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Capital District Transportation Committee

# REGIONAL FREIGHT AND GOODS MOVEMENT PLAN





# Regional Freight and Goods Movement Study: Final Report

CAPITAL DISTRICT TRANSPORTATION COMMITTEE

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## CHAPTER 1: EXECUTIVE SUMMARY

The Capital District Transportation Committee (CDTC) is the designated metropolitan planning organization (MPO) serving the four counties of New York's capital region: Albany, Rensselaer, Saratoga,<sup>1</sup> and Schenectady. As the entity responsible for both near term and long range transportation planning, CDTC chose to undertake this Freight and Goods Movement Study to better understand the role and profile of freight transportation throughout the region. This will in turn contribute to making appropriate investments to support the efficiency and safety of goods movement.

### Stakeholder Involvement

An important part of the process of developing this study was input and review provided by key stakeholders and the public. People who own and operate different elements of the freight-related transport business are an excellent source of information. This includes infrastructure owners, including transportation agencies, railroad companies, ports, and airports; carriers; shippers and receivers; and land developers. The primary mechanism for stakeholder involvement was the CDTC Freight Advisory Committee. This standing committee meets regularly and comprises representatives of the freight and logistics industry, developers, and public agencies. The FAC offered valuable input at each stage of study development. In addition, the study team conducted a variety of individual interviews and small group meetings with freight stakeholder in the region and also conducted field visits to several key freight facilities.

### Overview of Modern Freight and Goods Movement

Freight moves by five primary modes: truck, rail, water, air, and pipeline. Some trips are by a single mode, others are multimodal and involve transfer at a terminal facility. Globally, shippers and receivers choose modes of transportation based on cost, timeliness and reliability. Each mode has advantages and disadvantages for the shippers and receivers, as well as for the environment and society. Each mode also has different capacity, reliability and cost-effectiveness for different types of shipments.

The term "commodity" is used to describe an item traded in commerce, whether or not it is a raw material or a finished product. Commodities are typically transported in one of three forms:

- Bulk Cargo - Cargo that is unbound as loaded.
- Breakbulk Cargo - Cargo of non-uniform sizes, often transported on pallets, or in sacks, drums or bags.

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<sup>1</sup> The Village of South Glens Falls and the Town of Moreau, while geographically part of Saratoga County, both fall within the planning jurisdiction of the Adirondack/Glens Falls Transportation Council by agreement with CDTC.





- Containerized Cargo - Moved in containers that are used primarily for ocean freight shipment, and which can be loaded easily and directly onto truck chassis or rail flatcars.

The 'last mile' is the part of the cargo movement trip that delivers the good to the final destination. It sometimes requires a change in mode. Particularly in densely developed metropolitan areas, this last mile is what distinguishes freight and goods movement from other freight movement.

## Land Use and Freight Typologies

### Land Use

It is important for local and regional land use decision-making to carefully consider where and how freight-generating operations are sited and may expand. The study team reviewed existing land use patterns using land use data from the Capital District Regional Planning Commission and identified major freight facilities based on information from regional employers and major stakeholders. From these two analyses, the team evaluated common characteristics across freight-related sites to create the following land use typology criteria:

- Intermodal Center - Large facilities that handle container goods
- Regional Distribution Hub - Large warehouses served by truck and rail
- Manufacturing Center - Clusters of manufacturers that generate freight trips
- Suburban Commercial Center - Collections of large consumer retail facilities
- Urban Core - Central business district locations in dense downtown areas

### Freight Priority Network

The CDTC Freight Priority Network (FPN) provides a logical system of routes that facilitate efficient and safe truck mobility within, to, and from the CDTC region. FPN designation is important because it provides CDTC and its constituent municipalities, counties, and state agencies with guidance on roadway investment, planning, design (e.g., clearances, turning radii), maintenance, pavement, signalization, and access management to help support freight mobility across the region. The study team developed quantitative and qualitative designation criteria for each route type. Table 1 provides an overview of the FPN route classifications and designation criteria.



TABLE 1: SUMMARY OF FPN ROUTE CLASSIFICATION TYPES AND CRITERIA

FPN Classification	Count Requirement	Facility Characteristic Requirement
<b>Major</b>	Greater than 4,000 Trucks/Day Greater than 15% Truck Percentage If count data is unavailable, Interstate classification qualifies	Access-Controlled Highways Major Arterials
<b>Minor</b>	Greater than 3,000 AADT Greater than 1,000 Trucks/Day Greater than 15% Truck Percentage Connects to an Intermodal Center LU Typology, Regional Distribution Hub LU Typology, or Manufacturing Center LU Typology If count data is unavailable, >3,000 AADT and LU connection qualifies	Major Arterials Minor Arterials
<b>Connector</b>	100-1,000 Trucks/Day Greater than 15% Truck Percentage Connects to an Intermodal Center LU Typology	Minor Arterials Collector Routes

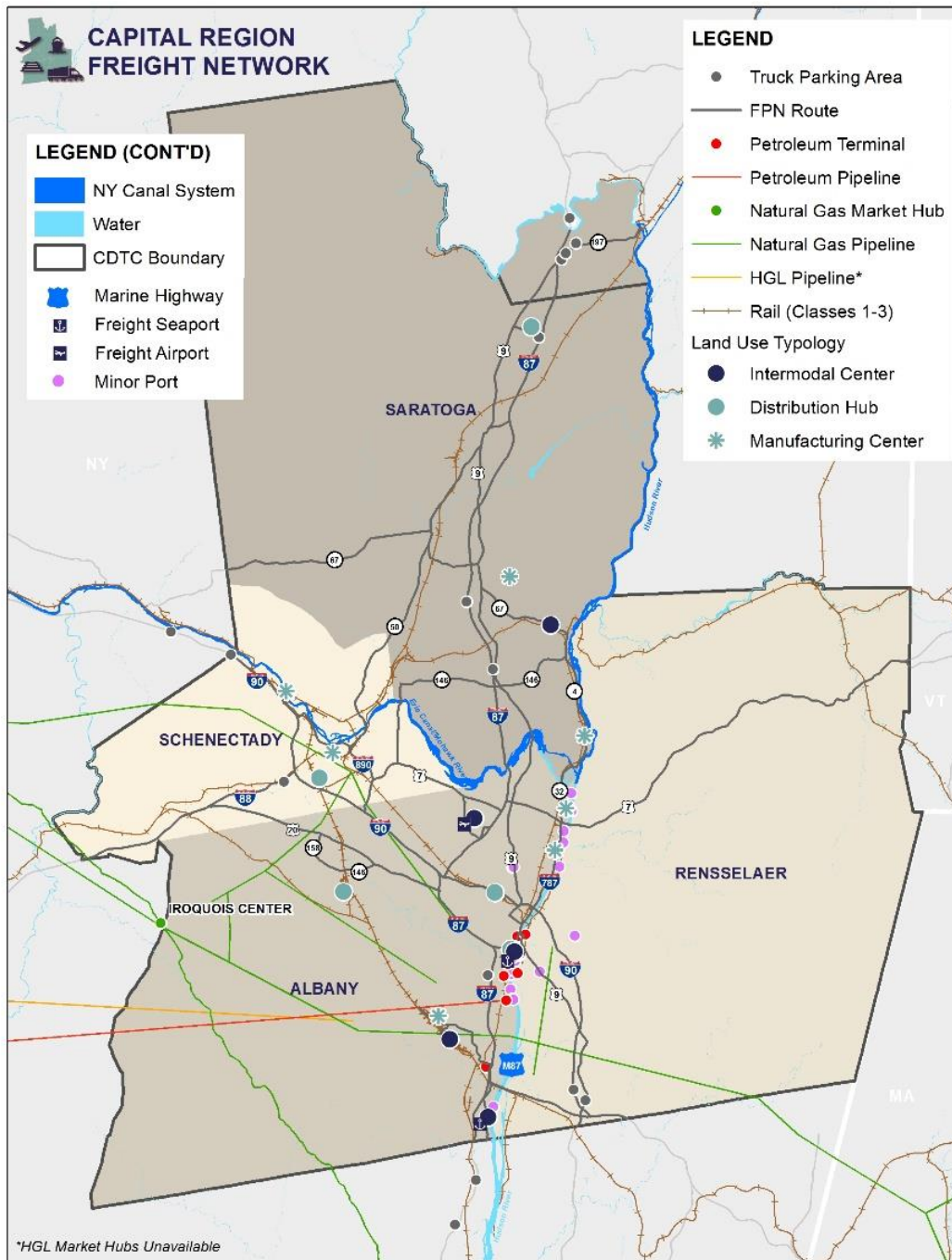
Because the freight network is primarily connected via a regional road network, local governments have a responsibility to work cooperatively at a regional level to foster the safest, most effective network. This report also includes a toolbox for local governments to consider when coordinating or reviewing freight-generating activities.

## Existing Conditions

An important first step in determining regional relationships between freight and land use is to identify regional population and employment trends. Forecasts suggest that the region's four counties will collectively experience a 6% increase in population through 2030, and the CDTC region will gain nearly 69,000 jobs between 2012 and 2022, an increase of 12%. The top three industries in terms of percentage change include "Mining", "Agriculture, Forestry, Fishing and Hunting", and "Transportation and Warehousing". While the overall employment projections for the region are relatively modest, freight-related industries outpace employment projections at the State level in terms of percentage growth.

Next, the evaluation of existing conditions looks at existing freight-related infrastructure. Figure 1 provides an overview of the Capital Region's existing multimodal freight infrastructure system, including all significant roadways, railways, waterways, air services, pipelines, and freight land use typologies.

**FIGURE 1: FREIGHT ROADWAY, RAILWAY, WATERWAY, AIRWAY, PIPELINE, AND LAND USE FEATURES IN THE CDTC REGION**





The Freight Analysis Framework (FAF) forecasts that the region will experience a 67% increase in freight movement tonnage between 2012 and 2040. Domestic movements are more than 95% of total freight movements to, from, and within the Albany FAF zone. More tons are moved within the zone compared to inbound/outbound movements.

### Highway Conditions

Trucking represents the largest mode share by both weight and value in the CDTC region. According to 2012 FAF data, approximately 91 million tons of freight moved by truck to, from, and within the Albany FAF zone. Intra-zone movements account for 59% of the truck movements. Significant growth in truck movements is expected. Movements to the Albany FAF zone and within the Albany FAF zone through 2040 are also projected to increase in per ton value. The following bullets provide more information on specific features of the highway freight system:

- **2014 Pavement Data:** A majority of 76% of the CDTC's pavement centerline miles on the FPN have a rating of "Good" to "Excellent," meaning distress symptoms are absent or only beginning to show. Only 2% of roads on the FPN fall under the categorization of "Poor." Further, over 75% of roadways in the FPN fall within "Good" or "Acceptable" International Roughness Index (IRI) ranges. Interstates and other principal arterials have significantly fewer rough surfaces compared to the minor arterial and collector roads for both urban and rural segments.
- **Bridge/Crossing Conditions:** The majority of bridges on the FPN (65%) are in good condition. About a quarter of FPN bridges classify as "functionally obsolete," and seven percent of the FPN's bridges are "structurally deficient." CDTC routinely looks at bridge needs; the FPN will assist them in focusing on truck requirements on the FPN. In addition, there are three highway-rail grade crossings on the FPN.
- **Crashes:** Over the past five years, an average of 267 commercial vehicle crashes occurred annually in the CDTC region. Most crashes occur on Interstates, particularly I-787, I-87, I-88, and I-90. I-787 is particularly high in crashes. Crashes are mostly concentrated near downtown Albany. On average, about half of truck crashes occur within the FPN. Most commercial vehicle crashes occur in daylight (72%), but about 18% occur in dark road unlighted conditions. About 53% of crashes occurred under rain, snow, cloudy, or other adverse weather conditions.
- **Truck Parking Conditions:** There are ten truck parking areas (both public and private) in the CDTC region, and seven truck parking areas just outside of the CDTC region. Two facilities are no longer in service. The Thruway offers a significant number of parking opportunities, both within the CDTC study area and adjacent to the area. The Wilton Travel Plaza at I-87 (Northway) Exit 16 provides truck parking in the northern part of the study area, but rest areas closer to the regional core, particularly near the Port of Albany/Rensselaer and Albany International Airport, offer far fewer truck parking spaces.



- **Bottlenecks:** Albany and Schenectady each have beltway roads: I-787 and I-890 respectively. These include significant merge areas that create opportunities for bottlenecks. More common on principal arterial, minor arterial, and collector facilities are lane-drop bottlenecks. While analyzing individual signalized intersections is beyond the scope of this study, as CDTC pursues corridor studies that identify individual intersections requiring capacity improvements, priority should be given to those on the FPN.
- **Intelligent Transportation Systems (ITS) for Commercial Vehicle Operations:** The Capital Region currently has substantial ITS infrastructure installed for Commercial Vehicle Operations technology. Two Transportation Management Centers host the region's ITS system: (1) The NY State Police and NYSDOT Region 1 jointly operate a TMC located on Troy-Schenectady Road in Latham; ; and (2) NYSTA's headquarters in Albany – jointly operated by NYSTA and the State Police. The Interstate system within the Capital Region includes various ITS elements to facilitate the operation of commercial vehicles.

### Freight Rail Conditions

Rail is an important mode for freight in the CDTC region. According to FAF data, rail moved about 5,607,000 tons of commodities worth almost \$4 billion to, from, and within the Albany FAF zone in 2012. Forecasts for 2040 suggest significant growth in tonnage and low-to-moderate growth in value, resulting in a decrease in the value per ton of freight moved in, out, and through the region. Farm products, chemicals, petroleum and coal products and food products move to the region via rail mode. Wood products, clay, concrete, primary metal products and stone move through the region by rail.

Three Class 1 railroads provide inter-regional freight rail service in the CDTC Region: CSX Transportation (CSX), Norfolk Southern (NS), and Canadian Pacific (CP). These three firms operate freight rail service across North America, providing the region with high-capacity service to major freight nodes such as New York/New Jersey, Buffalo, Chicago, Baltimore, Boston, Atlanta, Montreal, Toronto, Vancouver, and others. In addition, several short line and "switching" railroads operate in the CDTC region.

The 2009 NYS Rail Plan identified the CSX River Line (west shore of Hudson) between Port Authority of New York and New Jersey (PANYNJ) facilities and Chicago as one of the most severe bottlenecks in the State due to single tracking between northern New Jersey Terminals and the Selkirk Rail Yard. This line is also constrained due to outdated tunnel clearances and at-grade crossings. The Hudson Line (east shore of Hudson) also shares track with intercity (Amtrak) and commuter rail services (MTA Metro North), which limits freight rail to off-peak hours.

### Water Cargo Conditions

Due to historical dependence on water movements and the presence of navigable rivers and canals, the CDTC region provides an important link for waterborne cargo. In 2012, about 40 million tons of cargo moved by water to,



from and through NYS, of which 56% were domestic movements, 31% were foreign, and 13% were intrastate. The following bullets detail specific features within the CDTC region's waterborne cargo environment:

- **Port of Albany/Rensselaer:** The Port of Albany/Rensselaer is the second most active cargo seaport in NYS and supports over 1,400 local jobs. The Port is located 124 nautical miles north of New York Harbor on the Hudson River. Channel depths reach 32 feet, and deep water facilities exist on both sides of the river. Current Port tenants lease space for both short and long term periods. Major tenants include manufacturers, metal recycling businesses, asphalt producers, and others. The Port of Albany/Rensselaer handled about 7.5 million tons of inbound and outbound waterborne cargo in 2012, according to USACE data. The Port accounts for about 4% of waterborne import tons in NYS, about 18% of waterborne export tons from the State, and about 20% of overall waterborne tonnage movements.
- **Port of Coeymans:** The Port of Coeymans is a privately owned facility located 10 miles south of the Port of Albany on the Hudson and about 100 miles north of key PANYNJ port facilities. Coeymans accommodates ships up to 750-feet and offers stevedoring, tug, barge, heavy lift, and break bulk services. The 375-acre port includes a 300-foot inlet channel and a 30-foot fresh water deep draft. The Port also has warehouse (275,000 square feet) and outdoor storage space available, as well as welding, cutting, grinding, and other services. The Port is also a permitted construction and demolition waste processing facility, equipped to process 1,000 tons per day.
- **Canals & Waterways:** The Erie Canal is part of the NYS Canal System, which provides access to Canada through the Port of Oswego and across New York through the Port of Buffalo. Freight-carrying vessels continue to use the Erie Canal in season. In the Capital Region, the Erie Canal corresponds to the Mohawk River. As it approaches the Hudson River, it follows a dedicated channel. The Hudson River is designated as Marine Highway 87 (M-87) as part of America's Marine Highway Program. The M-87 route provides a critical connection between the facilities of the Port Authority of New York and New Jersey to the Port of Albany, also allowing access to smaller ports in between.

### Air Cargo Conditions

The CDTC region encompasses 13 commercial and general aviation airports, of which one -- Albany International Airport (ALB) -- handles regularly scheduled commercial air cargo. The Bureau of Transportation Statistics (BTS) reports that, in 2012, about 1.5 million tons of cargo moved through the State's airports, of which ALB handled 20,971 tons (1.4%).

ALB serves as the region's hub for dedicated air cargo operations, including FedEx and UPS. In 2014, 1,885 aircrafts landed about 164.5 million pounds of cargo at ALB, averaging about five cargo-only plane landings per day and 157 per month. ALB operates a 53,000 square foot Air Cargo Facility, accessed via Kelly Road, in the





northeast quadrant of the airport. In addition to cargo-only air carriers, passenger airlines such as American Airlines, Delta Air Lines, Southwest Airlines and United Airlines provide “belly-cargo” services.<sup>2</sup> In 2013, ALB ranked 99<sup>th</sup> in the nation and fifth in the State landed cargo weight. In 2014, the ALB authorized \$5.4 million for both new construction and improvements to the existing airport infrastructure, including re-pavement and lighting improvements on the main runway and heavy operating equipment for snow removal.<sup>3</sup>

### Pipeline Conditions

The CDTC region is home to pipelines that handle petroleum products, natural gas, and hydrocarbon gas liquid (HGL). Selkirk is the terminus for the Enterprise Pipeline, which carries petroleum products from the Finger Lakes and Southern Tier regions. Enterprise Products also has an HGL line with a terminus in the Clarksville area. A variety of natural gas pipelines extend throughout the study area. A decline is projected for movements to the Albany FAF zone, but a significant increase is projected for movements within the Albany FAF zone.

### Gaps and Needs

The gaps and needs assessment couples the knowledge of existing and forecasted conditions with an understanding of stakeholder and community needs to identify where existing facilities, programs and/or policies do not currently meet demand or may not meet future demand. Figure 2 summarizes the region’s collective strengths, weaknesses, opportunities, and threats pertaining to freight and goods movement.

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<sup>2</sup> Cargo transported in the baggage hold of scheduled passenger flights.

<sup>3</sup> Albany International Airport, <http://flyalbany.com/airport-authority/development-projects>



FIGURE 2: SWOT ANALYSIS OF THE CDTC FREIGHT NETWORK

STRENGTHS		WEAKNESSES	
Industrial Parks	Port of Albany/Rensselaer Non-Maritime Business	Northway Exit 16 Overpass	Access Issue at Rotterdam Park
Regional Distribution Hubs	Port of Albany/Ren. Employment	Route 67 Corridor	Passenger/Freight Shared Lines
Generally Healthy Pavements	Port of Coeymans Growth	GPS Routing through Residential	Selkirk Rail Yard Single Tracking
Network Connectivity	On-Barge Service from NYC Area	Lack of Available Trucks	At-Grade Crossings
Support for Major Industries	ALB Location	Congestion on I-87 and I-90	Shared Waterfront Space
Major Intermodal Centers	ALB Capacity Stateshare	Tandem Truck Lots	Dredging at Port of Albany/Rensselaer
SMS Short Line	ALB Site Improvements	Illicit Activity at Truck Stops	ALB Capacity
CSXT River Line	Growth in Pipeline Movements	Roundabouts	Waterway Location
Upward Trends in Rail Shipping		Inadequate Truck Signage	No Local Oil Pipeline
Port of Albany/Ren. Market Share		Parking near Intermodal Centers	
		Bridge Adequacy	
OPPORTUNITIES		THREATS	
Growth at I-87 Exit 16 in Wilton	Saratoga-North Creek Railroad	Language Barriers	Transport of Hazardous Materials
Urban Area Truck Designation	Sunbury-Schenectady Connection	Closed Truck Stops	Short Line Funding & Operations
Signage Program for Truck Routing/Parking	Halfmoon Rail Corridor	Bridge Signage	Port Competition
Oversized Vehicle Toll Pass	Lease Opportunities at ALB	Inadequate Roadway Lighting	Security at Port of Coeymans
Regional Dispatch Network	Growing Tech Industry	Crashes on Major Routes	ALB Trucking Efficiency
Truck Stop Electrification	Capacity to Promote Waterborne Cargo	Tolling Bottlenecks	Pipeline Environmental Safety
Freight-Sensitive Development Impact Analysis	Container On Barge Service	Interchange Capacity Bottlenecks	Citizen Opposition to Pipeline
Technology Advancement—Tolls	Pipeline Proposals	Route 146 Congestion	
Technology Advancement—Autonomous Trucks		Capacity Limitations	
		Oil Train Congestion	

## Recommendations

The recommendations translate the findings from the Gaps and Needs analysis to a set of projects and programs for short, mid, and long term implementation in the CDTC area. The recommendations break out into two general categories: (1) Projects; and (2) Programs, Policies and Studies. Projects involve construction, reconstruction and/or changes to physical transportation infrastructure. Projects separate into early-action projects and long-range actions. Programs, Policies and Studies are non-capital initiatives that seek to employ regulatory, guidance and/or planning tools to facilitate more cost-effective and efficient use of existing and planned transportation infrastructure. Table 2 and Table 3 include descriptions of the early action and long-range projects suggested. Table 4 lists the suggested Programs, Policies and Studies.





## Regional Freight and Goods Movement Plan

**TABLE 2: EARLY-ACTION PROJECTS**

Project Short Name	Project Description	County/Muni	Mode(s)	Estimated Cost
NS Intermodal Facility Access Improvements	Provide turning lanes at NS Intermodal Facility entrance on NY 67 to support safe and efficient truck movements between I-87 Exit 11 in Malta and the facility.	Saratoga/ Mechanicville	Highway & Inter-modal	\$.5M - \$1M
Rotterdam Industrial Park Entrance Realignment	Realign and signalize entrance to Rotterdam Industrial Park at NY 7/ Duaneburg Rd. for safer and more efficient truck movements at a major logistics center and improve traffic and non-motorized safety and mobility.	Schenectady/ Rotterdam	Highway	\$.5M - \$2M
Public Official Training and Model Ordinance Development	Develop program that educates local public officials, including planning and zoning boards, about freight movement. Create and disseminate model ordinances and regulations for freight related development.	All	All	TBD

**TABLE 3: LONG-RANGE PROJECTS**

Project Short Name	Project Description	County/Muni	Mode(s)	Estimated Cost
NY 67 Modernization	NY 67 improvements to support safe and efficient truck movements between Mechanicville and I-87 Exit 11 in Malta (approx. 5.1 miles) <ul style="list-style-type: none"> <li>• Signalization at NS Intermodal Facility entrance</li> <li>• Turning lanes on NY 67 at major intersections</li> <li>• Improved trucker guidance signage throughout corridor</li> <li>• Redesign of roundabouts to facilitate safe and efficient truck movements</li> </ul>	Saratoga / Malta, Mechanicville	Highway & Inter-modal	\$10M
Livingston Avenue Bridge	Replace Livingston Avenue Rail Bridge and Walkway across the Hudson River between Albany & Rensselaer.	Albany, Rensselaer	Rail / Water	\$250M
I-87 Exit 16 Overpass Replacement	Add capacity in each direction to accommodate growing truck traffic in vicinity when NYSDOT initiates replacement of I-87 (Northway) Exit 16 overpass.	Saratoga / Wilton	Highway	\$1M
I-87 Exit 4 Albany International Airport Access Project	Build new ramp off Exit 4 to provide direct access to Albany Shaker Road and airport entrance.	Albany / Colonie	Highway / Air	\$33M
Freemans Bridge Road Grade Crossing Separation	Grade-Separate Pan Am (ST) Railway Crossing at Freemans Bridge Road.	Schenectady / Scotia	Highway / Rail	\$10M
Port of Albany Wharf Expansion	Extend Port of Albany wharf by 2000 feet.	Albany / Albany	Water	\$25M
Port of Albany Expansion	Acquire 80 acres of industrial-zoned waterfront land.	Albany / Albany	Water / Highway	\$10M
Port of Albany Cargo Handling Capacity Upgrade	Construct storage building on Port grounds for heavy lift cargo.	Albany, Rensselaer / Albany, Rensselaer	Water, Highway, Rail	\$8M
Container on Barge Service	Provide investments in facilities and operations to support container on barge service between NY/NJ and the Port of Albany.	Albany/ Albany	Water	TBD
Port of Coeymans Rail Extension	Extend rail service to waterside at Port of Coeymans.	Albany / Coeymans	Rail, water	\$2M
Port of Albany Dredging	Conduct river dredging at south side of Port of Albany.	Albany / Albany	Water	\$1M
Cargo-Supportive Improvements to Canal System	Identify and prioritize investments in NYS Canal System facilities that support and facilitate cargo movement within, to, from and through the Capital Region.	Regional	Water	TBD
Urban Area Hazardous Material Rail Transportation Mitigation	Identify and prioritize safety infrastructure and mitigation strategies where trains carrying hazardous materials (HazMat) travel close to residential neighborhoods and areas in the urban core of the Capital Region.	Regional	Rail	TBD



## Regional Freight and Goods Movement Plan

TABLE 4: PROGRAMS, POLICIES, AND STUDIES

Project Short Name	Project Description	County/Muni	Mode(s)	Estimated Implementation Cost
Tandem Trailer Lots Relocation Study	Research and identify new locations for existing tandem trailer lots at Thruway interchanges	Albany, Rensselaer, Schenectady	Highway	\$200,000
Port Truck Parking Expansion	Identify and implement opportunities to improve truck parking adjacent to Port of Albany.	Albany / Albany	Highway / Water	TBD
Truck Stop Restoration	Conduct planning to reopen closed truck stops on I-87 and I-90 corridors that would provide relief to truck parking demand in Capital Region.	Rensselaer, Saratoga / Schodack, Gansevoort	Highway	TBD
FPN Bridge Improvement Prioritization	Prioritize the reconstruction of bridges on the FPN to decrease those classified as "functionally obsolete" or "structurally deficient" in the CDTC Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).	All	Highway	TBD
Interstate Lighting Program	Add lighting infrastructure on I-90, I-87, I-88, and I-787 based on objective assessment of needs	All	Highway	<\$1M
I-787 Rail Relocation Feasibility Study	Coordinate with existing I-787 study to consider removing the existing CP Rail track in downtown Albany that serves the Port of Albany	Albany / Albany, Mechanicville, Watervliet, Cohoes, Bethlehem	Rail	TBD
Capital Region ITS CVO Enhancement	Freight operations in the area would benefit from enhanced Commercial Vehicle Operation (CVO) applications.	All	Highway	TBD
Local Delivery Optimization	Research and identify policies, procedures and actions municipalities can employ to support and facilitate safe and efficient goods deliveries in dense urban zones.	Various	Highway	\$150,000
CDTC Freight Data Collection Program	Build on existing regional traffic and transportation data collection systems and procedures to include more detailed and multimodal freight data, including data from state facilities (e.g., WIM stations) and from the pending CDTC SHRP2 study report.	All	All	TBD

## Performance Measures

The Capital Region will benefit from CDTC considering the relationship of freight and goods movement to the overall performance of the region's transportation system, and particularly that of the FPN. Recommended CDTC freight performance measures include:

- **Infrastructure – Bridges:** Percent Good/Fair/Poor Bridges on All FPN Roads
- **Infrastructure – Pavement:** Percent Good/Acceptable/Unacceptable IRI on All FPN Roads
- **Safety:** Number of Fatal and Serious Injury CVO Crashes on the FPN
- **Mobility:** Vehicle-Hours of Delay Applied to Truck Percentage
- **Reliability:** Planning Time Index/Travel Time Index
- **Environmental Impact:** Truck-related Emissions and Energy Consumption



## Regional Freight and Goods Movement Plan

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- **Shipping Mode:** Tonnage and Value Shipped by Each Mode

These measures will help to determine progress and changes on the freight system longitudinally to help guide future investment and planning for goods movement throughout the CDTC region.



## CHAPTER 2: INTRODUCTION, CONTEXT AND PURPOSE

The Capital District Transportation Committee (CDTC) is the designated metropolitan planning organization (MPO) serving the four counties of New York’s capital region: Albany, Rensselaer, Saratoga,<sup>4</sup> and Schenectady. As the entity responsible for both near-term and long-range transportation planning, CDTC chose to undertake this Freight and Goods Movement Study to better understand the role and profile of freight transportation throughout the region. This will in turn contribute to making appropriate investments to support the efficiency and safety of goods movement.

The study was not prepared in isolation. It is important to understand a number of underlying contextual elements. Goods movement is interwoven into the region and its transportation system. For example, when freight moves via truck it affects roadway safety, bridge and pavement condition, congestion, and community quality of life.

### New Visions 2040

CDTC has a longstanding transportation planning process called New Visions. Under this banner, the agency updates its long range transportation plan every five years, looking as far as 25 years into the future. New Visions establishes the region’s transportation investment priorities through a thoughtful evaluation of transportation and community development needs. As part of the current New Visions 2040 planning effort, CDTC adopted a series of planning principles. A number of these principles bear a direct relation to freight transportation and goods movement. Each is highlighted here:

- **Freight** – Our freight system is crucial to the economy; it will be efficient and automated, and will minimize its impact to communities.
- **Infrastructure** – Transportation funding must be sufficient to both repair and sometimes replace our highway, bridge, and transit infrastructure.
- **Safety and Security** – We can significantly save lives and reduce injuries when we decrease traffic crashes and better respond to traffic emergencies.
- **Travel Reliability** – Reliable traffic flow is more important than reducing congestion –traffic congestion is often a sign of an area’s economic vitality.
- **Environment** – Transportation choices should improve our environment, not harm it.
- **Economic Development** – Transportation is critical to our region’s economy.
- **Technology** – We must plan for new, smarter, better, and rapidly-changing transportation technology.
- **Regional Equity** –Transportation investments will address all needs fairly and equally.

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<sup>4</sup> The Village of South Glens Falls and the Town of Moreau, while geographically part of Saratoga County, both fall within the planning jurisdiction of the Adirondack/Glens Falls Transportation Council by agreement with CDTC.



This list demonstrates how deeply goods movement reaches into the community. Indeed, New Visions 2040 puts forth the following principle for freight:

“Freight – Our freight system is crucial to the economy; it will be efficient and automated, and will minimize its impact to communities. CDTC’s freight planning efforts will be comprehensive enough to encompass all modes, including air, water, rail, and highway. Maintaining the health and improving the efficiency of freight facilities in the region through public/private partnerships is a high priority. CDTC’s planning efforts will embrace freight’s key contributions to regional prosperity, while also trying to mitigate the negative impacts of all modes of freight movement on local communities.”

New Visions implicitly acknowledges that goods movement in metropolitan regions is complex and does not lend itself to simple fixes. Trucks on area roadways, and trains on the region’s railroads may pass through the Capital District without stopping, contributing to costs in terms of wear on infrastructure, congestion, emissions, and safety hazards without creating benefit. Other trips that either begin or end at locations in the region provide the goods movement necessary to support local industries that do business beyond CDTC’s four counties. These trips include air and maritime cargo. Finally, there are many truck trips that move entirely within the Capital District, moving goods from distribution centers to retail establishments, healthcare centers, or educational institutions.

## Public Policy: The Legislative and Regulatory Environment

Although certain market aspects have been deregulated, transportation is still a highly regulated industry. CDTC needs to maintain an awareness of the regulatory environment in which goods movement occurs, with the recognition that they cannot influence legislative or regulatory changes.

### Moving Ahead for Progress in the 21<sup>st</sup> Century (MAP-21)

- This law authorizes the programs of the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). It expired on September 30, 2014, and has since been extended by Congress three times, the most recent to October 29, 2015. This law shifted the focus of FHWA investments to the National Highway System (NHS), which includes the Interstate Highway System and other high-level highways. The New York State Department of Transportation (NYSDOT) makes the primary decisions on selecting projects to be funded by the National Highway Performance Program. The FHWA Surface Transportation Program provides resources to CDTC to be used for a broader range of roadways.
- MAP-21 also elevated the importance of freight in national transportation policy. It included requirements for a National Strategic Freight Plan, National Freight Advisory Committee, National Freight Network, and



encouragement to states to prepare their own freight plans. It did not provide dedicated funding for freight-related highway improvements. The Draft National Strategic Freight Plan was published for comment on October 20, 2015.

### Trucking Regulation

- The two highest profile issues are (1) driver hours of service rules and (2) truck size and weight. The Federal Motor Carrier Safety Administration (FMCSA) issued a Final Rule on driver hours of service in late 2011, after years of debate on safety benefits versus costs to the industry. The rule specifies how many hours a driver can drive during a day and a week; and the length of required rest periods.
- Regulation of truck size and weight is a combination of federal and state rules. FHWA establishes the maximum weight of trucks operating on the IHS; and the size and make-up of trucks operating on the National Network of highways. States may establish their own size and weight limits as long as they comply with the rules for the Interstate and National Network systems.

### Rail Regulation

- The Staggers Act of 1980 deregulated the business side of the railroad industry. The Surface Transportation Board was created in 1996 and given economic regulatory oversight of railroads, including rates, service, the construction, acquisition and abandonment of rail lines, carrier mergers, and interchange of traffic among carriers.
- Hours of service for train operators, dispatch, and signal employees is established in Federal legislation rather than rulemaking. The Federal Railway Administration (FRA) issued a rule requiring the deployment of Positive Train Control technology by the end of 2015. This communications link between trains and rail infrastructure will enhance train safety with automatic controls such as speed correction and braking.

### Hazardous Material Transport

- The US Pipeline and Hazardous Materials Safety Administration (PHMSA) is responsible for regulating and ensuring the safe and secure movement of hazardous materials to industry and consumers by all modes of transportation, including truck, rail, and pipeline. This includes the handling and labeling of all hazmat shipments, the vast majority of which are petroleum products including gasoline, diesel, and home heating oil.
- PHMSA and FRA recently issued a joint regulation on the transport of crude oil by rail, which is of interest to CDTC since such trains regularly traverse the Albany urban area. The rule introduces new standards for tank cars and operational protocols.



### Institutional and Governance Considerations

Freight moves by five primary modes: truck, rail, water, air, and pipeline. Some trips are by a single mode, others are multimodal and involve transfer at a terminal facility. For example, a shipping container may arrive at Norfolk Southern Railway's Mechanicville yard and be transferred to truck for delivery to a local manufacturer. Similarly, propane arrives by pipeline at the Enterprise Pipeline terminal in Selkirk for delivery by truck to local energy companies. Cargo being exported through the Port of Albany will arrive at the dock by truck or rail.

The modal nature of goods movement is important not only in terms of infrastructure, but also because of issues of ownership and investment. The region's roadways are owned by the State, counties, cities, towns, villages, and the NYS Thruway Authority. As such, construction, maintenance, and operations are publicly financed. Other publicly owned and operated facilities include the Port of Albany and the Albany International Airport. The Albany Port District Commission comprises members appointed by the Mayors of Albany and Rensselaer. The Albany County Airport Authority is a component unit of county government. Much of the remainder of freight transportation infrastructure is privately owned, including railroads, pipelines and terminals, and the Port of Coeymans.

In 2011, the State of New York created the Regional Economic Development Councils as a means of focusing economic development initiatives. The Capital Region Economic Development Council (CREDC) covers an eight-county area that includes the four counties of CDTC as well as those covered by the Adirondack/Glens Falls Transportation Council (Warren and Washington Counties as well as the Town of Moreau and Village of South Glens Falls in Saratoga County). The purpose of the CREDC is to seek out and screen economic development proposals that fit within its adopted goal structure, and apply for funding for an annual program of priority projects. While the Council has been successful in competing for State economic development funds, it has not focused on freight-related infrastructure. An exception in its 2014 program of projects is a \$5.1 million project to improve the Port of Coeymans. This is related to the Port being selected as the location for fabricating the steel members for the new Tappan Zee Bridge, which are then transported by barge downstream to the bridge location.

The complexity of governance means that CDTC's primary tool for direct influence is management of the FHWA programs. The agency has limited influence on much of the remaining investment in the region's freight transportation network. The same is true of land use decisions, which are made by local governments.

However, CDTC has an effective, cooperative relationship with local governments and key stakeholders throughout the four-county region and a proven track record on working together to build a quality region. The Freight and Goods Movement Plan will serve to inform those cooperative relationships with direction and priority for investment and policy development.

### New York State Freight Transportation Plan





NYSDOT is in the process of developing the New York State Freight Transportation Plan, New York's first comprehensive statewide freight planning effort. The Statewide freight planning effort involves an analysis and agglomeration of MPO and other public agency freight plans to identify common themes, goals, and freight projects of regional and statewide significance. This background analysis provided a framework for CDTC to use in the Freight and Goods Movement Study in terms of both information and methodology. NYSDOT's continued involvement on the CDTC's Freight Advisory Committee also assures coordination in aligning the goals and considerations from the statewide plan and the regional study efforts. The State Freight Transportation Plan is due for completion in September 2016.

### Stakeholder and Public Involvement

An important part of the process of developing this study is input and review provided by key stakeholders and the public. People who own and operate different elements of the freight-related transport business are an excellent source of information. They include infrastructure owners, including transportation agencies, railroad companies, ports, and airports; carriers; shippers and receivers; and land developers. The primary mechanism was the CDTC Freight Advisory Committee. This standing committee meets regularly, and comprises representatives of the freight and logistics industry, developers, and public agencies. They offered valuable input at each stage of study development. In addition, the study team conducted a variety of individual interviews and small group meetings with freight stakeholders in the region, as well as field visits to several key freight facilities. The Appendix includes a complete description of outreach activities.

### Accommodating Change

As the New Visions Technology planning principle states, CDTC wants to position itself and the region to accommodate new and rapidly changing transportation technology. A plan to direct investment in the future of the Capital District must consider the impacts and requirements of such changes.

A key technology development in transportation is the automation of vehicles. Two terms in current use are "connected vehicle" and "autonomous vehicle."

The first is synonymous with the "Connected Vehicle" program led by USDOT to facilitate communications among vehicles (vehicle-to-vehicle or V2V) and with roadside infrastructure (vehicle-to-infrastructure or V2I). Benefits include reduced crash risk, improved travel time reliability and congestion reduction. A full system will require both market investment to equip vehicles and public investment to equip infrastructure.

Second, autonomous personal vehicles from a number of manufacturers have been in real world testing since the early 2010s and accrued more than a million miles of driving experience. On May 5, 2015, Daimler Trucks rolled





out the Freightliner Inspiration, a tractor-trailer with Level 3 autonomy<sup>5</sup>, starting initial testing in Nevada where it is enabled by State law. There are numerous forecasts of fleet penetration for both cars and trucks over the coming decades. Since this will be market driven, and accompanied by public regulation, CDTC's role will be one of tracking and responding appropriately.

Opportunities for advanced technology apply to the entire logistics market segment, from improved routing to automated warehouses. As the "Internet of Things" evolves to the "Internet of Everything," the velocity and resilience of supply chains may continue to increase creating a greater demand on mobility.

Changes to the Capital District that will impact goods movement are not limited to technology. A goods movement plan done less than two decades ago would not have anticipated SUNY Poly/College of Nanoscale Science and Engineering, the existence of Global Foundries, or the movement of large volumes of crude oil by train. It is difficult to anticipate major changes in the regional economy over the coming decades, much less the driving factors of the global marketplace.

Being prepared for change does not mean forecasting which changes have a high probability of occurring. Instead, it means that CDTC must be strategic in its planning and investment choices so as to facilitate rather than foreclose future responses.

## Summary

Planning for freight and goods movement in the Capital District is both complex and critical to supporting a vibrant regional economy and quality communities. The remainder of this report will incorporate the aspects that have been raised into a regionally comprehensive approach to goods movement.

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<sup>5</sup> The National Highway Traffic Safety Administration (NHTSA) has defined automotive autonomy on a scale of Level 0 (full manual control) to Level 4 (full self-driving automation). Level 3 is defined as "limited self-driving automation".



## CHAPTER 3: OVERVIEW OF MODERN FREIGHT AND GOODS MOVEMENT

### Introduction

The emergence and continued growth of e-commerce, the mobile internet, and a global consumer class has led to an environment in which businesses and purchasers depend on freight and goods being shipped and delivered wherever and whenever they are desired. The same-day delivery offered now by Amazon Prime, Jet, and other firms provide examples of the current “cutting edge” in this area. This relatively new “pull economy,” in which consumers and users of commodities and products drive the production and shipping activities, differs significantly from the historical “push economy,” in which manufacturing cycles and processes generally dictated when and where commodities would be needed and products would be available to consumers.

The ability to efficiently move freight, goods and services is critical to supporting this pull economy, in which over 60 million tons of freight, worth \$40 billion, move through the U.S. freight transportation system every day. Efficient movement of freight (e.g., mode selection, routing, and intermodal transfer) is necessary to make the best use of our transportation facilities, protect the environment, and reduce energy requirements, while keeping up with the ever-increasing demand for goods. In recent decades, logistics management has emerged as a legitimate business function. It has continued to evolve toward a more integrated chain that links previously separate functions: material sourcing and procurement, manufacturing, inventory management, distribution and transportation. Today, this “supply chain management” structure has refocused businesses from just delivering products to reducing inventory and contributing to a company’s bottom line.

### Why Do Freight and Goods Move?

In recent decades, the make-up of the U.S. economy has undergone a significant structural shift: in the early 1980s, manufacturing was the leading sector of the U.S. economy. By 2007, manufacturing accounted for less than 20% of the economy, while the services sector accounted for 79%. The ability to efficiently move freight, goods and services plays a significant role in this transformation. The logistics revolution, described earlier, combined with public and private transportation investment, allow American businesses to reduce inventories, while simultaneously achieving greater economies of scale in a global trade environment.

These dual efficiency gains for American businesses rely on efficient transportation services: inventory reduction typically requires more frequent shipments to reduce the possibility of stock shortfalls, leading to more transportation services. Lower transportation costs also allow firms to consolidate production and distribution facilities from many to fewer, but consolidation implies a longer average length of shipment haul and the economies of scale are achieved only at the cost of more transportation services.



### How Do Freight and Goods Move?

The term “commodity” is commonly used to describe an item that is traded in commerce, whether or not it is a raw material or a finished product. The term usually implies an undifferentiated product competing mainly on price and availability. Commodities are typically transported in one of three forms:

- **Bulk Cargo** - Cargo that is unbound as loaded. Individual components cannot be counted and cargo is loaded (moved) in a loose, unpackaged form. Examples include the trains from the Midwest and Great Plains that move agricultural and energy commodities; and ships and barges carrying petroleum products, coal, and grain.
- **Breakbulk Cargo** - Cargo of non-uniform sizes, often transported on pallets, or in sacks, drums or bags. These cargos require labor-intensive loading and unloading processes. Examples include coffee beans, logs, and pulp.
- **Containerized Cargo** - Moved in containers (“boxes”) that are used primarily for ocean freight shipment, and which can be loaded easily and directly onto truck chassis or rail flatcars. Once a container is loaded initially at its origin, its contents are not re-handled until it is unloaded at its final destination. Commonly, these contents are items that are packaged individually and can be counted. Examples include finished products such as automobiles, clothing and appliances.

This categorization matters because it describes, in a broad sense, how freight is moved in, out, and through an urban region by truck, rail, marine and air; the networks and routes that are used for these movements; and the local facilities that are used to load, unload, transfer and process freight and goods.

### Who are the Key Actors in Freight and Goods Movement?

Freight and goods movement encompasses a variety of key actors, ranging from those firms and organizations that initiate the transport of an item, product or commodity to those that ultimately receive or consume a final product. A summary of the most important categories of actors in the freight and goods movement sector is provided in Table 5.



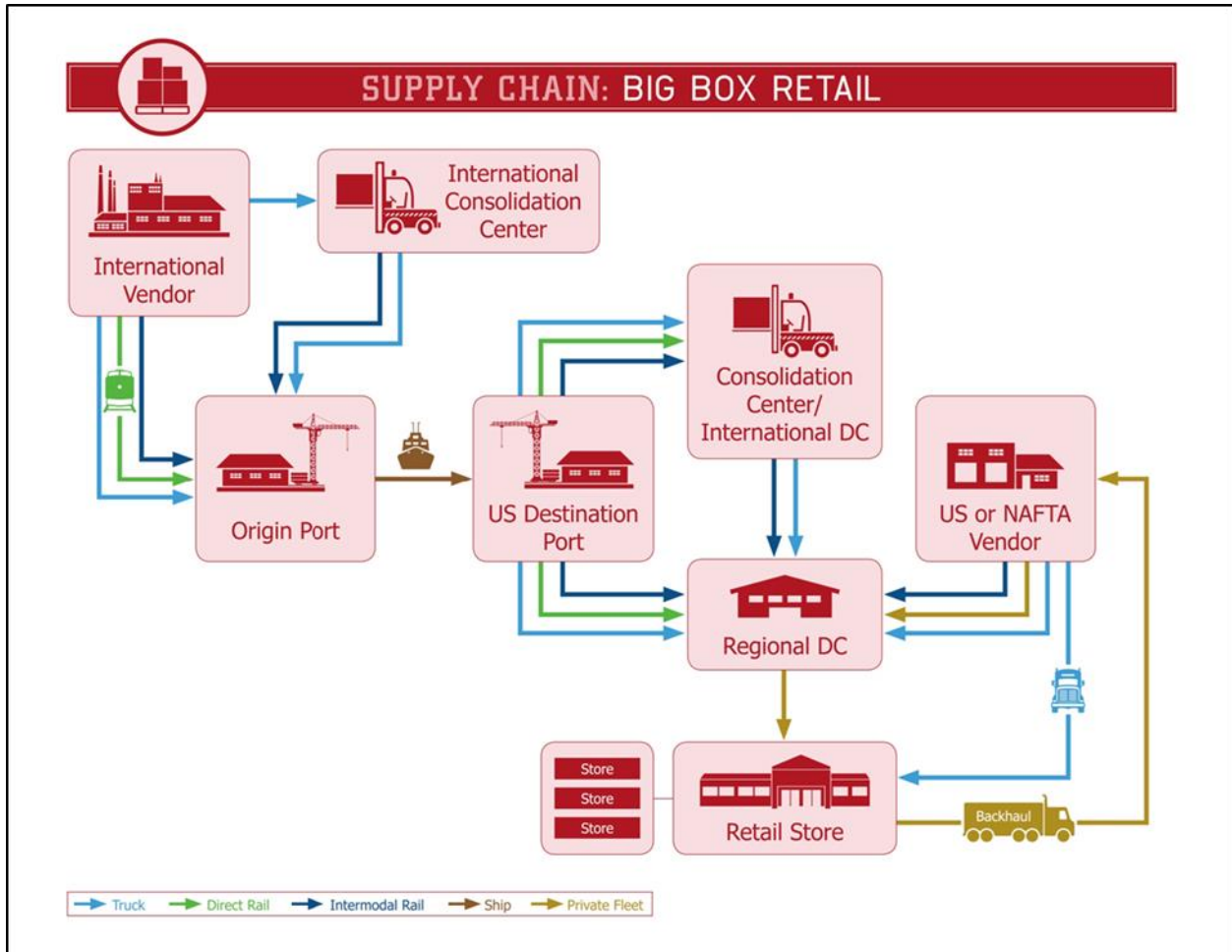
TABLE 5: Categories of Key Actors in Freight and Goods Movement

<b>Shipper:</b>	Sends freight and goods.
<b>Receiver:</b>	Destination for freight and goods. May also ship items onward after processing them or adding value.
<b>Operator or Carrier:</b>	Charged with moving the freight and goods from the shipper to the receiver by land, sea or air, in exchange for a fee.
<b>Infrastructure Provider:</b>	Owns, operates and/or maintains the roads, rails, ports, terminals or other infrastructure used by the operator to move the freight and goods.
<b>Drayage:</b>	Transporting of rail or ocean freight and goods by truck to an intermediate or final destination; typically a short distance (e.g., from marine port to warehouse).
<b>Transload:</b>	Transfer of bulk cargo from the vehicle/container of one mode to another, en route between a shipper and a receiver.
<b>Intermodal Terminal:</b>	Location where links between different transportation modes and networks connect, and where cargo can be exchanged between modes.

Each category also includes several sub-modes and technologies, with their own typical roles, advantages and disadvantages relative to other combinations of modes and technologies from a shipper's perspective and strengths and weaknesses from a societal perspective. The modes compete for freight and goods in a private sector economy that is influenced by cost, time, regulations, etc. In some cases, a particular cargo trip can only be made by one mode, and there is no competition between modes. In other cases, shippers choose a mode based on factors such as price, time, and reliability. As shown in the example in Figure 3, the supply chain supporting a typical "big box" store can be very complicated and involve many shippers, operators, infrastructure providers, and receivers around the world. With today's "just in time" inventory and delivery systems, disruption to one or more of the links in the supply chain, natural or manmade, can have significant effects on the overall operation and ability to supply the ultimate destination.

The 'last mile' is the part of the cargo movement trip that delivers the good to the final destination. It sometimes requires a change in mode. For example, goods that arrive in a region by rail container usually cannot be delivered to the store by rail, as rail lines do not reach every store. The goods must be moved the 'last mile' by an alternate mode – usually over road by truck. Figure 3 provides examples of last mile situations including the truck movements from the US Destination Port to the Regional Distribution Center (DC) and from the Regional DC to the Retail Store.

FIGURE 3: EXAMPLE OF BIG BOX RETAIL STORE SUPPLY CHAIN ELEMENTS (SOURCE: NCFRP REPORT 14, GUIDEBOOK FOR UNDERSTANDING URBAN GOODS MOVEMENT (2011))



Particularly in densely developed metropolitan areas, this last mile is what distinguishes freight and goods movement from other freight movement. Urban freight movements mainly involve making efficient trips with frequently smaller shipments and smaller vehicles to dense, mixed-use areas. These movements include pickups and deliveries that are vertical, as well as horizontal. Goods must travel vertically to high-rise office buildings and rooftop restaurants, and they travel horizontally on cross-town trips to meet delivery and pick-up schedules through frequently-congested conditions. A seemingly small disruption in the reliability of the urban transportation system (e.g., a street closing for emergency response) can rapidly precipitate delays and/or rerouting of trucks to less appropriate roads (e.g., through residential neighborhoods) in order to meet tightly-scripted delivery



schedules. Such disruptions can also be costly, to both freight operators and the overall economy. Shippers and carriers cost out transit time at \$25 to more than \$200 per hour, depending on the product being moved.

### How Does Freight Move?

Freight and goods typically move from the original shipper to ultimate receiver via at least one of the principal transportation modes (highway/road, rail, marine/water, air and/or pipeline). In addition, many shipments pass through an intermodal transfer facility and may be facilitated by a third or fourth party logistics provider. The following provides definitions for each of these modes and entities.

#### Transportation Modes

**Highway/Road** - Trucking is the most commonly-used mode for moving freight and goods on roads and highways. Trucks are particularly important for last mile movements. They can deliver large quantities of containerized or bulk goods and can transport heavy loads. Bicycles - and other human- powered vehicles - are becoming a more common mode for goods movement in urban cores. Bicycles work best for short-distance trips and lighter, smaller packages. They are low cost and have low environmental impacts.

**Rail** - Rail is very efficient for moving heavy goods and containerized cargo over long distances. However, rail lines are expensive to build and, in urban areas, are subjected to conflicts at at-grade crossings. “Class I” carriers are rail companies with large gross revenues (exceeding \$250M). “Short line” railroads are smaller companies, with revenues less than \$250 million, and generally operate over shorter distances than Class I railways. They typically connect producers and manufacturers to Class I railways, where the goods are loaded for longer distance trips. Short line railways, also called Class III railways, fall into two categories: (1) Local railways, which are line-haul railways not meeting the “Regional Railroad” (Class II) criteria; and (2) Switching and Terminal railways, which are either jointly owned by two railways for the purpose of transferring cars between railways or operate solely within a facility or group of facilities.

**Marine/Water** - Ocean-going ships transport containerized, bulk and breakbulk goods, and “heavy lift” or “dimensional” cargo across oceans. They are essential to global trade. Ships are more efficient than airplanes for carrying heavy goods across water and are sometimes competitive with rail and truck for delivery from one coast to another on the same continent. Short sea ships move cargo over water without crossing an ocean. These ships vary in size. They are typically smaller than ocean vessels and have smaller draughts, and so can be used to move goods along an inland waterway or along a coast. Short sea shipping is used to move both bulk cargo and containers. They may include barges that are moved by a towboat; a single tow may include as many as 15 barges, depending on the waterway.

**Air** - Cargo airplanes move goods over long distances quickly. Landing locations are limited by the runway type and size of plane. Airplanes are good for moving high value, light goods, as well as goods that expire. They are also useful for delivering goods to remote locations where there are no road or rail connections. Passenger



airplanes typically accommodate some goods movement (in addition to passenger baggage) in the airplane's cargo hold. This is known as "belly freight," because the cargo moves in the airplane's "belly." Again, air travel is used largely for high value, light weight goods. Routes are limited to air passenger routes. About 40% of total air cargo moves as belly freight in passenger planes.

**Pipelines** - Pipelines are used to move liquid goods such as petroleum products, water, or bitumen. Petroleum products must be transferred to other modes at pipeline terminals including tank farms. Local water and wastewater systems also move by pipeline. Pipelines can be constructed in a wide variety of landscapes.

### Multimodal Facilities

**Intermodal Terminals** – Intermodal terminals and facilities play a unique function of facilitating the transfer cargo between modes. They allow for the most efficient and effective combination of modes to move goods between a shipper and a receiver. Marine ports, airports, and intermodal rail yards are three examples of intermodal terminals. Goods arrive by one mode and are unloaded. Sometimes, these goods are drayed somewhere to facilitate transfer to another mode or are stored temporarily on site. The land near intermodal terminals can be reserved for industrial, storage, or warehousing in order to reduce the distance of trips and make good use of infrastructure.

### Cargo-facilitating Organizations

**Third Party and Fourth Party Logistics Providers** - The supply chain may be managed by third and fourth party logistics providers ("3PLs" and "4PLs"), which make decisions about how, where, and when goods move. 3PLs are specialists in logistics that provide a variety of transportation, warehousing and logistical services to buyers or sellers – tasks that previously were conducted in-house by the customer. 4PLs add additional supply chain capabilities, including consulting services and technology/communications providers. These actors work within regulations established by federal, provincial, and municipal government bodies, which are each responsible for different aspects of the system. Federal regulations address rail, air, and marine transport, while municipal and provincial regulations together address road transportation.

## Summary

Globally, shippers and receivers choose modes of transportation based on cost, timeliness, and reliability. Each mode has advantages and disadvantages for the shippers and receivers, as well as for the environment and society. Each mode also has different capacity, reliability and cost-effectiveness for different types of shipments. For example, air transport is suitable for high-value goods travelling long distances (e.g., bio-technologies); whereas use of local small parcel delivery services is common to very localized movement of high-value goods (such as courier packages and documents in a downtown area).





## CHAPTER 4: LAND USE AND FREIGHT TYPOLOGIES

The CDTC freight network serves local businesses and residents and is an important gateway connection to and from Canadian markets via the I-87 corridor; and global markets via the Port of Albany. Local freight transportation activity serves diverse freight centers spread across the region. These freight facilities (such as industrial parks, intermodal terminals, and distribution centers) reflect the broad range of manufacturing, warehousing, transportation, and natural resource activities that occur in the Capital Region. They also highlight the strong linkage between freight transportation and land use.

Freight transportation planning, which is now emphasized by federal legislation, requires a full understanding of the unique needs of shippers and carriers, the demands placed on transportation infrastructure, and connectivity to and from critical freight-related land uses. This Chapter considers the need to classify both freight-related land uses and the freight-dependent routes that access these land uses. The first section details the considerations and criteria to develop five land use typologies. The second section describes the development of a freight route classification system to designate the roads that provide connections to these major land uses, and the third section addresses how regional and local agencies can use these typologies to cohesively plan for efficient and non-disruptive freight movement.

### The Interface of Land Use and Freight Transportation – Illustrations from Capital Region Examples

While the movement of freight throughout the CDTC region is an essential component of a strong local, regional and national economy, the functioning of a healthy CDTC Freight Network is complicated in that it involves several local governments, each with their own local land use decision-making capabilities, and limited regional coordination. All too often local decision-making does not adequately consider the broader freight network in the context of regional implications, and how individual projects might impact other land use, environmental and economic conditions. Further, at an even finer level, many local land use decisions regularly set up conflicts within municipal borders because broader considerations are often overlooked. Both conditions are generally the result of a lack of understanding of freight movement and coordination at a regional level. Establishing a municipal freight education outreach program could help to create more informed, coordinated decision-making at the local level.<sup>6</sup>

An example of local land use decision-making that is creating conflicts within its own borders can be seen in the Town of Wilton, at the I-87 interchange. The town has zoned the area surrounding the Exit 16 interchange for

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<sup>6</sup> More information and guidance on freight-supportive land use planning may be found in “[NCFRP 33: Improving Freight System Performance in Metropolitan Areas: A Planning Guide](#),” and “[NCFRP 13: Freight Facility Location Selection: A Guide for Public Officials](#).”





large-scale distribution centers. Major retailers like Target and Ace Hardware have taken advantage of this zoning and have both located distribution centers along the Ballard Road corridor. Dollar General, another national chain, was also recently looking to establish a new distribution center at the interchange. Further west along the Ballard Road corridor, local regulations provide for large residential subdivisions. These developments include everything from single-family housing to larger-scale multi-unit residential developments. With such development comes higher levels of auto, bike and pedestrian trip generation. Layered on top of these new residential trips, are significant truck trips along the Ballard Road corridor and the Exit 16 overpass. While the new residential and industrial development has been zoned for, and continues to evolve, the roadway and bridge capacities have not been increased and/or modified to accommodate significantly higher traffic volumes in many years.

An example of local land use decisions with multijurisdictional impacts can be found in Mechanicville at the intermodal facility along the Route 67 corridor. The new rail yard was built by Pan Am Southern, a joint venture between Pan Am Railways and Norfolk Southern, in 2012. The facility was developed to convert double-stack container trains from the west to single-stack by removing the top layer of containers, allowing the train to continue further east through the Hoosac Tunnel. The top layer containers are then trucked to regional destinations. The reverse also occurs, with trucks bringing goods in to be shipped out by rail across the country. It is estimated that the facility generates approximately 300 trucks per day. Many of these trucks use the Route 67 corridor connecting with I-87 in Malta. The new facility is expected to generate several new rail yard related operations in the coming years and could include large distribution centers, such as those in Wilton, or trucking-related enterprises such as fuel services, repair shops, truck stops and restaurants. Some potential implications of this development: increased truck traffic, increased traffic conflicts, and deterioration in the level of service. As the intermodal facility continues to evolve, it will be critical for regional coordination leads the way for success.

## Land Use Typologies

CDTC's New Visions planning principles support the connection between transportation and economic development, and investing in the creation and growth of quality communities. With its focus on innovation-driven, technology-based industries, the Capital Region has one of the State's strongest and fastest growing economies. The region's "Tech Valley" initiative has facilitated the development of new industries and businesses across the region, with accompanying increases in population and land development. Examples of both established and new technology-based firms and institutions in the region include General Electric's Global Research Center in Niskayuna, Global Foundries' advanced semiconductor fabrication plants in Malta, and the rapidly-expanding SUNY Polytechnic Institute's College of Nanoscale Science and Engineering in Albany. Given these socioeconomic catalysts, the Capital District Regional Planning Commission (CDRPC) anticipates a consistently growing population through 2030 and beyond. The region's growing economy will also increase demand for the limited capacity of the highway network. It is important, therefore, for local and regional land use decision-making to carefully consider where and how freight-generating operations are sited and may expand.



### Land Use Type Methodology

The study team developed freight-related land use typologies to highlight areas in the Capital Region where major freight activities occur, or are likely to occur, based on land use patterns and plans. By categorizing land uses related to freight, planners at the local and regional level can better understand the transportation needs of these sites and plan more effectively for those needs. They may also be able to direct freight-related development proposals to the optimum sites to accommodate goods movement needs.

The study team reviewed existing land use patterns using land use data from CDRPC and identified major freight facilities based on information from regional employers and major stakeholders. From these two analyses, the team evaluated common characteristics across freight-related sites to create the land use typology criteria.

#### General Land Use Patterns

Figure 4 displays current land use classifications in the CDTC Region. The land use map shows regional land use clusters and indicates some of the key freight-generating areas. For example, areas near downtown Schenectady, along the Halfmoon-Green Island Corridor, near the Port of Albany, and near the Selkirk Rail Yard show concentrations of industrial land use. Areas in the northeastern portion of the region show high densities of agricultural land use.

#### Facility Identification

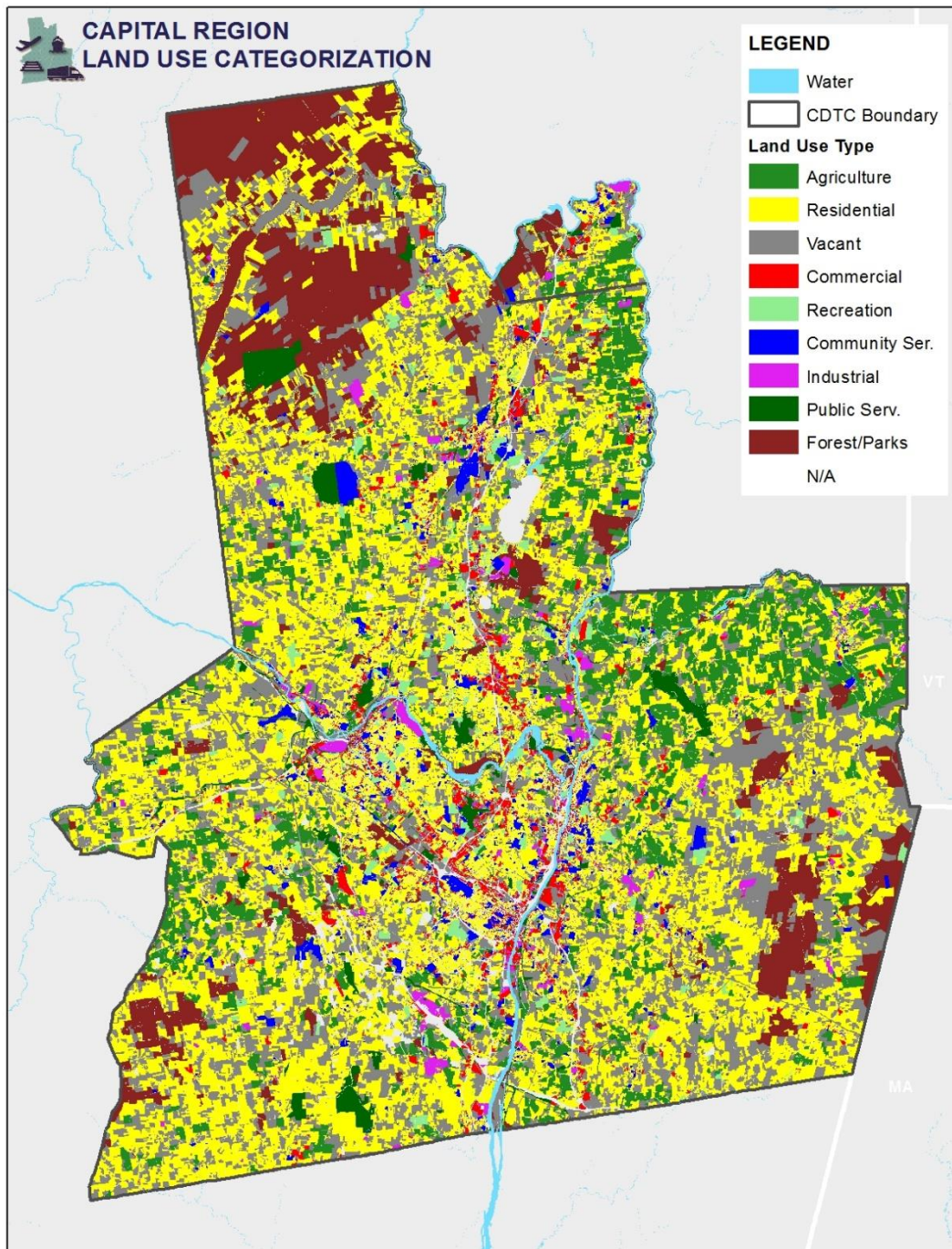
Based on an assessment of data, stakeholder interviews, and input from the FAC, the study team identified regionally significant freight-intensive establishments throughout the study area. Because these establishments encompass a range of industrial and logistics activities, they also generate different types and volumes of freight traffic. For example, some facilities rely on intermodal transfers, indicating that containerized cargo moves between any of the following modes at these locations: rail, ship, aircraft, and truck. These types of facilities often generate significant high truck volumes because of the large capacity of ships and rail cars.

Other multimodal facilities offer “transload” services, in which non-containerized materials load directly from a rail car to a truck or materials move through a holding facility while moving between the rail car and truck. Transload facilities thus offer distribution services and also attract high levels of truck traffic. Other distribution facilities may only include truck mode, moving containerized or non-containerized goods to and from these distribution centers.

Major manufacturing plants may generate high volumes of primarily truck traffic. Significant amounts of raw materials enter these sites to support the manufacturing process, and finalized or semi-finalized products exit the facility to move to the next stage of the supply chain.

Finally, at the end point of the supply chain, large shopping centers and commercialized urban areas require shipments of finalized goods for retail and restaurants. These areas do not typically involve delivery or pickup of high tonnage cargo, but still require safe and efficient truck access.

FIGURE 4: CDTC REGIONAL LAND USE CLASSIFICATIONS, SOURCE: CDRPC





## Land Use Typology Criteria

Based on the analysis of land use patterns in the region and identification of commonalities between goods movement at existing facilities, five typologies emerged to reflect regional freight activities. These typologies are the foundation for creating the region's Freight Priority Network, as well as establishing various land use techniques to promote freight as a good neighbor and foster public-private partnerships to enhance the network. Table 6 lists and defines these typologies.

**TABLE 6: LAND USE TYPOLOGY DESCRIPTIONS & CHARACTERISTICS**

Typology	Description	Characteristics
<b>Intermodal Center</b>	Intermodal Centers are large facilities that handle containerized goods from national and international sources. Intermodal Centers locate at strategic transshipment points along major transportation routes including rail, highway, waterways, and airports. They are a vital element of local, regional, and national economies by driving public investment and private enterprise. Intermodal Centers serve as regional logistical hubs and host a variety of positions ranging from stevedoring to engineering. Due to their size and nature, Intermodal Centers require the support of a large number of ancillary facilities to service and house their transportation fleets.	<ul style="list-style-type: none"> <li>• Generate significant road traffic</li> <li>• Require large parcels of land</li> <li>• Typically operate as a public authority or as part of an ongoing public/private partnership (PPP)</li> <li>• Incompatible with high density residential neighborhoods</li> <li>• Require public investments in infrastructure or tax abatements</li> <li>• Provide logistical services for a variety of unrelated businesses</li> </ul>
<b>Regional Distribution Hub</b>	Regional Distribution Hubs (RDH) are typically large warehouses that are served by truck and rail. They locate based on proximity to highways and the availability of inexpensive land at the periphery of communities. RDHs serve as centers of logistical control for private businesses. Regional Distribution Hubs are increasingly important as internet shopping grows and onsite inventories shrink. Brick and mortar stores increasingly rely on next day deliveries, increasing the number and frequency of truck deliveries and the need for well managed RDHs. Communities should anticipate and encourage their growth. Properly managed, RDHs can avoid conflict with adjacent land uses while providing a stable tax and job base.	<ul style="list-style-type: none"> <li>• Generate extensive truck trips daily</li> <li>• Typically require large tracts of undeveloped land</li> <li>• Depend on access to interstate highway system</li> <li>• Locate on the periphery of established communities</li> <li>• Each facility typically serves one company exclusively, but facilities may cluster depending on capacity of local infrastructure</li> <li>• Employ a substantial number of workers to sort and handle goods</li> <li>• Are becoming increasingly larger and consolidated</li> <li>• Incompatible with high density residential neighborhoods</li> </ul>





## Regional Freight and Goods Movement Plan

Typology	Description	Characteristics
<b>Manufacturing Center</b>	Manufacturing Centers are institutions or clusters of manufacturers that generate a substantial number of freight trips. Materials needed for production are shipped in from a variety of sources and finished products exit the site. MC's can have a large impact on local economies, providing jobs and tax revenue. Having quality infrastructure in place will encourage their locating. Communication between MCs and municipalities regarding changing freight needs can alleviate conflict between users of the local transportation system. Many municipalities actively recruit manufacturing centers by offering tax-breaks and regulatory incentives.	<ul style="list-style-type: none"> <li>• Generate freight traffic in and outbound</li> <li>• The types of freight vary with the type of manufacturing</li> <li>• Often, in places like industrial parks, raw materials or components received via truck will leave the facility by rail or vice versa</li> <li>• Provide important jobs to regional economy</li> </ul>
<b>Suburban Commercial Center</b>	Suburban Commercial Centers (SCC) are collections of large consumer retail facilities. Site requires access by trucks, private automobiles, and public transportation. SCCs can be one facility such as a regional mall or a collection of adjacent stores along a single arterial road. SCCs typically have no onsite logistical coordination capacity. Governmental policy favoring automobile infrastructure investments starting in the mid-20th century has been conducive to this model. Recent market demand for vibrant downtowns shifted investments away from sprawling SCCs, but they remain extremely popular.	<ul style="list-style-type: none"> <li>• Most land intensive type of freight and goods system</li> <li>• Generate truck deliveries from a large variety of distributors</li> <li>• Generate the highest number of automobile trips of all freight systems</li> <li>• Large parking lots and irregular curb cuts can prevent smooth truck deliveries</li> <li>• Typically not integrated with non-retail uses (municipal and residential)</li> <li>• Layout dictated by private developers/market</li> </ul>
<b>Urban Core</b>	Urban Core (UC) areas represent the most "finely grained" level of freight distribution and handling. Typified by central business district locations in densely developed downtown areas, freight moves by box truck, hand trolley and via foot. Logistically there is little central control of how freight is distributed in Urban Core areas. Physical restraints and traffic congestion are the most significant determinants of delivery patterns. Municipalities responding to increasing demand for walkable vibrant neighborhoods often disregard the needs of freight transport when implementing redevelopment schemes and streetscape improvements.	<ul style="list-style-type: none"> <li>• Layout of traditional neighborhoods causes conflict between pedestrian activity, commuter parking, and large truck deliveries</li> <li>• Smaller box trucks favored in dense Urban Core neighborhoods</li> <li>• Conflicts between pedestrian and bike improvements and freight delivery are common</li> <li>• Inadequate curbside parking for deliveries</li> <li>• Few businesses provide off-street loading docks</li> </ul>



## Freight Route Typologies

The CDTC Freight Priority Network (FPN) provides a logical system of routes that facilitate efficient and safe truck mobility within, to, and from the CDTC region. FPN designation is important because it provides CDTC and its constituent municipalities, counties, and State agencies with guidance on roadway investment, planning, design (e.g., clearances, turning radii), maintenance, pavement, signalization, and access management to help support freight mobility across the region.

The primary function of FPN designation is to bring roads that carry critical freight and goods movements to the forefront in freight-related investment decisions. Further, FPN designation is intended to engage local jurisdictions in operating, maintaining, and designing FPN roads to adhere to these specifications to promote safe/reliable infrastructure and efficient movement. For example, projects affecting FPN routes will receive acknowledgement for being part of the major freight system when planning and programming freight-related investments.

CDTC designated the original FPN in the late 1990s based on professional knowledge of regional freight movement patterns and routes. The original FPN simply designated a facility as a freight route, without any further gradation of route type or purpose. This Freight & Goods Movement Study built on that existing FPN to create specific designation criteria for a hierarchy of three route types:

- **Major Routes** - serve as the backbone of the FPN. These roads, mainly Interstate highways and key regional arterials, are generally designed, operated, and constructed to accommodate significant truck volumes.
- **Minor Routes** - regional/local roadways that provide mobility between major industrial and logistics origins and destinations and the Major Routes.
- **Connectors** - provide access between Major and Minor Routes and individual destinations or small clusters of logistics activities. Connector roads are generally designed and operated to accommodate periodic truck movements to shippers, receivers and/or urban centers.

## FPN Route Designation Methodology

The study team developed quantitative and qualitative designation criteria for each route type based on (1) an analysis of the available truck count data from NYSDOT, (2) understanding of the National Highway System (NHS) designation requirements, (3) additional example sources of truck route designation, and (4) an understanding of the CDTC regional system in terms of both freight-related transportation and land use. The following subsections detail the evaluation of each of these factors.



## Truck Count Data

The NYSDOT Data Traffic Viewer provides limited vehicle class counts throughout the CDTC area. Where available, traffic counts informed the selection of FPN routes. Where truck count data was not available, all-class counts and connecting land uses informed the decision to include the route in the FPN. Class counts vary by year based on location.

## National Highway System (NHS) Criteria

Sec. 470.107 of 23 CFR 470A provides the specific criteria for classification in the NHS: “The National Highway System shall consist of interconnected urban and rural principal arterials and highways (including toll facilities) which serve major population centers, international border crossings, ports, airports, public transportation facilities, other intermodal transportation facilities, and other major travel destinations; meet national defense requirements; and serve interstate and interregional travel. All routes on the Interstate System are a part of the NHS. (2) The NHS shall not exceed 286,983 kilometers (178,250 miles). (3) The NHS shall include the Strategic Highway Corridor Network (STRAHNET) and its highway connectors to major military installations, as designated by the Administrator in consultation with appropriate Federal agencies and the States. The STRAHNET includes highways which are important to the United States strategic defense policy and which provide defense access, continuity, and emergency capabilities for the movement of personnel, materials, and equipment in both peace time and war time. (4) The NHS shall include all high priority corridors identified in section 1105(c) of the ISTEA.” Table 7 details the criteria for major “intermodal transportation facilities” considered by the NHS.

TABLE 7: NHS CRITERIA FOR INTERMODAL TERMINALS

Intermodal Facility	Criteria <sup>7</sup>
<b>Airports</b>	100 cargo trucks/day in each direction
<b>Ports</b>	50,000 TEUs/year OR 500,000 tons/year of bulk commodity OR 100 cargo trucks/day in each direction
<b>Truck/Rail</b>	50,000 TEUs/year OR 100 cargo trucks/day in each direction
<b>Pipeline</b>	100 cargo trucks/day in each direction
<b>Other Facilities</b>	<ul style="list-style-type: none"> <li>- Handle +20% of freight volumes in state</li> <li>- Identified in the Intermodal Management System</li> <li>- Will experience significant expansion/investment</li> <li>- Connecting routes targeted for “investment to address an existing, or anticipated, deficiency as a result of increased traffic.”</li> </ul>

The NHS criteria helped to define the role of connector facilities in the FPN. By creating a groundwork for classifying both roadways and intermodal facilities, the study team incorporated these considerations into the FPN typology considerations.

<sup>7</sup> <http://www.gpo.gov/fdsys/pkg/CFR-2011-title23-vol1/pdf/CFR-2011-title23-vol1-part470-subpartA-appD.pdf>



### Criteria from Other US Studies

FHWA's "Freight Story 2008" classifies Major Freight Corridors as those with "8,500 trucks per day." The study team found this designation criteria too high for CDTC's purposes because not all major truck routes, specifically interstates, had counts of this magnitude.

LA Metro's Los Angeles County Strategic Goods Movement Arterial Plan identified that "750 trucks per day or higher appears to be a good indicator of significant truck volume, and 500 trucks per day an indicator of moderate truck volume." The study team found this criteria to be helpful, as most of the major truck routes identified in or suggested for the FPN had truck counts higher than 750 trucks.

In its 2009 Regional Truck Route Study, the Southeastern Massachusetts MPO identified specific classification criteria: "vehicle classification count locations where the truck ADT exceeded 400 trucks per day or 5% of total traffic were designated." The study team found this criteria to be helpful, as 400 trucks per day represents significant truck traffic in more rural areas, which justifies lower-count features that connect to Intermodal Centers.

### Land Use Connections

Using the Land Use Typologies described in the previous section, the FPN classification criteria consider intermodal facilities for the delineation of connecting routes. The criteria also consider freight-related major facilities such as Distribution Hubs and Manufacturing Centers to ensure that other major and minor routes cover corridors between these facilities and outside of the region. For example, the study team reviewed each of the following Intermodal Centers in the CDTC area to identify last mile connections:

- Port of Albany/Rensselaer
- Albany International Airport
- CSX Selkirk Rail Yards
- Port of Coeymans
- Norfolk Southern Intermodal Terminal (Mechanicville)

Further, the following Regional Distribution Hubs (RDH) and Manufacturing Centers (MC) also informed overall connectivity of the FPN routes based on each route's ability to connect these sites both within and outside of the region:

- Golub/Galesi Freight Distribution Centers in Schenectady (RDH)
- CP Kenwood Yard in Albany (RDH)
- Ace/Target Distribution Centers in Wilton (RDH)
- Northeast Industrial Park in Guilderland Center (RDH)





- CSX Transflo Albany (RDH)
- SI Group in Schenectady (MC)
- SABIC Innovative Plastics in Selkirk (MC)
- Glenville Business and Technology Park (MC)
- Global Foundries Campus in Malta (MC)
- General Electric Campus in Schenectady (MC)
- Green Island Industrial Park (MC)
- Momentive Performance Materials in Waterford (MC)
- Watervliet Arsenal (MC)

## FPN Route Designation Criteria

Table 8 provides an overview of the FPN route classifications and designation criteria.

TABLE 8: SUMMARY OF FPN ROUTE CLASSIFICATION TYPES AND CRITERIA

FPN Classification	Count Requirement	Facility Characteristic Requirement
<b>Major</b>	Greater than 4,000 Trucks/Day Greater than 15% Truck Percentage If count data is unavailable, Interstate classification qualifies.	Access-Controlled Highways Major Arterials
<b>Minor</b>	Greater than 3,000 AADT Greater than 1,000 Trucks/Day Greater than 15% Truck Percentage Connects to an Intermodal Center LU, Regional Distribution Hub LU, or Manufacturing Center LU If count data is unavailable, >3,000 AADT and LU connection qualifies.	Major Arterials Minor Arterials
<b>Connector</b>	100-1,000 Trucks/Day Greater than 15% Truck Percentage Connects to an Intermodal Center LU	Minor Arterials Collector Routes

Definitions:

- **Facility Types.** Functional Classification is a standard method of characterizing roadways that was developed by the FHWA. It is a hierarchy of roadway types in a network that describes their function in terms of accommodating through traffic versus providing access to adjacent parcels.



- Principal Arterial/Interstate or freeway. Complete control of access, provides only for through travel.
- Principal Arterial/Other. Primarily serve through travel. May provide access to intersection roadways and rarely to adjacent land use.
- Minor Arterial. Connect to principal arterials, while providing access to adjacent parcels. Typically higher volume roadways that are signalized.
- Collectors. Both urban and rural, these roadways act to collect traffic from local streets and move it to minor arterials for travel to destinations. Provide access to adjacent parcels.
- Local Streets. Provide direct access to all parcels, not for through travel.
- **AADT:** Annual Average Daily Traffic. Traffic count volume is collected for a specified count period, often one week. The daily traffic is averaged, then adjusted with seasonal and other modification factors developed from the overall traffic volume database.

The following subsections provide detailed descriptions of each of the FPN route classifications and designation criteria:

### Major FPN Route

- Access-controlled highways and major arterials designed, constructed, maintained, and operated to accommodate and facilitate movement of large volumes of both general and truck traffic.
- Limited signalization and/or grade separated.
- Provides the strategic connections between the Capital Region and other major regions within and outside NYS.
- Major FPN routes are generally Interstates and NHS facilities and owned and operated by NYSDOT or NYS Thruway Authority.
- Routes classified in this category must have over 4,000 trucks per day and over 15% truck traffic based on best available truck counts. If no counts are available, Interstate designation qualifies for classification.

### Minor FPN Route

- Routes designed, maintained, and operated to facilitate general mixed traffic, while supporting significant truck movements.
- Provides connections between Major FPN Routes and major trucking activity clusters, forming the core of the inter-regional transportation network.

- Routes classified in this category must be over 1,000 trucks per day and over 15% truck traffic based on best available truck count percentages. The facility must also have over 3,000 AADT (all vehicles daily count) AND provide a connection to one of the three land use typologies: Intermodal Center, Regional Distribution Hub, or Manufacturing Center. (See Land Use Typology Designation Criteria in the Appendix.) If no counts available, AADT > 3,000 AND Connection to noted land use typologies qualifies for classification.

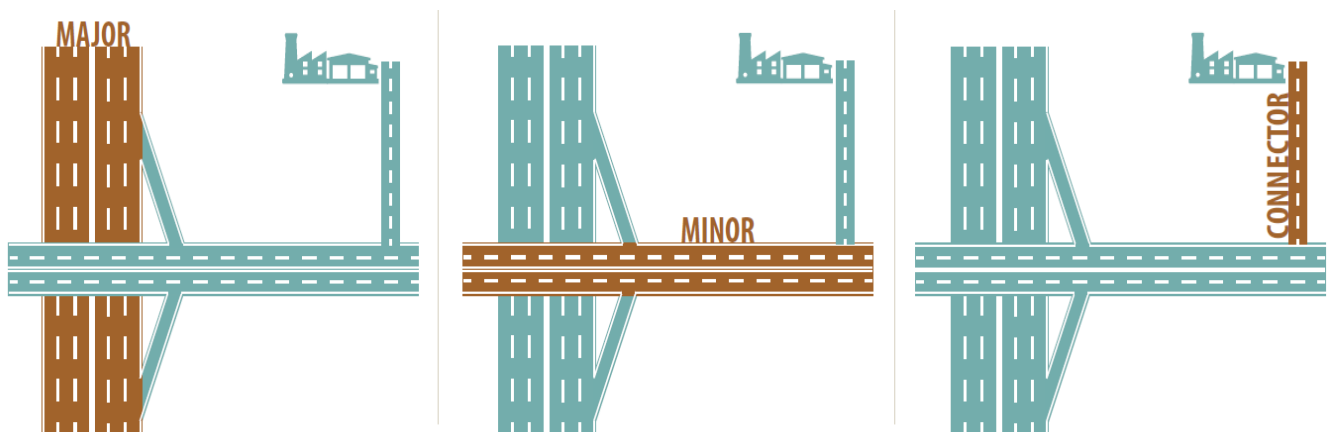
### Connector FPN Route

- Route is maintained and operated for general mixed traffic but with key intersections and segments managed/operated to facilitate safe and efficient truck movements.
- Provides connections between Minor FPN routes to intermodal freight sites.
- Routes classified in this category must be between 100 and 1,000 trucks per day and over 15% truck traffic based on best available truck count percentages AND provide a connection to an Intermodal Center.

Figure 5 illustrates the concepts of the FPN route types. Table 9 provides a summary of the facilities that qualify for CDTC's FPN including each road's FPN classification type, regional/interregional connections, nearby facilities, previous inclusion in the FPN, and average annual daily truck traffic (AADT) where available.

Figure 6 provides a map of the FPN and the facilities that fall under the Intermodal Centers, Regional Distribution Hubs, and Manufacturing Center LU (land use) typologies. Figure 7, Figure 8, and Figure 9 provide insets of the connectors at intermodal centers. Note: The NS Intermodal Terminal in Mechanicville does not have an inset because the facility is located on a Minor Route and has direct access to the FPN.

FIGURE 5: FPN ROUTE TYPE CHARACTERISTICS





## Regional Freight and Goods Movement Plan

TABLE 9: FPN ROUTE DETAILS

Route Name	FPN Class	Connection	Land Use Typologies Accessed	FPN Status	Daily Truck Count, %Trucks, AADT
<b>Interstate 88</b>	Major	West-East Local Access: Central Bridge, Schenectady Greater Access: NY Southern Tier, Western Pennsylvania	Regional Distribution Hubs	In FPN	W of Schenectady: 5,770, 37% (2005) W of Schenectady Near Schoharie: 4,080, 41% (2009)
<b>Interstate 90 (Thruway)</b>	Major	West-East Local Access: Amsterdam, Schenectady, Albany, E. Greenbush Greater Access: Finger Lakes/Buffalo, NY to West; Springfield/Boston, MA to East	Intermodal Centers Regional Distribution Hubs Manufacturing Centers	In FPN	No Truck Counts Available
<b>Interstate 890</b>	Major	West-East Local Access Only: Toll Free Local Alternative to the Thruway	Manufacturing Centers	In FPN	In Schenectady: 4,940, 21% (2009)
<b>Interstate 787</b>	Major	North-South Local Access Only: Local Alternative for Access to Downtown Albany via I-87 and SR-7	Intermodal Centers	In FPN	Near US 9 Ramp in Albany: 26,810, 29% (2011) I-787 Off Ramp to Route 7: 11,990, 20% (2007) In Cohoes: 5,170, 19% (2011)
<b>Interstate 87</b>	Major	North-South Local Access: Glens Falls, Saratoga Springs, Ballston Spa, Albany, Ravena Greater Access: Lake George, Plattsburgh, Burlington (VT), Canada to North; Kingston, New York City, Mid-Atlantic to South	Intermodal Centers Regional Distribution Hubs Manufacturing Centers	In FPN	In Wilton near Exit 16: 6,500, 25% (2006)
<b>US-4</b>	Minor	North-South Local Access Only: Connects Troy (Route 7) to Mechanicville (Route 67)	Intermodal Centers	Added to FPN	South of Mechanicville: 1,520, 27% (2010) In Waterford: 1,890, 25% (2010)
<b>US-7</b>	Minor	West-East Local Access: Schenectady, Latham, Troy, Pittstown, Boyntonville Greater Access: Vermont to East	Intermodal Centers Regional Distribution Hubs	In FPN	E of Schenectady: 4,890, 17% (2011) Btw. Albany & Hoosick: 2,860, 33% (2010)
<b>US-9</b>	Minor	North-South	Intermodal Centers	Added to	In Saratoga: 3,620, 17% (2009)



## Regional Freight and Goods Movement Plan

Route Name	FPN Class	Connection	Land Use Typologies Accessed	FPN Status	Daily Truck Count, %Trucks, AADT
		Local Access: Glens Falls, Wilton, Saratoga Springs, Ballston Spa, Malta, Albany, E Greenbush	Regional Distribution Hubs Manufacturing Centers	FPN	Near Halfmoon: 4,290, 30% (2007) Colonie/N of Albany: 4,200, 27% (2011) N of Coxsackie: 3,860, 31% (2007)
<b>Route 5S</b>	Minor	West-East Local Access: Connects Albany/I-90 through Schenectady west to Amsterdam/Utica/Western NY	Manufacturing Centers	Added to FPN	In Schenectady: 2,090, 23% (2009) Northwest of Scotia: 1,250, 25% (2011)
<b>Route 20</b>	Minor	West-East Local Access: Connects Esperance/I-88 through Albany to Nassau/I-90 Greater Access: Western Portion of NY, Lebanon Springs, Massachusetts	Intermodal Centers Manufacturing Centers	Added to FPN	SW of Schenectady: 1,220, 25% (2006) West of Albany: 8,430, 19% (2005) Western Albany: 3,530, 15% (2010)
<b>Route 50</b>	Minor	North-South Local Access Only: Saratoga Springs- Ballston Spa- Schenectady	Manufacturing Centers	In FPN	In Ballston Spa: 3,050, 19% (2011) Btw. Ballston Spa & Albany: 2,480, 19% (2011)
<b>Route 67</b>	Minor	West-East Local Access Only: Amsterdam, Ballston Spa, Mechanicville	Intermodal Centers Regional Distribution Hubs Manufacturing Centers	Added to FPN	In Amsterdam: 1,670, 23% (2010) Btw. Malta & Mechanicville: 2,090, 50% (2007)
<b>Route 146 (Niskayuna to Mechanicville)</b>	Minor	North-South/West-East Local Access: Connects Schenectady/ Niskayuna through Rexford to Clifton Park and I-87/US-9	Intermodal Centers:	Added to FPN	Between Rexford and Clifton Park: 3,950, 24% (2011) No Truck Counts Available (Between Clifton Park/Mechanicville) AADT: 10,210 – 16,400 (2013)
<b>Route 146 (Guilderland Loop)</b>	Minor	West-East Local Access: Guilderland and Route 20	Regional Distribution Hub	Added to FPN	NW of Guilderland Center: 3,010, 28% (2011) NE of Guilderland Center: 6,980, 52% (2010)
<b>Route 158 (Guilderland Loop)</b>	Minor	West-East Local Access: Guilderland and Route 20	Regional Distribution Hub	Added to FPN	NW of Guilderland Center: 1,315, 28% (2009)
<b>Route 787/ Route 32</b>	Minor	North-South Local Access Only: Connects I-787 to Route 4 via Green Island and Waterford	Intermodal Centers Manufacturing Centers	Added to FPN	Access to Bridge Ave: 4,990, 22% (2011) Access to Tibbets Ave: 6,050, 20% (2011) Access to Dyke Ave: 5,260, 19% (2011)



## Regional Freight and Goods Movement Plan

Route Name	FPN Class	Connection	Land Use Typologies Accessed	FPN Status	Daily Truck Count, %Trucks, AADT
<b>Route 912M/NYS Berkshire Connector</b>	Minor	West-East Local Access Only: Connects I-87 to I-90	Intermodal Centers	In FPN	No Truck Counts Available AADT: 12,900 – 16,000 (2013)
<b>Ballard Road</b>	Minor	West-East Local Access Only: Connects Rte 9 to I-87	Regional Distribution Hubs	Added to FPN	No Truck Counts Available AADT: 8,400 (2013)
<b>Route 396/ Maple Ave &amp; Route 55/ Creble Road</b>	Connector	West-East Local Access Only: Connects Selkirk Rail Yards to I-87	Intermodal Centers	In FPN	In Selkirk (Btw 9 & 87): 580, 34% (2009)
<b>Albany Shaker Road</b>	Connector	North-South Local Access Only: Route 7 and I-87 Access to Facilities Near Albany International Airport	Intermodal Centers	In FPN	No Truck Counts Available AADT North of Watervliet Shaker Rd: 5,500 (2013) AADT South of Watervliet Shaker Rd: 24,438 (2013)
<b>Route 155 (Old Wolf Road)</b>	Connector	North-South Local Access Only: Connects I-87 and Albany International Airport properties. Also provides non-interstate connection to east from the Airport.	Intermodal Centers	Added to FPN	Segment Stemming North from I-87: 1,930, 27% (2007)
<b>South Seventh/Boat Street</b>	Connector	North-South Local Access Only: From Highways in Downtown Albany to the Port of Albany/Rensselaer and CP Kenwood Yard	Intermodal Centers	In FPN	No Truck Counts Available AADT: 1,380 (2013)
<b>Stewart Port Expressway</b>	Connector	North-South Local Access Only: From US-20/US-9 to the Rensselaer side of the Port of Albany	Intermodal Centers	In FPN	South of US-9/US-20: 1,259 (2006)
<b>Route 32</b>	Connector	North-South Local Access Only: Connects I-87 and I-787 to Port of Albany/Rensselaer and CP Kenwood Yard	Intermodal Centers	Added to FPN	No Truck Counts Available AADT: 9,160 – 10,950 (2013)
<b>Route 144</b>	Connector	North-South Local Access Only: Connects I-87 to Port of Coeymans	Intermodal Centers	Added to FPN	South of Port of Coeymans: 400, 32% (2009)

**CAPITAL REGION  
FREIGHT PRIORITY NETWORK (FPN)**

**LEGEND**

**Land Use Typology**

- Intermodal Center
- Distribution Hub
- Manufacturing Center

**FPN Route Typology**

- Major
- Minor
- Connector
- Rail (Classes 1-3)
- NY Canal System
- Water
- CDTC Boundary
- Marine Highway
- Seaport
- Airport

The map displays the Capital Region Freight Priority Network (FPN) across four counties: Saratoga, Schenectady, Albany, and Rensselaer. The network includes major roads (Interstates 190, 87, 90, 88, 28, 71, 146, 156, 148, 147, 145, 144, 143, 142, 141, 140, 139, 138, 137, 136, 135, 134, 133, 132, 131, 130, 129, 128, 127, 126, 125, 124, 123, 122, 121, 120, 119, 118, 117, 116, 115, 114, 113, 112, 111, 110, 109, 108, 107, 106, 105, 104, 103, 102, 101, 100, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90, 89, 88, 87, 86, 85, 84, 83, 82, 81, 80, 79, 78, 77, 76, 75, 74, 73, 72, 71, 70, 69, 68, 67, 66, 65, 64, 63, 62, 61, 60, 59, 58, 57, 56, 55, 54, 53, 52, 51, 50, 49, 48, 47, 46, 45, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0), minor roads, and connectors. The network also includes rail lines (Classes 1-3), the NY Canal System, and water bodies. The CDTC Boundary is shown as a thick black line. The map also includes symbols for Marine Highway, Seaport, and Airport. The map is color-coded by land use typology: Intermodal Center (dark blue), Distribution Hub (teal), and Manufacturing Center (light blue). The map also shows the Hudson River, the Albany-Schenectady Canal, and the Albany-Schenectady Expressway. The map is titled "CAPITAL REGION FREIGHT PRIORITY NETWORK (FPN)" and includes a legend.



**FIGURE 7: FPN INSET OF THE ALBANY INTERNATIONAL AIRPORT CONNECTOR FACILITIES**



FIGURE 8: FPN INSET OF THE PORT OF ALBANY/RENSSELAER CONNECTOR FACILITIES

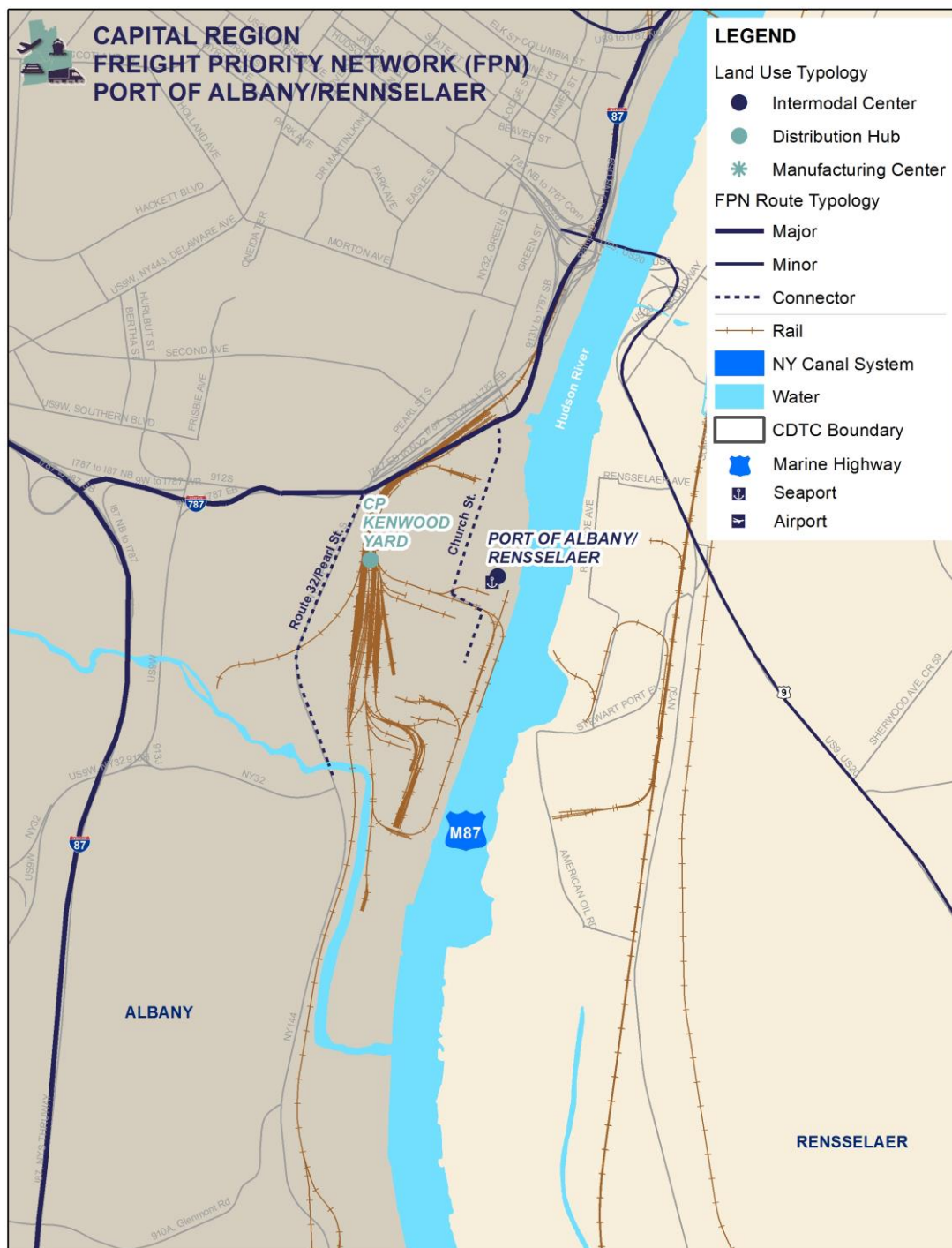
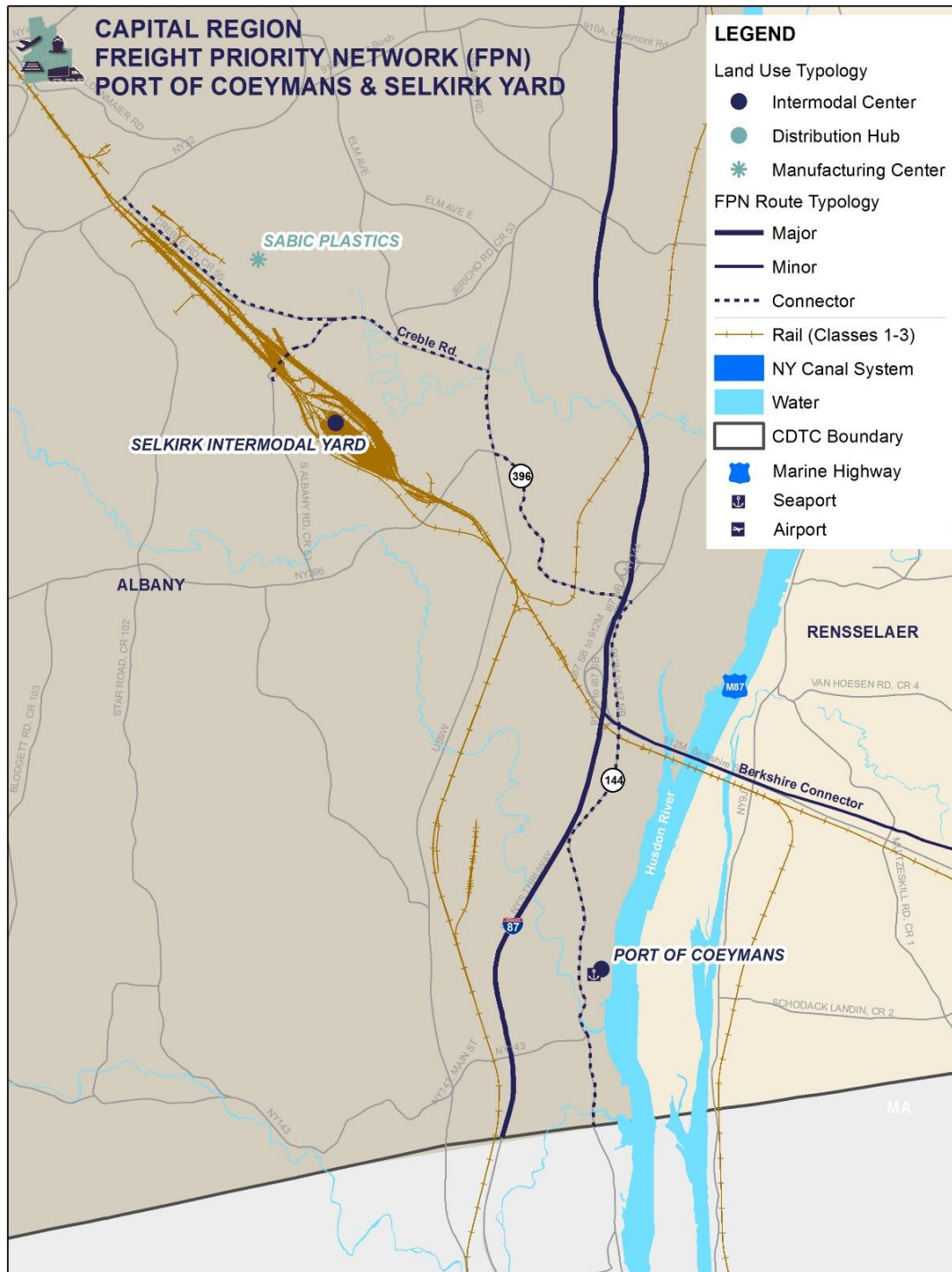


FIGURE 9: FPN INSET OF THE PORT OF COEYMANS & SELKIRK YARD CONNECTOR FACILITIES





## Applying the Land Use and Freight Typologies

Managing freight efficiently and effectively may have different implications for shippers than for local governments. From the shipper's perspective, the most effective system will minimize total logistics costs without adversely affecting timely delivery of products. Municipalities with freight generating activities similarly want to facilitate the efficiency of the system to support their shipping industries, but municipal boards also have the responsibility to balance this desire with the need for the safety and welfare of the general public. Further, because the freight network is primarily connected via a regional road network, local governments have a responsibility to work cooperatively at a regional-level to foster the safest, most effective network. Finding the balance between moving goods effectively and safely requires a high level of coordination between the public and private sectors.

Eighty-five percent of all roads in NYS are the responsibility of the county and local governments. Municipal Home Rule in NYS allows communities to exercise a large degree of autonomy, including local control of property taxes, land use controls, infrastructure investments, and roadways. Understanding the implications of local land use decisions on regional freight networks will help local decision-makers receive more positive impacts from the growth of freight at both local and regional levels. NYS Vehicle and Traffic Law (Articles 36-41, pp. 1610-1671) and Municipal Home Rule Law allow municipalities to regulate their own roads so long as they adhere to NYS constitutional law.

Local governments have the responsibility to develop policies and regulations to ensure that various land uses along the FPN can coexist without conflict. For example, it is generally inappropriate for a residential subdivision to be located adjacent to a Manufacturing Center that generates significant truck traffic and noise. Similarly, planners and decision-makers should carefully consider the appropriateness of locating an Intermodal Center near a major commercial area that already generates significant personal vehicle travel. Given Municipal Home Rule Law, the municipalities of the Capital Region should employ a Comprehensive Planning process to understand how their plans and policies relate to the FPN. When freight-related uses are identified through this process, municipalities should then establish integrated policies and regulations to balance potential freight's negative impacts with economic vitality and quality of life. As discussed in the following section, both regulatory and planning tools are available to aid municipalities in understanding and mitigating land use conflicts.

## Regulatory Tools

Some of the regulatory tools available to municipalities include road use agreements (RUAs), local truck routes, community benefit agreements (CBAs), freight overlay districts, light and noise pollution controls, special tax districts, and other local policy approaches:

- **Road Use Agreements:** RUAs are voluntary, negotiated agreements entered into by a municipality and freight intensive businesses that hold the business accountable for road damage caused by their operations. RUAs are often a gesture to garner support for the business entering the agreement.





- **Local Truck Routes:** Local truck route designations are a systematic approach to identifying appropriate trucking routes in a municipality. The municipality, by inventorying road capacity and adjacent land uses determines a preferred route. Such a proactive approach can be more sensitive to local needs than a route determined strictly by market forces.
- **Community Benefit Agreements:** CBAs involve negotiations between a municipality and an applicant proposing a project dependent on public infrastructure, rezoning, or buy-in. CBAs negotiations typically occur when a project requires buy-in from both public and private sectors.
- **Zoning- Freight Overlay Districts:** Creating freight overlay districts in the zoning policy will preserve established freight facilities and routes. Much like agricultural district overlays, freight overlays make potential neighbors aware of existing uses and prevent avoidable nuisance litigation.
- **Light and Noise Pollution Controls:** Light and noise pollution controls help mitigate the spillover effect from freight facilities. Requiring downwards facing, shielded lights, and designating quiet times will allow freight facilities to better integrate into the community. Orienting loading facilities away from neighboring parcels and providing buffers can minimize negative aesthetic, noise, and pollution impacts on residents.
- **Special Tax Districts:** By creating special tax districts within industrial clusters, special taxes can cover additional roadway repairs, snow removal, and other infrastructure improvements specifically related to freight.
- **Other Local Policy Approaches:** Other approaches include limitations on building size, prohibiting trucks on certain routes, prohibiting truck traffic at certain hours on specific facilities, requiring permits for oversized vehicles, requiring truck traffic generation studies as part of development review process, etc.

## Planning Tools

Local, county, and regional agencies can employ various planning tools to more effectively coordinate freight and land use. These tools include freight-related traffic impact analysis, off-peak delivery programs, vegetated buffer zones, freight clusters, collaborative crossing improvements, FPN-centric growth, industrial infill incentives, delivery consolidation programs, and other context-sensitive design specifications. Each of these planning concepts requires cooperation and collaboration between the public and private sector sides of freight operations:

- **Freight Related Traffic Impact Analysis:** Traffic impact analysis is a common practice in site plan review. However, the analysis rarely includes truck movements, instead focusing on site-generated automobile traffic volume. Municipal planning regulations can be modified to include studies of truck movements for regional distribution and suburban commercial centers.
- **Off-Peak Delivery Programs:** Urban business districts that suffer from congestion during regular business hours may benefit from off-peak incentives to businesses and freight operators. The municipality or business improvement district can extend the legal hours of operation to facilitate the program.



- **Vegetated Buffer Zones:** Buffering freight facilities and routes with vegetation, natural features, and berms can prevent complaints about aesthetics and noise.
- **Freight Clusters:** Clustering freight facilities requires municipal cooperation and planning but can save money for freight operators and consolidate the negative impacts on communities.
- **Collaborative Crossing Improvements:** Municipalities can partner with freight operators to site and fund safer crossings.
- **FPN-Centric Growth:** Municipalities can encourage freight facility development and growth around FPN facilities to ensure direct access to the regional system.
- **Industrial Infill Incentives:** Municipalities can encourage growth on underutilized industrial sites and/or vacant sites by offering incentives to locate in these areas.
- **Delivery Consolidation Programs:** In more urbanized areas, trucks may experience difficulties when utilizing local roads of smaller dimensions or in local commuter congestion. To avoid truck traffic on these smaller local roads, delivery consolidation points can collect goods and materials for micro-distribution rather than requiring heavy truck movement.
- **Other Context-Sensitive Design Specifications:** Additional freight-related planning considerations include road design/curb cuts, delivery area specifications, coordination of adjacent land uses in the Comprehensive Plan, etc.

Creatively addressing freight at a community level requires a dialogue between the freight industry and public decision-makers, as well as community outreach, to instill a common understanding of the issues surrounding freight. By acknowledging that freight is necessary to support businesses and people and reviewing these types of planning tactics, local communities can foster positive growth patterns.

## Land Use and Freight Typology Planning Toolbox

As transportation-dependent industries such as manufacturing and warehouse/distribution grow, municipal decision-makers -- particularly planning and zoning boards -- have an opportunity to help guide freight movement throughout the region through regulatory and planning strategies. Further, the nature of a freight movement system requires an intact network of facilities that extends beyond municipal boundaries and is considered on a regional scale. Communication and collaboration between neighboring municipalities, therefore, must also occur as these regulatory and planning practices come into play. The summary in Table 10 provides a toolbox for local governments to consider when coordinating or reviewing freight-generating activities.



## Regional Freight and Goods Movement Plan

TABLE 10: LAND USE POLICIES AND REGULATIONS RELATED TO THE FREIGHT NETWORK

Typology	Regulatory Tools	Planning Tools
<b>Intermodal Center</b>	<ul style="list-style-type: none"> <li>• RUAs</li> <li>• Freight Overlay District</li> <li>• Light/Noise Pollution Controls</li> <li>• Special Tax Districts</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetated Buffer Zones</li> <li>• Freight Clusters</li> <li>• Collaborative Crossing Improvements</li> <li>• FPN-Centric Growth</li> <li>• Industrial Infill Incentives</li> <li>• Coordination of Adjacent Land Uses in the Comprehensive Plan</li> <li>• Require Truck Traffic Studies in the Review Process</li> </ul>
<b>Regional Distribution Hub</b>	<ul style="list-style-type: none"> <li>• RUAs</li> <li>• Local Truck Routes</li> <li>• CBAs</li> <li>• Light/Noise Pollution Controls</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetated Buffer Zones</li> <li>• Freight Clusters</li> <li>• Collaborative Crossing Improvements</li> <li>• FPN-Centric Growth</li> <li>• Industrial Infill Incentives</li> <li>• Coordination of Adjacent Land Uses in the Comprehensive Plan</li> <li>• Require Truck Traffic Studies in the Review Process</li> </ul>
<b>Manufacturing Center</b>	<ul style="list-style-type: none"> <li>• RUAs</li> <li>• CBAs</li> <li>• Freight Overlay District</li> <li>• Light/Noise Pollution Controls</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetated Buffer Zones</li> <li>• Freight Clusters</li> <li>• FPN-Centric Growth</li> <li>• Industrial Infill Incentives</li> <li>• Coordination of Adjacent Land Uses in the Comprehensive Plan</li> </ul>
<b>Suburban Commercial Center</b>	<ul style="list-style-type: none"> <li>• Local Truck Routes</li> <li>• Building Square Footage Limits</li> </ul>	<ul style="list-style-type: none"> <li>• Off-Peak Delivery Programs</li> <li>• Delivery Consolidation Programs</li> <li>• Limit Curb Cuts</li> <li>• Delivery Area Specifications</li> <li>• Building Design Features</li> <li>• Require Truck Traffic Studies in the Review Process</li> </ul>
<b>Urban Core</b>	<ul style="list-style-type: none"> <li>• Local Truck Routes</li> <li>• Prohibit Trucks by Route and/or Time of Day</li> <li>• Permits for Oversized Vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Off-Peak Delivery Programs</li> <li>• Delivery Consolidation Programs</li> <li>• Limit Curb Cuts</li> <li>• Delivery Area Specifications</li> <li>• Building Design Features</li> </ul>





## CHAPTER 5: EXISTING CONDITIONS, TRENDS, AND FORECASTS

Providing a transportation system that facilitates cost-effective freight mobility requires an understanding of supply chain and logistics behaviors and an evaluation of existing freight movement patterns. Forecasts suggest that NYS's economic growth will significantly increase the volume of freight moved within the state. In NYS, projections suggest that commodity flows will grow from 827 million annual tons to nearly 1.4 billion annual tons, a 68% increase, between 2012 and 2040. This Chapter provides details on freight movements in NYS as a whole, existing and predicted socioeconomic and freight trends in the CDTC Region, and an analysis of infrastructure and commodity flows by mode.

### Statewide Conditions

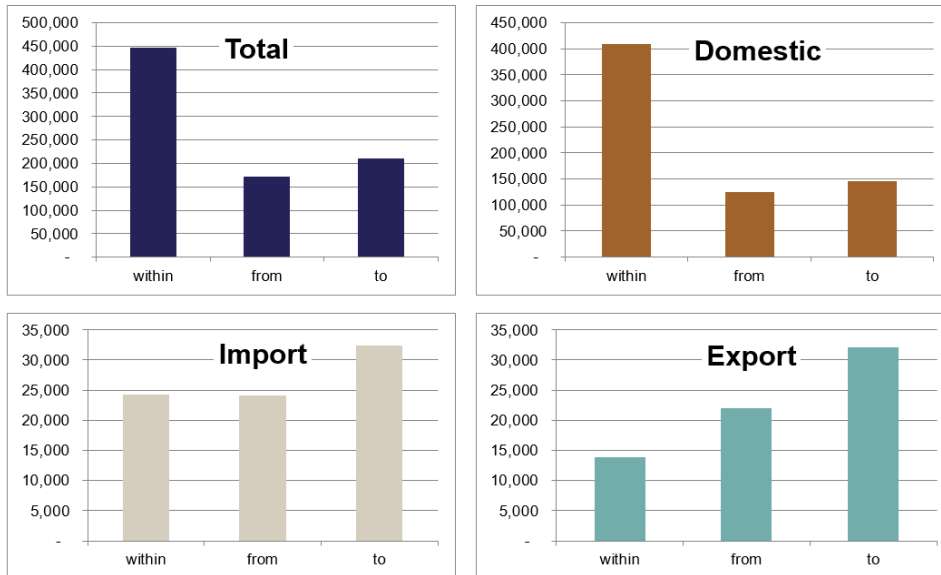
According to data derived from the Federal Highway Administration's (FHWA) Freight Analysis Framework, Version 3 (FAF3), about 54% of all NYS freight movements were moved within the State in 2012. One-quarter of all movements were to the State, and the remaining 21% of all movements were moved from the State.<sup>8</sup>

Figure 10 details the NYS freight movements by trade type. The import and export movements shown in Figure 11 are the domestic part of the import or export movement (i.e., the domestic origin and domestic destination). These percentage shares by trade types can vary significantly by state. For example, in California 76% of total movements are within the State as compared to 54% for NYS, and in Utah 85% of import-related movements are moves to the State, compared to 40% for NYS.

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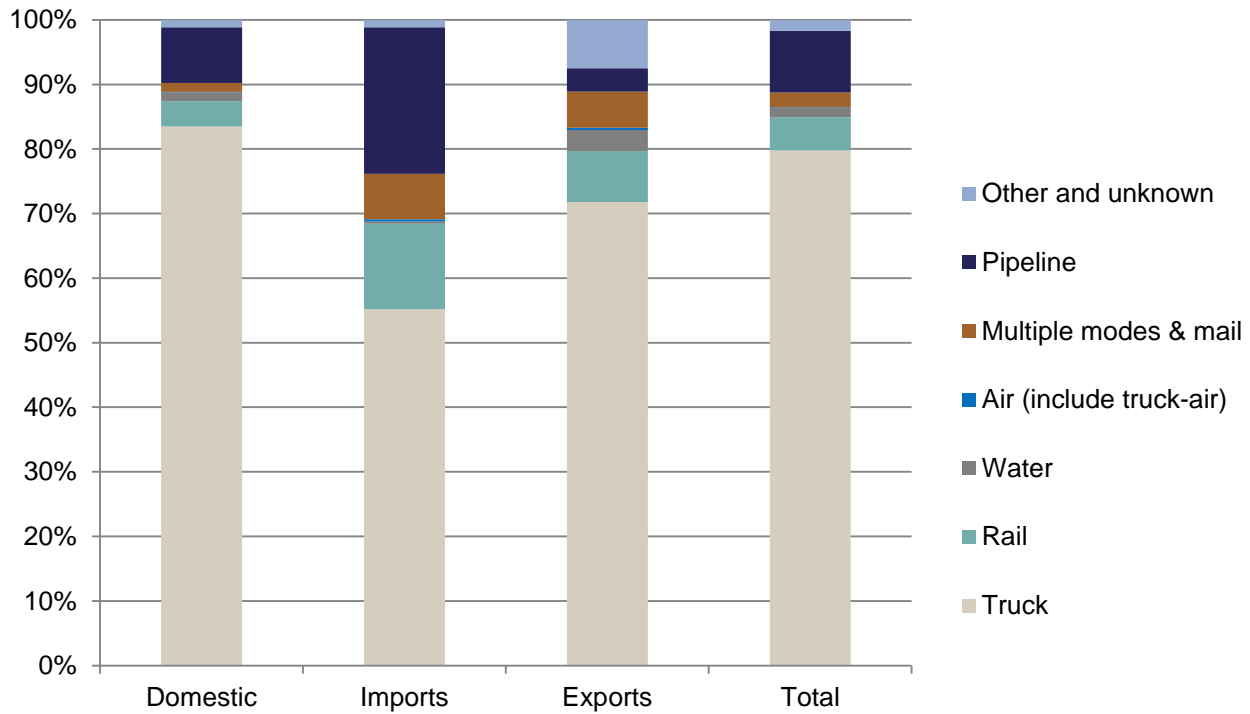
<sup>8</sup> Data on the amount or proportion of freight moving through NYS (without a NYS origin or destination) must be derived from several different sources and could not be analyzed for this report. The pending NYSDOT Freight Transportation Plan will include more detailed information such through freight traffic.

FIGURE 10: FREIGHT MOVEMENT IN NEW YORK STATE BY TYPE (2012), SOURCE: FAF3



According to the FAF3 data, trucks moved about 80% of all NYS freight movements in 2012, illustrating the importance of trucking in the State. The majority of all types of movements occur by truck, with 84%, 55%, and 72% of domestic, import and export movements, respectively, moving via truck. As shown in Figure 11, truck is the dominant mode, especially for domestic movements, but rail and pipeline also carry substantial shares of all movements. Rail and pipeline play the largest role in import movements with 13% and 23% of total tons, respectively, moved to the State.

FIGURE 11: MODE SHARES OF FREIGHT MOVEMENT IN NEW YORK STATE (2012), SOURCE: FAF3

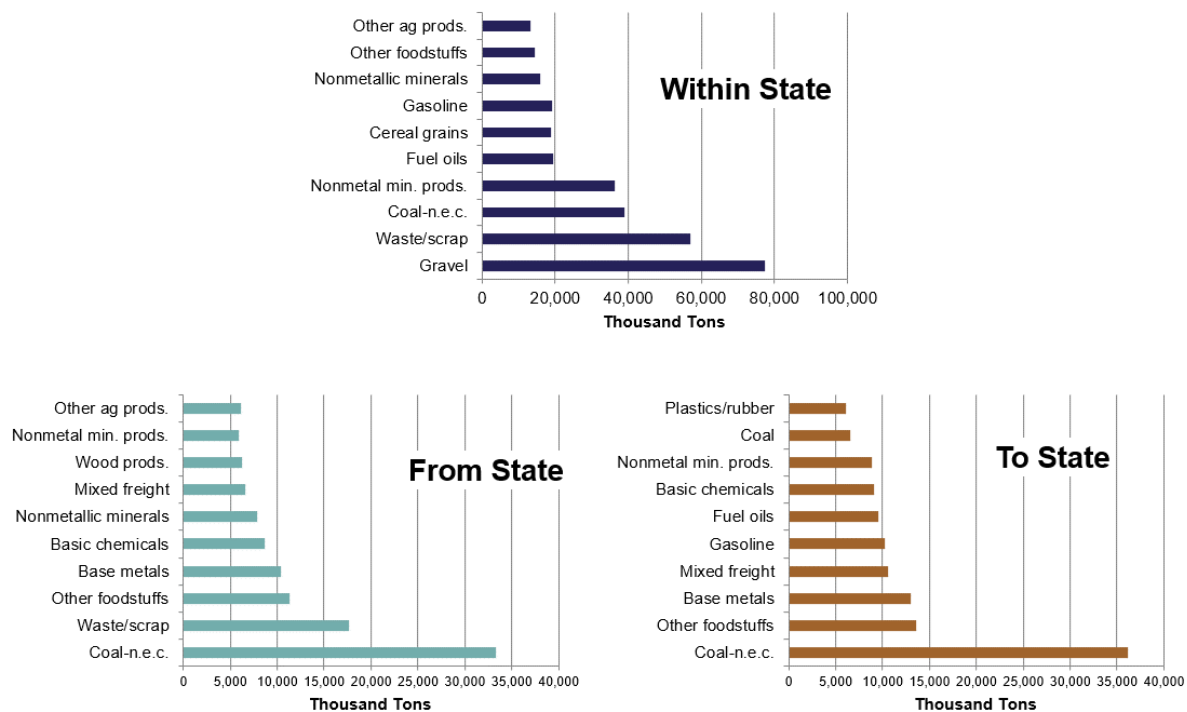




## Regional Freight and Goods Movement Plan

Figure 12 shows the top 10 commodities (by weight) for different trade type movements for the State. Commodity classification is based on the Standard Classification of Transported Goods Commodity Codes (SCTG2) used in the U.S. Bureau of Transportation Statistics Commodity Flow Survey. Most of these are bulk natural resources. The top commodities moved (by tonnage) within and to/from NYS are Gravel and Coal n.e.c. (not elsewhere classified) (SCTG Commodity Code 12) and Petroleum Products (SCTG Commodity Code 19). Petroleum products are moved primarily by pipeline. There is a network of pipelines throughout the State that transport gasoline, propane, LNG, and home heating oil from out-of-state refineries to distribution terminals within NYS. Origins include Pennsylvania, New Jersey, Texas, California, Louisiana, and Oklahoma. Coal used for electric generation in NYS is primarily sourced from Pennsylvania and the Powder River Basin in Wyoming.

FIGURE 12: FREIGHT MOVEMENT IN NEW YORK STATE – TOP COMMODITIES (2012), SOURCE: FAF3





## Regional Conditions

An important first step in determining regional relationships between freight and land use is to identify regional population and employment trends. These trends and forecasts highlight long-range land use and transportation planning needs to guide network resources.

### Population

Population projections developed by the CDRPC expect the region's population base to grow at a moderate rate. Likewise, the agency predicts employment opportunities will continue to emerge with developing Tech Valley initiatives. Forecasts suggest that the region's four counties will collectively experience a 6% increase in population. Table 11 shows the county forecasts for the region.

TABLE 11: 2010-2030 CDTC REGION POPULATION TRENDS, SOURCE: CDRPC

County	2010 Population	2030 Forecast	Forecasted % Change
Albany	304,204	316,018	3.9%
Rensselaer	159,429	163,685	2.7%
Saratoga	219,607	246,253	12.1%
Schenectady	154,727	162,117	4.8%
CDTC Region Total	837,967	888,073	6.0%

CDRPC's forecasts suggest the largest population percent increases in Saratoga County, with 12% growth projected between 2010 and 2030. The largest predicted absolute increase in population is also in Saratoga County, which is expected to gain over 26,646 residents in the 20-year period. At the local level, the top five growing municipalities in the region by percent are each located in Saratoga County. This similar trend holds true for absolute value increases with the exception of the Town of Colonie. The Town of Colonie is located in the northeast region of Albany County along the I-87 corridor and in close proximity to the growing SUNY Polytechnic Institute Colleges of Nanoscale Science and Engineering. Table 12 lists the top five municipalities by each percent and absolute growth for the CDTC region.

TABLE 12: 2010-2030 MUNICIPALITY GROWTH, SOURCE: CDRPC

Top 5 Municipalities by Percent Change				Top 5 Municipalities by Absolute Change			
Municipality	2010	2030	Change	Municipality	2010	2030	Change
Town of Wilton	16,173	19,652	21.5%	Town of Clifton Park	36,705	41,252	4,547
Town of Halfmoon	21,535	25,269	17.3%	Town of Colonie	81,591	85,678	4,087
Town of Malta	14,765	17,151	16.2%	Town of Halfmoon	21,535	25,269	3,734
Town of Providence	1,995	2,306	15.6%	Town of Wilton	16,173	19,652	3,479
Town of Ballston	9,776	11,141	14.0%	City of Saratoga Springs	26,586	29,027	2,441



## Employment

The NYS Department of Labor forecasts that the CDTC region will gain nearly 69,000 jobs between 2012 and 2022, an increase of 12% over the ten year period. The greatest increases in employment will be in “Arts, Entertainment and Recreation”, “Accommodation and Food Services” and “Professional and Business Services”.

Taking a closer look at those industries that have a greater dependency on the freight network, forecasts show modest employment gains between 2012 and 2022. The top three industries in terms of percentage change include “Mining”, “Agriculture, Forestry, Fishing and Hunting”, and “Transportation and Warehousing”. This trend is likely a reflection of a growing population and employment base. Of particular interest within the “Transportation and Warehousing” category is the sub-category “Warehousing and Storage”, which has an anticipated growth of nearly 22%. “Rail Transportation” also indicates a 10% increase, while “Truck Transportation” outpaces this in absolute values with an anticipated additional 320 new jobs over the ten year period, about a third more than “Rail Transportation.” A summary of employment projects is located in Table 13.

TABLE 13: 2012-2022 LONG-TERM INDUSTRY EMPLOYMENT PROJECTIONS, SOURCE: NYS DEPT. OF LABOR

NAICS	Industry Title	Employment		Net Change	Percent Change
		2012	2022		
	Total All Industries	570,150	638,830	68,680	12.0%
<b>11</b>	<b>Agriculture, Forestry, Fishing and Hunting</b>	<b>3,090</b>	<b>3,520</b>	<b>430</b>	<b>13.9%</b>
<b>112</b>	Animal Production	1,830	2,310	480	26.2%
<b>21</b>	<b>Mining</b>	<b>710</b>	<b>810</b>	<b>100</b>	<b>14.1%</b>
<b>212</b>	Mining (except Oil and Gas)	710	810	100	14.1%
<b>31</b>	<b>Manufacturing</b>	<b>31,060</b>	<b>34,500</b>	<b>3,440</b>	<b>11.1%</b>
<b>321</b>	Wood Product Manufacturing	800	900	100	12.5%
<b>334</b>	Computer and Electronic Product Manufacturing	2,920	5,570	2,650	90.8%
<b>42</b>	<b>Wholesale Trade</b>	<b>15,660</b>	<b>17,020</b>	<b>1,360</b>	<b>8.7%</b>
<b>423</b>	Merchant Wholesalers, Durable Goods	8,610	9,560	950	11.0%
<b>44</b>	<b>Retail Trade</b>	<b>58,800</b>	<b>64,290</b>	<b>5,490</b>	<b>9.3%</b>
<b>441</b>	Motor Vehicle and Parts Dealers	6,570	7,300	730	11.1%
<b>442</b>	Furniture and Home Furnishings Stores	1,780	2,060	280	15.7%
<b>443</b>	Electronics and Appliance Stores	1,840	2,070	230	12.5%
<b>444</b>	Building Material and Garden Equipment and Supplies Dealers	5,800	6,440	640	11.0%
<b>446</b>	Health and Personal Care Stores	4,220	4,970	750	17.8%
<b>452</b>	General Merchandise Stores	10,630	12,390	1,760	16.6%
<b>48</b>	<b>Transportation and Warehousing</b>	<b>12,810</b>	<b>14,560</b>	<b>1,750</b>	<b>13.7%</b>
<b>4821</b>	Rail Transportation	1,350	1,550	200	14.8%
<b>484</b>	Truck Transportation	3,240	3,560	320	9.9%
<b>493</b>	Warehousing and Storage	3,020	3,680	660	21.9%





## Major Industries

While the overall employment projections for the region are relatively modest, the freight-related industries outpace employment projections at the State level in terms of percentage growth. Table 14 summarizes the Capital Region's growth compared to all of NYS. Most of the growth is concentrated on the outer edges of the urban cores and along the I-87 corridor.

**TABLE 14: 2012-2022 LONG-TERM INDUSTRY EMPLOYMENT PROJECTIONS: CAPITAL REGION & NEW YORK STATE, SOURCE: NYS DEPT. OF LABOR**

Industry	Capital Region	New York State
<b>Agriculture, Forestry, Fishing, and Hunting</b>	13.9%	7.0%
<b>Mining</b>	14.1%	-7.2%
<b>Manufacturing</b>	11.1%	0.1%
<b>Wholesale Trade</b>	8.7%	4.1%
<b>Retail Trade</b>	9.3%	8.3%
<b>Transportation and Warehousing</b>	13.7%	7.2%

Table 15 provides the location quotient for Albany, Rensselaer, Schenectady, and Saratoga counties compared to NYS and the United States as a whole. A location quotient (LQ), derived from the United States Bureau of Economic Analysis data, is an analytical statistic that measures a region's industrial specialization relative to a larger geographic unit (usually the nation). An LQ is computed as an industry's share of a regional total for some economic statistic (e.g., earnings, gross domestic product [GDP] by metropolitan area, employment, etc.) divided by the industry's share of the national total for the same statistic.<sup>9</sup> An LQ value of greater than one indicates that the industry is stronger within the CDTC region compared to either NYS or the country as a whole. An LQ value lower than one indicates the opposite.

Table 15 highlights LQs over one to illustrate the CDTC region's strongest industry sectors. "Administrative and Waste Services," "Manufacturing," "Wholesale Trade," and "Transportation and Warehousing" are major industries in the region as compared to national industry trends. For example, a variety of local "Manufacturing Centers" (see *Chapter 4 on land use typologies*) such as General Electric, Glenville Business and Technology Park, Global Foundries, SI Group, SABIC Innovative Plastics, Green Island Industrial Park, Watervliet Arsenal/Arsenal Business Tech, Momentive Performance Material, and other smaller scale manufacturers generate significant traffic in the region. With regard to "Transportation and Warehousing," the Albany area contains a variety of major "Distribution Hubs" (see *Chapter 4 on land use typologies*), including those operated by Golub, Galesi, Ace, Target, and other smaller scale distribution entities. These two industries drive a significant amount of the freight moving in, out, and throughout the Capital District.

<sup>9</sup> Bureau of Economic Analysis, Frequently Asked Questions, [http://www.bea.gov/faq/index.cfm?faq\\_id=478](http://www.bea.gov/faq/index.cfm?faq_id=478)



## Regional Freight and Goods Movement Plan

Relative to NYS, predominant industries include “Real Estate and Rental and Leasing,” “Information,” “Administrative and Waste Services,” and “Wholesale Trade.” “Transportation and Warehousing,” though not as strong as the national LQ, is also a significant industry compared to State industry trends.

BEA does not report agricultural employment information; however, it is also evident that the agriculture industry is growing in the CDTC region. The CREDC reported that agriculture products experienced a 30% increase in market value from 2007 to 2012 and 40% increase in average product value per farm. In 2012, the region had 515 farms with sales over \$100,000 and 164 farms with sales over \$500,000.<sup>10</sup> Almost 220 square miles of the CDTC area are designated agriculture land uses, constituting 10% of the overall region’s landmass. Figure 4 (in Chapter 4) shows the existing land uses in the CDTC region to illustrate concentrations of agriculture and industrial land uses, as these land uses generate a significant amount of freight-related transportation.

TABLE 15: CAPITAL REGION LOCATION QUOTIENTS, BEA (2013)

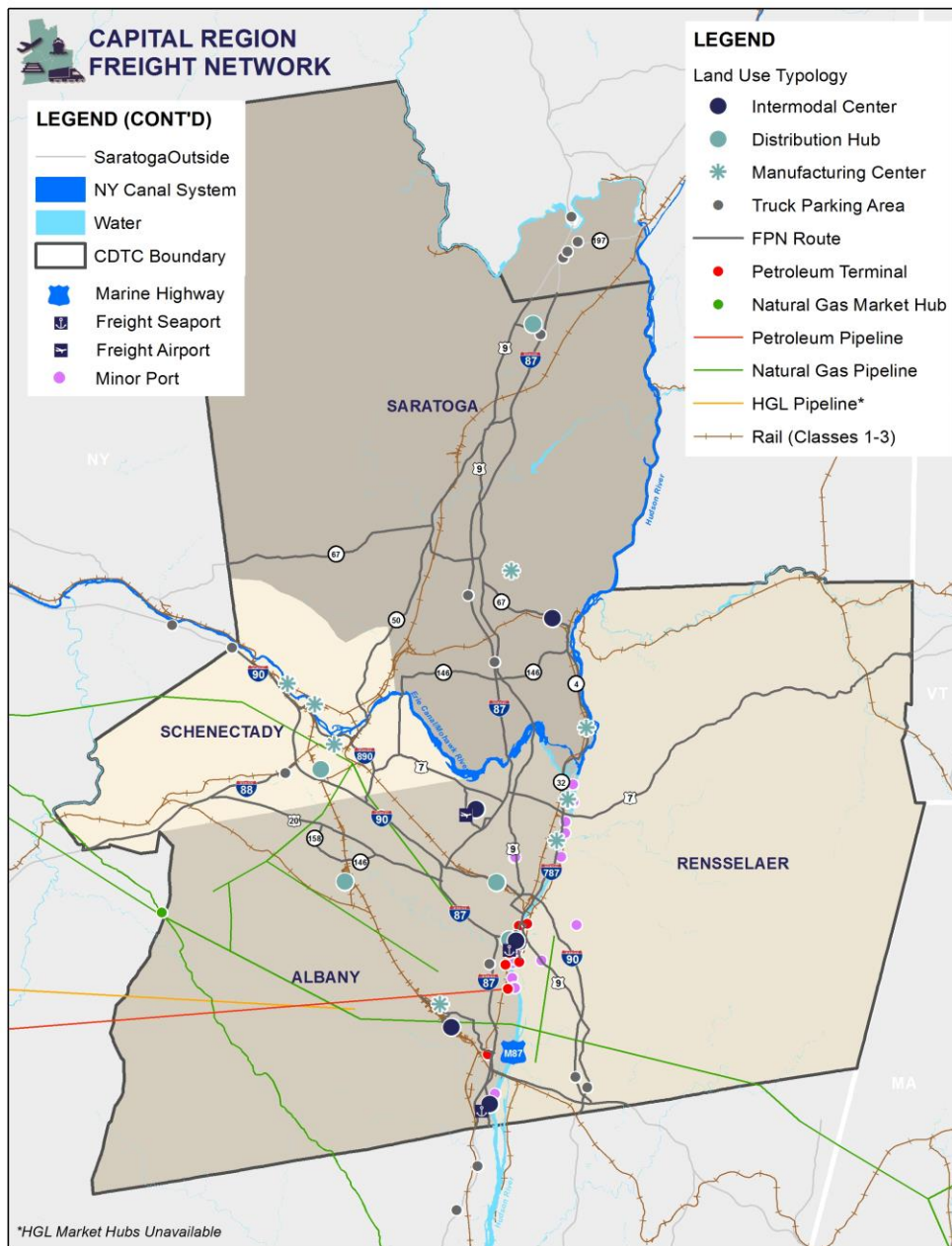
Industry	Capital Region	
	US	NY
Base Industry: Total, all industries	1.00	1.00
NAICS 11 Agriculture, forestry, fishing and hunting	ND	ND
NAICS 21 Mining, quarrying, and oil and gas extraction	ND	ND
<b>NAICS 23 Construction</b>	<b>1.03</b>	0.89
<b>NAICS 31-33 Manufacturing</b>	<b>1.45</b>	0.84
<b>NAICS 22 Utilities</b>	<b>1.10</b>	<b>1.12</b>
<b>NAICS 42 Wholesale trade</b>	<b>1.43</b>	<b>1.29</b>
NAICS 44-45 Retail trade	0.93	0.88
<b>NAICS 48-49 Transportation and warehousing</b>	<b>1.27</b>	<b>1.03</b>
<b>NAICS 51 Information</b>	0.96	<b>1.42</b>
<b>NAICS 52 Finance and insurance</b>	0.83	<b>1.12</b>
<b>NAICS 53 Real estate and rental and leasing</b>	<b>1.20</b>	<b>1.68</b>
NAICS 54 Professional and technical services	0.80	0.93
NAICS 55 Management of companies and enterprises	0.89	0.91
<b>NAICS 56 Administrative and waste services</b>	<b>1.61</b>	<b>1.35</b>
NAICS 61 Educational services	0.43	0.80
NAICS 62 Health care and social assistance	0.84	0.99
<b>NAICS 71 Arts, entertainment, and recreation</b>	<b>1.05</b>	<b>1.22</b>
<b>NAICS 72 Accommodation and food services</b>	<b>1.13</b>	0.98
<b>NAICS 81 Other services, except public administration</b>	0.78	<b>1.00</b>
<b>NAICS 99 Unclassified</b>	0.86	<b>2.35</b>

<sup>10</sup> <http://regionalcouncils.ny.gov/themes/nyopenrc/rc-files/capitalregion/CRREDC-2014PR.pdf>

## Infrastructure

Figure 13 provides an overview of the Capital Region's existing multimodal freight infrastructure system, including all significant roadways, railways, waterways, air services, and industrial hubs.

**FIGURE 13: FREIGHT ROADWAYS, RAILWAY, WATERWAY, AIRWAY, PIPELINE, AND LAND USE FEATURES IN THE CDTC REGION**





### Freight Flow

The overall CDTC freight flow analysis involves a variety of data sources. The Freight Analysis Framework (FAF) zone established by the Federal Highway Administration (FHWA) for the Albany area fully encompasses the CDTC region and is, in fact, somewhat more expansive than the CDTC region. However, the freight movement trends (by value and tons) for the entire FAF zone is generally representative of the movements within the CDTC region. FAF data informs the highway, rail, ports/waterways, air cargo, and pipeline analyses in this Chapter.

Data from the BEA - entitled the Public Use Waybill Sample - is a useful supplement to FAF data for the analysis of freight rail flows. The Albany BEA zone, contrary to both the CDTC and FAF regions, includes Albany, Rensselaer, Saratoga, Schenectady, and Schoharie Counties. The variation in these boundaries to provide a full understanding of each data source area is provided in Figure 14.

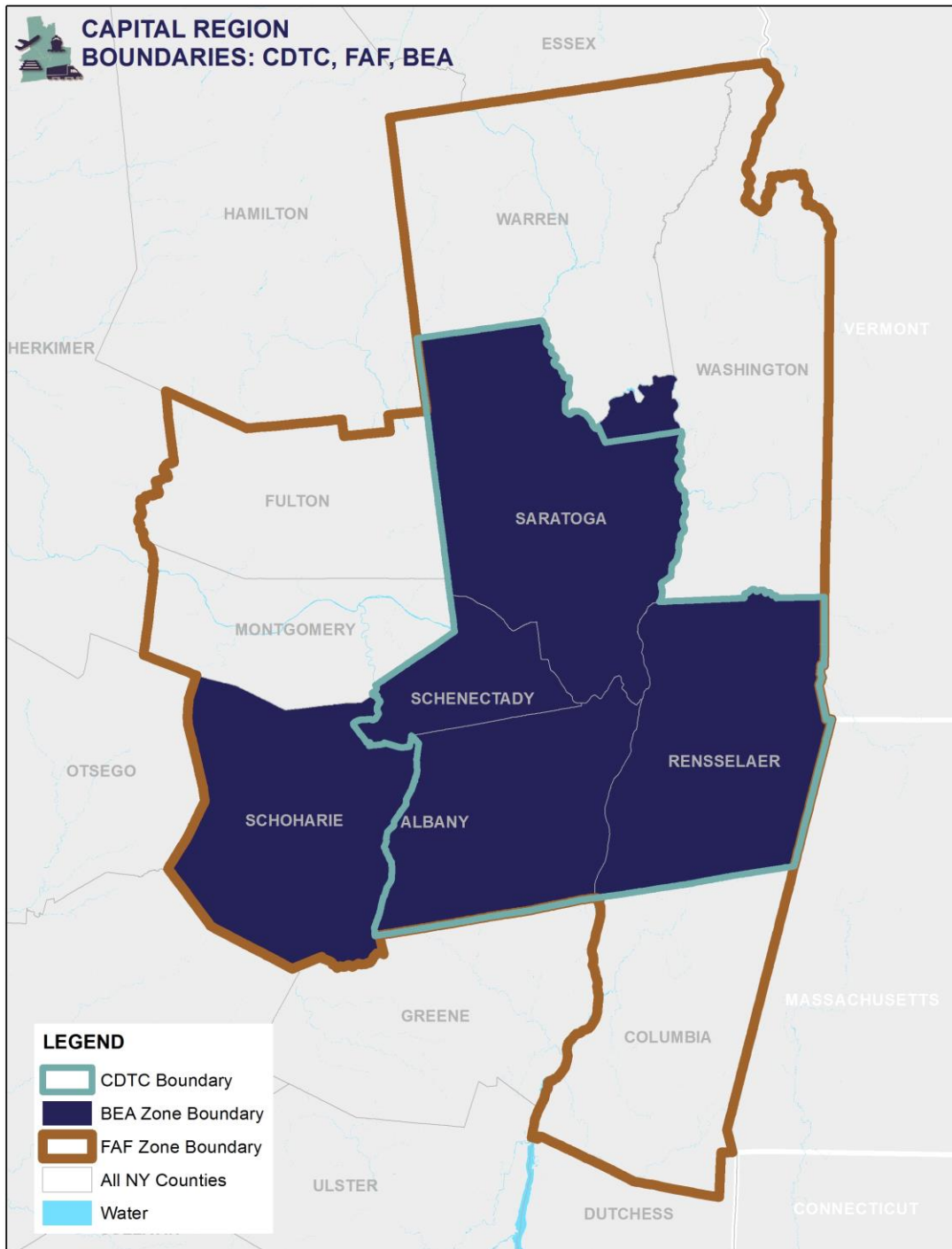
In terms of air freight cargo, T-100 data from the U.S. Bureau of Transportation Statistics (BTS) supplements the air freight information from FAF. T-100 data reports by airport (i.e., Albany International Airport).

Table 16 shows the total 2012 and 2040 forecast tons and value of freight movements. FAF forecasts that the region will experience a 67% increase in freight movement tonnage between 2012 and 2040.

Table 17 shows the breakdown by domestic and import/export movement. Domestic movements are more than 95% of total freight movements to, from, and within the Albany FAF zone. This Chapter therefore focuses on domestic movements.

Figure 15 shows the tons and value of domestic freight moved in the Albany FAF zone by direction of movement. Overall, more than 100 million domestic freight tons were moved to, from, and within the zone. More tons are moved within the zone compared to inbound/outbound movements, which is reasonable given the predominance of Manufacturing Centers, Distribution Hubs, and agriculture within the region.

FIGURE 14: ALBANY FAF ZONE AND THE CDTC AREA, SOURCES: FAF3, BEA, CDTC





## Regional Freight and Goods Movement Plan

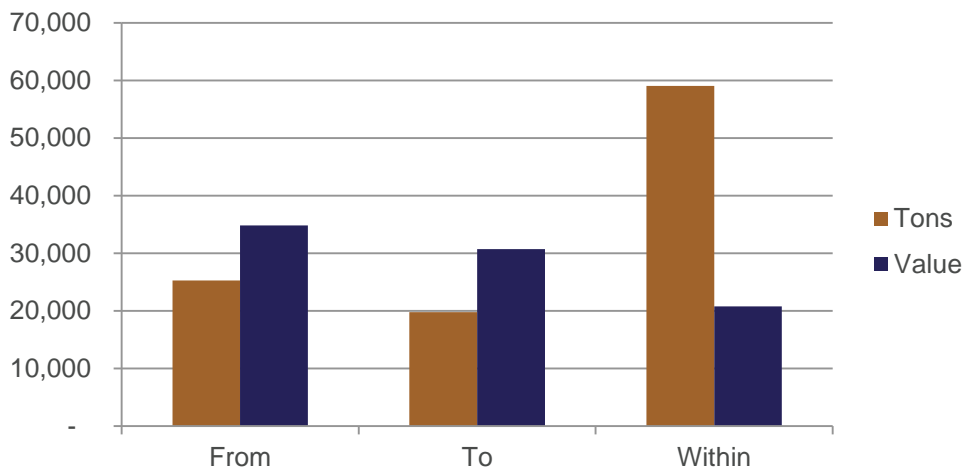
TABLE 16: ALBANY FAF ZONE TOTAL FREIGHT MOVEMENT (CURRENT AND FUTURE FORECAST), SOURCE: FAF3

TOTAL FREIGHT	TONS (THOUSANDS)	VALUE (MILLIONS)
2012	103,426	\$74,241
2040	172,807	\$152,811
Increase (%)	67%	106%

TABLE 17: ALBANY FAF ZONE TOTAL FREIGHT MOVEMENT (DOMESTIC VS. IMPORT/EXPORT), SOURCE: FAF3 (2012)

TOTAL FREIGHT	TONS (THOUSANDS)	VALUE (MILLIONS)
Domestic	99,185	\$69,240
Import + Export	4,242	\$5,002
Domestic Share (%)	95%	93%

FIGURE 15: ALBANY FAF ZONE FREIGHT MOVEMENT BY DIRECTION OF MOVEMENT, SOURCE: FAF3 (2012)



The mode shares for freight movements in the Albany FAF zone (excluding movements entirely within the region) are shown in Figure 16 and Figure 17. As the figure shows, trucks move 95% of freight by weight shipping to the Albany FAF zone from outside the zone. Truck is also the principal mode for outbound freight movement (72%). However, rail also moves a significant amount (21%) of outbound freight.



FIGURE 16: 2012 ALBANY FAF ZONE FREIGHT MOVEMENT MODE SHARES, SOURCE: FAF3 (2012)

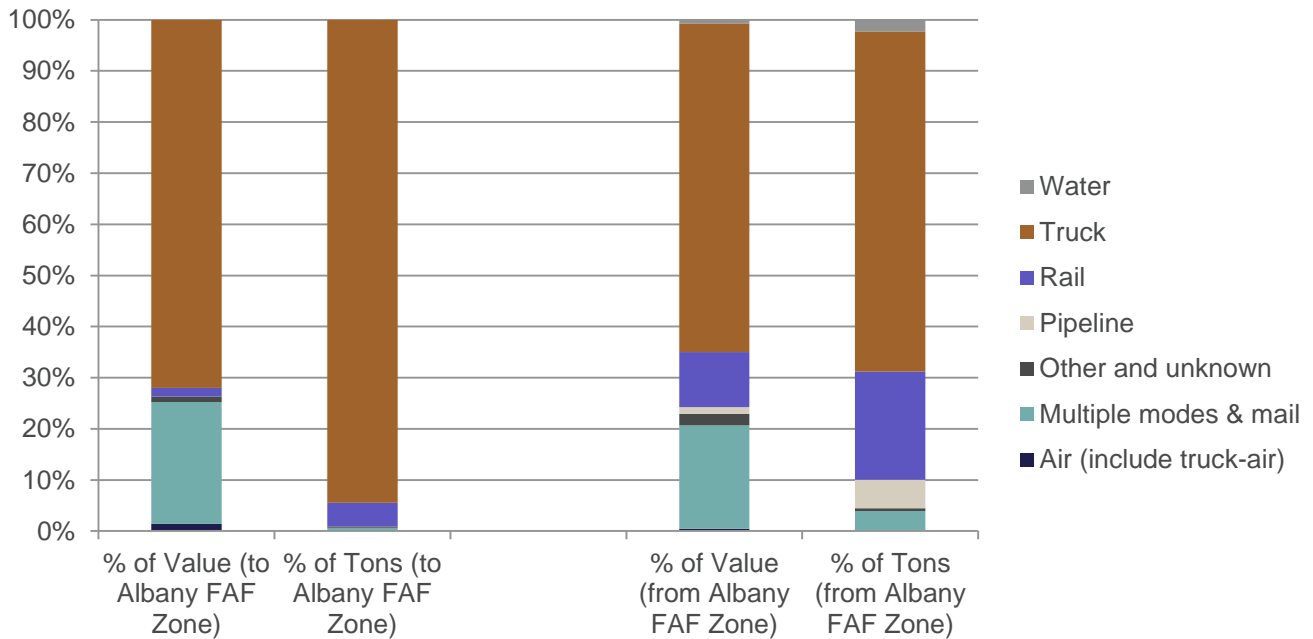
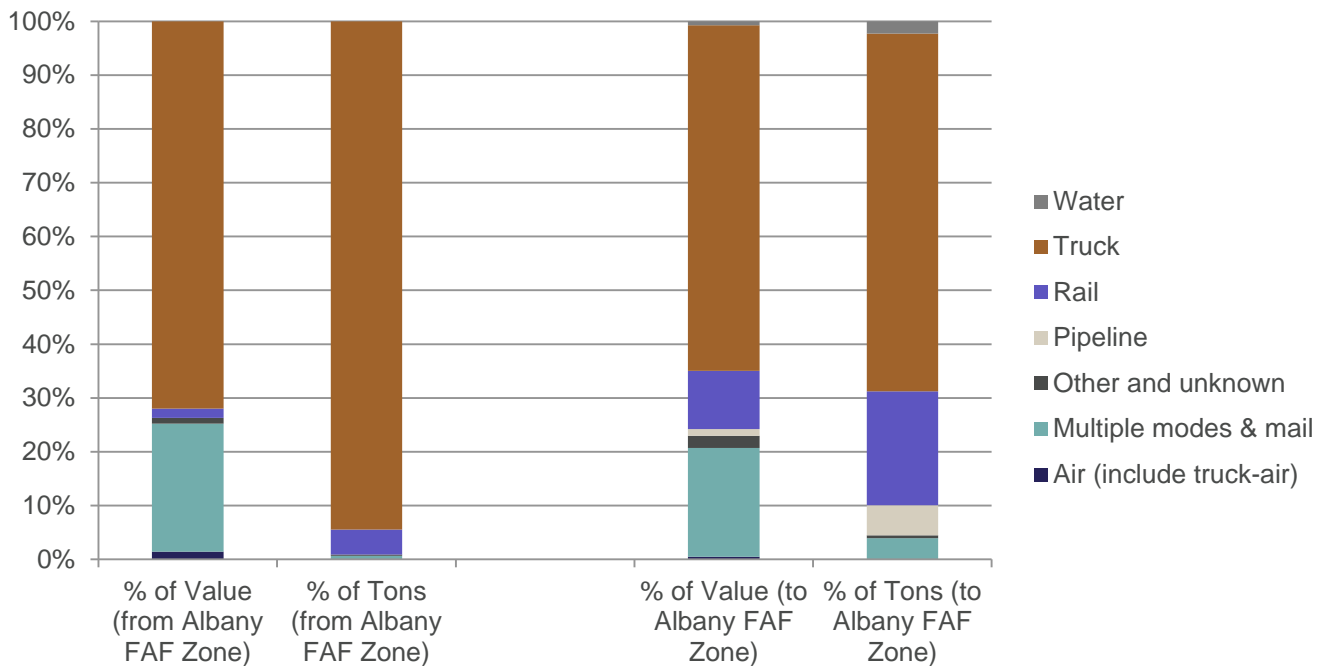


FIGURE 17: 2040 ALBANY FAF ZONE FREIGHT MOVEMENT MODE SHARES, SOURCE: FAF3 (2012)





## Highways

### Infrastructure

Figure 18 illustrates the CDTC region's key roadway infrastructure. The region is at the hub of three Interstate highways corridors:

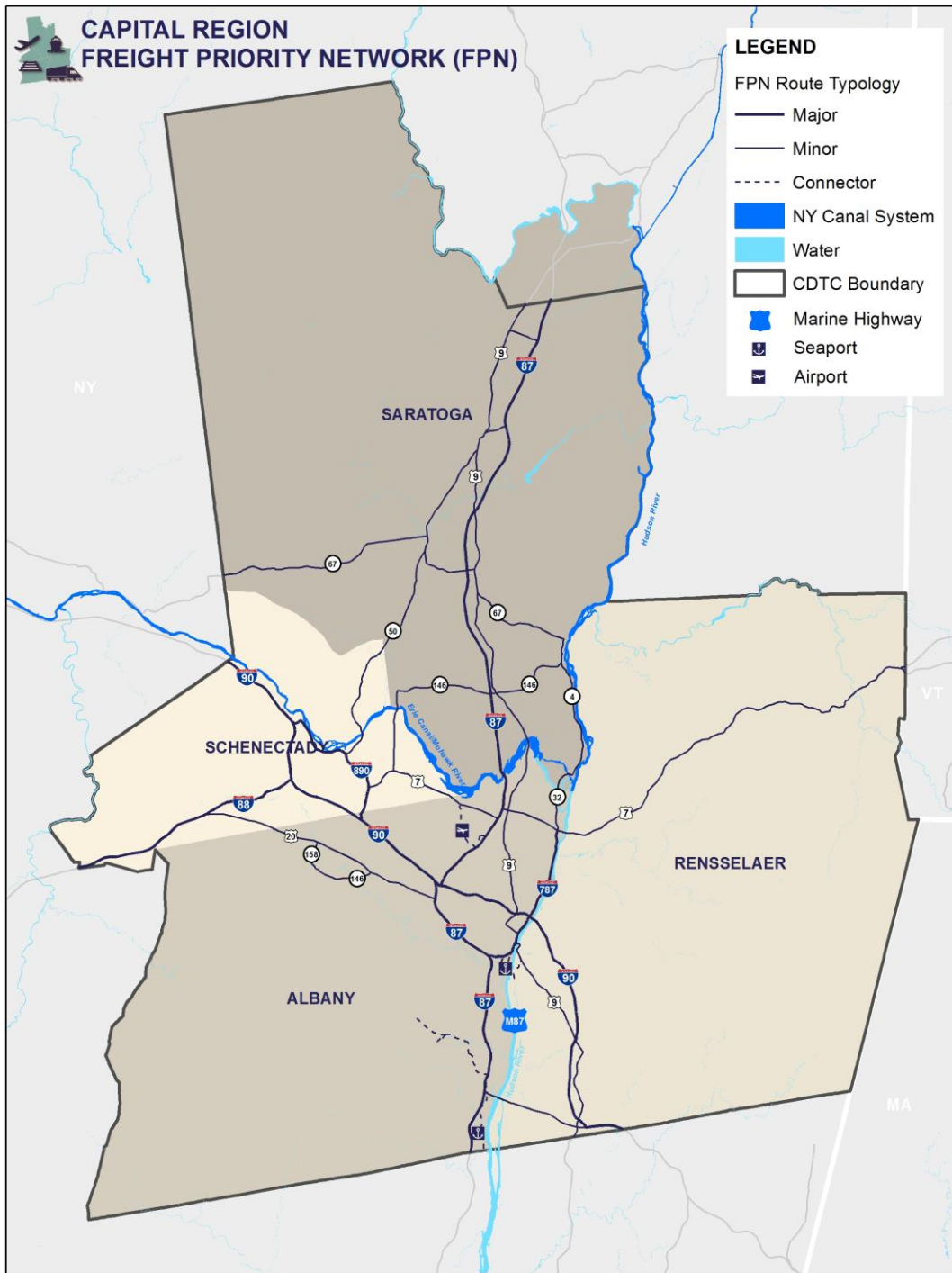
- I-90, which west of Albany is the NYS Thruway, provides east-west truck connectivity from Boston to Buffalo, the Midwest, and Toronto;
- I-87, which north of Albany is the Northway and south of Albany is the NYS Thruway, provides north-south truck access from the New York City metro area, where it connects to I-95, north to Montreal; and
- I-88 provides a direct connection to Binghamton and I-81 as a truck route to Pennsylvania and the Appalachian region.

Interstates I-787 and I-890 serve the CDTC region internally. The region is at the hub of 3 interstate highway corridors, NYS Route 7 east of I-890 in Schenectady, and US Route 20 west of I-88, are part of the NHS, providing inter-regional travel corridors that are not limited access. All of these routes are eligible for improvements funded by the FHWA National Highway Performance Program. Freight also moves internally within the region reaching trip origins and destinations on a network of other NYS highways and roads owned by local jurisdictions. Often referred to as last mile connections, these facilities link freight generators with the NHS. Table 18 summarizes the National Highway Performance Network (NHPN) highway centerline-miles in the CDTC region.

TABLE 18: NHPN ROADWAYS IN THE CDTC REGION, BY FUNCTIONAL CLASS AND AREA TYPE, SOURCE: NHPN (2014)

Functional Class	Urban	Rural	Total	%Urban	%Rural	%Total
Interstate	87.3	52.3	139.6	63%	37%	13%
Freeway or Expressway	25.2	0	25.2	100%	0%	2%
Principal Arterial	233.3	92.1	325.4	72%	28%	31%
Minor Arterial	79.8	228.7	308.5	26%	74%	29%
Major Collector	0	13.9	13.9	0%	100%	1%
Undefined			253.2	0%	0%	24%
<b>Total</b>	<b>425.6</b>	<b>387.0</b>	<b>1,065.8</b>			

**FIGURE 18: ROADWAY GEOGRAPHY IN CDTC REGION, SOURCE: NHPN (HIGHWAY)**





## Pavement Conditions

NYSDOT measures and evaluates pavement conditions through two different methodologies: (1) surface condition, which involves visual scoring but credibly reflects underlying pavement problems; and (2) rideability, which is measured using the International Roughness Index (IRI).

The scale for rating pavement surface conditions ranges between 1 and 10, in which “1” is the worst pavement condition and “10” is the best. A majority of 76% of the CDTC’s pavement centerline miles on the FPN have a rating of “Good” to “Excellent” (greater than or equal to “7” meaning distress symptoms are absent or beginning to show). Only 2% of roads on the FPN fell under the categorization of “Poor.” Further, the 2014 NYSDOT pavement conditions report showed no CDTC roads with a pavement condition less than “4.” Table 19 summarizes pavement condition surface score by functional classification on the FPN roadways. Figure 19 illustrates pavement conditions on each FPN segment.

TABLE 19: 2014 PAVEMENT CONDITIONS ON THE FPN ROADWAYS, SOURCE: NYSDOT, CDTC (2014)

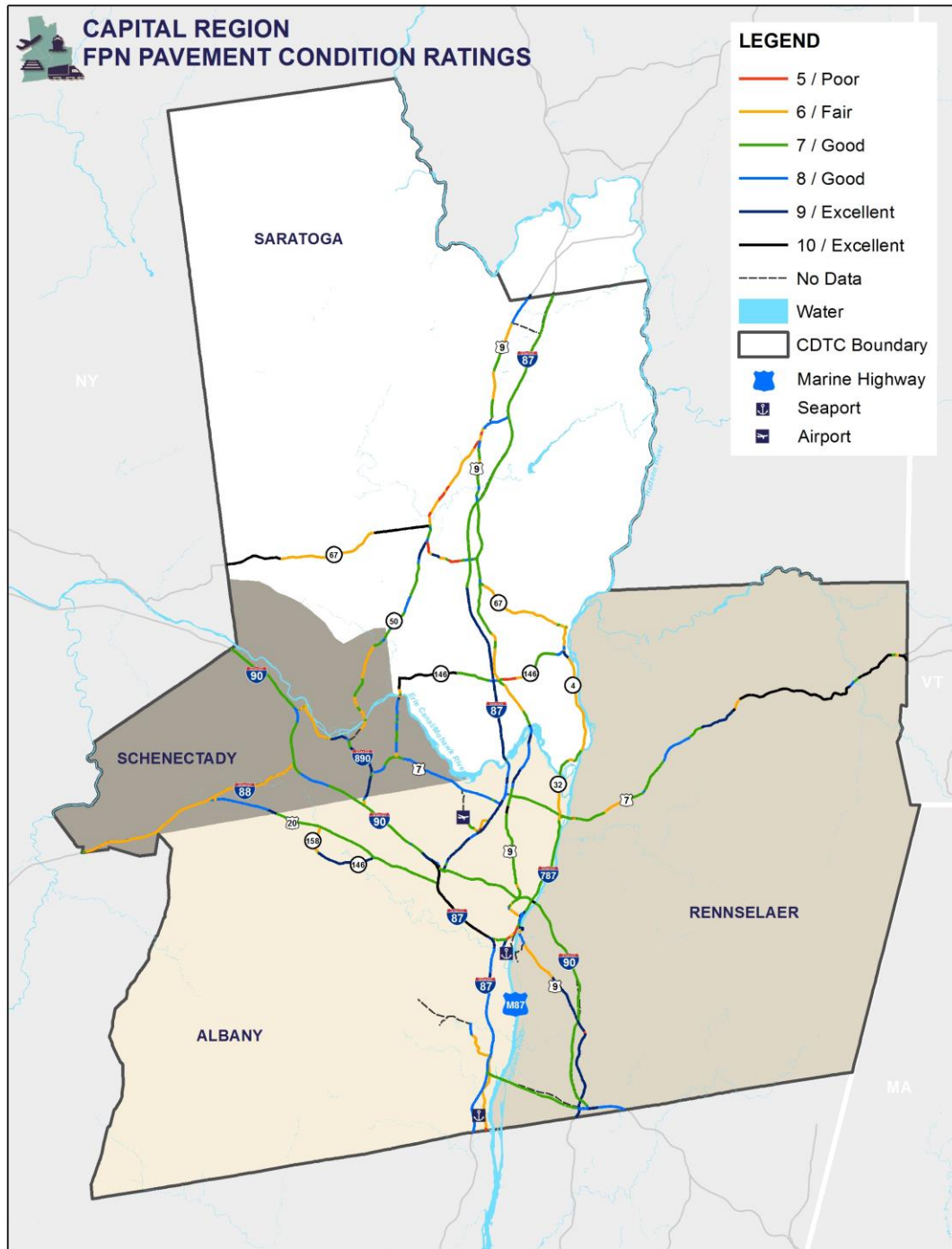
Functional Classification	Centerline Miles	Lane Miles	%Poor (≤5)	%Fair (=6)	%Good (7-8)	%Excellent (9-10)
Interstate	135.2	716.6	2%	14%	59%	25%
Other Principal Arterial	174.4	513.1	2%	24%	55%	19%
Minor Arterial	27.3	67.3	7%	44%	26%	24%
Collector	8.7	17.4	13%	83%	3%	0%
<b>Total</b>	<b>345.5</b>	<b>1314.3</b>	<b>3%</b>	<b>21%</b>	<b>54%</b>	<b>22%</b>

IRI, on the other hand, measures the variation in slope of a paved surface in inches per mile. The FHWA considers an IRI of less than 95 inches/mile as “Good,” while an IRI between 96 and 170 inches/mile is “Acceptable.” The FHWA’s scale recognizes any measurement over 170 as “Unacceptable.” Table 20 provides the IRI by functional classification, showing that 75% of roadways in the FPN fall within “Good” or “Acceptable” ranges. Interstates and other principal arterials have significantly fewer rough surfaces compared to the minor arterial and collector roads for both urban and rural segments.

TABLE 20: 2014 INTERNATIONAL ROUGHNESS INDEX (IRI) ON FPN ROADWAYS, CDTC (2014)

Functional Classification	Good (≤95)	Acceptable (96-170)	Unacceptable (170+)
Interstate	52%	26%	22%
Other Principal Arterial	30%	46%	24%
Minor Arterial	8%	41%	51%
Collector	3%	50%	47%
<b>Total</b>	<b>40%</b>	<b>35%</b>	<b>25%</b>

**FIGURE 19: 2014 PAVEMENT CONDITIONS ON THE FPN**





## Bridge/Crossing Conditions

The majority of bridges on the FPN (65%) are in good condition. About a quarter of FPN bridges classify as “functionally obsolete.” According to NYSDOT, this classification “refers to a bridge’s inability to meet current standards for managing the volume of traffic it carries, not its structural integrity. For example, a bridge may be functionally obsolete if it has narrow lanes, no shoulders, or low clearances.” On the other hand, about 7% of the FPN’s bridges are “structurally deficient.” The NYSDOT notes: “a ‘structurally deficient’ bridge, when left open to traffic, typically requires significant maintenance and repair to remain in service and eventual rehabilitation or replacement to address deficiencies. In order to remain in service, structurally deficient bridges are often posted with weight limits.”<sup>11</sup> Federal law requires that all bridges be inspected biennially. Bridge inspection includes a thorough review of numerous structural elements of the substructure, superstructure, and deck. Underwater inspection of bridges over waterways is required every five years to detect scour conditions. The inspection also documents geometric conditions including lane width, approach width and radii, presence of bicycle lanes or sidewalks, and signalization.

Because each bridge is unique in terms of design, construction, materials, age, and maintenance history, caution is raised in looking at gross bridge statistics. CDTC routinely looks at bridge needs; FPN classification will assist in focusing on truck requirements on the FPN. Table 21 summarizes bridge conditions on the FPN.

TABLE 21: BRIDGE CONDITIONS ON FPN

Bridge Status	# Bridges	% Bridges
<b>Structurally Deficient (SD)</b>	21	7%
<b>Functionally Obsolete (FO)</b>	78	27%
<b>Neither SD/FO</b>	187	65%
<b>Total Bridges in FPN</b>	286	100%

On the FPN there are three highway-rail grade crossings. CSX owns two of these facilities, both of which are located near Selkirk Yard, a CSX-owned facility. Both of these crossings allow public access. The Boston & Maine Corporation owns the third at-grade crossing located in Scotia, which also permits access to the public. Figure 20 illustrates the locations of these at-grade crossings, and Figure 21 provides additional details on the crossings.

<sup>11</sup> <https://www.dot.ny.gov/main/bridgedata>



FIGURE 20: FPN AT-GRADE CROSSINGS

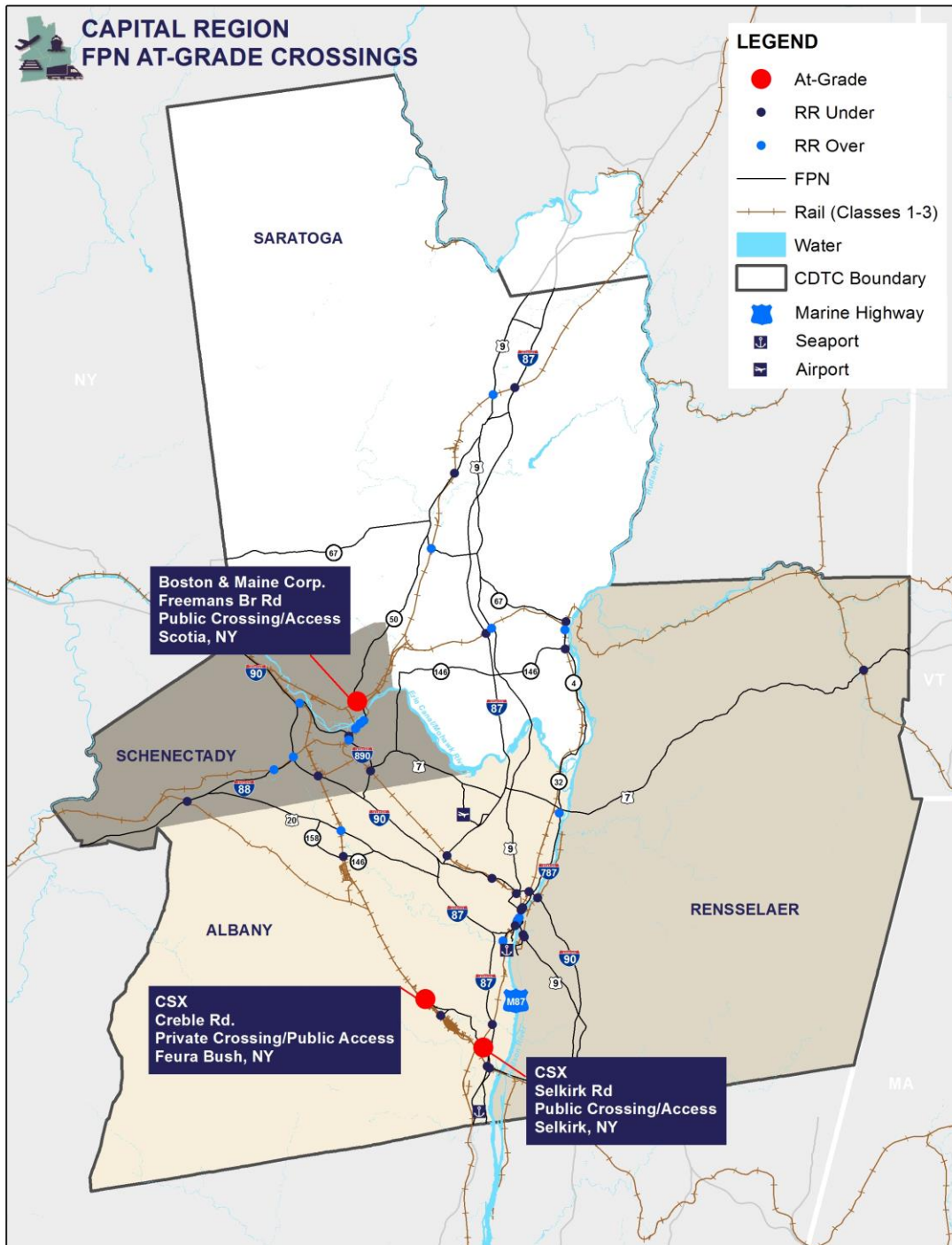




FIGURE 21: AT-GRADE CROSSING DETAILS

Boston & Maine Corp.  
Freemans Br Rd (Route 50 connector)  
Public Crossing/Access  
Scotia, NY  
2011 Traffic Count Data – 11889 Total Vehicles -  
17.38% Trucks – 2,066 AADT



CSX  
Creble Road  
Private Crossing/Public Access  
Feura Bush, NY  
2009 Traffic Count Data – 2082 Total Vehicles -  
43.42% Trucks – 904 AADT



CSX  
Selkirk Rd (Rt 396)  
Public Crossing/Access  
Selkirk, NY  
2009 Traffic Count Data – 1725 Total Vehicles -  
33.97% Trucks – 586 AADT





## Safety Conditions

Crash histories are analyzed over a multiyear period to overcome the potential for statistical anomalies. Over the past five years, an average of 267 commercial vehicle crashes occur annually in the CDTC region. Most crashes occur on Interstates, specifically I-787, I-87, I-88, and I-90. Crashes are mostly condensed near downtown Albany. On average, about half of truck crashes occur within the FPN. Table 22 summarizes the number of crashes per year in relation to the FPN system. Figure 23 maps these commercial vehicle crash locations by year of the crash.

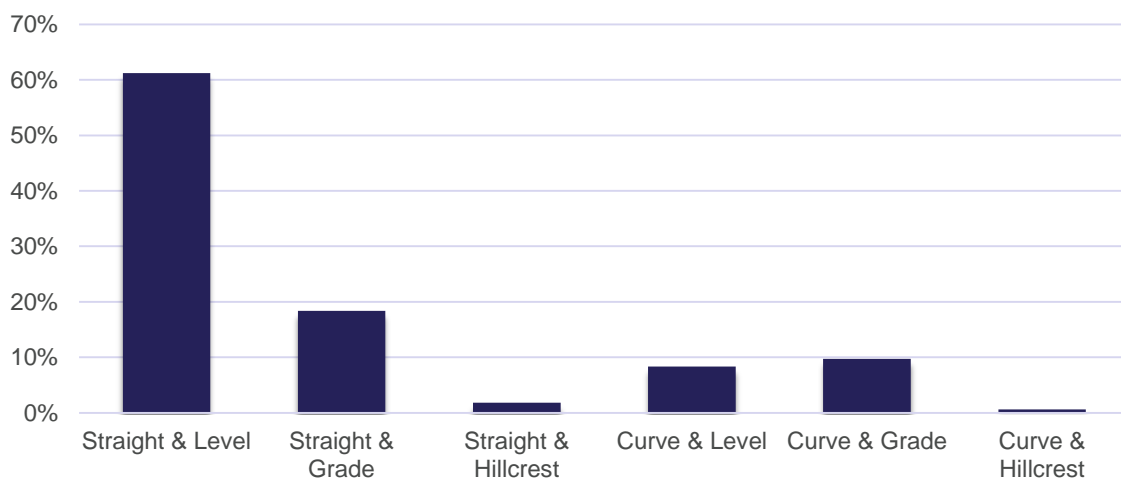
TABLE 22: 2010 - 2014 CRASHES ON THE FPN, SOURCES: NYSDOT (2010-2014), CDTC<sup>12</sup>

Year	2010	2011	2012	2013	2014	Average
CV Crashes on FPN	112	133	129	144	162	136
CV Crashes Total	219	251	246	265	324	261
% CV Crashes on FPN	51%	53%	52%	54%	50%	52%

Most commercial vehicle crashes occur in daylight (72%), but about 18% occur in dark road unlighted conditions. Dark lighted, dawn, and dusk conditions follow at 6%, 3%, and 2%, respectively. Figure 24 maps locations where commercial vehicle crashes occurred in dark unlighted areas. A majority of these crashes are on major Interstates (i.e., I-87, I-90, I-787, and I-88).

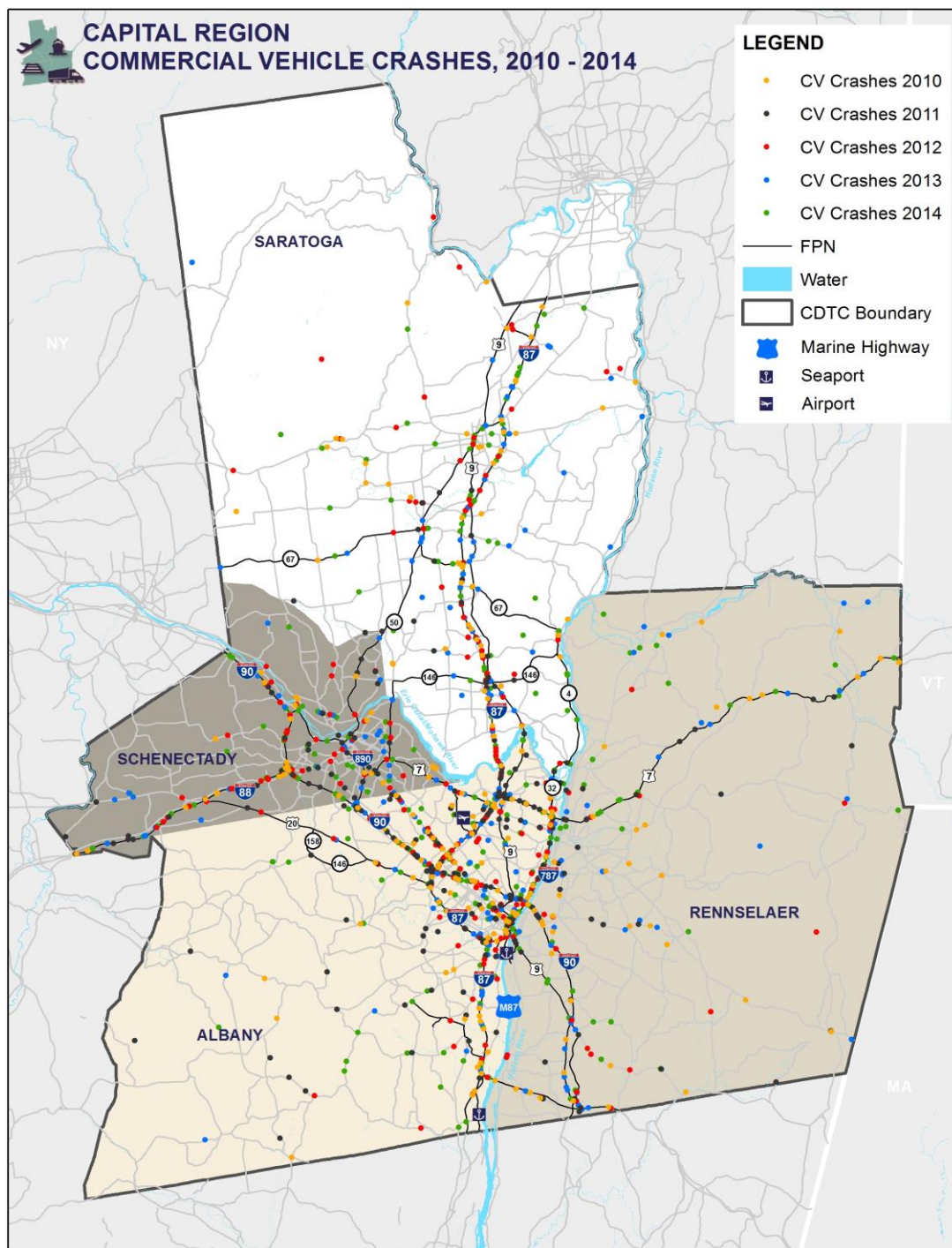
A majority of crashes occur on straight and level roads; however, some crashes may be affected by the characteristics of the roadway. Figure 22 illustrates the percentages of commercial vehicle crashes that occur on straight and grade roadways and either level or grade curves.

FIGURE 22: 2010 – 2014 ROADWAY CONDITIONS FOR COMMERCIAL VEHICLE CRASHES, SOURCES: NYSDOT (2010-2014), CDTC



<sup>12</sup> Disclaimer: Crash data provided by the NYS Department of Transportation's Accident Location Information System

FIGURE 23: 2010-2014 COMMERCIAL VEHICLE CRASHES IN THE CDTC AREA, SOURCE: NYSDOT, CDTC



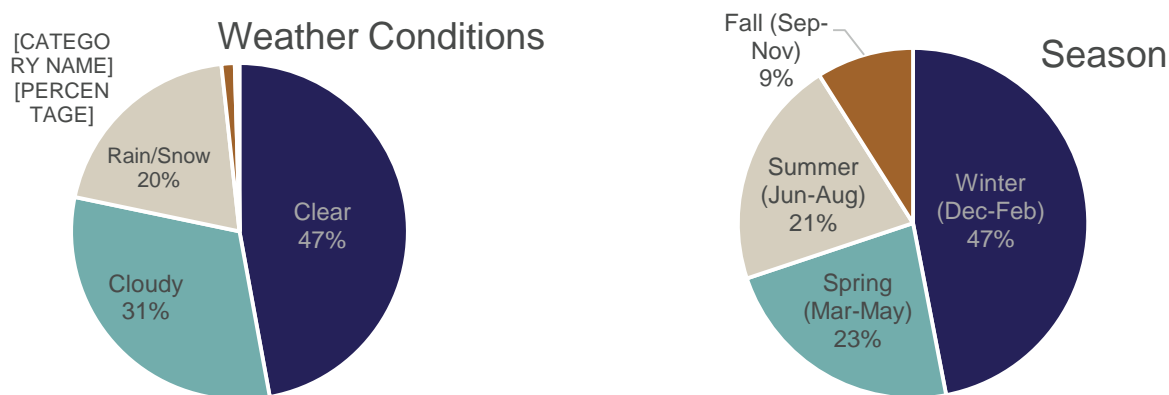


**FIGURE 24: 2010-2014 COMMERCIAL VEHICLE CRASH LOCATIONS IN DARK UNLIGHTED AREAS, SOURCE: NYSDOT, CDTC**



Weather and seasonality impacts the frequency of commercial vehicle crashes on the road. While almost half of crashes occur in clear weather, about 53% occur under rain, snow, cloudy, or other adverse weather conditions. (Approximately 30% of crashes occur when the actual roadway is wet or covered in snow or slush.) Similarly, almost half of crashes occur in winter months, with another 23% occurring in spring months – two seasons that experience high amounts of precipitation, particularly snow. Figure 25 summarizes the breakdown in commercial vehicle crash instances by weather condition and season.

**FIGURE 25: WEATHER AND SEASONAL CONDITIONS FOR COMMERCIAL VEHICLE CRASHES, 2010 - 2014**



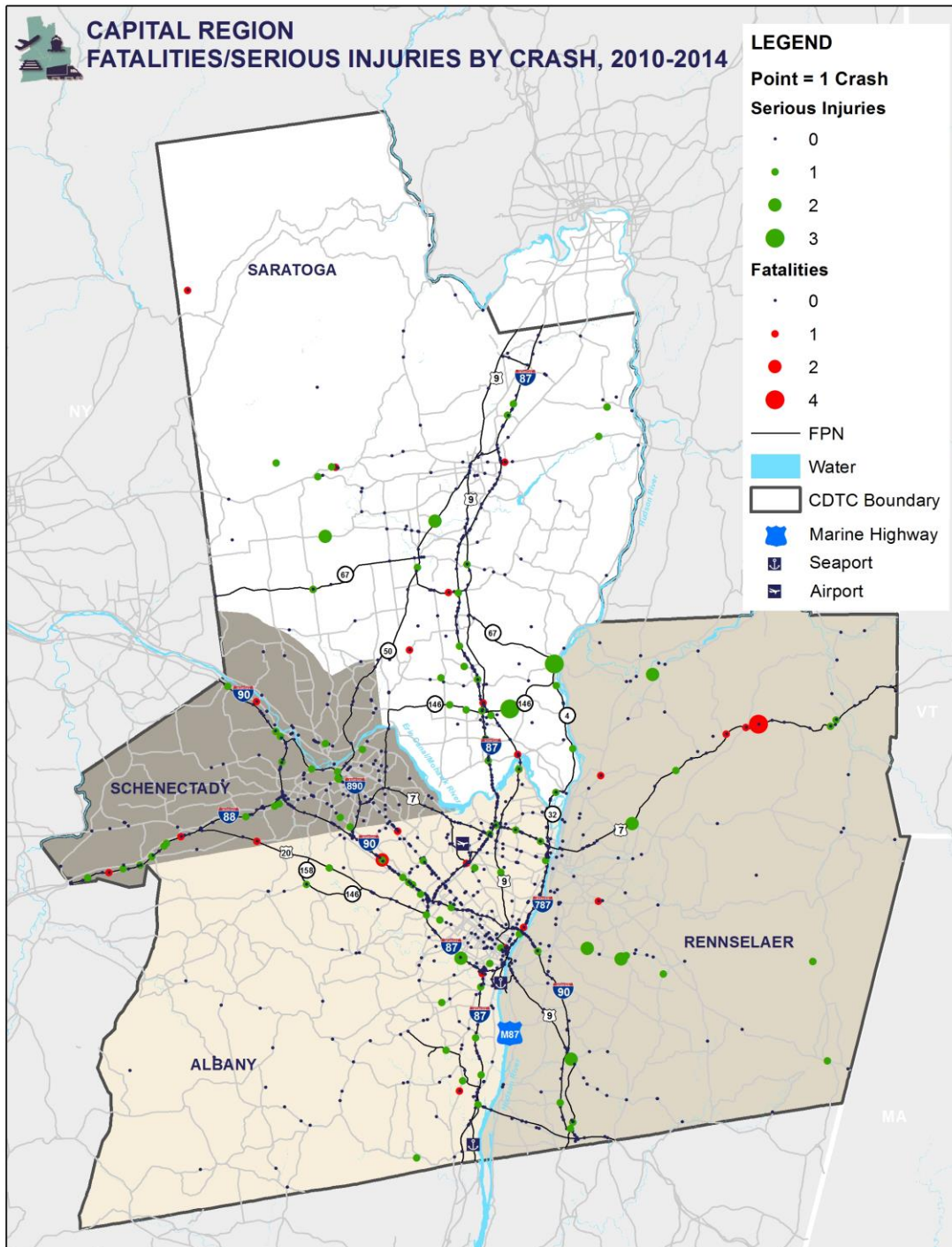
A majority of crashes (55%) within the CDTC region result in only property damage and another 36% of crashes end in minor injury. Seven percent result in serious injury with 2% fatal injuries. Figure 26 identifies crash locations resulting in both fatal and serious injuries from 2010 to 2014. Each point represents a crash. The size of the crash point varies by the number of fatalities in the crash. Fatal crashes occurred mainly on interstates. Routes 20, 67, and 146 also show higher rates of serious injury crashes than other minor FPN routes.

The American Transportation Research Institute (ATRI) developed a national assessment of significant commercial vehicle rollover locations from years 2001 through 2009 entitled, "Mapping Large Truck Rollovers: Identification and Mitigation Through Spatial Data Analysis." The ATRI report, however, identifies 625 rollover instances over the 2001 through 2009 period. This study identified two rollover locations in the CDTC study area:

- I-90 and I-87 (Near the toll plaza at Exit 24) – Nine rollovers over the 2001 through 2009 period.
- I-90 and US 20 (Near the 11W Exit) – Four rollovers over the 2001 through 2009 period.

Both locations include relatively sharp ramp turns; however, both locations have additional signage to recognize the severity of the turn to drivers. For example, the I-90/I-87 location has a 20 mile per hour speed limit and chevron signs lining the ramp to indicate the sharp bend. The I-90/US 20 location has a 25 mile per hour speed limit, a right curve sign, and several chevron signs to warn drivers.

FIGURE 26: FATALITIES AND SERIOUS INJURIES BY CRASH, 2010 - 2014





## Regional Freight and Goods Movement Plan

### Truck Parking Conditions

Overnight truck parking is an important issue. With the Federal Motor Carrier Safety Administration hours of service rules for truck drivers, drivers need to find safe and convenient places to park when they reach their driving limit. There are ten truck parking areas (both public and private) in the CDTC region, and seven truck parking areas just outside of the CDTC region. Two facilities are not currently in service. Table 23 and Table 24 summarize information on these parking facilities and their capacities.

Figure 27 displays the facility locations.

**TABLE 23: ESTIMATE OF DESIGNATED OFF-ROAD TRUCK PARKING CAPACITY IN THE CDTC AREA**

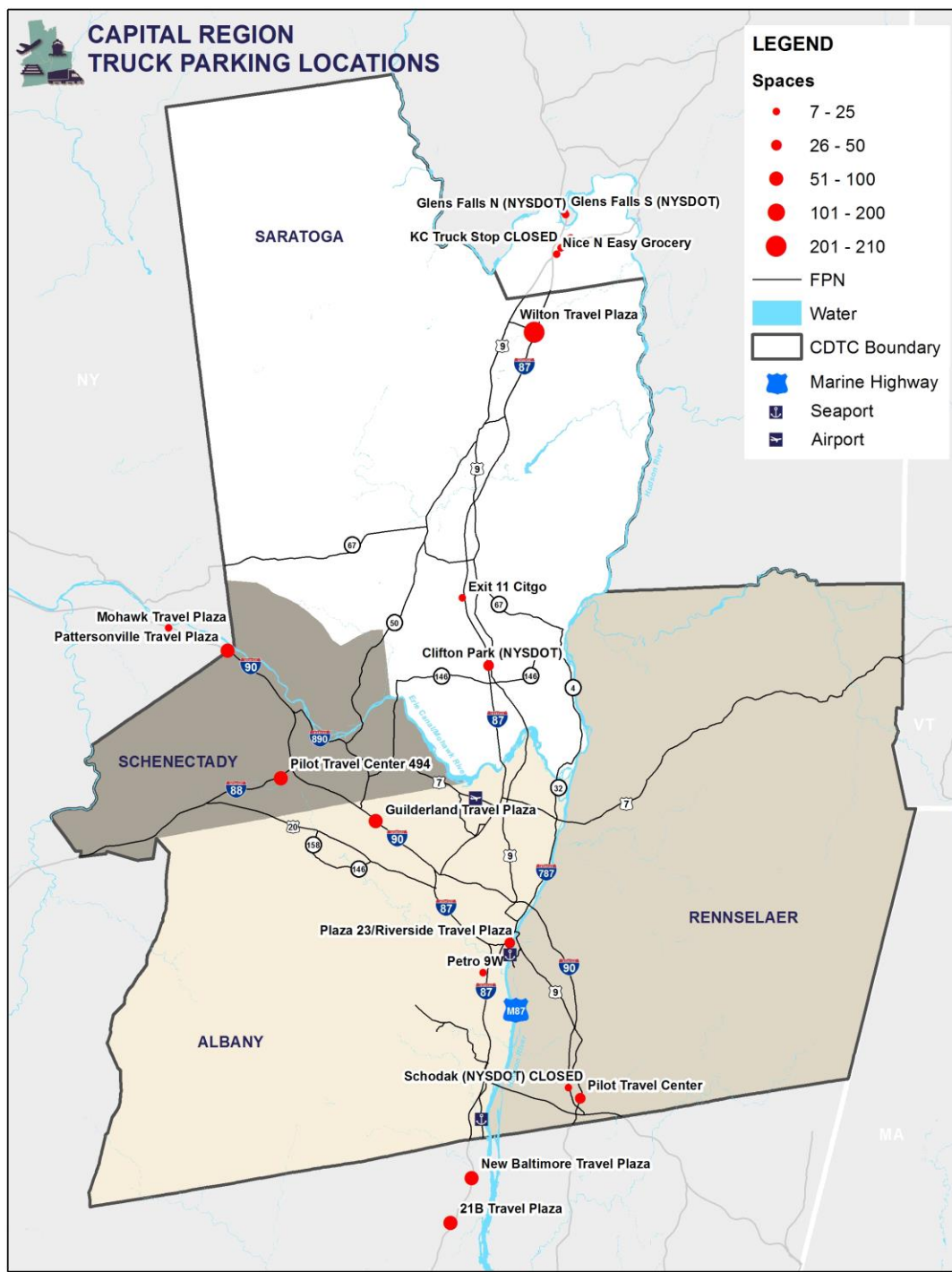
Name of Lot	County	Municipality	Route	Description	Hours	Number Spaces
<b>Plaza 23/ Riverside Travel Plaza</b>	Albany	Albany	I-87/ I-787	Off I-87 Exit 23 or I-787 Exit 2 - 240 Church St.	24	50*
<b>Petro 9W Truck Stop</b>	Albany	Albany/ Glenmont	I-87	Off Exit 23, Rt.9W	24	No Space Markings, 20-30
<b>Pilot Travel Center</b>	Rensselaer	Castleton-On- Hudson	I-90W	Off Exit 12, 995 U.S Rte 9	24	35*
<b>Clifton Park</b>	Saratoga	Saratoga Springs	I-87N	Off Exit 14	24	28
<b>Exit 11 Truck Stop (Citgo)</b>	Saratoga	Round Lake	I-87	Off Exit 11, Round Lake Rd.	N/A	No Space Markings, 20-30
<b>Wilton Travel Plaza</b>	Saratoga	Wilton	I-87	Off Exit 16, 215 Ballard Rd	N/A	210*
<b>Pattersonville Travel Plaza</b>	Schenectady	Pattersonville	I-90W	Milepost 168, Located Westbound between Exit 26 & Exit 27	24	55*
<b>Pilot Travel Center No.494</b>	Schenectady	Rotterdam	I-88	Off Exit 25, 1128 Duanesburg Rd.	24	67*
<b>Guilderland Travel Plaza</b>	Schenectady	Schenectady	I-90EW	Milepost 153, Located Eastbound between Exit 25 & Exit 24	24	72*
<b>Schodack</b>	Rensselaer	Schodack	I-90W	Between Exits 11 & 12	N/A	13*
						<b>~580 Spaces</b>

**TABLE 24: ESTIMATE OF DESIGNATED OFF-ROAD TRUCK PARKING CAPACITY ON ROUTES ENTERING/EXITING THE CDTC REGION**

Name of Lot	County	Municipality	Route	Description	Hours	Number Spaces
<b>21B Travel Plaza</b>	Greene	Coxsackie	I-87	Off Exit 21B, 12800 US Route 9W	N/A	64*
<b>New Baltimore Travel Plaza</b>	Greene	Hannacroix	I-87	Milepost 127, Located Northbound & Southbound between Exit 21B & Exit 21A	24	52*
<b>Mohawk Travel Plaza</b>	Montgomery	Amsterdam	I-90E	Milepost 172, Located Eastbound between Exit 27 & Exit 26	24	14*
<b>Nice N Easy Grocery (Mobil)</b>	Saratoga	South Glens Falls	I-87	Off Exit 17, US Rt.9	N/A	15*
<b>Moreau Xtra Mart (Sunoco)</b>	Saratoga	South Glens Falls	I-87	Off Exit 17, US Rt.9 - One mile off interstate	N/A	18*
<b>Glens Falls (N)</b>	Warren	Queensbury	I-87N	Between Exits 17 & 18	24	16
<b>Glens Falls (S)</b>	Warren	Queensbury	I-87S	Between Exits 17 & 18	24	15
<b>K C Truck Stop (Getty)</b>	Saratoga	Gansevoort	I-87	Off Exit 17, US Rt.9 1311 Saratoga Rd.	N/A	No Space Markings, 5-10
						<b>~200 Spaces</b>



FIGURE 27: NYSDOT REST STOP AREAS NEAR THE CDTC REGION





## Regional Freight and Goods Movement Plan

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The Thruway offers a significant number of parking opportunities, both within the CDTC study area and adjacent to the area. The Wilton Travel Plaza at I-87 (Northway) Exit 16 provides truck parking in the northern part of the study area, but rest areas closer to the regional core offer far fewer truck parking spaces.

Figure 28 shows the truck rest areas in relation to major freight generating land uses in the region. The analysis buffer is five miles from each major land use. The map shows that there are relatively few truck parking options along the FPN near Albany International Airport and between Albany and Mechanicville. Plaza 23/Riverside Travel Plaza is adjacent to the Port of Albany, providing some truck parking; however, trucking industry stakeholder feedback suggests that this travel plaza is considered by some to be unsafe, leading to its avoidance by some truckers for nighttime parking. Thus, there may also be a parking deficit near the Port of Albany.

**FIGURE 28: TRUCK PARKING NEAR FREIGHT LAND USES**





### Bottlenecks

FHWA's "An Initial Assessment of Freight Bottlenecks on Highways" report from 2005 identifies four features to scan when searching for potential freight bottlenecks:<sup>13</sup>

- Interchange capacity bottlenecks (areas in which highways or major arterials merge);
- Lane-drop bottlenecks (areas in which one or more lanes discontinue);
- Signalized intersection bottlenecks (areas in which traffic signals can cause significant back-ups); and
- Steep-grade bottlenecks (areas in which the road's grade or slope causes a significant decrease in traffic speed).

Figure 29 shows areas relevant to the first two bullets: interchange capacity and lane-drop bottlenecks. The Albany and Schenectady downtown areas each have beltways that include major merge areas, creating opportunities for bottlenecks along the Thruway and I-787. More common on principal, minor arterial, and collector facilities are lane-drop bottlenecks. US-9, for example loses a lane north of the Saratoga Springs. Route 146 also loses a lane exiting the Clifton Park area, which could impede mobility and safety for trucks using this route for east-west access. Route 20 loses a lane westbound north of Guiderland Center, which could also create congestion traveling toward I-88.

While analyzing individual signalized intersections is beyond the scope of this study, any intersection on a freight route with a poorly timed signal or with inadequate intersection capacity can easily become a bottleneck for freight movement. As CDTC pursues corridor studies that identify individual intersections requiring capacity improvements, priority should be given to those on the FPN that serve critical freight movements.

Figure 30 illustrates the topography of the CDTC region as a means to assess possible steep-grade bottleneck concerns on the FPN. However, there are no significant grade variances evident that suggest the potential for major bottlenecks.

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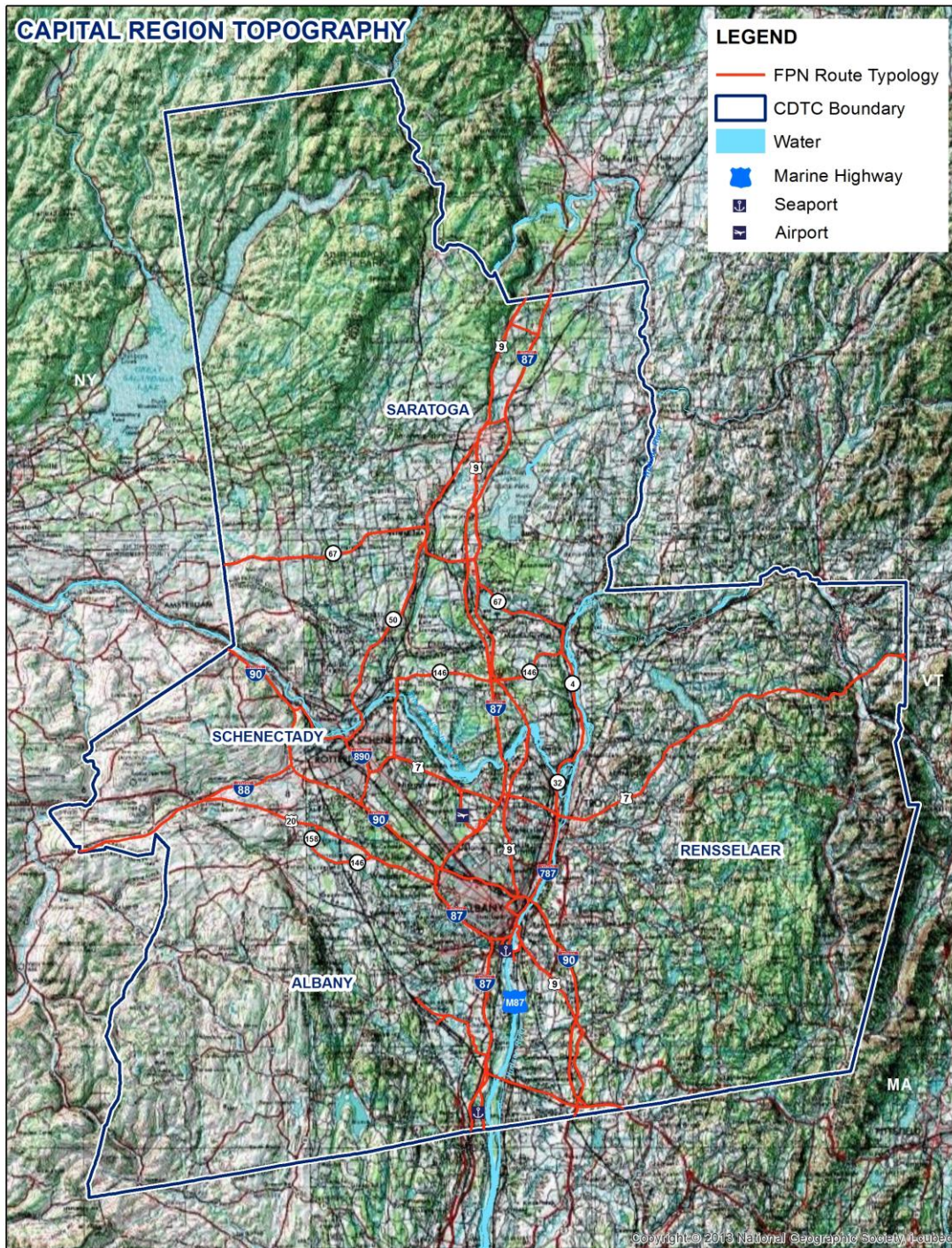
<sup>13</sup> <http://www.fhwa.dot.gov/policy/otps/bottlenecks/chap4.cfm>

**FIGURE 29: POTENTIAL BOTTLENECK AREAS, SOURCE: NYSDOT, HPMS (2013)**





FIGURE 30: CAPITAL REGION TOPOGRAPHY AND THE FPN, SOURCE: ESRI US TOPO MAPS







### Intelligent Transportation Systems (ITS) for Commercial Vehicle Operations

The Capital Region currently has substantial Intelligent Transportation System (ITS) infrastructure installed for Commercial Vehicle Operations (ITS/CVO) technology. Two Transportation Management Centers (TMCs): (1) The NY State Police Headquarters on the State Office Building Campus in Albany – jointly operated by NYSDOT's Region 1 and State Police; and (2) NYSTA's headquarters in Albany – jointly operated by NYSTA and the State Police - host the region's ITS system. The Interstate system within the Capital Region includes various ITS elements to facilitate the operation of commercial vehicles:<sup>14</sup>

- Dynamic Message Signs (DMS): Overhead electronic signs on Interstates. DMS locations include: two signs at the Twin Bridges on I-87, one sign on I-90 between Exit 8 and the Patroon Island Bridge westbound, two signs on the Thruway (I-87/I-90) between Exits 25 and 24, one sign on the northbound side of Thruway prior to Exits 23 and 24, and one sign on I-90 Berkshire Spur westbound before Exit B1.
- Closed Circuit Television (CCTV): Cameras monitoring traffic conditions on I-90, I-787, I-87, and Route 7 in the Capital Region.
- Traffic Data Sites (TDS) Stations: Traffic counter loops within the pavement structure that include volume and speed data to identify real time congestion and incidents. There are TDS stations in the Capital District on I-90, I-787, I-87, and Route 7.
- Seasonal Weather Information System (SWIS): Data collection stations on the Thruway that collect information related to temperature, levels of precipitation, visibility, wind speed, and pavement temperatures
- Highway Advisory Radio System (HAR): HAR is an AM radio station that provides real time traffic, detour, and other incident information. Coverage extends from around Thruway Interchange 25 to the Tappan Zee Bridge.
- Highway Emergency Local Patrol (HELP): A response program that assists disabled vehicles on limited access facilities in the Capital Region through a funding partnership with State Farm Insurance.
- Electronic Screening: There is an electronic screening, "e-screening," site located east of the Schodack Rest Area on I-90 westbound that electronically checks commercial vehicle credentials through a transponder, which connects to the Safety and Fitness Electronic Records (SAFER) database and One Stop Credentialing and Registration (OSCAR) data. The Schodack location also includes a test bed for weigh-in-motion (WIM) technology to also assess commercial vehicles for weight compliance.

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<sup>14</sup> List from I-87 Multimodal Corridor Study [https://www.dot.ny.gov/programs/i-87-multimodal-corridor-study/repository/chapter\\_2-10\\_intelligent\\_transportation\\_systems.pdf](https://www.dot.ny.gov/programs/i-87-multimodal-corridor-study/repository/chapter_2-10_intelligent_transportation_systems.pdf)



## Freight Flows

As previously noted, trucking represents the largest mode share by both weight and value in the CDTC region. Table 25 displays the current amount of freight being moved by truck, as well as anticipated future growth in truck movements. Significant growth in truck movements is expected. Movements to the Albany FAF zone and within the Albany FAF zone through 2040 are also projected to increase in per ton value. Movements from the Albany FAF zone are projected to have approximately the same per ton value through 2040.

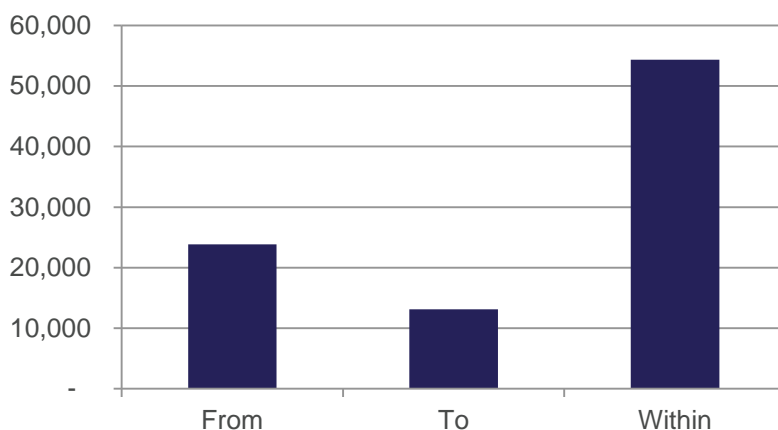
TABLE 25: ALBANY FAF ZONE TRUCK FREIGHT MOVEMENTS (TO/FROM/WITHIN), SOURCE: FAF3

BY TRUCK MODE	FROM ALB TO ALL OTHER (FROM)			FROM ALL OTHER TO ALB (TO)			FROM ALB TO ALB (WITHIN)		
	TONS (000)	VALUE (MILLIONS)	\$/TON	TONS (000)	VALUE (MILLIONS)	\$/TON	TONS (000)	VALUE (MILLIONS)	\$/TON
2012	23,863	\$25,082	\$1,051	13,144	\$19,728	\$1,501	54,353	\$19,211	\$353
2040	43,259	\$44,257	\$1,023	20,373	\$47,486	\$2,331	73,081	\$31,822	\$435
Increase (%)	81%	76%	-3%	55%	141%	55%	34%	66%	23%

Due to the anticipated growth in freight moving by truck, CDTC should be cognizant of pavement conditions, bridge conditions, and truck-specific system accommodations, particularly on FPN facilities, to ensure safe and efficient movement of these goods and materials. While truck traffic commonly utilizes Interstates and other major facilities, local roads provide access to freight generators and receivers, and are often equally important to serving customers.

According to the FAF data in 2012, approximately 91 million tons of freight moved by truck to, from, and within the Albany FAF zone. Intrazone movements account for 59% of the truck movements (with the remaining 26% and 14% reflecting outbound and inbound movements, respectively). Figure 31 shows the truck movement details for the Albany FAF zone.

FIGURE 31: ALBANY FAF ZONE TRUCK FREIGHT MOVEMENTS IN KTONS, SOURCE: FAF3 (2012)





“Nonmetallic Mineral products,” “Fuel Oils,” “Mixed Freight” and “Other Foodstuffs” are the top outbound commodities by tonnage moved from the Albany FAF zone by truck. These commodities account for about half of all tons originating from the zone. The key destinations for the “Nonmetallic Mineral Products” leaving the Albany zone are the New York City FAF zone<sup>15</sup> and the remainder of NYS. These more proximate destinations are not surprising given the cost to haul heavy goods and their relative value. In the case of “Fuel Oils”, significant tonnage moves to the Vermont and Massachusetts zones (1.5 million tons together) serving the home heating oil market.

“Gravel”, “Waste/Scrap”, Other Foodstuffs” and “Nonmetallic Minerals” are the main inbound commodities by ton moved to the zone by truck. These commodities account for about 40% of tons going to the zone. The key origins for these commodities are mostly other NYS zones.

“Gravel” and “Nonmetallic Mineral Products” together account for 55% of truck freight movements by weight within the Albany FAF zone.

## Rail

### Infrastructure

Three Class 1 railroads provide inter-regional freight rail service in the CDTC Region: CSX Transportation (CSX), Norfolk Southern (NS), and Canadian Pacific (CP). These three firms operate freight rail service across North America, providing the region with high-capacity service to major freight nodes such as New York/New Jersey, Buffalo, Chicago, Baltimore, Boston, Atlanta, Montreal, Toronto, Vancouver, and others.

In addition, several short line and “switching” railroads operate in the CDTC region. These include Pan Am Railways, and one of its key operating units, the Boston & Maine Railroad; and SMS Rail Lines. The shortlines provide direct service to customers and interchange cars with the Class 1 railroads for long haul travel. The Albany Port Railroad, a terminal line jointly owned by CSX and NS, provides switching services within the Port property for railcars delivered and received by one of the Class 1 carriers. Figure 32 provides a map of the region’s rail system.

### Freight Rail Conditions

CSX maintains a strong freight rail presence in the CDTC region. It owns and operates the Selkirk Rail Yard, just west of I-87 (Thruway) Exit 22, which handles both intermodal and transload movements and includes an automotive distribution center. The 2009 NYS Rail Plan states that the yard serves over 1,700 rail cars per day. The CSX mainline between Albany and Buffalo is one of the highest volume rail corridors in the State.

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<sup>15</sup> The New York City FAF Zone is the New York State part of the New York NY-NJ-CT-PA CSA, and includes the 10 counties in the NYMTC region as well as Dutchess, Orange and Ulster counties.



NS's lines in the CDTC region also provide critical connections and intermodal movement. The Pan Am Southern (PAS) Railway, jointly owned by NS and Pan Am Railways (PAR), owns the "Patriot Corridor" between Albany and the greater Boston area, using rail lines formerly owned by the Boston and Maine Corporation. The Corridor is operated by PAR subsidiary Springfield Terminal Railway. The 2009 NYS Rail Plan projected that freight volumes on various Patriot Corridor segments will increase by over 200% through 2030. NS also owns and operates the growing intermodal facility in Mechanicville, west of the Route 67 and Route 4 intersection.

CP owns the Kenwood Yard adjacent to the Port of Albany/Rensselaer in the City of Albany. This facility serves domestic travel flows between Albany and the Chicago area. CP also owns the Green Island Branch that runs between Cohoes and Green Island, but has discontinued this service.

The Rail Safety Improvement Act of 2008<sup>16</sup> requires freight railroads to install Positive Train Control (PTC) technology on 40% of their networks by December 15, 2015.<sup>17</sup> PTC allows for additional safety measures helping to control speed and avoid collisions. It is reasonable to assume that future full implementation of this technology on CDTC region railroads will enhance both the safety and efficiency of freight rail operations. At the time of this report, Congress is considering delaying the PTC deadline because of the implementation cost to the railroads.

### **Bottlenecks**

The 2009 NYS Rail Plan identified the CSX River Line (west shore of Hudson) between PANYNJ facilities and Chicago as one of the most severe bottlenecks in the State due to single tracking between northern New Jersey Terminals and the Selkirk Rail Yard. This line is also constrained due to outdated tunnel clearances and at-grade crossings.

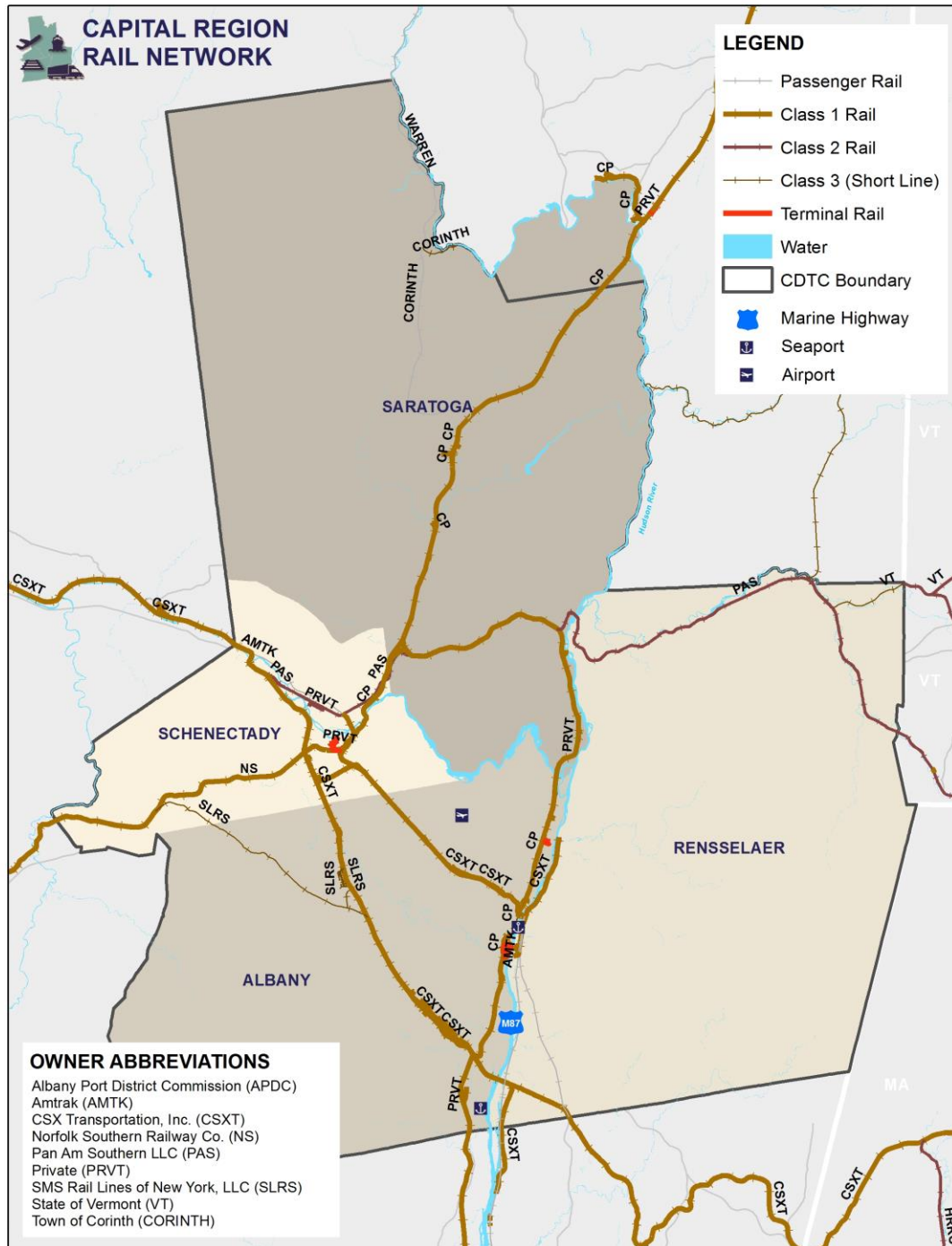
The Hudson Line (east shore of Hudson) also shares track with intercity (Amtrak) and commuter rail services (MTA Metro North), which can limit freight rail to off-peak hours.

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<sup>16</sup> <https://www.fra.dot.gov/eLib/Details/L03588>

<sup>17</sup> As of October 21, 2015, the U.S. House Transportation and Infrastructure Committee has introduced legislation, entitled the Positive Train Control Enforcement and Implementation Act of 2015, to extend the 2015 PTC implementation deadline to the end of 2018, while also providing limited authority for the Secretary of Transportation to extend the deadline beyond 2018 if railroads show they are having continued difficulties in meeting the deadline while making a full effort to install PTC, coupled with requiring railroads to complete progress reports on implementation efforts.

FIGURE 32: RAIL SYSTEM IN CDTC REGION





## Freight Flows

Rail is an important mode for freight in the CDTC region. Table 26 provides the current volumes and values of rail freight, as well as with the forecast growth in rail movements for 2040. Forecasts for 2040 suggest significant growth in tonnage and low-to-moderate growth in value, resulting in a decrease in the value per ton of freight moved in, out, and through the region.

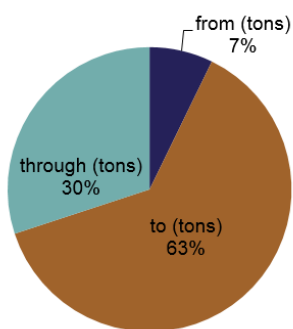
TABLE 26: ALBANY FAF ZONE RAIL FREIGHT MOVEMENTS (TO/FROM/WITHIN), SOURCE: FAF3

BY RAIL MODE	FROM ALB TO ALL OTHER (FROM)			FROM ALL OTHER TO ALB (TO)			FROM ALB TO ALB (WITHIN)		
	TONS (000)	VALUE (MILLIONS)	\$/TON	TONS (000)	VALUE (MILLIONS)	\$/TON	TONS (000)	VALUE (MILLIONS)	\$/TON
2012	1,180	\$595	\$505	4,184	\$3,315	\$792	243	\$27	\$111
2040	1,849	\$270	\$146	13,653	\$5,453	\$399	417	\$35	\$83
Increase (%)	57%	-55%	-71%	226%	64%	-50%	72%	28%	-25%

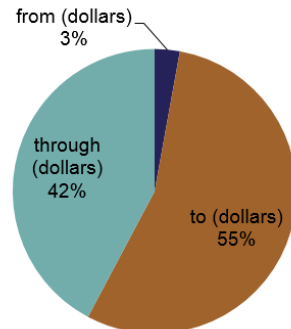
Rail is an important mode for freight in the CDTC region. According to FAF data, rail moved about 5,607,000 tons of commodities worth almost \$4 billion to, from, and within the Albany FAF zone in 2012. Figure 33 shows the share of movements by tons and value for the three different movement directions. The graphic shows that more commodities (by weight and value) are destined to the Albany BEA zone than originating from it using the rail mode.

FIGURE 33: ALBANY BEA ZONE RAIL FREIGHT MOVEMENT, SOURCE: PUBLIC WAYBILL (2010)

Albany BEA zone Rail Tons (Waybill)



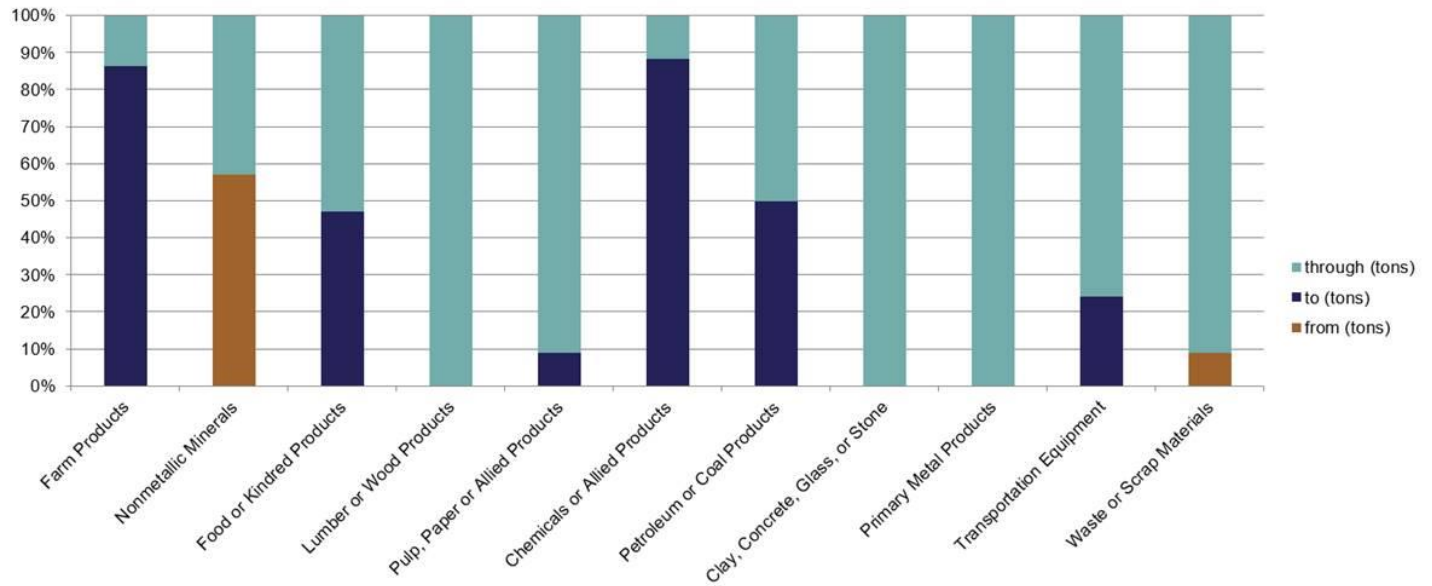
Albany BEA zone Rail Dollars (Waybill)



“Farm Products”, “Chemicals”, “Petroleum and Coal Products”, and “Food Products” move to the region via rail mode. “Wood Products”, “Clay”, “Concrete”, “Primary Metal Products”, and “Stone” move through the region by rail. “Nonmetallic Minerals” originate in the region utilizing the rail mode. About 60% of the nonmetallic minerals (heavy commodity) are moving from the region and the rest passes through the region. Figure 34 illustrates BEA zone freight movements by commodity type.



FIGURE 34: ALBANY BEA ZONE RAIL FREIGHT MOVEMENT BY COMMODITY, SOURCE: PUBLIC WAYBILL (2010)

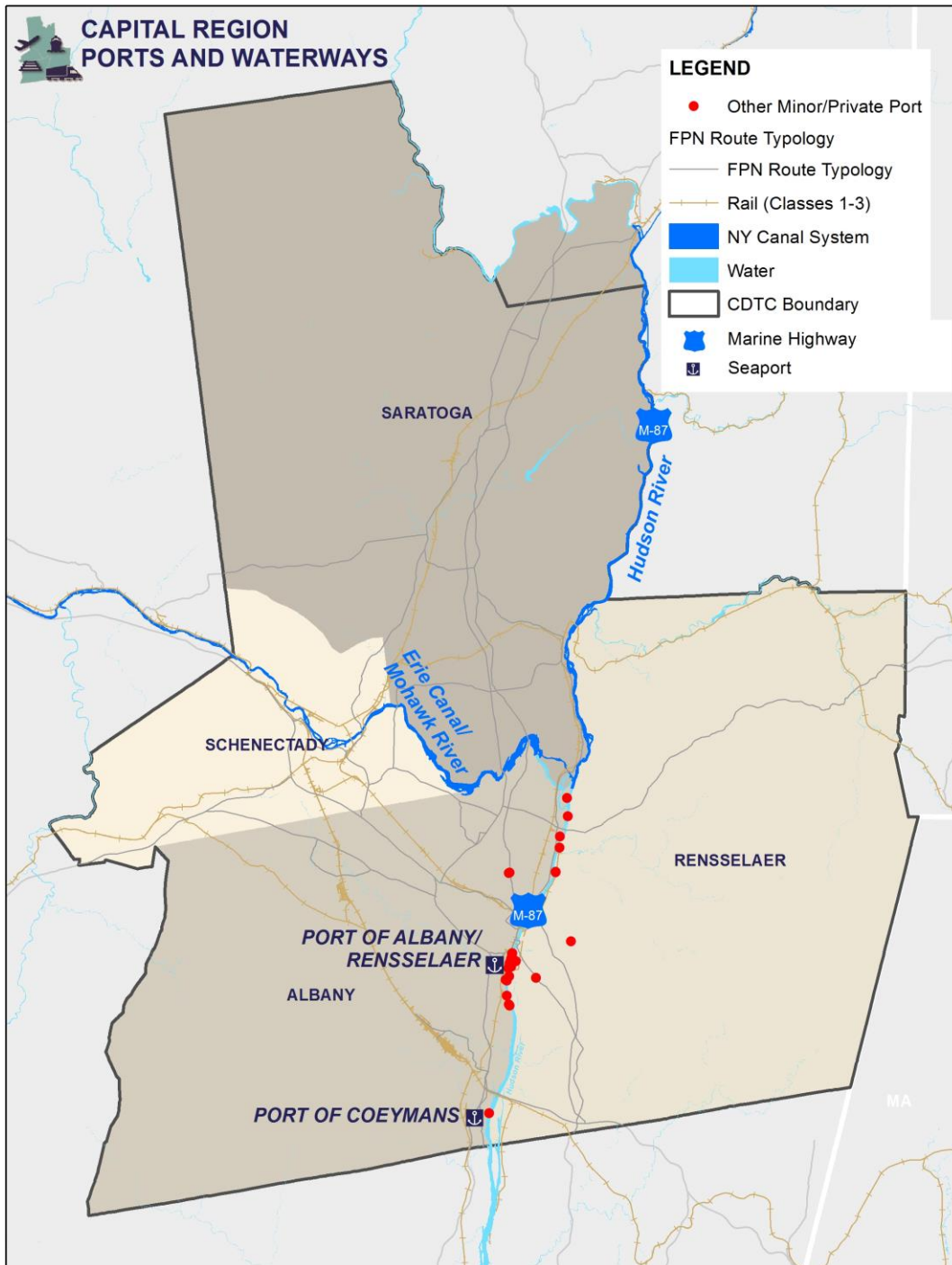


## Ports & Waterways

### Infrastructure

The Hudson River, which has supported waterborne trade since at least the 17<sup>th</sup> Century, provides a way to move domestic and international cargo, primarily bulk and specialty, to and from the Ports of Albany/Rensselaer and Coeymans. As shown in Figure 35, Albany and Rensselaer Counties host numerous public and private loading and unloading facilities on the Hudson River.

FIGURE 35: WATERWAY GEOGRAPHY IN CDTC REGION





### The Port of Albany/Rensselaer

The Port of Albany/Rensselaer is the second most active cargo seaport in NYS and supports over 1,400 local jobs. The Port is located 124 nautical miles north of New York Harbor on the Hudson River. Channel depths reach 32 feet, and deep water facilities exist on both sides of the river. The Albany side wharf is 4,200 feet long, while the Rensselaer side is about 1,200 feet. The Port includes heavy lift on-dock rail service, as well as super-sacking and bagging operations. The facility operates a mobile harbor crane, a 13.5 million bushel grain elevator, and 105 million gallon bulk liquid storage container. U.S. Customs and Border Protection has an on-site office for cargo clearance.

In 2013, the Port completed the development of a new Security/Emergency Operations Center. In addition, to expand and improve its carrying capacity, the Port recently invested in a new crane, timber pile replacement and over \$200,000 in terminal rail improvements to the 20 miles of rail on the facility.<sup>18</sup> In addition, the Port completed the \$8.5 million Rensselaer Wharf reconstruction project in 2014, which doubled the capacity for ship docking on the Rensselaer side of the Hudson and added a mobile harbor crane. This project increased capacity for heavy/project lift cargo. Following the wharf improvements, the Port of Albany anticipates dredging at the Port's south end.

Current Port tenants lease space for both short and long term periods. Major tenants include manufacturers, metal recycling businesses, asphalt producers, and others. The Port also has about 20 open acres of storage space available for tenant use.<sup>19</sup>

### Port of Coeymans

The Port of Coeymans (Coeymans) is a privately owned facility located 10 miles south of the Port of Albany on the Hudson and about 100 miles north of key PANYNJ port facilities. Coeymans accommodates ships up to 750-feet and offers stevedoring, tug, barge, heavy lift, and break bulk services. The 375-acre port includes a 300-foot inlet channel and a 30-foot fresh water deep draft. The Port also has warehouse (275,000 square feet) and outdoor storage space available, as well as welding, cutting, grinding, and other services. The Port is also a permitted construction and demolition waste processing facility, equipped to process 1,000 tons per day.

Coeymans opened in the late 2000s and was employed shortly thereafter for the assembly and barge-transport of major construction materials for bridge projects in the New York City area.<sup>20</sup> In 2015, Coeymans is also supporting construction and transit of materials for the replacement of the Tappan Zee Bridge, including large steel girders.<sup>21</sup>

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<sup>18</sup> 2013 Port of Albany Annual Report <https://flipflashpages.uniflip.com/3/95006/332840/pub/document.pdf>

<sup>19</sup> 2014 Port of Albany Annual Report <https://flipflashpages.uniflip.com/2/95006/353682/pub/document.pdf>

<sup>20</sup> <http://pmterminal.com/about-us/>

<sup>21</sup> <http://www.timesunion.com/news/article/Coeymans-Port-booms-with-work-for-new-Tappan-Zee-6305719.php?cmpid=fbsocialflow>



Coeymans recently added conveyor systems to assist in handling these types of materials to make this more efficient and cost-effective. Coeymans continues to grow and has the potential to become a major regional gateway, as the owners report capacity for shipment of up to three million tons per year.<sup>22</sup> The Port cited the need for funding to enhance security at the facility.

### Canal & Waterway Conditions

The Erie Canal is part of the New York State Canal System and recognized as the Erie Canalway National Heritage Corridor by US Congress.<sup>23</sup> The Canal System provides access to Canada through the Port of Oswego and across New York through the Port of Buffalo. Freight-carrying vessels continue to use the Erie Canal in season. The New York State Canal Corporation reported that, “In 2012, over 42,000 tons of cargo valued at approximately \$26 million was shipped on the Canal System.”<sup>24</sup> Other recent reports show growth of cargo tonnage on the Canal system in recent years.

In the Capital Region, the Erie Canal corresponds to the Mohawk River. As it approaches the Hudson River, it follows a dedicated channel. The Hudson River is designated as Marine Highway 87 (M-87) as part of America’s Marine Highway Program. Section 1121 of the Energy Independence and Security Act of 2007 established this 29,000-mile system of navigable waterways with the intention of integrating water vessels and ports into the surface transportation system. The M-87 route provides a critical connection between the facilities of the PANYNJ to the Port of Albany, also allowing access to smaller ports in between.

### Freight Flows

Due to historical dependence on water movements and the presence of navigable rivers and canals, the CDTC region provides an important link for waterborne cargo. United States Army Corps of Engineers (USACE) data representing water trade movement across NYS and for the Port of Albany/Rensselaer are shown in both Figure 36 and Figure 37.

In 2012, about 40 million tons of cargo moved by water to, from and through NYS, of which 56% were domestic movements, 31% were foreign, and 13% were intrastate. The Port of Albany/Rensselaer handled about 7.5 million tons of inbound and outbound waterborne cargo in 2012, according to USACE data. The Port accounts for about 4% of waterborne imports in the State of New York, about 18% of waterborne exports from the State, and about 20% of overall waterborne movements. Shares by ton and trade type at the state-level are provided in Figure 36.

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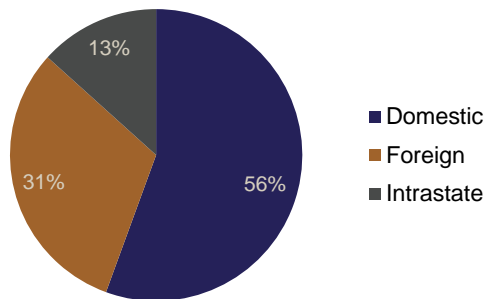
<sup>22</sup> <http://www.pitandquarry.com/rollin-on-the-river/>

<sup>23</sup> [http://eriecanalway.org/about-us\\_what-is-erie-canal\\_overview.htm](http://eriecanalway.org/about-us_what-is-erie-canal_overview.htm)

<sup>24</sup> <http://www.canals.ny.gov/economic-benefit-report.pdf>

FIGURE 36: NEW YORK STATE WATER TRADE MOVEMENT, SOURCE: USACE (2012)

### Overall shares by tons



### Detailed shares by tons

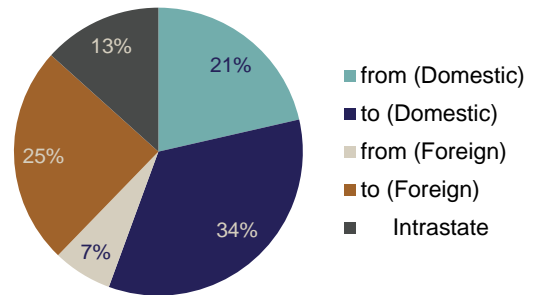
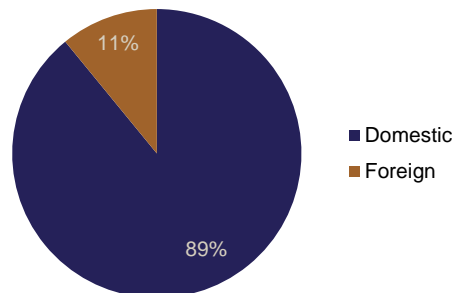


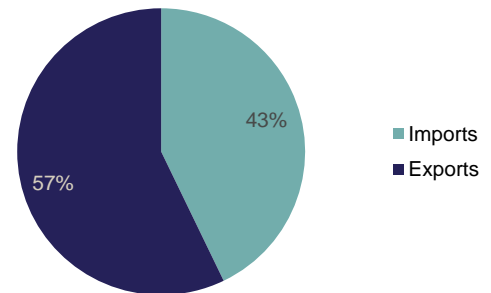
Figure 37 shows the details of domestic and foreign inbound and outbound cargo handled by the Port of Albany/Rensselaer.

FIGURE 37: PORT OF ALBANY WATER TRADE MOVEMENT, SOURCE: USACE (2012)

### Overall shares by tons



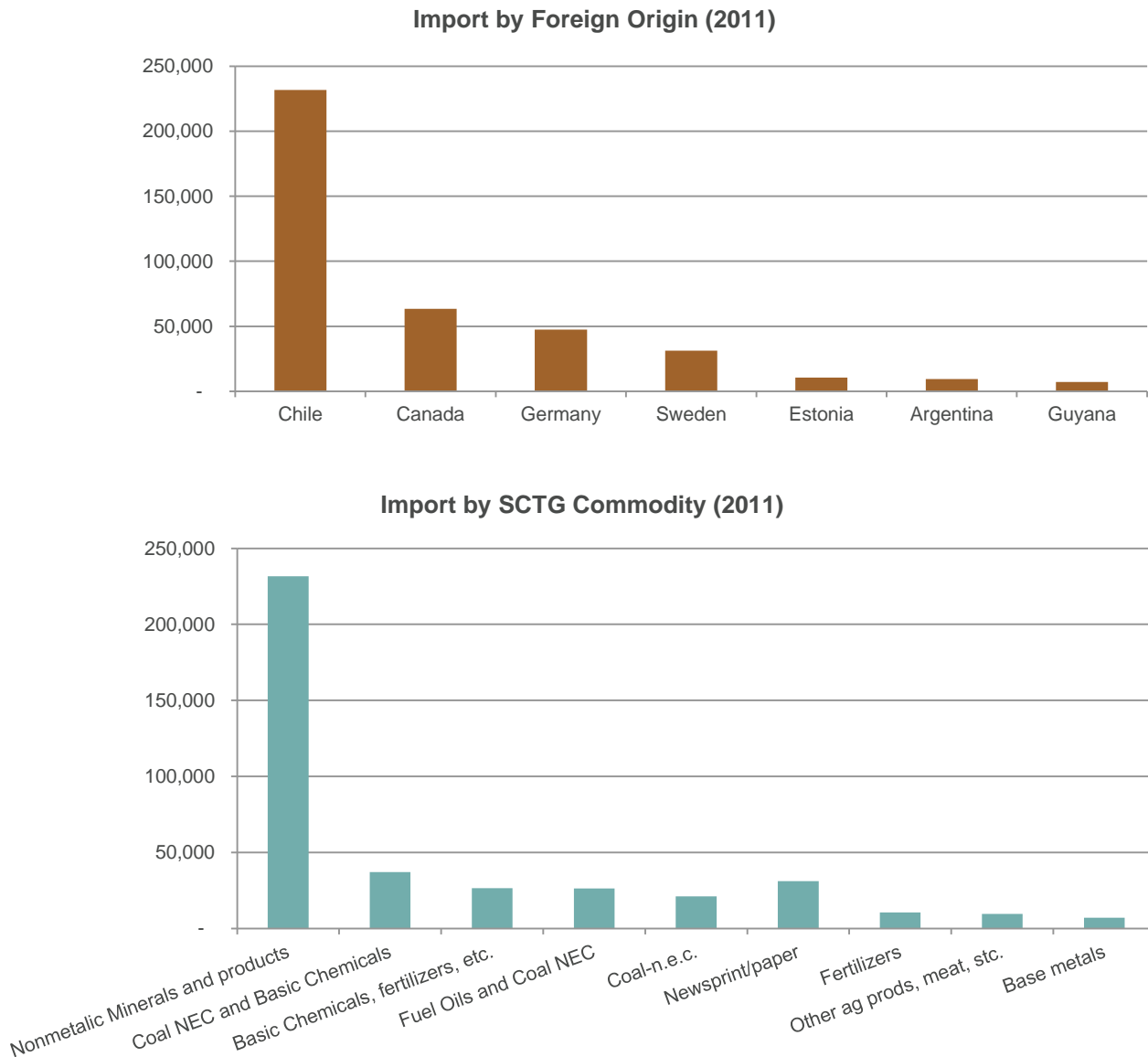
### Shares by ton (foreign)



The share of waterborne foreign movements at the Port of Albany which are exports is almost triple the share of NYS foreign movements which are (57% to 21%). With 89% of tons moved at the Port of Albany domestic, the Port also handles a much higher proportion of domestic movements than NYS as a whole does.

Chile accounts for about 60% of imports to the Port (“Nonmetallic Minerals”), with Europe and Canada being the other main sources of imports. “Nonmetallic minerals” account for about 60% of the Port’s imports. Other imported commodities are mainly bulk natural resources (“Chemicals” and “Coal”). Figure 38 shows the foreign origin and commodity details of import movements to the Port of Albany.

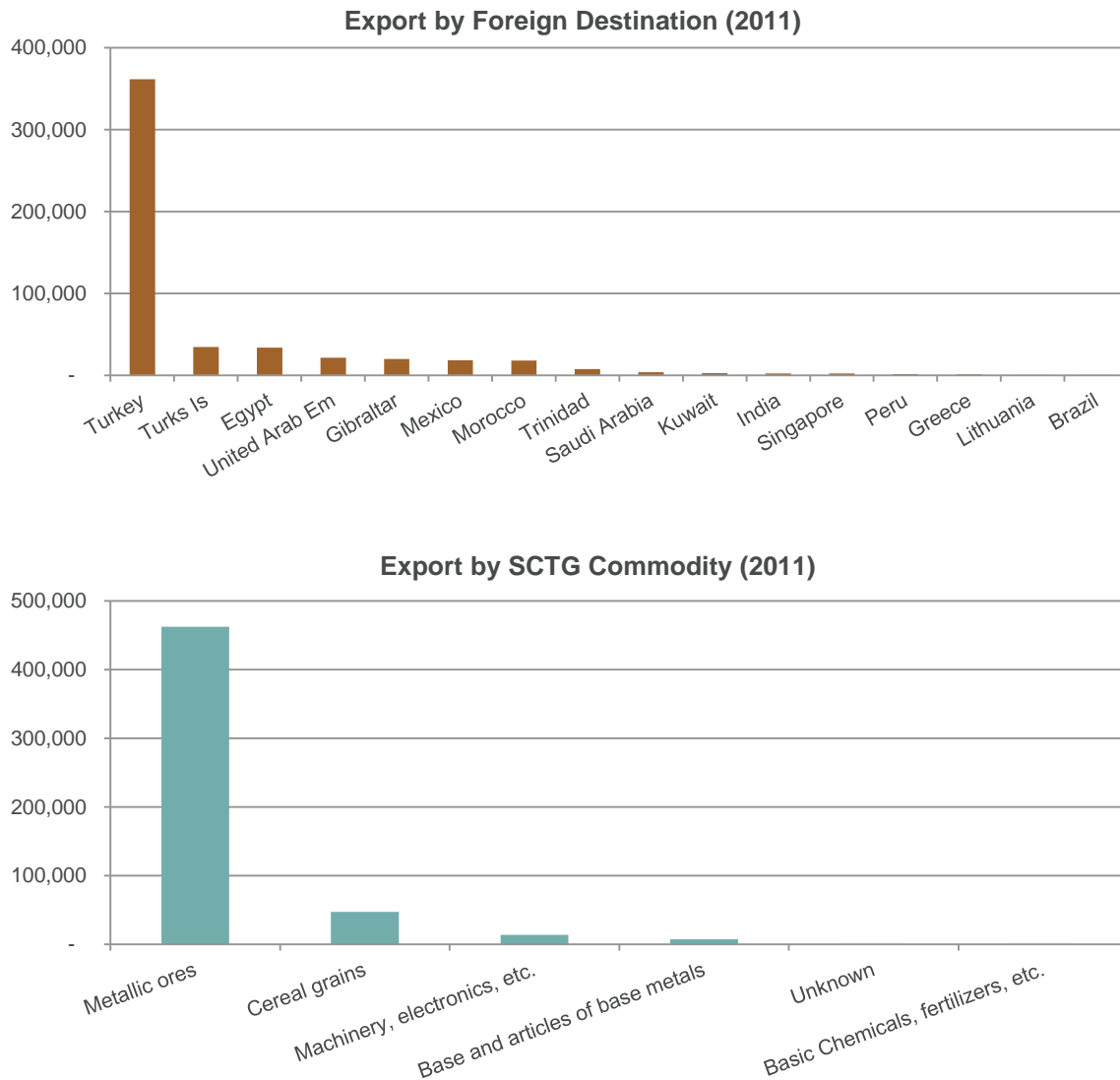
FIGURE 38: PORT OF ALBANY IMPORT WATER TRADE MOVEMENT, SOURCE: USACE (2011)



About 90% of the Port's exports are destined for Turkey ("Metallic Ores"), with the balance of exports mainly destined for Europe, Mexico, and the Middle East. "Metallic Ores" account for about 90% of outbound Port cargo. Other main commodities are wheat and manufactured products. Figure 39 shows the foreign destinations and commodity details of Port exports.



FIGURE 39: PORT OF ALBANY EXPORT WATER TRADE MOVEMENT, SOURCE: USACE (2011)



Considering all movement types, significant volumes of “Petroleum and Petroleum Products” are moved to/from the Port of Albany/Rensselaer (see Figure 40), and the intensity of petroleum movement has been true for 2008 through 2012. Figure 41 shows the percentage change in total tons between 2008 and 2012 for the three different movement directions. The significant growth in the shipments leaving the Port between 2011 and 2012 is notable. Figure 42 examines the traffic leaving the Port by commodity to identify the commodities that experienced the largest growth. It shows a steep rise in “Petroleum and Petroleum Products” while other commodities maintain roughly the same volumes of freight.

FIGURE 40: PORT OF ALBANY ALL TRAFFIC DIRECTIONS WATER MOVEMENT, SOURCE: USACE

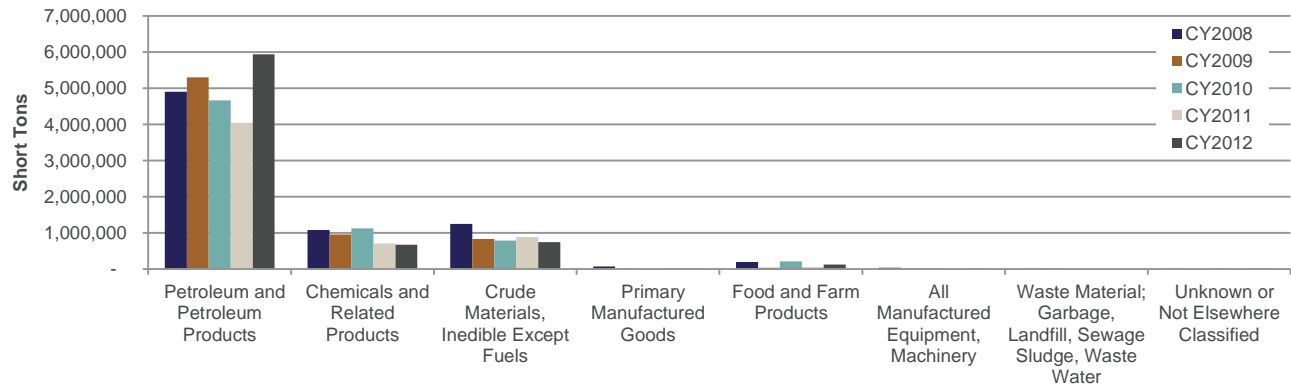


FIGURE 41: PORT OF ALBANY CARGO VOLUMES BY MOVEMENT, SOURCE: USACE

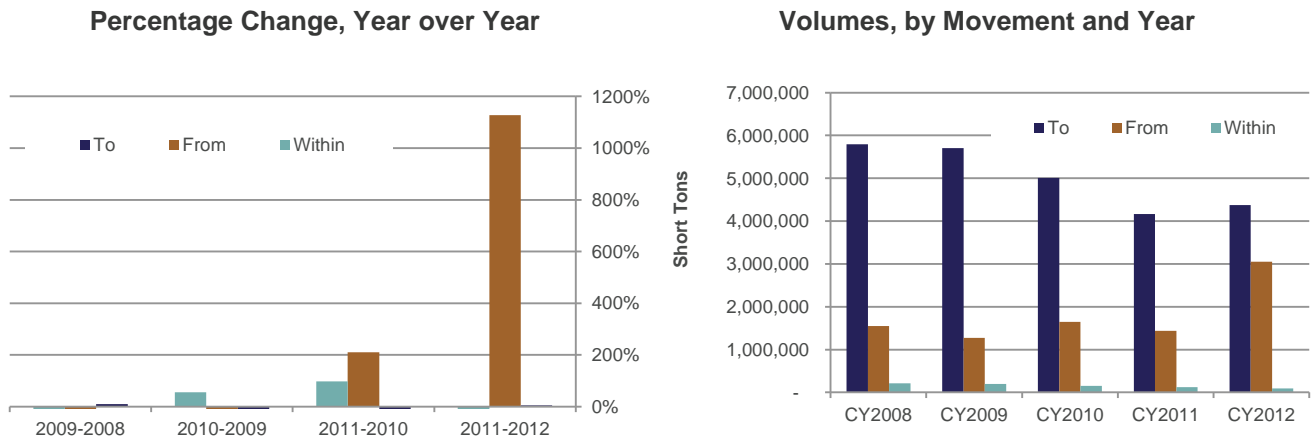
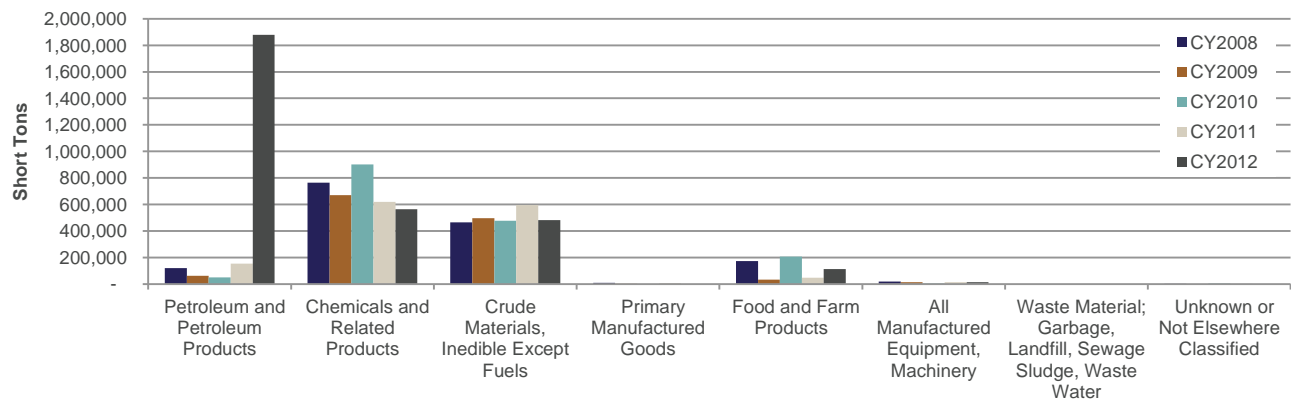


FIGURE 42: PORT OF ALBANY WATER MOVEMENTS (FROM PORT DOMESTIC AND FOREIGN), SOURCE: USACE

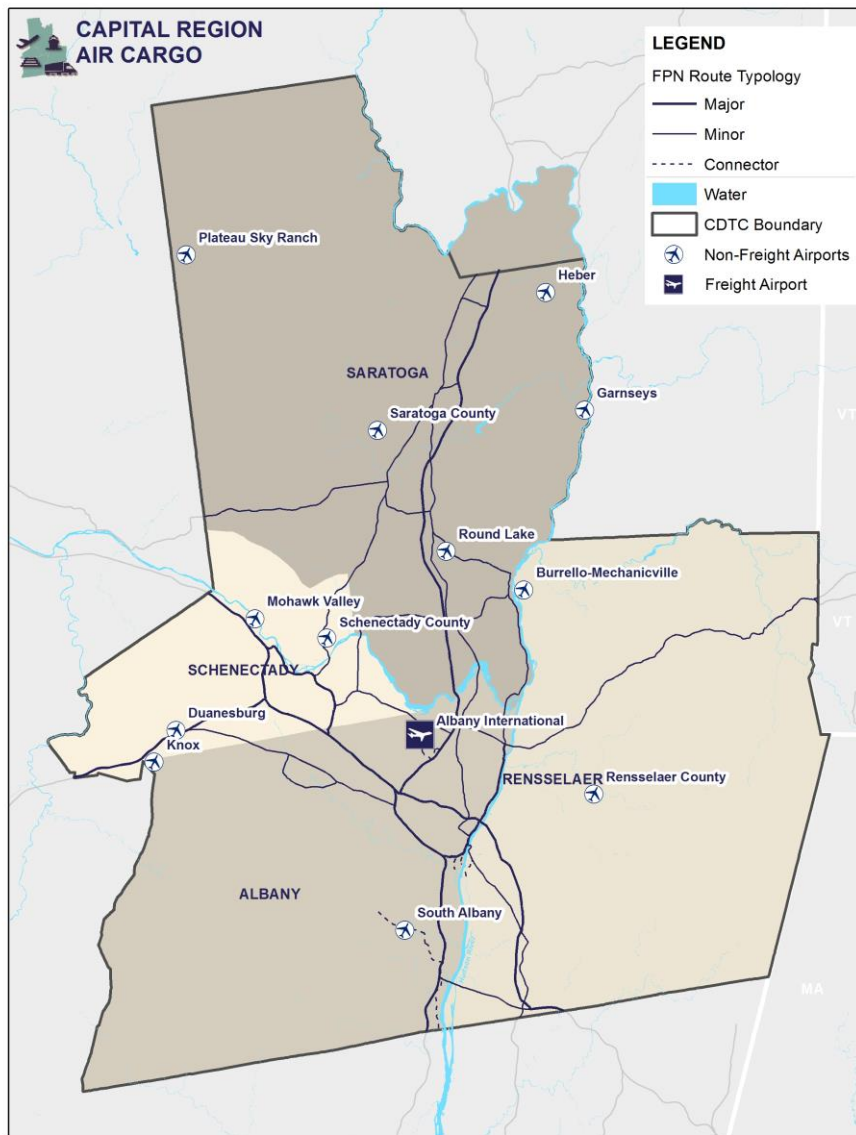


## Air Cargo

### Infrastructure

The CDTC region encompasses 13 commercial and general aviation airports, of which one -- Albany International Airport (ALB) -- handles regularly scheduled commercial air cargo. Figure 43 shows locations of airports in the study area.

FIGURE 43: AIRPORTS IN THE CDTC REGION





### Albany International Airport

ALB serves as the region's hub for dedicated air cargo operations, including FedEx and UPS. In 2014, 1,885 aircraft landed about 164.5 million pounds of cargo at ALB, averaging about five cargo-only plane landings per day and 157 per month:

- Ameriflight LLC – 263 landings containing over 4 million pounds
- FedEx – 260 landings containing just under 51.5 million pounds
- UPS – 482 landings containing over 101.4 million pounds
- Wiggins Airways – 880 landings containing just under 7.5 million pounds

ALB operates a 53,000 square foot Air Cargo Facility, accessed via Kelly Road, in the northeast quadrant of the airport. In addition to cargo-only air carriers, passenger airlines such as American Airlines, Delta Air Lines, Southwest Airlines, and United Airlines provide “belly-cargo” services.<sup>25</sup> As of October 2015, the Albany International Airport Authority is seeking freight handlers to use ALB, with 5,000 square feet available in the Airport Cargo Facility.<sup>26</sup>

In 2013, ALB ranked 99<sup>th</sup> in the nation and fifth in the State for landed cargo weight. In 2014, the Albany County Airport Authority authorized \$5.4 million for both new construction and improvements to the existing airport infrastructure, including re-pavement and lighting improvements on the main runway and heavy operating equipment for snow removal.<sup>27</sup>

### Freight Flows

Because of its relatively high cost, air transport is generally reserved for high value, time-sensitive cargo, such as materials and shipments associated with the region's high-technology industry. BTS reports that, in 2012, about 1.5 million tons of cargo moved through the State's airports, of which ALB handled 20,971 tons (1.4%). If one excludes John F Kennedy International (JFK) airport from these statistics, ALB's share was 11.1% of all tons moving through the State's airports. Details of cargo and mail movements through NYS airports by movement direction are in Table 27.

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<sup>25</sup> Cargo transported in the baggage hold of scheduled passenger flights.

<sup>26</sup> Albany International Airport, <http://flyalbany.com/passenger-guide/air-cargo>

<sup>27</sup> Albany International Airport, <http://flyalbany.com/airport-authority/development-projects>



## Regional Freight and Goods Movement Plan

TABLE 27: NY STATE CARGO AND MAIL TONS BY AIRPORT (TONS), SOURCE: T-100 DATA (2012)

AIRPORT	FREIGHT- OUTBOUND	MAIL- OUTBOUND	FREIGHT- INBOUND	MAIL- INBOUND	TOTAL FREIGHT
JFK John F. Kennedy International	564,681	23,932	742,169	21,980	1,306,850
SYR Syracuse Hancock International	22,135	1,145	25,602	0	47,737
BUF Buffalo Niagara International	21,946	7	25,177	7	47,123
ROC Greater Rochester International	20,715	0	24,602	3	45,317
ALB Albany International	9,697	21	11,274	21	20,971
SWF Stewart International	3,945	0	13,599	0	17,544
LGA LaGuardia (Regional)	3,015	409	3,421	3	6,436
DQK Wheeler-Sack Army Air Field	624	-	868	-	1,491
ELM Elmira/Corning Regional	420	2	459	-	878
PBG Plattsburgh International	229	-	427	-	656
ISP Long Island MacArthur (Regional)	183	-	456	0	639
FRG Republic Airport Farmingdale (Regional)	55	-	69	-	124
JHW Chautauqua County-Jamestown (Regional)	45	-	57	-	102
IAG Niagara Falls International	20	-	46	-	66
HPN Westchester County (Regional)	0	-	13	0	13
BGM Greater Binghamton (Regional)	1	0	5	0	6
ITH Ithaca Tompkins Regional	1	0	4	0	5
ART Watertown International	1	-	0	0	1

ALB's principal air cargo destinations were Memphis (TN), Syracuse (NY), and Hartford (CT), accounting for about 92% of all outbound tonnage (47%, 30% and 14%, respectively). Main origins of inbound air cargo were Memphis (TN), Philadelphia (PA), and Hartford (CT), accounting for about 88% of all inbound tonnage (35%, 33% and 20%, respectively). Syracuse, Memphis, Philadelphia and Hartford each host at least one major sorting facility for an air cargo carrier.

## Pipeline

### Infrastructure

The CDTC region is home to pipelines that handle petroleum products, natural gas, and hydrocarbon gas liquid (HGL). Selkirk is the terminus for the Enterprise Pipeline, which carries petroleum products from the Finger Lakes and Southern Tier regions. Enterprise Products also has an HGL line with a terminus in the Clarksville area. A variety of natural gas pipelines extend throughout the study area, including the Iroquois Gas Transmission Pipeline, Tennessee Gas Pipeline and Dominion Transmission Company. Iroquois Gas operates the "Iroquois Center" on the western border of the study area near Schoharie. This facility is a natural gas market hub.



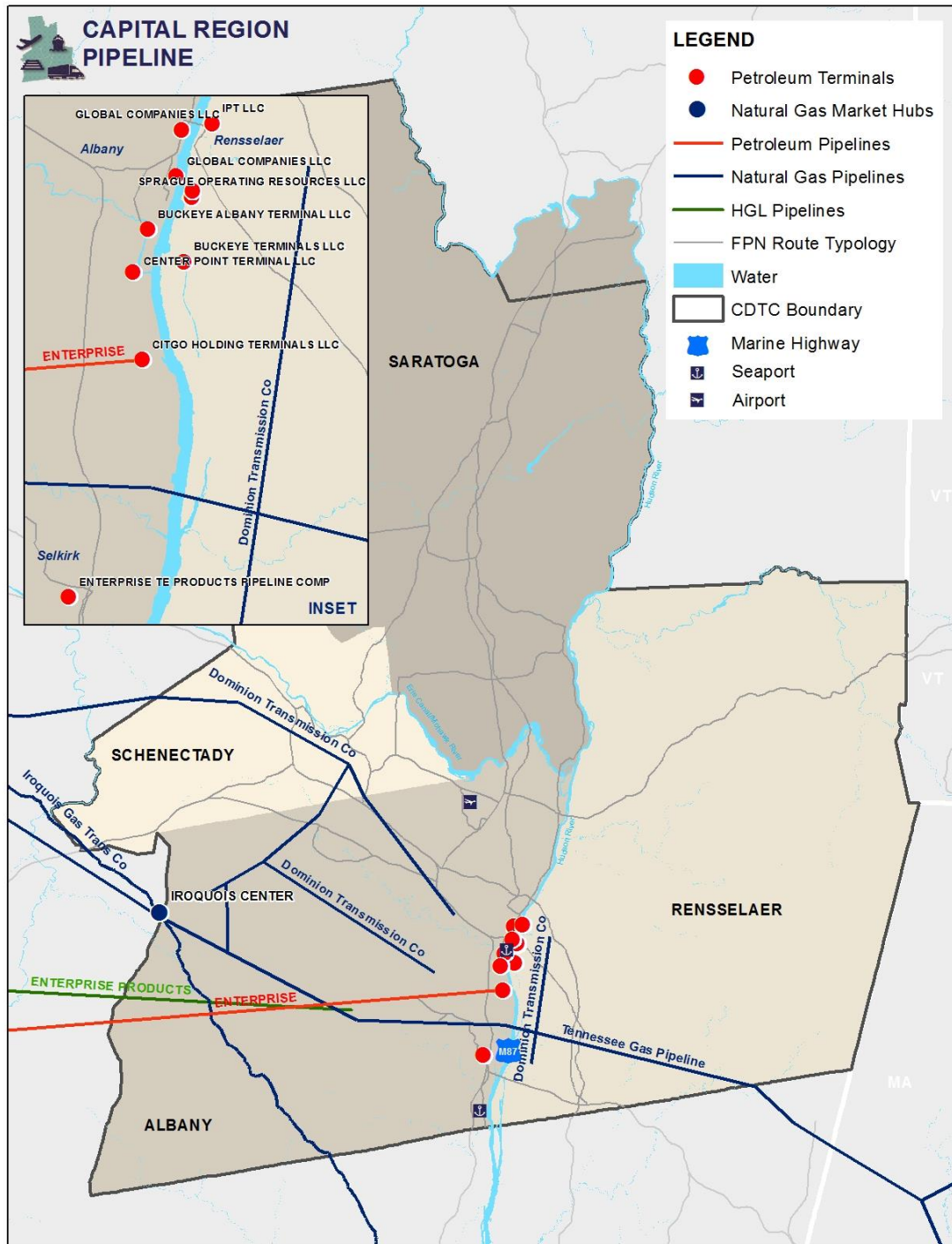
## Regional Freight and Goods Movement Plan

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Figure 44 displays the CDTC regions' principal pipeline system. (Note: HGL terminal information was not available at the time of the study, so the exact name/location of the terminal is not included in Figure 44.)



FIGURE 44: CDTC REGIONAL PIPELINE NETWORK, SOURCES: EIA (2012-2014)





## Regional Freight and Goods Movement Plan

Given the recent growth in Marcellus Shale extraction, various proposals exist to move natural gas throughout the Northeast region via pipeline. Examples of those near to the study area include the proposed Constitution pipeline (Susquehanna County, PA to Schoharie County) and Pilgrim Pipeline (Albany and Linden, NJ). These projects are not finalized for further development or construction; therefore, this study does not further discuss them in detail, as any assessment of impacts on the CDTC region would be speculative.

### Freight Flows

The CDTC region serves as an important regional hub for pipeline connections. Table 28 provides the current amount of commodities being moved by pipeline, as well as the anticipated growth in pipeline flows in the future. As noted, a decline is projected for movements to the Albany FAF zone, but a significant increase is projected for movements within the Albany FAF zone.

TABLE 28: ALBANY FAF ZONE PIPELINE FREIGHT MOVEMENTS (TO/FROM/WITHIN), SOURCE: FAF3

BY PIPELINE MODE	FROM ALB TO ALL OTHER (FROM)			FROM ALL OTHER TO ALB (TO)			FROM ALB TO ALB (WITHIN)		
	TONS (000)	VALUE (MILLIONS)	\$/TON	TONS (000)	VALUE (MILLIONS)	\$/TON	TONS (000)	VALUE (MILLIONS)	\$/TON
<b>TOTAL FREIGHT</b>									
2012	-	-	-	1,104	\$395	357	659	\$20	30
2040	-	-	-	775	\$277	357	2,445	\$75	31
Increase (%)	-	-	-	-30%	-30%	0%	271%	281%	3%



## CHAPTER 6: GAPS AND NEEDS

This Chapter's purpose is to couple the knowledge of existing and forecasted conditions, described in Chapter 5, with an understanding of stakeholder and community needs to identify where existing facilities, programs and/or policies do not currently meet demand or may not meet future demand. The CDTC planning effort involved several venues of stakeholder feedback including an online survey, personal interviews, and meetings with the Freight Advisory Committee. The information in this chapter is a conglomeration of the feedback received in these involvement efforts. This Chapter breaks down the strengths, weaknesses, opportunities, and threats associated with cargo movement on each mode in the CDTC freight system.

### Highway

#### Strengths

- **Industrial Parks:** The CDTC region has two major industrial parks. The Rotterdam Industrial Park includes major distribution firms including Golub, Galesi, and FedEx Freight and is conveniently located on Route 7, adjacent to the I-90/I-88 interchange. The Northeast Industrial Park in Guilderland Center is located off of Route 146/US-20 and located right off the CSXT line that routes from Buffalo, Rochester, and Syracuse to the Selkirk Rail Yard. Tenants include Distribution Unlimited (third-party logistics), PODS (moving and storage), Xpress Global Systems (floor coverings logistics provider), IFCO Systems Pallets Division (pallet supply and recycling), Holbrook Lumber Company, Premium Plywood Products, and McLane Foodservice Distribution. The two industrial parks generate extensive truck traffic to, from, and within the Capital Region, demonstrating the region's strength in the "Transportation and Warehousing" sector.
- **Regional Distribution Hubs:** In addition to the two industrial parks described above, various large corporations host major distribution facilities in the Capital Region. For example, the Ace Hardware and Target distribution hubs in Wilton facilitate distribution of goods for stores throughout the northeast.
- **Generally Healthy Pavements:** Only 2% of the FPN has "Poor" pavement scores and 22% has "Fair" scores, indicating that a significant majority of regionally-significant freight routes have "Good" to "Excellent" surfaces. Similarly, only 24% of roadways fall under an "Unacceptable" IRI, also indicating that the majority of roadways in the FPN have rideable surface conditions. While it is important to improve the roads that fall under "Poor," "Fair," and "Unacceptable" conditions, above-adequate pavement ratings on over 75% of the roadways increases safety and efficiency for trucks and is a strength of the region.
- **Network Connectivity and Redundancy:** Figure 13 (in Chapter 4) presents an overview of all modes of the regional freight system. There are no dead ends in the FPN. Connector roads end as they reach their respective intermodal center, and Major and Minor Routes only appear to "discontinue" as these features exit the CDTC region. Every major intermodal center and most distribution hubs and manufacturing



centers connect directly to the FPN system. Additionally, the FPN includes a variety of parallel routes. Therefore, if a major crash occurs on a Major Route, there will be Minor Route options available to circumvent major delays for truck deliveries or pick-ups (e.g., if the Northway (I-87) experienced a significant incident, trucks could utilize US-9 to travel north-south along the corridor).

- **Support for Major Industries:** Both Agriculture and Manufacturing are strong sectors in the Capital Region. Further, the Capital Region REDC's 2014 Annual Report emphasizes support for jobs and investment in agriculture, as well as providing incubators for businesses involved in research, development, and manufacturing. These industries rely heavily on freight movement via truck. Investment in these sectors will ensure steady freight flows in the region.

## Weaknesses

- **Northway Exit 16 Overpass:** Exit 16 provides the primary access connections to both the Ace Distribution Center and the Target Distribution Center. The bridge, built in 1962, is one lane in each direction and now has significantly higher traffic volumes given the neighboring Distribution Center activities and several new residential developments. The current Bridge Condition Rating is 5.156 (a rating greater than 5 is considered to be in 'good' condition). This location could become a safety hazard if congestion causes exiting trucks to queue on the ramp and mainline. It should be monitored on a regular basis.
- **Route 67 Corridor:** Route 67 provides an important connection between the NS Intermodal Facility in Mechanicville and I-87 Exit 11 in Malta. The concern, cited by several stakeholders and supported by study team field reviews, stems from anticipated increased truck volumes along the corridor as a result of recent investments in the intermodal facility. There are safety concerns at the entrance to the yard.
- **GPS Routing:** Stakeholder interviews also found that trucks utilizing GPS for routing were often given paths through residential areas or to areas with clearance limitations. Residential area roads are not guaranteed to have the appropriate dimensions, clearances, and weight capacity to accommodate truck traffic. Therefore, truck drivers may find themselves in difficult positions when routed through these areas. Further, residents may complain about noise, exhaust, pavement degradation, or safety issues rendered by an increased presence of commercial vehicles on residential streets. Clearance limitations from bridges or other vertical obstructions are dangerous to drivers and can increase travel time, as drivers will need to find ways to circumvent these obstacles.
- **Congestion on I-87 and I-90:** Interstates in the region are subject to high congestion in peak hours, particularly on I-87 and I-90. Stakeholders noted that traffic is also high along these corridors on holidays.
- **Tandem Truck Lots:** Trucks made up of two 40' trailers may operate on the NYS Thruway, but not on other roads beyond distances and exceptions listed in New York State Vehicle & Traffic Law §385. This policy requires a yard at designated Thruway exits to provide for splitting, storage, and make-up of these



doubles. At Exits 23, 24, and 25A, the placement of the tandem lot is immediately adjacent to the toll barrier. This often requires trucks to turn across all of the entering traffic adjacent to the toll booths, causing congestion and safety concerns.

- **Illicit Activity at Truck Stops:** Stakeholders identified rest stops as hot spots for crime. Many truck drivers do not feel safe at the existing rest stops in the county. The Plaza 23/Riverside Travel Plaza located near the Port of Albany/Rensselaer was a commonly cited concern.
- **Roundabouts:** The Capital Region's roundabouts act as traffic calming mechanisms and provide a safer alternative to the traditional signalized intersection. While properly designed roundabouts have "truck aprons" to accommodate larger vehicles, both truck and car drivers may be unfamiliar with this feature and have difficulty navigating the roundabout. In addition, roundabouts may present a barrier to oversize/overweight vehicles that attempt to travel through them.
- **Inadequate Truck Information Signage:** Another common stakeholder observation was signage for trucks, specifically in relation to existing designated truck routes and rest stops. New York State has an adopted policy for signing vertical clearance for all bridges that are substandard. These bridges are posted with a height that is 12" less than the actual clearance. The intent is to offer a safety buffer, thereby reducing the incidence of bridge strikes. Since many states post actual clearance, this can be confusing for drivers.
- **Inadequate Truck Parking near Intermodal Centers:** The Albany area has extensive truck parking coverage; however, safety concerns and proximity to pick-up/drop-off locations may prevent optimized usage of these lots. Additionally, timing may present issues for drivers with limited loading/unloading windows and driver hour-of-service limitations. As illustrated in Figure 28, the five-mile radius of Albany International Airport lacks a designated truck parking facility. Given the airport lands an average of five cargo-only planes per day, truck parking demand may prove challenging near times of pick-up and drop-off. The Port of Albany/Rensselaer has a parking facility adjacent to the site; however, this site is reported by stakeholders to be relatively unsafe and underutilized. The NS Intermodal Yard in Mechanicville is just under 25 miles from the Wilton Travel Plaza with over 200 parking spaces and within a five-mile radius of the Clifton Park rest area. For trucks coming from the east, there is little parking available en route to the site.
- **Bridge Adequacy:** About 27% of bridges on the FPN are functionally obsolete, indicating that these facilities may not be suitable for freight vehicles given clearance, weight, and dimensional issues. Another 7% of the FPN's bridges are structurally deficient, leaving only 66% of bridges fully equipped for significant truck traffic.
- **Access Issue at Rotterdam Industrial Park:** Stakeholders noted that trucks often have a difficult time making left turns exiting the Industrial Park due to traffic volumes and sight issues.



## Opportunities

- **Growth at I-87 Exit 16 in Wilton:** Both Ace and Target Distributions Centers took advantage of the space near Exit 16 in the Town of Wilton, these two facilities along with ample designated truck parking provide an opportunity for the development of an industrial cluster off of I-87. Grouping industries near one another helps to contain goods movement to the existing FPN and prevent industrial growth near conflicting land uses, as long as adequate infrastructure is provided.
- **Urban Area Truck Designation:** While urban roads will not be classified as part of the FPN system unless they provide a connection to an Intermodal Center, it is important for counties or municipalities to identify and communicate urban truck routes to promote efficient local truck routing.
- **Signage Program for Truck Routing/Parking:** In addition to local level truck route planning, a well-coordinated effort to communicate preferred truck routes and officially-designated truck parking areas could have various positive effects on the regional goods movement system. Signage related to FPN routes, as well as locally-designated routes, can supplement GPS routing to ensure trucks stay on roads appropriate for commercial vehicle traffic.
- **Oversized Vehicle Toll Pass:** Development of a pass-through for oversized vehicles at the Thruway's tollbooths could expedite commercial vehicle delays.
- **Regional Dispatch Network:** Changing regulations in the freight industry create an increasingly difficult environment for independent and small freight operations to connect with smaller manufacturing operations. Often these small manufacturing operations fabricate products that do not completely fill trucks. A coordinated regional dispatch network would help to help facilitate dependable, affordable connections between these smaller manufacturing operations and the freight industry.
- **Freight-Sensitive Development Impact Analysis:** It is not uncommon for local governments to have only a limited understanding of the needs and impacts of the freight industry when reviewing project proposals. CDTC has the opportunity to develop information to share with municipalities and counties that highlights expected implications of new freight-related operations, as well as how to accommodate the needs of drivers in the freight industry.
- **Technology Advancement-ITS:** The existing ITS infrastructure in the Capital Region provides a base for growth in the use of technology to improve commercial vehicle operations. The 2006 I-87 Corridor Study suggests the possibility of incorporating the TRANSMIT system, which uses E-Z Pass transponder information to gauge real-time speeds and delays on the Thruway between the Garden State Parkway and the Tappan Zee Bridge, to I-87 in the Capital Region. Further in 2014, NYSDOT released a plan for statewide implementation of Roadway Weather Information System (RWIS), which uses data collection stations to monitor surface conditions to inform snow and ice removal vehicle dispatch. Expansion of the other technologies listed in the ITS discussion is another opportunity.





- **Technology Advancement – Toll Collection:** Electronic toll collections (E-Z Pass) has been in use on the NYS Thruway for many years. However, except in a few locations, interchanges still have manned toll barriers that create congestion and safety problems. A future opportunity is for the Thruway to create a barrier-free, fully automated toll road.
- **Technology Advancement – Autonomous Trucks:** As a planning organization, CDTC should consider the potential impact of autonomous vehicles, including trucks. Daimler now has a small number of autonomous Freightliner trucks being tested on Interstate highways in Nevada. If applied to long haul segments only, there may be the need for parking areas adjacent to Interstate interchanges where drivers would board to travel to the final destination. Similarly, there is discussion of autonomous urban delivery vehicles, which could facilitate off-hours delivery without labor force impact. While full adoption of these technologies is likely decades into the future, CDTC must not miss the planning opportunity.

## Threats

- **Language Barriers:** In light of truck driver shortages, recent hiring trends show a higher frequency of truck drivers that do not speak or read English. While many systems facilitate bilingual communication, this presents a factor for consideration in the development of future signage efforts, as well as use of ITS systems.
- **Closed Truck Stops:** Two of the rest stops listed in Table 23 and Table 24 are no longer in operation. Collectively these stops compose around 25 spaces. The potential for additional closings because of budget constraints is also of concern.
- **Bridge Signage:** NYS law requires that bridge vertical clearance, when substandard, be signed at 12 inches shorter than actual height. The intent is to make sure that a buffer exists thereby reducing the likelihood of bridge strikes. Experienced drivers are aware of this discrepancy and may attempt to clear bridges despite the vehicle height limitations. This issue can specifically become a problem after the completion of road resurfacing projects if height specifications signage adjustments do not follow. This can result in trucks not clearing the bridge underpass.
- **Inadequate Roadway Lighting:** Figure 24 illustrates a greater frequency of crashes on dark unlighted roads. Many of these roads are interstates.
- **Crashes on Major Routes:** Figure 26 illustrates crashes by incidence of injury or fatality. Serious injuries and fatalities are high on Major Routes in the FPN including I-787, I-90, and Route 7.
- **Tollbooth Bottlenecks:** Despite the widespread use of the E-Z Pass, toll plazas still require vehicles to slow down to a near stop for accurate transponder readings and for the safety of toll collectors as they pass from one booth to another. Commercial vehicles must go even slower to ensure clearance due to the large size of the vehicle.



- **Interchange Capacity Bottlenecks:** I-90, I-88, and I-890 meet to create a beltway around Schenectady, while I-87, I-90, and I-787 create a beltway around Albany. These mass interchange configurations outside of the downtown areas create significant bottlenecks due to changing numbers of lanes and merging.
- **Route 146 Congestion:** As a result of the Rexford Bridge reconstruction, Route 146 increases its appeal to freight traffic markets, as well as personal vehicle traffic. The road is currently one lane in each direction between Schenectady and Clifton Park. This limited capacity has the potential to create delays on the route.

## Rail

### Strengths

- **Major Intermodal Centers:** The NS Mechanicville Intermodal Terminal and CSXT Selkirk Rail Yard facilities provide two outlets to meet demand for the Capital Region's diverse base of industries. The number of intermodal facilities in upstate New York is limited, with only four intermodal facilities between Syracuse, Binghamton, and Rochester. The Capital Region stands out by having these two major facilities.
- **Regional Distribution Hubs:** The Northeast Industrial Park at Guilderland Center and the CSX Transflo in Albany facility provide transload services, allowing cargo to be loaded directly from a rail car to a truck or to a holding facility between the rail car and truck, creating smooth and expeditious connections in both the rail and trucking systems. Also, Kenwood Yard next to the Port of Albany provides unloading of ethanol and crude oil to move on-barge to east coast refineries.
- **SMS Short Line:** SMS Rail Lines of New York, LLC owns the short line railroad at the Guilderland Center Northeast Industrial Park and a segment that connects the Northeast Industrial Park to the newly acquired NS line that travels from Schenectady to Binghamton, Scranton (PA), and Sunbury (PA).
- **CSXT River Line:** The CSXT River Line is one of the most traveled railways in the State according to the 2009 NYS Rail Plan.
- **Upward Trends in Rail Shipping:** The 2040 forecasts project a 226% increase in tons shipped to the Capital Region from outside regions. FAF projections also suggest a 72% increase in tons shipped within the region and 57% increase in tons shipped from the Capital Region to outside regions by 2040. Increases in values per ton shipped to, from, and within the area are not as substantial as the tonnage, which suggest that more bulk products will be moving throughout the region. Rail is often used for heavy weight and moderately valued commodities.



### Weaknesses

- **Passenger/Freight Shared Lines:** While sharing lines helps to combine resources, the CSXT shared line with Amtrak can cause delays in goods movement. Stakeholders noted this in the interview process. However, the double-tracking between Schenectady and Rensselaer should relieve a significant bottleneck.
- **Single Tracking near Selkirk Rail Yard:** Single tracking near the Selkirk Rail Yard area may cause bottlenecks on the CSXT line, thus causing delays in the supply chain.
- **At-Grade Crossings:** Stakeholder interviews cited at-grade crossings as an issue for the area. They are safety hazards, and can slow traffic. Shown in Figure 20, there are four at-grade crossings in the CDTC Region. Three of these crossings allow public access.

### Opportunities

- **Saratoga-North Creek Railroad:** Stakeholder interviews noted that the segment of rail, currently owned in the CDTC area by the Town of Corinth, could potentially be used for northbound freight movement to the North Creek/Chestertown area. In May 2012, Iowa Pacific Holdings (owner/operator) received permission from the Surface Transportation Board to restore freight service on the derelict north end of the line as far as Newcomb, New York. Freight service began on the line in February 2013. Although the service extends beyond the CDTC region, economic development efforts ought to be made to promote the railroad's connection into the Adirondack Park from Saratoga Springs, which is also located along a Class 1 rail owned by Canadian Pacific.
- **Sunbury-Schenectady Connection:** In 2015, NS acquired the rail line between Sunbury, PA and Schenectady, NY from CP Rail. This segment is a critical link from both the Capital Region and NS Mechanicville Intermodal Facility to the NY Southern Tier and Pennsylvania. Heavy-weight materials used for natural gas extraction, a high-growth market in Pennsylvania, may utilize this connection.
- **Halfmoon Rail Corridor:** Stakeholder interviews noted that the segment along the Hudson from Green Island north to Halfmoon is an industry-centric corridor with easy access to both the waterfront and existing Class 1 rail lines. Halfmoon is in a good position to increase its intermodal capabilities and create a facility that will support the industry in this segment of the region.

### Threats

- **Capacity Limitations:** Because rail relies on a fixed guideway system, increases to capacity are limited. The 2009 NYS Rail Plan suggests that growth in freight rail will utilize the existing capacity by 2035. 2040 FAF projections used in this study support this claim, bringing awareness to capacity limitations in the region.



- **Oil Train Congestion:** A significant volume of crude oil moves from North Dakota on the CSX mainline to the Port of Albany and down the west side of the Hudson. Crude oil by rail involves speed restrictions, additional track inspections, and increased safety measures. Trains carrying oil utilize significant capacity on regional rail lines and cause delays because of their many safety restrictions, which may hinder other goods movement to, from, and within the region.<sup>28</sup> They also create potential safety concerns for neighboring residential and commercial entities.
- **Hazardous Materials:** The FRA recognizes that rail transport is the safest method of moving hazardous materials long distances. Therefore, rail traffic often includes the movement of chemicals and other materials that require strategic handling and risk liability on freight infrastructure owners. Incidents involving hazardous material rail cars are not common, but when they occur, the aftermath may be catastrophic.
- **Limited Rail Service for Small Customers:** Class 1 railroads today rely significantly on large volumes of freight moving in “unit trains,” in which all rail cars carry the same commodity and are shipped from the same origin to the same destination, without being split up or stored en route. However, because unit trains are economical only for high-volume customers (e.g., oil producers, intermodal containers, bulk commodity shippers, etc.), small customers who might need only one or a few shipments per week typically turn to trucks for their shipping needs. Trucking’s flexibility and speed generally fits the smaller shippers’ needs and makes shipping by rail logistically and economically infeasible. FAF predictions show rail market share about the same in 2040 as today.
- **Short Line Funding and Operations:** Short lines provide a vital link connecting communities not located along major Class 1 corridors with the national rail freight network. Because these lines are smaller they operate on much thinner margins. Maintenance costs are among the top costs of operating a rail line. As noted previously, while Class 1 railroads often focus on large, long-haul shipments, short-lines have a smaller “market” to draw from and, thereby, fewer resources to maintain the network. They also must rely on Class 1 railroads to move their cars to/from the trip origin or destination. There is often limited economic or operational benefit to the Class 1 railroads from dropping off or picking up cars from short lines, so these interchanges frequently suffer from delays and/or unreliable scheduling. Consequently, short lines may find it difficult to provide timely and reliable service to their customers.
- **Bridge Adequacy:** While railroad companies do not generally make rail bridge ratings publicly available, certain regional freight stakeholders stated that deteriorating rail bridge conditions and weight limits could negatively affect the reliability of the region’s freight system in the future.

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<sup>28</sup> Association of American Railroads <https://www.aar.org/todays-railroads/what-we-haul/crude-oil-by-rail>



## Ports & Waterways

### Strengths

- **Port of Albany/Rensselaer Market Share:** The Port of Albany/Rensselaer is ranked No. 147 for total trade among the nation's roughly 450 airports, seaports and border crossings through July of 2015.<sup>29</sup> It handles diverse import and export cargo. This includes electric generating equipment from General Electric in Schenectady that is shipped globally, facilitated by on-dock heavy lift cranes. Cargill operates a grain elevator that can handle 13.5 million bushels, the largest in the U.S. east of the Mississippi; they deal in grain, flour, and animal feed products. The Rensselaer side of the port includes a major scrap metal export business. The Port also transloads petroleum products to/from barges.
- **Port of Albany/Rensselaer Non-Maritime Business:** The Port is also a landlord, leasing space to a number of tenants that do not use port shipping operations. They include a major scrap metal dealer.
- **Port of Albany/Rensselaer Employment:** The Port of Albany/Rensselaer has a significant influence on the local economy with over 1,400 associated jobs.
- **Port of Coeymans Growth:** The Port of Coeymans provides a new and growing market for waterborne cargo. The Port's strong growth since its recent opening suggests that it will continue to attract tenants and shippers along M-87.

### Weaknesses

- **Shared Waterfront Space:** Municipal waterfront areas along the Hudson hinder the Port of Albany/Rensselaer's ability to expand capacity or operations.
- **Dredging at Port of Albany/Rensselaer:** Following the wharf project, the Port of Albany's south side requires dredging to support water cargo movement.

### Opportunities

- **Capacity to Promote Waterborne Cargo:** the Port of Albany/Rensselaer has 20 acres of open space for tenants, and the Port of Coeymans, a growing port, offers additional space. As capacity fills on both truck and rail modes, M-87 and the Erie Canal provide an alternative for goods movement along strategic corridors in the State. Recent increases in tonnage moved on New York's canal system may support mode share to water cargo.
- **Container on Barge Service:** The Port Authority of New York & New Jersey is one of the largest container handling ports in the country. The Panama Canal expansion may increase that traffic. PANYNJ

<sup>29</sup> <http://ustradenumbers.com/ports/port/port-of-albany-ny/>



has looked before at the “inland port” concept in which large numbers of containers are moved by water or rail to a remote location for further processing. An earlier venture in container-on-barge service to Albany did prove financially viable, but with changing conditions, new opportunities may arise.

### Threats

- **Port Competition:** The Capital Region’s ports face competition from PANYNJ facilities, as well as via rail lines for heavy-weight goods and JFK/ALB air facilities for high-value goods.
- **Security at the Port of Coeymans:** As the Port of Coeymans expands in customers and services, security measures will need to grow to expedite services while ensuring all movement is safe and secure.

### Air Cargo

#### Strengths

- **ALB Location:** ALB is the only cargo airport in the Upper Hudson Valley, making it a hub for not just the CDTC region, but also areas extending further north to Glens Falls and Plattsburgh.
- **ALB Capacity:** Not including the John F. Kennedy International (JFK) airport, ALB accounted for 11% of all tons moving through airports in New York, a significant percentage of cargo for the remainder of the State.
- **ALB Site Improvements:** ALB recently invested in runway improvements and in snow removal equipment, which will enhance the airport’s ability to move freight during the winter season.

#### Weaknesses

- **No weaknesses noted regarding ALB.**

#### Opportunities

- **Lease Opportunities at ALB:** ALB currently has 5,000 square feet of open space for lease by freight handlers. The airport is also willing to accommodate additional freight carrier tenancy but utilizing more of the airport’s space for lease.
- **Growing Tech Industry:** The express shipping options of air cargo make it a valuable option for coordinating high-value, time sensitive shipments to almost anywhere in the world. Shipping by air also offers the advantage of a high level of security as airport controls over cargo are tightly managed. With the location of Global Foundries in Malta, and other technology initiatives throughout the region spurred by SUNY Polytechnic, there is an opportunity for significant growth in demand for air cargo services at





ALB with both dedicated cargo carriers such as UPS and FedEx and belly cargo in passenger airline flights.

### Threats

- **Trucking Efficiency:** The flexibility and speed at which freight can move via truck renders air cargo a tough competitor, depending on destination. It is important to maintain a balance between mode shares, however, to avoid overcapacity on any one mode.

### Pipelines

#### Strengths

- **Growth in Pipeline Movements:** FAF's 2040 predictions suggest significant increases in commodities shipped via pipeline, specifically within the Capital Region. Increases may relate to natural gas extraction in Pennsylvania and movement of natural gas to the New England.

#### Weaknesses

- **No Local Oil Pipeline:** NYS only has one pipeline corridor for oil, the Kiantone Pipeline that moved crude oil from Canada to Buffalo, NY, south to Warren, PA. Oil generally moves via rail in the CDTC Region, which is less efficient.

#### Opportunities

- **Pipeline Proposals:** The growth of natural gas extraction in Pennsylvania catalyzed several pipeline proposals to increase capacity and flow from Pennsylvania to New York and farther up the Northeast. This study does not address any of these pipeline proposals directly because of the uncertainty in funding for any given project; nevertheless, the onset of proposals illustrates growing demand for the service and high potential for additional infrastructure in coming years.

### Threats

- **Environmental Safety:** Similar to rail, there are various environmental hazards associated with the movement of oil, gas, HGL, and other petroleum products.
- **Citizen Opposition to Pipeline:** In addition to the environmental hazards associated with pipelines, pipeline infrastructure is also invasive in construction phases. Citizen opposition to pipeline projects is common and sometimes a significant interference in the routing and timing of pipeline projects.

Figure 45 summarizes the region's collective strengths, weaknesses, opportunities, and threats pertaining to freight and goods movement. CDTC is in a unique position because of its various multimodal opportunities and its



growth in a variety of industries that involve significant movement of freight. Chapter 7 will look further into these strength, weaknesses, opportunities, and threats to provide specific and general recommendations to optimize movement in the Capital Region freight network moving into the future.

FIGURE 45: SWOT ANALYSIS OF THE CDTC FREIGHT NETWORK

STRENGTHS		WEAKNESSES	
Industrial Parks	Port of Albany/Rensselaer Non-Maritime Business	Northway Exit 16 Overpass	Access Issue at Rotterdam Park
Regional Distribution Hubs	Port of Albany/Ren. Employment	Route 67 Corridor	Passenger/Freight Shared Lines
Generally Healthy Pavements	Port of Coeymans Growth	GPS Routing through Residential	Selkirk Rail Yard Single Tracking
Network Connectivity	On-Barge Service from NYC Area	Lack of Available Trucks	At-Grade Crossings
Support for Major Industries	ALB Location	Congestion on I-87 and I-90	Shared Waterfront Space
Major Intermodal Centers	ALB Capacity Stateshare	Tandem Truck Lots	Dredging at Port of Albany/Rensselaer
SMS Short Line	ALB Site Improvements	Illicit Activity at Truck Stops	ALB Capacity
CSXT River Line	Growth in Pipeline Movements	Roundabouts	Waterway Location
Upward Trends in Rail Shipping		Inadequate Truck Signage	No Local Oil Pipeline
Port of Albany/Ren. Market Share		Parking near Intermodal Centers	
		Bridge Adequacy	
OPPORTUNITIES		THREATS	
Growth at I-87 Exit 16 in Wilton	Saratoga-North Creek Railroad	Language Barriers	Transport of Hazardous Materials
Urban Area Truck Designation	Sunbury-Schenectady Connection	Closed Truck Stops	Short Line Funding & Operations
Signage Program for Truck Routing/Parking	Halfmoon Rail Corridor	Bridge Signage	Port Competition
Oversized Vehicle Toll Pass	Lease Opportunities at ALB	Inadequate Roadway Lighting	Security at Port of Coeymans
Regional Dispatch Network	Growing Tech Industry	Crashes on Major Routes	ALB Trucking Efficiency
Truck Stop Electrification	Capacity to Promote Waterborne Cargo	Tolling Bottlenecks	Pipeline Environmental Safety
Freight-Sensitive Development Impact Analysis	Container On Barge Service	Interchange Capacity Bottlenecks	Citizen Opposition to Pipeline
Technology Advancement—Tolls	Pipeline Proposals	Route 146 Congestion	
Technology Advancement—Autonomous Trucks		Capacity Limitations	
		Oil Train Congestion	



## CHAPTER 7: RECOMMENDATIONS

The following section provides a recommended set of projects as well as regional programs, policies and studies that will facilitate more reliable, safe, and efficient freight and goods movement through the Capital Region over the next 10-20 years. The data, information and forecasts provided in the preceding chapters are the foundation of these recommendations. Stakeholder input and comments the study team obtained through various means also helped frame and refine these recommendations.

The recommendations break out into two general categories: **(1) Projects**; and **(2) Programs, Policies and Studies**:

- **Projects** involve construction, reconstruction and/or changes to physical transportation infrastructure. Typically, the State of New York and/or a county or municipality will be the lead for project development and implementation.
- **Programs, Policies and Studies** are non-capital initiatives that seek to employ regulatory, guidance and/or planning tools to facilitate more cost-effective and efficient use of existing and planned transportation infrastructure. Such initiatives may encompass operations (e.g., speed limits, signal timing), engineering and construction (e.g., intersection geometry, truck route standards), and/or land use and design (e.g., buffer vegetation requirements for residential developers). All levels of government may have some role in each of these, although land use and design is usually controlled at the municipal level.

### Projects

#### Early Action Projects

The following includes a subset of projects that are appropriate for “early action” by CDTC and its members. An Early Action Project typically has an estimated implementation cost of \$1-2 million or less and faces only minimal permitting or right-of-way requirements, meaning the project sponsor should be able to advance the project within 2-5 years from programming in the CDTC Transportation Improvement Program (TIP). Table 29 summarizes these early-action projects.



## Regional Freight and Goods Movement Plan

TABLE 29: EARLY ACTION PROJECT LIST

Project Short Name	Project Description	County	Municipality	Mode(s)	On FPN	Type	Funding	Estimated Implementation Cost	Justification
<b>NS Intermodal Facility Access Improvements</b>	Provide turning lanes at NS Intermodal Facility entrance on NY 67 to support safe and efficient truck movements between I-87 Exit 11 in Malta and the facility.	Saratoga	Mechanicville	Highway & Inter-modal	Yes	Capital	F / S / L	\$500,000 - \$1,000,000	NY 67 provides an important connection between the NS Intermodal Facility in Mechanicville and I-87 Exit 11 in Malta and is on the CDTC Freight Priority Network. Projected increased truck volumes along the corridor as a result of recent investments in the intermodal facility make it important to pursue cost-effective improvements in the corridor that facilitate freight mobility as well as general traffic safety and efficiency.
<b>Rotterdam Industrial Park Entrance Realignment</b>	Realign and signalize entrance to Rotterdam Industrial Park at NY 7/ Duaneburg Rd. for safer and more efficient truck movements at a major logistics center and improve traffic and non-motorized safety and mobility.	Schenectady	Rotterdam	Highway	No	Capital	P3	\$500,000 - \$2,000,000	Industrial Park entrance is poorly designed and requires trucks leaving and entering the facility to make awkward and potentially unsafe turning movements to and from NY 7. Realigning the entrance with Frank Road and adding appropriate signalization would improve safety, freight mobility, and overall traffic operations in that vicinity.
<b>Public Official Training and Model Ordinance Development</b>	Develop program that educates local public officials, including planning and zoning boards, about freight movement. Create and disseminate model ordinances and regulations for freight related development.	All	All	All	N/A	Program	F / S / L (UPWP)	TBD	Create a program to educate local planning and zoning boards about the Freight Priority Network, freight typologies, and considerations for efficient and effective regional freight movement. Include development of model ordinances and land use design techniques to protect surrounding non-freight land uses and foster a safe, convenient and efficient freight network; and planning tools like incorporating truck movement in site traffic impact studies.

### Long-Range Projects

The remaining projects will generally require more than five years to implement due to planning, engineering and design, right-of-way and/or permitting requirements. Several of these Long-Range projects also requires collaboration among multiple jurisdictions and/or levels of government, which may also require substantial time to achieve. Table 30 includes a summary of these long-range projects.



## Regional Freight and Goods Movement Plan

TABLE 30: LONG-RANGE PROJECT LIST

Project Short Name	Project Description	County	Municipality	Mode(s)	On FPN?	Type	Funding	Estimated Implementation Cost	Justification
<b>NY 67 Modernization</b>	<p>NY 67 improvements to support safe and efficient truck movements between Mechanicville and I-87 Exit 11 in Malta (approx. 5.1 miles)</p> <ul style="list-style-type: none"> <li>• Signalization at NS Intermodal Facility entrance</li> <li>• Turning lanes on NY 67 at major intersections</li> <li>• Improved trucker guidance signage throughout corridor</li> <li>• Redesign of roundabouts to facilitate safe and efficient truck movements</li> </ul>	Saratoga	Malta / Mechanicville	Highway & Inter-modal	Yes	Capital	F / S / L	\$10,000,000	NY 67 provides an important connection between the NS Intermodal Facility in Mechanicville and I-87 Exit 11 in Malta and is on the CDTC Freight Priority Network. Projected increased truck volumes along the corridor as a result of recent investments in the intermodal facility make it important to pursue cost-effective improvements in the corridor that facilitate freight mobility as well as general traffic safety and efficiency.
<b>Livingston Avenue Bridge</b>	Replace Livingston Avenue Rail Bridge and Walkway across the Hudson River between Albany and Rensselaer.	Albany / Rensselaer	Albany, Rensselaer	Rail / Water	Yes	Capital	F / S / L	\$75,000,000	The Livingston Avenue Bridge is a critical link in New York's Empire Corridor passenger rail line that could not easily be replaced by a crossing at a different location. The Bridge is at the end of its service life and does not meet current rail or river navigation needs or standards. Restoration of the original pedestrian walkway is also needed.
<b>I-87 Exit 16 Overpass Replacement</b>	Replace I-87 (Northway) Exit 16 overpass to add capacity in each direction to accommodate growing truck traffic in vicinity.	Saratoga	Wilton	Highway	Yes	Capital	F / S	\$10,000,000	Exit 16 provides the primary access connections to both the Ace and Target Distribution Centers. The bridge, built in 1962, is one lane in each direction and now has significantly higher traffic volumes given the neighboring Distribution Center activities and several new residential developments. The current Bridge Condition Rating is 5.156.
<b>I-87 Exit 4 Albany International Airport Access Project</b>	Build new ramp off Exit 4 to provide direct access to Albany Shaker Road and airport entrance.	Albany	Colonie	Highway / Air	Yes	Capital	F / S	\$33,000,000	With the significant growth in activity at Albany International Airport in recent years, as well as growing commercial activity associated with the Airport, there is an established need to improve access from I-87 to the Airport. The EIS for the overall Exit 4 Access Improvement project, approved by the federal government in 2014, includes improved airport access as a key part of the project's purpose and need statement.



## Regional Freight and Goods Movement Plan

Project Short Name	Project Description	County	Municipality	Mode(s)	On FPN?	Type	Funding	Estimated Implementation Cost	Justification
<b>Freemans Bridge Road Grade Crossing Separation</b>	Grade-Separate Pan Am (ST) Railway Crossing at Freemans Bridge Road.	Schenectady	Scotia	Highway / Rail	Yes	Capital	F / S / P3	\$10,000,000	This grade crossing is on a CDTC Freight Priority Network roadway and is part of NYSDOT's Schenectady County Track Rationalization and Grade Crossing Elimination Project. The crossing needs to facilitate safe and efficient freight mobility. 2011 data shows a total AADT of 11,889, of which 17.4% or 2,066 were trucks. This important and heavily traveled rail line serves Pan Am Railway freight traffic between the CSX interchange at Rotterdam Junction and both the CP line north to Montreal and the NS line east to Mechanicville. Grade-separated intersections substantially increase capacity by eliminating delay caused by the previous intersection or railroad. Further, elevating one portion of a street or rail crossing improves safety by eliminating vehicle, train, and pedestrian conflicts.
<b>Port of Albany Wharf Expansion</b>	Extend Port of Albany wharf by 2000 feet.	Albany	Albany	Water	Yes	Capital	S	\$25,000,000	Need to extend and improve the wharf to provide the Port with additional reliever port space. This project would extend the wharf by 2,000 feet (37%).
<b>Port of Albany Expansion</b>	Acquire 80 acres of industrial-zoned waterfront land.	Albany	Bethlehem	Water / Highway	Yes	Capital	S	\$10,000,000	Existing tenants would be able to expand their businesses. Prospective tenants that would benefit from enhanced container trade would benefit from the location. Such businesses include manufacturing, construction and cold chain logistics (refrigerated warehousing).
<b>Port of Albany Cargo Handling Capacity Upgrade</b>	Construct storage building on Port grounds for heavy lift cargo.	Albany / Rensselaer	Albany, Rensselaer	Water, Highway, Rail	Yes	Capital	S	\$8,000,000	The building would be about 56,000 square feet and leased to private companies. The building would be located alongside rail lines near the wharf on the Hudson River. The storage building would protect heavy lift cargo, like generators, from the elements prior to transfer to ships.
<b>Port of Coeymans Rail Extension</b>	Extend rail service to waterside at Port of Coeymans.	Albany	Coeymans	Rail, water	Yes	Capital	P3 / S	\$2,000,000	The rail would extend 10,000 feet from the CSX junction at LaFarge cement (easement received). The rail will service port and industrial park and is expected to provide 25% increase in productivity
<b>Port of Albany Dredging</b>	Conduct river dredging at south side of Port of Albany.	Albany	Albany	Water	Yes	Program	S	\$1,000,000	Following the upgrades to the wharf, the Port of Albany/Rensselaer will need to dredge the south side of the port for larger vessels and traffic.
<b>Cargo-Supportive Improvements to Canal System</b>	Identify, prioritize, and fund key investments in NYS Canal System facilities that would support and facilitate cargo movement within, to, from and through the Capital Region, particularly regarding connections with the Great Lakes/Port of Oswego and NY/NJ.	All	Multiple	Water	Yes	Program / Capital	F / S	TBD	The NYS Canal System, particularly the Erie Canal/Mohawk River, is receiving increasing interest in being used for moving various types of cargo, particularly large over-dimension/over-height items and bulk commodities. To support and grow its use for shipping, key facilities such as locks and operating machinery need upgrading to perform reliably, efficiently, and safely.





## Regional Freight and Goods Movement Plan

Project Short Name	Project Description	County	Municipality	Mode(s)	On FPN?	Type	Funding	Estimated Implementation Cost	Justification
<b>Urban Area Hazardous Material Rail Transportation Mitigation</b>	Identify, prioritize and fund safety infrastructure and mitigation strategies where trains carrying hazardous materials (HazMat) travel close to residential neighborhoods and areas.	Regional	Regional	Rail	N/A	Program / Capital	TBD	TBD	Railroads in the Capital Region carry a significant amount of hazardous materials, including crude oil destined for the Port of Albany. Because several of the rail lines that carry these trains run adjacent to residential neighborhoods, some of which contain primarily economically disadvantaged populations, there is a need to identify and install safety devices, such as physical barriers, that help mitigate potential negative impacts to these neighborhoods.
<b>Container on Barge Service</b>	Provide investments in facilities and operations to support container on barge service between NY/NJ and the Port of Albany.	Albany	Albany	Water	Yes	Operating	S / L (F?)	TBD	Projected containerized freight volume increases at Port of NY/NJ resulting from Panama Canal expansion will strengthen case for re-starting container on barge service between NY/NJ and Port of Albany. It is important to ensure the Port of Albany can efficiently and cost-effectively accommodate this new traffic. This service would use the federally-designated M-87 Marine Highway Connector.

## Programs, Policies and Studies

The following set of recommendations includes several programs, policies and planning studies that CDTC and/or its member jurisdictions should implement to facilitate and support more efficient, cost-effective and safe freight and goods movement throughout the Capital Region. Table 31 summarizes the programs, projects, and studies list.

**TABLE 31: PROGRAMS, PROJECTS, AND STUDIES LIST**

Project Short Name	Project Description	County	Municipality	Mode(s)	On FPN?	Type	Funding	Estimated Implementation Cost	Justification
<b>Tandem Trailer Lots Relocation Study</b>	Research and identify new locations for existing tandem trailer lots at Thruway interchanges	Albany, Rensselaer, Schenectady	Multiple	Highway	Yes	Study / Capital	UPWP	\$200,000	The locations of existing tandem trailer lots will jeopardize the safe and efficient of barrier-free tolling at Thruway interchanges. These lots will need to be relocated and/or redesigned as the Thruway transitions to new technologies that allow high-speed passage through toll plazas. Among the options that could be considered is relocating the current Exit 23 lot to the nearby Port of Albany via I-787, as suggested in the 2002 CDTC Linkage Study of Albany County Commercial Transportation Access.



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Project Short Name	Project Description	County	Municipality	Mode(s)	On FPN?	Type	Funding	Estimated Implementation Cost	Justification
<b>Port Truck Parking Expansion</b>	Identify and implement opportunities to improve truck parking adjacent to Port of Albany.	Albany	Albany	Highway / Water	Yes	Study / Capital	UPWP (P3?)	TBD	Multiple stakeholders state that the Port's truck parking is unsafe and insufficient. The Plaza 23 Truck Stop specifically has a poor reputation among truck drivers. Security improvements at this station could help increase parking demand.
<b>Truck Stop Restoration</b>	Conduct planning to reopen closed truck stops on I-87 and I-90 corridors that would provide relief to truck parking demand in Capital Region.	Rensselaer / Saratoga	Schodack / Gansevoort	Highway	Yes	Study / Capital	F / S (UPWP)	TBD	Inadequate safe overnight truck parking was documented in both the parking spatial analysis and through stakeholder input. The Schodack Rest Area (I-90W between Exits 11 & 12) has been closed by NYSDOT except for CVO inspections. There may also be private truck stop facilities that are closed but still have viable parking spaces.
<b>FPN Bridge Improvement Prioritization</b>	Prioritize the reconstruction of bridges on the FPN to decrease those classified as "functionally obsolete" or "structurally deficient" in the CDTC Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).	All	Various	Highway	Yes	Policy	F / S	TBD	About 27% of bridges on the FPN are functionally obsolete, indicating that these facilities may not be suitable for freight vehicles given clearance, weight, and dimensional issues. Another 7% of the FPN bridges are structurally deficient, leaving only 66% of bridges fully equipped for significant truck traffic.
<b>Interstate Lighting Program</b>	Add lighting infrastructure on I-90, I-87, I-88, and I-787 based on objective assessment of needs	All	Various	Highway	Yes	Study	F / S (UPWP)	<\$1,000,000	Serious truck-involved crashes have occurred on unlighted FPN roadways. The FHWA Lighting Handbook suggests a Crash Modification Factor of greater than 25% reduction when lighting is installed, especially to achieve uniform conditions. The Handbook also indicates the importance of an engineering study.
<b>I-787 Rail Relocation Feasibility Study</b>	Coordinate with existing I-787 study to consider removing the existing CP Rail track in downtown Albany that serves the Port of Albany	Albany	Albany, Mechanicville, Watervliet, Cohoes, Bethlehem	Rail	Yes	Study	F / S / L (UPWP)	TBD	Explore the feasibility of removing CP Rail tracks from Mechanicville to the Port of Albany by re-routing trains to the existing tracks or building a second track from Mechanicville to Schenectady to the CSXT Selkirk Yard to the Port of Albany. Coordinate with CDTC I-787 study recommendations. At minimum the goal of this strategy would be to remove railroad tracks from Downtown Albany to improve both safety and access to the waterfront.



## Regional Freight and Goods Movement Plan

Project Short Name	Project Description	County	Municipality	Mode(s)	On FPN?	Type	Fund-ing	Estimated Implementation Cost	Justification
<b>Capital Region ITS CVO Enhancement</b>	Build on existing Intelligent Transportation System (ITS) infrastructure on I-90 and I-87 Corridors to improve truck driver information and reduce non-recurring and recurring congestion on the FPN	All	Various	Highway	Yes	Program	F / S (UPWP)	TBD	Truck-based freight movement requires both efficiency and reliability to avoid costly delay, meet delivery schedules and conform to driver hours-of-service (HOS) requirements. While the Capital Region has an established ITS infrastructure, freight operations in the area would benefit from enhanced Commercial Vehicle Operation (CVO) applications. These include additional weigh-in-motion (WIM) stations and electronic credentialing (there is currently one WIM test bed site and e-screening location in the Capital Region at Schodack). Incident management protocols should ensure that pre-planned detours can accommodate trucks. Truck drivers rely on both GPS and static signage for directions. GPS for truck routing must be kept up to date with deficient vertical clearance, load postings, and urban truck prohibitions. Static signs to key freight destinations should be reviewed for accuracy.
<b>Local Delivery Optimization</b>	Research and identify policies, procedures and actions municipalities can employ to support and facilitate safe and efficient goods deliveries in dense urban zones.	All	Various	Highway	Some	Study / Program	UPWP / Linkage Program	\$150,000	Past CDTC Linkage Studies have identified goods movement, especially local package and goods deliveries, as a growing challenge in congested urban areas of the Capital Region. This issue will become more challenging as the region's urban centers attract more infill and mixed-use development and people. This project would develop a toolkit of policy, programmatic and capital improvement options municipalities can employ to help better harmonize urban goods movement with overall traffic, pedestrian and bike activity, and general quality of life needs.
<b>CDTC Freight Data Collection Program</b>	Build on existing regional traffic and transportation data collection systems and procedures to include more detailed and multimodal freight data, including data from state facilities (e.g., WIM stations) and from the pending CDTC SHRP2 study report.	All	All	All	Yes	Program	UPWP	TBD	There is a need for CDTC to move toward more systematic and robust collection of data on freight transportation in the region in order to support ongoing planning, investment decision-making, and performance monitoring. With the development of a new statewide freight plan by NYSDOT, CDTC has an opportunity to collaborate and partner with the state to improve and expand its ability to collect and employ freight data across all modes.



### Performance Measures

The federal Moving Ahead for Progress in the 21<sup>st</sup> Century legislation (MAP-21) introduced the requirement that MPOs and states use a method known as **performance-based planning and programming (PBPP)**. The intent of PBPP is to have the agencies that invest public monies in transportation improvements continuously evaluate the outcome of those investments. This provides transparency to the public and decision makers about the efficacy of investments.

MAP-21 includes seven National Goals that form the basis of PBPP. These include safety, infrastructure, mobility, reliability, and freight and economic development. While USDOT has not yet completed the rulemaking required to define the performance measures as of the date of this report, the Capital Region will benefit from CDTC considering the relationship of freight and goods movement to the overall performance of the region's transportation system, and particularly that of the FPN. Most of the freight-related performance measures will be linked to the condition and performance of the highway portion of the FPN, since that is where CDTC can directly invest.

Recommended CDTC freight performance measures include:

- **Infrastructure – Bridges:** The proposed federal rule on infrastructure applies to the National Highway System, although states can choose to broaden the application. It is recommended that CDTC apply the proposed measure of percent Good/Fair/Poor bridges to all FPN roads.
- **Infrastructure – Pavement:** The same federal rule proposes evaluating the condition of pavements based on the IRI scale. It is understood that trucks have a negative impact on pavement smoothness through rutting and cracking. There is concern that the proposed federal methodology that focuses on percent poor may drive agencies toward a “worst first” rather than “preservation first” approach, which is not desirable. CDTC may consider the best use of pavement metrics.
- **Safety:** The proposed federal rule focuses on fatal and serious injury crashes. CDTC should adopt a freight metric that measures the number of fatal and serious injury CVO crashes on the FPN.
- **Mobility:** Recurring congestion on the FPN interferes with the efficiency of goods movement. An appropriate performance measure is vehicle-hours of delay applied to truck percentage.
- **Reliability:** Non-recurring congestion can cause large and measurable costs to goods movement. The causes are incidents (including crashes), work zones, weather events, and special events (like concerts or fairs). With carriers expected to meet specified delivery windows, or constructing driver schedules to meet hours of service regulations, an unplanned delay can make adherence impossible. Commonly used metrics for reliability include the planning time index and travel time index, both of which measure the variability in travel time on a given facility over months or a year.



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- **Environmental Impact:** Because CDTC assigns a high level of concern to limiting the impact of travel on the region's environment and quality of life, it is appropriate to consider truck-related emissions and energy consumption. These performance measures will be primarily modeled rather than measured.
- **Shipping Mode:** CDTC recognizes that each mode of freight movement has its own characteristics, so there is little competition among them. An exception may be use of truck when rail, particularly short line operation, cannot provide the service a shipper needs. However, even absent competition, it is important that CDTC track the utilization of its regional transportation system in terms of tonnage and value shipped by each mode over time.



## CHAPTER 8: SUMMARY

Freight and goods movement are integral to a region's economic health. In order to attract and retain a variety of businesses, from manufacturing to retail, freight must move efficiently at competitive costs. Shippers should have access to more than one mode and more than one carrier. This not only increases competition but also provides resiliency in the supply chain. A global reach, facilitated through import and export opportunities, enhances the economy even more.

The Capital Region is in a positive position. Its highway system is in generally good condition, with only modest congestion in specific locations during peak periods. Two Class 1 railroads, with two intermodal terminals to move shipping containers from rail to truck, serve the Region. Two active ports on the Hudson River that facilitate both domestic and import-export business also serve the Region. Albany International Airport provides cargo handling facilities for time-sensitive shipments.

### How Can CDTC Facilitate Achievement of the Capital Region's Economic Development Goals?

By focusing on the Freight Priority Network (FPN), CDTC has an opportunity to facilitate and support efficient, reliable and safe freight and goods movement in the Capital Region, thereby enhancing the Region's ability to attract and retain industries and businesses. Specific locations that are candidates for improvement have been identified in the Recommendations section of this report. It is CDTC's responsibility to ensure that necessary improvements are put in place that maintain the integrity and service of the FPN as new freight generating businesses are attracted to the region.

Specific strategies that CDTC should consider include:

- **Collaborate with Economic Developers.** While the regional economic development community is generally aware of the importance of goods movement, CDTC should put the regional freight network and its capabilities on display. Each mode and associated facilities are important assets that can attract new businesses to the region.
- **Collaborate with Land Use Agencies.** CDTC has a long and positive history of collaboration with local governments that control land use. It is unusual, however, that there is a focus on the goods movement needs and impacts of development proposals. This study and its proposed land use typologies can form the groundwork of a renewed collaborative effort.
- **Coordinate with New York State.** While freight movement has a regional impact, there is much about the logistics sector that is statewide, national and global. CDTC is in the position to work with NYSDOT, which is currently doing its own Freight Transportation Plan, to identify opportunities for freight improvements that are of mutual benefit.





## APPENDIX: STAKEHOLDER ENGAGEMENT PROCESS

### Introduction

Part of a successful freight and goods movement strategy includes developing an understanding of the community's desires and level of support. For the purposes of this freight and goods movement study, the 'community' is defined as not only the average regional resident, but also those that are using the network on a regular basis such as manufactures and truck drivers. The goal of our outreach was to proactively engage residents, civic and business leaders, and other key stakeholders. For the CDTC Regional Freight & Goods Movement Study observations, preferences and ideas were generated in a variety of forums including: individual interviews (both in person and via phone), focus group meetings, on-line surveys and "mall meetings".

Stakeholders interviewed and invited to focus group meetings were identified by the CDTC's Freight Advisory Committee. The Freight Advisory Committee brings together private freight operators and public freight planners to share information on local freight issues and events in order to develop a reliable, efficient, safe, and environmentally responsible freight transportation system for the region. The information gathered through our public outreach process was shared back with the Advisory Committee for consideration and discussion. Much of what was learned through the outreach process is the foundation for several recommendations made within the strategy.

#### Interviews & Meetings Conducted

- NYS Motor Truck Association
- Albany International Airport
- NYS Owner-Operator Independent Drivers Association
- Saratoga County Planners
- Galesi Group
- Ace Hardware DC
- Scotty's Truck Stop
- Capital District Regional Planning Commission
- Norfolk Southern
- Mechanicville Intermodal Facility (tour with NYSDOT)
- Rensselaer County Planning Department
- City of Albany
- General Electric
- Chamber of Southern Saratoga County
- Port of Albany (site tour)
- Port of Coeymans
- New York State Canal Corporation
- Schenectady Metroplex Development Authority

### Stakeholder Engagement Activities for this Project

- **Interviews:** Development of comprehensive freight plans and policies by public agencies requires an understanding of how and where goods move throughout the supply chain. To help understand regional needs, interviews were conducted with both public and private sector industry leaders. The interviews took place either at the individuals place of business or via telephone. Basic questions were designed to help identify strengths, weaknesses, opportunities and threats within the region. Flexibility was also given to allow the individual stakeholders to elaborate on any type of unique knowledge they had of the region's needs and to share future plans. Eighteen interviews were conducted.



Interviews indicated that overall the network is functioning well, but requires some targeted improvements. Among the top issues identified were the call for strategically located safe rest areas for truck drivers, improved signage guiding trucks through the region was also called for, particularly to distribution centers and to parking areas, and improved GPS that too often directs trucks to inappropriate areas. Finally, it was frequently noted that car traffic needs to be better informed about the movement of large trucks through roundabouts.

- **Focus Groups:** Focus groups were structured to facilitate discussion to collect opinions, ideas, and comments from both industry leaders and public sector planning professionals. The focus group began with a brief overview of what a freight and goods movement study is and then outlined the plan process. Participants were asked a series of questions to facilitate group discussion and identify priority issues facing the Capital District Region. Focus group attendees were also asked to identify specific projects to address the issues discussed as well as key assets to be enhanced and preserved in the region. Group discussion was also encouraged to vary from any prescribed structure to help draw from the expertise of the stakeholders and highlight the unique aspects of the region. Two focus group meetings were organized:
  1. **Saratoga County Planners Workshop:** Local planners from several Saratoga County communities were invited to discuss freight and goods movement in Saratoga County. Through the meeting it was determined that many local governments do not understand basic needs and implications of freight movement within their communities. A key finding from this meeting resulted in the need to better educate planners and planning boards on the role of freight and goods movement in their communities.
  2. **Chamber of Southern Saratoga County:** The Chamber of Southern Saratoga County represents businesses in one of the fastest growing areas in the State: Ballston Lake, Ballston Spa, Burnt Hills, Charlton, Clifton Park, Crescent, Glenville, Halfmoon, Jonesville, Malta, Mechanicville, Rexford, Round Lake, Schuylerville, Stillwater, Vischer Ferry and Waterford. The Chamber was able to pull together a sub-committee of manufacturers to discuss their specific freight needs and issues. Overall, participants in the meeting felt that the network was working satisfactorily to meet their needs. Some projects were identified, such as the potential to create a regional cooperative dispatching unit to help small- to medium-sized manufacturing operations collaborate on filling truck loads to maximize efficiency and cost effectiveness.
- **Mall Meetings:** Residents are the people who live, work and shop within the region. They suffer from nuisances resulting from urban freight movements near their residential, work or retail areas. The typical resident does not take into consideration the requirements of moving freight and goods into the venues that they make their purchase. For many residents, trucks, trains and planes are a nuisance to them when they wait at a rail crossing, are slowed by a truck or the sound of an airplane overhead.



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In an effort to reach the average residents, two “mall meetings” were organized. The first meeting was held at Wilton Mall in Saratoga County from 11:00 AM – 4:00 PM. The second was held at the Empire State Plaza Indoor Concourse near the food court in downtown Albany from 10:00 AM – 3:00 PM. Both events were set up as informal and relaxed “kiosks” that outlined what freight is and why it’s important for us to consider freight in our local planning efforts. Residents were then asked to indicate on a map points of conflict as well as to help identify priorities from a list of ten priorities. Overall, residents feel that the freight network works effectively. The number one priority was identified as the need to provide and maintain a safe freight movement environment. Three priorities were tied for second: somewhat related the call for a safe network, a number two priority by residents s to provide strategically located safe rest areas for truck drivers; relieving congestion along the Northway was top priority; and finally, making better use of the canal network for large, over-dimension cargo was recognized as a top priority.

- **On-Line Surveys:** With the understanding that the region’s freight network has a more users and greater diversity than we could make one-to-one contact with, two short surveys were developed and posted on the CDTC website. The first survey was geared to the professional users of the network and advertised in the New York State Motor Truck Association newsletter. Three questions were asked of participants to prioritize issues, opportunities, and needs with the reginal freight network. The number one issue identified was congestion along the Northway and Thruway, particularly at the convergence of the Northway and the Thruway at Exit 24. A call for providing more convenient truck parking was also noted as an opportunity going forward.