
  - Trucking Parking Analysis
  - Travel Demand Analysis

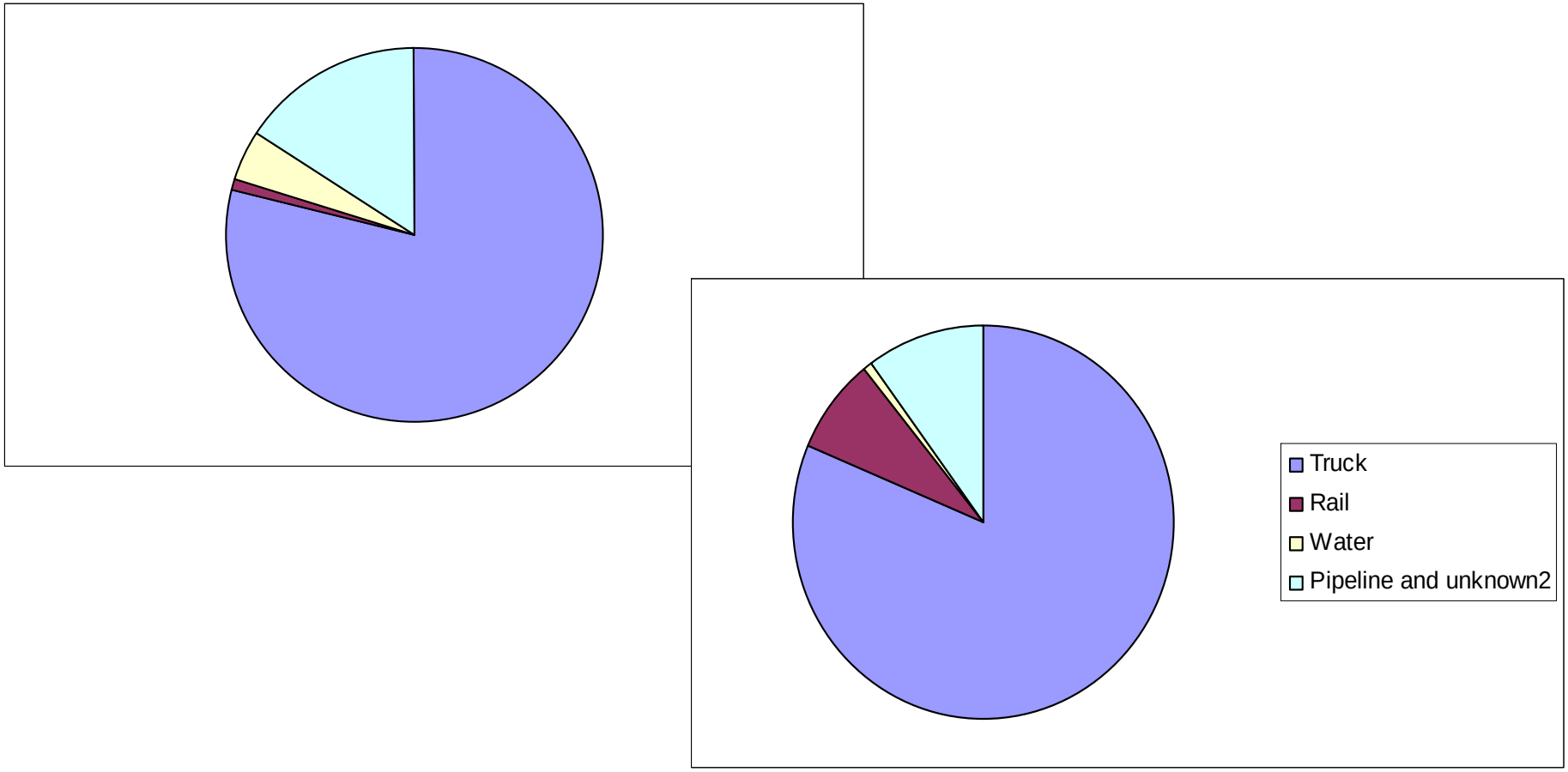
Key Next Steps

- Develop a Web-based tool to disseminate data –primary audiences are public transportation agencies (e.g. State DOTs) and Academia
  - Directional
  - Time of Day
  - City Pairs
- Expanding beyond the interstate system
- Enhance data by adding additional vendors/fleets

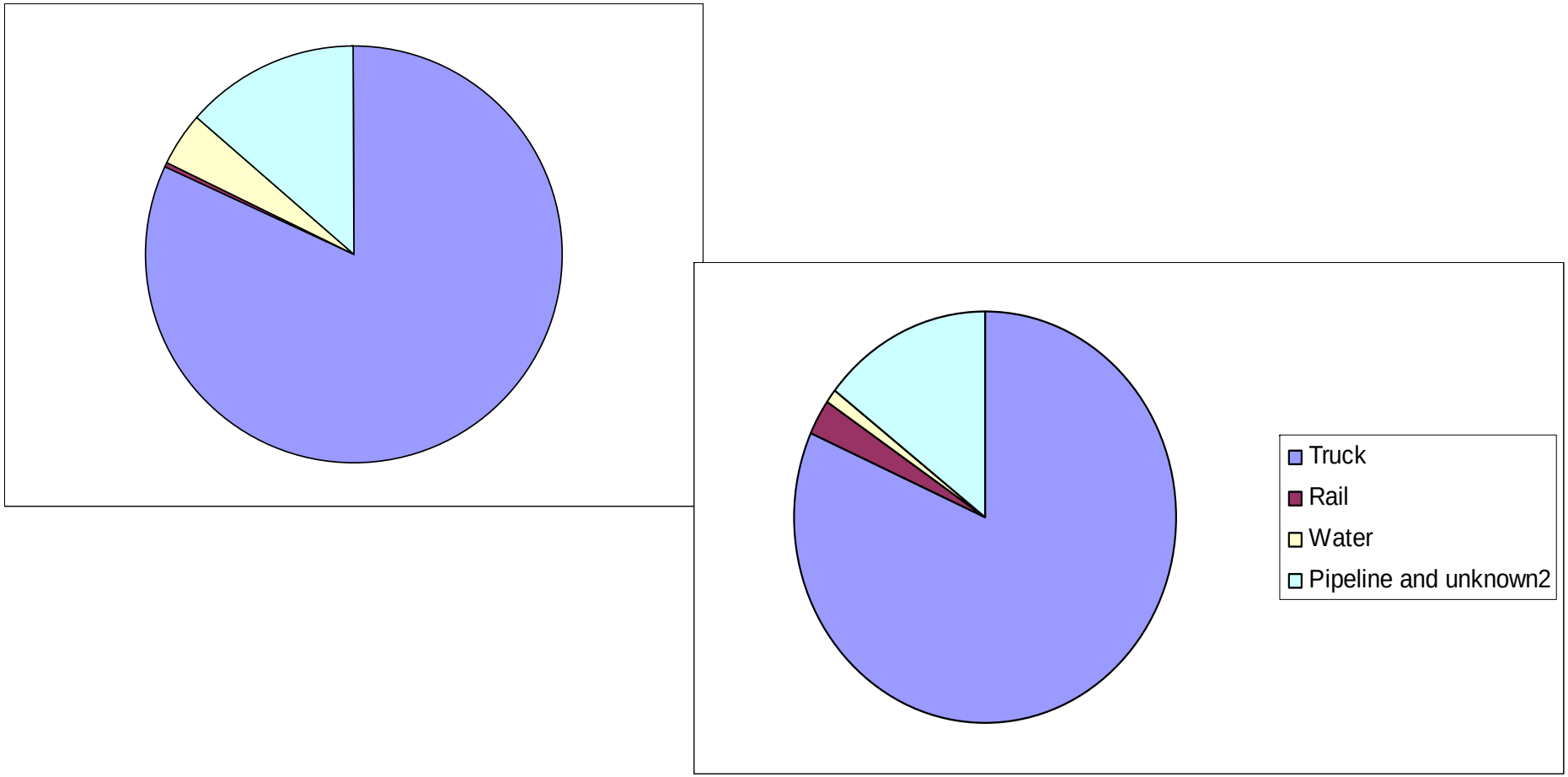
Key Next Steps cont.

- Partner with public agencies and universities to apply the results
  - Decision Support Tools
  - Trend Analysis
  - Demand Modeling
  - Forecasting Models
  - Cost Benefit/Analysis
  - Before and After Assessments
- Expand US/Cda Data Collection by up to 10 crossings
- Expand to US/Mexico Border

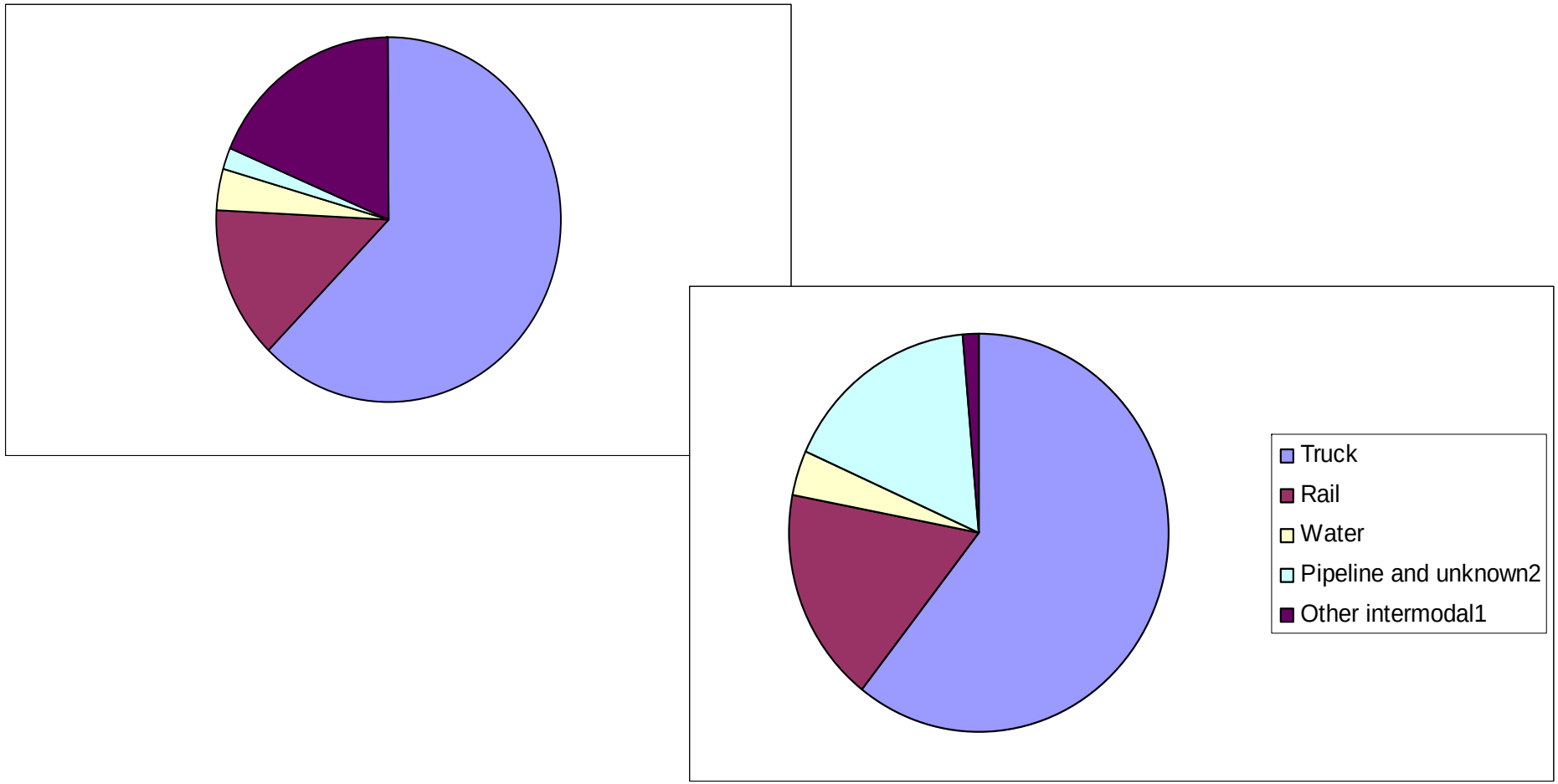
2002 Tons Within State by Mode New Jersey & Pennsylvania



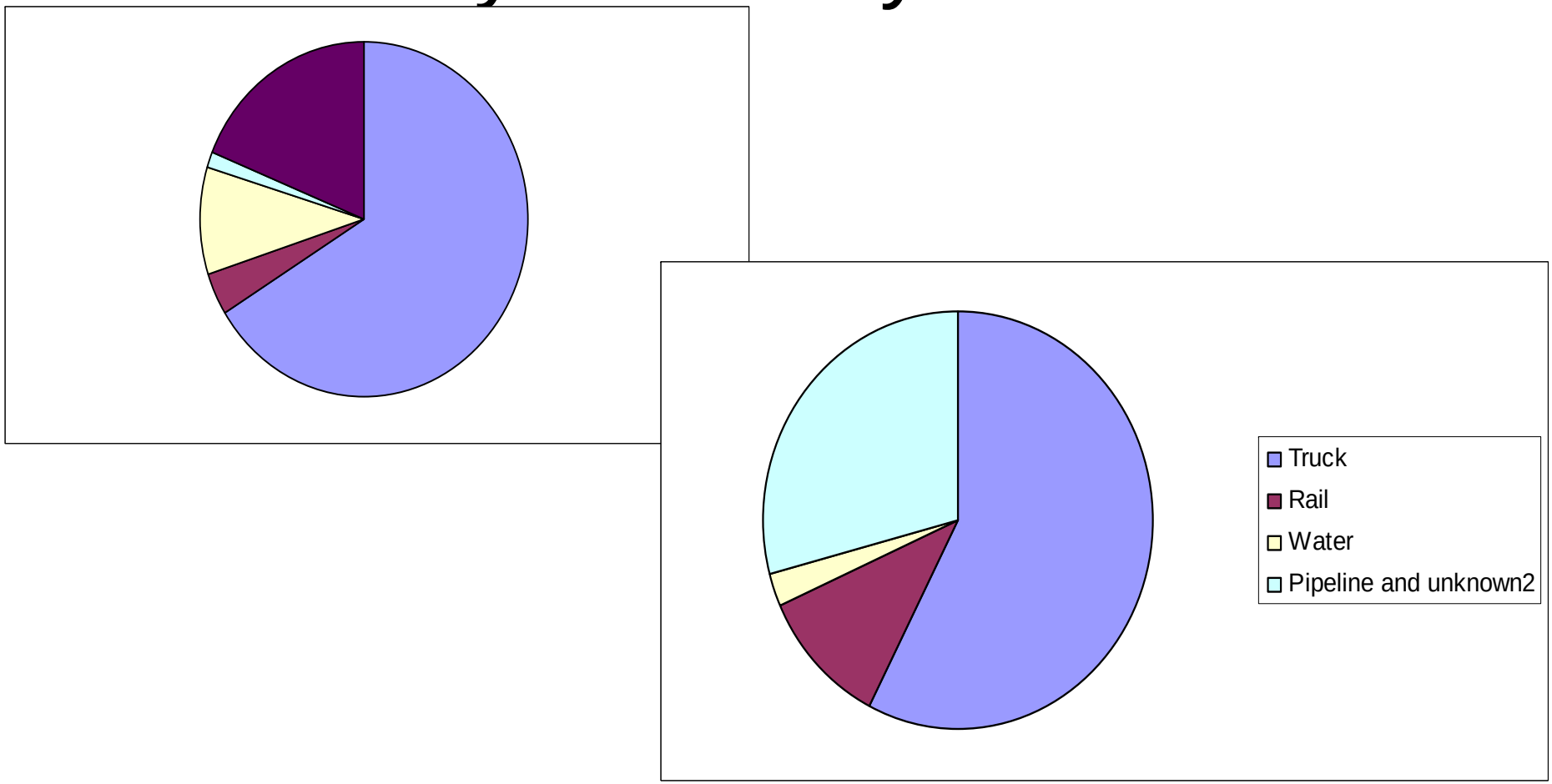
2035 Tons Within State by Mode New Jersey & Pennsylvania



2002 Tons to State by Mode
New Jersey & Pennsylvania



2035 Tons From the State by Mode New Jersey & Pennsylvania



SO….

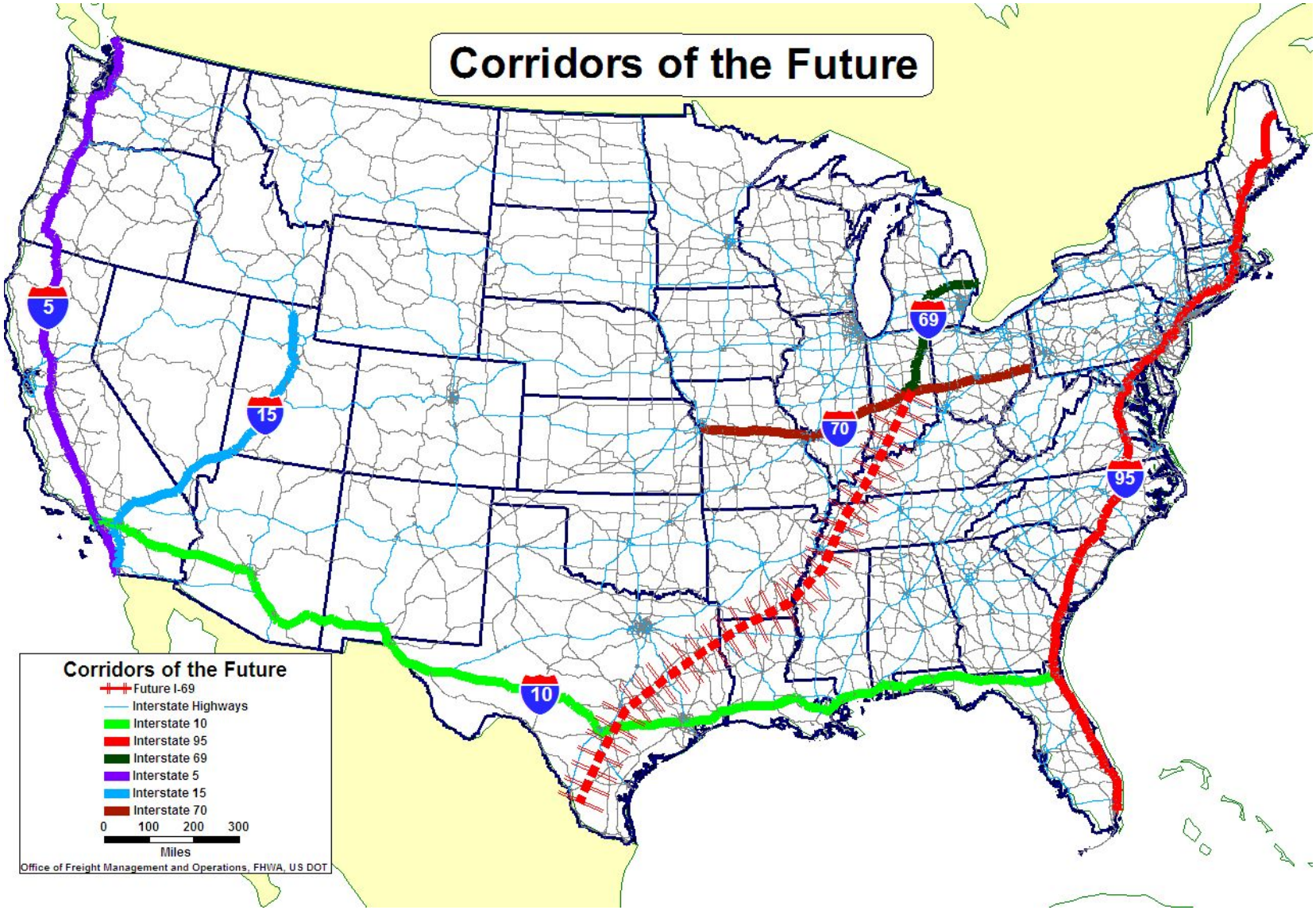
- The national economy is reliant on a functional transportation network.
- Today's intermodal freight system is not equipped to handle predicted growth
- System deficiencies increase operating costs and congestion, and decrease safety, economic competitiveness, and environmental quality
- Keeping freight moving requires coordination and collaboration among varied private and public stakeholders at the international - national – regional – state – local levels

New View

- Corridors of Future option: tolled dedicated truck lanes
  - Do they make sense?
    - How, When, and where?
  - Multi state – how long works?
  - Longer combination vehicles?
  - Heavier trucks?
  - Industry perspectives?

FHWA Activities

- Office of Freight Management and Operations
  - FAF Data
  - Truck Size and Weight assistance
  - Freight technology – High Tech Fixes - ITS
  - Freight Professional Development
- Office of Planning
- Resource Center
- Division offices


Corridors of the Future
5
15
69
70
95
10
Corridors of the Future
Future I-69
Interstate Highways
Interstate 10
Interstate 95
Interstate 69
Interstate 5
Interstate 15
Interstate 70
0 100 200 300
Miles
Office of Freight Management and Operations, FHWA, US DOT

Freight Courses

- Integrating Freight in the Planning Process
  - Web based April 1, 2008
- Advanced Freight Planning – Now available - NHI
- Engaging the Private Sector Work Shop – Now available – free through FHWA
- Freight & the Environment – Spring/Summer 2008

Information

- Section 1909 Commission report link
  - http://www.transportationfortomorrow.org/final_report/
- Office of Freight Management and Operations web site
  - http://ops.fhwa.dot.gov/freight/index.cfm
- National Cooperative Freight Research Program – TRB
  - http://www.trb.org/