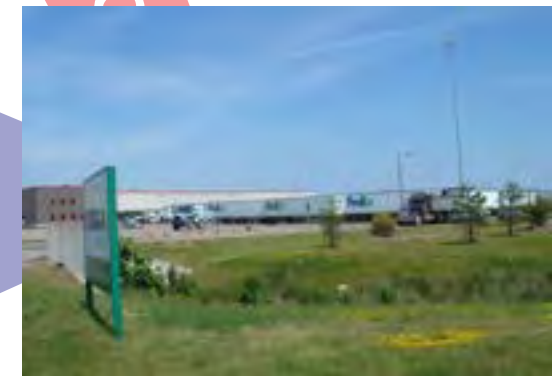
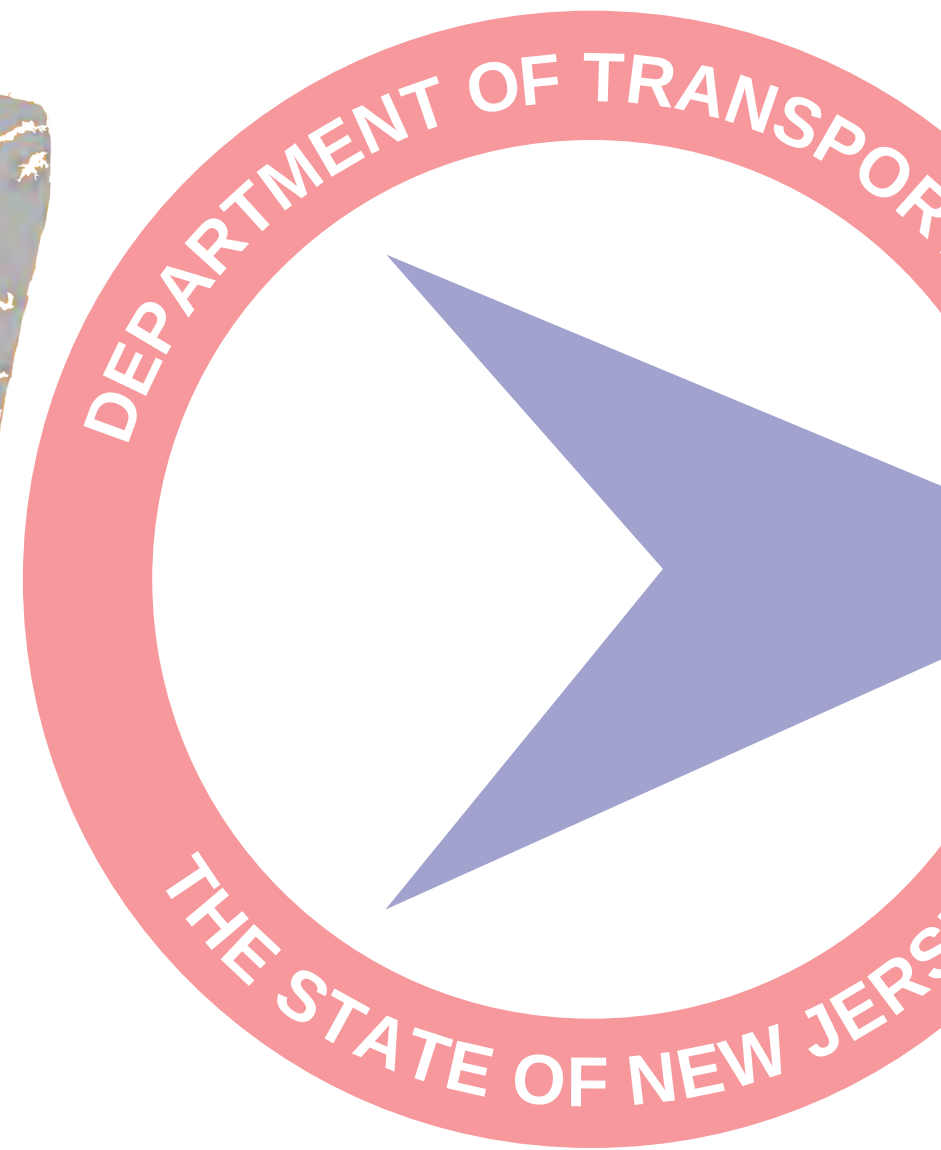


New Jersey Statewide Freight Plan Phase II: Priority Highway Freight Corridors



Final Report
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TABLE OF CONTENTS

Introduction.....1

A Changed Context 2

 A Great Recession and a Gradual Recovery 2

 New Jersey Today 3

 The Changing Freight Landscape 3

 Impacts of the Panama Canal Expansion 7

 International Trade 8

 Key Industry and Commodity Flows.....8

Corridor Profiles to Identify Priority Actions 9

 Demographic and Land Use Data 9

 Retail Clusters.....9

 Truck Volumes 9

 Freight Flows 9

 New Jersey Department of Transportation Management Systems Data 10

 Integration with Context and Stakeholder Input 11

 Ongoing Projects 11

 Southern New Jersey Freight Transportation and Economic Development Assessment 12

 Summary Problem Areas.....12

Blueprint for Investment.....13

 Key Problem Areas 13

 Priority Ranking 14

East-West Corridor Profile (Interstates 78 and 80) 16

 Geographic Context and Corridor Description.....16

 Demographic Assessment 16

 Key Freight Facilities.....16

 Retail Clusters 23

 Truck Facilities 23

 Roadway Summary.....26

 Truck Volumes.....27

 Goods Movement.....29

 Pavement Condition.....37

 Crash Analysis.....38

 Congestion.....39

 Bridge Data 41

 Stakeholder Feedback 42

 Corridor Priority Projects 43

North-South Corridor Profile (Interstate 295 and the New Jersey Turnpike) 69

 Geographic Context/Corridor Description 69

 Demographic Assessment 71

 Key Freight Facilities.....72

 Retail Clusters.....75

 Truck Facilities 76

 Roadway Summary 78

 Corridor Performance.....79

 Goods Movement.....82

 Leading Origins of Heavy-truck Inbound Flows.....83

 Leading Destinations of Heavy-truck Outbound Flows 86

 Heavy-truck Tonnage Flows by Commodity 88

 Origin-Destination Commodities.....89

 Pavement Condition 93

 Crash Analysis 94

 Congestion 96

 Bridge Data 99

 Stakeholder Feedback 100

 Corridor Priority Projects.....101

 Planned Improvements 103

 Remaining Problem Locations 103

Bergen County Connector Corridor Profile (NJ Route 17) 110

 Geographic Context/Corridor Description 110

 Demographic Assessment 111

 Key Freight Facilities.....113

 Retail Clusters 114

 Truck Facilities 114

 Roadway Summary 115

 Truck Volumes 115

 Goods Movement.....116

 Pavement Condition 119

 Crash Analysis.....119

 Congestion 120

 Bridge Data 122

 Stakeholder Feedback 123

 Corridor Priority Projects.....123

 Planned Improvements 124

 Remaining Problem Locations 124

Northeastern New Jersey Beltway Corridor Profile (Interstate 287).....133

 Geographic Context/Corridor Description 133

 Demographic Assessment 134

 Key Freight Facilities.....135

 Retail Clusters 137

 Truck Facilities 138

 Roadway Summary 139

 Corridor Performance.....139

 Goods Movement.....140

 Pavement Condition 144

 Crash Analysis 145



Congestion	146
Bridge Conditions	147
Stakeholder Feedback	148
Corridor Priority Projects	148
Planned Improvements	148

Figures

Figure 1—Key priority highway freight corridors	2
Figure 2—Statewide and national employment trends, 2000 to 2011	3
Figure 3—Trends in truck driver turnover	4
Figure 4—Trends in containerized cargo through the Port of New York & New Jersey	5
Figure 5—Bayonne Bridge project.....	5
Figure 6—Location of warehouses and distribution centers in New Jersey and Eastern Pennsylvania	6
Figure 7—North Atlantic port shares of containerized imports from Northeast Asia	8
Figure 8—Ongoing/Planned STIP Projects.....	11
Figure 9—Priority project locations	12
Figure 10—East-west freight corridor context	17
Figure 11—Land uses in Northern New Jersey.....	18
Figure 12—Employment density in Northern New Jersey	19
Figure 13—Population density in Northern New Jersey	20
Figure 14—Warehouses and distribution centers along the east-west freight corridor	22
Figure 15—Retail establishments in New Jersey	24
Figure 16—Truck facilities along the east-west freight corridor	25
Figure 17—FAF3 data for the east-west corridor	28
Figure 18—Origin-destination shares considering <i>through-state</i> traffic, Interstate 78.....	30
Figure 19—Origin-destination shares considering <i>through-state</i> traffic, Interstate 80.....	30
Figure 22—Top origins and destinations by county, Interstate 78	32
Figure 22—Top origins and destinations by county, Interstate 80	33
Figure 22—Leading pass-through commodities, Interstate 78	34
Figure 23—Leading pass-through commodities, Interstate 80	34
Figure 24—Origin-destination heavy-truck tonnage by commodity type, Interstate 78.....	35
Figure 25—Origin-destination heavy-truck tonnage by commodity type, Interstate 80.....	36
Figure 26—Pavement conditions along the east-west freight corridor	37
Figure 27—Truck crash hot spots along the east-west freight corridor, 2006 through 2008.....	38
Figure 28—CMS score along the east-west freight corridor	40
Figure 29—Structurally deficient bridges along the east-west freight corridor	41

Figure 30—Key problem areas along the east-west freight corridor	43
Figure 31—Problem Locations, Mileposts 5.0–7.7, Interstate 78	47
Figure 32—Problem Locations, Mileposts 6.09–7.06, Interstate 78	48
Figure 33—Problem Locations, Mileposts 7.2–7.7, Interstate 78	49
Figure 34—Problem Locations, Mileposts 23.6–31.5, Interstate 78	50
Figure 35—Problem Locations, Mileposts 29.9–31.5, Interstate 78	51
Figure 36—Problem Locations, Mileposts 48.3–54.32, Interstate 78	52
Figure 37—Problem Locations, Mileposts 48.3–49.7, Interstate 78	53
Figure 38—Problem Locations, Mileposts 49.5–50.86, Interstate 78	54
Figure 39—Problem Locations, Milepost 54.32, Interstate 78	55
Figure 40—Problem Locations, Mileposts 56.0–62.0, Interstate 78	56
Figure 41—Problem Locations, Mileposts 56.80–57.7, Interstate 78	57
Figure 42—Problem Locations, Mileposts 58.9–59.72, Interstate 78	58
Figure 43—Problem Locations, Mileposts 4.3–4.6, Interstate 80	59
Figure 44—Problem Locations, Mileposts 30.4–30.8, Interstate 80	60
Figure 45—Problem Locations, Mileposts 34.0–34.2, Interstate 80	61
Figure 46—Problem Locations, Mileposts 37.5–37.7, Interstate 80	62
Figure 47—Problem Locations, Mileposts 43.5–44.0, Interstate 80	63
Figure 48—Problem Locations, Mileposts 52.8–52.9, Interstate 80	64
Figure 49—Problem Locations, Mileposts 53.5–53.8, Interstate 80	65
Figure 50—Problem Locations, Mileposts 55.1–55.3, Interstate 80	66
Figure 51—Problem Locations, Mileposts 60.0–60.5, Interstate 80	67
Figure 52—Problem Locations, Mileposts 64.9–65.5, Interstate 80	68
Figure 53—New Jersey’s north-south freight corridor	70
Figure 54—Key freight facilities along New Jersey’s north-south freight corridor	70
Figure 55—Land uses in Northern New Jersey	71
Figure 56—Employment density by municipality, New Jersey.....	72
Figure 57—Population density by municipality, New Jersey.....	73
Figure 58—Warehouses and distribution centers along the north-south freight corridor.....	74
Figure 59—Retail establishments within 1 mile of the New Jersey Turnpike	75
Figure 60—Retail establishments within 1 mile of Interstate 295	76
Figure 61—Truck facilities along Interstate 295 and New Jersey Turnpike.....	77
Figure 62—FAF3 truck volumes, Interstate 295	80
Figure 63—FAF3 truck volumes, New Jersey Turnpike.....	81
Figure 64—Origin-destination shares considering <i>through-state</i> traffic, Interstate 295.....	82
Figure 65—Origin-destination shares considering <i>through-state</i> traffic, New Jersey Turnpike	82
Figure 66—Origin-destination shares considering <i>through-state</i> traffic, Interstate 295 and New Jersey Turnpike combined	83



Figure 67—Breakdown of heavy-truck tonnage by origin, Interstate 295 84

Figure 68—Breakdown of heavy-truck tonnage by origin, New Jersey Turnpike 85

Figure 69—Breakdown of heavy-truck tonnage by origin, Interstate 295 and New Jersey Turnpike
combined.....85

Figure 70—Breakdown of heavy-truck tonnage by destination, Interstate 295 86

Figure 71—Breakdown of heavy-truck tonnage by destination, New Jersey Turnpike 87

Figure 72—Breakdown of heavy-truck tonnage by destination, Interstate 295 and New Jersey
Turnpike combined 88

Figure 73—Leading pass-through commodities, Interstate 295 89

Figure 74—Leading pass-through commodities, New Jersey Turnpike.....89

Figure 75—Leading pass-through commodities, Interstate 295 and New Jersey Turnpike
combined.....89

Figure 76—Origin-destination heavy-truck tonnage by commodity type, Interstate 295 90

Figure 77—Origin-destination heavy-truck tonnage by commodity type, New Jersey Turnpike 91

Figure 78—Origin-destination heavy-truck tonnage by commodity type, Interstate 295 and New
Jersey Turnpike combined 92

Figure 79—Pavement conditions, Interstate 295 93

Figure 80—Truck crash hot spots, Interstate 295, 2006 through 2008.....94

Figure 81—Truck crash hot spots, New Jersey Turnpike, 2006 through 2008 95

Figure 82—CMS score, Interstate 295 97

Figure 83—CMS score, New Jersey Turnpike.....98

Figure 84—Structurally deficient bridges, Interstate 295 99

Figure 85—Key problem areas, New Jersey Turnpike 101

Figure 86—Key problem areas, Interstate 295 102

Figure 87—Problem Locations, Milepost 14.2, Interstate 295.....105

Figure 88—Problem Locations, Milepost 5.4, New Jersey Turnpike 106

Figure 89—Problem Locations, Mileposts 42.2/88.1–78.0/W113.8, New Jersey Turnpike.....107

Figure 90—Problem Locations, Milepost 47.6/92.9, New Jersey Turnpike.....108

Figure 91—Problem Locations, Milepost 62.5/E107.8, New Jersey Turnpike.....109

Figure 92—Route 17 freight corridor.....110

Figure 93—Land uses, NJ Route 17 111

Figure 94—Employment density by municipality, Bergen County 112

Figure 95—Population density by municipality, Bergen County 112

Figure 96—Warehouses and distribution centers, NJ Route 17.....113

Figure 97—Retail establishments, NJ Route 17 114

Figure 98—Truck facilities, NJ Route 17 115

Figure 99—FAF3 truck volumes, NJ Route 17 116

Figure 100—Origin-destination shares considering *through-state* traffic, NJ Route 17 116

Figure 101—Heavy-truck tonnages by origin share, NJ Route 17..... 117

Figure 102—Heavy-truck tonnages by destination share, NJ Route 17 117

Figure 103—Leading pass-through commodities, NJ Route 17 118

Figure 104—Origin-destination heavy-truck tonnage by commodity type, NJ Route 17 118

Figure 105—Pavement conditions, NJ Route 17 119

Figure 106—Truck crash hot spots, NJ Route 17, 2006 to 2008 120

Figure 107—CMS score, NJ Route 17 121

Figure 108—Structurally deficient bridges, NJ Route 17 122

Figure 109—Overall performance, NJ Route 17 123

Figure 110—Problem Locations, Mileposts 26.0–26.3, NJ Route 17 126

Figure 111—Problem Locations, Mileposts 24.5–24.8, NJ Route 17 127

Figure 112—Problem Locations, Mileposts 11.8–15.8, NJ Route 17 128

Figure 113—Problem Locations, Mileposts 10–10.5, NJ Route 17 129

Figure 114—Problem Locations, Mileposts 9.0–9.4, NJ Route 17 130

Figure 115—Problem Locations, Mileposts 8.3–8.7, NJ Route 17 131

Figure 116—Problem Locations, Mileposts 3.8–4.2, NJ Route 17 132

Figure 117—Northeastern New Jersey Beltway 133

Figure 118—Land uses, Interstate 287 134

Figure 119—Employment density by municipality, Interstate 287 135

Figure 120—Population density by municipality, Interstate 287 136

Figure 121—Warehouses and distribution centers, Interstate 287 136

Figure 122—Retail establishments, Interstate 287..... 137

Figure 123—Truck facilities, Interstate 287 138

Figure 124—FAF3 truck volumes, Interstate 287..... 140

Figure 125—Origin-destination shares considering *through-state* traffic, Interstate 287 141

Figure 126—Heavy-truck tonnages by origin share, Interstate 287 142

Figure 127—Heavy-truck tonnages by destination share, Interstate 287 142

Figure 128—Leading pass-through commodities, Interstate 287 143

Figure 129—Origin-destination heavy-truck tonnage by commodity type, Interstate 287 143

Figure 130—Pavement conditions, Interstate 287 144

Figure 131—Crash clusters, Interstate 287 145

Figure 132—CMS conditions, Interstate 287, 2006 to 2008..... 146

Figure 133—Structurally deficient bridges, Interstate 287..... 147

Figure 134—Overall corridor conditions, Interstate 287 149

Figure 135—Problem Locations, Mileposts 41.7–42.2, Interstate 287 151

Figure 136—Problem Locations, Mileposts 39.3–39.8, Interstate 287 152

Figure 137—Problem Locations, Mileposts 20.5–21.6, Interstate 287 153

Figure 138—Problem Locations, Mileposts 14.1–14.9, Interstate 287 154



Figure 139—Problem Locations, Mileposts 4.4–4.9, Interstate 287 155

Figure 140—Problem Locations, Mileposts 2.1–2.45, Interstate 287 156

Figure 141—Problem Locations, Mileposts 0.8–1.0, Interstate 287 157

Tables

Table 1—Priority ranking for targeted improvement locations 15

Table 2—Interstate 78 characteristics 26

Table 3—Interstate 80 characteristics 26

Table 4—Summary of 2008 WIM station weekday traffic volumes, Interstate 78 27

Table 5—Summary of 2008 WIM station weekday traffic volumes, Interstate 80 29

Table 6—Leading origins for inbound heavy-truck tonnage, Interstate 78 31

Table 7—Leading origins for inbound heavy-truck tonnage, Interstate 80 31

Table 8—Leading destinations for outbound heavy-truck tonnage, Interstate 78 32

Table 9—Leading destinations for outbound heavy-truck tonnage, Interstate 80 33

Table 10—Origin-destination heavy-truck tonnage by commodity type, Interstate 78 35

Table 11—Origin-destination heavy-truck tonnage by commodity type, Interstate 80 36

Table 12—Summary of structurally deficient bridges, Interstate 78 42

Table 13—Summary of structurally deficient bridges, Interstate 80 42

Table 14—Industrial space, availability, new construction, and lease rates in the market areas
directly served by the New Jersey Turnpike and Interstate 295, fourth quarter, 2010 74

Table 15—Full service areas, New Jersey Turnpike 78

Table 16—Interstate 295 characteristics 78

Table 17—New Jersey Turnpike characteristics 79

Table 18—New Jersey Turnpike west alignment characteristics 79

Table 19—Summary of 2008 WIM station weekday traffic volumes, Interstate 295 80

Table 20—Summary of 2008 WIM station weekday traffic volumes, New Jersey Turnpike 81

Table 21—Leading origins for inbound heavy-truck tonnage, Interstate 295 83

Table 22—Leading origins for inbound heavy-truck tonnage, New Jersey Turnpike 84

Table 23—Leading origins for inbound heavy-truck tonnage, Interstate 295 and New Jersey
Turnpike combined 85

Table 24—Leading destinations for outbound heavy-truck tonnage, Interstate 295 86

Table 25—Leading destinations for outbound heavy-truck tonnage, New Jersey Turnpike 87

Table 26—Leading destinations for outbound heavy-truck tonnage, Interstate 295 and New
Jersey Turnpike combined 88

Table 27—Origin-destination heavy-truck tonnage by commodity type, Interstate 295 90

Table 28—Origin-destination heavy-truck tonnage by commodity type, New Jersey Turnpike 91

Table 29—Origin-destination heavy-truck tonnage by commodity type, Interstate 295 and New
Jersey Turnpike combined 92

Table 30—Summary of structurally deficient bridges, Interstate 295 100

Table 31—NJ Route 17 characteristics 115

Table 32—Leading origins for inbound heavy-truck tonnage, NJ Route 17 117

Table 33—Leading destinations for outbound heavy-truck tonnage, NJ Route 17 117

Table 34—Origin-destination heavy-truck tonnage by commodity type, NJ Route 17 118

Table 35—Summary of structurally deficient bridges, NJ Route 17 122

Table 36—Interstate 287 characteristics 139

Table 37—Summary of 2008 WIM station weekday traffic volumes, Interstate 287 139

Table 38—Leading origins for inbound heavy-truck tonnage, Interstate 287 141

Table 39—Leading destinations for outbound heavy-truck tonnage, Interstate 287 141

Table 40—Origin-destination heavy-truck tonnage by commodity type, Interstate 287 143

Table 41—Summary of structurally deficient bridges, Interstate 287 148

Appendixes

Appendix A—Commodity Flows

Appendix B—Stakeholder Involvement

Appendix C—Enhanced Opportunities—International Freight



ACRONYMS AND ABBREVIATIONS

2007 Plan	The New Jersey Comprehensive Statewide Freight Plan (September 2007)
AADT	Average Annual Daily Traffic
AADTT	Average Annual Daily Truck Traffic
BMS	Bridge Management System
CMS	Congestion Management System
DRBA	Delaware River and Bay Authority
DRJTBC	Delaware River Joint Toll Bridge Commission
EB	Eastbound
GSP	Garden State Parkway
IL	Illinois
IN	Indiana
MI	Missouri
MOTBY	Military Ocean Terminal at Bayonne
NB	Northbound
NJDOT	New Jersey Department of Transportation
NJIT	New Jersey Institute of Technology
NJTA	New Jersey Turnpike Authority
NJTPA	North Jersey Transportation Planning Authority
NJTPK	New Jersey Turnpike
OH	Ohio
PANYNJ	Port Authority of New York & New Jersey
PMS	Pavement Management System
PNYNJ	Port of New York & New Jersey
SB	Southbound
SIC	Standard Industrial Commodity
SJPC	South Jersey Port Corporation
SMS	Safety Management System
TEU	20-foot equivalent units/containers
TIP	Transportation Improvement Program
TP-1	NJDOT Transportation Problem Statement Form
WB	Westbound
WI	Wisconsin
WIM	Weigh-in-Motion
WNRR	Washington Northern Railroad



INTRODUCTION

The 2007 *New Jersey Comprehensive Statewide Freight Plan* (2007 Plan) recognized the critical role of goods movement within New Jersey’s economy and the need for an efficient interconnected multimodal freight system. New Jersey’s freight system operates at international, national, regional, and local levels and involves all forms of freight conveyance—trucking, rail, air cargo, waterborne—operating in an integrated multimodal manner. The 2007 Plan identified the opportunities and challenges associated with the movement of goods in New Jersey and recommended a number of actions to advance New Jersey’s freight movement goals.

Moving forward, the New Jersey Department of Transportation (NJDOT) is focused on a systems approach and refining specific strategies and investments for each mode. To that end, NJDOT has embarked on a *rail freight strategy plan*, a *marine highway platform initiative*, and a *highway corridor program*—coordinating the three efforts to ensure a multimodal action plan for the state. These three plans, along with the *Southern New Jersey Freight Transportation and Economic Development Assessment* (South Jersey Freight Plan), will ultimately create a roadmap for future transportation investments and their impact on the goods movement industry in New Jersey. When linked together, this multi-pronged approach illustrates the importance of each individual mode and the need to connect with economic development opportunities throughout the state. Further, it provides New Jersey with a blueprint to review critical linkages between modes in order to expand the multimodal capacity of the state. NJDOT is committed to advancing a statewide *multimodal* freight agenda and the review of how freight moves along each individual mode is the continuation of this effort.

The highway corridor program is articulated in this report—the *New Jersey Statewide Freight Plan Phase II: Priority Highway Corridors*. This report examines the top six priority freight corridors identified in the 2007 Plan. The 2007 Plan prioritized New Jersey’s key highway corridors based on overall truck volumes, tonnage moved, and connections to major freight facilities. The 2007 Plan developed a series of immediate and near-term actions aimed at advancing freight improvements throughout the state, including the need to develop corridor-based infrastructure improvements, as this plan ultimately sets forth to do. While this study focuses on the top six highway corridors identified in the 2007 Plan, a review of the next set of priority roadways may be warranted under a supplemental study. Likewise, this plan does not focus on last-mile connections, including National Highway System Connectors. Further study of these critical links is warranted to identify gaps between the six key highway corridors and major distribution or intermodal centers.

Movement of goods along the major corridors of New Jersey will continue to be significant. In order to keep New Jersey businesses competitive with neighboring states and effectively serving the state’s residents and customers, NJDOT and other state agencies must continue to invest in New Jersey’s key highway corridors.

Understanding the constrained fiscal environment and multiple demands for funding, these investments can be strategic and targeted:

- NJDOT should advance the top problem areas, identified in the Blueprint for Investment section of this report, into its pipeline.
- NJDOT and NJTA should prioritize already planned improvements along these corridors that support freight movements and economic development within the NJ key industries.
- NJDOT should advance policy changes and pilot projects, working with the freight industry, port facilities, and municipal and county governments to ensure that collaborative solutions are developed.

- To improve overall roadway safety, NJDOT and the NJTA should invest in new or expanded truck parking facilities, working with local officials to develop private facilities and developing solutions that minimize the impacts to local roads and residents.
- Given the number of jobs and businesses supported by supply chain activities in the state, NJDOT should increase the importance of freight movements in project selection by investing in the creation of a freight management system.
- To improve overall roadway safety, minimize highway maintenance needs, and improve operational conditions, NJDOT should investigate new pavement technologies on key freight corridors, including the use of longer-life pavements on roadways where truck volumes are heaviest.
- NJDOT should advance the safety-focused improvements identified for interchanges, including improving acceleration and deceleration lanes.
- To affirm and support a systems approach to goods movement and encourage the optimal use of all the freight options available, NJDOT should work with local and county officials, as well as key businesses and distribution centers, to improve access for trucks between the state highway network and the local pick-up or delivery points, thereby addressing *last mile* concerns.
- Additionally, NJDOT should work with the logistics industry to improve or expand connections to major existing or planned intermodal terminals, thereby strengthening the statewide multimodal network.

The continued success of the freight industry in New Jersey is dependent on a robust infrastructure network. By crafting and investing in policies for improving and enhancing the state highway network to meet the needs of the users and providers of New Jersey’s freight system, NJDOT will support and expand New Jersey’s role as a key part of the national and global logistics chain.

The purpose of this effort is to examine the highway corridor actions identified in the 2007 Plan, including developing specific infrastructure and operational action plans for the six priority highway freight corridors identified in the plan. The 2007 Plan noted that:

- New Jersey’s 84,000 lane-miles of state and authority-owned roadways carry an average yearly volume of 2.6 million vehicles per lane-mile, nearly 75 percent higher than the national average of 1.5 million.
- More than 70 trillion annual vehicle miles are traveled over the state’s highway system—a remarkable number given the compact geography of New Jersey—with trucks accounting for more than 6 trillion vehicle miles (approximately 9 percent).
- Nearly 75 percent of all tonnage in the state moves by road, but the highest concentration of truck traffic occurs on a very limited subset of the state’s roadways. The six priority freight corridors that emerged were Interstates 78, 80, 287, 295, the NJTPK, and NJ Route 17, as illustrated in Figure 1.

This report summarizes the context in which the statewide highway corridor freight plan was undertaken, establishes an investment blueprint that focuses on goods movement, and highlights overall findings and actions. Ultimately the goal of this plan is to provide NJDOT with an implementation blueprint aimed at prioritizing investments in improvements that target key areas impacting the freight industry.



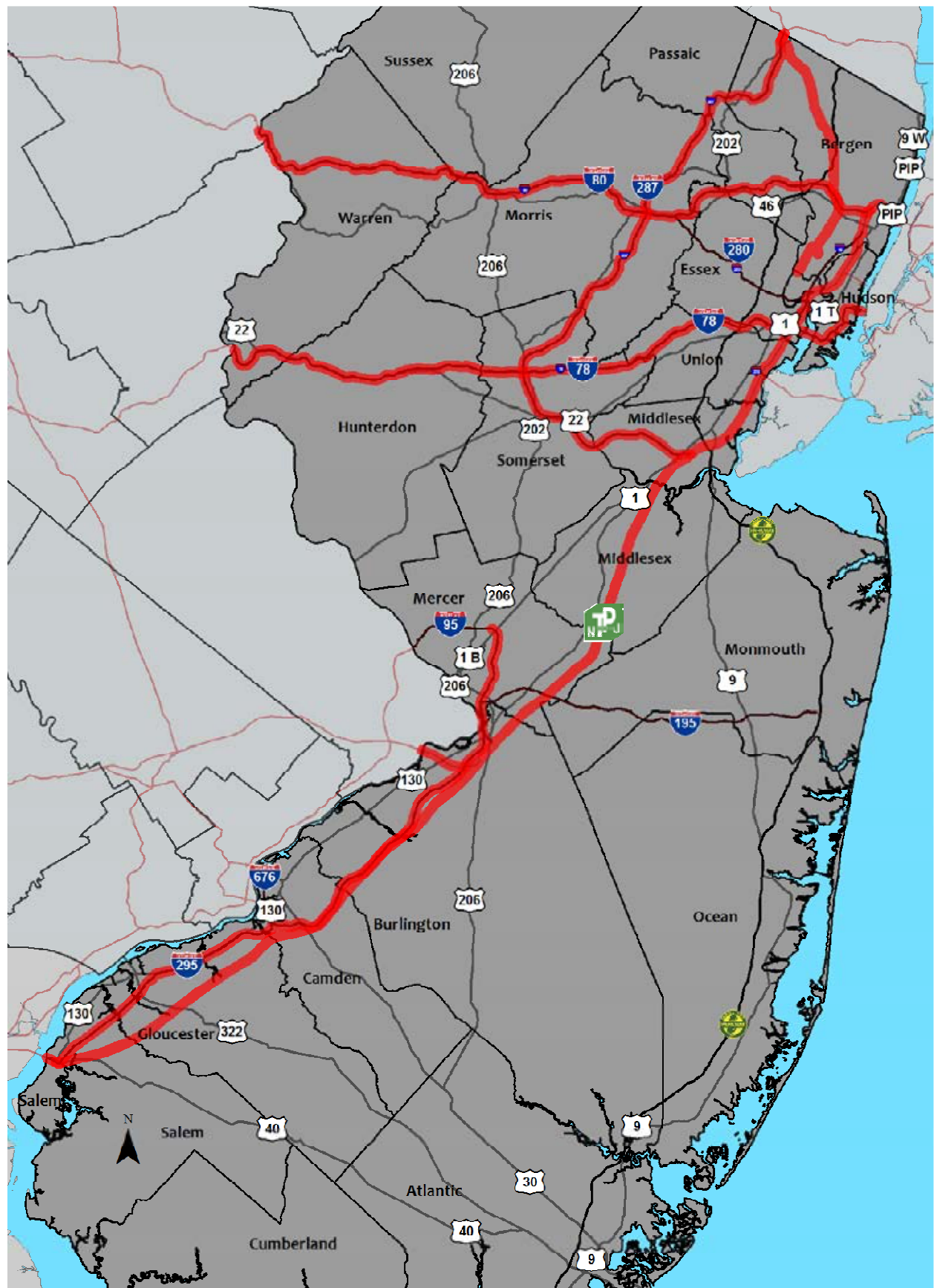


Figure 1—Key priority highway freight corridors

A CHANGED CONTEXT

New Jersey’s goods movement industry not only serves freight movements originating in or destined to New Jersey, but regional, national, and international locations as well. New Jersey’s port facilities are uniquely positioned to serve major markets not only within the state but in New York, New England, and Pennsylvania. New Jersey’s position along the northeast corridor between New York and Philadelphia necessitates the location of numerous warehousing and distribution centers throughout the state, including significant clusters in Northeastern New Jersey and near Interchange 8A of the NJTPK.

Industry stakeholders noted that New Jersey’s key roadways are a *conduit* between major ports, distribution centers, and retail centers. While this includes significant flows within New Jersey, it also includes significant flows between facilities in Northeastern New Jersey and the Lehigh Valley, as well as national goods movements. While New Jersey has an intrinsic advantage given the location of existing ports and the significant number of consumers located along or near major highways, the lack of or high cost of available warehousing space and higher overall cost of doing business in New Jersey reduces the impact of the state’s locational advantage. New Jersey must find a way to reinforce its geographic and infrastructure advantages through policy and project improvements to the degree that they outweigh the financial benefits that companies take advantage of in other states. This is especially important as fuel prices continue to rise, forcing the freight industry to rethink logistical and distribution chain decisions.

Given that New Jersey is the most densely populated state in the country, significant clusters of consumers exist within the most populous areas in Northeast, Central, and Southwest New Jersey. Thus, the highest densities of New Jersey’s producers and consumers are generally linked by the key highways that this study focuses on.

The changed context includes

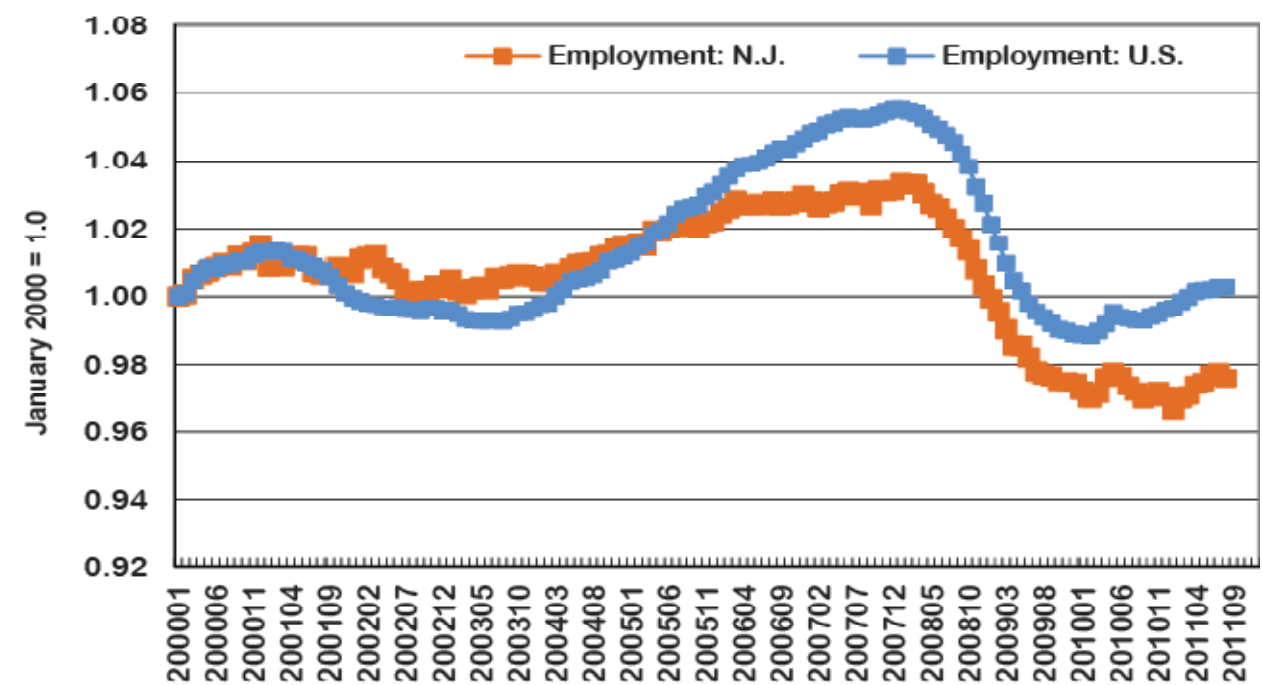
- Changes in the global, national, and regional economic climates
- Changes specific to New Jersey
- Changes affecting the freight movement industry
- Changes in international trade affecting freight movements
- Changes in the key industries and commodity movements in New Jersey

A Great Recession and a Gradual Recovery

Since the 2007 Plan was completed, the New Jersey, the U.S., and the global economies plummeted into the greatest recession since the Great Depression and are gradually emerging. Vast losses in jobs (Figure 2) reduced consumer demand levels, diminished fiscal budgets, and tightened financial markets, all of which altered the context of goods movement. As one major industrial developer noted during this time, “the phones stopped ringing.” Lease rates for industrial properties dropped to their lowest levels in over 15 years as demand for retail products and building supplies decreased. Companies merged or resized.

Despite the economic slowdown, New Jersey continues to invest in its freight infrastructure. Public and private sector entities invested hundreds of millions of dollars in upgrading the Port of New York & New Jersey (PNYNY), including deepening channels, improving terminals, purchasing new equipment, enhancing security, and improving inland rail connections. The NJTPK continued the addition of traffic lanes between Interchanges 6 and 9. The Liberty Corridor Program addressed key rail and road bottlenecks. The South Jersey Port Corporation proceeded with developing the Port of Paulsboro. Plans advanced to address the air draft issues associated with the Bayonne Bridge.





Source: Rutgers Economic Advisory Service, October 2011 Forecast

Figure 2—Statewide and national employment trends, 2000 to 2011

In 2011, the U.S. and New Jersey began to emerge from the economic downturn. While governmental agencies reduced staffing, a wide range of businesses increased employment, resulting in a net increase in New Jersey jobs in 2011. Job growth is anticipated to be slow, with a return to 2007 employment levels by about 2016.¹

The large inventory of available industrial properties declined as more companies took advantage of lower lease rates to move into more modern facilities, improve access to the densely populated and affluent regional consumer market, and position themselves for increasing maritime cargo movements with the opening of the new Panama Canal locks in 2014.

As detailed in the following sections, the *New Jersey Statewide Highway Corridor Freight Plan* has considered the changed economic, fiscal, and development environments in assessing and planning for the critical roadway corridors in New Jersey.

New Jersey Today

New Jersey had a population approaching 8.8 million people in 2010, an increase of 4.5 percent since 2000.² During the same time period, the nationwide population grew by nearly 10 percent, reflecting the higher growth trends in the Middle Atlantic States. New Jersey, however, remains the most densely populated state in the nation. In 2010, New Jersey had 1,196 people per square mile, more than 15 percent higher than the second highest state (Rhode Island with 1,006 persons per square mile²), and more than 12 times the national average (87 persons per square mile²).

¹ Rutgers Economic Advisory Service October 2011 Forecast.

² US Census Bureau, USA Quick Facts—New Jersey, <http://quickfacts.census.gov/qfd/states/34000.html>



New Jersey household incomes also remain among the highest in the U.S. In 2009, New Jersey ranked second only to Maryland in terms of median household income (\$68,342), while the median household income in the U.S. was approximately \$50,000.

With New Jersey continuing to be a key consumer node within an even larger and affluent consumer market, the state remains a hub for distribution activity. The population concentration also positively contributes to New Jersey's gateway status for international trade.

The Changing Freight Landscape

The goods movement industry has been almost as dynamic as the economy during this period. The changes reflect economic conditions, rising fuel prices, and the impacts of natural disasters on key business supply chains. Additional supply chain drivers and considerations include:

- Changed consumer demand levels
- Changes in production facility locations
- A growing truck driver shortage
- Completion of the new Panama Canal locks
- New industrial space uses

Each of these drivers affects freight movement in New Jersey and has framed the analysis of the roadways and system.

Changed consumer demand levels

After decades of over-consumption, the economic slowdown altered spending patterns, perhaps permanently. A 2010 report on consumer spending patterns noted that “a new frugality, characterized by a strong value consciousness that dictates trade-offs in price, brand, and convenience, has become the dominant mind-set among consumers in the U.S.”³

Personal consumption has been the leading driver of the national supply chain and, with the dense concentration of consumers in New Jersey and the surrounding area, is a key consideration in freight movement and utilization of warehousing space. As the economy recovers and consumer demand modestly rises, interest in modern distribution space has returned in New Jersey. Lower lease rates have enabled companies to shift to more modern spaces and consolidate operations. Companies continue to seek to optimize their inventory, and suppliers are now being asked more frequently to hold inventory and ship it to their customers more quickly when real-time demand warrants.

As a continuing center of consumer activity, New Jersey remains important as a distribution location. More moderate consumer spending is anticipated to affect overall demand. However, the need to more quickly respond to changes in demand makes establishing sites closer to consumer activity preferable. Thus, New Jersey's position should remain secure.

³ Booz & Company, *The New Consumer Frugality: Adapting to the Enduring Shift in U.S. Consumer Spending and Behavior*, 2010, p. 2.

Changes in production facility locations

New Jersey has continued to struggle to retain manufacturing jobs. For example:

- In 2009, Sunoco closed its Eagle Point refinery in Gloucester County.⁴ In 2011, the firm announced that it was also closing its facilities in Pennsylvania.
- Ocean Spray is moving its production facility from Bordentown (Burlington County) to the Lehigh Valley to build a modern plant with improved rail access and lower utility and transportation costs.⁵
- Sony closed its compact disc manufacturing facility in Pitman (Gloucester County) citing a reduced demand for this product.⁶

At the same time, some success has been achieved in retaining and attracting new manufacturing businesses, including:

- The Valero refinery in Paulsboro was sold to PBF Energy, which is continuing to run the production plant.⁷
- The Indian pharmaceutical company Ranbaxy will be producing a generic version of the drug Lipitor in New Jersey.⁸
- Manischewitz opened its new headquarters and production facility in Newark in June 2011.⁹
- Goya Foods is developing a rail-served manufacturing operation in Jersey City.¹⁰

The global supply chain disruptions that were caused by the 2011 disasters in Japan and flooding in Thailand have begun to impact production location planning. The Japan disasters resulted in a shortage of parts for auto production lines, while the flooding in Thailand resulted in a shortage of computer hard drives.

Companies are now thinking about diversifying the location of their production facilities. Additionally, due to increased fuel costs and overseas labor costs, companies are considering locating some production facilities closer to their markets. With the U.S. remaining a major consumer market, *re-shoring* (bringing manufacturing operations back to this country) and *near-shoring* (locating facilities in Central and South America) are under consideration but require significant investments in building and operating the facilities, labor costs, taxes, utilities, and transportation costs.

⁴ "Sunoco Inc. to sell remaining refineries," *Gloucester County Times*, 7 September 2011, http://www.nj.com/gloucester-county/index.ssf/2011/09/sunoco_inc_to_sell_remaining_r.html

⁵ "Ocean Spray to close Bordentown plant, relocate to Pa," *Times of Trenton*, 7 May 2011, http://www.nj.com/mercer/index.ssf/2011/05/ocean_spray_to_close_bordentow.html

⁶ "Sony to Close N.J. CD Plant," *Wall Street Journal*, 18 January 2011, <http://online.wsj.com/article/SB10001424052748703954004576089903205268860.html>

⁷ "Valero Energy to sell Paulsboro refinery for \$360M," *Bloomberg News*, 27 September 2010, http://www.nj.com/business/index.ssf/2010/09/valero_energy_to_sell_paulsbor.html

⁸ "Indian Drugmaker gets FDA Approval to Sell Generic Lipitor After Delay Over Quality Problems," *Washington Post*, 30 November 2011, http://www.washingtonpost.com/business/industries/indian-drugmaker-gets-fda-approval-to-sell-generic-lipitor-after-delay-over-quality-problems/2011/11/30/gIQA2l1EO_story.html

⁹ "Manischewitz opens new main plant in Newark," *New Jersey Jewish News*, 15 June 2011, <http://njewishnews.com/article/statewide/manischewitz-opens-new-main-plant-in-newark>

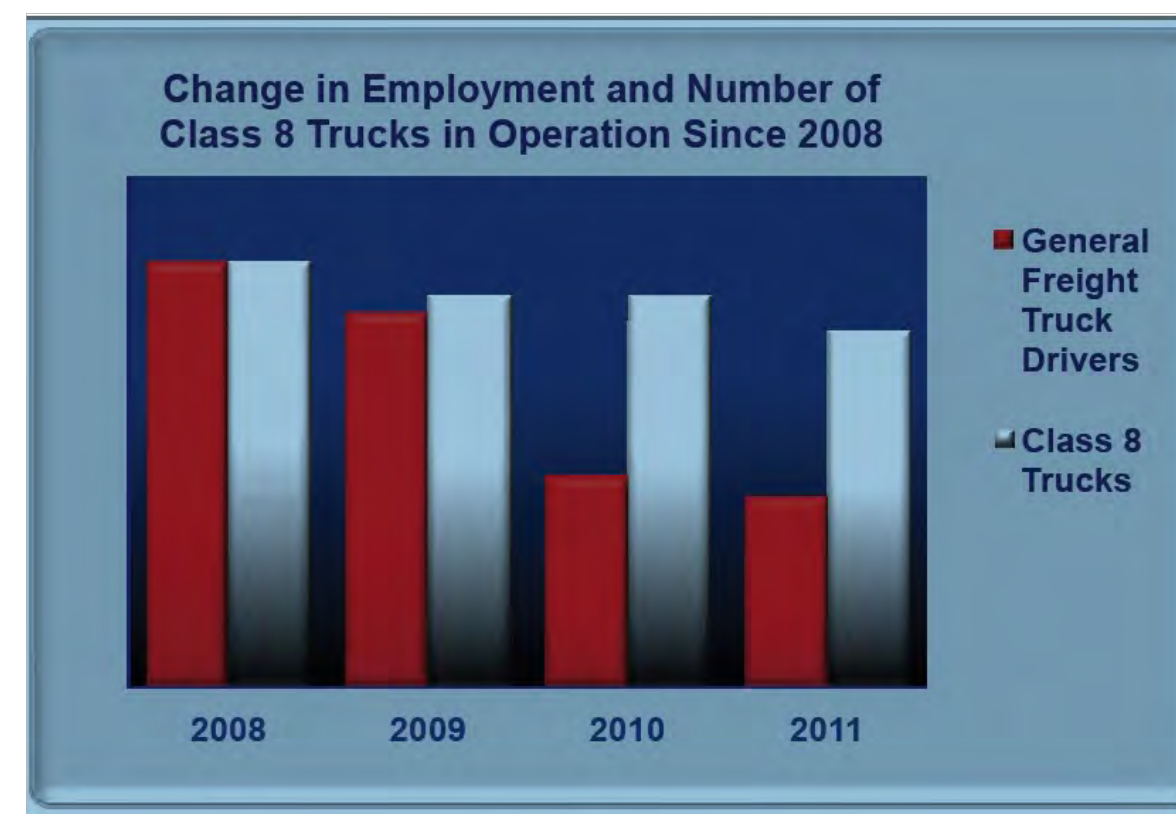
¹⁰ "EDA approves \$82M tax credit for Goya," *NJBIZ*, 11 October 2011, [http://www.njbiz.com/article/20111011/NJBIZ01/111019955/0/events_calendar/EDA-approves-\\$82M-tax-credit-for-Goya](http://www.njbiz.com/article/20111011/NJBIZ01/111019955/0/events_calendar/EDA-approves-$82M-tax-credit-for-Goya)

In the U.S., locations with historic strength in manufacturing or skilled labor are considered ripe for reinvestment. In this regard, New Jersey can compete for returning businesses assuming that costs are commensurate with other locations in the U.S.

A growing truck driver shortage

Shippers and transportation providers have been increasingly concerned about a growing shortage of truck drivers for several years. The causes of this shortage include the difficulties of the job, long distance routes that may separate drivers from their families for several days to several weeks, and increases in required background checks, particularly for drivers serving distribution facilities.

Many organizations hoped that the economic slowdown would attract more individuals to truck driving and reduce driver turnover. However, while turnover initially declined during the recession, Figure 3 indicates that driver turnover increased substantially in 2011 despite the unemployment rate. Companies have interpreted this information as indicating a low interest in truck driver jobs. Accordingly, concerns regarding driver shortages have accelerated.



Source: 2012 Council of Supply Chain Management Professionals State of Logistics Report

Figure 3—Trends in truck driver turnover

In response to these concerns, shippers and transportation providers are implementing a variety of strategies, including:

- Exploring alternative modes, including intermodal rail and water routes
- Adopting regional routes in place of long-distance routes so drivers can be home with their families daily



The impacts for New Jersey may include:

- Long distance truck movements that are more oriented to time-sensitive, high-value cargo. Such loads generate higher revenues and can support higher pay for drivers. However, the emphasis on time sensitivity increases the need for predictable travel times. Congestion on roadways generates the opposite—unpredictable travel times—and increases the importance of addressing choke points.
- Increased use of rail alternatives where such rail service meets customer needs.
- More trucks moving between rail yards and end users, as well as more trucks moving regionally between distribution centers and end users.
- Increased interest in potential domestic marine highway services that meet customer needs.

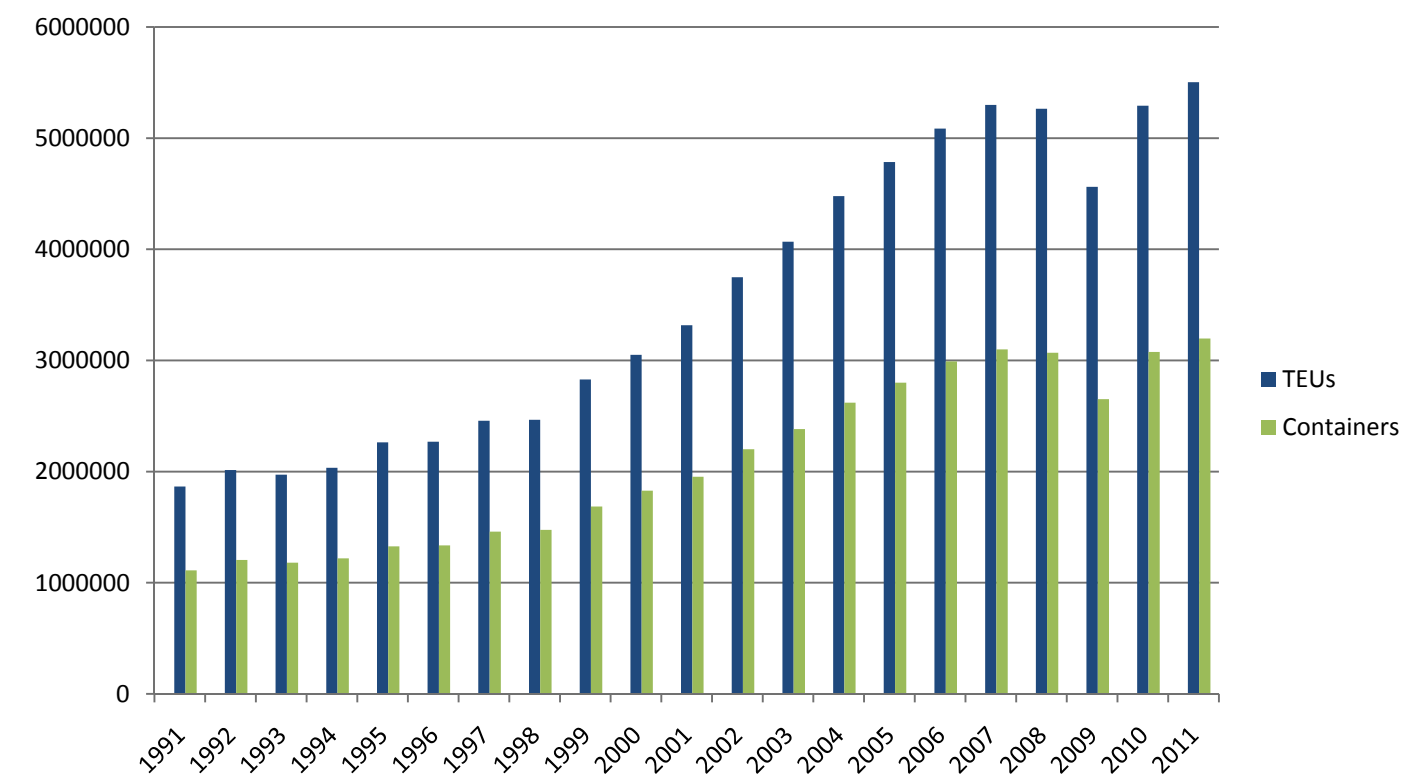
Completion of the new Panama Canal locks

By the end of 2014, the Panama Canal Authority anticipates completing a new set of locks that will enable much larger vessels to use the facility. Container vessels have been growing considerably in size in the last several years. The newest generation of vessels is anticipated to hold over 18,000 twenty-foot equivalent units (TEU).

The new larger vessels are more fuel efficient and further reduce the cost per container through their increased capacity. Accordingly, even before the Panama Canal improvements are completed, larger vessels are calling at PNYNJ. Not surprisingly, containerized cargo activity at PNYNJ in 2010 already exceeded 2008 volumes (Figure 4).

The consumer concentration within a one-day drive from this port complex in Northern New Jersey continues to attract vessel calls. However, the current height (*air draft*) of the Bayonne Bridge, which spans the critical Kill Van Kull entrance to Port Newark/Elizabeth and the New York Container Terminal, is an impediment to serving the new class of vessels. In December 2010, the PANYNJ announced that the agency would raise the roadway deck (Figure 5) on the Bayonne Bridge to remove that obstacle.¹¹ The PANYNJ anticipates project completion by 2016.

¹¹ “Bayonne Bridge Navigational Clearance Program,” Port Authority of New York/New Jersey, <http://www.panynj.gov/bayonnebridge/>



Source: Port Authority of New York & New Jersey

Figure 4—Trends in containerized cargo through the Port of New York & New Jersey



Source: <http://www.panynj.gov/bayonnebridge/>

Figure 5—Bayonne Bridge project

New industrial space uses

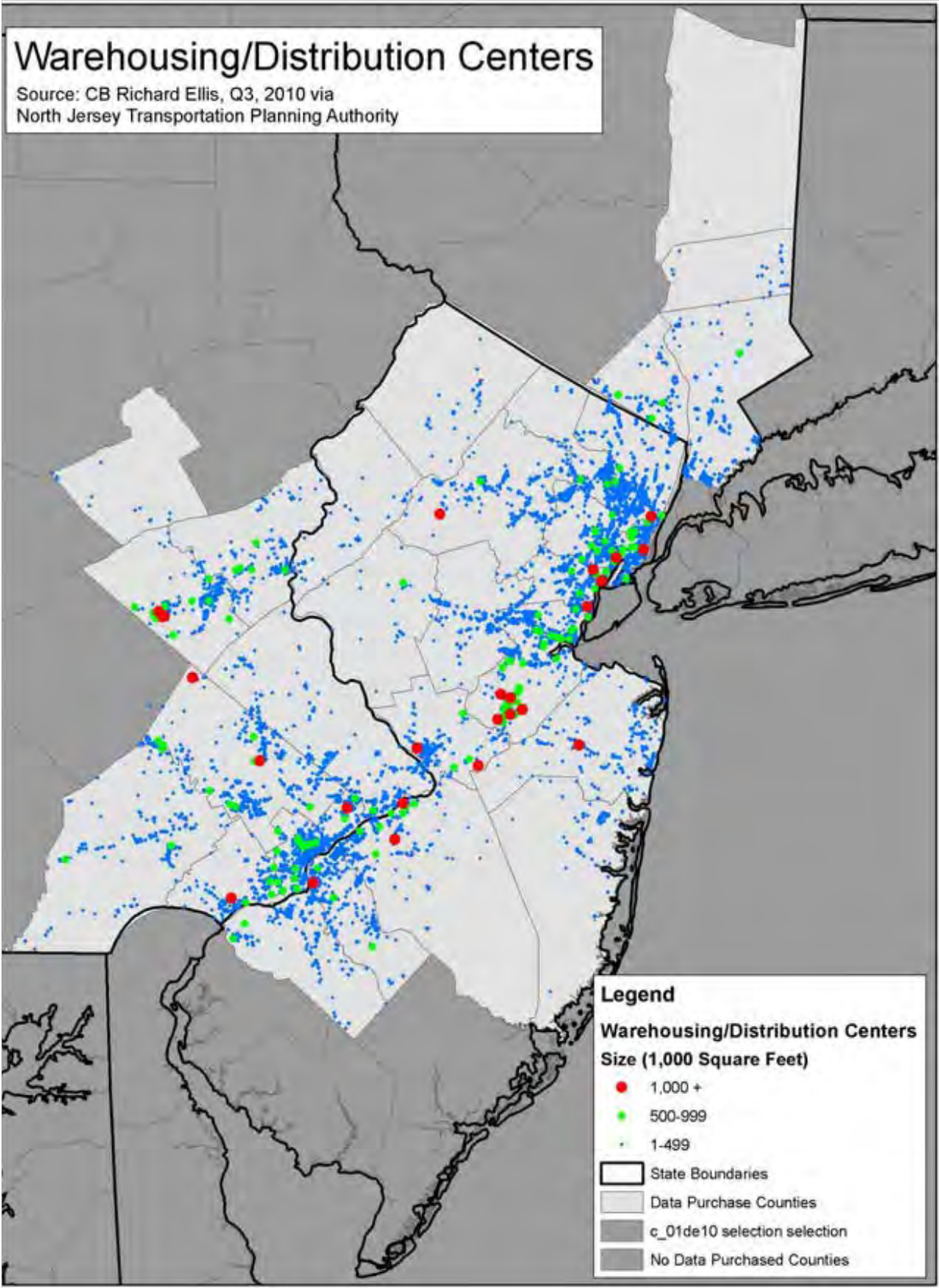
In the fourth quarter of 2011, New Jersey had over 900 million square feet of industrial space.¹² The state continues to be one of the leading concentrations of industrial space in the U.S.

Much of the New Jersey space exists in warehouses and distribution centers. Given New Jersey’s role in the supply chain, many of these buildings exceed 500,000 square feet. As shown on Figure 6, much of this space is located in or accessed by the six corridors analyzed in this report. In addition to the industrial space in New Jersey, the Lehigh Valley area of Pennsylvania, accessed primarily by Interstate 78, has an additional 58.4 million square feet of industrial space.

Other users of industrial property include manufacturing and production facilities and research and development space. A newer trend in industrial property use, electronic data storage¹³ facilities, is growing quickly. In New Jersey, data storage buildings have been or are being developed primarily in Bergen, Middlesex, and Somerset Counties. For example, the 831,000-square-foot IO Data Center is located in the former New York Times printing building in Edison.

The different uses of industrial properties were factored into the corridor analyses. In addition, the trends specific to each corridor were considered. For example, development of new industrial space in Bergen County is generally limited to data centers. Other industrial uses in the county are shifting to alternative land uses, such as retail.

Growth in industrial properties focused on distribution and production along the New Jersey Turnpike and Interstate 295 continues. Similarly, the Lehigh Valley area continues to grow as an industrial center and competes with New Jersey for these facilities.



¹² Source: CB Richard Ellis data

¹³ Data storage facilities contain immense banks of computer equipment which support the *cloud* computing that is quickly growing in the U.S.



Impacts of the Panama Canal Expansion

Panama Canal expansion will allow much larger ships to transit the Canal beginning in 2015. In preparation, many ocean carriers are purchasing much larger ships to move containers—up to 13,000 TEUs from the current Panamax size ship of about 5,000 TEUs. The timing and nature of the impacts of this change to PNYNJ are difficult to predict due to a variety of factors including:

- Completion of New York Harbor deepening to 50 feet
- Replacement of the Bayonne Bridge deck, which currently constrains the size of ships that can call on the majority of port container terminals
- Capacity of South Atlantic Coast ports (Savannah and Charleston) to handle larger ships, which may limit carrier service designs that usually include port calls at both North Atlantic and South Atlantic ports

Assuming these issues are resolved and larger ships begin to service the Port, a cascading set of effects will result in impacts to the current freight transportation system that need to be prepared for:

- Unit cost of transporting containerized goods will be decreased.
- Use of larger ships will affect how ships are scheduled impacting which ports are called on and the timing of those calls.
- Larger ships will mean longer calls at ports and more concentrated loading and unloading of containers.

Decreases in transportation costs

It is possible that decreases in transportation costs could result in shifts in Northeast Asia-U.S. trade away from West Coast ports to U.S. Gulf and East Coast ports. This potential impact has been anticipated and widely reported. Summarized below are reasons why this impact may be minimal:

- U.S. import markets are highly differentiated by geography and types of products. U.S. West and Central regions lying west of Chicago, Memphis, and Dallas are likely to be served through the West Coast due to competitive transportation costs and lower transit times. In addition, high value products are likely to move predominantly through West Coast ports due to the value of time associated with those products.
- Supply chain network design may be the principal determinant of how goods are shipped; small changes in transportation costs may represent a small contribution to the factors that go into that design.
- Significant coastal shifts have already occurred, which means there may be limited remaining potential for impacts of Panama Canal expansion.
- While total transportation cost savings to the East Coast could be significant (on the order of \$400 per TEU using a 13,000 TEU ship versus a 5,000 TEU ship), these total costs savings will be retained in part by transportation network providers—including shipping lines, the Panama Canal Authority, and others—leaving the savings to consumers and beneficial cargo owners greatly reduced. Transportation cost savings to West Coast ports could be equally significant as even larger ships (not subject to the expanded Panama Canal constraints and thus exceeding 13,000 TEUs) are deployed on Asia-West

Coast services. This could reduce the cost reduction to the East Coast (relative to that of the West Coast) to near zero, which would offer no incentive to shift shipping patterns.

- Competition between West Coast shipping interests (including West Coast ports and Class I railroads) and the Panama Canal may be limited since these market participants have different objectives as well as differing capabilities. In particular, the West Coast interests can market and price differentiated products on a point-to-point basis while the Panama Canal Authority can only apply tolls on containers moving through the Canal.

Based on these factors, significant shifts away from the West Coast to the East Coast due to Panama Canal expansion are unlikely to occur; the overall impact of the Canal widening in the near term could be zero.

Impact of potential shifts in New Jersey

If there are marginal shifts that do result from expansion, the first and most direct possibility is that remaining products shipped by rail cross country to New Jersey and other nearby regions, such as Eastern Pennsylvania, could be imported instead through PNYNJ. This would divert containers currently arriving at intermodal rail terminals in New Jersey to arrive at port terminals. The net result is that inbound local rail traffic would decline and that loaded truck origins would shift from New Jersey rail terminals to the port terminals. If cargo moves through port terminals that would otherwise have moved by rail to Pennsylvania, truck traffic from the port to the destinations represented by Pennsylvania cargo would increase. Conversely, if cargo moves through the port that would otherwise have been trucked into the metropolitan region from Pennsylvania facilities, trucked distances could be less.

Another possibility for marginal coastal shifts is for cargo moving by rail to inland destinations, such as Ohio. Both New York and Norfolk would be competitive for handling this shifted cargo. The impact of this would likely be increased rail traffic from the port moving to the inland destinations, with little trucking impacts expected.

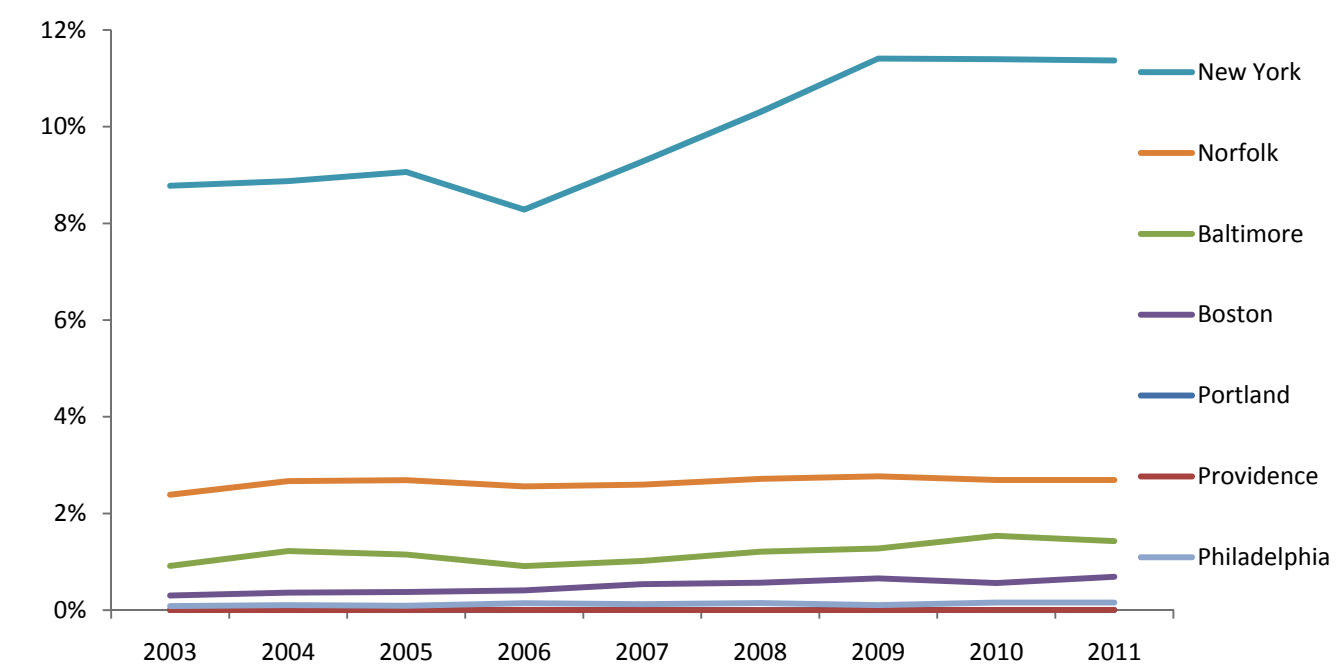
Direct impacts from larger ships

Apart from coastal shifts in cargo, there is a possibility of impacts directly related to the use of larger ships. If such use results in fewer port calls, this could mean cargo being more concentrated in larger ports, such as PNYNJ, and diverted from smaller North Atlantic ports.

Figure 7 shows that PNYNJ's share of total U.S. containerized import tons from Northeast Asia increased to 11.4 percent in 2009 through 2011—up from 9.5 percent in 2005—while other North Atlantic port shares remained relatively constant (and much lower). While this reflects the historic coastal shifts that have occurred, it also suggests that if port traffic becomes more concentrated due to large ship use, there could be marginal shifts from smaller ports to PNYNJ. However, given that the second largest port is Norfolk (relatively distant from New Jersey in the Mid-Atlantic) and given improvements in capacity in Baltimore (with a new channel depth of 50 feet), the principal impacts may be more likely in much smaller ports, such as Boston, Philadelphia, and Wilmington. Given the very small shares represented by these ports, overall impacts on volume would be small and likely take the form of increased truck traffic from the Port to the affected destination regions.

The final impact from use of large ships is that ship calls to PNYNJ are likely to be longer with more concentrated unloading and loading of containers. This could put some peak load stresses on port operations and inland transport, such as more intense container yard use and more peak loads at trucking gates and local highways and bridges.





Source: US Census Bureau and Parsons Brinckerhoff Analysis

Figure 7—North Atlantic port shares of containerized imports from Northeast Asia

International Trade

As part of understanding the changed context for New Jersey freight movements, the project team reviewed *Enhanced Opportunities for International Freight Development*, a white paper developed by Moffat & Nichol for NJDOT in September, 2011. This document, which is provided as Appendix C, assessed the impact of international trade at Northern and Southern New Jersey port complexes on the state highway network.

The analysis indicated that trucks carrying freight to and from the ports for import and export represent a significant share of trucks on key corridors near PNYNJ marine terminals in Northern New Jersey:

- On the New Jersey Turnpike (NJTPK) in Northern New Jersey, port-related trucks represent an estimated 33.8 percent of truck traffic and 3.1 percent of total traffic. Moving farther south, the numbers are still high—21.6 percent of truck traffic and 2.2 percent of all traffic. This traffic is generated largely by moves between the PNYNJ and first/last points of rest, particularly warehouse/distribution centers along the NJTPK throughout Northern New Jersey.
- On Interstate 280, port-related trucks represent an estimated 28.0 percent of truck traffic and 2.9 percent of all traffic. Interstate 280 is an important access corridor for port trucks.
- On Interstate 78, port-related trucks represent 7 percent of truck traffic and 0.7 percent of all traffic. These are lower percentages than the other corridors since much of the traffic on Interstate 78 is related to the through traffic (bound to the George Washington Bridge and points beyond New Jersey), rather than direct access to PNYNJ marine terminals.

The analysis suggests that port trucks will be a constant share of traffic on Interstate 78, a significantly increasing share of traffic on NJTPK, and a dramatically increasing share of traffic on Interstate 280.

Even on highway segments farther from PNYNJ facilities, port-related trucks represent a significant share of truck traffic and total traffic. Port trucks represent an estimated 8 to 12 percent of truck traffic on more distant segments of NJTPK, Interstate 78, and Interstate 80. For NJTPK and Interstate 80, these shares are projected to more than double through 2035. (The projected drop for Interstate 78 may be related to a spike in projected domestic truck traffic on Interstate 78, combined with the fact that Interstate 78 is a less important PNYNJ access route than the other corridors being studied.)

Overall international marine traffic is projected to grow at a much higher rate than domestic truck traffic. As such, New Jersey needs to be poised to handle this shifting demand pattern.

Key Industry and Commodity Flows

The New Jersey State Plan¹⁴ identified seven industries key to New Jersey’s economic viability. These included bio/pharmaceuticals and life sciences; transportation, logistics, and distribution; finance; advanced manufacturing; health care; leisure, hospitality, and retail; and green economy. New Jersey is also highly dependent on the agricultural and seafood production industries therefore; these key industries were also evaluated. By reviewing the locations of the primary businesses that support these industries and commodities that are generated by these industries, the team found that while each industry has demands on various aspects of the New Jersey transportation system, they also serve national markets.

These industries account for a significant portion of goods moving on New Jersey’s key highways, and they rely on these roadways for efficient movement in order to provide on-time deliveries to producers and consumers alike. On-time deliveries can be impacted by any number of factors, including recurring congestion, non-recurring congestion (due to major events, incidents or crashes), interchanges, and tolls, among others. For example, several industrial developers noted that “it is easy to sell against a site on I-287, by just bringing a potential developer to I-287 during congested conditions.” When combined with high property leasing costs, these issues can make New Jersey a less attractive place to do business. This could result in a shift of many freight businesses to locations outside the state, including a high collection of warehousing in the Lehigh Valley. Regardless of the location of the distribution centers, the consumers are in Northern New Jersey, and these key facilities will continue to carry significant truck volumes. The NJDOT must seek improvements to accommodate this traffic and potentially balance the scales to attract distribution centers back to New Jersey.

The transport of agricultural, chemical, food-related, and petroleum commodities is vital to supporting many of the key industries within New Jersey. With the exception of agricultural industries, demand is highest in the northeastern part of the state within the Interstate 287 belt, where the majority of employers using or producing these commodities are clustered. The greater Camden area is typically a secondary cluster of these industries. Agricultural businesses appear to be distributed throughout the state, though a majority of farmland is located in the southern portion of New Jersey. Businesses that produce and distribute food items can be found throughout the state.

Interstate 80 is a primary route that serves the seven key industry commodities. Interstate 78 and Interstate 95/NJTPK are primary routes for all commodities except agricultural commodities, for which they serve in a secondary role to Interstate 80 (showing New Jersey’s connectivity to the food production areas elsewhere in the U.S.).

¹⁴ Draft Final—State Strategic Plan: New Jersey’s State Development & Redevelopment Plan, New Jersey State Planning Commission, Draft Final Plan 11/14/11, <http://www.nj.gov/state/planning/publications/192-draft-final-ssp.pdf>



Interstate 287 largely plays a secondary role in the transport of all the key industry commodities, providing connectivity among the three routes noted above. From the state level, Interstate 295 generally plays a lesser role than Interstates 78, 80, and 95/NJTPK. However, within the context of Southern New Jersey, it is a vital route for the transport of all key industry commodities and supports the industrial hub of Camden. More detailed information on these key industries and the associated commodity flows are provided within each corridor profile later in this document.

CORRIDOR PROFILES TO IDENTIFY PRIORITY ACTIONS

To ensure that New Jersey industries remain competitive, it is important to invest in the state’s primary transportation corridors. Working within the overall context, each of the major highway corridors previously identified in the 2007 Plan was examined.

Corridor profiles were developed for:

- East-West freight corridor (Interstates 78 and 80)
- North-South freight corridor (Interstate 95/NJTPK/Interstate 295)
- Bergen County Connector freight corridor (NJ Route 17)
- Northeastern New Jersey Beltway freight corridor (Interstate 287)

These profiles included an overall corridor description and an analysis of relevant available datasets to assess the existing conditions that freight traffic faces on New Jersey’s major corridors. These data sets included truck traffic flows, truck crash locations, major origin and destination flows along the key facilities, identification of adjacent retail and distribution centers, and relevant NJDOT management systems data. Using these profiles, key problem areas were identified. Each corridor profile includes information on the following data sets compiled from existing sources.

Demographic and Land Use Data

General patterns of readily available population and employment data from the 2000 U.S. Census were mapped for each corridor. This data was reviewed to determine general patterns and densities of areas surrounding each of the key highway corridors. Statewide land use 2002 data was reviewed to analyze the general developmental patterns along each of the key highway corridors, including the prevalence of residential, industrial, commercial, and agricultural uses.

Retail Clusters

The clustering of retail establishments along the key corridors was examined to identify areas of potentially high demand for deliveries. This involved the identification of businesses (Standard Industrial Commodity [SIC] Major Groups 52-59) that are the primary receivers of freight within New Jersey. Retail locations with more than 50 employees located within 1 mile of each of the highway corridors were reviewed and mapped. The locations of major retail clusters are important because they are key destinations for truck shipments. In addition, participants in the trucking industry discussion noted that truck crashes may correlate with the number of retail clusters (delivery locations) and increased interaction with auto traffic proximate to retail locations.

Truck Volumes

The most recent Weigh-in-Motion (WIM) data (2008) was analyzed by the New Jersey Institute of Technology (NJIT) for NJDOT and published in the *WIM Station Annual Report for 2008*. The data used in the report went

through an extensive review process to remove any suspect data (due to observed anomalies in volume, WIM station malfunctions, badly formatted records, missing/extra hourly data, etc.). To avoid skewing analysis of truck traffic volumes, the data were then filtered to analyze only non-holiday weekday traffic. For any missing months of data, NJIT used a forecasting algorithm to estimate those monthly volumes. After that filtering was complete, the data at each WIM station were summarized to illustrate the annual distribution and variation of heavy-truck traffic volume, the diurnal distribution of heavy-truck traffic, and a comparison to heavy-truck traffic in the previous year. This dataset was unfortunately limited to a small sample size, only providing heavy vehicle traffic volumes at a limited number of locations along the key corridors under review in this study.

Since no statewide database for heavy vehicle traffic volumes was available, the project team used the 2007 Federal Highway Administration’s (FHWA) Freight Analysis Framework (FAF3) travel model (Version 3.1.1) to provide estimates of current travel patterns. These volumes serve as an important measure of freight demand along New Jersey’s key corridors and were a significant component of the rating system used to prioritize the identified locations for investment.

Freight Flows

Information on truck commodities and origin-destination pairs was estimated using two national databases. NJDOT’s 2007 TRANSEARCH freight database provides estimates of truck tonnage by commodity and origin-destination pairs at the county level for all counties in New Jersey, adjoining counties in other states, and larger multi-county zones elsewhere in the U.S. It captures large truck flows (five axle or more) to, from, within, and through all counties in New Jersey, as reported in the U.S. Bureau of the Census Commodity Flow Survey, or as reported to IHS Global Insight (which produces TRANSEARCH) by national trucking firms through proprietary data sharing agreements, or as modeled by IHS Global Insight using proprietary algorithms. Due to limitations of the data collection and processing methodology, the data does not capture smaller truck movements, which are predominantly local and short-haul; nor does it report “linked trips” where freight is passing from one mode or vehicle to another via an intermediate transfer facility, such as a warehouse or seaport. The data is considered reasonably reliable for 5+ axle truck movements and, in the absence of detailed truck origin-destination surveys, represents the best available source of truck commodity and origin-destination information.

The consultant team translated truck tonnage into equivalent units and assigned them to the FHWA’s FAF3 highway network, based on commodity class and origin-destination pairs. After corridors and links to be evaluated were selected, the percentages of heavy trucks on a given analysis link with particular commodity and origin-destination characteristics were determined using select link analysis queries. The results are reported at the county level and provide a useful characterization of the population of truck trips; however the methodology has several limitations.¹⁵

¹⁵ The underlying Transearch data is provided at the county-to-county level and the trip distribution assignments are also made at the county-to-county level, as the FAF3 network does not provide a mechanism for further disaggregating the flows to Traffic Analysis Zones (TAZs). The NJTPA’s RTM-E model and other MPO models allow for TAZ disaggregation of trucks flows, but do not provide enough vehicle class types to preserve the underlying information about the commodities or O-D patterns of the observed trucks. Essentially, MPO models do the best job of telling us which links trucks appear on, but do not tell us what they are carrying or where they are moving to and from, while the FAF3 assignment does the best job of telling us what they are carrying and where they are moving to and from. For this analysis, we used the FAF3 assignment because it provides information not otherwise reportable. The necessary trade-off is a loss of specificity with respect to truck routes. For most counties and corridors, the FAF3 analysis results in reasonable and useful findings. But in a few instances, data could not be reported, because the FAF3 assignment did not route traffic over a particular corridor in a particular county. Better integration of truck travel patterns and underlying truck characteristics within statewide and regional models is an important opportunity for future research, and this process represents an instructive first step.



In order to reflect the impact that goods movement has on a specific location, the project team reviewed the percentage of non-through freight traffic¹⁶ within a specific county. This measure was used in the priority rating system to provide more significant importance on those locations that serve freight destined to or originating in New Jersey rather than traffic simply passing through the state. Thus, this measure seeks to promote the goods-movement industry within the state and provide for investment that will more significantly benefit those in the Garden State.

New Jersey Department of Transportation Management Systems Data

The primary datasets used to review existing conditions for each of the key highway freight corridors were NJDOT’s management systems, which are a series of measures that review specific conditions for the statewide roadway network. The analysis for this study focused on four management systems—congestion, safety, bridge, and pavement—that directly or indirectly reflect an impact on goods movement along New Jersey’s highways. Locations where deficiencies were identified on multiple management systems were highlighted as being critical locations for improvements aimed at improving circulation for heavy vehicles.

Congestion management system

NJDOT provided Congestion Management System (CMS)¹⁷ data for New Jersey’s statewide highway network. CMS scores indicate areas of recurring congestion along New Jersey’s highway network, which can have significant negative impacts on freight traffic. Recurring congestion significantly impacts travel times and the on-time delivery of freight and adds to the overall cost of freight movement in terms of lost time and increased fuel usage. NJDOT’s CMS database also provides information related to the state’s “79 most congested commuter corridors” and “problem area interchanges,” which are priority locations in terms of recurring congestion along New Jersey’s highway network.

Safety management system

The project team reviewed three years of crash data (2006 through 2008) in order to identify clusters of crashes over the three year period involving heavy vehicles (vehicle types 20-29). Based on this analysis, clusters were mapped along each of the key corridors under this study’s analysis. While most clusters were associated with interchanges, several mainline clusters were noted as well. While all crashes impact traffic flows and affect delivery times for the trucking industry, crashes involving heavy trucks are more likely to have injuries and fatalities and often result in more damage to other vehicles or properties. Crashes impact through-travel times and delivery times for freight traffic. Additionally, the project team reviewed NJDOT’s *Large Truck Safety, Volumes 1-4*, prepared by NJIT. This report reviews large truck crash data for the entire state for the same years analyzed above (2006 through 2008). This data set included a measure of crash severity in addition to crash location, providing the project team with an additional measure to identify locations where the incidence of crashes involving injuries and fatalities was high.

Many truck trips use only a portion of a route through an entire county, and do not traverse a county end-to-end. To account for this, the select link analysis examined multiple links within each county, and if a particular truck appeared on any link, it was counted as part of the total for that county; trucks appearing on multiple links within a given county were counted only once. The origin-destination and commodity results apply only to the population of heavy trucks only, which is a subset of all trucks appearing on the New Jersey highway network. The information is based on year 2007 data; given the effects of the recession, current truck volumes are close to year 2007 on a statewide and national level. However, some differences may exist.

¹⁶ Non-through freight traffic includes goods whose trip either begins, ends, or begins and ends within a given county.
¹⁷ CMS data are based on 2006 ADT data—each link includes maximum v/c ratios, congestion description, county/MPO ranking, and a priority score and rating (low, medium, high).

Bridge management system

A review of the NJDOT 2009 Bridge Management System (BMS) data indicated a significant number of bridges that were determined to either be structurally deficient or functionally obsolete.¹⁸ Bridges that are structurally deficient may adversely impact freight traffic throughout the region if the issues leading to the structurally deficient classifications progress further and require load restrictions. While load restrictions on major roadways are unlikely, the maintenance, rehabilitation, or replacement work required to return the structurally deficient bridges to a satisfactory level of service would likely cause major disruptions to freight traffic in the form of lane closures, reduced lane widths, slower speeds, or lengthy detours. Construction may further compound freight movement given the tendency for many highway construction projects to be scheduled for off-peak commuter periods when freight traffic is often higher.

Pavement management system

The project team reviewed Pavement Management System (PMS) data provided by NJDOT to identify locations where deficient pavement exists along the corridor. PMS data most recently compiled throughout 2008 was used in this analysis.¹⁹ The prevalence of poor pavement on a roadway can have a significant impact on delivery times, travel speeds, and safety for heavy vehicle traffic. Poor pavement can increase overall trucking costs due to increased maintenance costs for vehicles using these roadways. Any major resurfacing projects along these routes will also dramatically impact freight movement, especially since many highway construction projects take place during non-commuter peak travel periods, during which the number of heavy-truck trips is still significant.

Truck facilities

Truck facilities, including rest areas and truck stops, play a key role in the highway truck network. The siting of these facilities helps determine route choice and stopover points on longer journeys. Over-capacity truck rest stops were identified as a major statewide problem in the *North Jersey Truck Rest Stop Study Refinement and Action Plan* as well as the *DVRPC Regional Truck Parking Study*.²⁰ Limited sites are currently available, and those that do exist are often over capacity, indicating unmet demand.

Rest and parking area facilities generally offer limited (or no) services and serve simply as locations where trucks can safely take refuge from the adjacent roadway. The siting of these areas can impact driver behavior, route choice, and ultimately the safety of drivers who seek a stopover point that does not force them to use the local road network, as drivers are often forced to use shoulder areas as unofficial stopover points.

¹⁸ NJDOT’s Bridge Management System (BMS) is an inventory of all bridges with a span over 20 feet in New Jersey. It includes information on their physical characteristics, condition, and ownership. Bridges are inspected biennially and the condition of various bridge elements is rated on numerical scale. The scale ranges from zero to nine, with a zero representing a failed condition and a nine representing an excellent condition. A bridge is deemed structurally deficient if the condition rating of its deck, superstructure, substructure or culvert is 4 (poor) or less; or if either its structural evaluation for load capacity or its water adequacy has an appraisal rating of 2 (critical) or less. Structural deficiency does not necessarily mean that a bridge is unsafe. It often indicates that a bridge has been load posted and is unable to handle vehicle loads that would normally be expected on the roadway, requires rehabilitation to remain to open, or is closed. Any bridge that is classified as structurally deficient is excluded from the functionally obsolete category. A bridge is classified as functionally obsolete if the deck geometry, underclearances (vertical and horizontal), approach roadway alignment, overall structural evaluation for load capacity, or waterway adequacy has an appraisal rating of 3 (serious) or less. Functional obsolescence typically means that the bridge geometry (clearances, lane widths, etc) no longer meets the current design criteria for the roadway system for which it is a part.
¹⁹ Pavement rankings were determined using International Roughness Index (IRI) ratings, along with guidelines developed by NJDOT. A ranking of good (IRI rating less than 95), fair (IRI rating equal to or greater than 95 but less than or equal to 170), or poor (IRI rating greater than 170) was identified for 0.1 mile segments along each of the major highway corridors analyzed as part of this study.
²⁰ *North Jersey Truck Rest stop Study Refinement and Action Plan*, NJTPA/Gannett Fleming, December 2009, p.9; *DCRPC Regional Truck Parking Study*, DVRPC, April 2011, p.57



Private truck stops are located throughout New Jersey and provide numerous services for the trucking industry, including fuel, mechanic/maintenance services, food, showers, wireless Internet, and parking. Like the rest areas noted earlier, these facilities are a key part of the statewide highway freight network, helping to determine route choice and stopover points for the trucking industry. The siting of these facilities can be challenging, as increased truck volumes often have negative impacts on adjacent local roads, including traffic congestion, noise, and damage to locations that have not been designed to accommodate large truck traffic.

Integration with Context and Stakeholder Input

Broader contextual issues affecting freight movement were also considered. For example, issues identified by previous studies and key stakeholders included:

- Port operating times that force the trucking industry to use roadways during peak congestion periods
- Lack of sufficient truck facilities along key roadways, including a lack of overnight parking areas and full service areas
- Siting issues associated with distribution centers, including the need for an increase in distribution centers close to port facilities

Port operating times often require trucks to use these already congested roadways during peak commute times because they must arrive or depart to meet the operating times. These travel patterns are also dependant on the destination schedule for specific deliveries, so significant changes and coordination in the expectations and policies of numerous players within the logistics chain would be needed. Thus, the lack of coordination amongst players currently leads to a significant inefficiency of resources, including the truck itself, driver needs, and fuel. Improving or allowing for increased coordination between the trucking industry, port facilities, and destination facilities can have significant impacts on not only the cost of doing business in terms of labor and materials, but can have a positive impact on safety, congestion, and air quality as well.

Truck facilities play a role in these movements as well since their locations are often close to the most common trip patterns to and from major freight facilities. These facilities, including parking areas, full service areas, and truck stops, generally are placed at a convenient distance from major ports, allowing trucks to park or rest overnight before arriving at the port. These facilities are often located adjacent to (or, in the case of the NJTPK, within) major highways, giving trucks a minimally circuitous detour from their overall trip.

The location of Distribution Centers is driven by several factors, including the availability and cost of land, access to existing highway facilities, proximity and impact on surrounding land uses, and potential benefits provided by a local municipality, county, or state.

Ongoing Projects

The project team reviewed NJDOT’s Statewide Transportation Improvement Program (STIP) to identify ongoing or planned projects along the six key freight corridors. This information was supplemented with input from the NJTA regarding ongoing or planned projects along the New Jersey Turnpike and input from stakeholders. These projects, illustrated in Figure 8, were cross referenced with identified problem areas to prioritize improvement areas that have not yet been addressed.

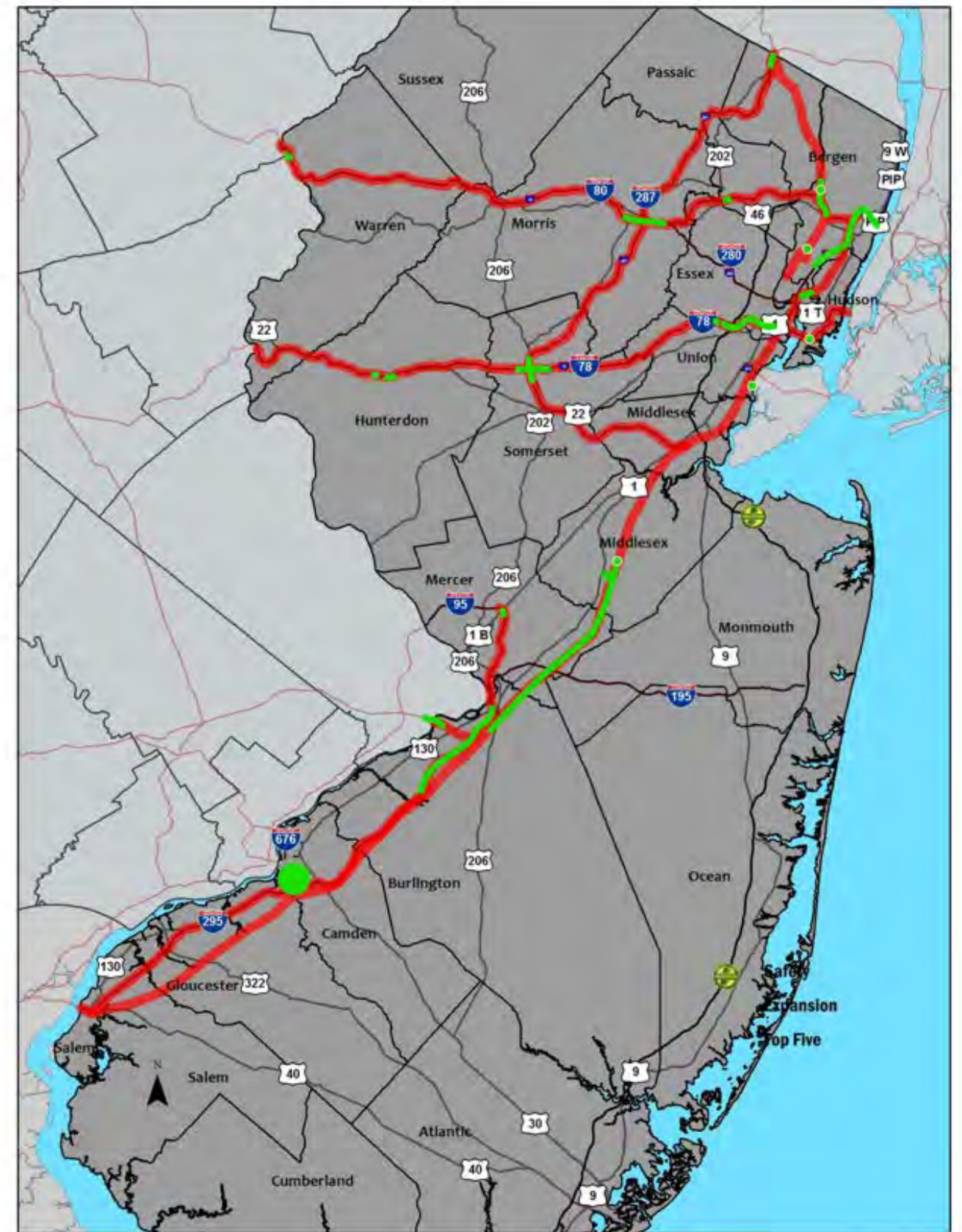


Figure 8—Ongoing/Planned STIP Projects



Southern New Jersey Freight Transportation and Economic Development Assessment

As part of NJDOT's commitment to maintaining and improving New Jersey as a key node in the logistics industry, the Department completed the *Southern New Jersey Freight Transportation and Economic Development Assessment* (South Jersey Freight Plan) in December 2010. This report reviewed the freight resources and markets within Southern New Jersey and outlined a plan to maintain, improve, and expand freight infrastructure in Southern New Jersey. This report, along with the *Priority Highway Freight Corridors Plan* and *Strategic Freight Rail Study* aim to work in tandem to serve the primary modes involved in the logistics industry in New Jersey.

As part of the *Priority Highway Freight Corridors Plan*, the project team reviewed the "Investment Blueprint" detailed in the South Jersey Freight Plan to avoid duplicative or contrasting recommendations. Given that the focus within South Jersey Freight Plan keys on Interstate 295 and the New Jersey Turnpike, the project team reviewed recommendations for those roadways made in the South Jersey Freight Plan. This review concluded that the recommendations along Interstate 295 detailed in the South Jersey Freight Plan focus on economic development opportunities based on access between the highway and existing and potential land uses. The focus of the *Priority Highway Freight Corridors Plan* is centered on improvements to locations identified through an analysis of freight-focused datasets. Therefore while the two plans detail recommendations for different locations along Interstate 295, they do so with the overall focus of improving that highway for the logistics industry.

Further, the South Jersey Freight Plan provided a detailed review of existing assets within that region, including ports, distribution centers, highways, and rail and maritime assets. Therefore to maximize resources, this study did not re-analyze the key freight assets within the South Jersey region.

Summary Problem Areas

The analysis identified key problem areas that were identified as deficient within multiple datasets. Once the subset of key problem area locations was created, the project team reviewed ongoing or planned projects and removed these locations from the subset. The remaining projects were then ranked based on available freight-specific datasets, including FAF3 truck volumes, crashes involving trucks, and in-state freight flows. Finally, input from statewide transportation and planning authorities and organizations, freight experts, industrial developers, and trucking industry representatives was taken into account. These problem areas are illustrated on Figure 9, and details for each corridor can be found in the corridor profiles that follow.

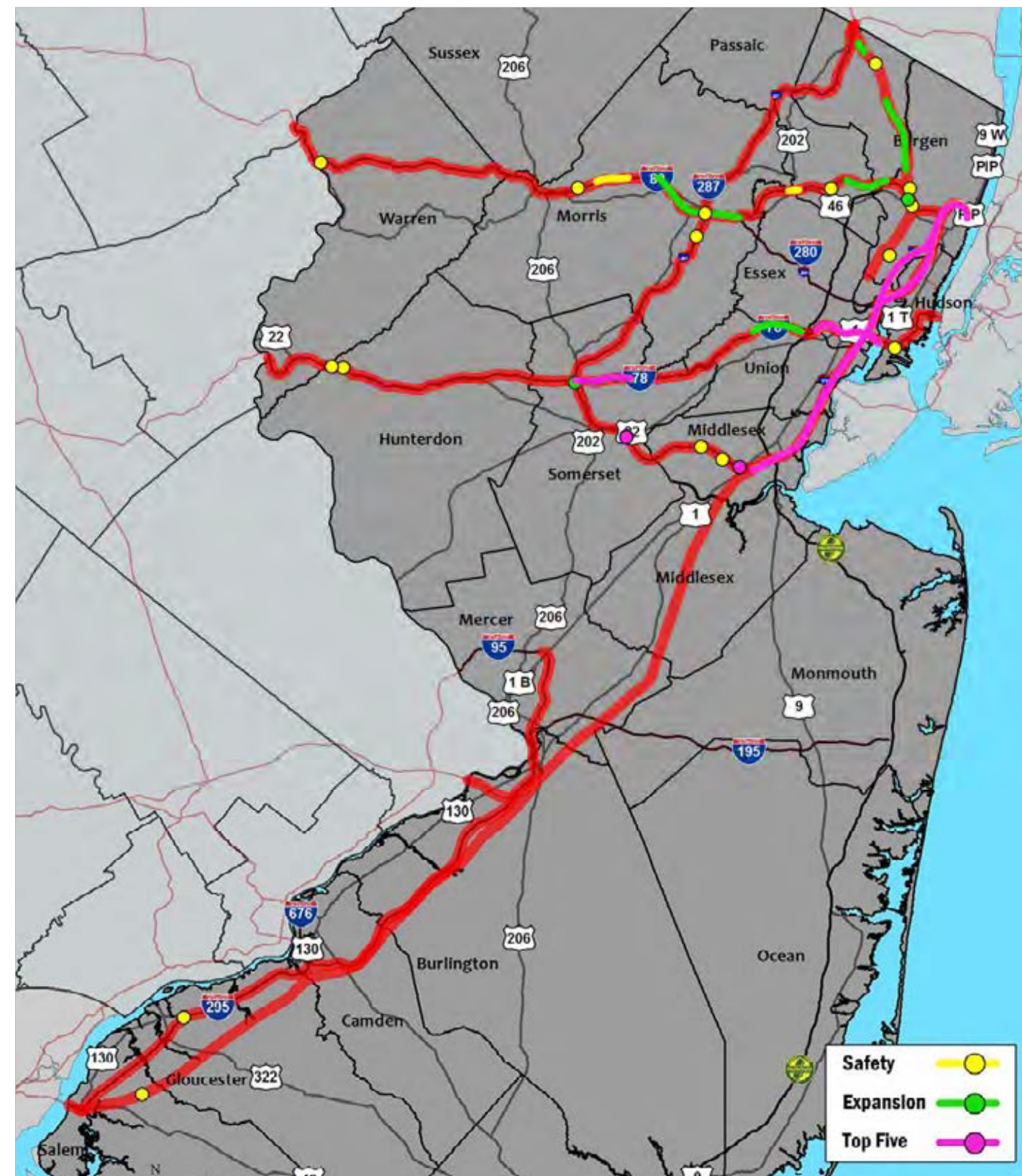


Figure 9—Priority project locations



BLUEPRINT FOR INVESTMENT

Improvements and investments on New Jersey’s heaviest traveled corridors are needed in order to continue to make the state an attractive place for the goods movement industry to do business. This plan includes a series of actions that aim to address the identified problem areas, including improving the efficiency of New Jersey’s most heavily traveled roadways, improving those areas where high crash occurrence indicates potential safety concerns, and policy changes that will benefit New Jersey’s logistics industry.

These actions aim to reinforce New Jersey as a place for the freight industry to do business. This includes improvements at locations where existing freight movements are heaviest in addition to investments in key locations that will encourage further growth in expanding freight markets within the state. The resulting prioritization can support decision making that allows for the highest impact of limited funding for transportation improvements in New Jersey, including the identification of applicable capital improvement strategies.

Key Problem Areas

The key problem areas were identified through the use of data, mapping, and stakeholder input. Once targeted locations were identified, they were ranked to prioritize investments based on the severity of existing issues and impact on existing traffic flows. Each project was classified as being one of four improvement types—safety, maintenance, expansion, or policy.

- **Safety improvements** would improve conditions at locations where high numbers of crashes involving trucks have historically occurred, resulting in property damage, injuries or fatalities, or simply lost time for trucks forced to deal with non-recurring congestion. These improvements range from improved signage or striping, widening of ramp radii, extended acceleration/deceleration lanes, improved access to major retail areas, or increased truck-only facilities.
- **Maintenance improvements** would focus on investments in existing infrastructure. Deficient pavement and bridges were reviewed along New Jersey’s key corridors. As noted earlier, deficient bridges on major highways are unlikely to become load restricted, but the rehabilitation or replacement of structures can have a significantly negative impact on goods movement. Similarly, poor pavement can impact the trucking industry by limited travel speeds, increased wear and tear on trucks, or congestion associated with lane closures due to resurfacing projects. These improvements would aim to minimize impacts on the trucking industry, including the application of emerging technologies that can extend the lifecycle of transportation infrastructure.
- **Expansion improvements** are appropriate for locations where existing facilities do not meet the needs of current or future travel demands. These improvements may address existing recurring congestion issues through the introduction of additional capacity, the identification of alternative routes, or a shift of freight movements to non-peak time periods. These improvements must also address future demand—New Jersey’s key roadways are expected to have increased traffic on numerous already heavily congested links. In many cases, increasing capacity may not be a viable solution because of the high costs of right-of-way and construction as well as the challenges of widening highways in the densest portions of New Jersey. In those cases, alternative improvements focused on improving freight throughput through information technology, policy, and behavioral changes should be encouraged.

- **Policy improvements** would require significant coordination among NJDOT, freight and logistics industries, and other state and local agencies. However, the impact of these policies would likely be significant, while requiring a significantly smaller investment than physical improvements.

Safety

Interstate 78

- MP 56 (NJ Route 27) to MP 60.0 (east of NJTPK)
 - ♦ Interchange 57 (U.S. Routes 1 and 9)
- Interchange 7 (NJ Route 173)
- Interchange 6 (County Route 632)

Interstate 80

- MP 32.5 to MP 34.8
 - ♦ Interchange 34 (NJ Route 15)
- MP 52.7 (County Route 613) to MP 53.9 (NJ Route 23)
 - ♦ Structures 0726155/0726156 (over Passaic River)
 - ♦ Interchange 53 (U.S. Route 46/NJ Route 23)
- Interchange 55 (NJ Route 62/County Route 646)
- Interchange 30 (County Route 615)
- Interchanges 4B/4C (U.S. Route 46/NJ Route 94)

Interstate 295

- Interchange 13 (U.S. Route 130)

New Jersey Turnpike

- MP 42.2 (Interstate 287) to MP 78.0 (George Washington Bridge)
 - ♦ Thomas Edison/Grover Cleveland Service Areas
 - ♦ Passaic River Crossing—Structure 107.88
- Clara Barton/John Fenwick Service Area

NJ Route 17

- Interchange with U.S. Route 46
- Sears Distribution Center Driveways (MP 10.5)
- Interchange with Interstate 80 eastbound
- Interchange with County Route 85
- Interchange with NJ Route 3

Interstate 287

- Interchange 1 (U.S. Route 1)
- Interchange 41 (Interstate 80)
- Interchange 39 (NJ Route 10)
- Interchange 2 (NJ Route 27)
- Interchange 4 (Durham Avenue)



Maintenance

- Statewide resurfacing programs
- Increased use of new pavement technologies
- Prioritized structural improvements on the priority freight roadways

Expansion

Interstate 78

- MP 23.6 (County Route 523) to MP 31.2 (Interstate 287)
 - ♦ Interchange 29 (Interstate 287/U.S. Routes 202 and 206)
- MP 49.0 (NJ Route 24) to MP 54.2 (Winans Avenue)

Interstate 80

- MP 37.6 (County Route 513) to MP 46.5 (Interstate 280)
 - ♦ Interchange 37 (County Route 513)
 - ♦ Interchange 43 (Interstate 287)
- MP 59.8 (County Route 648) to MP 62.6 (Garden State Parkway [GSP])
 - ♦ Interchange 60 (NJ Route 20)
- Interchange 64/64A (NJ Route 17)

Interstate 295

- MP 26.0 (NJ Route 42/Interstates 76 and 676) to MP 30.5 (U.S. Route 30)

NJ Route 17

- MP 11.8 (County Route 61) to MP 15.8 (County Route 80)
- MP 26.0 (Stag Hill Road) to MP 26.3 (U.S. Route 202)

Interstate 287

- Interchange 14A (U.S. Route 22)
- Interchange 21 (Interstate 78)

Statewide

- Expand existing or identify new locations for truck parking along key corridors

Policy

- Support extending port operating hours to support off-peak freight movements
- Introduce pilot *known-driver* program allowing deliveries to occur during non-business hours
- Support inland distribution centers
- Support open road tolling
- Investigate increased opportunities for WIM stations
- Provide outreach and guidance to local municipalities regarding truck parking policies
- Develop NJDOT Freight Management System to rank and prioritize locations where transportation improvements will most greatly benefit the logistics industry.

- Encourage NJDOT, MPOs, and other statewide agencies to work together to identify locations where truck parking can be expanded, for example:
 - ♦ A trucking company in Burlington County has started using an existing underutilized parking lot to provide a rest area with overnight parking.
 - ♦ A parcel of land adjacent to the James Fennimore Cooper Service Area on the NJTPK near I-295 has been reserved for future potential use—this could be an opportunity for the MPOs, NJDOT, and the NJTPK to work together to expand truck parking.
- Target enforcement of overweight trucks on locations where permit issuance is highest
- Encourage NJDOT to work with MPOs and American Transportation Research Institute (ATRI) to identify rollover hotspot locations, as has been already done in 31 states²¹
- Create statewide freight advisory committee that coordinates and leverages work being done by individual MPOs
- Review unfunded TIP projects to determine where logistics industry can lend support to increase visibility of project

Problem area summaries were developed for each of the physical improvement areas. These problem summaries review existing conditions, including background information, while identifying existing deficiencies from both quantitative data sources as well as those discussed by key stakeholders or through a review of conditions using aerial photography. Detailed problem statements were developed for the highest priority locations using NJDOT’s Transportation Problem Statement Form (TP-1).

Priority Ranking

Each of the identified locations was further ranked based on several freight factors—FAF3 truck volumes, in-state freight flows (originating in and/or destined to New Jersey), and crashes involving trucks. In order to prioritize these locations, a rating system was developed that normalized each of the datasets on a 10-point scale. This identifies which locations are most critically in need of improvements focused on benefiting the goods movement industry. NJDOT has identified these projects for advancement into the project pipeline in order to maintain the state’s economic competitiveness within the northeast region while supporting the nation’s economic competitiveness. The overall result of the priority rating is included in Table 1. A map highlighting each of the priority locations is illustrated on Figure 9.

Based on this analysis, the top five priority locations for freight-focused highway improvements are:

- New Jersey Turnpike, MP 42.2 to MP 78.0
- Interstate 287-Interchange 1 (U.S. Route 1)
- Interstate 287-Interchange 14A (U.S. Route 22)
- Interstate 78, MP 23.6 to MP 31.2
- Interstate 78, MP 56.0 to MP 60.0

²¹ “Mapping Large Truck Rollovers: Interactive Map,” American Transportation Research Institute, <http://www.atri-online.org/2012/05/09/interactive-map/>



Table 1—Priority ranking for targeted improvement locations

Location		Safety	Truck Volumes	New Jersey Freight Flow	Overall Rating	Breakout Projects	Location Focus
NJTPK, MP 42.2 to 78	Interchange 10 (Interstate 287) to north terminus (George Washington Bridge), including eastern and western spurs	7.50	9.00	8.90	8.47	Thomas Edison/Grover Cleveland Service Areas, Structure 107.88, over Passaic River	Safety
Interstate 287, MP 0.9	Interchange 1 (U.S. Route 1)	7.50	7.00	n/a	7.25		Safety
Interstate 287, MP 14.2	Interchange 14A (U.S. Route 22)	6.75	5.00	9.80	7.18		Expansion
Interstate 78, MP 23.6 to 31.2	East of Interchange 24 (County Route 523) to Interchange 29 (Interstate 287)	9.25	6.00	5.20	6.82	Interchange 29 (Interstate 287/U.S. Routes 202 and 206)	Expansion
Interstate 78, MP 56 to 62	Interchange 56 (NJ Route 27) to east of Interstate 95/NJTPK	8.75	6.00	3.70	6.37	Interchange 57 (U.S. Routes 1 and 9)	Safety
Interstate 80, MP 37.6 to 46.5	Interchange 37 (County Route 513) to Interchange 47 (Interstate 280)	3.36	9.00	5.30	6.30	Interchange 37 (County Route 513) and Interchange 43 (Interstate 287)	Expansion
Interstate 287, MP 42	Interchange 41 (Interstate 80)	6.00	5.00	7.90	6.30		Safety
Interstate 287, MP 39.5	Interchange 39 (NJ Route 10)	6.00	5.00	7.90	6.30		Safety
Interstate 80, MP 32.5 to 34.8	Vicinity of Interchange 34 (NJ Route 15)	4.50	8.00	5.30	5.93	Interchange 34 (NJ Route 15)	Safety
NJ Route 17, MP 11.8 to 15.8	County Route 61 to County Route 80	4.01	6.00	9.30	5.79		Expansion
Interstate 78, MP 49 to 54.2	Interchange 48 (NJ Route 24) to Interchange 54 (Winans Ave)	3.00	9.00	5.30	5.77	Interchange 48 (NJ Route 24), Interchange 49 (NJ Route 124/NJ Route 82), Interchange 54 (Winans Road)	Expansion
NJ Route 17, MP 26 to 26.3	Stag Hill Road to U.S. Route 202	5.21	4.00	9.30	5.55		Expansion
Interstate 80, MP 52.7 to 53.9	Interchange 52 (County Route 613) to Interchange 53 (NJ Route 23)	5.30	6.00	3.65	5.48	Structures 0726155/0726156 (over Passaic River), Interchange 53 (U.S. Route 46/NJ Route 23)	Safety
NJ Route 17, MP 8.4	Interchange with U.S. Route 46	3.00	4.00	9.30	5.43		Safety
Interstate 287, MP 21.2	Interchange 21 (Interstate 78)	3.00	3.00	9.80	5.27		Expansion
NJ Route 17, MP 10.5	Sears Distribution Center	1.50	5.00	9.30	5.27		Safety
Interstate 80, MP 59.8 to 62.6	Interchange 59 (County Route 648) to Interchange 62 (GSP)	5.50	6.00	3.90	5.13	Interchange 60 (NJ Route 20)	Expansion
NJ Route 17, MP 9.3	NJ Route 17 southbound to Interstate 80 eastbound	0.75	5.00	9.30	5.02		Safety
NJ Route 17, MP 24.6	Interchange with County Route 85	0.75	5.00	9.30	5.02		Safety
Interstate 287, MP 2.2	Interchange 2 (NJ Route 27)	3.75	6.00	n/a	4.88		Safety
Interstate 295, MP 26 to 30.5	Interchange 26 (NJ Route 42/Interstate 76) to Interchange 29 (U.S. Route 30)	4.59	4.00	6.80	4.62		Expansion
NJ Route 17, MP 4	Interchange with NJ Route 3	1.50	3.00	9.30	4.60		Safety
Interstate 80, MP 65.2	Interchange 64/64A (NJ Route 17)	5.50	5.00	3.20	4.57		Expansion
Interstate 80, MP 55.2	Interchange 55 (NJ Route 62/County Route 646)	2.25	7.00	3.90	4.38		Safety
Interstate 287, MP 4.6	Interchange 4 (Interstate 287 southbound at Durham Avenue)	3.75	5.00	n/a	4.38		Safety
NJTPK, MP 5.4	Clara Barton/John Fenwick Service Areas	3.00	3.00	7.10	4.37		Safety
Interstate 80, MP 30.6	Interchange 30 (County Route 615)	1.50	6.00	5.30	4.27		Safety
Interstate 295, MP 14.2	Interchange 13 (U.S. Route 130)	1.50	3.00	7.60	4.03		Safety
Interstate 78, MP 7.5	Interchange 7 (NJ Route 173)	3.75	3.00	3.50	3.42		Safety
Interstate 80, MP 4.6	Interchanges 4B/4C (U.S. Route 46/NJ Route 94)	0.75	4.00	4.70	3.15		Safety
Interstate 78, MP 7.1	Interchange 6 (County Route 632)	2.25	3.00	3.50	2.92		Safety





EAST-WEST CORRIDOR PROFILE (INTERSTATES 78 AND 80)

Within New Jersey, Interstates 78 and 80 provide critical links in the regional and national freight system. Interstate 78 is an essential link for freight arriving at or departing from the large port facilities in Newark and Elizabeth, as well as Newark Liberty International Airport. In Western New Jersey, the freight corridor crosses the Delaware River, servicing warehousing and distribution centers in Eastern Pennsylvania. While Interstate 78 terminates at Interstate 81 near Harrisburg, Pennsylvania, Interstate 80 continues across the U.S. to San Francisco, providing an inroad between New Jersey and the rest of the nation. The eastern portion of the corridor provides a key access point to the densely populated New York City metropolitan market and the city itself via the Holland and Lincoln Tunnels and the George Washington Bridge.

The east-west corridor acts as a primary connection that links the growing node of warehouses and distribution centers in Eastern Pennsylvania with New Jersey. Participants in the discussion with industrial developers and property owners noted that locations in Pennsylvania can more easily access the Interstate 81 corridor, which has emerged as a competitor north-south route to Interstate 95. According to participants, national retailers prefer Interstate 81 locations for distribution centers because of the lack of tolls and lower traffic volumes than Interstate 95, which has tolls in New Jersey and is regularly congested throughout the northeast. The warehousing and distribution center cluster in Eastern Pennsylvania is a major competitor to similar New Jersey facilities.

New Jersey was characterized as a *conduit state* during a discussion conducted for this study with key trucking firm executives who noted that:

- Interstate 78 is a major conduit for freight flows from Port Newark and Elizabeth to distribution centers in Eastern Pennsylvania (Allentown, Bethlehem, Macungie, and Harrisburg). Trucks also use this route to connect with rail intermodal yards (with domestic and West Coast port shipments) in Central Pennsylvania (Harrisburg, Chambersburg, Mechanicsburg). Interstate 78 provides connections to Interstate 287 north to connect to Interstate 80 or continue north to northern New York.
- Interstate 80 freight flows to and from Northeastern Pennsylvania and areas farther west, including areas in and around Lehigh, Berwick, Bloomsburg, and Milton. Interstate 80 provides connections via the George Washington Bridge to New York.

Geographic Context and Corridor Description

As shown on Figure 10, Interstates 78 and 80 provide the main east-west corridor across New Jersey, linking through traffic with Pennsylvania to the west and New York City to the east. Each route is 68 miles long, and together they traverse the northern third of New Jersey, including portions of Warren, Sussex, Hunterdon, Somerset, Morris, Union, Essex, Passaic, Bergen, and Hudson Counties.

Interstate 78 connects Easton, Pennsylvania, in the west to the Holland Tunnel and New York City in the east. At its western terminus, Interstate 78 traffic enters and exits New Jersey via the Interstate 78 Toll Bridge over the Delaware River. East of the bridge, Interstate 78 is generally a six- to eight-lane, 65-mph highway through its interchange with the NJTPK in Newark. East of the NJTPK interchange, Interstate 78 operates as the NJTPK Extension, a four-lane, 55-mph toll road connecting to the Holland Tunnel, which emerges onto Canal Street in lower Manhattan.

Interstate 80 runs parallel to and north of the Interstate 78 corridor. At its western terminus, traffic enters and exits the state via the Delaware Water Gap Toll Bridge. Like Interstate 78, Interstate 80 generally carries six to eight lanes of traffic at a posted speed limit of 65 mph. The speed limit drops to 55 mph as Interstate 80 moves east into the more densely populated region of the state and approaches its eastern terminus at NJTPK/Interstate 95 in Teaneck, Bergen County. As illustrated in Figure 10, the east-west freight corridor has many important connections to other aspects of the freight transportation network, and both Interstate 78 and Interstate 80 connect to numerous key highways in New Jersey's truck network. Connections within New Jersey link the corridor to important north-south freight corridors, including Interstate 287 and Interstate 95/NJTPK. Additionally, numerous interchanges with state and U.S. routes connect the corridor to the regional network, accessing local markets and distributors.

Demographic Assessment

A general review of land uses along the east-west freight corridors illustrates the change in the character of development patterns from east to west. Likewise, it shows a difference in land uses surrounding Interstate 78 versus Interstate 80. The dominant land use surrounding Interstate 78 is residential, particularly east of Interstate 287. However, industrial uses are common in the eastern portion of the corridor, particularly those in Elizabeth, Newark, and Jersey City. West of Interstate 287, Interstate 78 alternates between agricultural, forested or open land, and residential land uses with the exception of Phillipsburg, which has a dense mix of commercial, industrial, and residential uses located adjacent to the Pennsylvania border. While Interstate 80 is similar to Interstate 78 east of Interstate 287 (primarily residential), it includes a greater diversity of residential, commercial, and industrial uses west of Interstate 287. A map detailing general land use patterns is included on Figure 11.

A review of employment densities, shown by municipality on Figure 12, illustrates the importance of both Interstates 78 and 80 in providing local and regional access for major employers in the state. Statewide population densities (Figure 13) illustrate a similar phenomenon, with the densest areas located in Eastern New Jersey between Interstates 78 and 80.

Key Freight Facilities

The east-west freight corridor provides a significant link between the major freight facilities in Northeastern New Jersey and points west. The major freight facilities service not only freight movements originating in or destined to New Jersey, but include regional, national, and internationally significant facilities that play a role in the global economy. Figure 10 illustrates the key freight facilities located adjacent to or in the vicinity of the east-west freight corridor.

Major ports

PNYNJ is the largest complex of maritime terminals in the Eastern U.S. The complex includes Port Newark/Elizabeth and the Global Marine Terminal and Military Ocean Terminal at Bayonne (MOTBY) complex in Jersey City and Bayonne. In addition, many companies operate private terminals in the area, including the ConocoPhillips Bayway refinery in Linden. The complex handles a wide range of cargo, including containerized cargo; roll-on roll-off cargo, such as automobiles; liquid and dry bulk products; *break bulk* movements, including steel, lumber, and paper; and movements of specialized items, such as yachts, subway cars, and heavy industrial components.



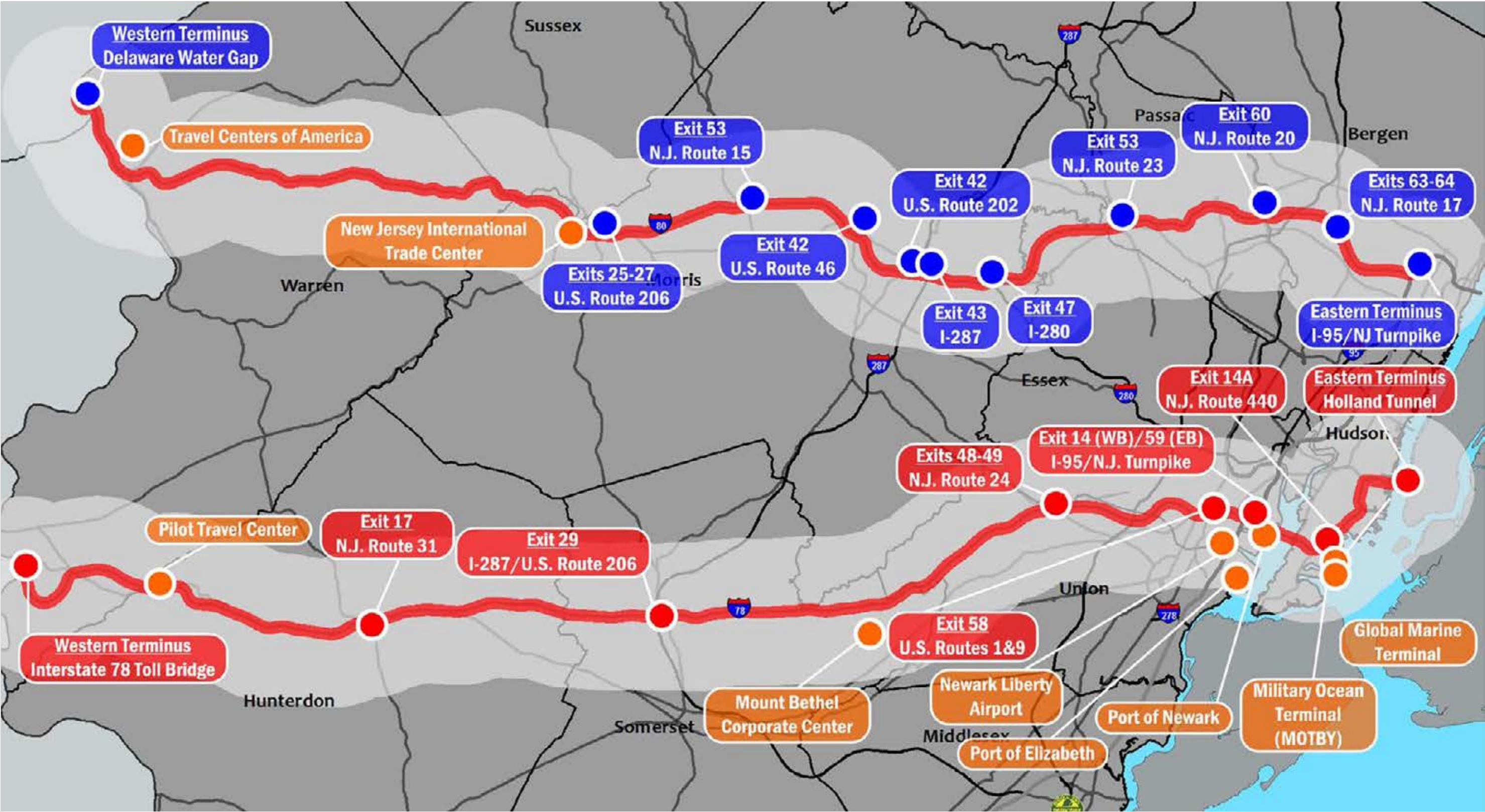


Figure 10—East-west freight corridor context





Figure 11—Land uses in Northern New Jersey



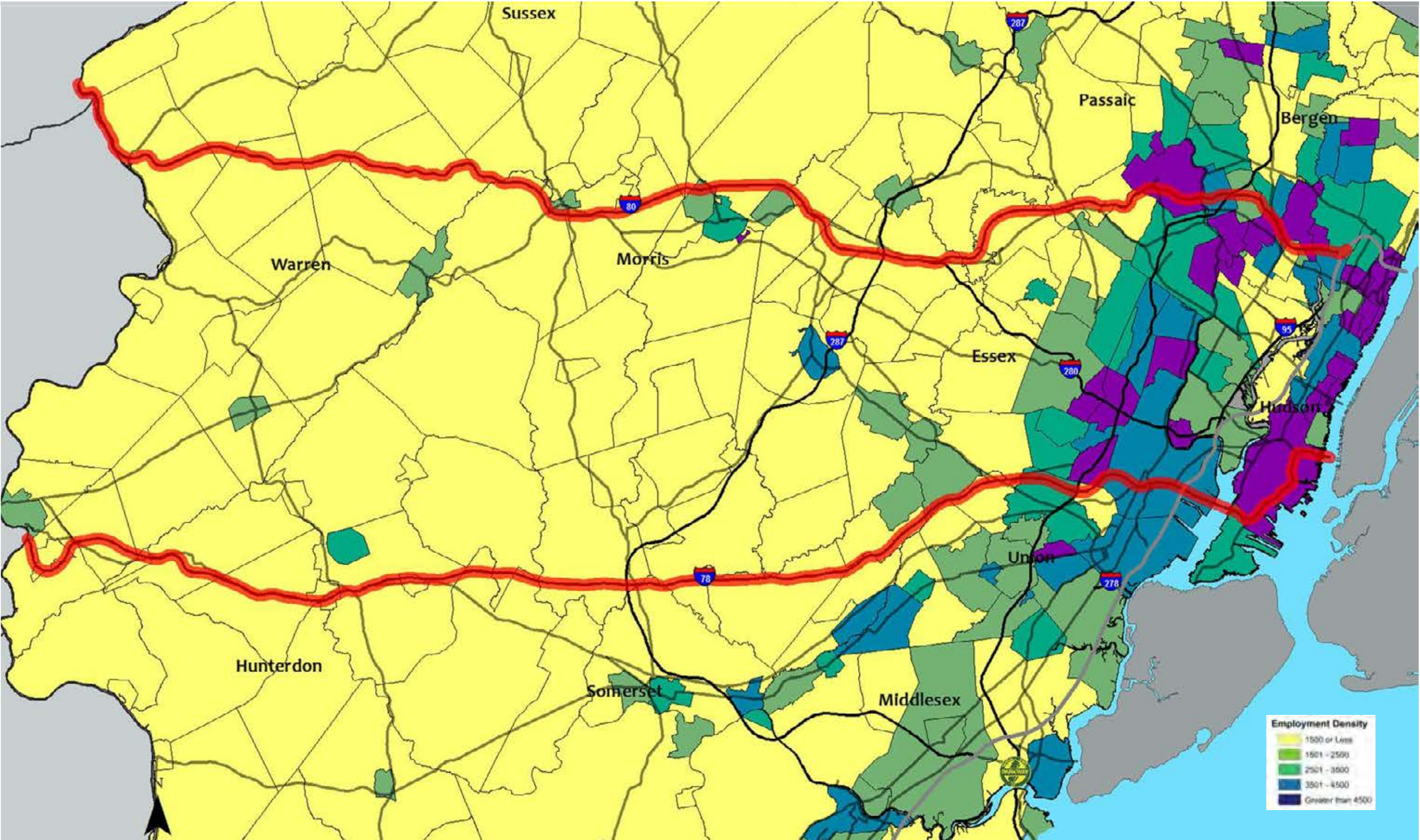


Figure 12—Employment density in Northern New Jersey



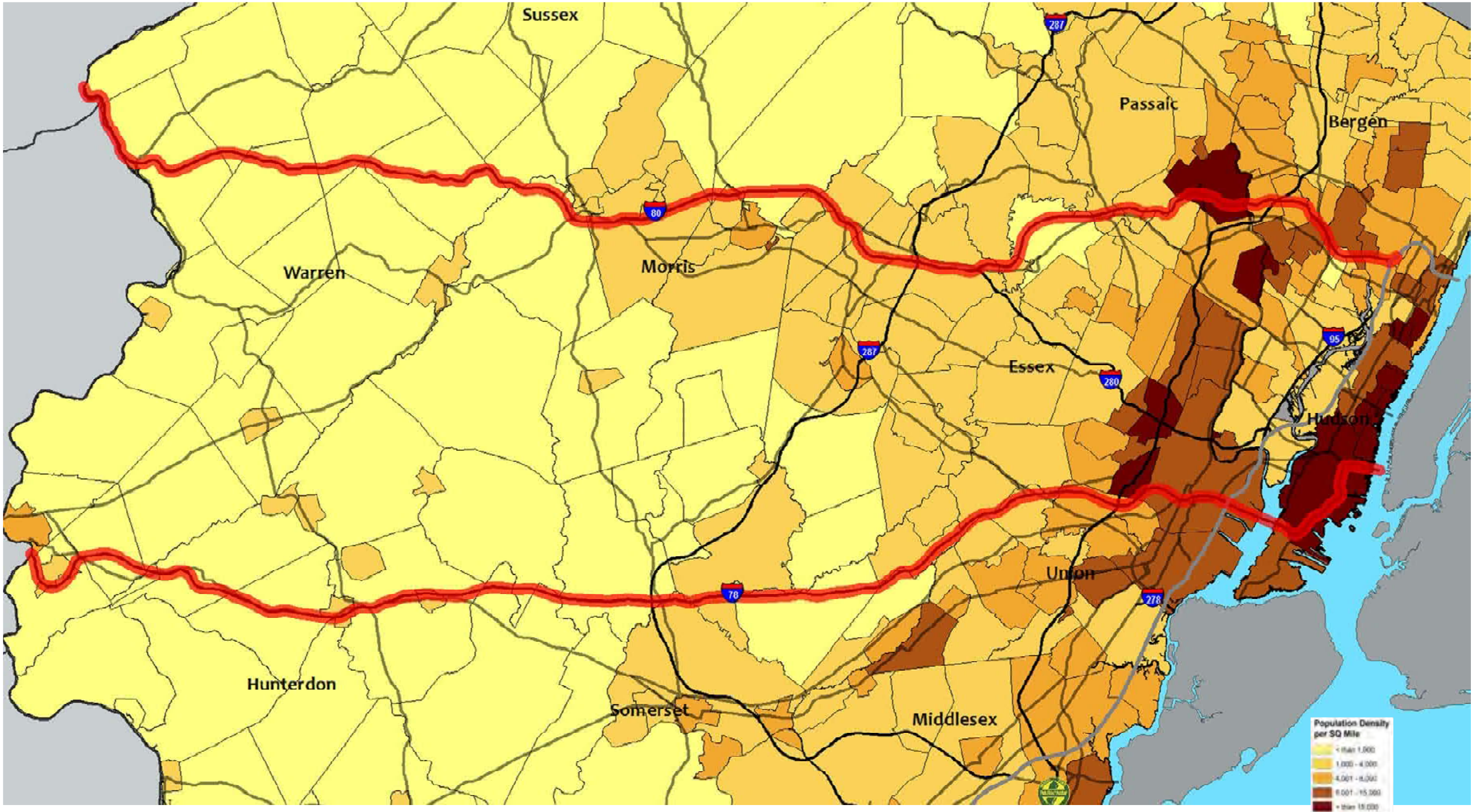


Figure 13—Population density in Northern New Jersey



Port of Newark/Elizabeth Marine Terminal

The Port Newark/Elizabeth complex encompasses over 2,000 acres in the Cities of Elizabeth and Newark. The complex includes three large container terminals:

- Maher Terminal, which has 445 acres and 16 container cranes
- APM Terminal, which is operated by a division of Maersk Lines, situated on 350 acres with 15 cranes
- Port Newark Container Terminal (PNCT), which covers 180 acres and has 9 container cranes

Additional acreage in the complex handles the significant number of vehicles imported and exported through the complex, along with such bulk movements as salt, scrap, and orange juice concentrate. Several specialized facilities and distribution centers are also located on port property, along with government inspection and other services.

In 2009, the port handled 78 million tons of cargo—a reduction from the 89 million tons processed in 2008 but still considerably higher than the 43 million tons handled in 1991. The number of containers handled by the port (measured in TEUs) grew from 1.9 million in 1991 to 4.6 million in 2009.

While approximately 85 percent of the cargo moving through the facility travels inland by truck, the Port Authority has extensively invested in rail yards adjacent to the terminals (also known as *on dock rail*). An ExpressRail facility is located between the Maher and Maersk Terminals in Elizabeth, while a second ExpressRail facility is located near the PNCT. The two ExpressRail facilities are enhanced by the unique 2-mile long Corbin Street Yard at the port, which runs adjacent to NJTPK. This yard enables the major railroads serving the port to build full train sets to inland destinations, reducing the travel time and handling of rail movements.

Global Marine Terminal/ Military Ocean Terminal at Bayonne

The Global Marine Terminal and MOTBY facilities are located off the main shipping channel and are not impacted by air draft issues at the Bayonne Bridge. In addition, the PNYNJ is redeveloping the Greenville Yards adjacent to the Global Marine Terminal as a location for enhanced Cross Harbor carfloat activity and as a potential location for an additional ExpressRail facility. Work on improving roadway access to the terminals and Greenville Yard is also being pursued.

The marine terminals in Jersey City and Bayonne experienced significant change in 2010. In June 2010, the PNYNJ agreed to acquire the 98-acre Global Marine Terminal and expand it to 170 acres by incorporating the former Northeast Auto Terminal property. In 2007, the PANYNJ announced that the agency would be shifting the Northeast Auto Terminal acreage to a container operation. In addition, PNYNJ acquired 130 acres in the former MOTBY in June 2010.

Newark Liberty Airport/Off-Airport Cargo Facilities

According to PANYNJ (the operator of Newark Liberty International Airport [EWR]), 290 acres and nearly 1.4 million square feet of space is devoted to cargo operations. While EWR is a hub for integrated logistics carriers, such as FedEx and UPS, the airport also moves a significant amount of cargo internationally and domestically in the bellies of passenger aircraft. In 2009, EWR ranked 9th in the U.S. and 24th in the World in terms of cargo tonnage. In 2009, EWR handled over 762,000 tons of revenue freight. The leading cargo carriers at the airport are FedEx, UPS, and Continental Airlines.

In addition to operations at the airport, freight forwarders and other air cargo handlers operate facilities near EWR. The need for proximity increases the lease rates that can be charged for such industrial properties in comparison to other locations in the region.

Distribution centers

New Jersey is one of the leading locations for warehousing and distribution activity in North America. As of the fourth quarter of 2010, over 904 million square feet of industrial property existed in New Jersey. Leading locations for these facilities within New Jersey include Middlesex, Essex, Union, Hudson, and Bergen Counties.

Interstates 78 and 80 also serve major freight supply chain nodes in Eastern Pennsylvania. Interstate 78 serves the Lehigh Valley area in Pennsylvania, which includes nearly 59 million square feet of industrial property, and the Bethlehem Intermodal Terminal (served by the Norfolk Southern Railroad). Interstate 80 serves the northeastern portion of Pennsylvania, which has 45 million square feet of industrial property.

The location of warehouses and distribution centers in the east-west freight corridor is shown on Figure 14. The map distinguishes the warehouses that are over 500,000 square feet, which tend to serve a multi-state area, and those warehouses that are 1 million square feet or larger, which often serve most of North America.

Participants in the discussion with industrial developers and property owners noted that competitive factors affecting decisions regarding the placement of facilities in Pennsylvania versus New Jersey include the following:

- Expiration of the Keystone Opportunity Zone tax waivers (which are and continue to be an important incentive for development in Pennsylvania), which will increase the cost of maintaining certain facilities constructed under this program.
- The rise in fuel prices will encourage distribution facilities to locate closer to markets.

They further noted that negative competitive factors affecting Pennsylvania versus New Jersey locational decisions include New Jersey's higher corporate, payroll, income, and real estate taxes. Several other key elements were pointed out by industry stakeholders, including:

- Certain brownfield sites may offer opportunities for establishing freight villages/logistics centers. The Hercules Powder Property in Morris County adjacent to Interstate 80 and Norfolk Southern rail line and the Union Carbide Property in Piscataway in the Interstate 287 corridor adjacent to the Conrail Port Reading line are examples of potential sites.
- The Scranton/Wilkes-Barre area, served by Interstate 80, has seen more growth recently as a result of the Keystone Opportunity Zone program.
- The Harrisburg area tends to have larger regional facilities and tends to be served by containerized cargo from the Port of Los Angeles/Long Beach, while Eastern Pennsylvania areas tend to be served by PNYNJ (one exception is the Norfolk Southern service provided to the Bethlehem Intermodal terminal).
- Eastern Pennsylvania has attracted major retailers, such as Gap and Wal-Mart.
- Developers noted that companies have found labor in New Jersey to be more productive than other locations for a similar wage. A participant noted that some warehouses in the Harrisburg area need to shut down for two weeks in December to accommodate hunting season.



- Participants noted that *big box* warehouse users are looking at New Jersey and the Interstate 81 corridor in Pennsylvania. Participants noted that some Pennsylvania towns have become less accepting of warehouse development than in the past.
- Big box retail distribution centers have shifted out of the congested Interstate 95 corridor and into the Interstate 81 and Interstate 84 corridors. Thus, Interstates 78 and 80 are key access routes to the metropolitan New York City marketplace.
- In California, the Ports of Long Beach/Los Angeles have support and distribution facilities located in the middle/eastern part of the state (Inland Empire area). This area in distance is roughly analogous to the Eastern Pennsylvania area that is served by Port Newark/Port Elizabeth. In essence, the participants felt that New Jersey's *Inland Empire* is Eastern Pennsylvania. Given the restrictions of the Highlands Act, it is unlikely there will be much industrial development in these corridors within New Jersey.

Interstate 78

The eastern node of Interstate 78 contains about 137 million square feet of industrial property. These buildings range from older industrial structures to more modern facilities that serve the immediate region—the Port of Elizabeth and Newark and Newark Liberty International Airport.

Nearly 46 million square feet of industrial property exists in the real estate markets that Interstate 78 flows through in Somerset and Hunterdon Counties. The majority of this property (over 40 million square feet) is located in Somerset County.

Distribution centers in the Lehigh Valley Region of Pennsylvania are served by Interstate 78, which links this area to the New York and New Jersey market and the Port of Elizabeth and Newark complex. The Lehigh Valley area, which includes Lehigh and Northampton Counties, has many modern warehouses larger than 500,000 square feet of leasable space and the Bethlehem Intermodal Terminal, which includes:

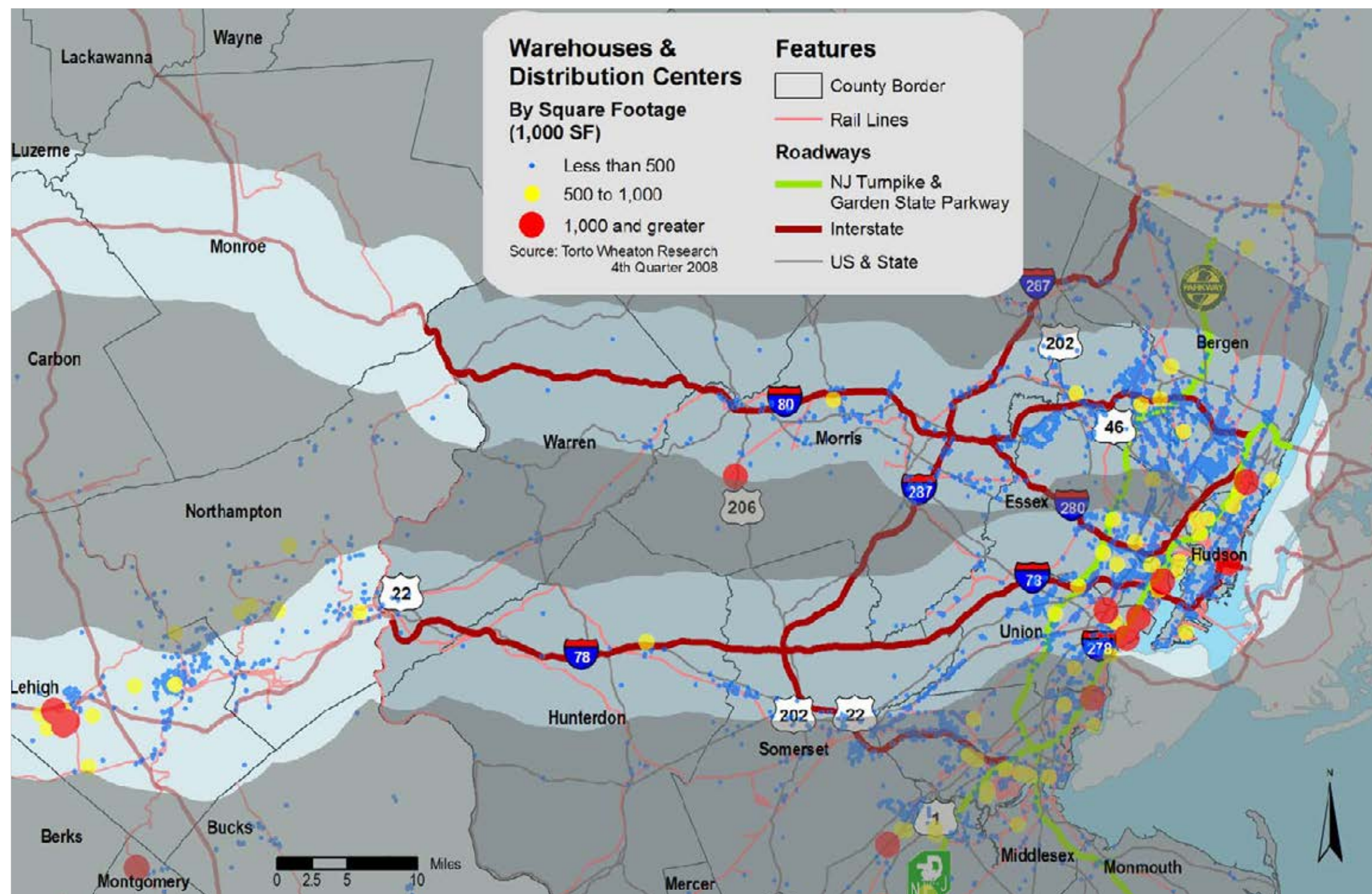


Figure 14—Warehouses and distribution centers along the east-west freight corridor

- Lumber reload**—Inside and outside storage areas for receiving lumber by rail and distributing it by truck.
- Bulk transload**—Operated by Bulkmatic, there are several tracks for transloading from railcar to truck.



- **Triple Crown**—Norfolk Southern operates this unique truck/rail service within the terminal as part of their overall Triple Crown Network.
- **Trailer on flat car operation**—This consists of two 3,000-foot railroad tracks capable of loading or unloading two blocks of cars simultaneously. Chassis staging areas are located on either side. Perpendicular placement of chassis maximizes the storage areas on either side.

Major businesses with distribution centers in the Lehigh Valley area include KIA Motors, Wakefern, JC Penny Logistics, Phillips/Van Heusen, CDS public warehouse (used by Target and Wal-Mart, among others), DSC, Tru-Value Hardware, Ameri-cold, and Bridgestone/Firestone. Production and distribution facilities in the area include Nestle, Coca Cola, RR Donnelly, and Kraft Foods. Many of these businesses use port facilities in New Jersey as well as serve customers in New Jersey. This freight movement generates significant truck activity on the Interstate 78 corridor.

Interstate 80

The vicinity of the eastern terminus of Interstate 80 in New Jersey, in Central Bergen County and the Meadowlands area, contains over 132 million square feet of industrial property. These properties include distribution centers and warehouses that serve New York City as well as the larger New York-New Jersey-Connecticut region.

Interstate 80 continues west through U.S. Route 46/NJ Routes 3 and 23 and Morris County markets, which includes nearly 102 million square feet of industrial property.

Upon entering Northeastern Pennsylvania, an area that includes Carbon, Lackawanna, Monroe, and Schuylkill Counties, Interstate 80 is surrounded by 45 million square feet of industrial property. Interstate 80 also intersects with Interstate 81 in this area, which provides north-south connectivity. Many of the sites in this area are Keystone Opportunity Zones, a Pennsylvania initiative to attract economic development to the area.

Retail Clusters

Figure 15 illustrates the clustering of retail employers (SIC Major Groups 52-59) that are primary receivers of freight within New Jersey. Retail locations with more than 50 employees located within 1 mile of Interstates 78 or 80 are indicated in red, while retail locations with more than 50 employees located beyond 1 mile of Interstates 78 and 80 are shown in grey. Significant clusters are evident in Eastern New Jersey along both roadways. Interstate 80 includes clusters farther west, including numerous businesses located near its interchange with Interstate 287. U.S. Route 46, which parallels Interstate 80, serves as a major commercial corridor and likely feeds a significant amount of freight traffic to Interstate 80. Interstate 78 has fewer retail establishments located west of Union County, with only one notable cluster in Hunterdon County near Route 31.

Participants in the trucking industry discussion noted that truck accidents may correlate with the number of retail clusters (delivery locations) and increased interaction with auto traffic proximate to retail locations.

Truck Facilities

Over-capacity truck rest stops were identified as a major problem along Interstate 78 and Interstate 80 in the *North Jersey Truck Rest Stop Study Refinement and Action Plan*.²² Limited sites are currently available, and those that do exist are often over capacity, indicating unmet demand. Existing truck facilities are illustrated in Figure 16.

Rest areas/parking areas

No designated parking facilities exist in the eastern half of New Jersey along the east-west corridor, often forcing truck traffic to use unapproved locations, including shoulders, as parking areas. In the western half of the corridor, along Interstate 80, two facilities exist both eastbound and westbound, while Interstate 78 has just one facility each eastbound and westbound. Those facilities that do exist have limited parking areas and are often over capacity, especially at peak times.

Interstate 78

Similar eastbound and westbound facilities at MP 7.9 are signed as “Rest Areas” and provide no services. They include parking for approximately 10 trucks and are open to the public.

Interstate 80

The eastbound facility at MP 7.15 is signed as a “Rest Area” and has limited services, including a tourist center, vending machines, and rest rooms. It includes 22 delineated truck parking spaces, separate from car and bus parking.

The eastbound facility at MP 21.4 is signed as a “Rest Area” and provides no services. It includes parking for approximately 12 trucks but is open to the public. The westbound facility at MP 21.3 is signed as a “Picnic Area” and provides no services. Similar in design to its eastbound counterpart, it also includes parking for approximately 12 trucks and is open to the public.

The westbound facility at MP 32.2 provides no services and is used strictly for truck parking. NJDOT, in accordance with New Jersey Statute 39:4-208, has restricted use of this facility “only to vehicles over five tons registered gross weight at approximate MP 32.2, and when in the rest areas vehicles shall stop or stand only in designated areas and between the painted lines.”²³ Essentially, this means that NJDOT has legislatively reserved this facility for truck use only. This location includes approximately 12 delineated parking spaces, but shoulder use in the facility is common. A similar facility located along Interstate 80 eastbound at MP 32.2 is no longer in operation.

Weigh stations

Weigh stations exist on both Interstate 78 and 80 near the border with Pennsylvania. One weigh station along Interstate 80 eastbound exists near MP 1. A weigh station near MP 3 on Interstate 78 eastbound was replaced in 2007 with a newly constructed facility adjacent to Interchange 6 in both the eastbound and westbound directions. Operating times for these facilities have not been determined.

²² *North Jersey Truck Rest stop Study Refinement and Action Plan*, NJTPA/Gannett Fleming, December 2009, p.9

²³ http://www.state.nj.us/transportation/refdata/traffic_orders/rest_stops/rt80.shtm



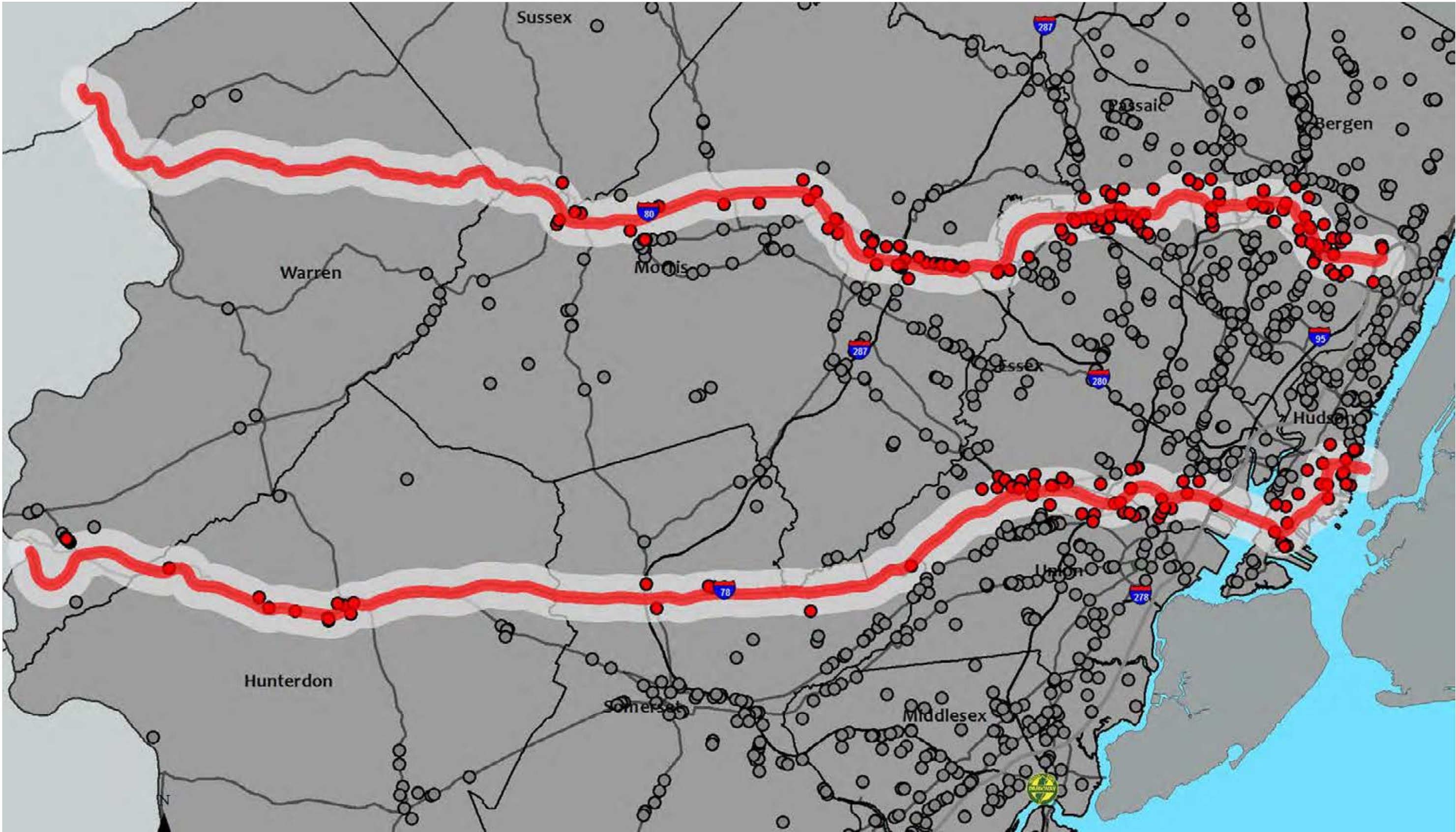


Figure 15—Retail establishments in New Jersey



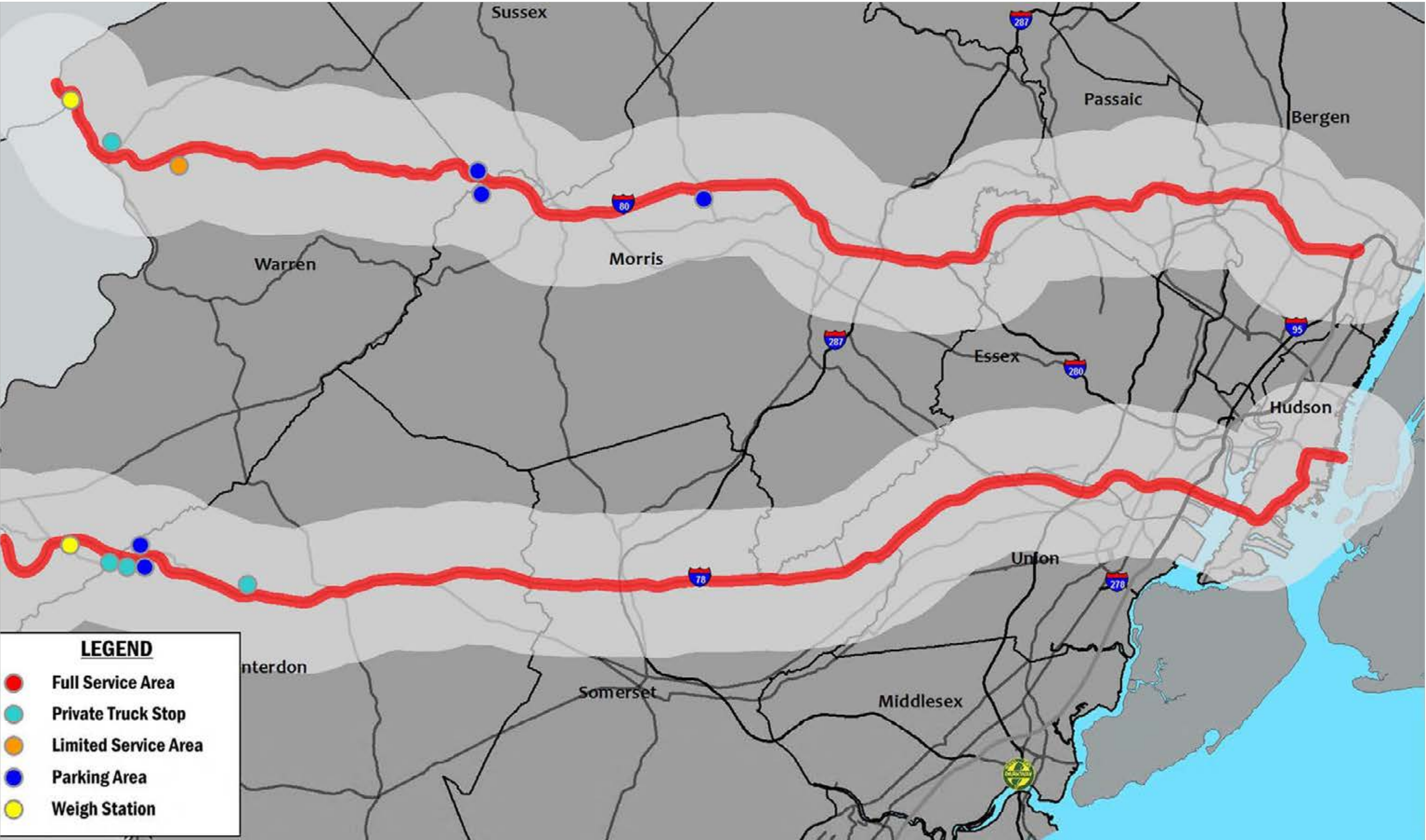


Figure 16—Truck facilities along the east-west freight corridor



Private truck stops

As with the rest areas, the private truck stops are located in the western portion of the corridor, and no large scale full-service facilities exist east of Hunterdon and Warren Counties. Four major private truck stops exist along the east-west corridor.

Interstate 78

Three major privately operated truck stops are located along Interstate 78, all in the western portion of the corridor. Two facilities are located adjacent to Interchange 7 (NJ Route 173) and are accessible from Interstate 78 eastbound and westbound. A third facility is located adjacent to Interchange 12 (NJ Route 173) and is most easily accessible from Interstate 78 westbound, while trucks traveling eastbound on Interstate 78 must traverse several local intersections to access this site.

- Travel Centers of America (Interstate 78, Interchange 7)—122 parking spaces
- Pilot Travel Center (Interstate 78, Interchange 7)—30 parking spaces
- Pilot Travel Center (Interstate 78, Interchange 12)—85 parking spaces

Interstate 80

One major privately operated truck stop, Travel Centers of America, is located along Interstate 80 in New Jersey, adjacent to Interchange 4C (westbound) and Interchange 4A (eastbound) in the western portion of the corridor. This stop has 185 parking spaces for trucks. Access from Interstate 80 westbound is indirect and challenging, due to a short weaving section along U.S. Route 46/NJ Route 94. Likewise, access to Interstate 80 eastbound is challenging due to a circuitous return route that includes a tight-turning radius from Simpson Road to NJ Route 94. The difficulty trucks have making this turn is evidenced by damaged curbing and countless ruts within the adjacent grass median. The offset placement of an adjacent stop sign, likely due to repeated damage from truck traffic, further indicates the insufficient turning radius that currently exists.

Roadway Summary

Interstates 78 and 80 have varying cross sections as they traverse New Jersey. A summary table of total lanes, posted speed limits, and right-hand shoulder widths for each roadway is detailed in Table 2 (Interstate 78) and Table 3 (Interstate 80).

Table 2—Interstate 78 characteristics

Milepost Start	Milepost End	Length (miles)	Jurisdiction	Total Lanes EB	Shoulder Width EB (feet)	Total Lanes WB	Shoulder Width WB (feet)	Posted Speed Limit
0	4.2	4.2	DRJTBC	3	12	3	12	65
4.2	48.1	43.9	NJDOT	2-4	12	2-3	12	65
48.1	49.5	1.4	NJDOT	2	3-10	2	12-15	65
49.5 (local)	58.6 (local)	9.1	NJDOT	2-3	3	2-3	0-3	65
49.5 (express)	58.6 (express)	9.1	NJDOT	2-3	3-15	2	3-15	65
58.7	66.5	7.8	NJTA	2	12	2	12	55
66.5	67.8	1.3	PANYNJ	2	0	2	12	25-35

Table 3—Interstate 80 characteristics

Milepost Start	Milepost End	Length (miles)	Jurisdiction	Total Lanes EB	Shoulder Width EB (feet)	Total Lanes WB	Shoulder Width WB (feet)	Posted Speed Limit
0	0.5	0.5	DRJTBC	2	0-12	2	0-12	50
0.5	1.4	0.9	NJDOT	2	6-12	2	4-12	50
1.4	5.1	3.7	NJDOT	2-3	12	2-3	4-12	55
5.1	9.0	4.9	NJDOT	4	10-12	3	12	65
9.0	34.6	25.6	NJDOT	3-4	12	3-4	12	65
34.6	44.0	9.4	NJDOT	4	12	3-4	12	65
44.0 (local)	46.3 (local)	2.3	NJDOT	2	12	2	12	65
44.0 (express)	46.3 (express)	2.3	NJDOT	3	12	3	10-12	65
46.3	52.8	6.5	NJDOT	3	12	3	12	65
52.8	58.9	6.1	NJDOT	3-4	12	3	12	55
58.9	62.7	3.8	NJDOT	3-5	6-12	3-5	12	55
62.7 (express)	64.7 (express)	2.0	NJDOT	2	4			
62.7	64.7	2.0	NJDOT	2	12	4	12	55
64.7 (local)	68.5 (local)	3.8	NJDOT	2-4	0-12	2-3	0-2	55
64.7 (express)	68.5 (express)	3.8	NJDOT	2	2-8	2	2-8	55

Interstate 78

While Interstate 78 is predominantly under the jurisdiction of NJDOT, three other entities maintain control over the roadway along the eastern and western ends of the roadway. The western end of Interstate 78 is under jurisdiction of the Delaware River Joint Toll Bridge Commission (DRJTBC) and includes the Interstate 78 Toll Bridge. A nearly 8-mile section of Interstate 78 is operated by the New Jersey Turnpike Authority (NJTA) as the Newark Bay Extension section of the New Jersey Turnpike. Finally, the easternmost section of Interstate 78 is under the jurisdiction of the Port Authority of New York and New Jersey (PANYNJ), which operates the Holland Tunnel.

Throughout most of New Jersey, Interstate 78 carries two travel lanes with a 12-foot shoulder and a posted speed limit of 65 mph. A 9-mile section of Interstate 78 in Union and Essex Counties, terminating at the NJTPK Toll Plaza carries two or three local and two or three express travel lanes.

Interstate 78 includes three sections that are tolled. The Interstate 78 Toll Bridge (DRJTBC) has a sliding scale for trucks, ranging from \$5.00 (2-axle truck) to \$22.75 (7-axle truck), with a discount of 10 percent for E-ZPass users. The Newark Bay Extension of the New Jersey Turnpike (NJTA) charges varying tolls based on the number of axles and interchange of entry and exit. Finally, the Holland Tunnel (PANYNJ) has a sliding scale for trucks, ranging from \$16.00 (2-axle truck) to \$56.00 (7-axle truck), with E-ZPass discounts offered during off-peak and overnight periods.



Interstate 80

Interstate 80 is primarily under the jurisdiction of NJDOT, with the exception of its westernmost terminus, which includes the Delaware Water Gap Toll Bridge under the jurisdiction of DRJTBC. The cross section of Interstate 80 varies greatly as it traverses New Jersey, with many different lane configurations both eastbound and westbound. Two local/express configurations exist along the roadway, with a 2-mile section located in Parsippany-Troy Hills Township between Interstates 280 and 287, as well as a section in Bergen County between the GSP and NJ Route 17 southbound in Hackensack. While Interstate 80 terminates at the NJTPK (Interstate 95), it provides a key link to the George Washington Bridge and points east in New York.

Interstate 80 includes one tolled section. The Delaware Water Gap Toll Bridge (DRJTBC) has a sliding scale for trucks, ranging from \$5.00 (2-axle truck) to \$22.75 (7-axle truck), with a discount of 10 percent for E-ZPass users.

Truck Volumes

The most recent WIM data (2008) was analyzed by NJIT for NJDOT and published in the *WIM Station Annual Report for 2008*. The data used in the report went through an extensive review process to remove any suspect data (due to observed anomalies in volume, WIM station malfunctions, badly formatted records, missing/extra hourly data, etc.). To avoid skewing analysis of truck traffic volumes, the data were then filtered to analyze only non-holiday weekday traffic. For any missing months of data, NJIT used a forecasting algorithm to estimate those monthly volumes. After that filtering was complete, the data at each WIM station were summarized to illustrate the annual distribution and variation of heavy-truck traffic volume, the diurnal distribution of heavy-truck traffic, and a comparison to heavy-truck traffic in the previous year.

Since no statewide database for heavy-vehicle traffic volumes was available, the project team used the 2007 FHWA FAF3 travel model (Version 3.1.1) to provide estimates of current travel patterns. These volumes serve as an important measure of freight demand along New Jersey’s key corridors and were a significant component of the rating system used to prioritize the identified locations for investment. Available NJDOT WIM data provided snapshots of actual heavy-truck volumes at several locations along the corridors. While this allows a useful comparison of truck volumes at several points on a corridor and the ability to review changes in volume over time, there are not enough WIM stations to paint a complete picture of corridor volumes. For this task, the consultant team used the FHWA FAF3 model. FAF3 is a national model that uses a variety of data sources to estimate commodity movements by truck. While the model does not consider a detailed understanding of local conditions (as illustrated by the high number of truck trips allocated to the truck-restricted GSP), it provides a reasonable, high-level estimate of average annual daily truck traffic (AADTT) from 2007, the model’s base year, which can indicate trends along a corridor, such as identifying areas of high truck traffic.

Interstate 78—WIM data

NJDOT operates five WIM stations along Interstate 78, while a sixth is operated by DRJTBC on the Pennsylvania side of the Interstate 78 Toll Bridge. On Interstate 78, the distribution of these WIM stations provides a general characterization of traffic volumes through the western and central portions of the corridor. NJDOT does not currently operate any WIM stations in the more urban, eastern stretch of Interstate 78. Data from stations 78E, 78F, 78D, and 78B provide information on traffic volumes near the Pennsylvania border (MP 5.02 and MP 7.9) and to the west and east of the Interstate 287 intersection (MP MP 25.7 and MP 34.5), respectively.

As shown in Table 4, eastbound traffic on Interstate 78 increases as traffic moves from west to east; however, eastbound WIM data was not available east of Interstate 287 in Central New Jersey. Between available WIM sites, overall traffic volumes on Interstate 78 increase by approximately 25 percent from Bethlehem (Hunterdon County—MP 7.9) to Readington (Hunterdon County—MP 25.7). However, in the eastbound direction, heavy-truck volumes (those identified as class 8 or larger) on Interstate 78 actually decreased slightly between MP 5.0 and MP 25.7. Therefore, overall truck percentages when compared to overall volumes decrease as traffic moves east. However, as traffic volumes were not available east of Interstate 287, it is difficult to determine where the decrease in eastbound truck traffic occurs.

Table 4—Summary of 2008 WIM station weekday traffic volumes, Interstate 78

WIM Station ➔	78E (MP 5.02)		78F (MP 7.9)		78D (MP 25.7)		78B (MP 34.5)	
Direction ➔	EB	WB	EB	WB	EB	WB	EB	WB
2008 ADT	41,960	N/A	N/A	41,965	53,000	53,806	N/A	39,966
Heavy truck ADT	7,360	N/A	N/A	6,730	7,073	7,288	N/A	3,172
Heavy truck percentage	17.5%	N/A	N/A	16.0%	13.3%	13.5%	N/A	7.9%

Source: NJDOT 2008 WIM station raw data, weekday volumes

ADT = average daily traffic
Heavy truck = FHWA classification 8 through 13

Westbound traffic on Interstate 78 follows a similar pattern to eastbound traffic, with higher volumes in the eastern portion of the state. As with the eastbound data, WIM data for Interstate 78 westbound was only available in the central and western sections of the state. On Interstate 78, traffic builds by approximately 35 percent from east of Interstate 287 (MP 34.5) to west of Interstate 287 (MP 25.7), indicating a large volume of traffic may access Interstate 78 westbound from Interstate 287. Westbound truck volumes more than double from east of Interstate 287 to west of Interstate 287, indicating that a significant amount of truck traffic may access Interstate 78 westbound from Interstate 287. Given the clusters of distribution and industrial centers along Interstate 287 in Middlesex and Somerset Counties, it is likely that traffic headed west on Interstate 78 out of New Jersey would do so via Interstate 287.

The *WIM Station Annual Report for 2008* also provides information on daily profiles of heavy-truck traffic during the fourth quarter of 2008. On Interstate 78, eastbound traffic data is available at MP 5.02 and MP 25.7. The peak period for truck traffic is early morning, from 4:00 to 6:00 am, likely due to long-haul trucks aiming to reach Eastern New Jersey’s terminals and distribution centers as they open or to avoid peak congestion in Northeastern New Jersey. A second mid-morning peak, from 9:00 am to noon, is evident as well, potentially including truck traffic that departed distribution centers in the Allentown area as they opened for morning business. Heavy-truck traffic drops sharply between the peaks, corresponding to the large peak in car and light-truck traffic during the morning commuter peak between 6:00 am and 8:00 am. However, a considerable portion of eastbound heavy-truck traffic also occurs during overnight hours as well, indicating that significant flows of truck traffic aim to avoid peak hour congestion along this route.

Hourly trend data for westbound traffic on Interstate 78 is available at WIM stations located at MPs 7.9, 25.7, and 34.5. Westbound heavy-truck traffic on Interstate 80 has a consistent peak over the mid-day period from approximately 9:00 am to 3:00 pm. The peak period shifts slightly later in the day going from east to west, likely reflective of long-haul truck traffic picking up their freight early in the day at Eastern New Jersey’s terminals and warehouses and heading west to deliver their goods. Heavy-truck volumes decline significantly



in late afternoon during the large commuter peak from about 3:00 pm to 7:00 pm for cars and light trucks, but increase during overnight hours where they outpace car and light-truck volumes.

Truck percentage trends along Interstate 78 were assessed utilizing weekday raw WIM data from 2001 to 2008. While the historic data on Interstate 78 was largely incomplete and provided few data points, station 78D (MP 25.7) provides six complete years of data in both the eastbound and westbound direction. At this location, total daily traffic on Interstate 78 in both directions increased slightly from 2003 to 2006 before declining and ultimately returning to approximately 2003 levels in 2008. Over the same period, the net percentage of heavy-truck traffic decreased steadily to 13.5 percent in 2008, which is indicative of the increase in fuel costs and the overall slowing economy.

A review of heavy-truck weekday volume trends from 2007 to 2008 indicates a net drop (between 2 and 8 percent) in heavy-truck traffic along Interstate 78 at several locations in both directions. The most significant decline in truck traffic was at MP 25.7 (west of Interstate 287), which saw a net reduction in eastbound truck traffic of 8 percent. The greatest reduction in westbound traffic was 7 percent at MP 7.9 (Hunterdon County). This decline is generally indicative of the overall slowing economy, as well as the increase in fuel costs, particularly that of diesel fuel.

Interstate 78—FAF3 data

Truck volumes on Interstate 78 generally increase from west to east (Figure 17). The FAF3 model estimates the AADTT at approximately 7,000 trucks along the western end of the corridor. Moving east, volumes build to approximately 15,400 trucks at the intersection with Interstate 287. East of Interstate 287 AADTT drops to approximately 7,700 trucks before increasing to approximately 15,600 trucks near the intersection with NJ Routes 24, 124, and 82 in Union County. This high AADTT level is maintained through the intersection with the GSP and into Essex County before decreasing to approximately 10,000 trucks approaching the NJTPK interchange. East of the NJTPK, AADTT ranges from 5,000 to 7,400 trucks until the Holland Tunnel approach, which has an AADTT of approximately 9,300 trucks.

Interstate 80—WIM data

NJDOT operates four WIM stations along Interstate 80. The geographic distribution of the WIM stations on Interstate 80 provides a more complete general characterization of traffic volume along the route's entire length. Data from stations 80A, 80C, and 80D provide information on traffic volumes near the Pennsylvania border (MP 8.3), just west of the Interstate 287 intersection (MP 38.1), and near the eastern terminus of Interstate 80 (MP 66.2).

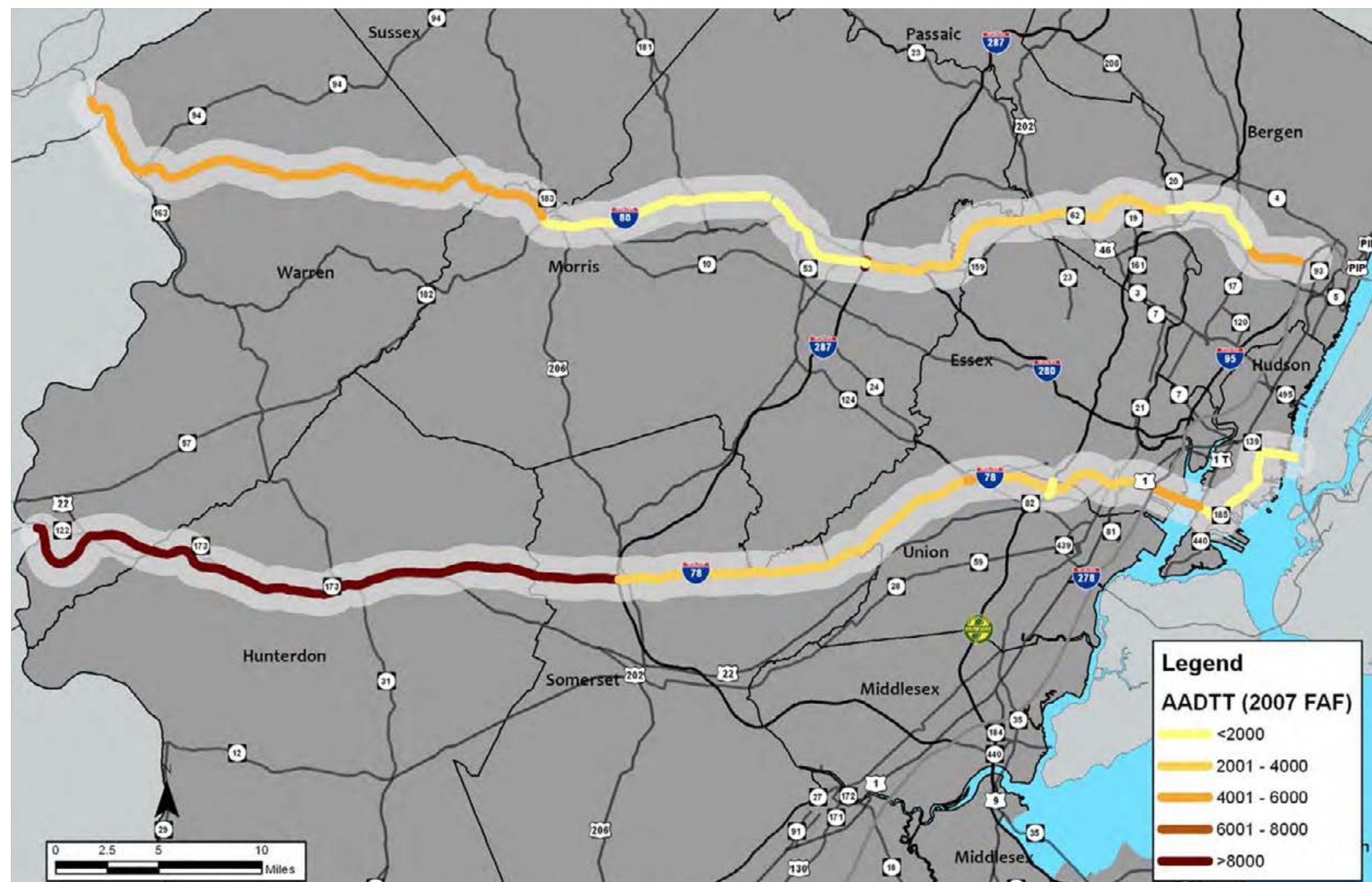


Figure 17—FAF3 data for the east-west corridor

As shown in Table 5, eastbound traffic on Interstate 80 increases similarly to Interstate 78 as traffic moves from west to east; however, eastbound WIM data was not available east of Interstate 287 in Central New Jersey. The increase in overall eastbound volumes is more significant on Interstate 80, where it more than triples between Knowlton (Warren County—MP 8.3) and Denville (Morris County—MP 38.1). Overall volumes are greater on Interstate 78 in the western end of the corridor, while Interstate 80 exhibits higher overall volumes in Central New Jersey. In the eastbound direction, heavy-truck volumes (those identified as class 8 or larger) on Interstate 80 increase between MP 8.3 and MP 38.1, but the overall percentage of trucks versus overall traffic decreases by approximately 65 percent.



Table 5—Summary of 2008 WIM station weekday traffic volumes, Interstate 80

WIM Station ➔ Direction ➔	80A (MP 8.3)		80C (MP 38.1)		80D (MP 66.2)	
	EB	WB	EB	WB	EB	WB
2008 ADT	25,385	25,568	85,200	79,611	N/A	99,650
Heavy truck ADT	3,864	3,830	4,549	4,236	N/A	4,758
Heavy truck percentage	15.2%	15.0%	5.3%	5.3%	N/A	4.8%

Source: NJDOT 2008 WIM station raw data, weekday volumes

ADT = average daily traffic

Heavy truck = FHWA classification 8 through 13

Westbound traffic on Interstate 80 follows a similar pattern to eastbound traffic, with higher volumes in the eastern part of the state. On Interstate 80, WIM data for westbound traffic was available near the eastern terminus as well as the central and western sections of the route. Total volume on Interstate 80 falls by nearly 75 percent from South Hackensack (MP 66.2, nearly 100,000 vehicles) to Knowlton (MP 8.3, 25,600 vehicles). Westbound heavy-truck traffic also generally decreases across the state from east to west but at a much lower rate than total traffic. On Interstate 80, heavy-truck volumes decrease by approximately 20 percent from MP 66.2 to MP 8.3. Thus, the overall truck percentages nearly triple as traffic moves from east to west. When compared to overall volumes on Interstate 78, Interstate 80 exhibits higher volumes in the eastern portion of the state, while Interstate 78 has higher volumes approaching the Delaware River.

Hourly trend data for Interstate 80 eastbound is available at MP 8.3 and MP 38.1. Eastbound heavy-truck traffic on Interstate 80 is similar to that for Interstate 78 eastbound. The peak period for heavy trucks occurs between 4:00 am and 6:00 am, likely due to long-haul trucks aiming to reach Eastern New Jersey’s terminals and distribution centers as they open or to avoid peak congestion in Northeastern New Jersey. A second peak in mid-morning, from 9:00 am to noon, is evident as well, particularly at MP 38.1. Heavy-truck traffic drops sharply between those truck peaks, corresponding to the significant commuter peak between 6:00 am and 8:00 am. A considerable portion of eastbound heavy-truck traffic also takes place during overnight hours on Interstate 80 as well, outpacing all other vehicle types between midnight and 5:00 am. Medium truck traffic follows a similar peaking pattern to the heavy trucks, though volume is less evenly distributed throughout the day and the morning peak plateaus through mid-afternoon before tailing off during the late afternoon and overnight hours.

Hourly trend data for westbound traffic is available at MPs 8.3, 38.1, and 66.2. Westbound hourly heavy-truck flows at all three sites follow similar patterns, with the heaviest truck flows occurring between 9:00 am and 4:00 pm, indicating the significant flow of traffic coming from trucks leaving distribution centers and industrial areas in Northeastern New Jersey. However, heavy-truck flows begin to decrease by 1:00 pm at the easternmost WIM site (MP 66.2) while heavy-truck flows at the western sites do not begin to decrease until 3:00 pm. This illustrates that many distribution centers and industrial sites in Northeastern New Jersey cease sending westbound trucks by mid-afternoon.

Weekday raw WIM data from 2001 to 2008 were used to review truck percentage trends along Interstate 80. Historic data on Interstate 80 were available for only selected years at a single location (MP 66.2). Eastbound data at this location were available for 2003 through 2006, while westbound data was available for 2004 through 2008. At this location, total daily traffic on Interstate 80 generally increased in both directions, while heavy-truck percentages leveled off. A significant increase in overall traffic was identified along Interstate 80 eastbound between 2005 (83,000) and 2006 (90,000). Truck percentages along Interstate 80 eastbound at

this location remained approximately 5 percent for all four years of data available. 2007 average annual daily traffic (AADT) data was not available at this location to review further trending. Overall net traffic westbound increased steadily from 2004 to 2008, while truck percentages were mostly unchanged, with a slight net decline noted from 2006 to 2008, as overall traffic increases outpaced heavy-truck traffic increases.

A review of heavy-truck weekday volume trends from 2007 through 2008 indicates a significant net drop (between 7 and 14 percent) in heavy-truck traffic along Interstate 80 at several locations in both directions. The most significant decline in truck traffic was at MP 32.4 (west of NJ Route 15), which saw a net reduction in eastbound truck traffic of 14 percent. However, at MP 38.1, net eastbound truck traffic was reduced by only 9 percent, which may indicate that the demand for truck traffic destined for Dover Township or NJ Route 15 has decreased at a greater rate than other areas along Interstate 80. A net reduction in truck traffic between 7 and 10 percent was seen at four other locations. This decline is generally indicative of the overall slowing economy, as well as the increase in fuel costs, particularly that of diesel fuel.

Interstate 80—FAF3 data

Truck volumes on Interstate 80 (Figure 10) generally increase from west to east, peaking in the vicinity of the Interstate 287 interchange and then decreasing moving toward the eastern terminus of Interstate 80. The FAF3 estimated AADTT at the western end of Interstate 80 is approximately 7,200 trucks, which builds to approximately 20,000 trucks approaching the interchange with U.S. Route 202 in Morris County. AADTT remains high, at 16,000 to 18,600 trucks, through the Interstate 287 and Interstate 280 interchanges. East of Interstate 280, AADTT ranges from 12,000 to 16,000 trucks through Passaic County and the interchange with NJ Route 20. East of Passaic County to the terminus at the NJTPK, AADTT is approximately 9,400 to 10,300 trucks.

FAF data summary

As shown on Figure 17, the FAF3 model indicates slightly higher overall truck volumes on Interstate 80. AADTT peaks at approximately 20,000 trucks on Interstate 80, compared to 15,600 trucks on Interstate 78. Volume patterns on the two roadways are also similar. Volumes on both roadways build from west to east, peaking in the vicinity of their Interstate 287 interchanges. On the eastern half of the corridors, Interstate 78 experiences a second peak of equal magnitude near the NJ Routes 24, 82, and 124 interchanges and the GSP, while Interstate 80 experiences a second, smaller peak, near the vicinity of the NJ Route 20 interchange. Volumes then taper approaching their eastern termini but remain higher than the western end of the corridor.

Goods Movement

Heavy-truck tonnage flows by origin-destination, state level

Through traffic is clearly the leading generator of truck tonnage on both Interstate 78 and Interstate 80. Another way to define *through* traffic is that which passes through the entire state of New Jersey with an origin and destination outside the state. Examining *through-state* tonnage on Interstate 78 and Interstate 80 determines how much of the truck tonnage is related to supporting the state’s economy versus the economies of its neighbors. Origin-destination percentages using this through-state definition are shown on Figure 18 and Figure 19.



Interstate 78

As shown on Figure 18, more than half the heavy-truck tonnage on Interstate 78 is passing through New Jersey. At 48 percent, Somerset County has the lowest percentage of through-state traffic despite having the highest percentage of through county tonnage. This distinction is owed in part to the county’s central location within the state, which facilitates flows to and from neighboring counties. Hunterdon County shows the highest percentage of through state traffic at 65 percent percentage and has only 3 percent of total shipments that are internal. The FAF3 assignment process did not provide data for Interstate 78 through Warren or Hudson Counties.

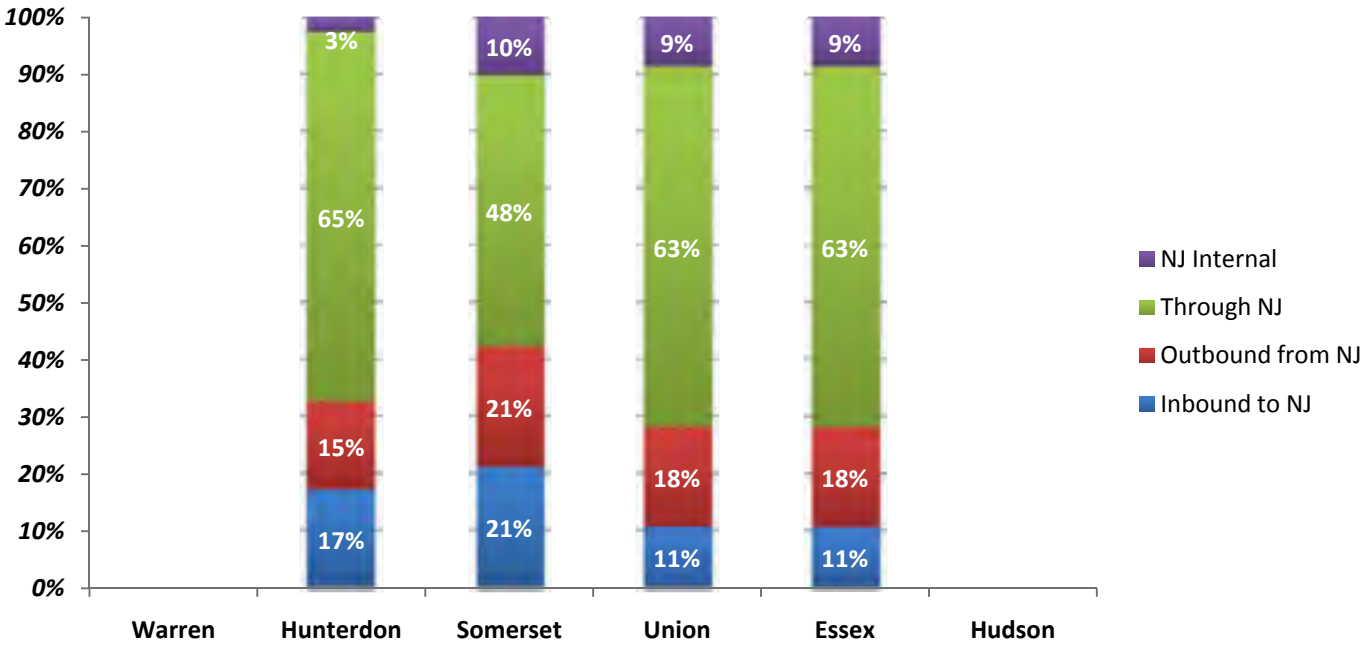


Figure 18—Origin-destination shares considering *through-state* traffic, Interstate 78

Interstate 80

The patterns of heavy-truck traffic on Interstate 80 are similar to those on Interstate 78, with through-state traffic constituting the largest single component of heavy-truck flows. In all but one county, as shown on Figure 19, more than half the heavy-truck tonnage on Interstate 80 is passing through New Jersey, with the exception of Morris County, where the figure is 47 percent. The highest shares of through New Jersey traffic are seen in the three counties east of Interstate 287—Essex, Passaic, and Bergen—which serve as gateways to New York and New England.

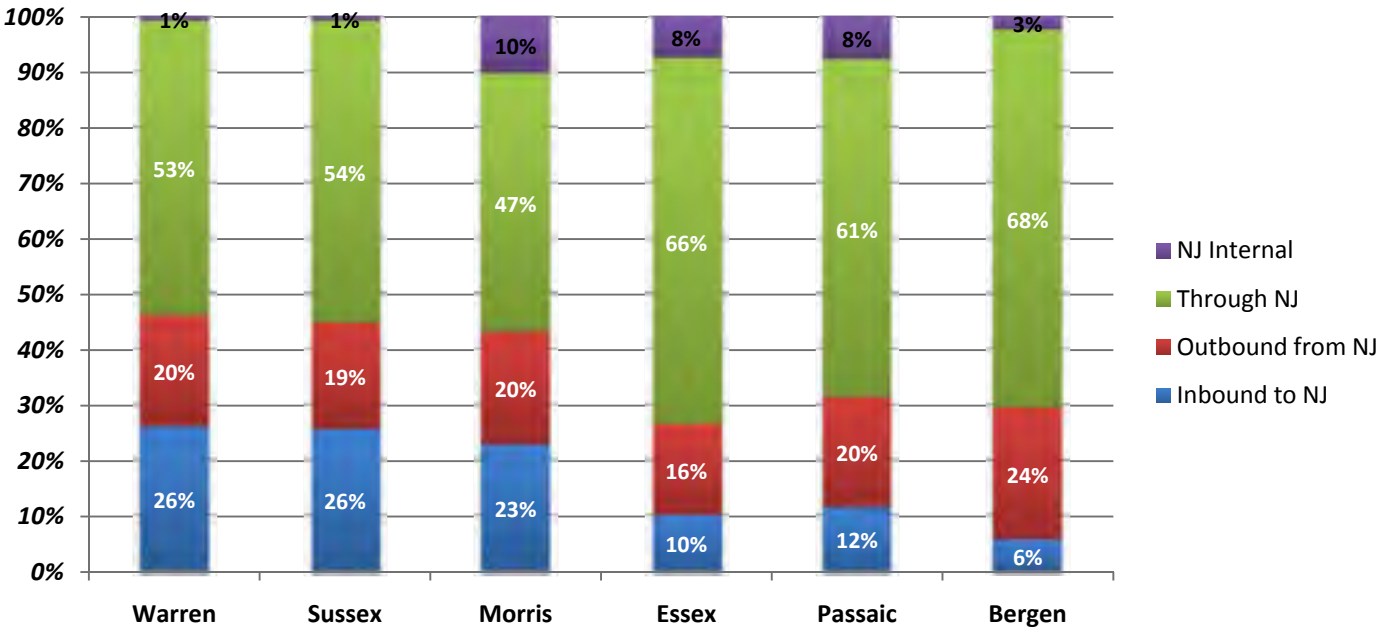


Figure 19—Origin-destination shares considering *through-state* traffic, Interstate 80

Leading origins of heavy-truck inbound flows

While through trucks are the most significant source of truck tonnage on Interstate 78 and Interstate 80, origin-destination flows are also very significant, accounting for 35 to 52 percent of tonnage on Interstate 78 (Figure 18) and 33 to 53 percent of tonnage on Interstate 80 (Figure 19). The assignment of TRANSEARCH data to the FAF3 network allows for a detailed breakdown of these origin-destination patterns as summarized in Table 6 through Table 9 and Figure 20 and **Figure 21**.



Interstate 78

For inbound tonnage on Interstate 78, with the exception of Hunterdon County, the largest shares originate in Northern New Jersey. Other major points of origin include the South East, Philadelphia, and New York City.

- **Hunterdon County**—the leading origins of truck tonnage for Hunterdon County are South East U.S. (27.6 percent), the Philadelphia area (25 percent), and Northern New Jersey (17.9 percent).
- **Somerset County**—the largest share of inbound truck tonnage destined for Somerset County is from Northern New Jersey (27.7 percent). This is the largest share of cargo to any county from Northern New Jersey. South East U.S. constitutes the next largest source of tonnage (20.3 percent). Philadelphia is the source of 18 percent of tonnage while New York City is the origin of only 6.7 percent.
- **Union and Essex Counties**—Like Somerset County, Northern New Jersey is the largest source of truck tonnage destined for Union and Essex counties. The South East U.S. is the origin for 21.2 percent of tonnage while New York City is responsible for 19.8 percent of tonnage. Thus, the profiles of Union and Essex counties are similar to Somerset County with the exception of the larger role played by shipments from NYC.

Table 6—Leading origins for inbound heavy-truck tonnage, Interstate 78

Top Origins	Warren	Hunterdon	Somerset	Union	Essex	Hudson
NJ North	No data	17.9%	27.7%	26.3%	26.3%	No data
South East		27.6%	20.3%	21.2%	21.2%	
PA Phil		25.0%	18.0%	17.5%	17.5%	
NY NYC		9.0%	6.7%	19.8%	19.8%	
New England rem		5.2%	3.9%	4.9%	4.9%	
MD rem		5.4%	3.9%	4.1%	4.1%	
Northeast PA		3.6%	2.6%	2.4%	2.4%	
PA rem		2.0%	3.1%	1.3%	1.3%	
All others (non top 5)		4.3%	13.9%	2.5%	2.5%	

Bold = top 5 within county
NJ North = New Jersey counties north of Burlington County
South East = FL, GA, SC, NC, VA, WV, DC
PA Phil= Philadelphia area, including surrounding counties
NY NYC = New York City area and surrounding boroughs and counties within NY
New England rem = remainder of New England—RI, MA, VT, NH, ME
MD rem= remainder of Maryland—Baltimore, Prince George’s, Washington
Northeast PA= Northeast counties of Pennsylvania
PA rem = remainder of PA, excluding Philadelphia region and eastern counties

Interstate 80

For inbound heavy-truck tonnage on Interstate 80, in every case the largest shares originate in Northern New Jersey and the next largest shares originate in Pennsylvania. New York City, the remainder of New York State, and the Midwest represent other important origins.

- **Bergen County**—the largest share of inbound traffic to Bergen County is from Northern New Jersey at 22.8 percent; the next largest shares are from Pennsylvania (excluding Philadelphia) at 10.9 percent, New York (excluding NYC and Long Island) at 9.2 percent, and the southeastern U.S. at 9.7 percent.

- **Passaic County**—the largest share of traffic inbound to Passaic County is from Northern New Jersey at 27.6 percent; the next largest shares are from Pennsylvania (excluding Philadelphia) at 16.3 percent, New York (excluding NYC and Long Island) at 14.1 percent, and Midwestern states (WI, MI, IL, IN, OH) at 10.0 percent.
- **Essex County**—the largest share of inbound traffic to Essex County is from Northern New Jersey at 23.8 percent; the next largest shares are from Pennsylvania (excluding Philadelphia) at 17.9 percent, New York (excluding NYC and Long Island) at 15.1 percent, and Midwestern states at 10.9 percent.
- **Morris County**—the largest share of inbound traffic to Morris County is from Northern New Jersey at 28.3 percent; the next largest shares are from Pennsylvania (excluding Philadelphia) at 15.4 percent, New York City and Long Island at 12.4 percent, New York (excluding NYC and Long Island) at 10.8 percent, and Midwestern states at 9.9 percent.
- **Sussex County**—the largest share of inbound traffic to Sussex County is from Northern New Jersey at 18.9 percent; the next largest shares are from Pennsylvania (excluding Philadelphia) at 17.9 percent, New York City and Long Island at 14.3 percent, New York (excluding NYC and Long Island) at 12.6 percent, and Midwestern states at 11.5 percent.
- **Warren County**—the largest share of inbound traffic to Warren County is from Northern New Jersey at 18.9 percent; the next largest shares are from Pennsylvania (excluding Philadelphia) at 17.9 percent, New York City and Long Island at 14.3 percent, New York (excluding NYC and Long Island) at 12.6 percent, and Midwestern states at 11.5 percent.

Table 7—Leading origins for inbound heavy-truck tonnage, Interstate 80

Top Origins	Warren	Sussex	Morris	Essex	Passaic	Bergen
NJ North	19.8%	18.9%	28.3%	23.8%	27.6%	22.8%
NY NYC	13.8%	14.3%	12.4%	7.0%	6.8%	7.7%
PA rem	17.7%	17.9%	15.4%	17.9%	16.3%	10.9%
NY rem	12.2%	12.6%	10.8%	15.1%	14.1%	9.2%
CT	0.5%	0.5%	0.5%	0.8%	1.0%	2.0%
New England rem	0.4%	0.4%	1.0%	2.2%	3.8%	6.0%
South East	1.5%	1.3%	1.1%	0.9%	0.8%	9.7%
East North Central	11.3%	11.5%	9.9%	10.9%	10.0%	5.9%
All others (non top 5)	25.2%	24.8%	23.2%	25.4%	25.3%	39.8%

Bold = top 5 within county
NJ North = New Jersey counties north of Burlington County
NY NYC = New York City area and surrounding boroughs and counties within NY
PA rem = remainder of PA, excluding Philadelphia region and eastern counties
NY rem = remainder of NY, excluding NYC, Long Island, and southeastern counties
CT = Connecticut
New England rem = remainder of New England—RI, MA, VT, NH, ME
South East = FL, GA, SC, NC, VA, WV, DC
East North Central = WI, MI, IL, IN, OH



Leading destinations of heavy-truck outbound flows

While New York City is an important destination for both corridors, the flows between the counties and New York are most consistently important for Interstate 78. In no county does the percentage of total tonnage destined for New York fall below 25 percent. A significant distinction in the profile of destinations for Interstate 78 is the large role played by the New England remainder region as a major demand source for truck-tonnage shipments. Only one county on Interstate 80, Bergen, has a significant share of its total outbound tonnage destined for New England remainder, while for the Interstate 78 counties more than 10 percent of shipments for all counties terminate in this region.

Interstate 78

- Hunterdon County**—New York City was the principal destination for truck tonnage originating in Hunterdon County representing 30.8 percent of total shipments. A total of 19.6 percent of shipments from Hunterdon County was destined for Northern New Jersey while 14 percent was destined for the area designated as the remainder of New England outside the major metropolitan statistical areas. An only slightly smaller share (12.4 percent) was destined for the southeast.
- Somerset County**—Northern New Jersey was the top destination of cargo originating in Somerset County. This was followed by New York City with 26.1 percent of total shipments received. Like Hunterdon County, the remainder of New England was the number three recipient of truck tonnage originating in Somerset County.
- Union and Essex Counties**—New York City was the top destination for cargo originating in Union County, receiving 29.4 percent of tonnage. Northern New Jersey was the destination of 19.2 percent of tonnage while the remainder of New England was the destination of 13.3 percent.

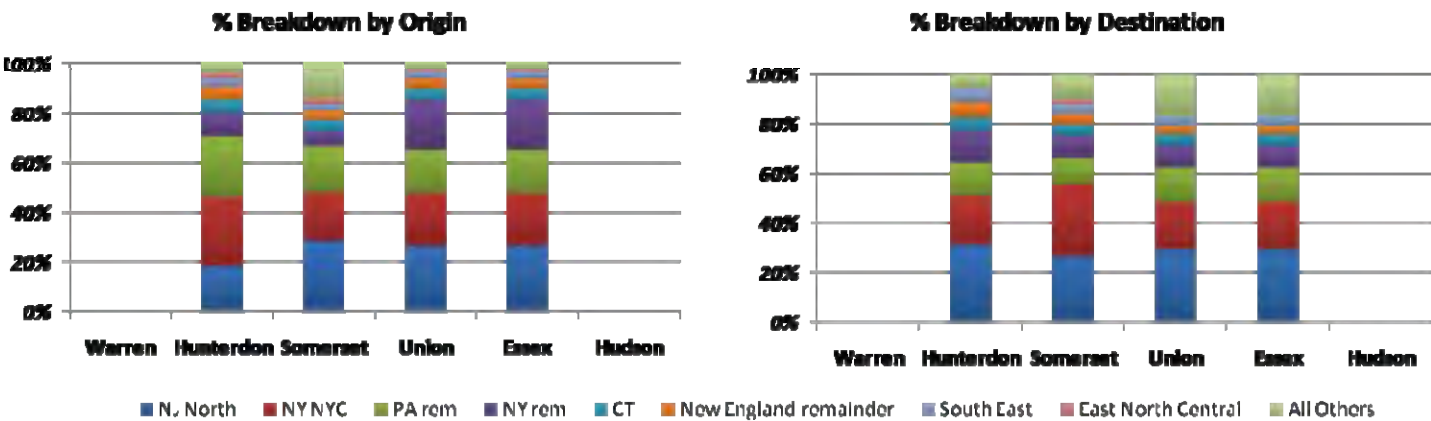


Figure 20—Top origins and destinations by county, Interstate 78

Table 8—Leading destinations for outbound heavy-truck tonnage, Interstate 78

Top Destinations	Warren	Hunterdon	Somerset	Union	Essex	Hudson
NY NYC	No data	30.8 percent	26.1 percent	29.4 percent	29.4 percent	No data
NJ North		19.6 percent	29.1 percent	19.2 percent	19.2 percent	
New England rem		14.0 percent	10.6 percent	13.3 percent	13.3 percent	
South East		12.4 percent	9.1 percent	9.1 percent	9.1 percent	
Northeast PA		5.8 percent	4.3 percent	4.7 percent	4.7 percent	
PA Phil		5.9 percent	4.2 percent	3.2 percent	3.2 percent	
MD rem		5.4 percent	3.9 percent	4.0 percent	4.0 percent	
NJ South		0.2 percent	2.3 percent	0.0 percent	0.0 percent	
All others (non top 5)		5.8 percent	10.3 percent	17.1 percent	17.1 percent	

Bold = top 5 within county

NY NYC = New York City area and surrounding boroughs and counties within NY

NJ North = New Jersey counties north of Burlington County

New England rem = remainder of New England—RI, MA, VT, NH, ME

South East = FL, GA, SC, NC, VA, WV, DC

Northeast PA= Northeast counties of Pennsylvania

PA Phil= Philadelphia area, including surrounding counties

MD rem= remainder of Maryland—Baltimore, Prince George’s, Washington

NJ South = New Jersey counties south of Burlington County



Interstate 80

For outbound heavy-truck tonnage on Interstate 80, in every case, the largest shares terminate in New York City and the next largest shares terminate in Northern New Jersey, with the exception of Essex County where the next largest shares terminate in Connecticut and New England. Whereas the inbound Interstate 80 flows were relatively balanced in geographic terms, with west to east flows being slightly dominant, the outbound Interstate 80 flows show a more pronounced directionality in favor of west to east flows. Essex, Passaic, and Bergen outbound flows are highly concentrated in New York City/Long Island destinations, while Warren, Sussex, and Morris outbound flows are more balanced between New York City, Northern New Jersey, Pennsylvania, and New York State.

- Bergen County**—the largest share of traffic outbound from Bergen County is to New York City and Long Island at 48.1 percent; the next largest shares are to New England at 18.8 percent, Connecticut at 10.9 percent and Northern New Jersey at 7.6 percent. The high shares to New England and Connecticut are most likely related to the receipt of international cargo and its subsequent distribution by truck to these regions.
- Passaic County**—the largest share of traffic outbound from Passaic County is to New York City and Long Island at 56.2 percent; the next largest share is to Northern New Jersey at 19.4 percent.
- Essex County**—the largest share of traffic outbound from Essex County is to New York City and Long Island at 59.5 percent; the next largest share is to Northern New Jersey at 17.8 percent.
- Morris County**—the largest share of traffic outbound from Morris County is to New York City and Long Island at 34.5 percent; the next largest share is to Northern New Jersey at 31.6 percent. Pennsylvania (excluding Philadelphia) has an 8.0-percent share and the remainder of New York has a 6.2-percent share.
- Sussex County**—the largest share of traffic outbound from Sussex County is to New York City and Long Island at 36.2 percent; the next largest share is to Northern New Jersey at 25.0 percent. Pennsylvania (excluding Philadelphia) has a 9.3-percent share and the remainder of New York has a 7.3-percent share.
- Warren County**—the largest share of traffic outbound from Warren County is to New York City and Long Island at 35.0 percent; the next largest share is to Northern New Jersey at 25.6 percent. Pennsylvania (excluding Philadelphia) has a 9.3-percent share and the remainder of New York has a 7.4-percent share.

Table 9—Leading destinations for outbound heavy-truck tonnage, Interstate 80

Top Destinations	Warren	Sussex	Morris	Essex	Passaic	Bergen
NJ North	25.6%	25.0%	31.6%	17.8%	19.4%	7.6%
NY NYC	35.0%	36.2%	34.5%	59.5%	56.2%	48.1%
PA rem	9.3%	9.3%	8.0%	4.5%	4.1%	2.4%
NY rem	7.4%	7.3%	6.2%	2.7%	3.1%	1.5%
CT	2.3%	2.3%	2.2%	3.8%	4.9%	10.9%
New England rem	1.9%	1.9%	1.8%	3.6%	5.1%	18.8%
South East	0.3%	0.2%	0.2%	0.1%	0.1%	3.0%
East North Central	5.4%	5.4%	4.6%	2.5%	2.3%	1.3%
All others (non top 5)	17.3%	16.8%	15.1%	10.8%	10.5%	11.6%

Bold = top 5 within county
NJ North = New Jersey counties north of Burlington County
NY NYC = New York City area and surrounding boroughs and counties within NY
PA rem = remainder of PA, excluding Philadelphia region and eastern counties
CT = Connecticut
NY rem = remainder of NY, excluding NYC, Long Island, and southeastern counties
New England rem = remainder of New England—RI, MA, VT, NH, ME
South East = FL, GA, SC, NC, VA, WV, DC
East North Central = WI, MI, IL, IN, OH

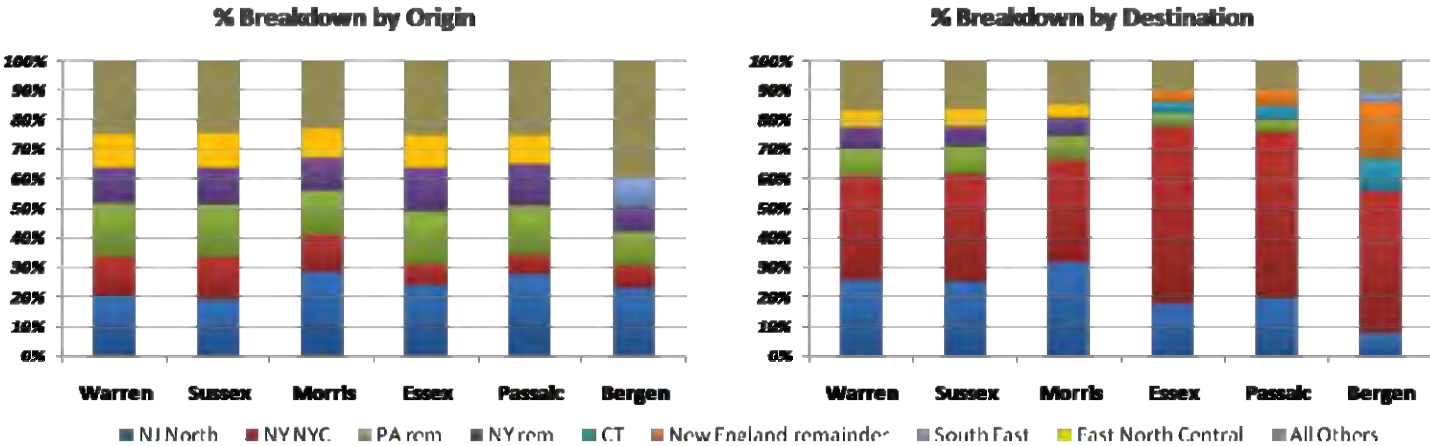


Figure 21—Top origins and destinations by county, Interstate 80



Heavy-truck tonnage flows by commodity

Through commodities

To understand the key commodity flows, it is useful to distinguish between origin-destination commodities and pass-through commodities (using the through-state definition of through commodities). Pass-through commodities on Interstate 80 and Interstate 78 are illustrated using STCC2 classifications on Figure 22 and Figure 23. Origin-destination commodities are reported in Table 10 and Table 11 and illustrated on Figure 24 and Figure 25.

For Interstate 78, warehousing and distribution products are the single largest source of pass-through shipments on the Interstate 78 corridor. Other major commodity categories include non-metallic minerals, chemicals, and food.

For Interstate 80, the leading pass-through commodities are food and kindred products; warehouse and distribution products; clay, concrete, glass, and stone; coal; and chemicals. Primarily, these represent consumer goods, building materials, fuels, and industrial products generated in other states and bound for New York City and New England via New Jersey. When comparing the relative importance of different commodity classes, the greater importance of non-metallic mineral shipments on Interstate 80 and lower importance of food shipments on Interstate 78 are significant distinctions.

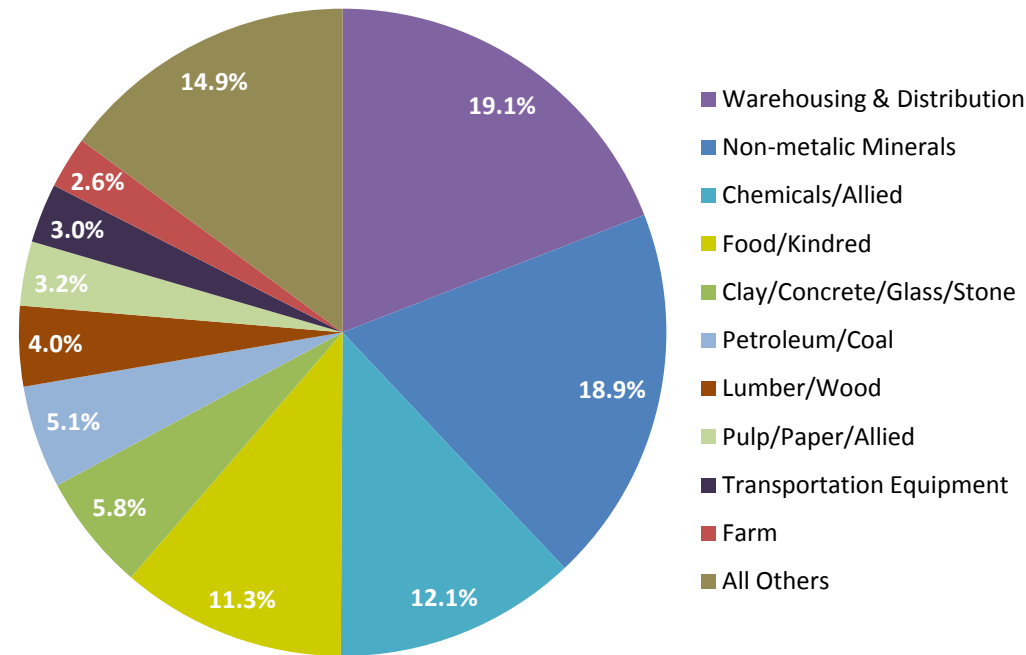


Figure 22—Leading pass-through commodities, Interstate 78

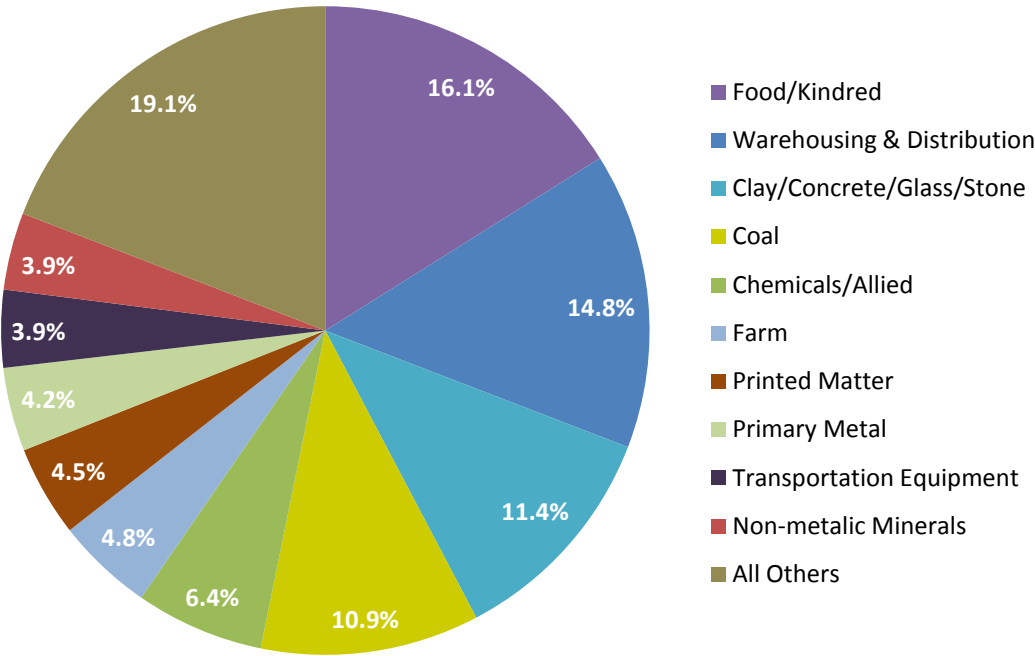


Figure 23—Leading pass-through commodities, Interstate 80

Origin-destination commodities

The distribution of heavy-truck tonnage by commodity type is different when considering origin-destination traffic (that is, tonnage that originates or terminates in the New Jersey counties traversed by Interstate 78 and Interstate 80). For origin-destination tonnage, the leading commodities are as follows:

- **Interstate 78**—warehouse/distribution (19.1 percent); non-metallic minerals (18.9 percent); chemicals (12.1 percent); food and kindred products (11.3 percent); and clay, concrete, glass and stone (5.8 percent).
- **Interstate 80**—warehouse/distribution (18.9 percent); non-metallic minerals (17.0 percent); chemicals (13.9 percent); food and kindred products (10.0 percent); and clay, concrete, glass and stone (9.4 percent).

While there are slight distinctions in the makeup of origin-destination commodity traffic for the Interstate 78 corridor when compared to Interstate 80, the profile of commodities more closely mirrors Interstate 80 when compared with the profile of through traffic.



Interstate 78

Origin-destination commodities handled using Interstate 78 are summarized in Table 10 and Figure 24. Key findings by county include:

- **Hunterdon County** is particularly strong in the shipment of non-metallic minerals (20.9 percent). Warehousing and distribution products make up 16.7 percent of total shipments, which is lower than the corridor-wide average, while chemicals at 12.9 percent are slightly higher than the corridor average.
- **Somerset County** was modeled in conjunction with Hunterdon County and thus has the same origin-destination makeup as Hunterdon County.
- **Union County and Essex County** has the highest percentage of warehousing and distribution products at 21.1 percent. No other commodity classes in these counties are higher than the corridor average. Non-metallic minerals make up 17.2 percent of total origin-destination flows or 1.7 percent lower than the corridor average.

Table 10—Origin-destination heavy-truck tonnage by commodity type, Interstate 78

Rank	STCC2 Commodity	Corridor	Warren	Hunterdon	Somerset	Union	Essex	Hudson
1	Warehousing and distribution	19.1%	No data	16.7%	16.7%	21.1%	21.1%	No data
2	Non-metallic minerals	18.9%		20.9%	20.9%	17.2%	17.2%	
3	Chemicals/allied	12.1%		12.9%	12.9%	11.5%	11.5%	
4	Food/kindred	11.3%		10.8%	10.8%	11.6%	11.6%	
5	Clay/concrete/glass/stone	5.8%		5.2%	5.2%	6.3%	6.3%	
6	Petroleum/coal	5.1%		5.8%	5.8%	4.6%	4.6%	
7	Lumber/wood	4.0%		4.3%	4.3%	3.8%	3.8%	
8	Pulp/paper/allied	3.2%		3.0%	3.0%	3.3%	3.3%	
9	Transportation equipment	3.0%		3.1%	3.1%	2.9%	2.9%	
10	Farm	2.6%		2.8%	2.8%	2.5%	2.5%	
	All others	14.9%		14.6%	14.6%	15.2%	15.2%	

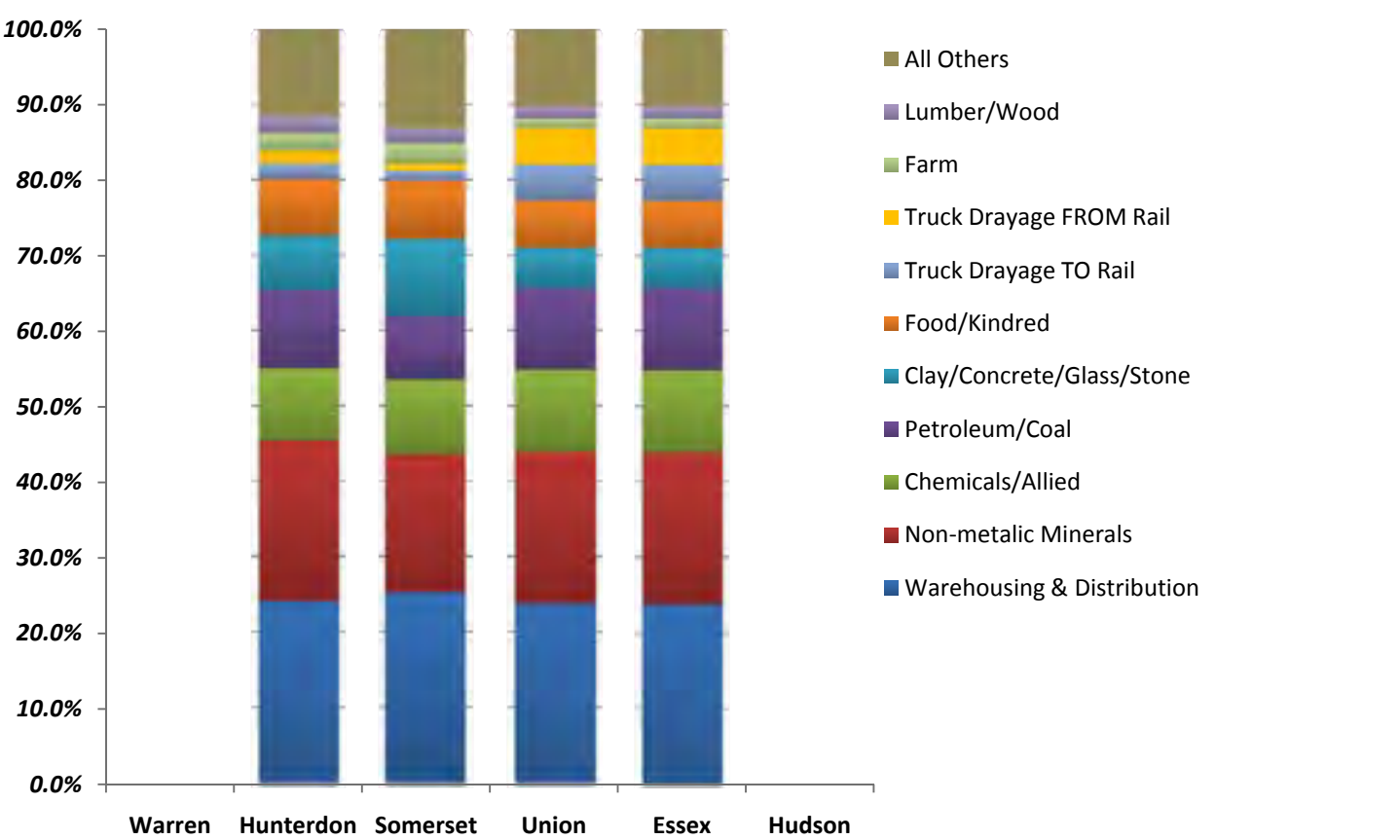


Figure 24—Origin-destination heavy-truck tonnage by commodity type, Interstate 78



Interstate 80

Origin-destination commodities handled using Interstate 80 are summarized in Table 11 and Figure 25. Key findings by county include:

- **Bergen County** has the highest concentration of warehouse/distribution traffic at 22.6 percent as well as the highest concentration of chemical traffic at 18.1 percent.
- **Passaic County** is strong in warehouse/distribution traffic at 21.0 percent but even stronger in non-metallic minerals at 26.5 percent.
- **Essex County** is similar to Passaic, with high percentages of warehouse/distribution traffic (19.6 percent) and non-metallic minerals (27.6 percent).
- **Morris County** is strong in warehouse/distribution traffic (20.1 percent) and non-metallic minerals (18.3 percent), along with chemicals, food, and clay/concrete/glass/stone.
- **Sussex County** is strong in warehouse/distribution traffic (16.0 percent), lower than average in non-metallic minerals (9.5 percent), higher than average in chemicals, and slightly above average in food and clay, concrete, glass, and stone.
- **Warren County** is strong in warehouse/distribution traffic (15.8 percent), although this is the lowest share of any Interstate 80 county. It shows a good balance among other commodities, including non-metallic minerals; chemicals; food; and clay, concrete, glass, and stone.

Table 11—Origin-destination heavy-truck tonnage by commodity type, Interstate 80

Rank	STCC2 Commodity	Corridor	Warren	Sussex	Morris	Essex	Passaic	Bergen
1	Warehousing and distribution	18.9%	15.8%	16.0%	20.1%	19.6%	21.0%	22.6%
2	Non-metallic minerals	17.0%	10.8%	9.5%	18.3%	27.6%	26.5%	18.0%
3	Chemicals/allied	13.9%	15.8%	15.3%	11.6%	9.6%	12.2%	18.1%
4	Food/kindred	10.0%	11.8%	12.1%	9.7%	8.7%	8.0%	7.9%
5	Clay/concrete/glass/stone	9.4%	10.3%	10.4%	10.5%	7.5%	6.9%	8.3%
6	Petroleum/coal	4.5%	4.2%	4.4%	4.3%	1.8%	2.4%	8.6%
7	Farm	3.9%	4.9%	5.1%	3.7%	4.9%	3.9%	0.6%
8	Pulp/paper/allied	3.6%	4.2%	4.3%	3.2%	3.4%	3.5%	2.6%
9	Primary metal	2.8%	4.0%	4.1%	3.1%	1.7%	1.5%	0.9%
10	Lumber/wood	2.0%	2.5%	2.6%	1.9%	2.1%	1.8%	0.6%
	Other commodities	14.0%	15.7%	16.1%	13.5%	13.1%	12.2%	11.8%

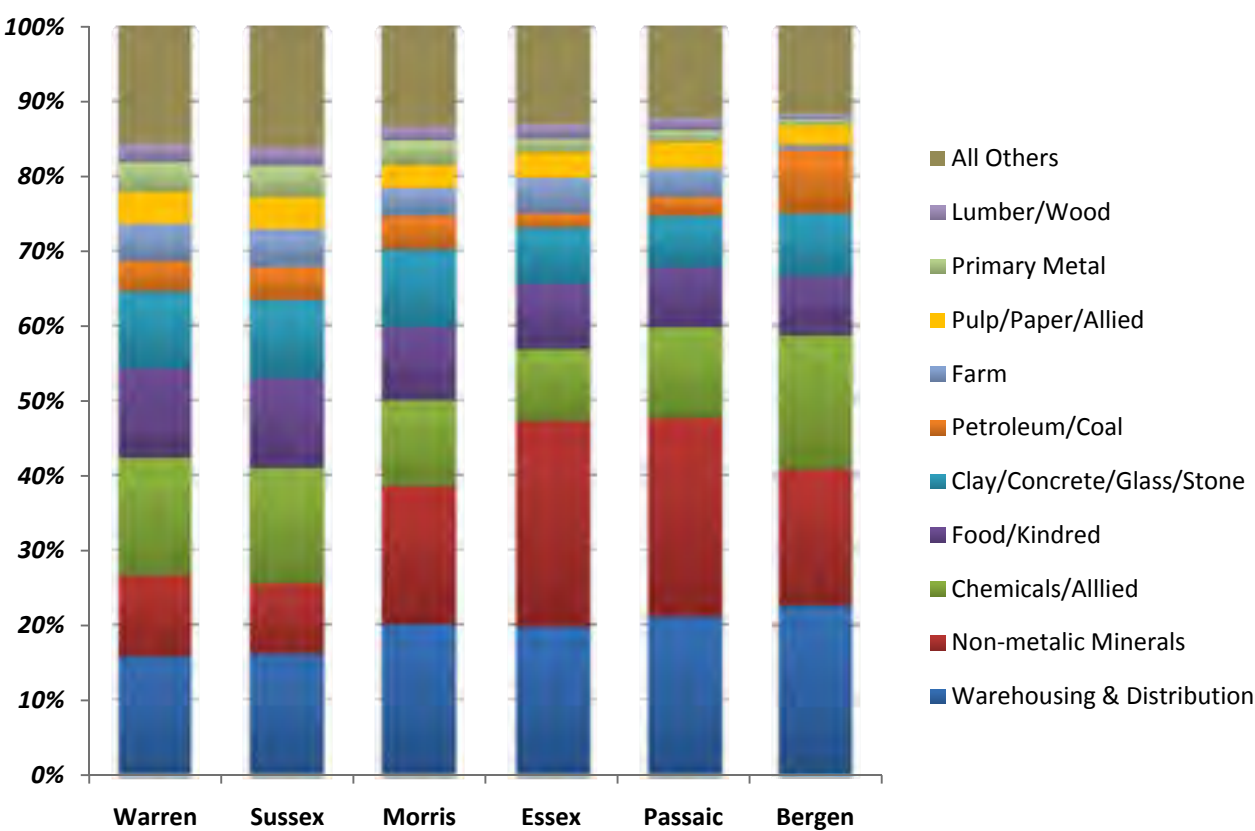


Figure 25—Origin-destination heavy-truck tonnage by commodity type, Interstate 80

Goods movement overall findings

Both Interstate 78 and Interstate 80 are critically important corridors for two primary reasons. First, they function as major through-freight corridors, linking New York and New England with Pennsylvania and the Midwest. In this role, they carry a diverse range of commodities and serve numerous origin-destination pairs. Second, these two corridors function as vital connectors for New Jersey origin-destination traffic. They act as collectors and distributors of freight movement within and between Northern New Jersey counties; they allow major freight shippers and receivers and facilities (including ports, airports, and rail terminals) in New Jersey to reach out-of-state markets; and they allow Northern New Jersey to be served by producers and freight facilities in other states.



Pavement Condition

The project team reviewed PMS data provided by NJDOT to identify locations where deficient pavement exists along the corridor. PMS data compiled throughout 2011 indicating deficient pavement locations was used in this analysis.²⁴ Figure 26 illustrates deficient pavement locations along Interstates 78 and 80, including inset areas for local and express roadways along both routes.

The prevalence of poor pavement along Interstates 78 and 80 can have a significant impact on delivery times, travel speeds, and safety for heavy-truck traffic. Poor pavement can increase overall trucking costs due to increased maintenance costs for vehicles using these roadways. Any major resurfacing projects along either of these routes will also dramatically impact freight movement, especially since many highway construction projects take place during non-commuter peak travel periods during which the number of heavy-truck trips is still significant.

Interstate 78

Approximately 18 percent of Interstate 78 exhibited deficient pavement conditions during 2011. This is a significant improvement from 2008 PMS data, which indicated that approximately 65 percent of Interstate 78 exhibited poor pavement. In 2011, two segments longer than 2 miles were identified on Interstate 78, including a 3.4-mile eastbound section in Essex and Union Counties (MP 53.7 to MP 57.1) and a 2.5-mile eastbound section in Hunterdon County (MP 7.6 to MP 10.1).

Interstate 80

Nearly 25 percent of Interstate 80 exhibited deficient pavement conditions during 2011. This is a significant improvement from 2008 PMS data, which indicated that approximately 60 percent of Interstate 80 exhibited poor pavement. In 2011, two segments longer than 2 miles were identified on Interstate 80, including a 3.4-mile eastbound section in Essex and Morris Counties (MP 47.5 to MP 50.9) and a 3.1-mile eastbound section in Passaic County (MP 55.1 to MP 58.2).

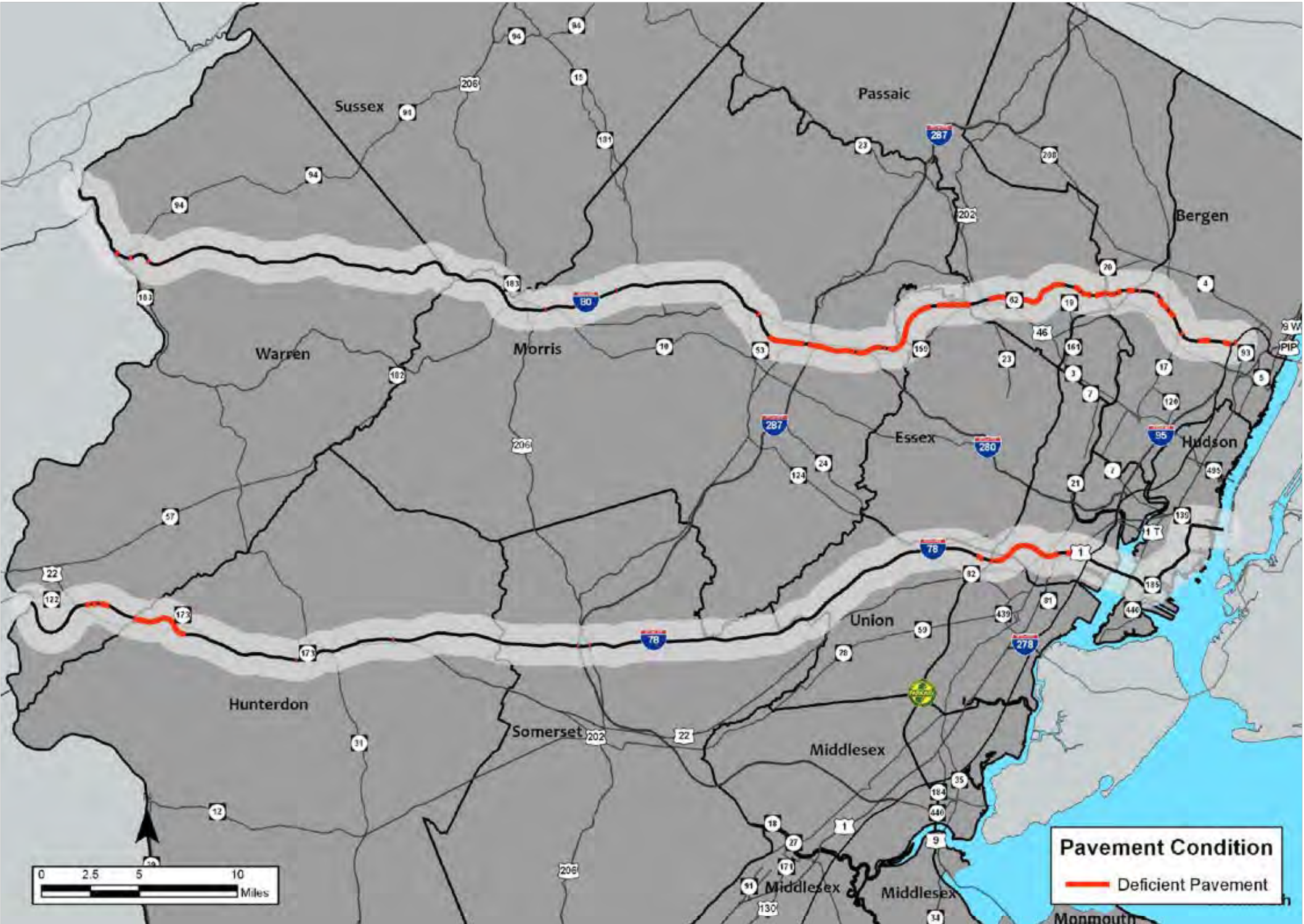


Figure 26—Pavement conditions along the east-west freight corridor

²⁴ Pavement rankings were determined using International Roughness Index (IRI) ratings, along with guidelines developed by NJDOT. A ranking of good (IRI rating less than 95), fair (IRI rating equal to or greater than 95 but less than or equal to 170), or poor (IRI rating greater than 170) was identified for 0.1 mile segments along each of the major highway corridors analyzed as part of this study.



Crash Analysis

The project team reviewed three years of crash data (2006 through 2008) in order to identify clusters of crashes over the three-year period involving heavy vehicles (vehicle types 20-29). Based on this analysis, clusters were mapped for both Interstate 78 and Interstate 80 (Figure 27). While most clusters were associated with interchanges, several mainline clusters were noted as well. While all crashes impact traffic flows and affect delivery times for the trucking industry, crashes involving heavy trucks are more likely to have injuries or fatalities, often resulting in more damage to other vehicles or properties. Crashes impact through-travel times and delivery times for freight traffic.

Interstate 78

Several major crash clusters were identified along Interstate 78, predominantly along the eastern portion of the highway, including:

- **Interchange 12** (NJ Route 173)—This interchange includes access to the easternmost private truck stop along Interstate 78 and likely has significant heavy-vehicle movements.

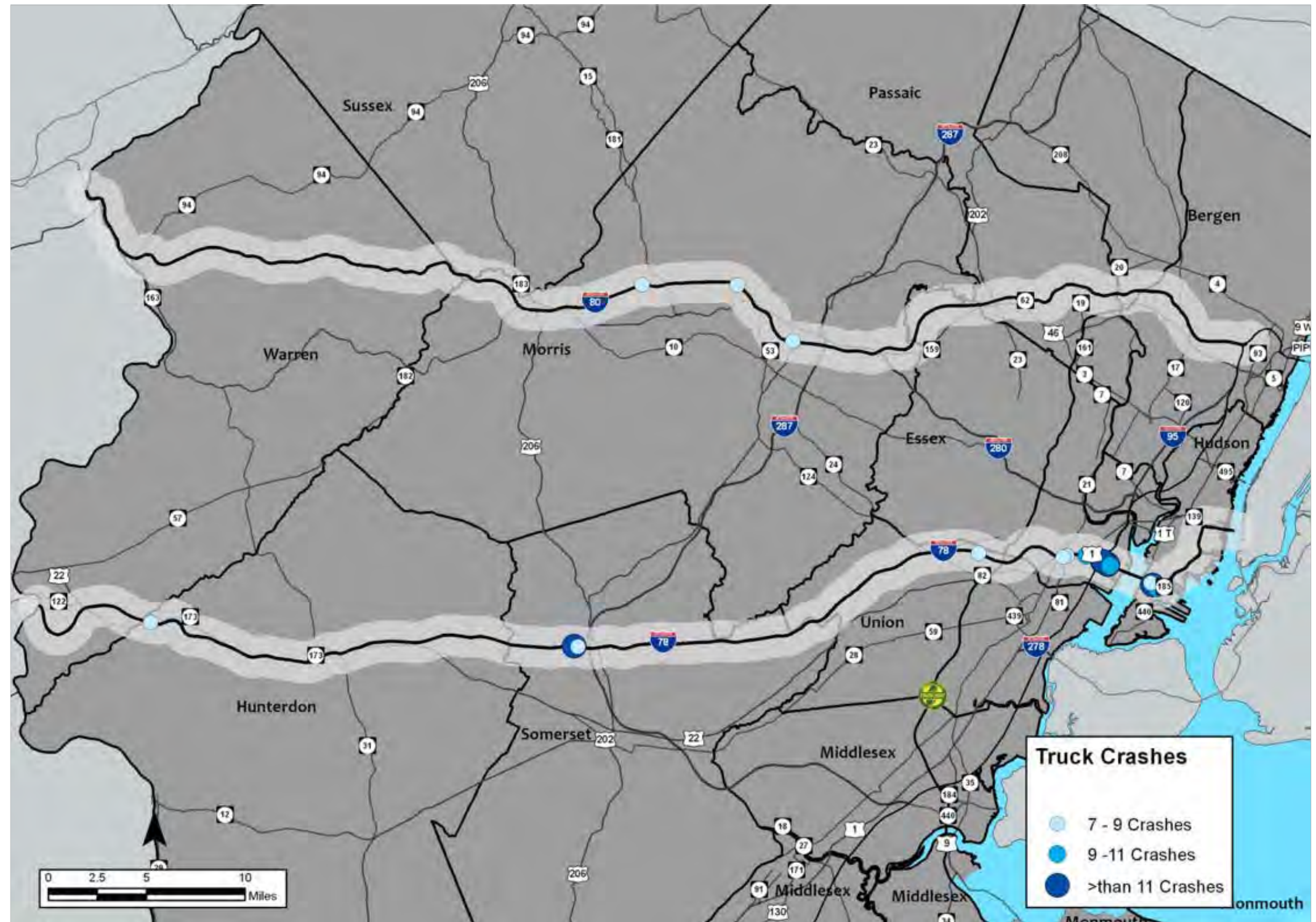


Figure 27—Truck crash hot spots along the east-west freight corridor, 2006 through 2008



- **West of Interchange 29** (Interstate 287)—The interchange of Interstate 78 and Interstate 287 is a major access point for trucks coming from Somerset and Middlesex County destined to points west. A review of traffic volumes indicated that heavy-truck movements on Interstate 78 increase significantly west of Interstate 287; therefore, an increase in heavy vehicle crashes would be expected.
- **Mainline west of Halsey Street** (Union Township, Union County, MP 52.2)—Crash clusters occur in a section of Interstate 78 that has express and local lanes, in a recently widened section of the roadway.
- **West of Interchange 57** (NJ Route 21/U.S. Route 1&9) and **West of Interchange 58** (U.S. Route 1&9)—These interchanges have significant truck movements because these roadways provide access into industrial/port areas in Elizabeth, Newark, Kearny, and other points in Essex and Union Counties.

Additionally, the project team reviewed NJDOT’s document *Large Truck Safety*, Volumes 1-4, prepared by NJIT. This report reviews large truck crash data for the entire state for 2006 through 2008. From a statewide perspective, Interstate 78 ranked second out of all roadways, with 1,375 large truck crashes, for a 5.0-percent statewide share. In terms of severity, it was also second in the state, with 17 crashes causing severe injury (1.2 percent of the corridor’s large truck crashes). Interstate 78 in Newark (MP 54.57 to MP 60.65) had the fourth highest number of large truck crashes (344) among all road segments in the state. This segment includes the crash clusters noted above near Interchanges 57 and 58.

The crash analysis information was discussed with participants in the trucking industry discussion. The participants provided the following observations:

- **Interstate 78 and Interstate 24/82 interchanges in Springfield**—There is tight radius curvature on ramps from 78 to 24 west; truck acceleration and deceleration on uphill and downhill requires adequate length at interchange ramps. The right/left ramps at the same time are also an issue. The road geometries in this Union County location lead to accidents. Passenger vehicles tend to cut off trucks trying to weave across to exits on the left and on the right while on a hill.
- **Interstate 78 and 287 interchange in Somerset County**—Truck acceleration and deceleration on uphill and downhill requires adequate length at interchange ramps. West of Interstate 287, the trucking firms reported that acceleration and deceleration lanes are relatively short for trucks; the trucks cannot get up to speed. The topography is steeper. A fourth lane should be added for slower trucks.
- **Interstate 78 sun glare issue**—Sun glare is a major issue at the western end of Interstate 78 in Warren/Hunterdon County areas where mountains are crossed. Eastbound uphill movements are impacted by low angle sun glare mornings. Both truck and car movements are impacted by sight/visibility impairments caused by glare. A fourth lane may be needed for trucks on uphill sections.

Interstate 80

A review of crash data for Interstate 80 indicated several major clusters, including several along the central and eastern portions of the highway. Those clusters include:

- **Mainline west of NJ Route 15** (Jefferson/Rockaway Townships, Morris County, MP 32.7)
- **East of Interchange 35** (Morris County Route 661)
- **East of Interchange 37** (Morris County Route 513)—Travelling eastbound, this section of Interstate 80 includes multiple acceleration ramps from County Route 513.
- **West of Interchange 42** (U.S. Route 202)

- **Interchange 60** (NJ Route 20)—This interchange has numerous ramp/merge points and provides connections to major industrial points south in Union and Essex Counties via NJ Route 21.
- **Interchange 62** (GSP)—While trucks are prohibited from the GSP within Northern New Jersey, the number of passenger vehicles entering/exiting the GSP from Interstate 80 impacts slower moving freight traffic traveling along Interstate 80.

Based on NJDOT’s document *Large Truck Safety*, Volumes 1-4, Interstate 80 had the third highest number of large truck crashes in the state, with 1,211 crashes for a 4.4-percent statewide share. It also had the third highest number of large-truck crashes resulting in severe injury, with 11 crashes (0.9 percent of the corridor’s large-truck crashes).

The crash analysis information was discussed with participants in the trucking industry discussion. The participants provided the following observations:

- **Interstate 80 overall issues**—Acceleration and deceleration lanes are too short; not enough maneuvering room for tractor-trailers.
- **Interstate 80/287 ramps in Parsippany**—Tight radius curves on interchange ramps cause many trucks to tip. This interchange is maneuvered by many trucks at the end of their trip when fatigue is higher.

Congestion

NJDOT provided CMS²⁵ data for the entire Interstate 78 and Interstate 80 corridors within New Jersey. CMS scores indicate areas of recurring congestion along New Jersey’s highway network, which can have significant negative impacts on freight traffic. Recurring congestion significantly impacts travel times and the on-time delivery of freight plus adds to the overall cost of freight movement in terms of lost time and increased fuel usage. NJDOT’s CMS database also provides information related to the state’s “79 most congested commuter corridors,” and “problem area interchanges” which are priority locations in terms of recurring congestion along New Jersey’s highway network. Figure 28 illustrates the congestion levels found along the east-west freight corridor. Major sections along the east-west freight corridor, including nearly the entire length of Interstate 78 and easternmost 42 miles of Interstate 80, are among the top 105 most congested commuter corridors. This recurring congestion ensures that freight traffic associated with industrial uses in Union, Essex, Bergen, and Passaic Counties destined for points west will have to deal with impacts and costs associated with lost time to travel schedules. Further illustrating the impacts of congestion along Interstate 78 and Interstate 80 are the 26 interchanges along the east-west freight corridor that have been identified by NJDOT as problem area interchanges.

Interstate 78

Nearly 40 miles of the Interstate 78 corridor (approximately 60 percent) is classified as “very congested,” while the nearly one mile of the easternmost segment (approaching the Holland Tunnel) is classified as “severely congested.”²⁶ As shown on Figure 28, the levels of congestion along Interstate 78 primarily vary between moderately and very congested, with areas east of U.S. Route 22 experiencing the heaviest levels of congestion.

²⁵ The CMS data provided are based on 2006 ADT data and for each link includes maximum v/c ratios, congestion description, county and MPO ranking, and ultimately a priority score and rating (low, medium, or high).
²⁶ The NJDOT CMS indicates that segments with a volume to capacity ratio greater than 0.9 but less than 1.1 are “very congested,” while segments with a volume to capacity ratio greater than 1.1 are “severely congested.”



Anecdotal information provided by NJDOT indicated that two segments are ranked on NJDOT's list of 105 congested commuter corridors, indicating some of the highest recurring congestion levels in the entire state:

- MP 4.16 (U.S. Route 22) to MP 58.50 (U.S. Route 1&9)—Ranked #4
- MP 58.50 (U.S. Route 1&9) to MP 67.83 (Holland Tunnel)—Ranked #34

Thirteen interchanges on Interstate 78 have been identified as problem area interchanges:

- Interchange 12 (Hunterdon County Route 625)
- Interchange 24 (Hunterdon County Route 523)
- Interchange 26 (Somerset County Route 665)
- Interchange 29 (Interstate 287)
- Interchange 48 (NJ Route 24)
- Interchange 49 (NJ Route 124)
- Interchange 50 (Union County Route 630)
- Interchange 52 (GSP)
- Interchange 54 (Winans Road)
- Interchange 57 (U.S. Routes 1 and 9)
- Interchange 14* (New Jersey Turnpike/Interstate 95)
- Interchange 14A* (NJ Route 440)
- Interchange 14C* (NJ Route 139)

*Indicates Interchange on Newark Bay Extension of New Jersey Turnpike

Interstate 80

Nearly 20 miles of Interstate 80 (approximately 60 percent) is classified as *very congested*. As shown on Figure 28, the levels of congestion along Interstate 80 primarily vary between moderately and very congested, with areas east of U.S. Route 46 experiencing the heaviest levels of congestion.

Anecdotal information provided by NJDOT indicated two bi-directional segments that are included on NJDOT's list of 105 congested commuter corridors:

- MP 26.23 (U.S. Route 206) to MP 68.54 (NJTPK/Interstate 95)—Ranked #9
- MP 0.00 (Delaware Water Gap) to MP 3.6 (vicinity of Sage Cabin Road)—Ranked #66

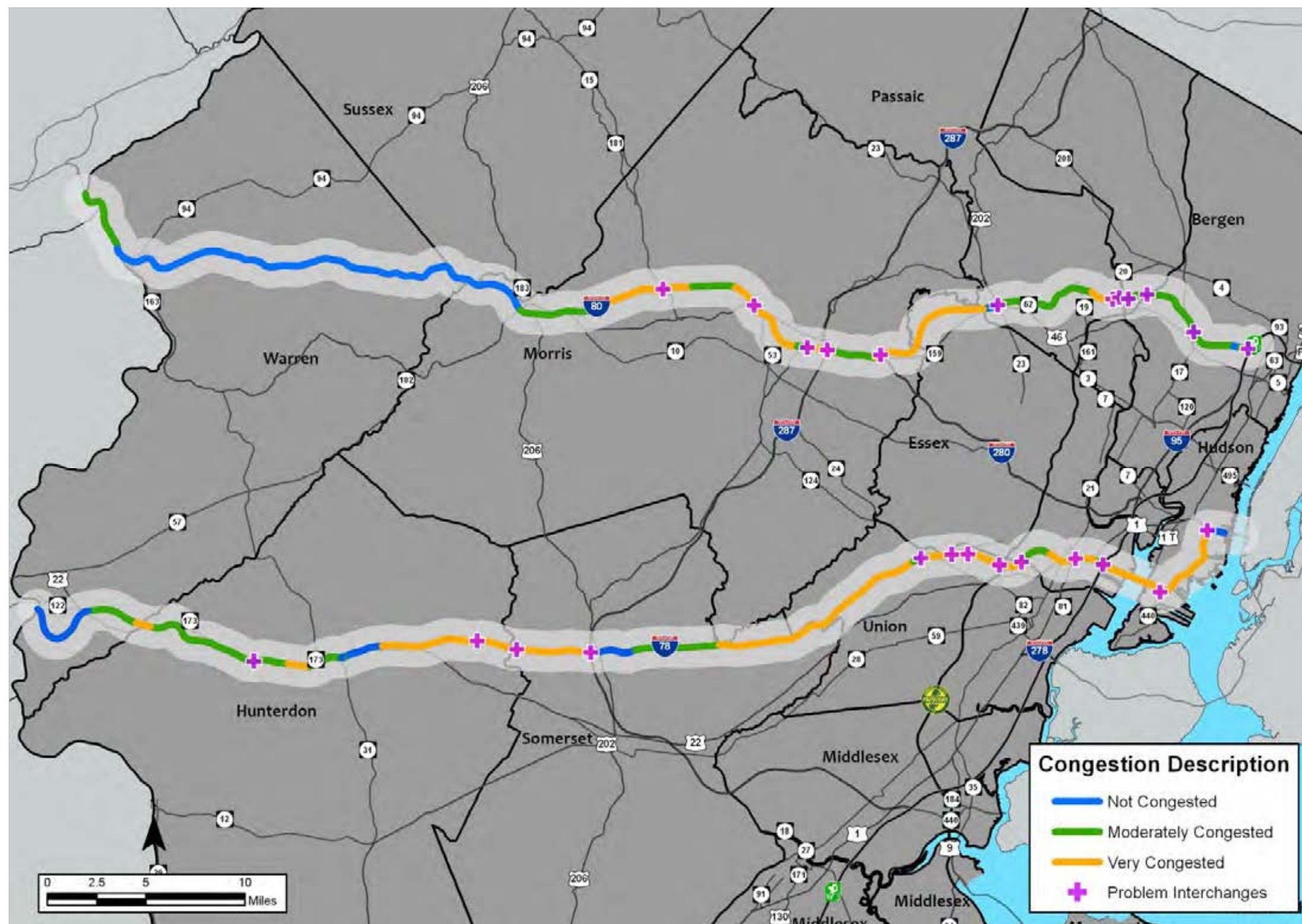


Figure 28—CMS score along the east-west freight corridor



Thirteen interchanges on Interstate 80 have been identified as problem area interchanges:

- Interchange 34 (NJ Route 15)
- Interchange 38 (U.S. Route 46)
- Interchange 42 (U.S. Route 202)
- Interchange 43 (Interstate 287)
- Interchange 47 (U.S. Route 46/Interstate 280)
- Interchange 53 (U.S. Route 46/NJ Route 23)
- Interchange 59 (Market Street)
- Interchange 60 (NJ Route 20)
- Interchange 61 (Bergen County Route 507)
- Interchange 62 (GSP)
- Interchange 63 (NJ Routes 4 and 17)
- Interchange 64 (U.S. Route 46/NJ Route 17)
- Interchange 68 (NJTPK/Interstate 95/U.S. Route 46)

Bridge Data

A review of the NJDOT 2011 BMS data²⁷ indicated a significant number of bridges that were determined to either be structurally deficient or functionally obsolete.²⁸ Bridges that are structurally deficient may adversely impact freight traffic throughout the region if the issues leading to the structurally deficient classifications progress further and require load restrictions. While load restrictions on major roadways like Interstate 78 or 80 are unlikely, the maintenance, rehabilitation, or replacement work required to return the structurally deficient bridges to a satisfactory level of service would likely cause major disruptions to freight traffic in the form of lane closures, reduced lane widths, slower speeds, or lengthy detours. Construction may further compound freight movement given the tendency for many highway construction projects to be scheduled for off-peak commuter periods when freight traffic is often higher.

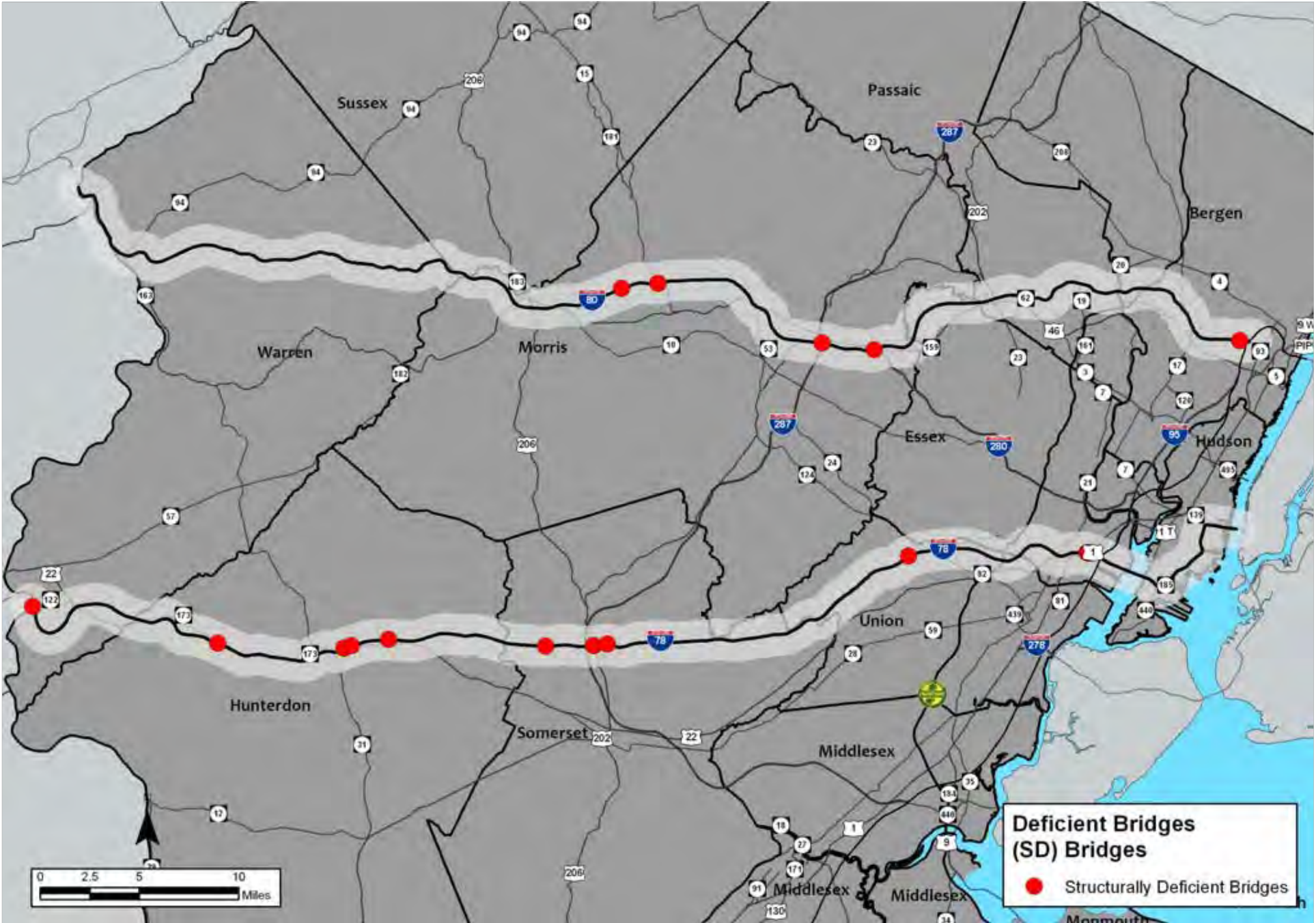


Figure 29—Structurally deficient bridges along the east-west freight corridor

²⁷ NJDOT’s Bridge Management System (BMS) is an inventory of all bridges with a span over 20 feet in New Jersey. It includes information on their physical characteristics, condition, and ownership. Bridges are inspected biennially and the condition of various bridge elements is rated on numerical scale. The scale ranges from zero to nine, with a zero representing a failed condition and a nine representing an excellent condition.

²⁸ A bridge is deemed structurally deficient if the condition rating of its deck, superstructure, substructure or culvert is 4 (poor) or less; or if either its structural evaluation for load capacity or its water adequacy has an appraisal rating of 2 (critical) or less. Structural deficiency does not necessarily mean that a bridge is unsafe. It often indicates that a bridge has been load posted and is unable to handle vehicle loads that would normally be expected on the roadway, requires rehabilitation to remain to open, or is closed. Any bridge that is classified as structurally deficient is excluded from the functionally obsolete category. A bridge is classified as functionally obsolete if the deck geometry, underclearances (vertical and horizontal), approach roadway alignment, overall structural evaluation for load capacity, or waterway adequacy has an appraisal rating of 3 (serious) or less. Functional obsolescence typically means that the bridge geometry (clearances, lane widths, etc) no longer meets the current design criteria for the roadway system for which it is a part.



Interstate 78

The BMS includes a total of 228 bridges along or crossing Interstate 78 in New Jersey. Figure 29 illustrates the bridges along the corridor that are classified as structurally deficient. As shown in Table 12, this includes structures at major interchanges with U.S. Routes 202 and 206, Somerset County Route 620, the NJTPK, and U.S. Route 1/9. This also includes seven ramp structures at several interchanges along Interstate 78.

Table 12—Summary of structurally deficient bridges, Interstate 78

Route	Feature Intersected	Interstate 78 Milepost	Municipality	County
County Route 614	Pattensburg Road (County Route 614) over Interstate 78	11.76	Union Township	Hunterdon
Interstate 78 (ramp)	Interstate 78 Ramp A (U.S. Route 22) over Interstate 78	18.46	Clinton Township	Hunterdon
Interstate 78 (ramp)	Interstate 78 Ramp C over Beaver Brook	18.85	Clinton Township	Hunterdon
County Route 639	Cokesbury Road (County Route 639) over Interstate 78	20.78	Lebanon Borough	Hunterdon
Interstate 78	Interstate 78 westbound over N Branch Raritan River	28.81	Bedminster Township	Somerset
Interstate 78	Interstate 78 eastbound over U.S. Routes 202 and 206	31.25	Bedminster Township	Somerset
Interstate 78	Interstate 78 westbound over U.S. Routes 202 and 206	31.25	Bedminster Township	Somerset
Interstate 78	Interstate 78 westbound over Washington Valley Road (County Route 620)	31.96	Bridgewater Township	Somerset
Interstate 78	Interstate 78 westbound over Quarry Road	48.54	Springfield Township	Union
County Route 577	County Route 577 (Main Street) over Interstate 78 (MP 50.02)	50.02	Springfield Township	Union
Interstate 78 (ramp)	Interstate 78 Ramps 2 and 6 over Interstate 78	58.03	Newark City	Essex
Interstate 78 (ramp)	Ramp 3 over Ramps 2 and 6; Interstate 78 and Ramp 13	58.03	Newark City	Essex
Interstate 78 (ramp)	Interstate 78 Ramps 5 and 6 over U.S. Route 1/9 and Ramp 11	58.10	Newark City	Essex
Interstate 78 (ramp)	Interstate 78 Ramp 3 over U.S. Route 1/9 and Ramp 11	58.10	Newark City	Essex
Interstate 78 (ramp)	Interstate 78 Ramp 5 over U.S. Route 1/9 and Ramp 10	58.14	Newark City	Essex

Source: NJDOT Bridge Management System Database, 2011

Locations in bold indicate high priority rankings

The NJDOT BMS also uses a variety of data to create a holistic view of a bridge’s condition and its relative importance to the transportation network and, thereby, create a priority ranking for statewide bridge maintenance purposes. An analysis of the BMS rankings shows four bridges along Interstate 78, as shown in bold in Table 12, that are among the highest priority rankings within the BMS.

Interstate 80

The BMS includes a total of 225 bridges along or crossing Interstate 80. Figure 29 illustrates the bridges along the corridor that are classified as structurally deficient. As shown in Table 13, all eight of these structures are on the mainline of Interstate 80, including those at major interchanges with Interstate 287, U.S. Route 46, and the NJTPK.

Table 13—Summary of structurally deficient bridges, Interstate 80

Route	Feature Intersected	Interstate 80 Milepost	Municipality	County
Interstate 80	Interstate 80 eastbound over Howard Boulevard (County Route 615)	30.61	Mount Arlington Borough	Morris
Interstate 80	Interstate 80 westbound over Howard Boulevard (County Route 615)	30.61	Montville Township	Morris
Interstate 80	Interstate 80 eastbound over Berkshire Valley Road and Washington Northern Railroad	31.99	Roxbury Township	Morris
Interstate 80	Interstate 80 eastbound over Mount Hope Mineral Railroad	33.88	Wharton Borough	Morris
Interstate 80	Interstate 80 westbound over Mount Hope Mineral Railroad	33.88	Wharton Borough	Morris
Interstate 80	Interstate 80 and Ramp D over Interstate 287 northbound and Ramps D and H	43.67	Parsippany-Troy Hills Township	Morris
Interstate 80	Interstate 80 Ramp B over U.S. Route 46 eastbound and Ramp D	46.36	Parsippany-Troy Hills Township	Morris
Interstate 80	Interstate 80 eastbound Express Ramp to Interstate 95 southbound over Interstate 80 eastbound Local	65.19	Teaneck Township	Bergen

Source: NJDOT Bridge Management System Database, 2011

Locations in bold indicate high priority rankings

The NJDOT BMS also uses a variety of data to create a holistic view of a bridge’s condition and its relative importance to the transportation network and, thereby, create a priority ranking for statewide bridge maintenance purposes. An analysis of the BMS rankings shows one bridge along Interstate 80, as shown in bold in Table 13, that is among the highest priority rankings within the BMS.

Stakeholder Feedback

Meetings were held with the Motor Trucking Association and the Commercial Real Estate Developers Association (NIAOP) to discuss key issues identified and gain their feedback on problem locations, issues, and potential solutions.

Participants in the trucking industry discussion also recommended several improvement priorities and potential policies regarding the east-west corridor, including the following:

- If tolls were enacted at the Pennsylvania border of Interstate 78 and Interstate 80, then trucking firms indicated they would use alternative parallel roads. Several of the trucking firms indicated that instead, fuel tax should be increased. (Fuel tax is a lower variable cost per dollar in operating expenses for truck operators than tolling.) Toll collection plazas increase congestion, which is a major cost factor to route choice.
- Reduce volumes on Interstates 78 and 80 by offering mass transit alternatives to decrease automobile traffic. Follow through on studies to extend rail passenger service into Hunterdon County.
- Provide rail hubs (park-and-rides) for commuters in the western part of the state to connect to new rail service extensions.



- Provide variable message signing at key locations in corridors to redirect traffic away from bottlenecks or warn drivers of upcoming congestion to allow them time to find adequate rest stops to meet the 10-hour rest requirements. There are first time drivers in this corridor/area, so wayfinding and VMS signing are important.
- Improve/provide more rest areas and offer more parking to encourage carpooling to reduce congestion involving passenger vehicles.

Participants in the industrial developers discussion suggested that:

- New Jersey focus on north-south movements rather than east-west to support development in New Jersey rather than Pennsylvania.
- In addition, in contrast to the trucking community, the industrial developers suggested enacting tolls at the Pennsylvania border of Interstate 78 and Interstate 80:
- Participants recommended tolling of Interstate 78 and 80, which would help to equalize costs between New Jersey and Pennsylvania and help keep jobs in New Jersey.
- Participants noted that raising tolls on the NJTPK would severely and negatively affect any decisions to locate in New Jersey in favor of Pennsylvania.

Corridor Priority Projects

An analysis of crash hot spots involving trucks, poor pavement locations, and areas with a high CMS score (Figure 30) identified several problem areas where these issues are currently evident along the Interstate 78 and 80 east-west corridor. When combined, these problems can severely impact on-time freight deliveries and shift route choice to the state, county, and local road network or even influence the decision making on the siting of distribution facilities.

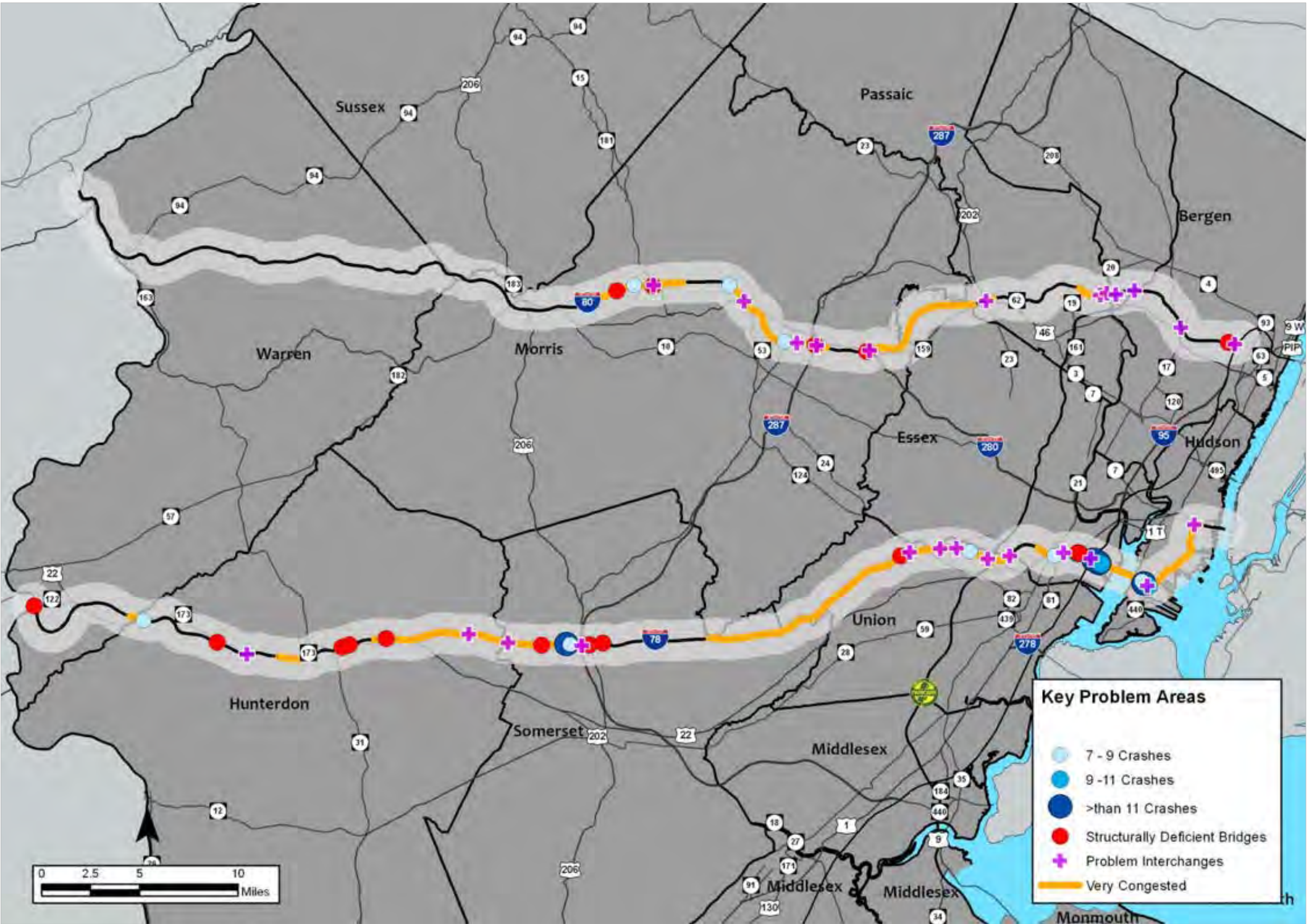


Figure 30—Key problem areas along the east-west freight corridor



Once identified, the project team reviewed planned improvements along each corridor versus the problem areas. If planned improvements addressed the identified issues, the problem area was eliminated from the list for the identification of new problem statements. A list of planned projects on Interstates 78 and 80 included in the North Jersey Transportation Planning Authority's (NJTPA) *Transportation Improvement Program* (TIP) for fiscal years (FY) 2010–2013 is included in this section.

Next, each of these projects (in addition to those identified in the other three priority corridors) was ranked based on freight-specific indicators, as detailed in the Blueprint for Investment section earlier in this report. As noted, several locations along Interstate 78 and Interstate 80 were identified as having a combination of problem interchanges, existing congestion, poor pavement conditions, or crash problems. A review of commodity flows for each corridor indicates that these deficiencies impact the movement of goods that are critical to New Jersey's economy. Since some of these segments are located east of Interstate 287, where the local share of freight traffic flows are heaviest (based on commodity flow data), targeted improvements to these areas will more directly impact New Jersey-based freight traffic. These segments include problem interchanges located in areas where heavy freight movements are likely occurring based on the density of distribution centers and other freight traffic generators located within their vicinity.

The following sections highlight the already programmed improvements and the remaining problem locations to be addressed.

Planned Improvements

Interstate 78

- **Union/Essex Rehabilitation, Contract B** (MP 53.7 to MP 58.5, Union and Essex Counties)—Will provide preventive maintenance, reconstruction, and safety improvements, including roadway resurfacing and structural work to bridges within the project area. Construction is scheduled for FY 2012 and 2013. This section is east of a recently resurfaced section of Interstate 78 between MP 50.6 and MP 52.9 (Union/Essex Rehabilitation, Contract A).
- **Edna Mahan Frontage Road** (MP 15.0 to MP 15.4, Hunterdon County)—Extension of existing frontage road to provide connection to existing prison access road, providing congestion relief and direct access to Interstate 78 eastbound for the correction facility's large workforce. The project is currently in design and is scheduled for construction during FY 2012.
- **Pittstown Road (Interchange 15) Improvements** (MP 16.06 to MP 16.10, Hunterdon County)—Development of interchange improvements to relieve congestion and safety issues. Traffic queues on the westbound exit ramp currently back up onto the interstate. The project is currently scheduled for construction during FY 2015.
- **Garden State Parkway (Interchange 142) Improvements** (MP 52.8 to MP 53.7, Union County)—Construction of missing move ramps to provide movements from GSP northbound to Interstate 78 westbound and GSP southbound to Interstate 78 eastbound. The project will also provide roadway resurfacing and bridge deck maintenance within the project area. The project was completed in FY 2011. This section is east of a recently resurfaced section of Interstate 78 and west of a section due to be resurfaced under the above Union/Essex Rehabilitation project (Contract B).
- **Interstate 287/Interstate 78/U.S. Routes 202 and 206 Interchange Improvements** (Somerset County)—Development of interchange improvements at the Interstate 78 and Interstate 287 interchange (Interstate 78 Interchange 29) and the interchange of Interstate 287 and U.S. Routes 202 and 206 to address safety issues. Under this project, the Interstate 287 southbound to Interstate 78

westbound ramp would be widened from one to two lanes; the Interstate 78 eastbound to Interstate 287 northbound ramp would be shifted from a left-lane to a right-lane entrance, eliminating a five-lane weave for vehicles traveling from Interstate 78 eastbound to Interstate 287 northbound/U.S. Routes 202 and 206 interchange. Additionally, a missing move ramp would be provided for U.S. Routes 202 and 206 northbound to Interstate 287 southbound. The project is currently in the design phase; construction is scheduled to be completed during FY 2014. This interchange is currently on the NJDOT "problem area interchange" list and suffers from congestion and crash issues, as noted previously.

- **Interchange 14A Reconstruction** (Hudson County)—Address existing operational limitations at the Interchange 14A toll plaza. It will be relocated to meet increased traffic volumes due to the redevelopment of the Military Ocean Terminal in Bayonne for proposed commercial and residential uses. The project is in the design phase and construction will be completed during FY 2015.

Interstate 80

- **Parsippany-Troy Hills Roadway Improvements** (MP 41.5 to MP 45.6, Morris County)—Reconstruction of Interstate 80 along with deck replacement of Interstate 80 eastbound structures over Interstate 287 northbound (NJDOT structure 1414168) and Smith Road (NJDOT structure 1414169). Several interchange improvements will also be made, including adding a lane to the ramp from Interstate 80 eastbound to Interstate 287 southbound, constructing a new ramp to provide access from Interstate 80 eastbound to Littleton Road eastbound, adding a right-turn lane to the ramp from Interstate 80 eastbound to South Beverwyck Road, and lengthening the weave distance for two ramps in the project area. Construction is scheduled from FY 2012 through FY 2014. This section of roadway was identified as having *poor* pavement based on an analysis of the NJDOT PMS.
- **Knowlton Truck Weigh Station** (MP 1.55 to MP 2.75, Warren County)—This project will upgrade the existing truck weigh station with new weighing equipment and improved support facilities, advanced warning signage, and extended acceleration and deceleration lanes on Interstate 80. Construction is scheduled to be completed in mid-2012. This section of roadway has been identified by NJDOT as a congested commuter corridor and exhibits heavy-truck volumes associated with long-haul freight destined to or originating in Pennsylvania and points west.
- **Interstate 80 at NJ Route 23 Long-Term Interchange Improvements** (MP 52.8 to MP 53.75, Passaic and Essex Counties)—Evaluate concepts to relieve weekday and weekend congestion at the interchange of Interstate 80/NJ Route 23/U.S. Route 46 (Interchange 53) and provide critical missing moves, such as NJ Route 23 southbound to Interstate 80 westbound. The project is currently undergoing preliminary design. This interchange has been identified on NJDOT's problem area interchange list and will expand on recently completed improvements to U.S. Route 46 and NJ Route 23 within the interchange area.

Remaining Problem Locations

As noted above, the following locations are the remaining problem areas to be addressed along the I-78 and I-80 corridors once the already planned improvements are addressed.

Interstate 78

Interstate 78 serves several key industries in New Jersey, including chemicals, food and kindred, and petroleum. Chemical and food and kindred commodity flows within the corridor serve the national economy as flows originate or are destined to the Midwestern and Southern United States. Additionally this corridor



carries significant flows that originate or are destined to New Jersey. Initial deficiencies identified for each problem location are summarized below along with summary graphics provided at the end of this section. As projects are advanced through the pipeline for these areas, additional deficiencies and issues may be identified.

Milepost 5.0-7.7 (Interchanges 6 and 7) (Figure 31)

According to 2007 NJDOT traffic data, the area carried over 90,000 vehicles daily with approximately 7,000 heavy vehicles (2007 FAF3). According to commodity flow data, approximately 35% of the domestic trucks in this area originate or are destined to New Jersey. This location has a high truck crash rate with 32 crashes involving heavy vehicles (2006–2008). Within this 2.7 mile segment there is a weigh station and two interchanges. 2009 NJDOT CMS data indicates that this area is Very Congested, while 2008 NJDOT PMS data indicates that some of this segment includes deficient pavement.

Issues that should be examined as this problem statement advances to Concept Development include the merge at Interchange 6 (CR 632—MP 6.09-7.06) (Figure 32) and the weigh station traffic which then must merge to the mainline. These merging movements between cars and trucks with the mainline traffic in such a short distance could be a contributing factor to congestion and crashes. Additionally Interchange 7 (NJ 173—MP 7.2-7.7) (Figure 33) appears to have tight ramp radii that could contribute to crash incidence or make truck movements difficult at an interchange that includes adjacent truck stops.

Milepost 23.6-31.5 (CR 523 to I-287) (Figure 34)

This eight (8) mile segment carried over 120,000 vehicles daily with over 11,000 heavy vehicles according to the 2007 FAF3 data. According to the commodity flow data, over 50 percent of the domestic trucks in this area originate from or are destined to New Jersey. This stretch has a high truck crash rate with 162 crashes involving heavy vehicles between 2006 and 2008. According to the NJDOT Management Systems data this area is Very Congested and has some segments of deficient pavement.

Issues that should be examined as this problem statement advances to Concept Development include a focus on Interchange 29 (MP 29.9-31.5: I-287 & U.S. Route 202/206) (Figure 35). This interchange has a high crash rate (over 60 crashes involving trucks in a 3 year period), is Very Congested, has two structurally deficient bridges, and has deficient pavement according to the NJDOT Management Systems. The interchange appears to have tight ramp radii that could contribute to the crash issues or make truck movements difficult. There are also very heavy merging volumes between I-78 and I-287 with this location, providing a key linkage between two of the States Priority Freight Corridors.

Milepost 48.3-54.32 (Interchanges 48, 49, and 54) (Figure 36)

This 6 mile segment includes three highly congested interchanges and carries up to 179,000 vehicles and nearly 15,000 trucks daily. According to the commodity flow data, nearly 40 percent of domestic truck traffic along this segment originates in or is destined to New Jersey. Fifty (50) crashes involving heavy vehicles were reported between 2006 and 2008. NJDOT Management Systems data notes that this entire segment is Very Congested and has several segments of deficient pavement.

This corridor includes three interchanges that should be examined as this problem statement advances to Concept Development. Interchange 48 (MP 48.3-49.7: NJ Route 24) (Figure 37) has several existing issues, including a high crash rate (20 crashes involving trucks in the 3 year period), a structurally deficient bridge south of the interchange, and high levels of congestion. One issue to be examined is the challenging lane configuration along Route 24 approaching Interstate 78 westbound. This interchange is also ranked #131 on

ATRI's National Congestion Index, indicating it has among the highest levels of truck congestion in the United States.

Interchange 49 (MP 49.5-50.86: NJ Routes 124 & 82) (Figure 38) is east of the split of Interstate 78 into local and express lanes in which motorists tend to make unexpected movements to avoid being forced to exit. This location includes segments of deficient pavement and is classified on the NJDOT Congestion Management System as Very Congested. This segment of Interstate 78 carries more than 150,000 vehicles and nearly 15,000 trucks daily, and had 25 crashes involving heavy vehicles reported between 2006 and 2008.

The segment of Interstate 78 at Interchange 54 (MP 54.32: Winans Road) (Figure 39) carries nearly 180,000 vehicles and 15,000 trucks daily. This location includes segments of deficient pavement and is classified on the NJDOT Congestion Management System as Very Congested. One issue to be examined at this interchange is the ramp configuration as there are several ramps with tight turning radii.

Milepost 56.0-62.0 (Interchanges 57/58 and NJ Turnpike Interchange 14) (Figure 40)

This segment includes three interchanges and the westernmost portion of the Newark Bay Extension of the New Jersey Turnpike. This section of Interstate 78 is adjacent to Newark Liberty International Airport and Port Newark/Elizabeth and carries more than 100,000 vehicles and up to 10,000 trucks daily. NJDOT Management Systems data indicates that the entire segment is Very Congested, has some segments of deficient pavement, and includes the top drainage problem area within New Jersey. Further, more than 180 crashes involving heavy vehicles were reported during the three year analysis period.

Within this segment Interchange 57 (MP 56.8-57.7) (Figure 41) provides access to U.S. Routes 1/9 via a complex system of ramp movements. This location is critical for the goods movement industry since it is directly adjacent to Newark Liberty International Airport and provides access to Port Newark/Elizabeth. Several existing deficient conditions were identified at this location, including deficient pavement and drainage problems, as it is ranked number one on the statewide Drainage Management System. Several interchange ramps have tight radii and heavy merge and weave areas. NJDOT Congestion Management Systems data indicates this location is Very Congested. Finally, this segment has a high truck crash rate, with nearly 60 truck crashes reported between 2006 and 2008.

The interchange of Interstate 78 and Interstate 95/NJ Turnpike (MP 58.9- 59.72) (Figure 42) is the western terminus of the Newark Bay Extension of the New Jersey Turnpike. This location has several existing issues including congestion, tight ramp radii, and merging/weaving constraints due to the location of the toll plaza on Interstate 78. This segment also has a high truck crash rate, with 76 reported crashes involving heavy vehicles between 2006 and 2008.

Interstate 80

Interstate 80 serves several key industries in New Jersey, including agriculture, chemicals, and food and kindred. The agriculture industry serves markets nationwide, while the chemical and food and kindred industries serve the Midwestern and Southern United States. Initial deficiencies identified for each problem location are summarized below along with summary graphics provided at the end of this section. As projects are advanced through the Pipeline for these areas, additional deficiencies and issues may be identified.

Milepost 4.3-4.6 (Interchange 4B/4C—U.S. Route 46/NJ Route 94) (Figure 43)

This location is highlighted predominantly due to its proximity to the westernmost truck stop along Interstate 80 in New Jersey. With limited truck parking and rest areas across the corridors, accessibility to the few existing stops is a high priority. This interchange includes numerous tight ramp movements and requires



trucks to traverse a circuitous route to the truck stop. Further, this location includes a functionally obsolete bridge on Interstate 80 eastbound at the interchange and has segments of deficient pavement.

Milepost 30.4–30.8 (Interchange 30—Morris County Route 615) (Figure 44)

This location includes two structurally deficient bridges on Interstate 80 at the interchange. This segment of Interstate 80 carries more than 11,000 trucks and has a high percentage (53%) of New Jersey-based domestic truck flows.

Milepost 34.0–34.2 (Interchange 34—NJ Route 15) (Figure 45)

This location is adjacent to several retail centers, including the Rockaway Mall. This segment of Interstate 80 is classified as Very Congested and carries more than 15,000 trucks daily, with more than half of the domestic truck flows originating in or destined to New Jersey, based on the commodity flow data. An examination of this interchange should seek to address improved mobility and reduced congestion for the heavy truck traffic as well as the significant retail traffic in this area.

Milepost 37.5–37.7 (Interchange 37—Morris County Route 513) (Figure 46)

This interchange provides access to several industrial and commercial sites and has several ramps with tight turning radii. This Very Congested segment of Interstate 80 carries nearly 19,000 trucks daily, with more than half of the domestic truck flows originating in or destined to New Jersey. The interchange should seek to ensure appropriate merge and weave distances are provided at the ramps for the heavy trucks as well as address congestion.

Milepost 43.5–44.0 (Interchange 43—Interstate 287) (Figure 47)

This interchange links two of the primary freight corridors within New Jersey, carrying 136,000 vehicles and more than 17,000 trucks on Interstate 80 daily. NJDOT Management Systems data indicates that this location is Very Congested, has deficient pavement, and includes a structurally deficient bridge on Interstate 80 over Interstate 287. This location has a high percentage (53%) of domestic truck flows originating in or destined to New Jersey. Finally, this interchange is also ranked #107 on ATRI's National Congestion Index, indicating it has among the highest levels of truck congestion in the United States. Improvements should address system deficiencies and improve mobility for heavy vehicles through this interchange.

Milepost 52.8–52.9 (Structures over Passaic River) (Figure 48)

This Very Congested segment of Interstate 80 carries nearly 12,000 trucks daily and includes two structurally deficient bridges on the mainline of Interstate 80. It also includes segments of deficient pavement. Improvements should seek to address congestion and system deficiencies to maintain efficient commodity movements along this corridor.

Milepost 53.5–53.8 (Interchange 53—U.S. Route 46/ NJ Route 23) (Figure 49)

This interchange is adjacent to the Willowbrook Mall, a major retail destination, and includes a series of challenging ramps linking the three roadways. Two structurally deficient bridges exist at the interchange—NJ Route 23 over Interstate 80 and U.S. Route 46 over Interstate 80 ramps. Improvements should seek to address system deficiencies and improve interchange ramps and merges to maintain efficient commodity movements along this corridor.

Milepost 55.1–55.3 (Interchange 55—NJ 62/CR 646) (Figure 50)

This segment of Interstate 80 includes segments of deficient pavement and is ranked number 24 on NJDOT's Drainage Management System. The interchange is adjacent to a cluster of commercial and retail uses and includes several ramps with tight turning radii to be examined.

Milepost 60.0–60.5 (Interchange 60—NJ 20) (Figure 51)

This interchange includes numerous deficiencies based on a review of NJDOT Management Systems Data. This segment of Interstate 80 includes portions of deficient pavement, ranks number 43 on the Drainage Management System, includes a functionally obsolete bridge, is ranked Very Congested on the Congestion Management System, and is identified as a mainline bottleneck. The interchange includes several ramps with tight turning radii and is located adjacent to the Passaic River. Improvements should seek to address system deficiencies and eliminate the mainline bottleneck, as well as improve interchange ramps to improve truck movements through this interchange.

Milepost 64.9–65.5 (Interchange 64/64A—NJ Route 17) (Figure 52)

This interchange links two key freight corridors in New Jersey and includes a series of challenging ramp movements. Several commercial and retail clusters are located adjacent to the interchange. NJDOT Management Systems data indicates that this location includes segments of deficient pavement, one structurally deficient bridge, and one functionally obsolete bridge. Improvements should seek to address system deficiencies and improve interchange ramps to maintain efficient truck movements through this interchange.

Problem statement summary graphics were developed for each of the key locations described above. The summaries include an aerial overview of the location, identified critical areas, and pertinent information about the location, including AADT, AADTT, Crash Data, NJDOT Management Systems Data, and applicable NJDOT Capital Investment Strategy categories. The problem statement summaries for Interstates 78 and 80, traveling west to east, are included in the following pages.





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



Interstate 78: Mileposts 5.0 – 7.7 (Interchanges 6 and 7)
Franklin and Greenwich Townships, Warren County
Bloomsbury Borough and Bethlehem Townships, Hunterdon County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

High truck crash rate

Heavy truck traffic at interchange - adjacent to private truck stops

BACKGROUND DATA	
ROADWAY:	Interstate 78
JURISDICTION:	NJDOT
MILEPOSTS:	5.0 – 7.7
ROADWAY PROFILE:	EB – 3 Lanes WB – 3 Lanes
COUNTY:	Warren/ Hunterdon
MUNICIPALITIES:	Greenwich & Franklin Twps/ Bloomsbury Borough Bethlehem Township
AADT:	90,747 (2007)
CRASH DATA:	32 crashes involving heavy vehicles (2006-2008)

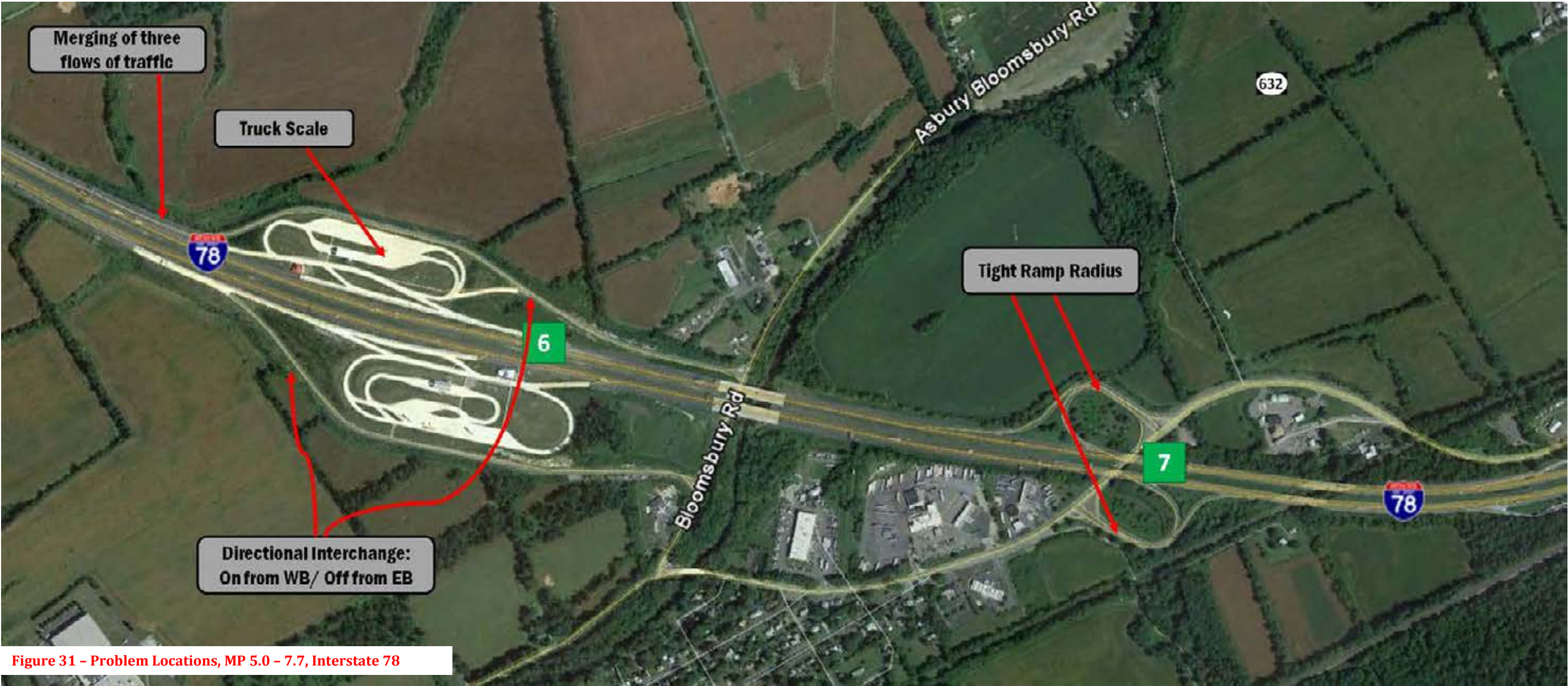


Figure 31 – Problem Locations, MP 5.0 – 7.7, Interstate 78





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



Interstate 78: Mileposts 6.09 – 7.06 (Interchange 6- CR 632)
Franklin and Greenwich Townships, Warren County
Bloomsbury Borough, Hunterdon County

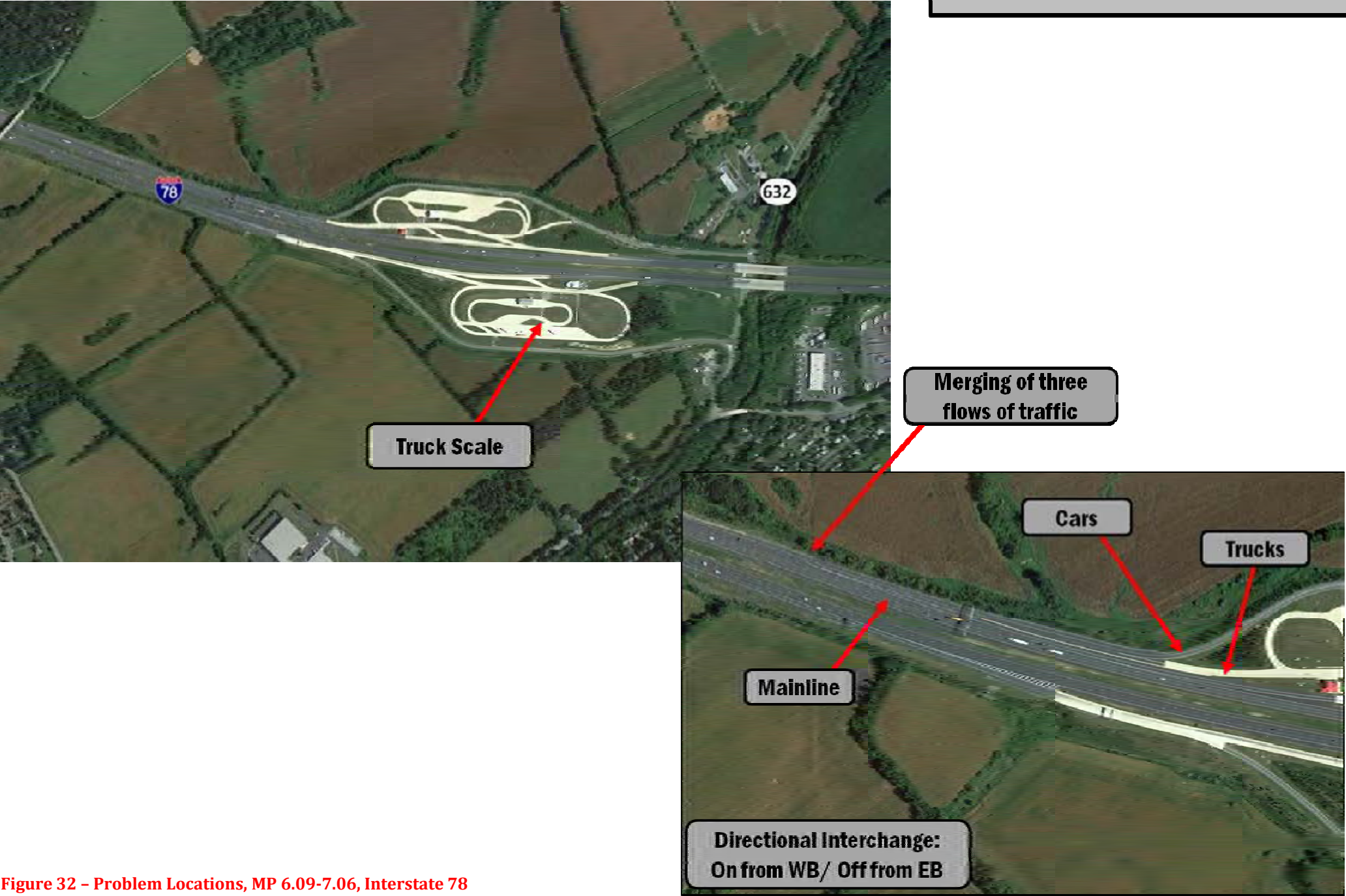
SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

High truck crash rate

Heavy truck traffic at interchange - adjacent to private truck stops

BACKGROUND DATA

ROADWAY:	Interstate 78
JURISDICTION:	NJDOT
MILEPOSTS:	6.09 – 7.06
ROADWAY PROFILE:	EB – 3 Lanes WB – 3 Lanes
COUNTY:	Warren/ Hunterdon
MUNICIPALITIES:	Greenwich & Franklin Twps/ Bloomsbury Borough
AADT:	90,747 (2007)
NJ-BASED	
TRUCK FLOW %:	35%
AADTT (2007 FAF3)	6,995
CRASH DATA:	11 crashes involving heavy vehicles (2006-2008)



NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Very Congested CMS Score 6.28
DRAINAGE:	Not on list
BRIDGE:	No Structurally Deficient or Functionally Obsolete Structures
PAVEMENT:	Not Deficient

APPLICABLE CIS PROGRAM CATEGORY

Bridge Assets

Roadway Assets

Mass Transit Assets

Airport Assets

Transportation Support Facilities Assets

Safety Management

Congestion Relief

Multimodal Support

Local System Support

Figure 32 – Problem Locations, MP 6.09-7.06, Interstate 78



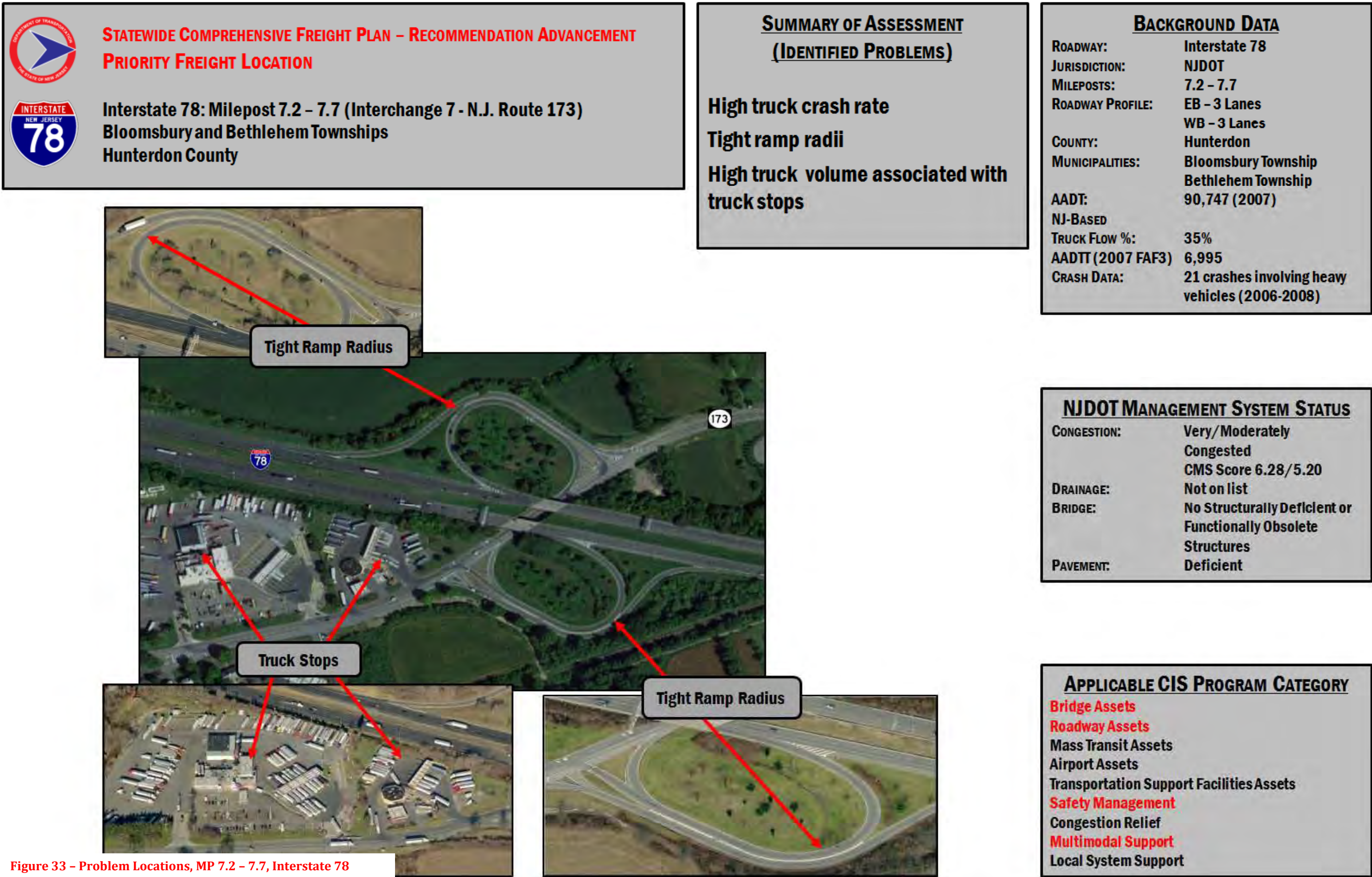


Figure 33 – Problem Locations, MP 7.2 – 7.7, Interstate 78



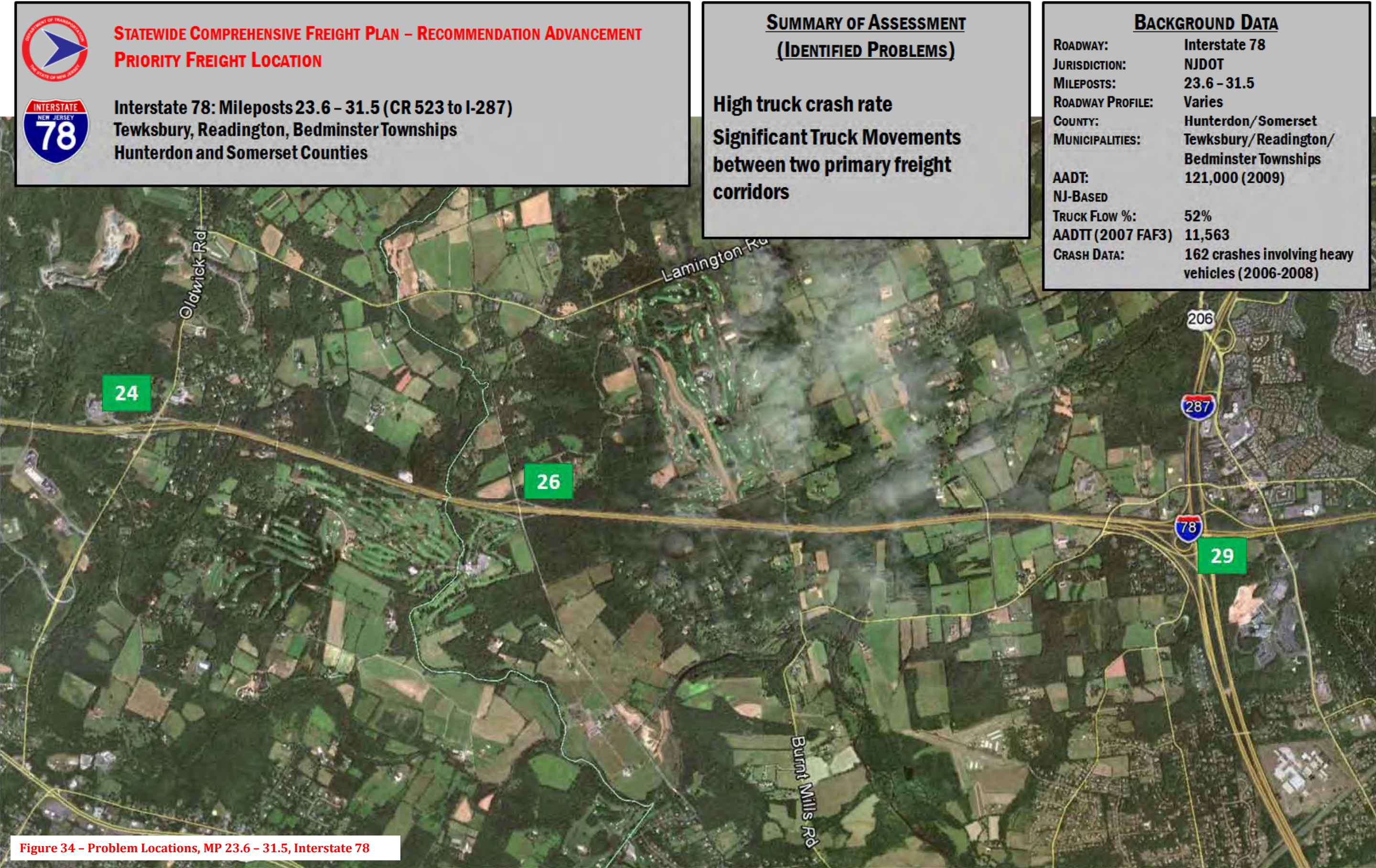


Figure 34 – Problem Locations, MP 23.6 – 31.5, Interstate 78



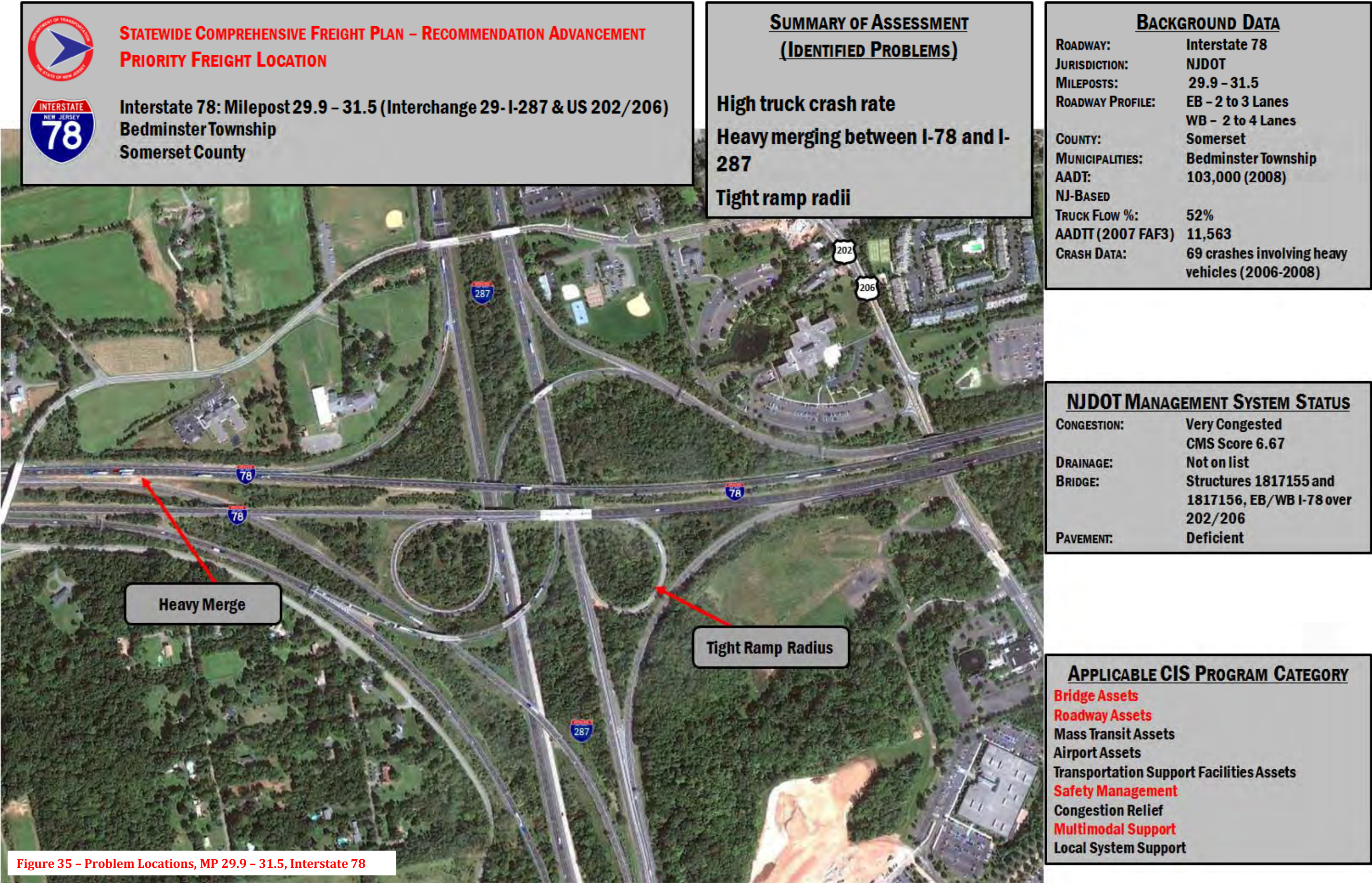


Figure 35 – Problem Locations, MP 29.9 – 31.5, Interstate 78

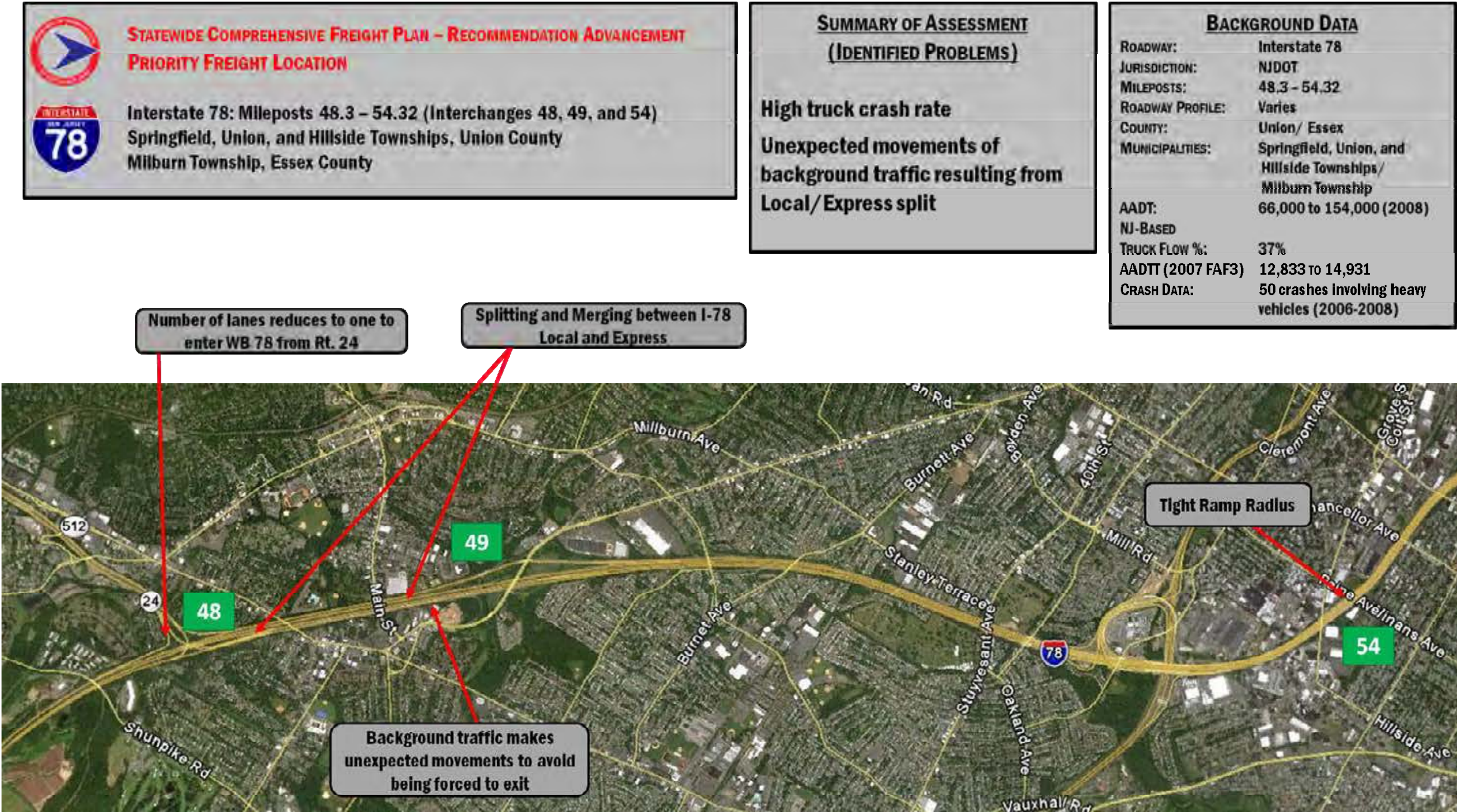


Figure 36 – Problem Locations, MP 48.3 – 54.32, Interstate 78





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



Interstate 78: Milepost 48.3 – 49.7 (Interchange 48- NJ 24)
Springfield Township
Union County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

Ranked #131 on ATRI National Congestion Index

Heavy merge of traffic from four lanes to one

High truck crash rate

BACKGROUND DATA

ROADWAY:	Interstate 78
JURISDICTION:	NJDOT
MILEPOSTS:	48.3 – 49.7
ROADWAY PROFILE:	EB – 3 Lanes (Local & Exprs) WB – 3 Lanes Local 2 Lanes Express
COUNTY:	Union
MUNICIPALITIES:	Springfield Twp
AADT:	154,522 (2008)
NJ-BASED TRUCK FLOW %:	37%
AADTT (2007 FAF3)	12,833
CRASH DATA:	20 crashes involving heavy vehicles (2006-2008)



Figure 37 – Problem Locations, MP 48.3 – 49.7, Interstate 78

NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Very Congested CMS Score 6.59
DRAINAGE:	Not on list
BRIDGE:	Structure 2010161, I-78 WB Quarry Road
PAVEMENT:	Not Deficient

APPLICABLE CIS PROGRAM CATEGORY

- Bridge Assets
- Roadway Assets
- Mass Transit Assets
- Airport Assets
- Transportation Support Facilities Assets
- Safety Management
- Congestion Relief
- Multimodal Support
- Local System Support



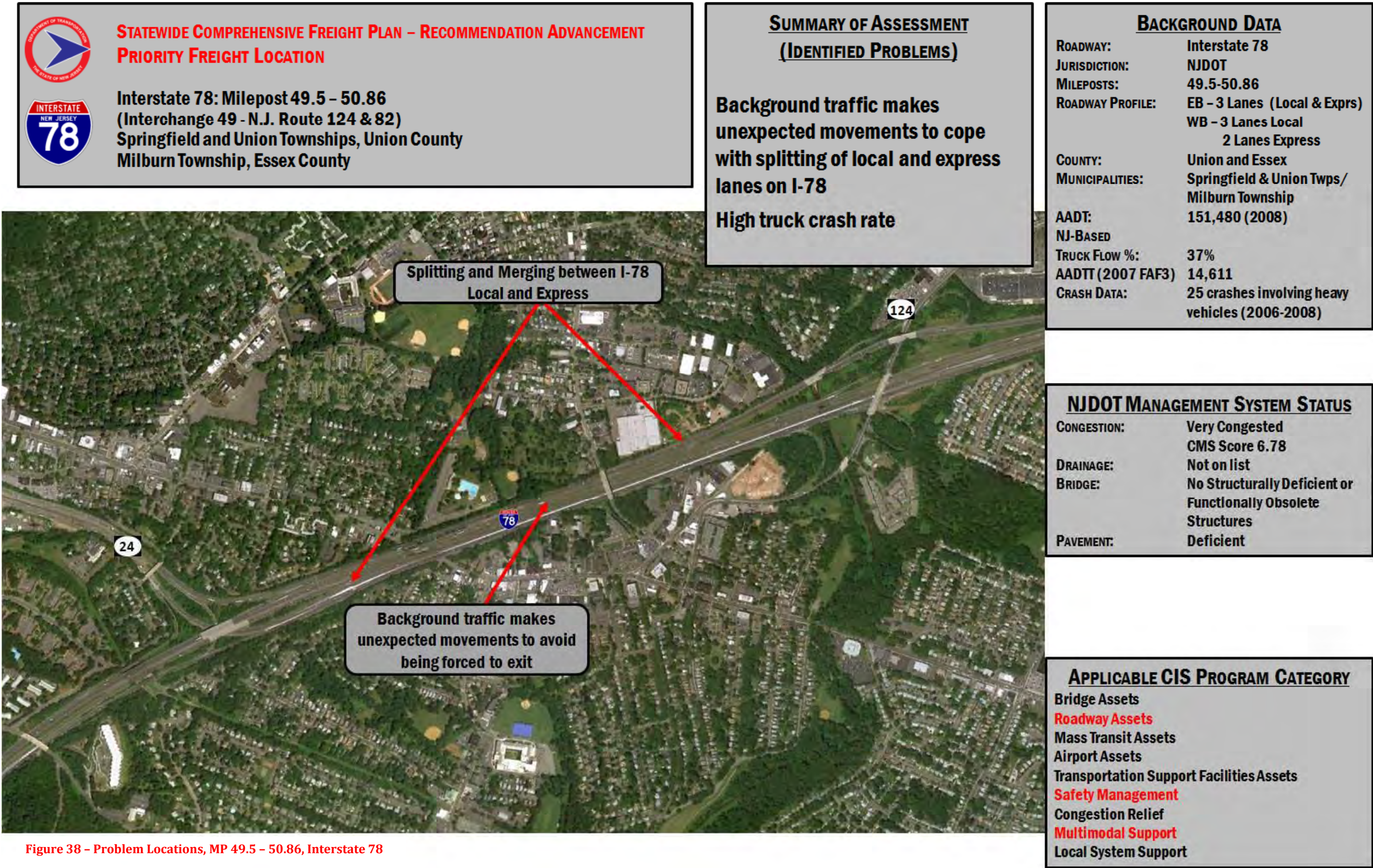


Figure 38 – Problem Locations, MP 49.5 – 50.86, Interstate 78





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



Interstate 78: Milepost 54.32 (Interchange 54- Winans Road)
Hillside Township
Union County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

Tight ramp radii

BACKGROUND DATA

ROADWAY:	Interstate 78
JURISDICTION:	NJDOT
MILEPOSTS:	54.32
ROADWAY PROFILE:	EB – 2 Express Lanes 3 Local Lanes WB – 2 Express Lanes 3 Local Lanes
COUNTY:	Union
MUNICIPALITIES:	Hillside Township
AADT:	179,000 (1999)
NJ-BASED	
TRUCK FLOW %:	37%
AADTT (2007 FAF3)	14,931
CRASH DATA:	5 crashes involving heavy vehicles (2006-2008)

NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Very Congested CMS Score 6.54
DRAINAGE:	Not on list
BRIDGE:	No Structurally Deficient or Functionally Obsolete Structures
PAVEMENT:	Deficient

APPLICABLE CIS PROGRAM CATEGORY

- Bridge Assets
- Roadway Assets
- Mass Transit Assets
- Airport Assets
- Transportation Support Facilities Assets
- Safety Management
- Congestion Relief
- Multimodal Support
- Local System Support



Figure 39 – Problem Locations, MP 54.32, Interstate 78





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



Interstate 78: Mileposts 56.0– 62.0(Interchanges 57 and NJTPK 14)
Newark City, Essex County
Bayonne and Jersey Cities, Hudson County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

High truck crash rate
Heavy congestion
Toll plaza merging and diverging
Rapid succession of ramps results in unexpected movements of background traffic.

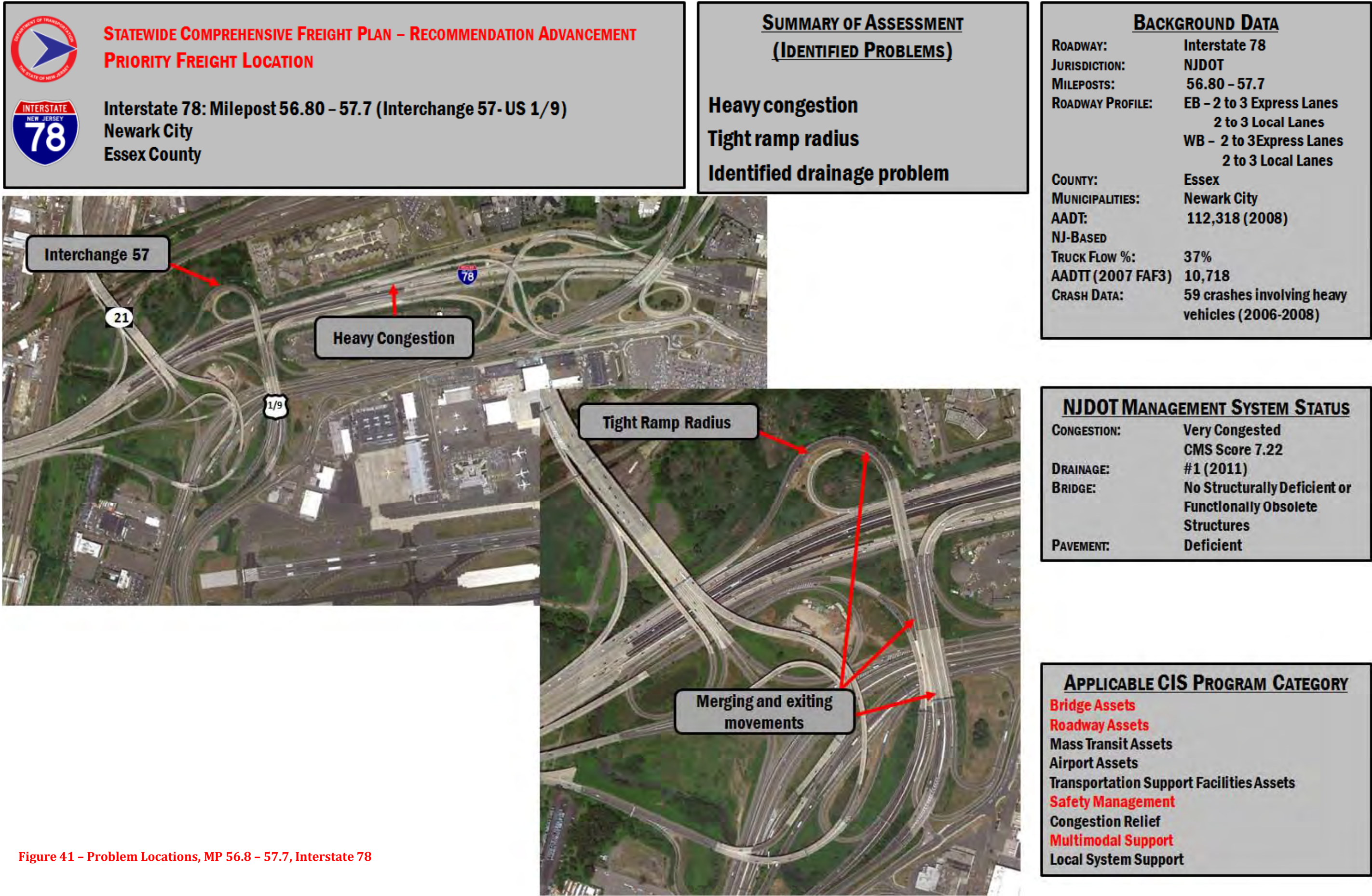
BACKGROUND DATA

ROADWAY:	Interstate 78
JURISDICTION:	NJDOT/NJ Turnpike Authority
MILEPOSTS:	56.0 – 62.0
ROADWAY PROFILE:	EB – 2 to 3 Express Lanes 2 to 3 Local Lanes WB – 2 to 3 Express Lanes 2 to 3 Local Lanes
COUNTY:	Essex/ Hudson
MUNICIPALITIES:	Newark City/ Bayonne and Jersey Cities
AADT:	112,318 (2008)
NJ-BASED	
TRUCK FLOW %:	37%
AADTT (2007 FAF3)	5,970 TO 10,718
CRASH DATA:	183 crashes involving heavy vehicles (2006-2008)



Figure 40 – Problem Locations, MP 56.0 – 62.0, Interstate 78







STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



Interstate 78: Milepost 58.9 – 59.72(NJ Turnpike Interchange 14/ I-95)
Newark City
Essex County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

Heavy congestion
High truck crash rate
Toll plaza merging and diverging

BACKGROUND DATA

ROADWAY:	Interstate 78
JURISDICTION:	NJDOT/NJ Turnpike Authority
MILEPOSTS:	58.9 – 59.72
ROADWAY PROFILE:	EB – 2 Lanes WB – 2 Lanes
COUNTY:	Essex
MUNICIPALITIES:	Newark City
AADT:	112,318 (2008)
NJ-BASED	
TRUCK FLOW %:	37%
AADTT (2007 FAF3)	8,444
CRASH DATA:	76 crashes involving heavy vehicles (2006-2008)

NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Very Congested CMS Score 7.38
DRAINAGE:	Not on list
BRIDGE:	No Structurally Deficient or Functionally Obsolete Structures
PAVEMENT:	Data Unavailable

APPLICABLE CIS PROGRAM CATEGORY

Bridge Assets
Roadway Assets
Mass Transit Assets
Airport Assets
Transportation Support Facilities Assets
Safety Management
Congestion Relief
Multimodal Support
Local System Support

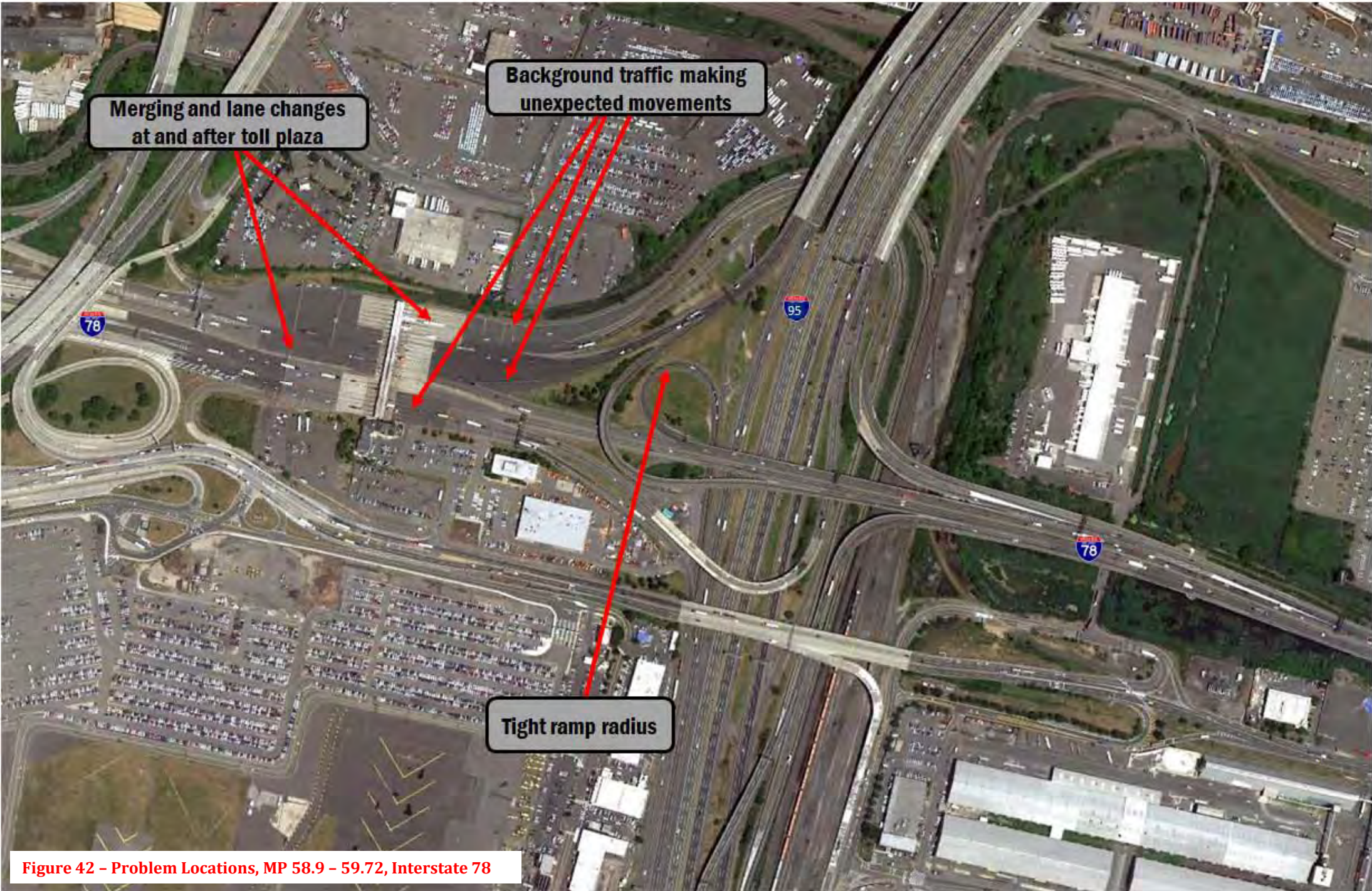


Figure 42 – Problem Locations, MP 58.9 – 59.72, Interstate 78



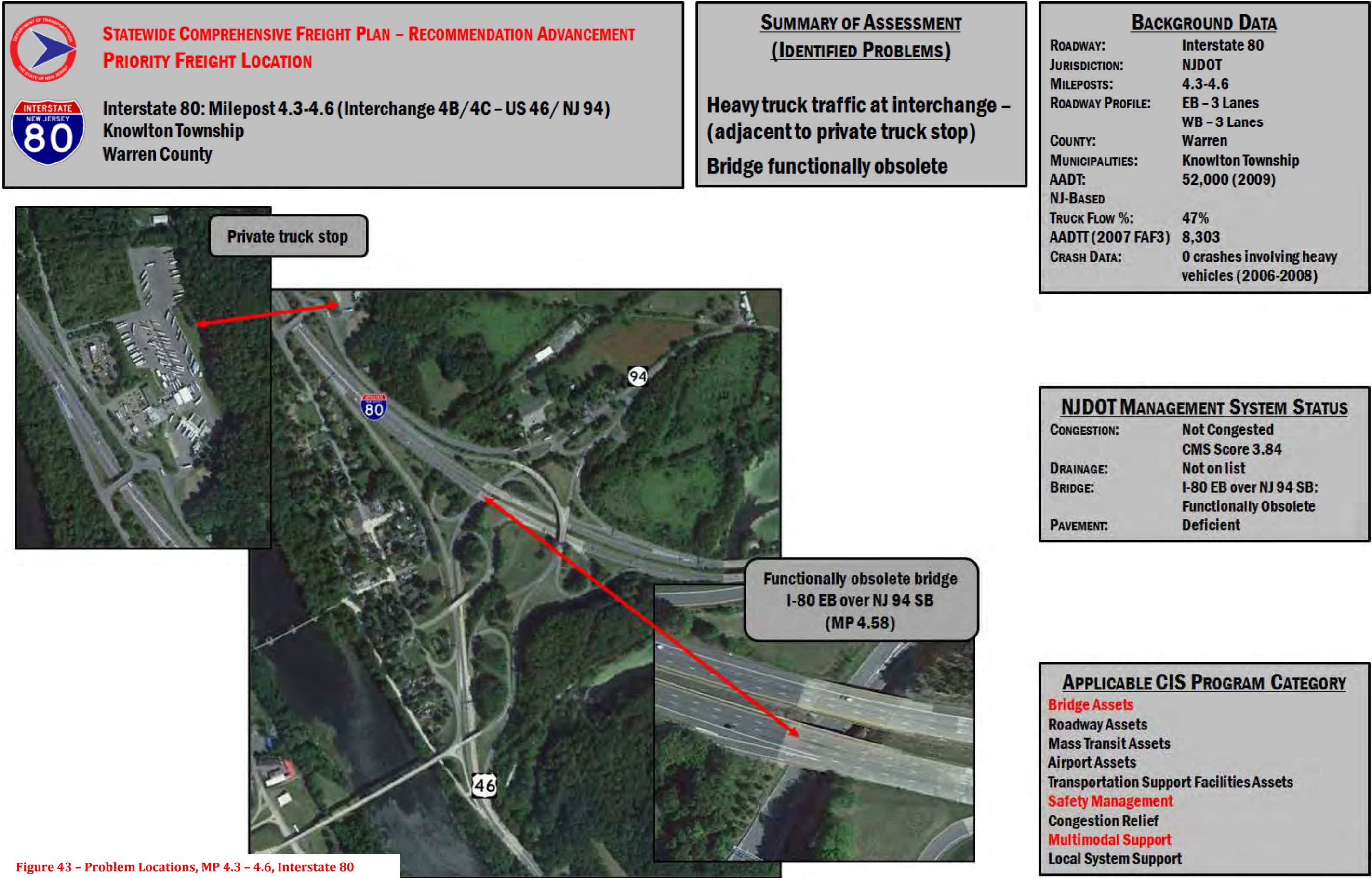


Figure 43 – Problem Locations, MP 4.3 – 4.6, Interstate 80



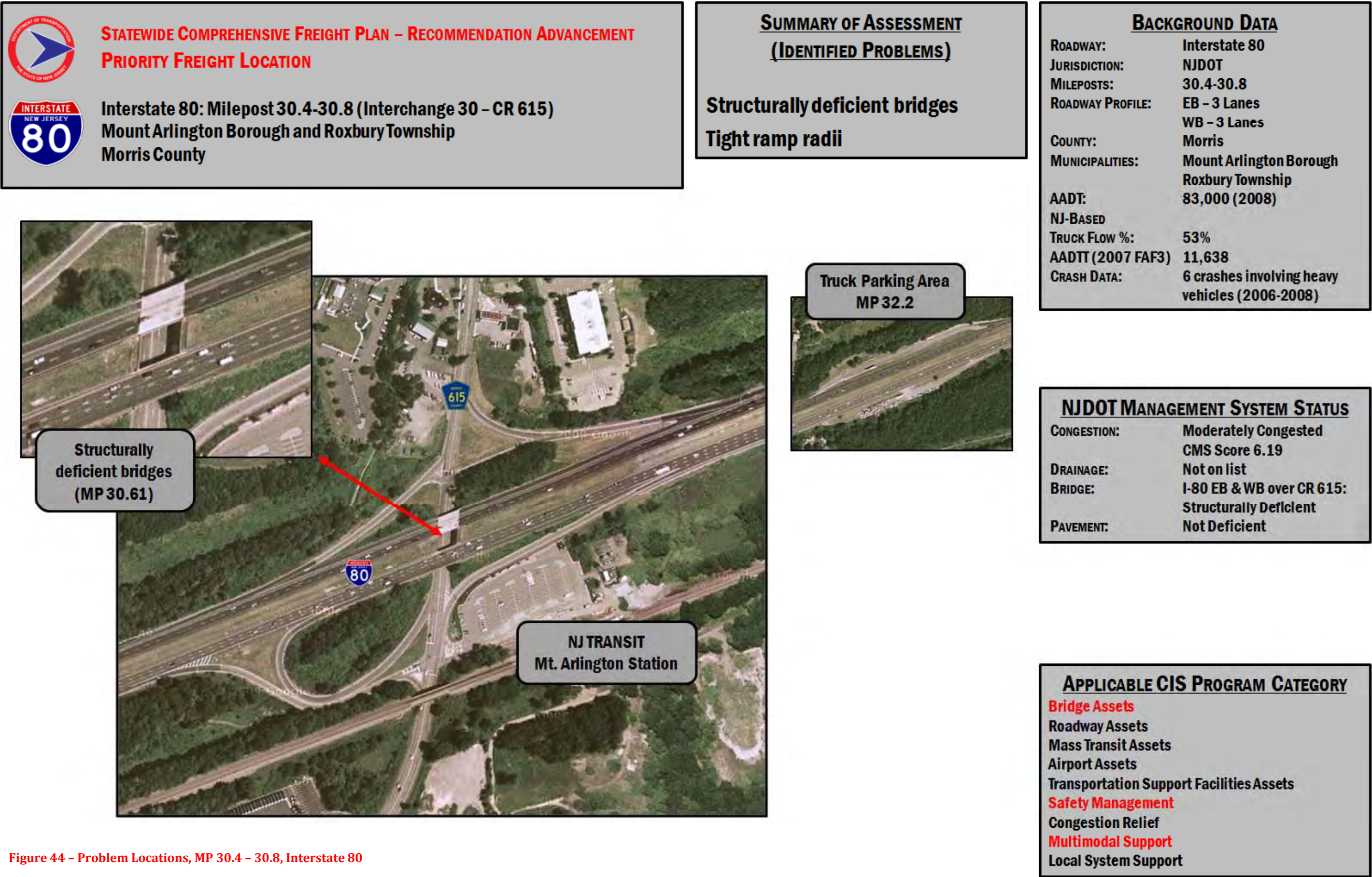


Figure 44 – Problem Locations, MP 30.4 – 30.8, Interstate 80



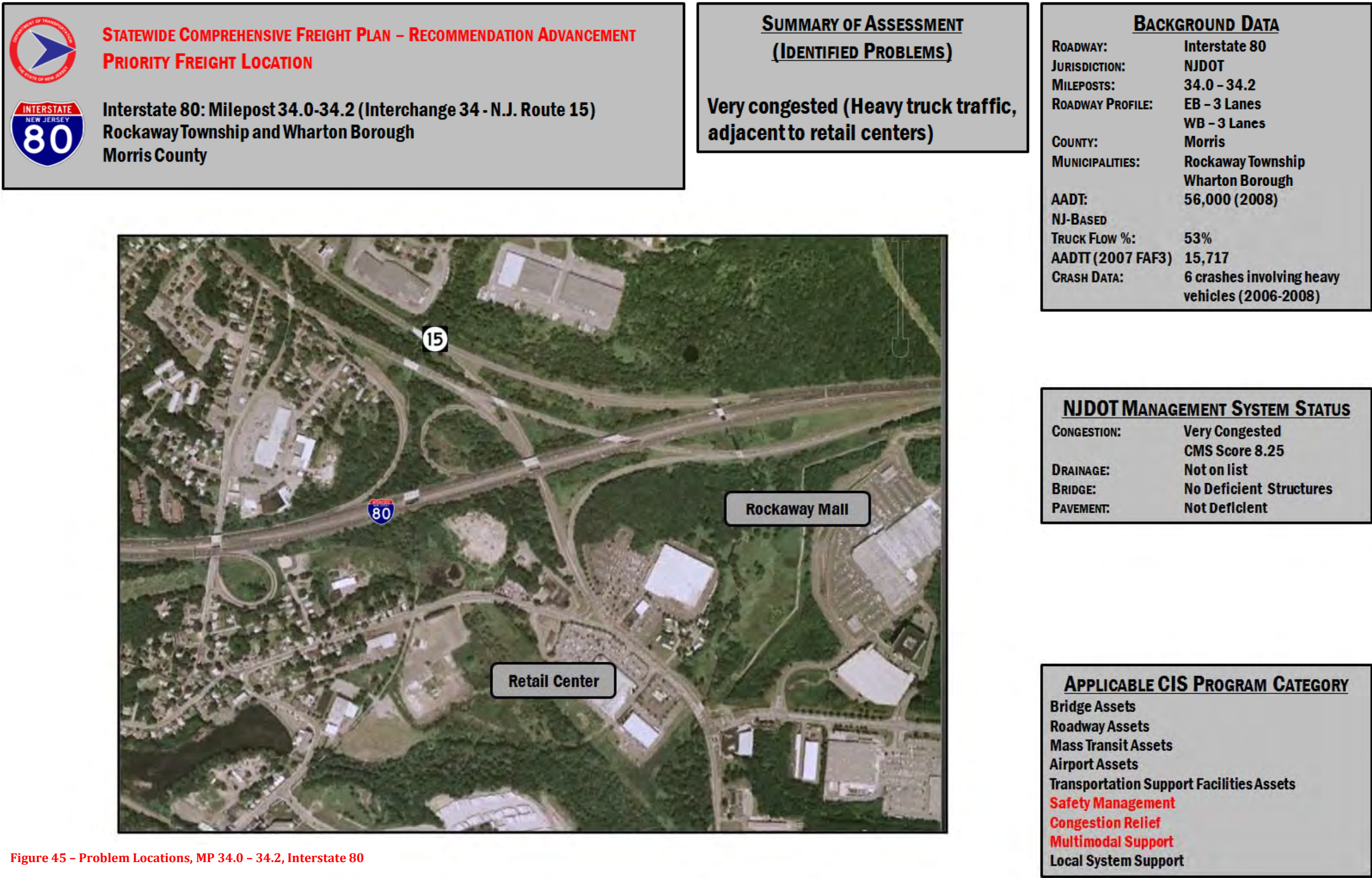


Figure 45 – Problem Locations, MP 34.0 – 34.2, Interstate 80



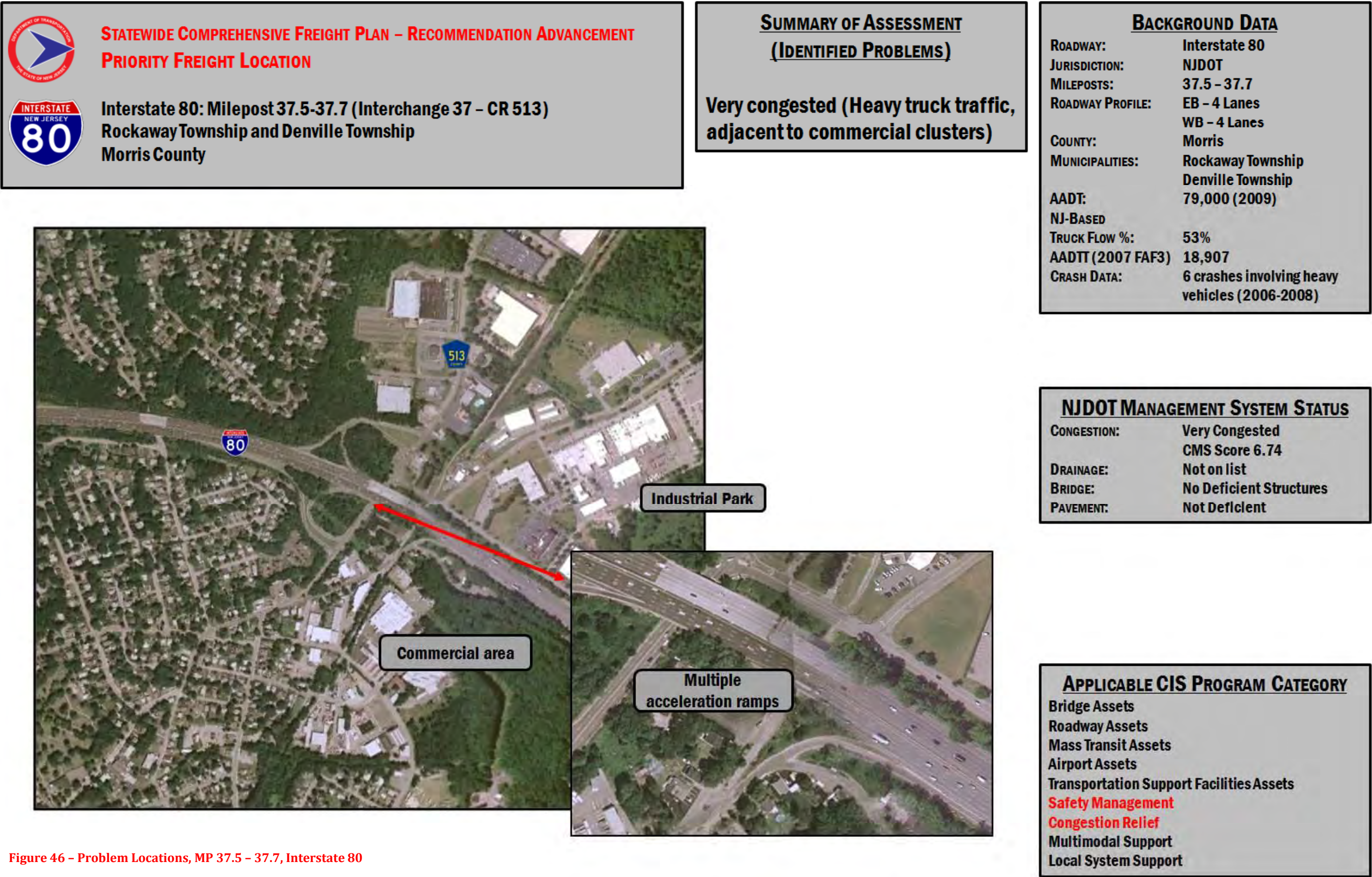


Figure 46 – Problem Locations, MP 37.5 – 37.7, Interstate 80



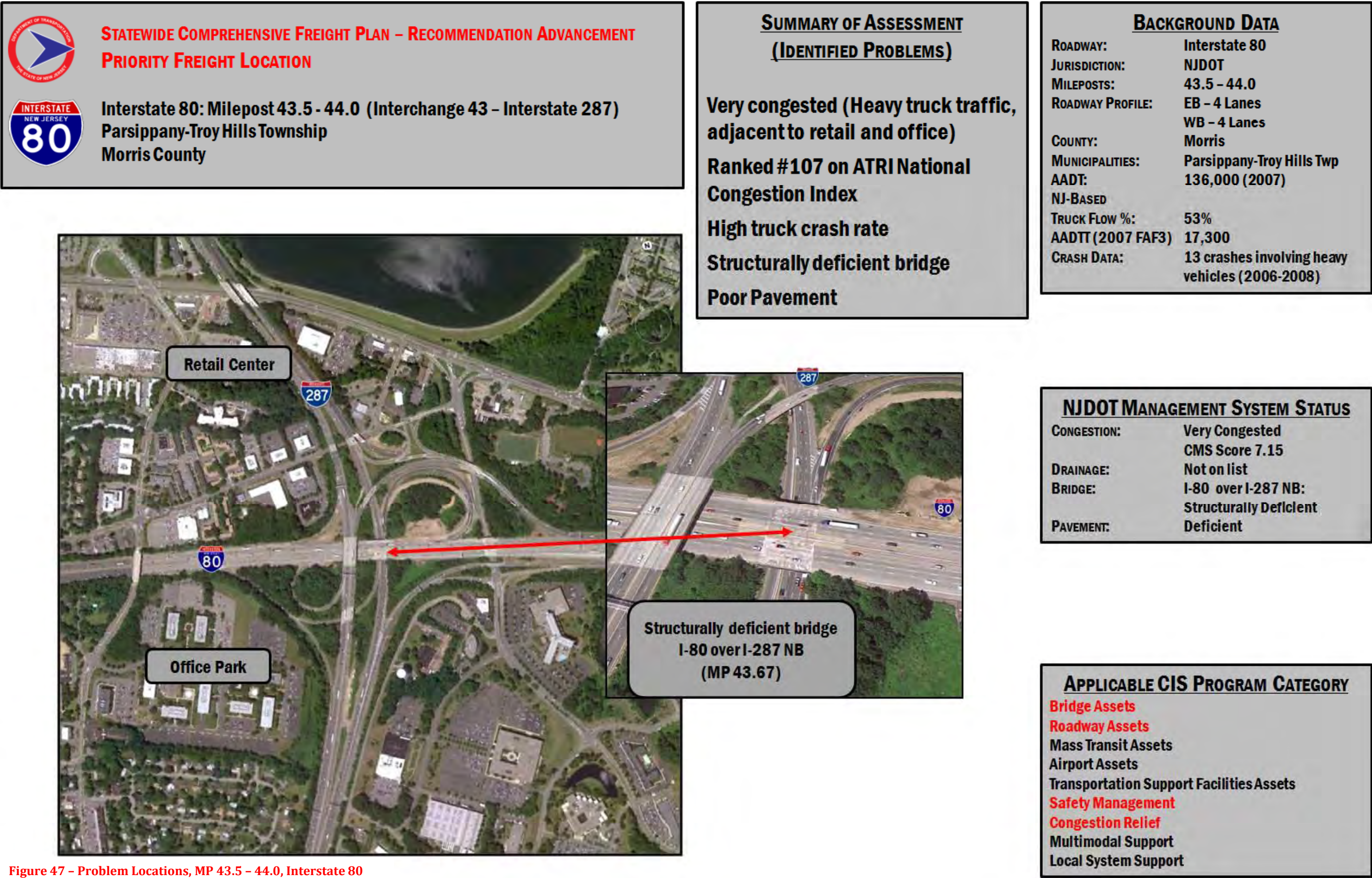


Figure 47 – Problem Locations, MP 43.5 – 44.0, Interstate 80



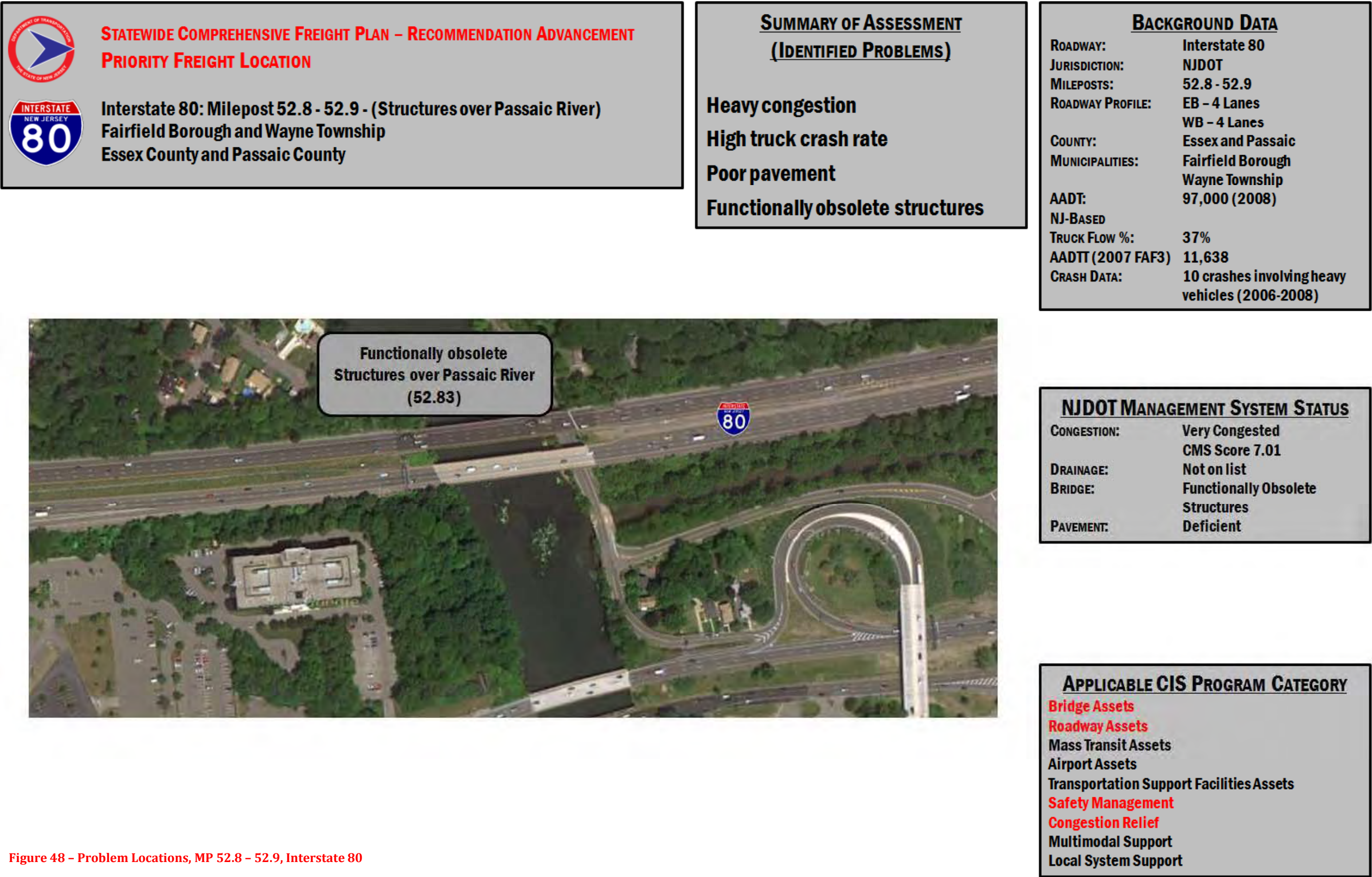


Figure 48 – Problem Locations, MP 52.8 – 52.9, Interstate 80



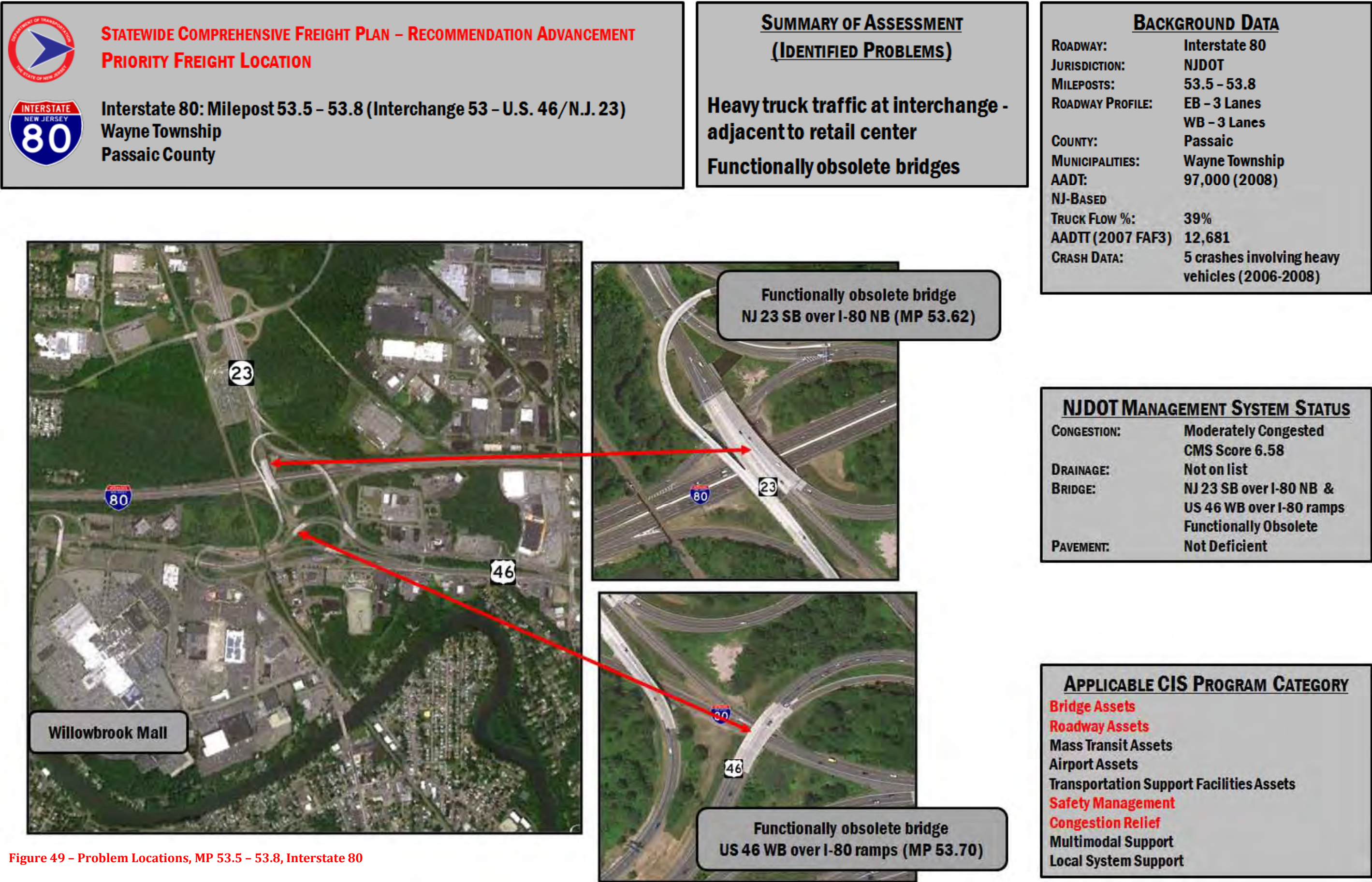


Figure 49 – Problem Locations, MP 53.5 – 53.8, Interstate 80



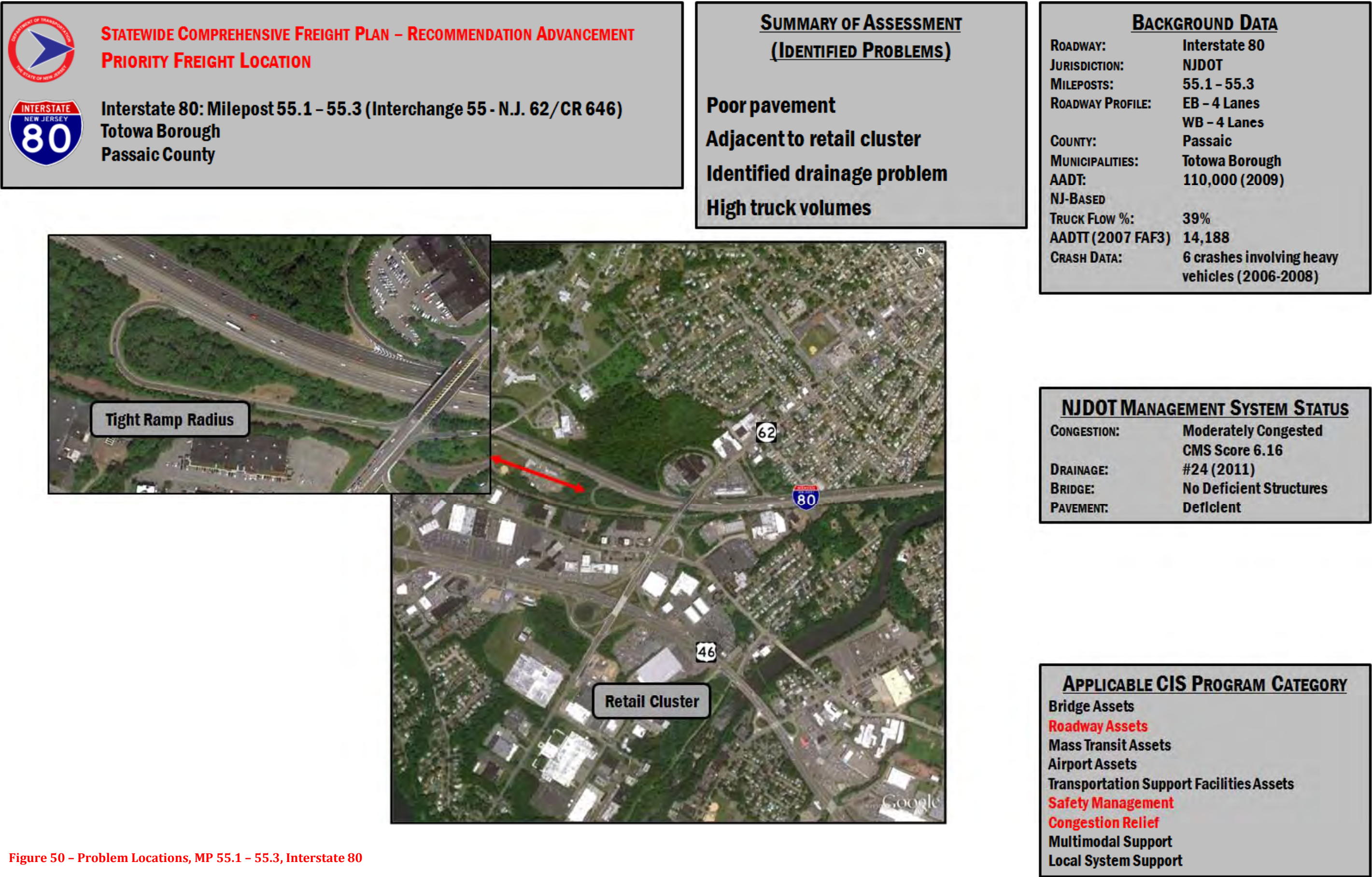


Figure 50 – Problem Locations, MP 55.1 – 55.3, Interstate 80



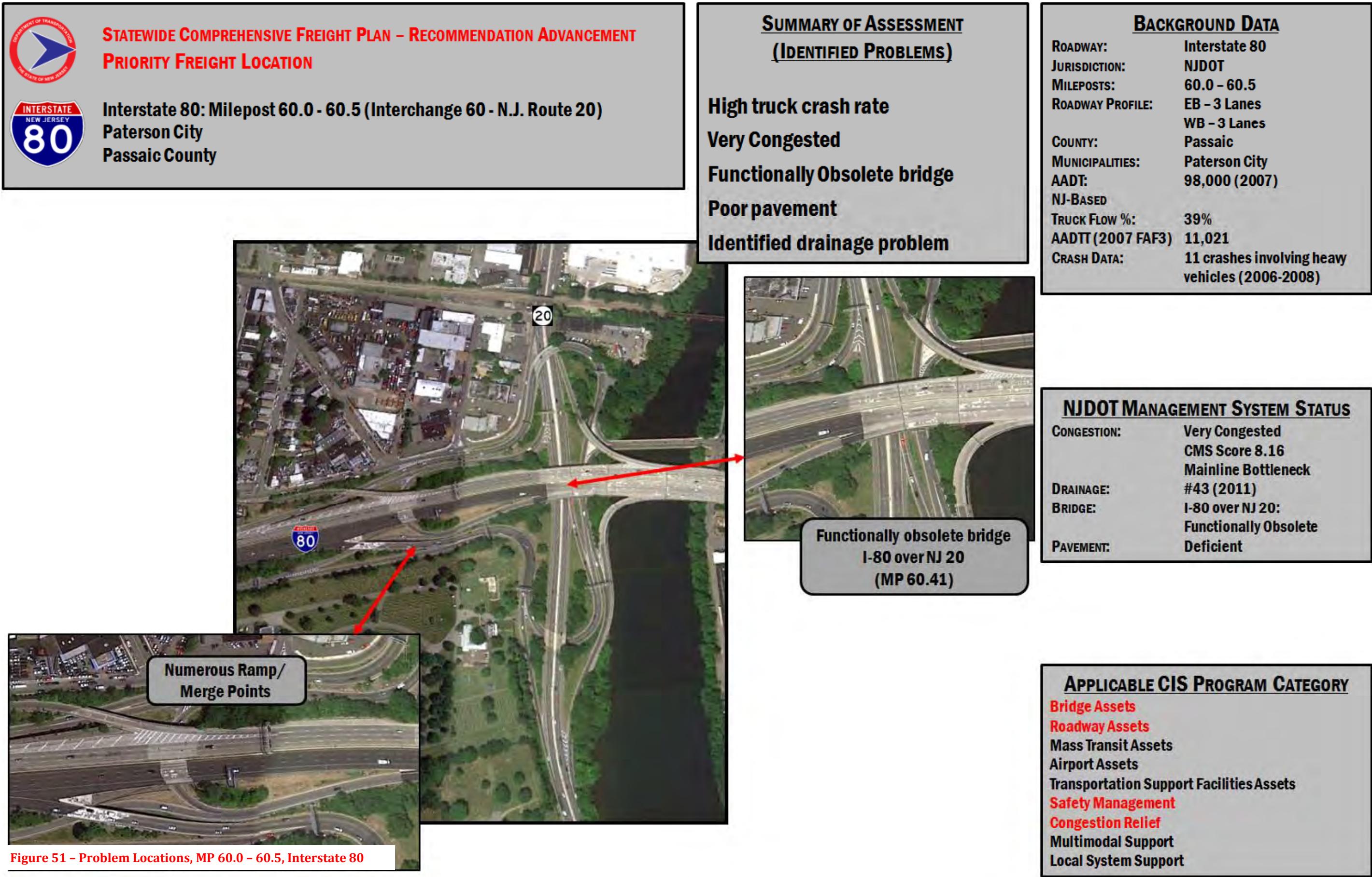


Figure 51 – Problem Locations, MP 60.0 – 60.5, Interstate 80





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



Interstate 80: Milepost 64.9 – 65.5 (Interchange 64/64A - N.J. Route 17)
Hackensack City
Bergen County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

Bridges structurally deficient and structurally obsolete

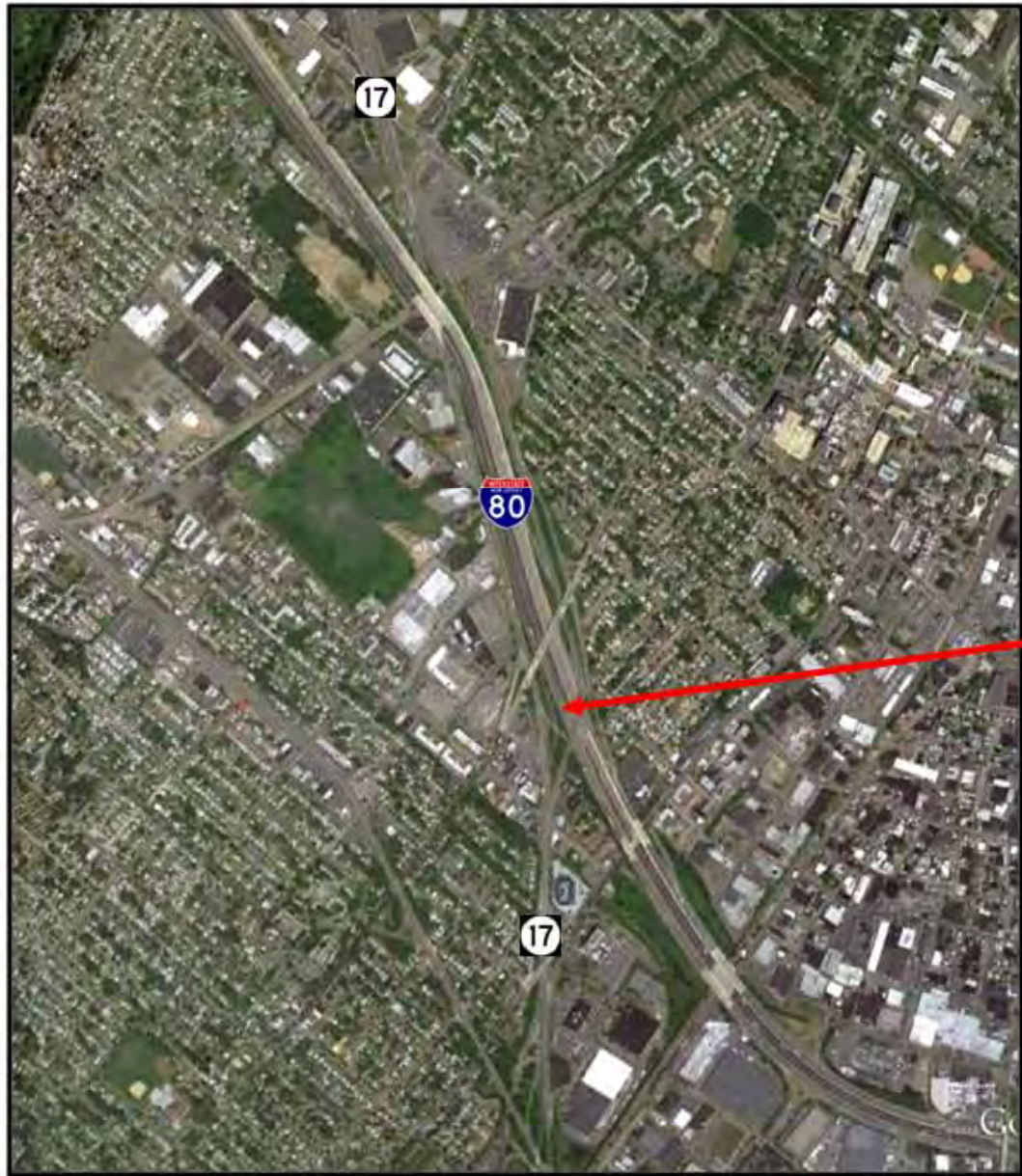
Numerous ramp movements

Interchange of two major freight corridors

Poor pavement

BACKGROUND DATA

ROADWAY:	Interstate 80
JURISDICTION:	NJDOT
MILEPOSTS:	64.9 – 65.5
ROADWAY PROFILE:	EB – 4 Lanes WB – 4 Lanes
COUNTY:	Bergen
MUNICIPALITIES:	Hackensack City
AADT:	98,000 (2008)
NJ-BASED	
TRUCK FLOW %:	32%
AADTT (2007 FAF3)	9,885
CRASH DATA:	7 crashes involving heavy vehicles (2006-2008)





Structurally deficient bridge
NJ 17 over I-80
(MP 65.19)

Functionally obsolete bridge
I-80 off-ramp over on-ramp
(MP 65.19)

NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Moderately Congested CMS Score 5.44
DRAINAGE:	Not on list
BRIDGE:	NJ 17 NJ over I-80: Structurally deficient NJ 17 over I-80: Functionally obsolete
Pavement:	Deficient

APPLICABLE CIS PROGRAM CATEGORY

Bridge Assets

Roadway Assets

Mass Transit Assets

Airport Assets

Transportation Support Facilities Assets

Safety Management

Congestion Relief

Multimodal Support

Local System Support

Figure 52 – Problem Locations, MP 64.9 – 65.5, Interstate 80





NORTH-SOUTH CORRIDOR PROFILE (INTERSTATE 295 AND THE NEW JERSEY TURNPIKE)

Interstate 295 and the NJTPK form the major north-south freight corridor in New Jersey, extending from the Delaware state line in the southwest corner of the state to the George Washington Bridge and New York City in the northeast corner of the state. The NJTPK traverses essentially the entire length of the state and includes 131 miles of roadway, while Interstate 295 runs for 68 miles through the southern and central portions of the state. Within South Jersey (south of Interstate 195), Interstate 295 and the NJTPK essentially parallel each other and, in some places, the roads are only about 200 feet apart. Together, the corridor covers portions of Salem, Gloucester, Camden, Burlington, Mercer, Middlesex, Union, Essex, Hudson, and Bergen Counties.

As pointed out by the trucking executives, the north-south corridor is a key conduit for freight traffic, including key trucking corridors:

- Pennsylvania through New Jersey for distribution east of the Hudson River (New York/New England)
- Pennsylvania into New Jersey for warehousing/cross docking/consolidation then forwarding east of the Hudson to New York/New England.

Accordingly, the north-south corridor serves both as a conduit for *through traffic*, as well as a location where cargo moves through New Jersey warehouses and distribution centers on its way to its destination. Indeed, the north-south corridor is remarkable for the significant amount of such facilities located along its entire length. The NJTPK and Interstate 295 collectively represent one of the largest concentrations of warehousing and distribution space in North America.

Geographic Context/Corridor Description

As shown on Figure 53, the NJTPK and Interstate 295 serve as the main north-south corridor for New Jersey, linking New Jersey to Delaware to the south and New York to the north. The mainline NJTPK runs for about 117 miles between Carney’s Point in Salem County to Fort Lee in Bergen County, carrying four or six lanes until just south of Interchange 8A in Monroe, Middlesex County, where it becomes a dual-dual highway providing both *outer* and *inner* roadways in each direction. Trucks and buses must use the outer roadway (signed for “cars/trucks/buses”), while only cars are permitted to use the inner roadway (signed for “cars only”). The total number of lanes varies between 10 and 14 for this section, which extends north to Newark. Just north of Newark, the road divides into parallel eastern and western spurs. The western alignment provides a closer connection to NJ Routes 3 and 17 and services the Meadowlands Sports Complex while the eastern spur traverses Secaucus and provides a more direct link to the Lincoln Tunnel into New York City. The spurs run for about eight miles before rejoining and transitioning into a dual-dual alignment. This alignment continues for approximately 5 miles to the northern terminus of the NJTPK at U.S. Route 9W in Fort Lee, where it connects with the approach to the George Washington Bridge.

The NJTPK/Interstate 295 north-south freight corridor is a critical link in the regional and national freight system (Figure 54). The NJTPK connects to numerous key highways in New Jersey’s truck network including, Interstates 80, 280, 78, 287, and 195; U.S. Routes 1, 9, 1/9, 1/9T, and 22; and NJ Routes 3 and 440. In addition, a spur of the NJTPK provides a direct connection with the Pennsylvania Turnpike. Within Southern New Jersey, Interstate 295 provides connections to Interstate 676; the Atlantic City Expressway; U.S. Routes 30, 130, 206, and 322; and NJ Route 42. A demographic assessment of the corridor, including an analysis of municipal population and employment densities, is included below.



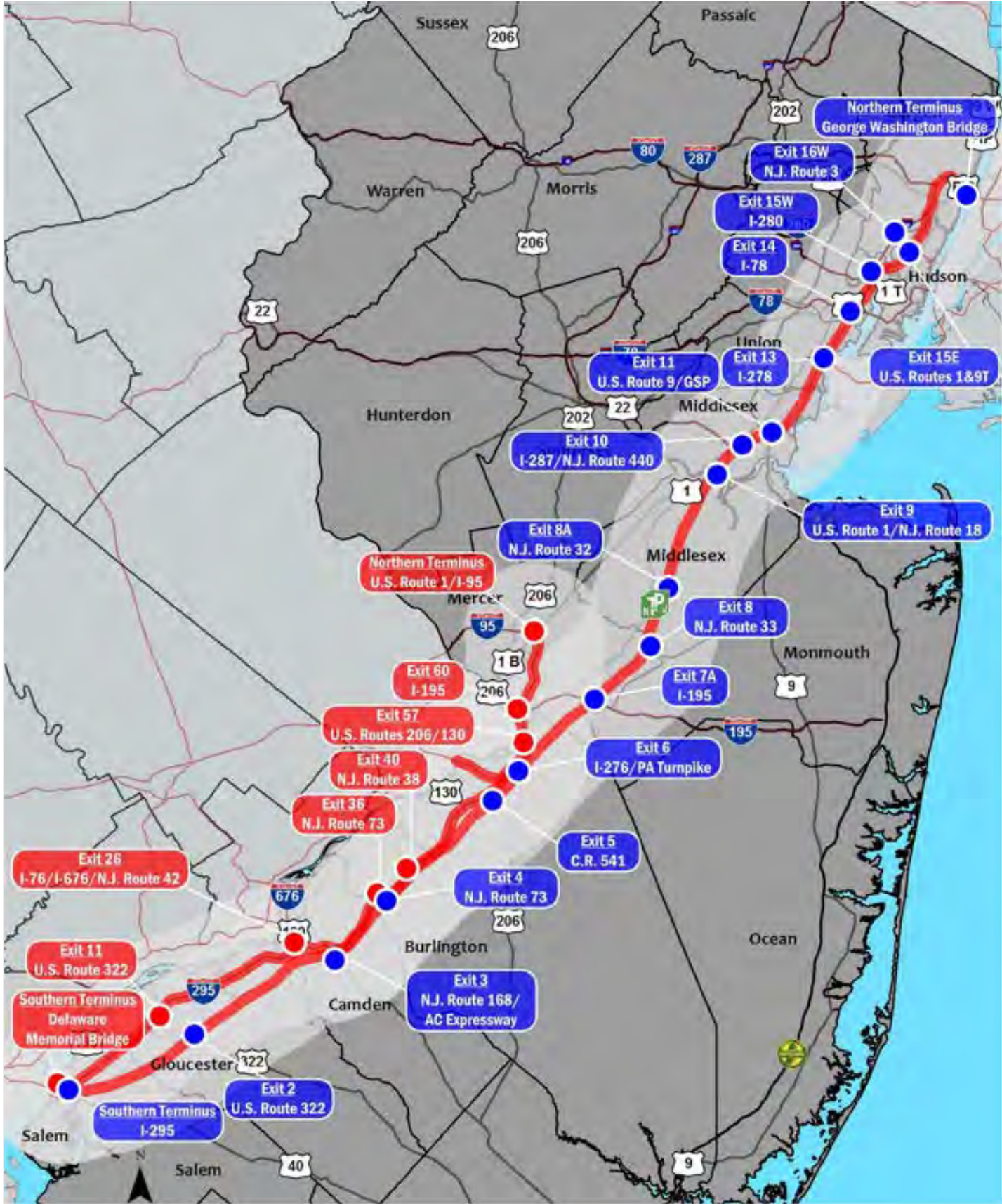


Figure 53—New Jersey's north-south freight corridor

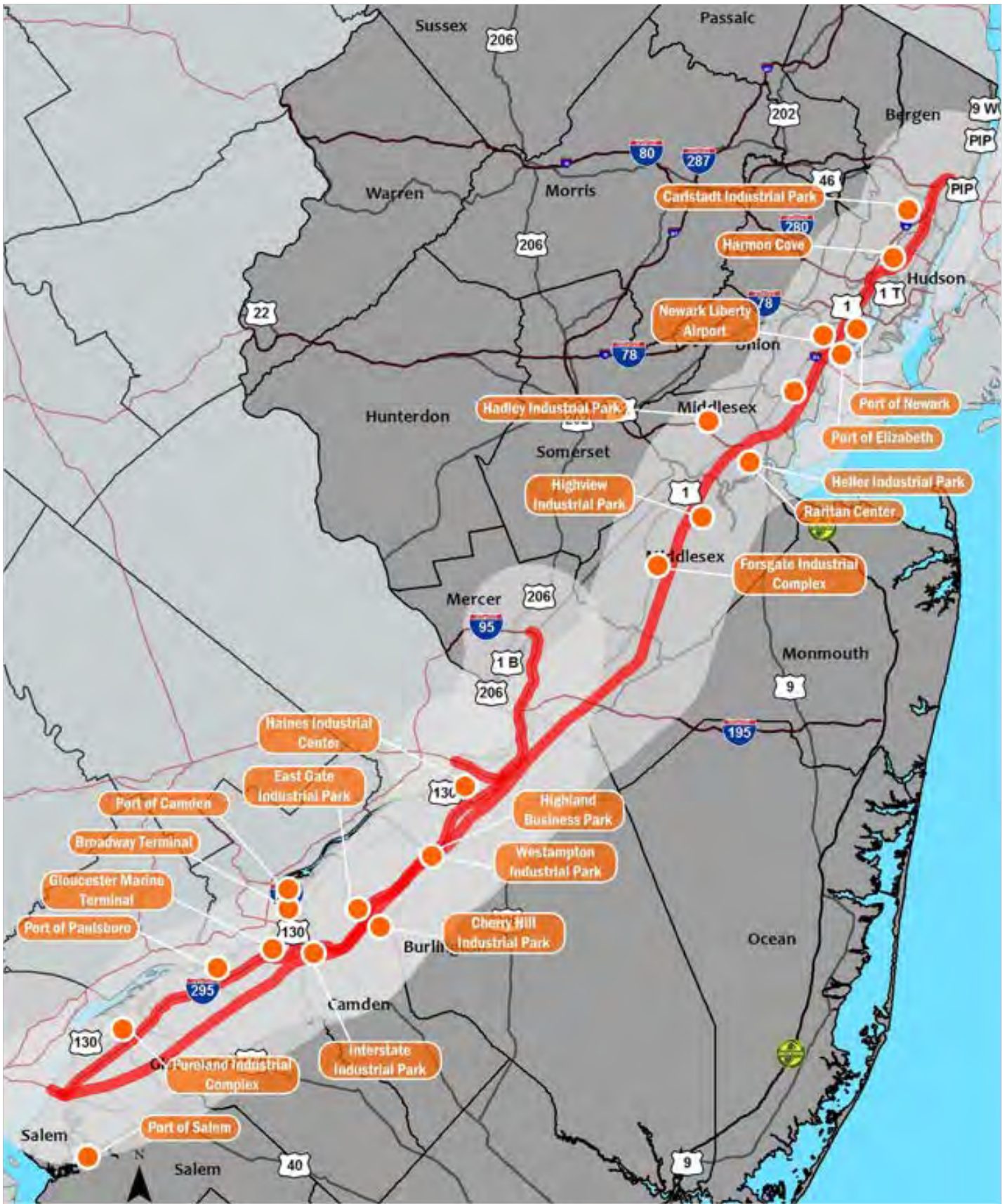


Figure 54—Key freight facilities along New Jersey's north-south freight corridor



Demographic Assessment

A review of general land uses along the north-south freight corridor finds a change in character of land uses moving from south to north, and similarly it shows a difference in land uses surrounding the NJTPK and Interstate 295. Figure 55 is a map detailing general land use patterns.

South of Interstate 195, the land uses surrounding the NJTPK and Interstate 295 are predominantly residential and agricultural. Most residential development is located in areas of Burlington, Camden, and Gloucester extending outward from Camden and along the Delaware River in Burlington County. Less residential development is located to the north in northern Burlington County and to the south in Salem County.

North of Interstate 195, the NJTPK runs through a more urbanized area, which includes a mix of residential, commercial, and industrial uses. Industrial uses are especially evident north of Interchange 9 in Middlesex, Union, Essex, Bergen, and Hudson Counties. At the same time, much of this segment of the NJTPK is bounded by undeveloped and environmentally sensitive land, particularly in the Meadowlands area.

Figure 56 and Figure 57 illustrate the employment and population densities along the corridor. In the portion of the corridor south of Interstate 195, residential density generally parallels the overall pattern of residential development described above. Employment density is more concentrated in the central portion when compared to residential development. Employment density is centered in Camden County and extends outward, particularly along U.S. Route 30. Population and employment densities are greater in the northern area, particularly north of Interchange 9 of the NJTPK.

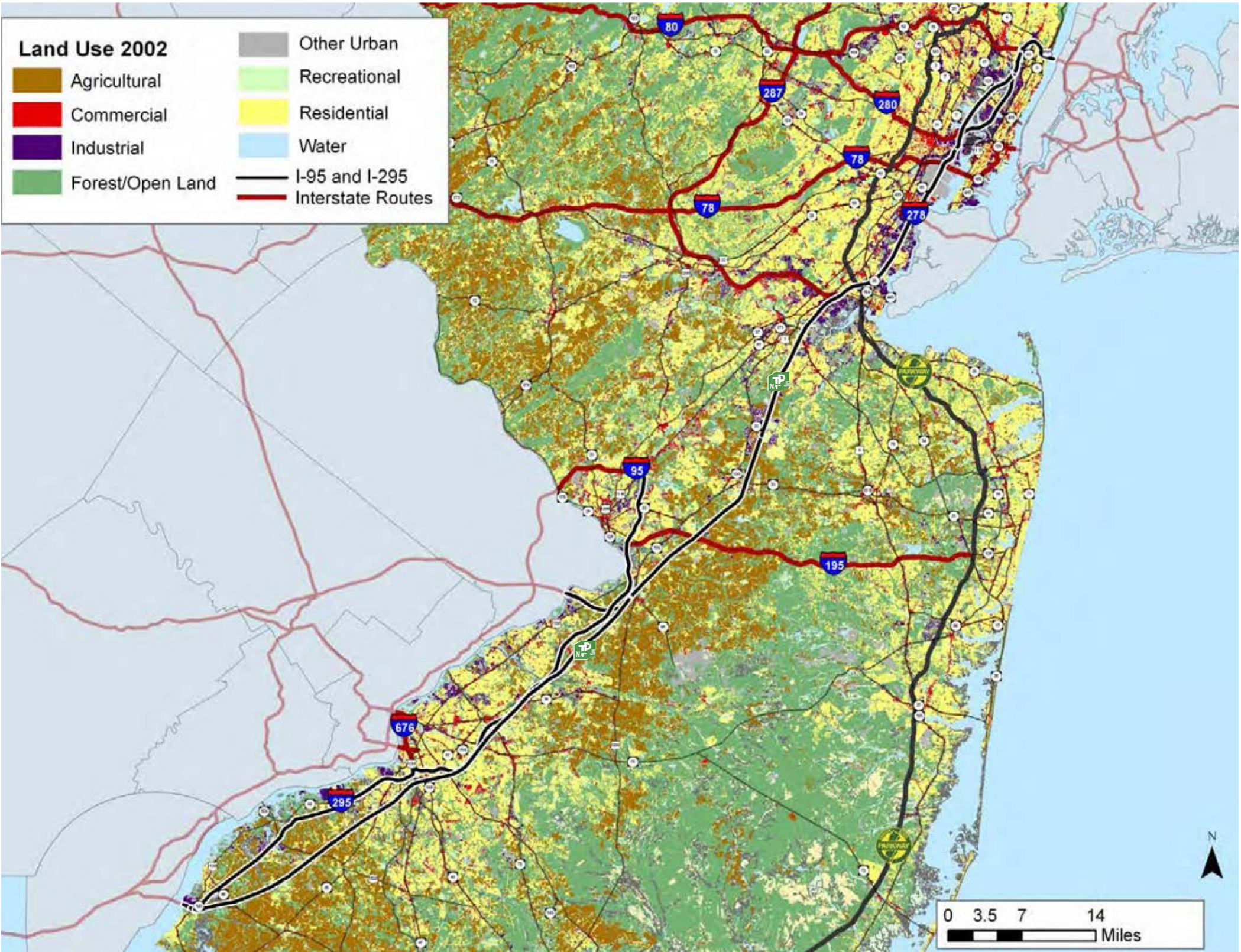


Figure 55—Land uses in Northern New Jersey



Key Freight Facilities

The north-south freight corridor provides an important connection between the major freight facilities in Northern New Jersey, located predominantly in Newark and Elizabeth, to the freight facilities in Southern New Jersey, including ports in Salem, Paulsboro, and Camden, and links these facilities to points to the north, south, and west. These freight facilities service not only freight movements originating in or destined to New Jersey but also serve regional, national, and internationally significant freight movements that play a key role in the global economy. **Error! Reference source not found.** illustrates the major freight facilities located adjacent to or in the vicinity of the north-south freight corridor.

Major ports

The northern portion of the NJTPK serves the major Northern New Jersey freight terminals. The report on the east-west freight corridor provides more details on these facilities, which include the Port of Newark/Elizabeth Marine Terminal, the Global Marine Terminal/Northeast Auto Terminal, and the Newark Liberty Airport and off-airport cargo facilities. To the south, the NJTPK and Interstate 295 corridor serve ports in Southern New Jersey, including Port of Camden, Gloucester Marine Terminal, Port of Salem, and a port facility currently under construction in Paulsboro.

Port of Camden

The Port of Camden, operated by the South Jersey Port Corporation (SJPC), is located approximately 3 miles from Interstate 295 along the Delaware River in Camden. The port comprises three terminals (Beckett Street, Broadway, and Broadway Produce) that provide a total of seven berths. Among the main products handled are wood, steel, cocoa, iron ore, scrap metal, minerals, and fresh fruit, including bananas and pineapples. The port area also includes warehouses and other related businesses.

Gloucester Marine Terminal

This 150-acre facility, owned and operated by Holt Logistics, is located in Gloucester City just south of the Port of Camden. It includes four berths, and its main commodities are fruit, steel, wood, and containers. The terminal has the largest refrigerated capacity of any terminal in the U.S.

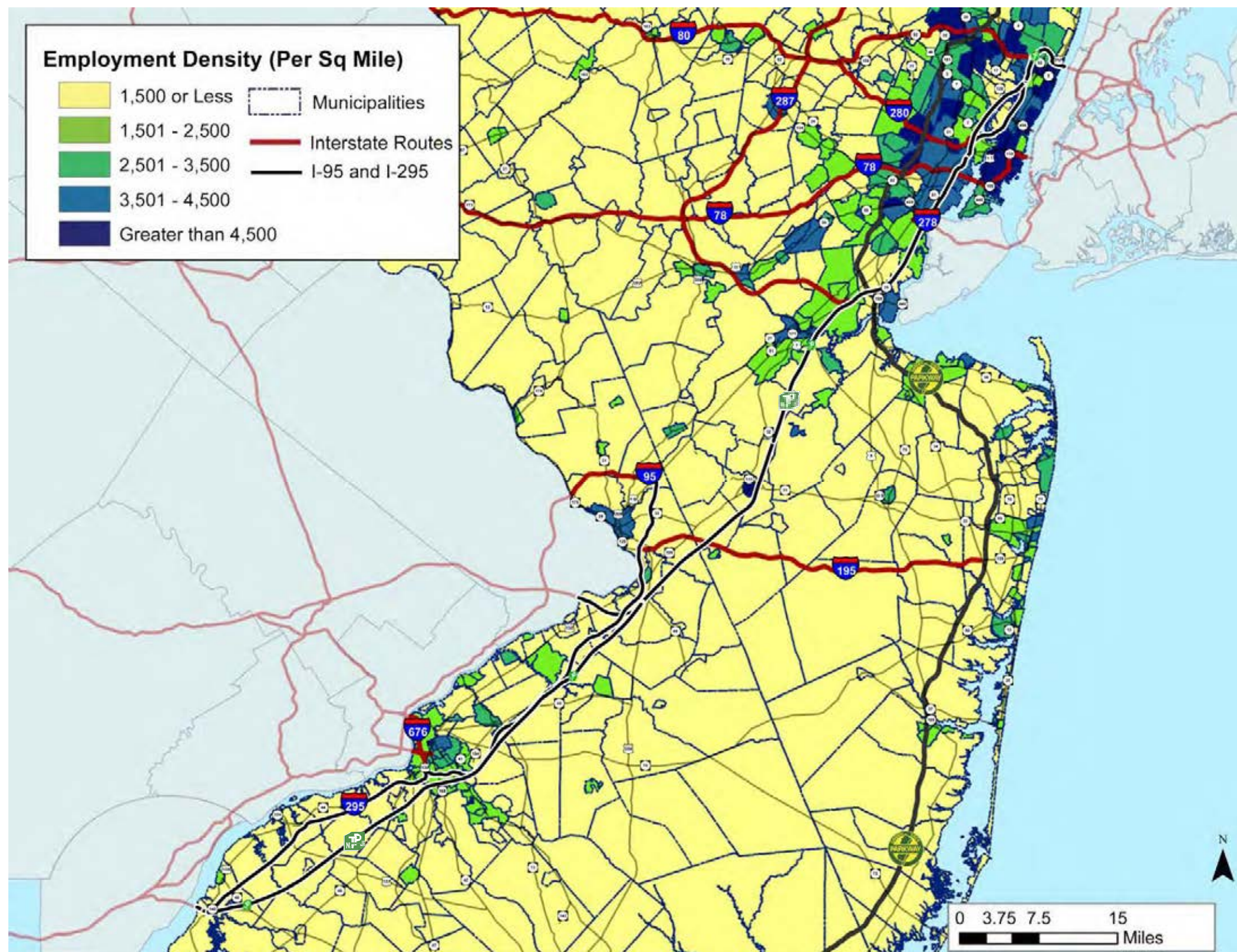


Figure 56—Employment density by municipality, New Jersey

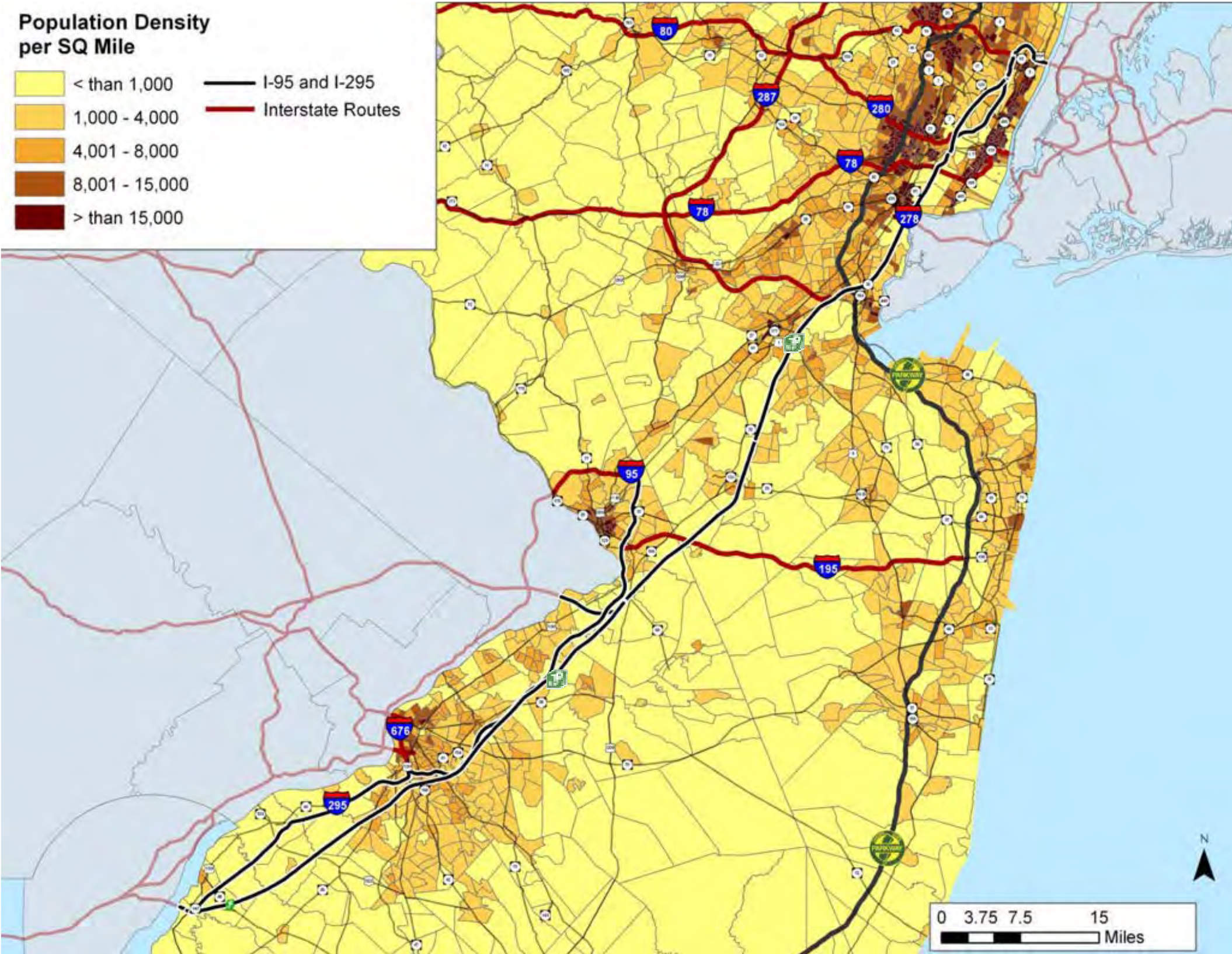


Port of Salem

SJPC also oversees the Port of Salem located along the Salem River, an inlet of Delaware Bay, approximately 9 miles from Interstate 295. The port’s one berth handles apparel, motor vehicles, consumer goods, and food products. It also includes aggregate operations and a small containerized cargo facility that handles traffic between the U.S. and Bermuda. A TIGER Grant was recently awarded to the SJPC and Salem County to invest in rail improvements to the Salem County Shortline railroad, as well as other freight-focused projects in South Jersey.²⁹

Port of Paulsboro

The SJPC has been working on a project to construct the first new marine terminal on the Delaware River in 50 years in Paulsboro, which will have direct roadway connections to Interstate 295. The Port of Paulsboro project, which will be a deep water port that will be built on 190 acres, is currently in the permit phase with both federal and state governments.



²⁹ “Salem County Officials Announce Funding From TIGER III Grant Will Help Improve County Railroad, Oldman’s Trestle,” *Today’s Sunbeam* (Salem County), 14 December 2011, http://www.nj.com/salem/index.ssf/2011/12/salem_county_officials_annouc_2.html



Figure 57—Population density by municipality, New Jersey

Distribution centers

The north-south freight corridor is a unique supply chain corridor that supports New Jersey, the multi-state region, and North American distribution activity. The amount of industrial property in this corridor is among the highest in the U.S., with many facilities exceeding 500,000 square feet. This includes several *big box* buildings greater than 1 million square feet that serve locations throughout North America.

Table 14 provides summary information on the market areas that the NJTPK and Interstate 295 serve. The location of warehouse and distribution centers in the north-south freight corridor is shown on Figure 58. In line with the industrial space statistics for the corridor, participants in the discussion with industrial developers and property owners noted that:

- There is significant vacant space and available properties along the Interstate 295/NJTPK corridors.
- Filling the currently vacant space in the Interchange 8A marketplace will increase truck movements to and from this location. It is unclear whether these movements will represent net new traffic to New Jersey or a redistribution of truck movements as companies relocate from current facilities to the Interchange 8A area.
- Some corporations are reducing their warehouse space and downsizing when renewing or extending leases. For example, Burlington Coat Factory consolidated 1.2 million square feet of facilities into a 600,000-square-foot facility in Burlington County.
- Locations in Pennsylvania can more easily access the Interstate 81 corridor, which has emerged as a competing north-south route to Interstate 95. According to participants, national retailers prefer Interstate 81 because there are no tolls and there is less traffic than Interstate 95 (which has tolls and is regularly congested).

Table 14—Industrial space, availability, new construction, and lease rates in the market areas directly served by the New Jersey Turnpike and Interstate 295, fourth quarter, 2010

Market	Existing Space (square feet)	Available Space (square feet)	Percent Available	Under Construction (square feet)	Asking Lease Rates
Central Bergen	33,913,818	2,950,502	8.7%		\$6.41
Meadowlands	98,262,400	11,889,750	12.1%	71,476	\$6.42
Newark	51,116,653	2,402,483	4.7%		\$5.55
Linden/Elizabeth	46,759,866	6,125,542	13.1%		\$4.66
Brunswicks/Interchange 9	25,083,301	3,386,246	13.5%		\$3.38
Carteret/Avenel	20,276,622	2,838,727	14.0%		\$5.49
Interchange 8A	64,100,735	11,922,737	18.6%		\$3.94
Interstate 287/Interchange 10	99,279,682	10,920,765	11.0%	93,200	\$4.83
Trenton/Interstate 295	24,185,587	4,958,045	20.5%	57,600	\$3.91
Burlington County	37,508,645	5,759,462	15.4%		\$4.73
Camden County	32,792,850	6,284,402	19.2%	23,000	\$4.71
Gloucester County	25,544,301	3,679,948	14.4%		\$4.64
Total	558,824,460	73,118,609	13.1%		

Salem County is not included in the database used but contains at least one industrial park and is considering additional developments.

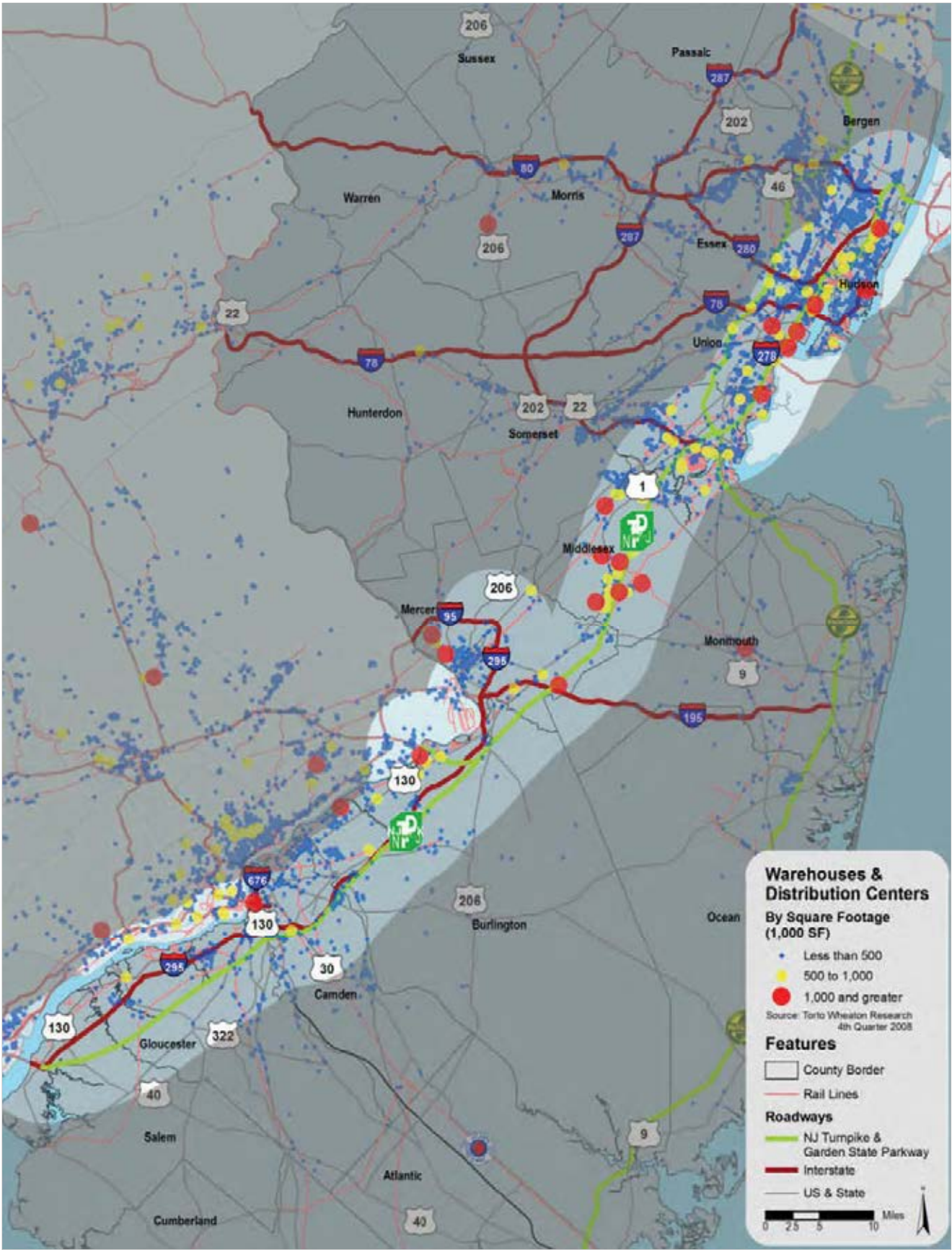


Figure 58—Warehouses and distribution centers along the north-south freight corridor



The following sections highlight some of the major industrial/business areas and sites along the corridors.

Interstate 295/New Jersey Turnpike

In addition to the warehousing and distribution centers in Northern New Jersey, many similar facilities are located in the vicinity of the NJTPK and Interstate 295 within Southern New Jersey:

- Haines Industrial Center, located 1 mile from the NJTPK extension to the Pennsylvania Turnpike (via Interchange 6) includes 4.5 million square feet of warehouse and distribution space.
- The Westampton Industrial Park and Highland Business Park, located adjacent to Interstate 295 (Interchange 45) in Westampton Township combine to provide over 2 million square feet of space.
- Interstate Business Park in Bellmawr has 2.8 million square feet, located in the vicinity of the NJTPK (Interchange 3) and Interstate 295 (Interchanges 26 and 28).
- MidAtlantic Corporate Center in West Deptford has 2.8 million square feet, located near Interstate 295 (Interchange 20).
- Forest Park, also in West Deptford, has 2.4 million square feet of leasable space and is located near Interstate 295/Interchange 19.
- The Pureland Industrial Complex, located in Logan Township adjacent to Interchange 10 of Interstate 295, is the largest distribution center in the eastern U.S., with 16 million square feet of leasable space. The adjacent LogistiCenter at Logan has 3.5 million square feet.
- Gateway Business Park, located in Oldmans Township in the vicinity of Interchange 7 of Interstate 295, has 3.6 million square feet.

New Jersey Turnpike

Numerous industrial parks are located along the NJTPK as it traverses the state. Within Northern New Jersey, the following industrial parks are located off the NJTPK:

- Gotham Industrial Park in Carlstadt, accessible from Interchange 16W, includes 1.2 million square feet of warehouse and distribution space.
- Harmon Cove, served by Interchange 15X in Secaucus, is a major mixed-use development that includes 13 million square feet of warehousing and office space.
- The City of Newark has about 5 million square feet of industrial space, concentrated in the eastern portion of the city near the airport and port.
- Raritan Center, located adjacent to Interchange 10 in Edison, is a large business/industrial park containing over 100 buildings with over 13 million square feet of space.
- Heller Industrial Park, located in Edison south of Raritan Center, has 8 million square feet of space.

- The Interchange 8A area is a major regional center for warehousing and distribution and includes over 64 million square feet of space, including regional distribution facilities for Barnes & Noble, The Home Depot, and Williams Sonoma.
- The Matrix Business Park and the Northeast Business Park are located in the vicinity of Interchange 7A and provide a combined total of nearly 10 million square feet of light industrial and distribution space

Retail Clusters

Figure 59 (NJTPK) and Figure 60 (Interstate 295) illustrate the clustering of retail employers (SIC Major Groups 52-59) that are primary receivers of freight within New Jersey. Retail locations with more than 50 employees

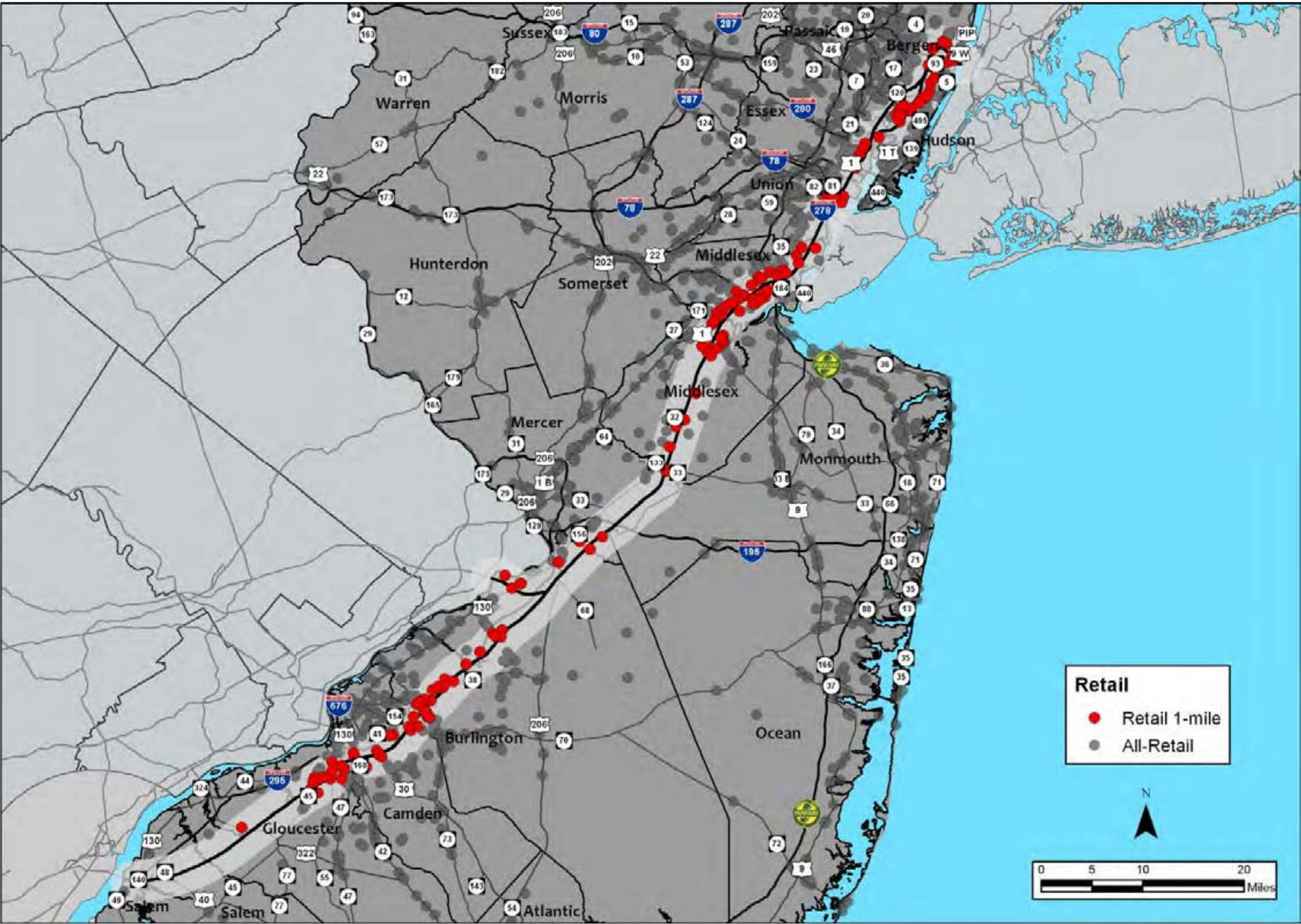


Figure 59—Retail establishments within 1 mile of the New Jersey Turnpike



located within 1 mile of Interstate 295 or the NJTPK are indicated in red, while retail locations with more than 50 employees located beyond 1 mile of Interstate 295 and the NJTPK are shown in grey.

In the northern portion of the corridor, the main retail clusters near the NJTPK include:

- The Harmon Meadow area, located near Interchange 17 in Secaucus, includes the Mill Creek Mall (400,000 square feet of retail) and The Plaza (3.5 million square feet of mixed uses, including hotel, office, restaurant, and retail).
- Interchange 13A in Elizabeth provides direct access to Jersey Gardens, a 1.3-million-square-foot shopping mall and Elizabeth Center, an 850,000-square-foot shopping center (including IKEA).
- Woodbridge Center, a 1.6-million-square-foot mall is located in the vicinity of Interchange 11 via NJ Route 9.
- Menlo Park Mall is a 1.3-million-square-foot mall along U.S. Route 1 approximately 2 miles from Interchange 10 on the NJTPK.
- The N.J. Route 18 corridor in East Brunswick extends south from Interchange 9 for about 5 miles and has approximately 3 million square feet of commercial/retail space, including the Brunswick Square Mall (770,000 square feet) and the Mid State Mall (400,000 square feet).

In the southern portion of the corridor, the main retail clusters near Interstate 295 or the NJTPK include:

- Burlington Center is a 670,000-square-foot mall located in Burlington Township adjacent to Interchange 47 of Interstate 295.
- Centerton Square is a 700,000-square-foot big box and strip shopping center located in Mount Laurel adjacent to Interchange 40 of Interstate 295.
- The Moorestown Mall and East Gate Square are located adjacent to Interstate 295 at Interchange 36 and in the vicinity of NJTPK Interchange 4.
- Deptford Mall is a 1.3-million-square-foot mall located south of Interstate 295 Interchange 26 adjacent to NJ Route 55.

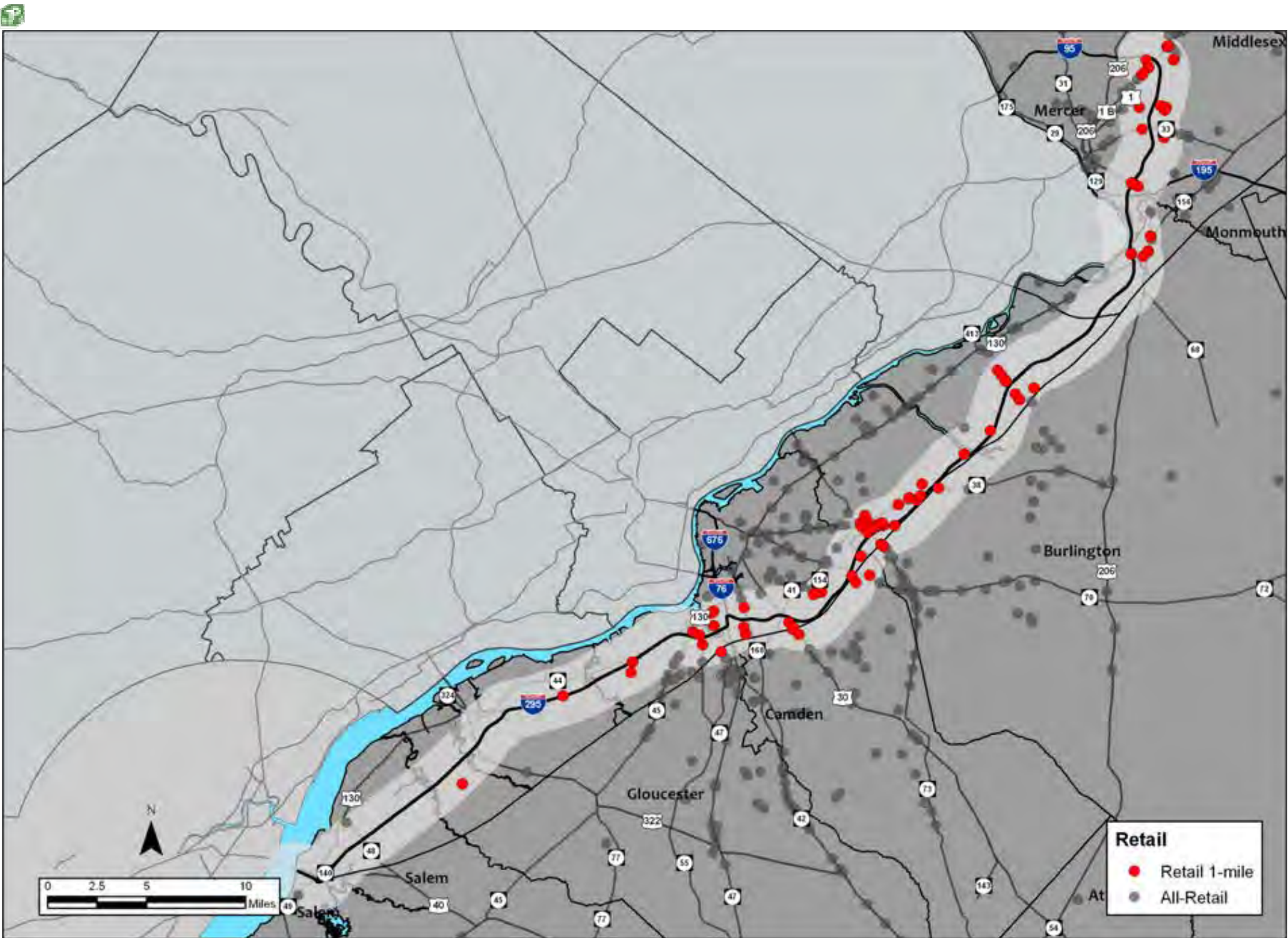


Figure 60—Retail establishments within 1 mile of Interstate 295

Truck Facilities

A discussion of existing truck facilities (Figure 61), including rest areas, weigh stations, and private truck stops, is included in the following sections.



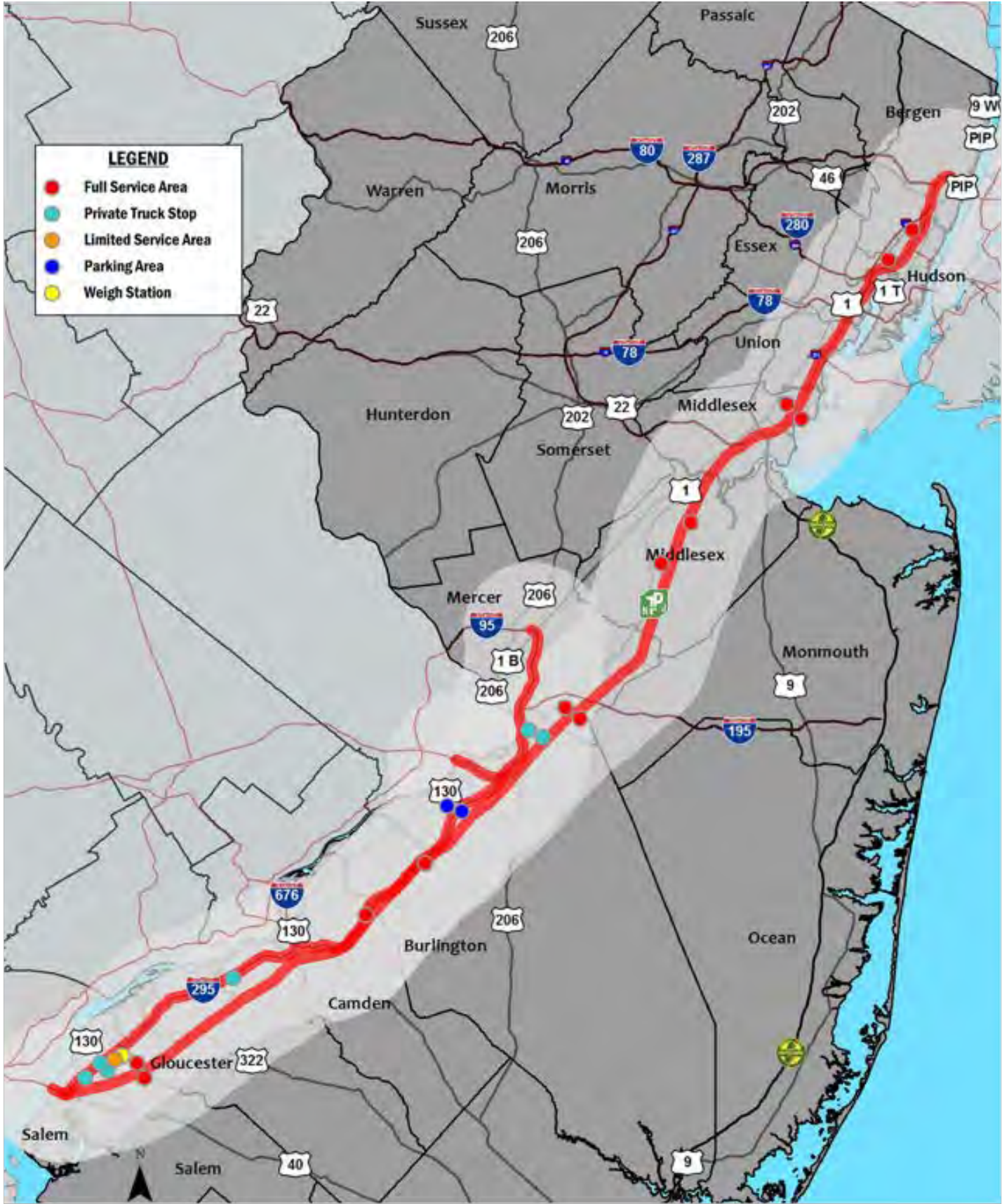


Figure 61—Truck facilities along Interstate 295 and New Jersey Turnpike

Rest areas/parking areas

Two designated parking areas and two rest areas exist on Interstate 295. No designated parking areas or rest areas exist on the NJTPK.

Interstate 295

There are two parking areas available to Interstate 295 located in the northbound and southbound directions at MP 49.5 in Springfield Township, Burlington County.

A rest area was located on Interstate 295 northbound at MP 2.1 in Carneys Point Township in Salem County which included 34 designated truck parking spaces. Participants in the trucking industry discussion noted that the Carneys Point rest area was among six facilities closed by the NJDOT.

Two rest areas are located at the scenic overlook located at MP 58.2 in Hamilton Township, Mercer County, in the northbound and southbound directions. However, the weight limit for vehicles using this facility is 10,000 pounds gross vehicle weight with the exception of emergency vehicles and maintenance and service vehicles. No vehicles are allowed at the scenic overlook between the hours of dusk and dawn. Therefore, this facility is not approved for use by most heavy vehicles carrying freight along Interstate 295.

Weigh stations

There are no weigh stations located on the NJTPK and one weigh station located on Interstate 295. This weigh station is located in Carney's Point Township at MP 3.5 in the northbound direction. The project team was unable to determine hours of operation for this facility.

Private truck stops

Six private truck stops are located in the vicinity of interchanges with the NJTPK and Interstate 295. Three facilities are located in the vicinity of Interchange 2B-C on Interstate 295 in Carney's Point Township:

- Flying J is located adjacent to Interstate 295 southbound and offers 360 parking spaces, showers, food, and weigh scales.
- Pilot Travel Center is located adjacent to Interstate 295 northbound and offers a limited parking area, showers, food, weigh scales, and wireless Internet.
- Carney's Point Valero is located on U.S. Route 40 approximately 1 mile from Interchange 2B on Interstate 295. This facility is also located adjacent to the NJTPK interchange with U.S. Route 40 south of the Interchange 1 toll plaza. This facility includes approximately 12 designated truck parking spots.

Two other large private truck stops are accessible from Interstate 295 in Burlington County via Interchange 56 (northbound) and Interchange 57B (southbound). These facilities are both accessible from NJTPK Interchange 7 as well:

- Love's Travel Stop offers wireless Internet, financial facilities, food, showers and laundry, DAT load monitor, office facilities, shipping facilities, approximately 75 parking spaces, and weigh scales.
- Petro operates a facility that is the largest private truck stop in New Jersey, with nearly 500 parking spaces.

Additional information from the DVRPC noted that the incomplete Interchange 56 limits direct access to these facilities from Interstate 295 southbound, and prevents northbound traffic from easily re-entering the highway.

Finally, a Travel Centers of America facility is located adjacent to interchange 18A along Interstate 295 in East Greenwich Township and provides approximately 175 parking spaces

Full service areas

There are twelve full service areas along the NJTPK. These facilities offer similar services as private truck stops and provide numerous services for the trucking industry, including fuel, food, mechanic/maintenance service, shopping, ATMs, restrooms, and wireless Internet. As these facilities are located directly on the NJTPK, they are more convenient for vehicles making longer journeys that do not wish to exit to the local roadway network. Some service areas are accessible to traffic in both directions while others are only available to traffic in the northbound or southbound direction. Table 15 summarizes the twelve service areas along the NJTPK. All facilities provide similar levels of service with food, fuel, and parking while other facilities (where noted) provide maintenance services. Truck parking at most NJTPK Service Areas is limited to two hours, with no overnight parking allowed.

Anecdotal information from the NJTA noted that the Vince Lombardi Service Area has a dedicated truck services facility and is the only Service Area on the New Jersey Turnpike that allows overnight parking for trucks. Currently, the truck parking facilities at Vince Lombardi are fully utilized and the NJTA is reviewing opportunities to expand truck parking into currently under-utilized commuter parking at the Service Area.

Table 15—Full service areas, New Jersey Turnpike

Milepost	Direction	Name	County	Municipality	Maintenance?	Parking
5.4	SB	Clara Barton	Salem	Oldmans	No	11
5.4	NB	John Fenwick	Salem	Oldmans	No	10
30.2	SB	Walt Whitman	Camden	Cherry Hill	Yes	18
39.4	NB	J. Fennimore Cooper	Burlington	Mount Laurel	No	47
58.7	NB	Woodrow Wilson	Mercer	Hamilton	Yes	44
58.7	SB	Richard Stockton	Mercer	Hamilton	Yes	42
71.7	SB	Molly Pitcher	Middlesex	Cranbury	Yes	79
78.7	NB	Joyce Kilmer	Middlesex	East Brunswick	Yes	5
92.9	NB	Grover Cleveland	Middlesex	Woodbridge	Yes	45
92.9	SB	Thomas Edison	Middlesex	Woodbridge	Yes	47
111.6	SB (eastern spur)	Alexander Hamilton	Hudson	Secaucus	Yes	45
115.5	NB/SB (eastern spur)	Vince Lombardi	Bergen	Ridgefield	Yes	180
116.0	NB/SB (western spur)					

Roadway Summary

Interstate 295 and the NJTPK have varying cross-sections as they traverse New Jersey. A summary table of total lanes, posted speed limits, and right-hand (outside) shoulder widths for each roadway is detailed in Table 16 (Interstate 295) and Table 17 and Table 18 (NJTPK).

Interstate 295

While Interstate 295 is predominantly under the jurisdiction of NJDOT, the Delaware River and Bay Authority (DRBA) maintains control over the roadway on its southern-most section from MP 0.00 to MP 0.95. This segment serves as the approach to the Delaware Memorial Bridge, also under jurisdiction of the DRBA, and provides a crossing of the Delaware River into Delaware. In Southern New Jersey, Interstate 295 runs generally parallel to the NJTPK as a non-tolled local alternative.

Throughout most of its length, Interstate 295 carries three travel lanes in each direction. One of the most congested segments of Interstate 295 is a nearly 1 mile section that carries two lanes in each direction between MP 26.45 and MP 27.40. The posted speed limit in this section is 35 mph and is a bottleneck that is being reviewed for future improvements as part of the Interstate 295/Interstate 76/NJ Route 42 Direct Connection project, currently in the design phase.

There is one toll plaza on Interstate 295 on the roadway segment that is under jurisdiction of the DRBA. It is on the southbound direction for the tolled crossing of the Delaware Memorial Bridge, which has a truck toll varying between \$8.00 and \$24.00 depending on the number of axles.

Table 16—Interstate 295 characteristics

Milepost Start	Milepost End	Length (miles)	Jurisdiction	Total Lanes NB	Shoulder Width NB (feet)	Total Lanes SB	Shoulder Width SB (feet)	Posted Speed Limit
0	0.95	0.95	DRBA	3	12	3	12	50
0.95	14.35	13.40	NJDOT	2	12	2	12	50-65
14.35	26.45	12.10	NJDOT	3	12	3	12	55-65
26.45	27.40	0.95	NJDOT	2	12	2	12	35
27.40	43.10	15.70	NJDOT	3	12	3	12	55-65
43.10	44.80	1.70	NJDOT	4	12	4	12	65
44.80	67.79	22.99	NJDOT	3	12	3	12	65

New Jersey Turnpike

The NJTPK is entirely under the jurisdiction of the NJTA. The characteristics of the NJTPK north-south roadway are shown in Table 17. A large section of the roadway has a posted speed limit of 65 mph with the exception of the southern-most 1.7 miles and northern-most 25 miles, which have a posted speed limit of 55 mph.

South of Interchange 8A (MP 27.40 of NJTPK/Interstate 95), continuing north, each direction of the NJTPK splits into two sections—an express section for cars only and a local section for cars/trucks/buses. As shown in Table 17, the number of cars-only lanes and cars/trucks/buses lanes changes frequently throughout the section of the NJTPK with local and express roadways. The express/local *dual-dual* roadway terminates within the eastern spur section of the NJTPK (MP 61.2- MP 71.8). A description of the western spur section of the NJTPK is included in Table 18.



Table 17—New Jersey Turnpike characteristics

Milepost Start	Milepost End	Length (miles)	Jurisdiction	Total Lanes NB	Shoulder Width NB (feet)	Total Lanes SB	Shoulder Width SB (feet)	Posted Speed Limit
New Jersey Turnpike, Route 700								
0.00	1.70	1.70	NJTA	2	10	2	10	55
1.70	52.17	50.47	NJTA	2-3	10-12	2-3	10-12	65
New Jersey Turnpike, Interstate 95								
6.55*	27.40	20.85	NJTA	3	12	3	12	65
27.40	46.20	18.80	NJTA	5 (2E, 3L)	0-12	6 (3E, 3L)	12	65
46.20	52.90	6.70	NJTA	7 (4E, 3L)	12	6 (3E, 3L)	12	65
52.90	60.40	7.50	NJTA	6/7 (3/4E, 3L)	2-12	6 (3E, 3L)	2-12	55
60.40	61.20	0.80	NJTA	2	0-2	5 (2E, 3L)	12	55
61.20	71.80	10.60	NJTA	4/5	0-12	3/4	12	55
71.80	73.40	1.60	NJTA	5/6 (3E, 2/3L)	5-12	5/6(3E,2/3L)	0-12	55
73.40	74.00	0.60	NJTA	2-3	2-12	2	10-12	55
74.00	76.80	2.80	NJTA	5/6 (3E, 2/3L)	2	5 (3E, 2L)	10-12	55
76.80	77.96	1.16	NJTA	3-7 (2/4E, 1-3L)	0	7 (4E, 3L)	0	55

E = Express (cars only)
L = Local (trucks, buses, cars)
*MP 6.55 represents the merge point of the Pennsylvania Turnpike Extension and the Route 700 section of the NJTPK.

Table 18—New Jersey Turnpike west alignment characteristics

Milepost Start	Milepost End	Length (miles)	Jurisdiction	Total Lanes NB	Shoulder Width NB (feet)	Total Lanes SB	Shoulder Width SB (feet)	Posted Speed Limit
0.00	0.45	0.45	NJTA	2	12	2	12	65
0.45	1.55	1.10	NJTA	3	12	3	12	65
1.55	6.90	5.35	NJTA	4	12	3	12	65
6.90	7.90	1.00	NJTA	3	12	2	12	65
7.90	9.15	1.25	NJTA	3	12	3	12	65
9.15	11.03	1.88	NJTA	3	12	2	12	65

High occupancy vehicle lanes are located between Interchange 11 (MP 45.5) in Woodbridge and Interchange 14 (MP 59.2) in Newark, both directions of the roadway. Due to these occupancy restrictions, trucks are not permitted to drive on these lanes during the posted peak hours (weekdays from 6 to 9 a.m. southbound, 4 to 7 p.m. northbound).

There are eight vehicle class distinctions used to determine toll prices based upon the vehicle’s number of axles. The NJTPK is a closed-system toll road that uses tickets obtained upon entering and surrendered upon interchanging at toll gates. Prices vary depending on the interchange where a vehicle enters and interchanges. A discount for EZ-Pass users during off-peak and peak/weekend times reduces tolls from the standard cash toll.

The NJTPK is currently in the construction phase of its Interchange 6 to 9 Widening Project, stretching from Interchange 6 (MP 48) to just south of Interchange 9 (MP 83), adding 170 lane miles in total. The project improvements include widening the segment from 6 to 12 lanes resulting in a dual-dual facility for “cars only” and “cars/trucks/buses”; adding an additional lane in the existing “cars/trucks/buses” segments, relocating and expanding the Interchange 8 toll plaza, and widening the existing Interchange 7A toll plaza. These improvements, particularly those made to provide the dual-dual facilities, will greatly enhance truck traffic on the NJTPK.

Corridor Performance

The most recent WIM data (2008) was analyzed by NJIT for the NJDOT and published in the *WIM Station Annual Report for 2008*. The data used in the report went through an extensive review process to remove any suspect data (due to observed anomalies in volume, WIM station malfunctions, badly formatted records, missing/extra hourly data, etc.). To avoid skewing analysis of truck traffic volumes, the data were then filtered to analyze only non-holiday weekday traffic. For any missing months of data, NJIT used a forecasting algorithm to estimate those monthly volumes. After that filtering was complete, the data at each WIM station were summarized to illustrate the annual distribution and variation of heavy-truck traffic volume, the diurnal distribution of heavy-truck traffic, and a comparison to heavy-truck traffic in the previous year.

Since no statewide database for heavy-vehicle traffic volumes was available, the project team used the 2007 FHWA FAF3 travel model (Version 3.1.1) to provide estimates of current travel patterns. These volumes serve as an important measure of freight demand along New Jersey’s key corridors and were a significant component of the rating system used to prioritize the identified locations for investment. Available NJDOT WIM data provided snapshots of actual heavy-truck volumes at several locations along the corridors. While this allows a useful comparison of truck volumes at several points on a corridor and the ability to review changes in volume over time, there are not enough WIM stations to paint a complete picture of corridor volumes. For this task, the project team used the FHWA FAF3 model, version 3.11. FAF3 is a national model that uses a variety of data sources to estimate commodity movements by truck. While the model does not consider a detailed understanding of local conditions (as illustrated by the high number of truck trips allocated to the truck-restricted GSP, it provides a reasonable, high-level estimate of AADTT from 2007, the model’s base year, which can indicate trends along a corridor, such as identifying areas of high truck traffic.

Interstate 295—WIM data

The NJDOT operates three WIM stations along Interstate 295. The distribution of these weigh stations provide a general characterization of traffic volumes through the central and southern portions of the corridor. Table 19 illustrates that a larger portion of heavy trucks frequent the southern portion of the roadway compared to the northern portions. The percentage of heavy-truck average daily traffic is between 9 and 10 percent at MP 15.2, while the percentage is below 6 percent at MP 35.7 and MP 39.6.



Table 19—Summary of 2008 WIM station weekday traffic volumes, Interstate 295

WIM Station ➔	15 (MP 15.2)		34 (MP 35.7)		40 (MP 39.6)	
	NB	SB	NB	SB	NB	SB
2008 ADT	31,123	30,106	61,358	61,219	53,307	52,858
Heavy truck ADT	2,781	2,954	3,319	3,358	2,926	2,742
Heavy truck percentage	8.9%	9.8%	5.4%	5.5%	5.5%	5.2%

Source: NJDOT 2008 WIM station raw data, weekday volumes

ADT = average daily traffic
Heavy truck = FHWA classification 8 through 13

Traffic volume doubles from MP 15.2 to MP 35.7 and then decreases slightly at MP 39.6. This northern segment of high volume is in Burlington County with interchanges connecting to NJ Routes 73 and 38. This segment contains a large number of retail clusters, high employment density, and high population density but has a lower heavy-truck percentage than the other WIM locations due to the high overall traffic volume.

There is a 19-percent increase in truck volume traveling north from Interchange 15 to Interchange 34 and a 12-percent decrease traveling south from Interchange 34 to Interchange 15. This is due to the many industrial parks between Interchanges 15 and 34. This truck activity pattern greatly differs from the 12-percent decrease in northbound truck traffic from Interchange 34 to Interchange 40 and 22-percent increase in southbound truck traffic from Interchange 40 to Interchange 34. This indicates high truck activity at Interchange 36 (NJ Route 73), the location of two major retail clusters.

The *WIM Station Annual Report for 2008* also provides information on daily profiles of heavy-truck traffic during the fourth quarter of 2008. On Interstate 295, northbound and southbound traffic data is available at MPs 15.2, 35.7, and 39.6. The peak period for heavy-truck traffic is between 9 a.m. and 2 p.m. in both the northbound and southbound directions at all three locations. This is likely due to truck drivers trying to avoid peak commuter congestion in the morning and evening peak hours. Heavy-truck volume is lowest generally between 9 p.m. and 1 a.m. in both the northbound and southbound directions.

The northbound direction sees a secondary peak between 4 a.m. and 7 a.m. at all three MP locations, likely due to long-haul trucks aiming to reach Northern/Central New Jersey’s industrial parks and retail centers as they open for deliveries or to avoid peak hour morning congestion in Northern/Central New Jersey where employment and population density are very high.

Weekday raw WIM data from 2001 through 2008 was reviewed to determine truck percentage trends along Interstate 295. However, this data had many gaps; most notably the station at MP 15.2 did not have data before the year 2008.

WIM data at MP 35.7 shows an increase in heavy-truck volumes between 2002 and 2006 before a significant drop through 2008. At MP 39.6, heavy volumes peaked in 2002 before showing a continuous decline between 2002 and 2008.

These trends are similar to patterns seen in other corridors and are indicative of the overall slowing economy as well as the increase in fuel costs, particularly that of diesel fuel.

Interstate 295—FAF3 data

Based on the FAF3 model and illustrated on Figure 62, the AADTT on Interstate 295 is highest on the Delaware Memorial Bridge (approximately 10,000 trucks), the main gateway into and out of Southern New Jersey. AADTT on Interstate 295 is also high around the Camden area where there are connections to major routes such as Interstate 76, U.S. Routes 30 and 130, and NJ Route 168. Daily truck volumes in the greater Camden area are approximately 8,700 to 9,700 trucks. The remainder of Interstate 295 generally sees 4,500 to 6,300 trucks each day.

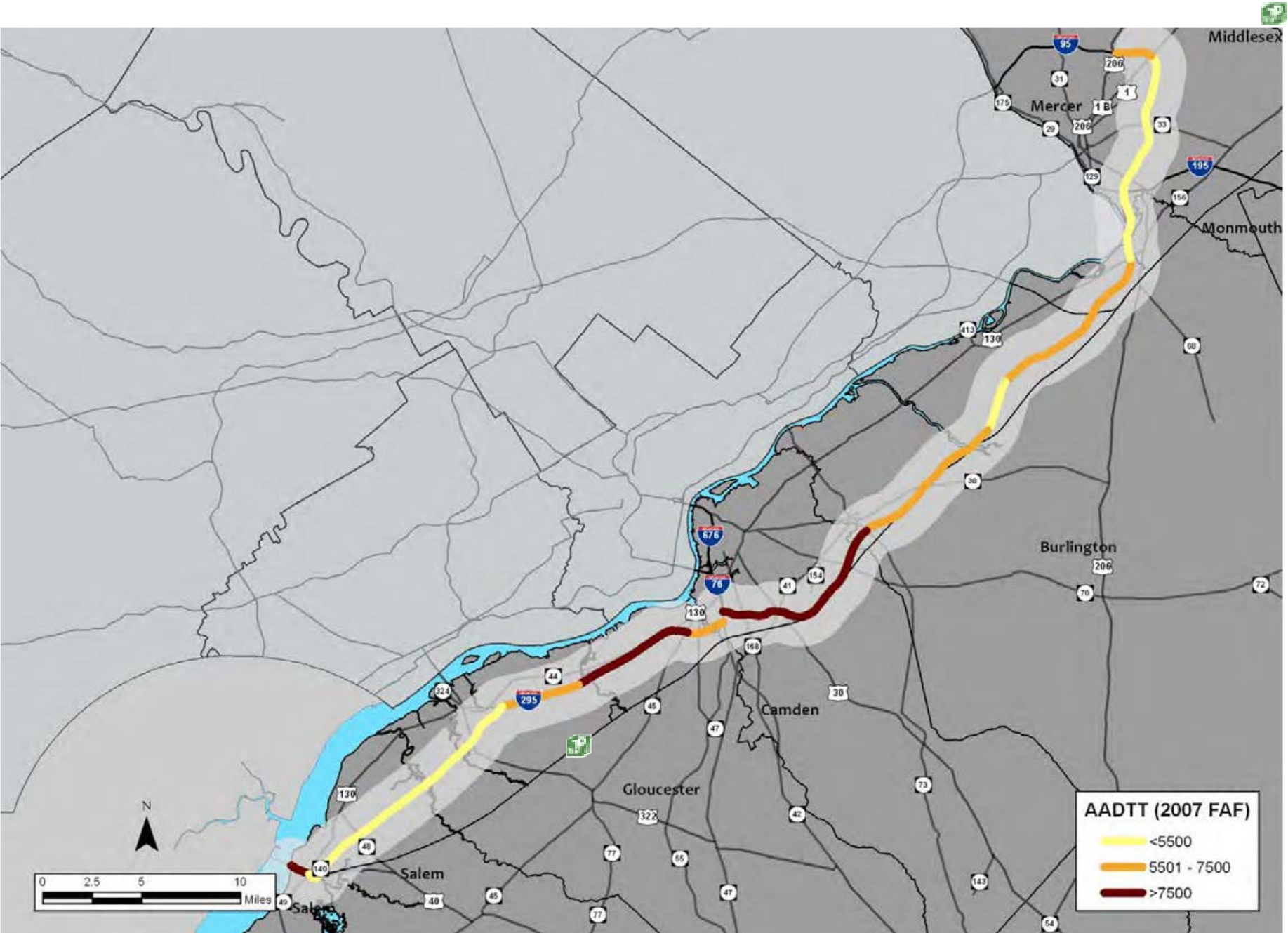


Figure 62—FAF3 truck volumes. Interstate 295



New Jersey Turnpike—WIM data

The NJTA operates one WIM station along the NJTPK in the northbound direction at MP 0.8. No WIM data is available for southbound traffic on the NJTPK. 2008 data from this location is shown in Table 20.

Table 20—Summary of 2008 WIM station weekday traffic volumes, New Jersey Turnpike

WIM Station →	1 (MP 0.8)	
Direction →	NB	SB
2008 ADT	17,380	N/A
Heavy truck ADT	2,879	N/A
Heavy truck percentage	16.57%	N/A

Source: NJDOT 2008 WIM station raw data, weekday volumes

ADT = average daily traffic

Heavy truck = FHWA classification 8 through 13

The *WIM Station Annual Report for 2008* does not provide daily profiles of heavy-truck traffic during the fourth quarter of 2008. Since 2008 was the only year that had WIM values available for MP 0.8, comparisons of heavy-truck volumes cannot be made to past years.

New Jersey Turnpike—FAF3 data

Based on the FAF3 model and illustrated on Figure 63, truck volumes on the NJTPK generally increase from south to north. Volumes are approximately 5,500 to 7,700 trucks per day through Southern New Jersey, increasing to 12,300 at the interchange with the extension to the Pennsylvania Turnpike and 20,500 near the interchange of NJ Route 18 in Middlesex County. AADTT remains high through most of Northern New Jersey at approximately 15,700 to 19,700 trucks. Volumes are balanced evenly between the NJTPK main line and the western spur. While FAF3 model volumes drop to approximately 8,100 trucks between the western spur and Interstate 80 interchange, AADTT quickly rises approaching the northern terminus. Peak AADTT on the NJTPK is approximately 22,700 trucks on the approach to the George Washington Bridge.

FAF3 data summary

Interstate 295 and the NJTPK run parallel to each other through Southern New Jersey. The volume patterns in this area are slightly different, indicating the slightly different uses of the two roadways. AADTT on the NJTPK generally increases steadily from approximately 5,500 trucks near the southern terminus to approximately 12,300 trucks near the junction with the NJTPK Extension in Northern Burlington County, indicative of its greater use for long-haul shipments. On Interstate 295, volumes are highest in the vicinity of Camden, which has several port facilities and connections to other major routes. This pattern suggests Interstate 295 is used more widely for local or short-haul shipments.

The AADTT on the NJTPK/Interstate 95 increases significantly moving north. Through Northern New Jersey, the NJTPK/Interstate 95 generally has an AADTT of 15,700 to 19,700 trucks, with a peak of nearly 22,700 trucks on the approach to the George Washington Bridge.

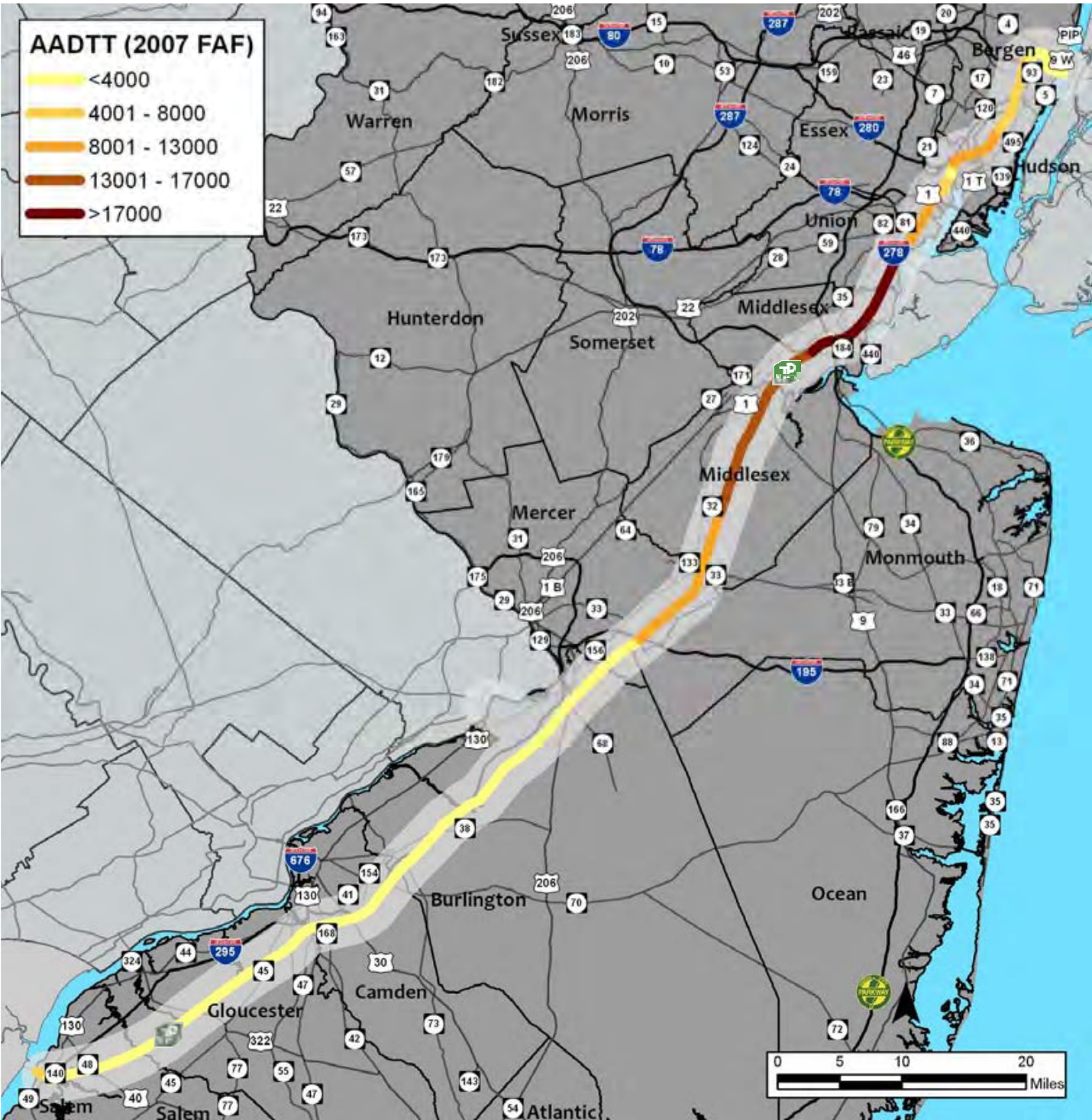


Figure 63—FAF3 truck volumes, New Jersey Turnpike



Goods Movement

Heavy-truck tonnage flows by origin-destination

Figure 64 and Figure 65 show the composition of heavy-truck tonnage by origin-destination pattern moving along Interstate 295 and the NJTPK. The figures show the share of tonnage for a given route and county by:

- Inbound share (terminating in New Jersey)
- Outbound share (originating in New Jersey)
- Internal share (originating and terminating in New Jersey)
- Through share (neither originating nor terminating in New Jersey)

Through traffic is a major generator of truck tonnage on both Interstate 295 and the NJTPK. By examining through-state tonnage on Interstate 295 and the NJTPK, the amount of truck tonnage related to supporting the state’s economy versus the economies of other states can be determined. The origin-destination flows for through-truck tonnage vary substantially by county.

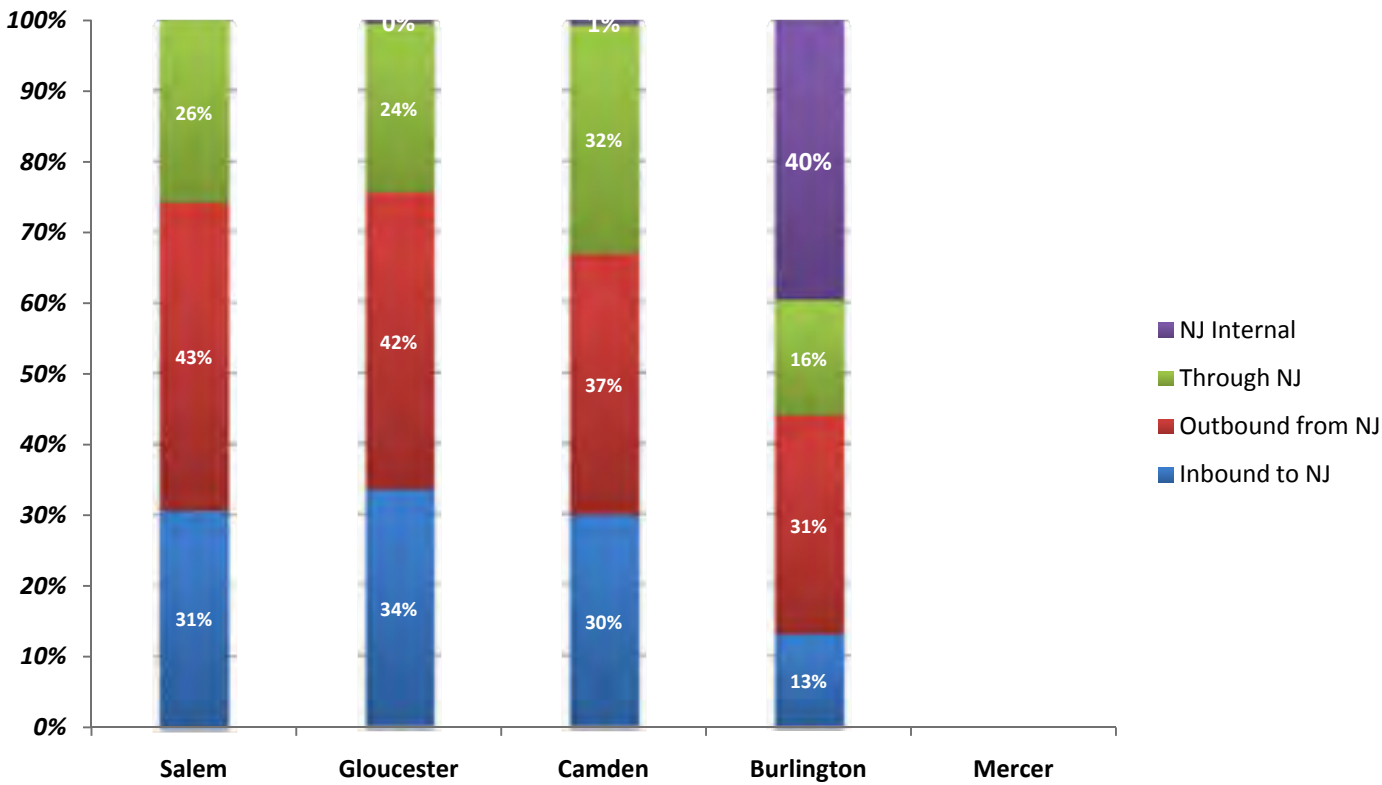


Figure 64—Origin-destination shares considering through-state traffic, Interstate 295

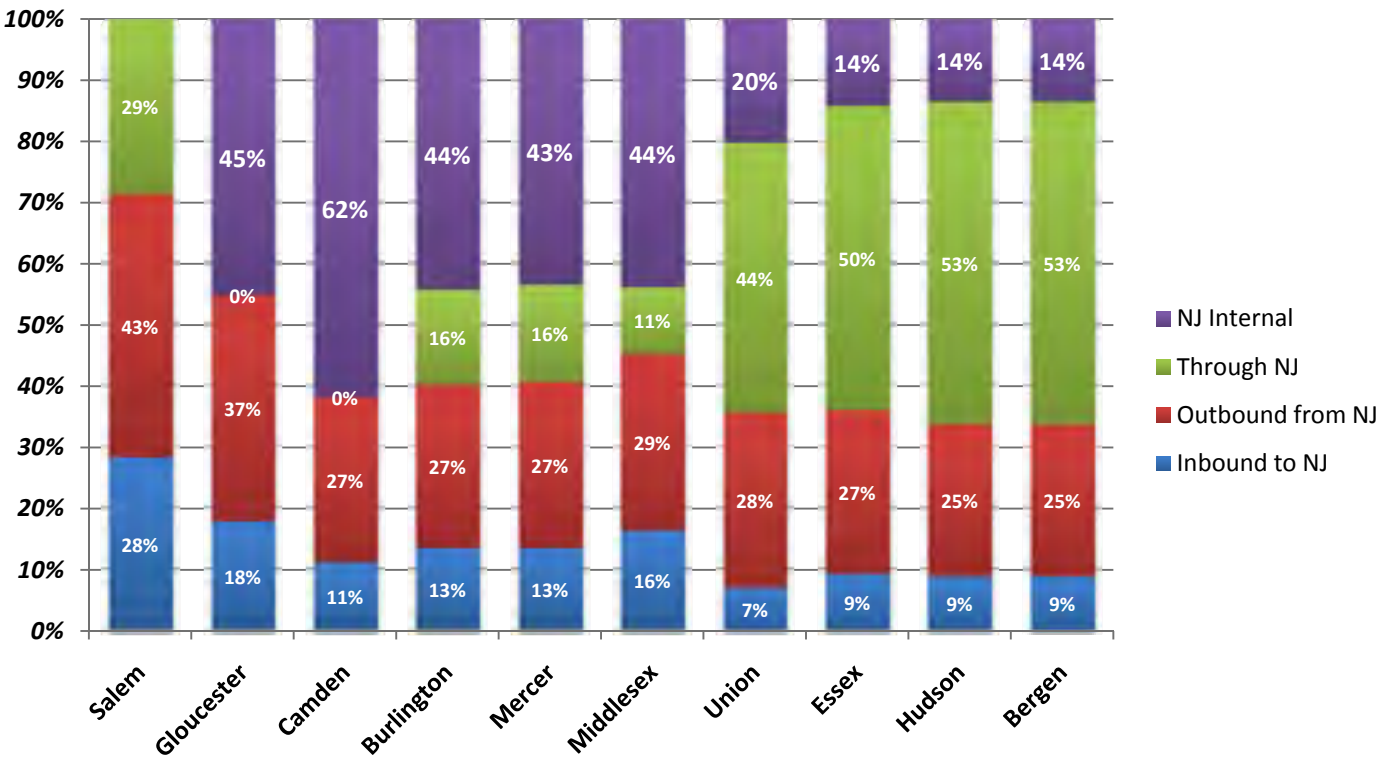


Figure 65—Origin-destination shares considering through-state traffic, New Jersey Turnpike

Interstate 295

Interstate 295 data shows significant amounts of through-state tonnage appearing in Gloucester and Camden at levels equal to Salem and higher than Burlington. This is probably a reflection of the FAF3 assignment process, which allocated through-state tonnage in these counties to Interstate 295 rather than the NJTPK. Interestingly, internal flows make up a significant share of Interstate 295 traffic in Burlington County traffic but a very small share of Salem, Gloucester, and Camden County traffic, which is counter-intuitive. Because Interstate 295 is not tolled, it would be expected to handle a higher share of local traffic than the NJTPK, but the FAF3 assignment process is not sensitive to tolling and this effect is not observed.

New Jersey Turnpike

The NJTPK presents a very different picture. What is most striking is the large percentage of through-state activity for counties in North Jersey—Union, Essex, Hudson, and Bergen—where through-state traffic is roughly half the total heavy-truck tonnage. For Central New Jersey counties, the through-state percentage drops to 11 to 16 percent, and internal tonnage is the dominant type of move. For Camden and Gloucester counties, there is essentially no through-state traffic reported; this confirms the idea that the FAF3 assignment process preferentially assigns through moves in those counties to Interstate 295. In reality, through numbers for Camden and Gloucester should be similar to Burlington, although possibly lower due to (a) higher levels of local traffic and (b) the Pennsylvania Turnpike connection increasing the through-state traffic share in Burlington.



Combined facility through Southern New Jersey

Because the NJTPK and Interstate 295 are parallel routes in close proximity to each other, the FAF3 assignment process—or any national network assignment process—risks missing the finer details of activity. Compounding this is that the FAF3 assignment process does not differentiate between tolled and non-tolled facilities. This means the tendency for toll avoidance is likely being under-represented. To provide an additional perspective on the combined operation of both facilities, it is useful to combine the data and treat the two routes as a single facility, spanning Salem, Gloucester, Camden, Burlington, and Mercer Counties.

Evaluating Interstate 295 and the NJTPK as a single facility, some of the discrepancies noted above in Camden and Gloucester Counties are mitigated, providing a clearer overview of flows through the region. Through-state heavy-truck traffic tends to be low relative to that seen on the NJTPK in Northern New Jersey. Through-state flows are generally 12 to 16 percent, with the exception of Salem County where 27 percent of interstate truck traffic is traveling through New Jersey. In the southern counties of Salem and Gloucester, outbound traffic from New Jersey is the predominant share at approximately 40 percent. In Camden, Burlington, and Mercer Counties, the largest share of heavy-truck traffic, approximately 43 percent, is traveling within New Jersey. The combined heavy-truck flows on Interstate 295 and the NJTPK are illustrated on Figure 66.

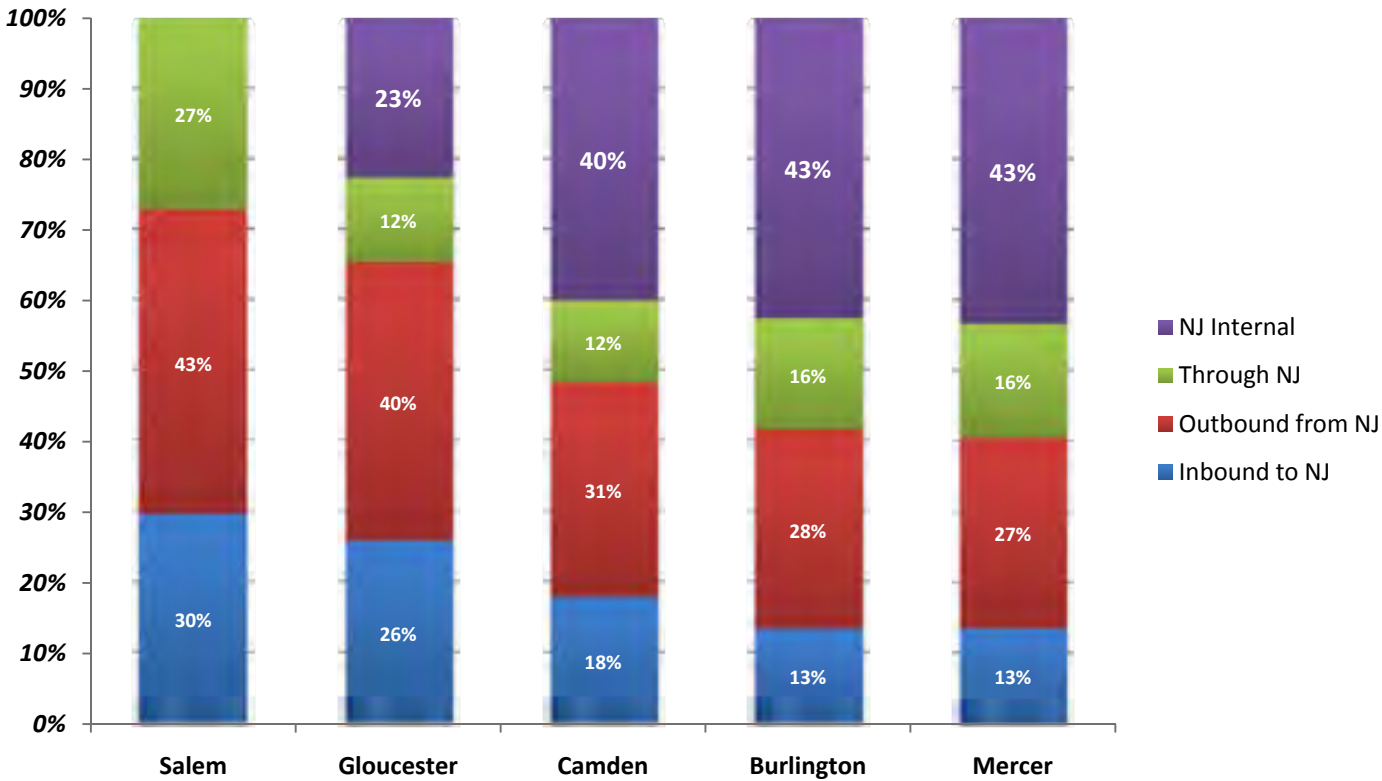


Figure 66—Origin-destination shares considering through-state traffic, Interstate 295 and New Jersey Turnpike combined

Leading Origins of Heavy-truck Inbound Flows

While through trucks are significant sources of truck tonnage on Interstate 295 and the NJTPK, origin-destination flows are also very significant, accounting for approximately 50 percent or greater of tonnage on both roadways (Figure 64 and Figure 65). The assignment of TRANSEARCH data to the FAF3 network allows for a detailed breakdown of these origin-destination patterns, as summarized in Table 21 through Table 26 and Figure 67 through Figure 72.

Interstate 295

For inbound tonnage on Interstate 295, most truck tonnage originates in either Northern or Southern New Jersey. Other major points of origin include New Castle County, Delaware; the Southeast region of the U.S.; Maryland; and Philadelphia. The breakdown of origins for heavy-truck tonnage on Interstate 295 is summarized by county:

- Salem County** is almost evenly balanced between Southern and Northern New Jersey, responsible for 21.8 percent and 21.5 percent of originating shipments, respectively.
- Gloucester County** has a profile that is similar to that of Salem County, with Southern New Jersey responsible for 22.6 percent of total inbound truck tonnage, followed by Northern New Jersey responsible for 20 percent of shipments.
- Camden County** shows the highest percentage of inbound tonnage from Northern New Jersey at 25.4 percent. New Castle County is the second largest source at 16.9 percent.
- Burlington County** is dominated by tonnage from Southern New Jersey, which makes up more than half (53.1 percent) of total inbound tonnage. Northern New Jersey is the source of 17.5 percent of inbound tonnage.

Table 21—Leading origins for inbound heavy-truck tonnage, Interstate 295

Top Origins	Salem	Gloucester	Camden	Burlington	Mercer
NJ North	21.5%	20.0%	25.4%	17.5%	No Data
NJ South	21.8%	22.6%	12.2%	53.1%	
South East	16.4%	13.9%	9.9%	4.4%	
New Castle	14.3%	12.9%	16.9%	7.6%	
MD rem	9.3%	8.1%	9.3%	4.2%	
PA Phil	1.8%	3.7%	5.3%	8.2%	
PA rem	3.5%	4.5%	3.7%	0.0%	
DE rem	3.2%	2.8%	3.6%	1.6%	
All Others (non top)	16.7%	22.5%	26.3%	9.2%	

Bold = top 5 within county
NJ North = New Jersey counties north of Burlington County
NJ South = New Jersey counties south of and including Burlington County
South East = FL, GA, SC, NC, VA, WV, DC
New Castle = New Castle County, DE
MD rem = Maryland, excluding Cecil County
PA Phil = Philadelphia area, including surrounding counties
PA rem = remainder of PA, excluding Philadelphia region and eastern counties
DE rem = Delaware, excluding New Castle County



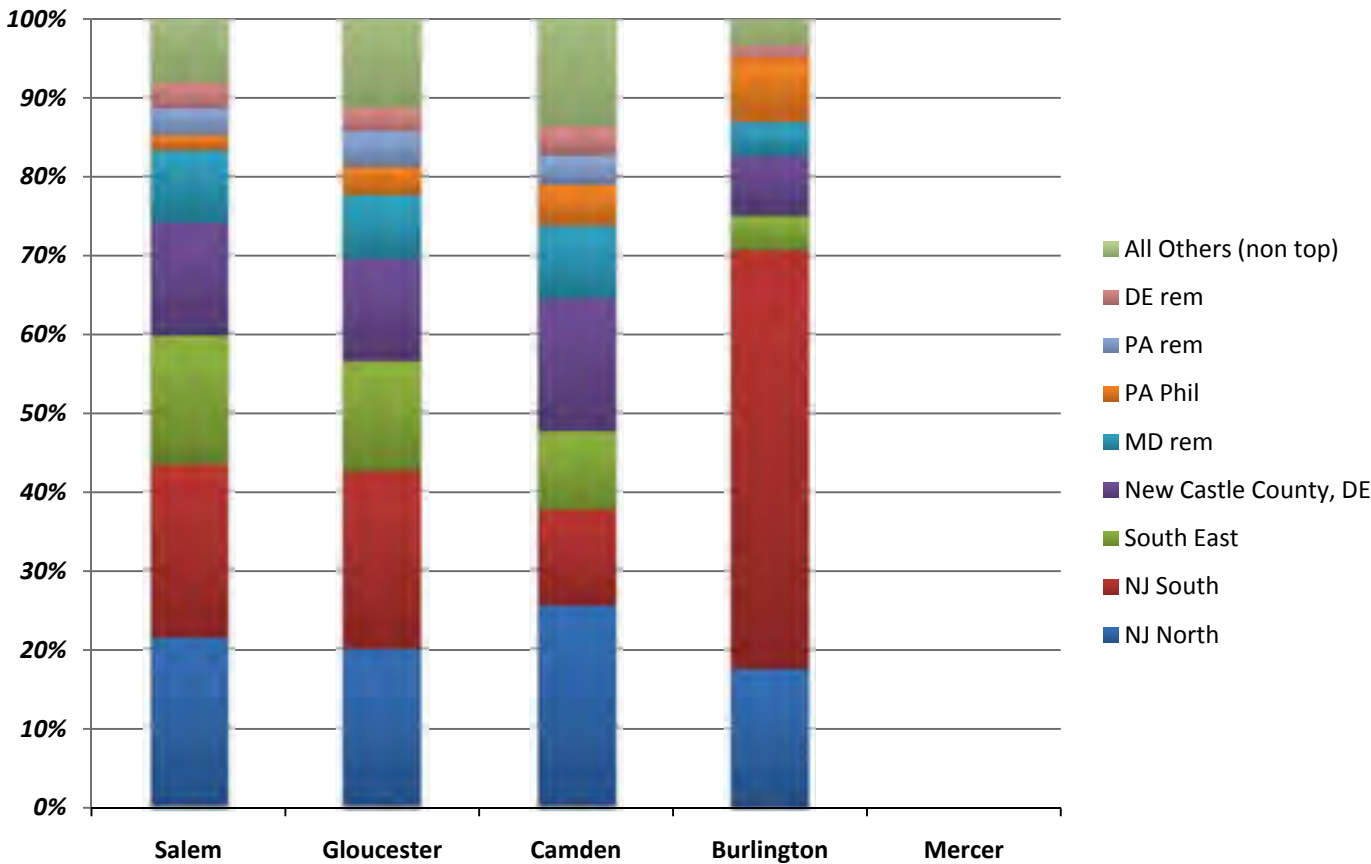


Figure 67—Breakdown of heavy-truck tonnage by origin, Interstate 295

New Jersey Turnpike

For inbound heavy-truck tonnage on the NJTPK, the largest shares originate in New Jersey, with the northern counties generally having higher shares of trucks from Northern New Jersey and the southern counties generally having larger shares of trucks from Southern New Jersey. The breakdown of origins for heavy-truck tonnage on the NJTPK is summarized by county:

- **Salem County** shows a good balance of tonnage origins with a similar share of tonnage originating in Northern (23.9 percent) and Southern (19.1 percent) New Jersey and the Southeast region of the U.S. (17.4 percent).
- **Gloucester County** is dominated by shipments from Southern New Jersey that constitute 66.9 percent of total shipments. Shipments from Northern New Jersey constitute 15.3 percent of the total while shipments from the Southeast region of the U.S. make up only 6.6 percent.
- **Camden County** shows even greater dominance by Southern New Jersey as a source of inbound truck tonnage. In total, 72 percent of inbound tonnage originates in Southern New Jersey, which is the highest percentage for any county for any origin. Shipments from Northern New Jersey make up 16.8 percent of the total.
- **Burlington County** has a roughly even split between shipments from Southern New Jersey, which make up 37.2 percent of total shipment, and Northern New Jersey, which accounts for 33.4 percent.

Philadelphia serves as another significant source of truck tonnage, accounting for 10.2 percent of the total.

- **Mercer County** has a split which is nearly identical to that of Burlington County with 37.2 percent of shipments originating from Southern New Jersey and 33.3 percent from Northern New Jersey. Philadelphia is the source of 10.6 percent of shipments.
- **Middlesex County** has the highest percentage of truck tonnage originating in Northern New Jersey at 50.5 percent. Southern New Jersey is the source of 22.3 percent of shipments, followed by Philadelphia, which is the source of 6.8 percent.
- **Union County** shows 34.8 percent of inbound tonnage originating in Northern New Jersey and has the highest percentage of inbound shipments originating in New York City at 20.7 percent. Southern New Jersey is the source for 14 percent of shipments while Philadelphia is the source for 13.4 percent.
- **Essex County** shows 31.6 percent of total inbound tonnage originating in Northern New Jersey, 18.3 percent originating in the Southeast region of the U.S., and 13.8 percent originating in Philadelphia.
- **Hudson and Bergen Counties** have Northern New Jersey as their principal origin, responsible for 32.9 percent of shipments. The Southeast region of the U.S. is the number two origin, responsible for 11.3 percent of the total. This is followed by Philadelphia, which accounts for 8.4 percent of total originating tonnage.

Table 22—Leading origins for inbound heavy-truck tonnage, New Jersey Turnpike

Top Origins	Salem	Gloucester	Camden	Burlington	Mercer	Middlesex	Union	Essex	Hudson	Bergen
NJ North	23.9%	15.3%	16.8%	33.4%	33.3%	50.5%	34.8%	31.6%	32.9%	32.9%
NJ South	19.1%	66.9%	72.1%	37.6%	37.2%	22.3%	14.0%	9.3%	5.7%	5.7%
PA Phil	0.5%	2.2%	1.0%	10.2%	10.6%	6.8%	13.4%	13.8%	8.4%	8.4%
South East	17.4%	6.1%	4.4%	2.5%	2.3%	1.3%	5.6%	18.3%	11.3%	11.3%
NY NYC	2.1%	0.6%	0.8%	2.5%	2.5%	2.4%	20.7%	5.8%	4.6%	4.6%
New Castle	15.6%	0.4%	0.3%	4.2%	4.3%	2.9%	3.0%	2.9%	1.8%	1.8%
MD rem	10.0%	1.1%	0.8%	2.3%	2.4%	1.6%	1.6%	4.5%	2.7%	2.7%
PA rem	2.2%	2.7%	1.1%	0.8%	0.8%	1.4%	0.4%	1.0%	6.3%	6.3%
NY rem	0.6%	0.5%	0.2%	0.8%	0.9%	1.7%	0.5%	0.1%	7.4%	7.4%
New England rem	0.9%	0.4%	1.3%	1.2%	1.3%	2.7%	2.9%	8.0%	5.7%	5.7%
All Others (non top)	14.0%	6.8%	4.2%	12.0%	12.1%	14.8%	11.5%	18.9%	33.6%	33.6%

Bold = top 5 within county
NJ North = New Jersey counties north of Burlington County
NJ South = New Jersey counties south of and including Burlington County
PA Phil = Philadelphia area, including surrounding counties
South East = FL, GA, SC, NC, VA, WV, DC
NY NYC = New York City area and surrounding boroughs and counties within NY
New Castle = New Castle County, DE
MD rem = Maryland, excluding Cecil County
PA rem = remainder of PA, excluding Philadelphia region and eastern counties
NY rem = remainder of NY, excluding NYC, Long Island, and southeastern counties
New England rem = remainder of New England—RI, MA, VT, NH, ME



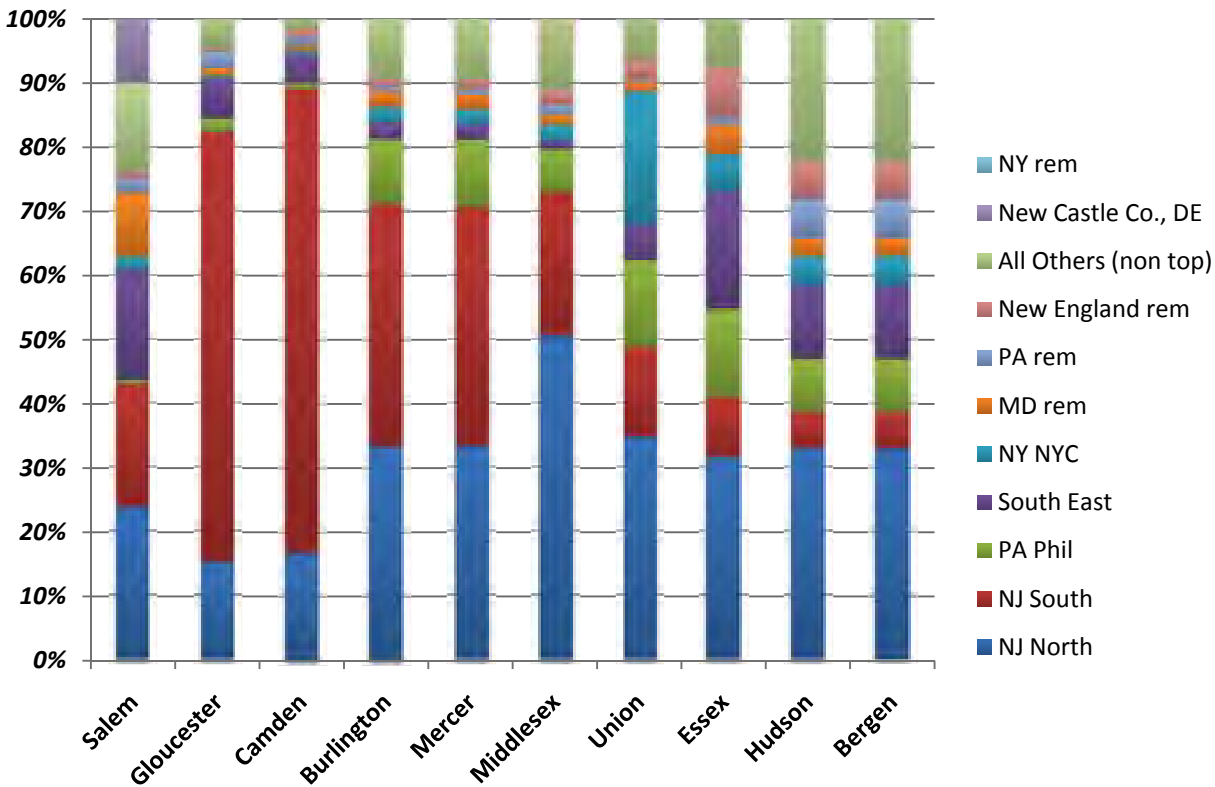


Figure 68—Breakdown of heavy-truck tonnage by origin, New Jersey Turnpike

Combined facility through Southern New Jersey

Evaluating Interstate 295 and the NJTPK as a single facility, the origin patterns are comparable to the separate facility evaluations described above. Truck tonnage generally originated in New Jersey, accounting for 43 to 71 percent of all origin tonnage. With the exception of Salem County, Southern New Jersey is the leading origin at 37 to 51 percent of inbound tonnage. The breakdown of origins for heavy-truck tonnage on the combined facility is summarized by county:

- **Salem County** shows a very balanced distribution among its top four origins—Northern New Jersey (23 percent), Southern New Jersey (21 percent), the Southeast region of the U.S. (17 percent), and New Castle County (15 percent).
- **Gloucester County** is dominated by shipments from Southern New Jersey, which constitute 45 percent of total shipments. Shipments from Northern New Jersey constitute 18 percent of the total, while shipments from the Southeast region of the U.S. make up only 10 percent.
- **Camden County** shows even greater dominance by Southern New Jersey, accounting for 51 percent of origin tonnage, which is the highest among all counties along the corridor. Shipments from Northern New Jersey make up 20 percent of the total.
- **Burlington County** has a similar portion of inbound tonnage originating in Southern New Jersey as Gloucester County, at 43 percent. Northern New Jersey accounts for 28 percent of origins, while Philadelphia is the third largest source of truck tonnage, accounting for 10 percent of the total.

- **Mercer County** has a fairly balanced split between New Jersey origins, with 37 percent coming from Southern New Jersey and 33 percent from Northern New Jersey. Philadelphia is the source of 10.6 percent of shipments.

Table 23—Leading origins for inbound heavy-truck tonnage, Interstate 295 and New Jersey Turnpike combined

Top Origins	Salem	Gloucester	Camden	Burlington	Mercer
NJ North	22.6%	17.6%	19.9%	27.7%	33.3%
NJ South	20.6%	44.5%	50.8%	43.2%	37.2%
PA Phil	1.2%	3.0%	2.5%	9.5%	10.6%
NY NYC	2.0%	1.2%	1.3%	2.0%	2.5%
New Castle	14.9%	6.7%	6.2%	5.4%	4.3%
MD rem	9.6%	4.6%	3.8%	3.0%	2.4%
South East	16.8%	10.0%	6.4%	3.2%	2.3%
All others (non top)	15.4%	16.5%	12.9%	11.0%	12.1%

Bold = top 5 within county
NJ North = New Jersey counties north of Burlington County
NJ South = New Jersey counties south of and including Burlington County
PA Phil = Philadelphia area, including surrounding counties
NY NYC = New York City area and surrounding boroughs and counties within NY
New Castle = New Castle County, DE
MD rem = Maryland, excluding Cecil County
South East = FL, GA, SC, NC, VA, WV, DC

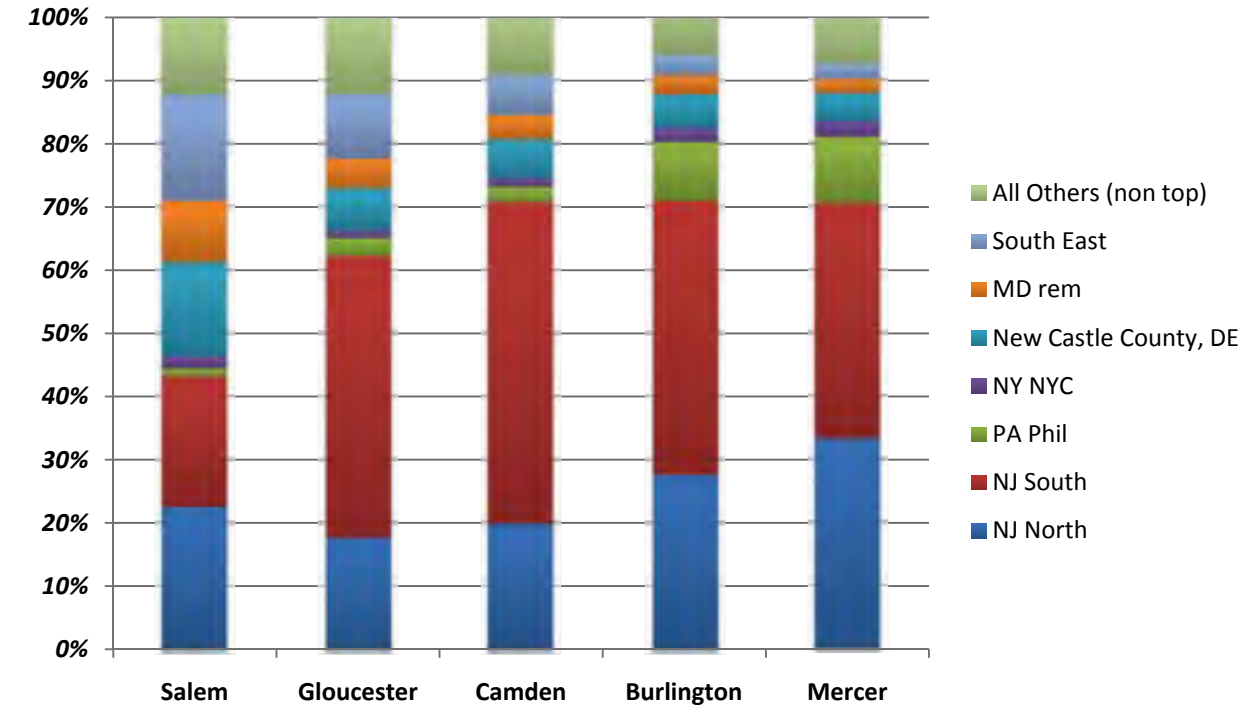


Figure 69—Breakdown of heavy-truck tonnage by origin, Interstate 295 and New Jersey Turnpike combined



Leading Destinations of Heavy-truck Outbound Flows

On both Interstate 295 and the NJTPK, the major destinations of heavy-truck outbound flows are largely within New Jersey and adjacent regions. Northern New Jersey is a major destination throughout both corridors, while Southern New Jersey is a more prominent destination among heavy trucks in the southern counties. Similarly, higher proportions of heavy trucks in the southern counties are destined to Delaware, the Southeast region of the U.S., and other southern points, while the proportion of tonnage bound to New York City and New England tends to increase moving through the northern counties.

Interstate 295

The breakdown of destinations for heavy-truck tonnage on Interstate 295 is summarized by county:

- Salem County** has a dispersed set of destinations for outbound cargo, the two most significant destinations being Southern New Jersey (18.2 percent) and New Castle County (16.6 percent). The Southeast region of the U.S. is the number three destination at 13.3 percent.
- Gloucester County** sends the largest share of its outbound cargo to Southern New Jersey with the second largest share destined for New Castle County.
- Camden County** has three key destinations for its outbound tonnage on Interstate 295: Southern New Jersey (16.7 percent), New Castle County (15.6 percent), and Northern New Jersey (13.9 percent).
- Burlington County** has a substantially different profile than the other counties, with almost half of total tonnage (47.9 percent) terminating in Northern New Jersey. New York City is the second most common destination at 16.7 percent.

Table 24—Leading destinations for outbound heavy-truck tonnage, Interstate 295

Top Destinations	Salem	Gloucester	Camden	Burlington	Mercer
NJ North	12.5%	11.9%	13.9%	47.9%	No Data
NJ South	18.2%	22.1%	16.7%	4.9%	
New Castle	16.6%	14.6%	15.6%	7.0%	
South East	13.3%	11.2%	7.1%	3.2%	
NY NYC	10.1%	9.3%	12.6%	16.7%	
New England rem	7.7%	7.1%	9.7%	6.8%	
MD rem	8.2%	6.8%	3.9%	1.8%	
CT	3.4%	3.2%	4.3%	6.7%	
All others (non top)	29.4%	31.0%	31.5%	14.8%	

Bold = top 5 within county

NJ North = New Jersey counties north of Burlington County

NJ South = New Jersey counties south of and including Burlington County

New Castle = New Castle County, DE

South East = FL, GA, SC, NC, VA, WV, DC

NY NYC = New York City area and surrounding boroughs and counties within NY

New England rem = remainder of New England—RI, MA, VT, NH, ME

MD rem = Maryland, excluding Cecil County

CT = Connecticut

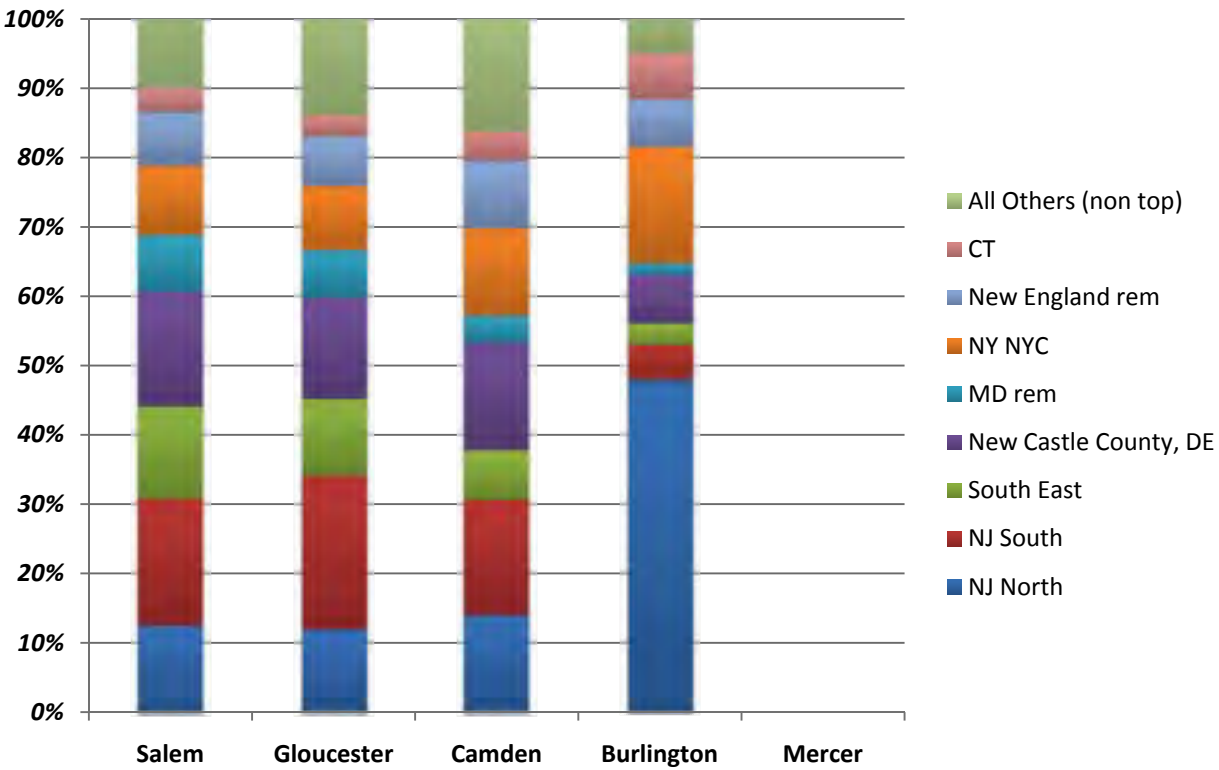


Figure 70—Breakdown of heavy-truck tonnage by destination, Interstate 295

New Jersey Turnpike

For outbound heavy-truck tonnage on the NJTPK, the majority of destinations tend to be within New Jersey or the New York City area. While Southern New Jersey is a major destination for heavy trucks in the southern counties of the NJTPK, it is not a major destination in the northern counties, where a higher portion is bound for New York City. New England states are another major destination of truck traffic on the NJTPK, with the proportion of tonnage generally increasing moving from south to north. The breakdown of destinations for heavy-truck tonnage on the NJTPK is summarized by county:

- Salem County** has a diverse array of destinations with the greatest proportion of outbound shipments destined for New Castle County at 17.9 percent. Southern New Jersey is the next most significant destination, responsible for 14.3 percent, followed by Northern New Jersey, responsible for 13.9 percent of tonnage.
- Gloucester County** sends one third (33.5 percent) of its shipments to Southern New Jersey, with a slightly smaller percentage (29.6 percent) to Northern New Jersey. New York City is the number three destination for outbound tonnage, responsible for 12.6 percent.
- Camden County** sends 44.8 percent of its outbound tonnage to Northern New Jersey, with 28.2 percent destined for Southern New Jersey. New York City is responsible for 11.5 percent of outbound tonnage.
- Burlington County** sends 42.2 percent of its outbound tonnage to Northern New Jersey, or almost three times the 15.7 percent of tonnage it sends to Southern New Jersey. New York City is again the number three destination, responsible for 14.6 percent of outbound shipments.



- **Mercer County** has a very similar profile of export shipments to Burlington County with 41.5 percent of total outbound tonnage destined for Northern New Jersey and a virtually even portion destined for Southern New Jersey (15.5 percent) and New York City (15.1 percent).
- **Middlesex County** has one of the most disproportionate patterns of outbound tonnage, with approximately half (50.2 percent) of tonnage terminating in Northern New Jersey. New York City is a distant second; accounting for 12.5 percent of tonnage, and Southern New Jersey is the third most common destination with 10 percent of tonnage.
- **Union County** sends 37.9 percent of outbound tonnage to New York City while Northern New Jersey is the destination for 22.3 percent. The remainder of New England is the third largest destination responsible for 8.5 percent of shipments.
- **Essex County** sends approximately 43 percent of its outbound flows to New England (13.5 percent to Connecticut and 28.6 percent to the remainder of New England). The remainder of tonnage is generally destined for Northern New Jersey (21.3 percent) or New York City (20.2 percent).
- **Hudson and Bergen Counties** have a higher portion of outbound truck tonnage destined for New York City, accounting for 40.6 percent of outbound flows. Northern New Jersey is the second most common destination (21 percent), while combined New England flows account for approximately 25 percent of remaining outbound flows (8.2 percent to Connecticut and 17.4 percent to the remainder of New England).

Table 25—Leading destinations for outbound heavy-truck tonnage, New Jersey Turnpike

Top Destinations	Salem	Gloucester	Camden	Burlington	Mercer	Middlesex	Union	Essex	Hudson	Bergen
NJ North	13.9%	29.6%	44.8%	42.2%	41.5%	50.2%	22.3%	21.3%	21.0%	21.0%
NJ South	14.3%	33.5%	28.2%	15.7%	15.5%	10.0%	5.0%	2.3%	1.4%	1.4%
NY NYC	11.2%	12.6%	11.5%	14.6%	15.1%	12.5%	37.9%	20.2%	40.6%	40.6%
New England rem	8.6%	2.7%	3.1%	6.1%	6.3%	7.3%	8.5%	28.6%	17.4%	17.4%
CT	3.8%	6.3%	5.9%	5.2%	5.3%	4.6%	5.1%	13.5%	8.2%	8.2%
South East	14.0%	2.8%	2.0%	1.8%	1.6%	1.4%	1.2%	6.0%	3.7%	3.7%
New Castle	17.9%	1.4%	1.0%	3.9%	4.0%	2.7%	1.5%	0.8%	0.5%	0.5%
NY rem	0.5%	3.7%	1.6%	2.2%	2.3%	2.4%	5.1%	0.4%	0.9%	0.9%
PA Phil	0.1%	1.5%	0.3%	4.2%	4.3%	2.9%	1.5%	2.2%	1.3%	1.3%
Northeast PA	0.0%	0.1%	0.0%	0.2%	0.2%	0.3%	2.6%	2.1%	1.3%	1.3%
All others (non top)	28.7%	14.2%	6.6%	16.3%	16.4%	15.4%	21.2%	10.4%	9.2%	9.2%

Bold = top 5 within county

NJ North = New Jersey counties north of Burlington County
NJ South = New Jersey counties south of and including Burlington County
NY NYC = New York City area and surrounding boroughs and counties within NY
New England rem = remainder of New England—RI, MA, VT, NH, ME
CT = Connecticut
South East = FL, GA, SC, NC, VA, WV, DC
New Castle = New Castle County, DE
NY rem = remainder of NY, excluding NYC, Long Island, and southeastern counties
PA Phil = Philadelphia area, including surrounding counties
Northeast PA = Carbon, Lehigh, Monroe, North Hampton, and Pike Counties in PA

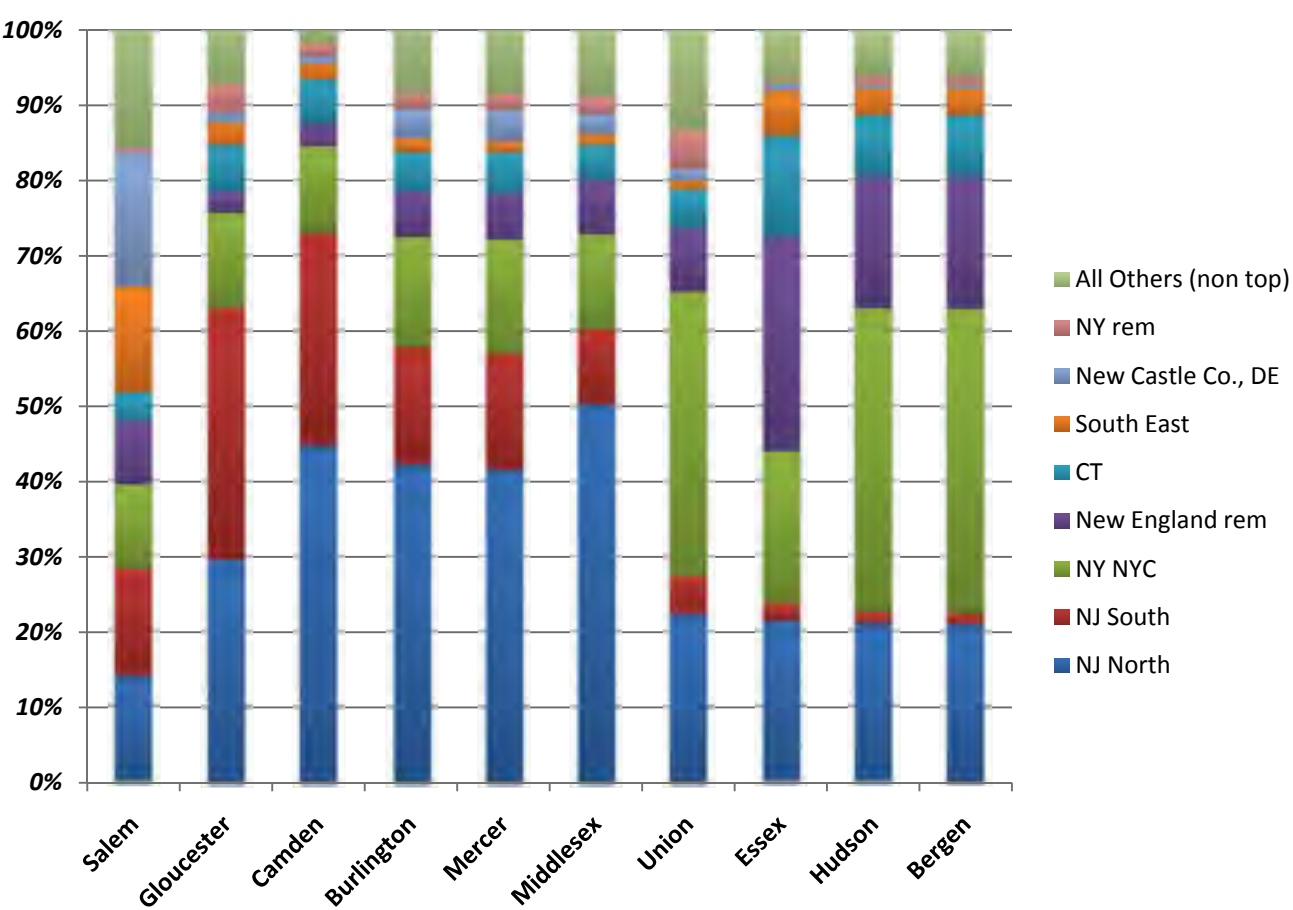


Figure 71—Breakdown of heavy-truck tonnage by destination, New Jersey Turnpike

Combined facility through Southern New Jersey

Evaluating Interstate 295 and the NJTPK as a single facility, the destination patterns are comparable to the separate facility evaluations described above. New Jersey and New York City are the predominate destinations. The southern portion of the corridor (Salem and Gloucester Counties) shows a higher propensity to favor southern destinations, while the remainder of the corridor has a higher bias towards northern destinations. The breakdown of origins for heavy-truck tonnage on the combined facility is summarized by county:

- **Salem County**, as with its origin flows, has a well-balanced distribution of destinations. Destinations with the greatest proportion of outbound shipments include New Castle County (17 percent); Southern New Jersey (16 percent); the Southeast region of the U.S. (14 percent); and Northern New Jersey (13 percent).
- **Gloucester County** sends over one quarter of its shipments to Southern New Jersey (28 percent), with a slightly smaller percentage to Northern New Jersey (21 percent). New York City is the number three destination for outbound tonnage, responsible for 12 percent.
- **Camden County** sends a larger share of its outbound tonnage to Northern New Jersey (34 percent) than Southern New Jersey (24 percent). New York City is responsible for 12 percent of outbound tonnage.

- **Burlington County’s** outbound flows are dominated by those destined to points north, particularly Northern New Jersey (44 percent) and New York City (15 percent). An additional 12 percent are destined to New England (6 percent to Connecticut and 6 percent to the remainder of New England) while 12 percent are destined to Southern New Jersey.
- **Mercer County** has a similar profile of export shipments to Burlington County, with 41.5 percent of total outbound tonnage destined for Northern New Jersey, followed by Southern New Jersey (16 percent), New York City (15 percent), and New England destinations (12 percent).

Table 26—Leading destinations for outbound heavy-truck tonnage, Interstate 295 and New Jersey Turnpike combined

Top Destinations	Salem	Gloucester	Camden	Burlington	Mercer
NJ North	13.2%	20.6%	33.8%	44.2%	41.5%
NJ South	16.4%	27.7%	24.1%	11.8%	15.5%
NY NYC	10.6%	10.9%	11.9%	15.4%	15.1%
New Castle County, DE	17.2%	8.1%	6.2%	5.0%	4.0%
CT	3.6%	4.7%	5.3%	5.7%	5.3%
New England rem	8.1%	5.0%	5.4%	6.4%	6.3%
South East	13.6%	7.0%	3.8%	2.3%	1.6%
All others (non top)	29.1%	25.6%	18.6%	16.5%	16.4%

Bold = top 5 within county

NJ North = New Jersey counties north of Burlington County

NJ South = New Jersey counties south of and including Burlington County

NY NYC = New York City area and surrounding boroughs and counties within NY

New Castle = New Castle County, DE

CT = Connecticut

New England rem = remainder of New England—RI, MA, VT, NH, ME

South East = FL, GA, SC, NC, VA, WV, DC

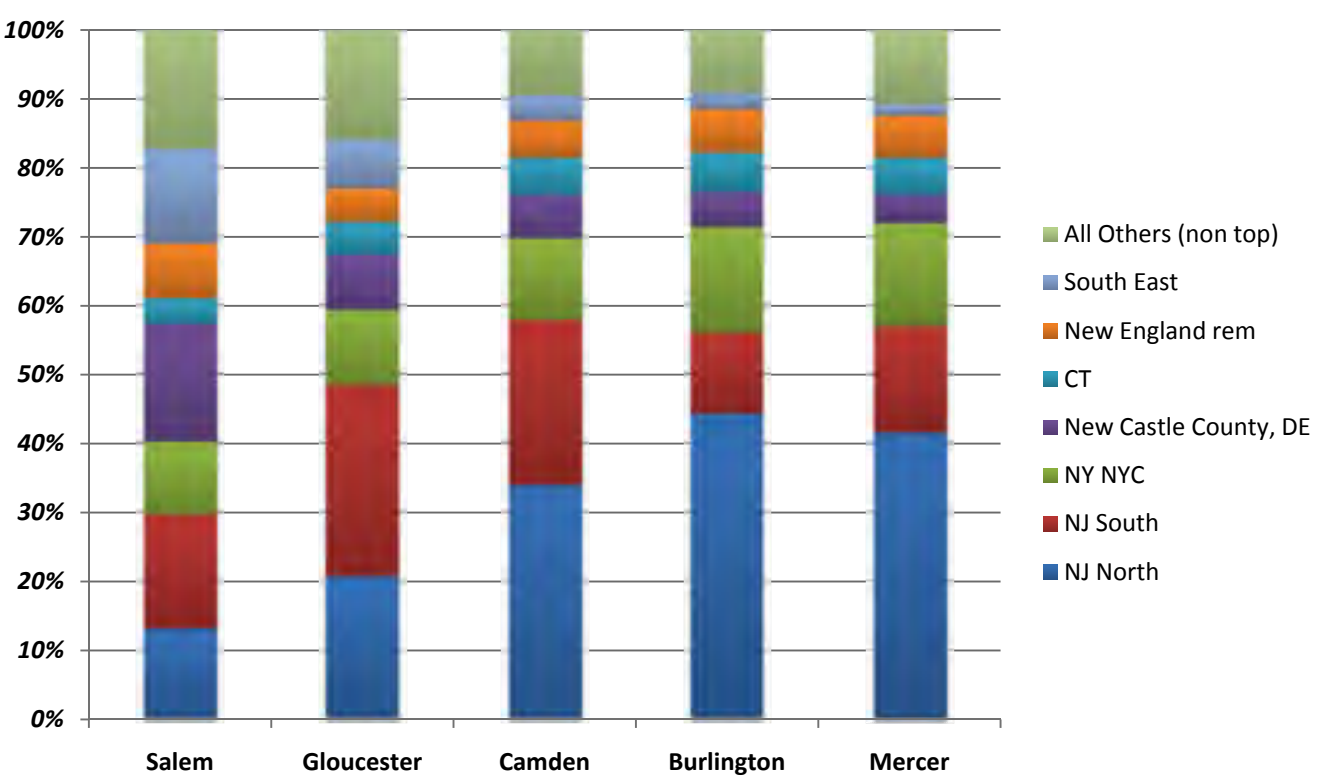


Figure 72—Breakdown of heavy-truck tonnage by destination, Interstate 295 and New Jersey Turnpike combined

Heavy-truck Tonnage Flows by Commodity

Through commodities

To understand the key commodity flows, it is useful to distinguish between origin-destination commodities and pass-through commodities (using the through-state definition of through commodities). Pass-through commodities on Interstate 295 and the NJTPK are illustrated using STCC2 classifications on Figure 73 through Figure 75. Origin-destination commodities are reported in Table 27 and Table 28 and illustrated on Figure 76 and Figure 77.

On Interstate 295, chemicals are the largest single contributor to through tonnage, accounting for 22.7 percent. The other major categories include warehousing and distribution products at 17.2 percent and food/kindred products at 13.8 percent of through tonnage.

Pass-through commodities make up a significant share of total tonnage on the NJTPK. There are four commodity classes that make up at least 10 percent of total through tonnage: food/kindred products (14.7 percent), warehousing and distribution products (14.3 percent), chemicals (12.5 percent), and non-metallic minerals (10.6 percent). Compared to Interstate 295, chemical shipments play a slightly smaller role on the NJTPK. Pulp and paper products are a more common shipment on the NJTPK than Interstate 295, where farm products replace pulp and paper among the top 10 through shipments.



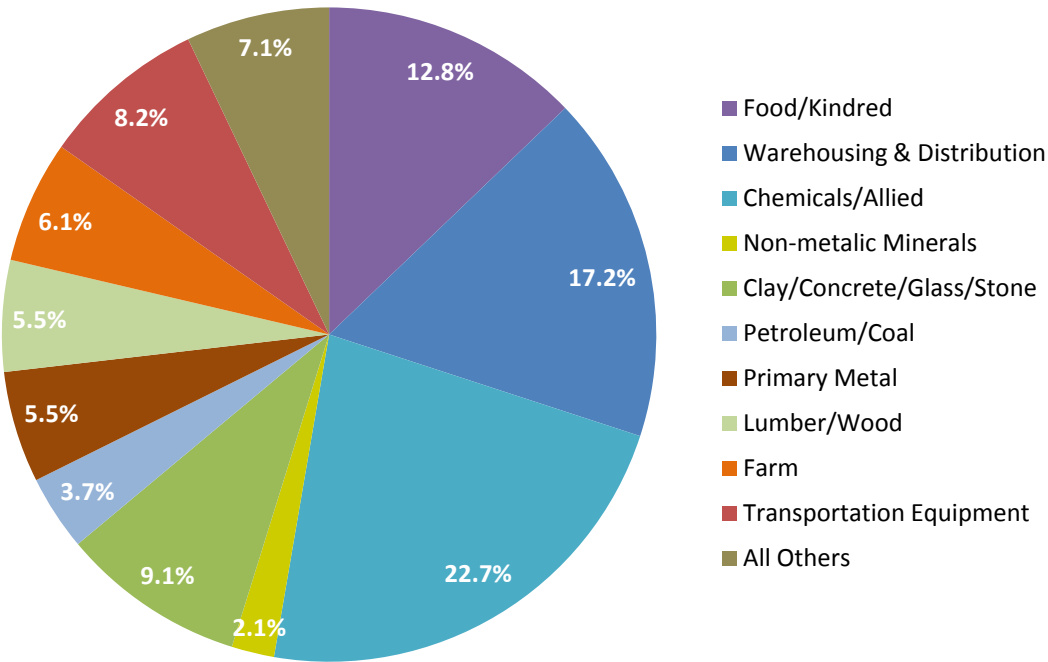


Figure 73—Leading pass-through commodities, Interstate 295

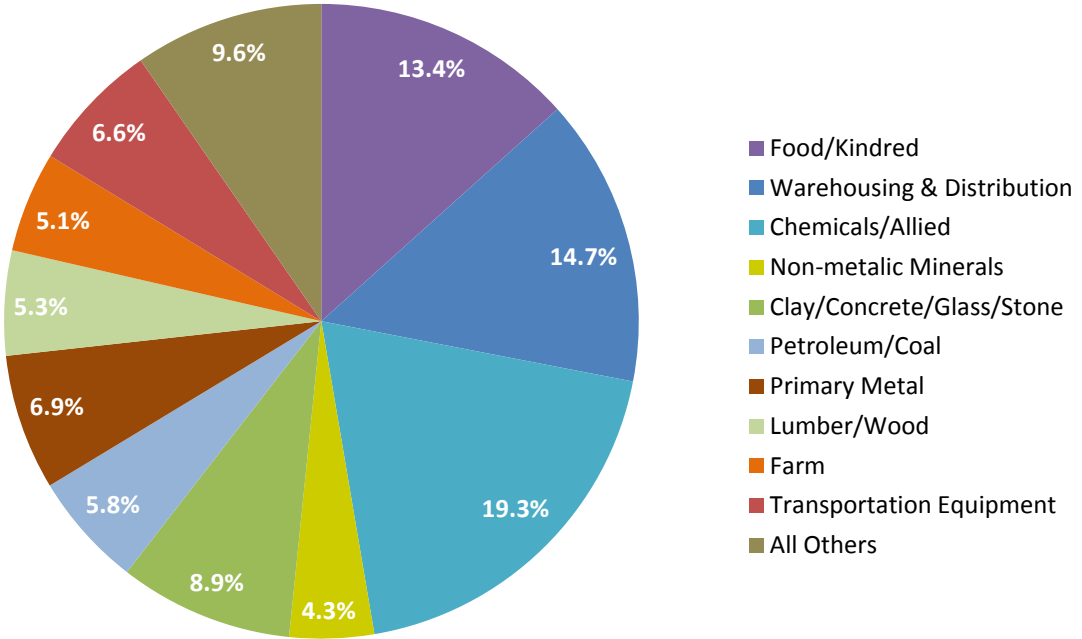


Figure 75—Leading pass-through commodities, Interstate 295 and New Jersey Turnpike combined

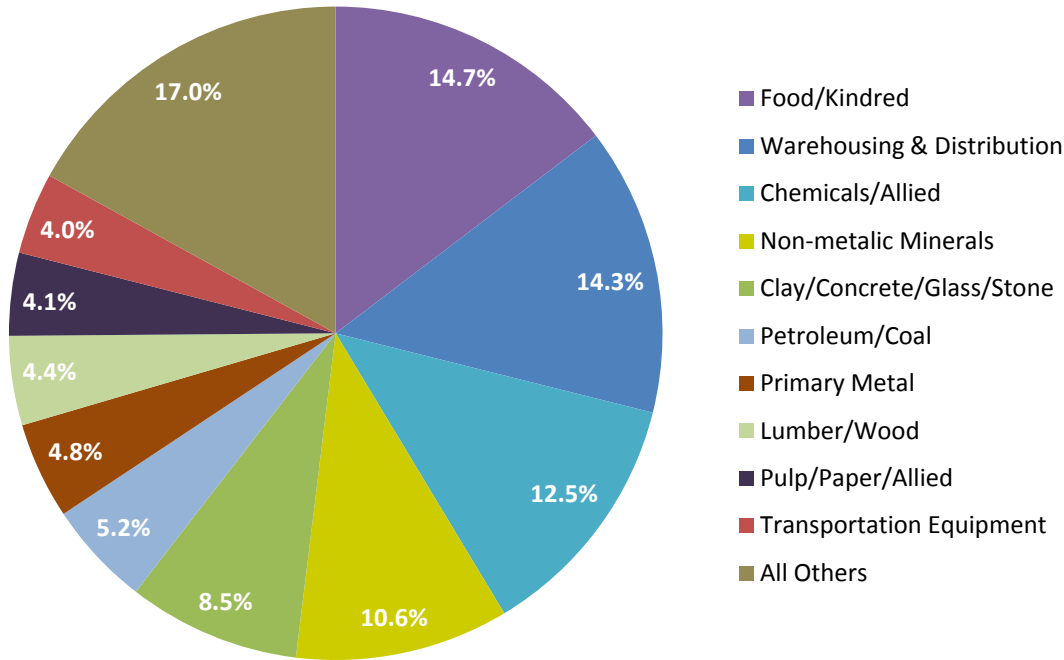


Figure 74—Leading pass-through commodities, New Jersey Turnpike

Evaluating Interstate 295 and the NJTPK as a single facility (Figure 75), the pass-through commodity pattern closely resembles the distribution seen on Interstate 295. This is likely because the FAF3 assignment process routed all through traffic in Gloucester and Camden Counties onto Interstate 295. Chemical products, at 19.3 percent, are the leading through shipments on the combined facility through Southern New Jersey. As with the separate Interstate 295 and NJTPK facilities, warehousing and distribution products (14.7 percent) and food and kindred products (13.4 percent) round out the top three pass-through shipments. Overall, the corridor shows a diversified base of commodities, with an additional seven commodity groups composing 4 to 9 percent of through tonnage.

Origin-Destination Commodities

The distribution of heavy-truck tonnage by commodity type is slightly different when considering origin-destination traffic (that is, tonnage that originates or terminates in the New Jersey counties traversed by Interstate 295 and the NJTPK). For origin-destination tonnage, the leading commodities are as follows:

- **Interstate 295**—Petroleum (21.3 percent); warehousing and distribution products (18.6 percent); non-metallic minerals (17.1 percent); chemicals (12.9 percent); food and kindred products (9.3 percent); and clay, concrete, glass, and stone (8.7 percent).
- **NJTPK**—Warehouse/distribution (25.5 percent); non-metallic minerals (14.7 percent); petroleum (13.8 percent); clay, concrete, glass, and stone (12.6 percent); chemicals (9.6 percent); and food and kindred products (9.2 percent).



While there are slight distinctions in the makeup of origin-destination commodity traffic for the Interstate 295 corridor when compared to the NJTPK, including a slightly higher share of petroleum along Interstate 295 and a higher share of warehousing and distribution products along the NJTPK, the most prevalent commodity groupings are similar.

Interstate 295

Origin-destination commodities handled using Interstate 295 are summarized in Table 27 below. Key findings by county include:

- Salem County** is led by chemicals and petroleum, each accounting for approximately 19.5 percent of tonnage. Warehousing and distribution products are another major commodity grouping, at 18.3 percent of tonnage, approximately equivalent to the corridor average.
- Gloucester County** handles a slightly greater share of petroleum inbound/outbound than the corridor average, at 23.4 percent. Other major commodity types include chemicals (17.8 percent), warehousing and distribution products (17.1 percent), and non-metallic minerals (11.6 percent).
- Camden County** has a similar commodity profile to Gloucester County, with a top four commodity grouping of petroleum (20.4 percent), warehousing and distribution (19.1 percent), chemicals (16.2 percent), and non-metallic minerals (12.8 percent).
- Burlington County** carries a higher share of non-metallic minerals (23.5 percent) than the rest of Interstate 295 and a slightly higher share of clay, concrete, glass, and stone (12.1 percent) and food and kindred products (10.2 percent). Similar to the rest of the corridor, petroleum (21.2 percent) and warehousing and distribution (19.5 percent) are other major commodity groupings.

Table 27—Origin-destination heavy-truck tonnage by commodity type, Interstate 295

Rank	Commodity	Corridor	Salem	Gloucester	Camden	Burlington	Mercer
1	Petroleum/coal	21.3%	19.6%	23.4%	20.4%	21.2%	No Data
2	Warehousing and distribution	18.6%	18.3%	17.1%	19.1%	19.5%	
3	Non-metallic minerals	17.1%	13.4%	11.6%	12.8%	23.5%	
4	Chemicals/allied	12.9%	19.5%	17.8%	16.2%	5.8%	
5	Food/kindred	9.3%	8.6%	8.5%	9.3%	10.2%	
6	Clay/concrete/glass/stone	8.7%	6.0%	6.1%	6.6%	12.1%	
7	Farm	2.2%	2.7%	2.8%	2.9%	1.2%	
8	Lumber/wood	1.8%	2.7%	2.4%	2.3%	0.9%	
9	Primary metal	1.0%	1.1%	1.6%	1.5%	0.5%	
10	Rubber/plastics	1.0%	1.4%	1.0%	1.1%	0.8%	
	All others	6.1%	6.7%	7.6%	7.8%	4.4%	

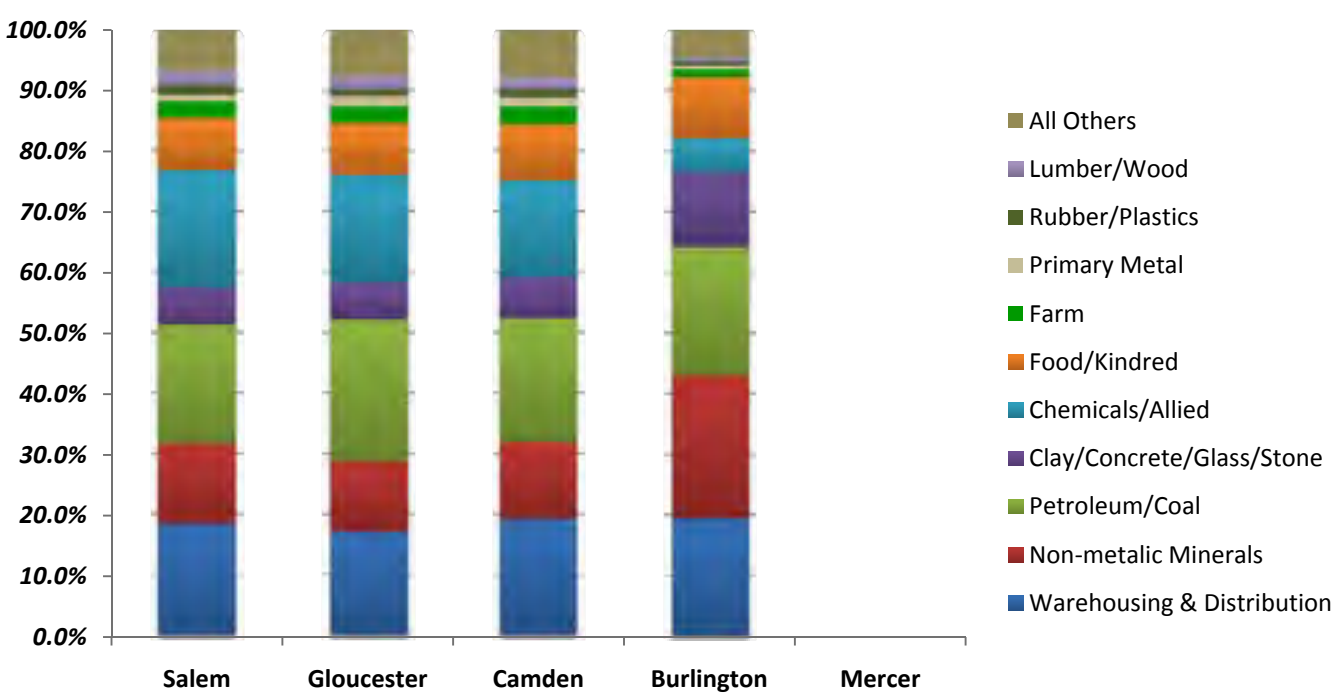


Figure 76—Origin-destination heavy-truck tonnage by commodity type, Interstate 295

New Jersey Turnpike

The following is the breakdown of origin-destination heavy-truck tonnage by county on the NJTPK, which is summarized in Table 28:

- Salem County** is led by petroleum, which is equal to 22.2 percent of total tonnage, followed by chemical products at 21.6 percent and warehousing and distribution at 18.3 percent.
- Gloucester County** is led by petroleum at 30.3 percent, followed by warehousing and distribution at 19.5 percent.
- Camden County** is led by warehousing and distribution at 24.2 percent, followed by petroleum at 19.8 percent and non-metallic minerals at 19.3 percent.
- Burlington County** is led by warehousing and distribution at 25.4 percent, followed by clay, concrete, glass, and stone at 16.7 percent and non-metallic minerals and petroleum at 15.6 percent each.
- Mercer County** is led by warehousing and distribution at 25.4 percent, followed by clay, concrete, glass, and stone at 16.7 percent; petroleum at 16.0 percent; and non-metallic minerals at 15.4 percent.
- Middlesex County** is led by warehousing and distribution at 30.2 percent, followed by non-metallic minerals at 15.5 percent.
- Union County** is led by warehousing and distribution at 25.0 percent, followed by non-metallic minerals at 15.0 percent.
- Essex County** is led by warehousing and distribution at 25.3 percent, followed by chemicals at 16.0 percent.



- **Hudson and Bergen Counties** have an identical breakdown of commodity groupings, led by warehousing and distribution at 24.8 percent, followed by non-metallic minerals at 15.5 percent and chemicals at 12.4 percent.

Table 28—Origin-destination heavy-truck tonnage by commodity type, New Jersey Turnpike

Rank	Commodity	Corridor	Salem	Gloucester	Camden	Burlington	Mercer	Middlesex	Union	Essex	Hudson	Bergen
1	Warehousing and distribution	25.5%	18.3%	19.5%	24.2%	25.4%	25.4%	30.2%	25.0%	25.3%	24.8%	24.8%
2	Non-metallic minerals	14.7%	9.8%	11.9%	19.3%	15.6%	15.4%	15.5%	15.0%	6.7%	15.5%	15.5%
3	Petroleum/coal	13.8%	22.2%	30.3%	19.8%	15.6%	16.0%	11.7%	13.9%	11.0%	8.2%	8.2%
4	Clay/concrete/glass/stone	12.6%	5.8%	13.8%	13.9%	16.7%	16.7%	11.9%	12.9%	12.1%	9.3%	9.3%
5	Chemicals/allied	9.6%	21.6%	7.6%	5.4%	5.5%	5.5%	8.7%	9.4%	16.0%	12.4%	12.4%
6	Food/kindred	9.2%	7.7%	8.8%	10.5%	9.7%	9.5%	7.9%	9.3%	10.6%	9.2%	9.2%
7	Truck drayage from rail	1.5%	0.1%	0.3%	0.1%	0.6%	0.6%	0.9%	1.0%	1.7%	3.7%	3.7%
8	Pulp/paper/allied	1.4%	0.7%	0.6%	0.5%	1.0%	1.0%	1.4%	1.4%	2.4%	2.1%	2.1%
9	Printed matter	1.3%	0.6%	0.5%	1.1%	1.4%	1.4%	1.3%	1.5%	1.5%	1.4%	1.4%
10	Lumber/wood	1.3%	3.0%	0.8%	0.7%	1.2%	1.2%	1.1%	1.0%	1.6%	1.7%	1.7%
	All others	9.1%	10.3%	5.9%	4.7%	7.2%	7.3%	9.4%	9.6%	11.2%	11.5%	11.5%

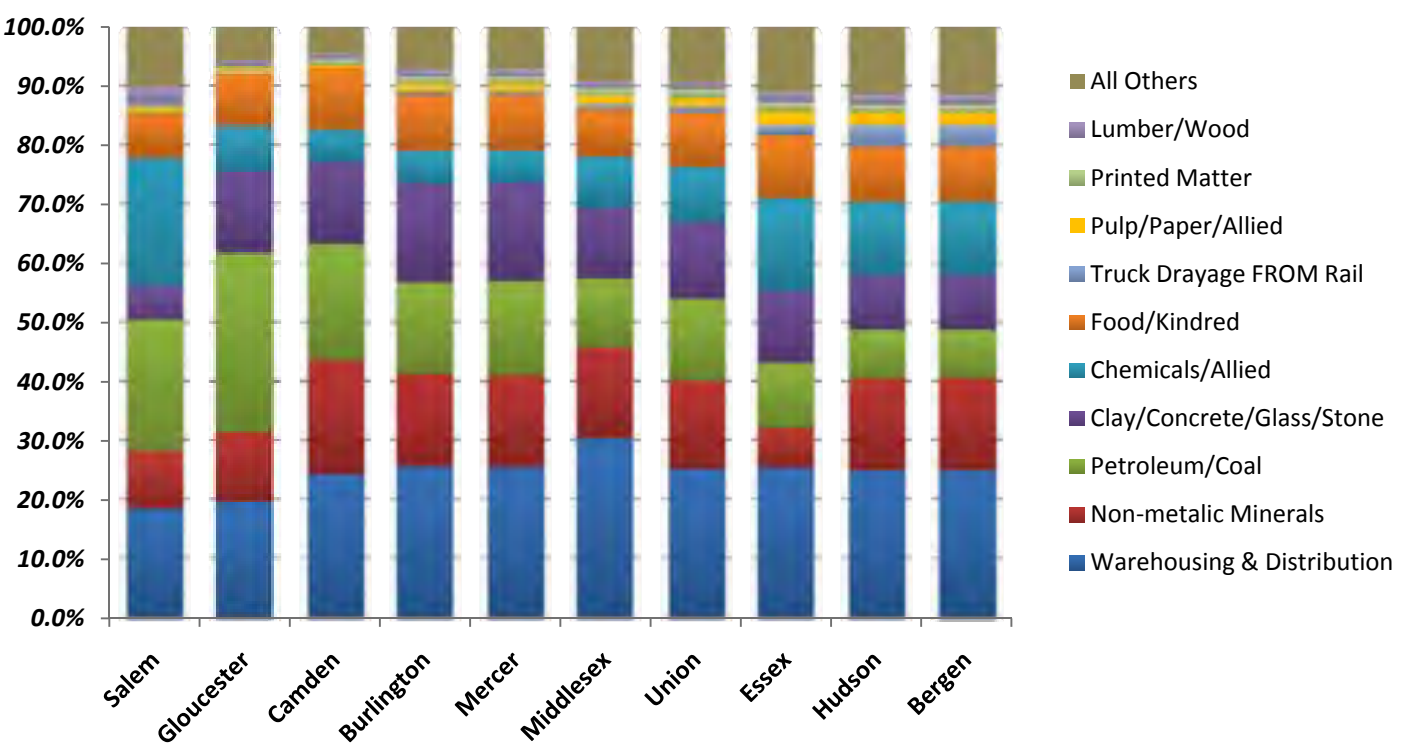


Figure 77—Origin-destination heavy-truck tonnage by commodity type, New Jersey Turnpike

Combined facility through Southern New Jersey

Evaluating Interstate 295 and the NJTPK as a single facility confirms the analysis of the separate facilities. Through Southern New Jersey, warehousing and distribution products and petroleum products are the leading commodities on the corridor, constituting 22.3 percent and 19.5 percent of tonnage, respectively. Petroleum products tend to be the top commodity in the southern two counties of Salem and Gloucester, while warehousing and distribution products lead the remaining three. Non-metallic minerals (15.8 percent); clay, concrete, glass, and stone (13.1 percent); food and kindred products (9.5 percent); and chemicals (8.8 percent) are the other leading commodities, which is a blend of the ordering seen in the separate facility analysis. The commodity profile details by county are discussed below and illustrated in Table 29 and Figure 78.

- **Salem County** is led by chemicals and petroleum products, each accounting for approximately 21 percent of tonnage. The tonnage share of chemicals is more than double the corridor average of 8.8 percent. Warehousing and distribution products are another major commodity grouping, at 18.3 percent of tonnage.
- **Gloucester County** handles a higher proportion of petroleum inbound/outbound than other counties on the corridor, at 27.3 percent of tonnage. Other major commodity types include warehousing and distribution (18.5 percent), chemicals (12.1 percent), and non-metallic minerals (11.8 percent).
- **Camden County** is led by warehousing and distribution (22.8 percent), followed by petroleum products (19.9 percent) and non-metallic minerals (17.5 percent).
- **Burlington County** has a similar profile to Camden County, with a top three commodity grouping of warehousing and distribution (23.3 percent), non-metallic minerals (18.4 percent), and petroleum



products (17.6 percent). Clay, concrete, glass, and stone is also a growing commodity grouping moving north on the corridor, now constituting 15.1 percent of tonnage.

- **Mercer County** illustrates a slight rise in warehousing and distribution products and clay, concrete, glass, and stone, now accounting for 25.4 percent and 16.7 percent of tonnage, respectively. Petroleum products (16.0 percent) and non-metallic minerals (15.4 percent) round out the top four commodity groupings.

Table 29—Origin-destination heavy-truck tonnage by commodity type, Interstate 295 and New Jersey Turnpike combined

Rank	Commodity	Corridor	Salem	Gloucester	Camden	Burlington	Mercer
1	Warehousing and distribution	22.3%	18.3%	18.5%	22.8%	23.3%	25.4%
2	Petroleum/coal	19.5%	20.8%	27.3%	19.9%	17.6%	16.0%
3	Non-metallic minerals	15.8%	11.7%	11.8%	17.5%	18.4%	15.4%
4	Clay/concrete/glass/stone	13.1%	5.9%	10.4%	11.9%	15.1%	16.7%
5	Food/kindred	9.5%	8.2%	8.7%	10.2%	9.9%	9.5%
6	Chemicals/allied	8.8%	20.5%	12.1%	8.3%	5.6%	5.5%
7	Farm	1.5%	2.6%	2.0%	1.5%	1.1%	1.0%
8	Lumber/wood	1.4%	2.9%	1.5%	1.1%	1.1%	1.2%
9	Printed matter	1.1%	0.6%	0.5%	1.0%	1.3%	1.4%
10	Primary metal	1.0%	1.1%	1.3%	0.8%	0.8%	1.1%
	All others	6.1%	7.5%	6.0%	4.9%	5.8%	6.8%

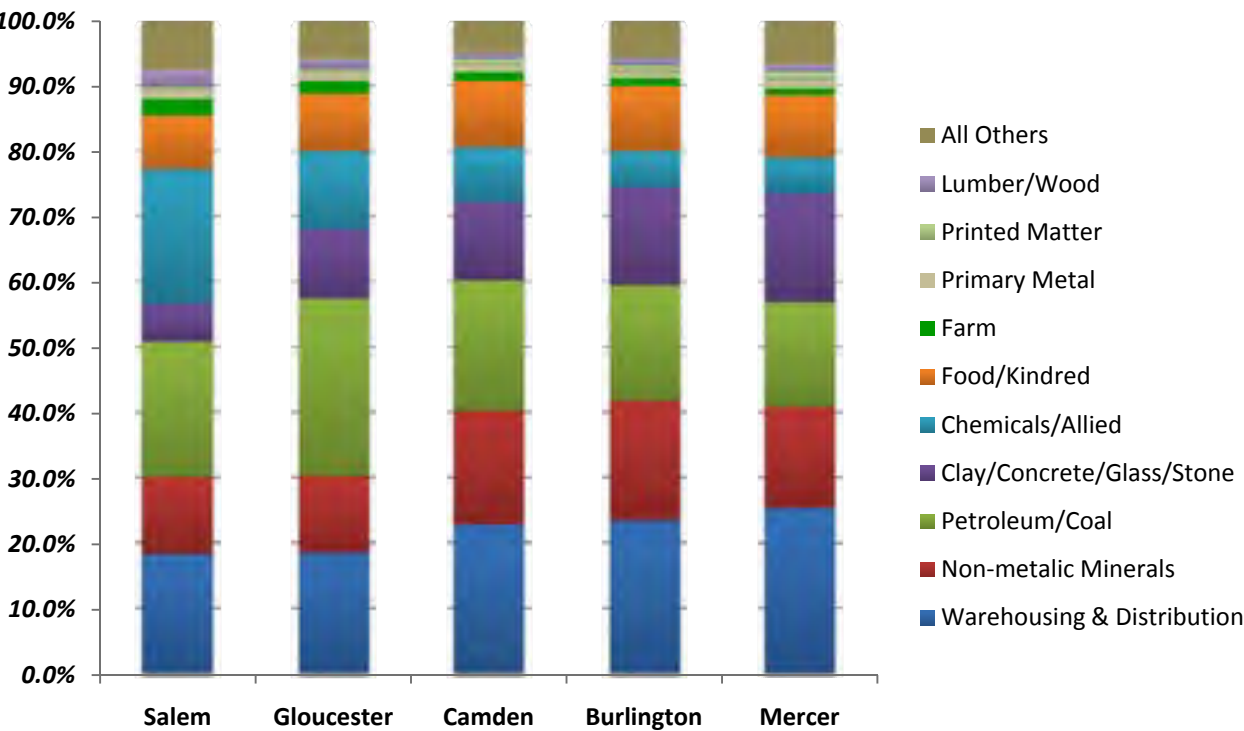


Figure 78—Origin-destination heavy-truck tonnage by commodity type, Interstate 295 and New Jersey Turnpike combined

Goods movement overall findings

The use of an FAF3 network assignment process to parallel truck routes is challenging, particularly when they have important differences—their physical extent, the number of local access points, and especially the out-of-pocket cost for truckers to use the facilities. Least-distance and least-time path assignment processes, including, but by no means limited to FAF3, will tend to assign a certain amount of traffic to the wrong facility. This issue is present in Southern New Jersey, where the NJTPK and Interstate 295 provide different, but parallel, functionality.

Taken as a whole, however, the analysis paints a useful picture of the combined function of these two facilities in Southern New Jersey. Of particular note are the lessons that can be drawn from the combined facility statistics. The NJTPK and Interstate 295:

- Are nationally significant truck corridors, linking New Jersey with the entire Atlantic Coast via the Interstate 95 Corridor
- Provide critical linkages to adjoining states
- Provide vital internal connections among New Jersey’s economic subregions

In Northern New Jersey, where the NJTPK is alone as the primary north-south truck corridor, there are different types of traffic patterns. Far more traffic is generated to and from the Northern New Jersey counties and to and from New York City. Through-state traffic shares on the NJTPK in Northern New Jersey are extremely high, reflecting its importance as a national link between New York City/New England markets and the remainder of the U.S. via connections with Interstate 78, Interstate 80, and the Pennsylvania Turnpike to the west along with the NJTPK and Interstate 295 in Southern New Jersey.



Pavement Condition

The project team reviewed PMS data provided by NJDOT to identify locations where deficient pavement exists along the corridor. PMS data compiled throughout 2011 indicating deficient pavement locations was used in this analysis.

The prevalence of poor pavement along Interstate 295 and the NJTPK can have a significant impact on delivery times, travel speeds, and safety for heavy-vehicle traffic. Poor pavement can increase overall trucking costs due to increased maintenance costs for vehicles using these roadways. Any major resurfacing projects along either of these routes will also dramatically impact freight movement, especially since many highway construction projects take place during non-commuter peak travel periods during which the number of heavy-truck trips is still significant.

Interstate 295

Figure 79 illustrates pavement ratings along Interstate 295. A review of 2011 pavement ratings for Interstate 295 shows that approximately 7.0 percent of Interstate 295 exhibits deficient pavement. This includes a nearly 3-mile section of deficient pavement on Interstate 295 southbound between MP 11.3 and MP 14.0 in Gloucester County.

New Jersey Turnpike

A review of pavement ratings for the NJTPK found that there are no deficient pavement locations throughout the corridor.

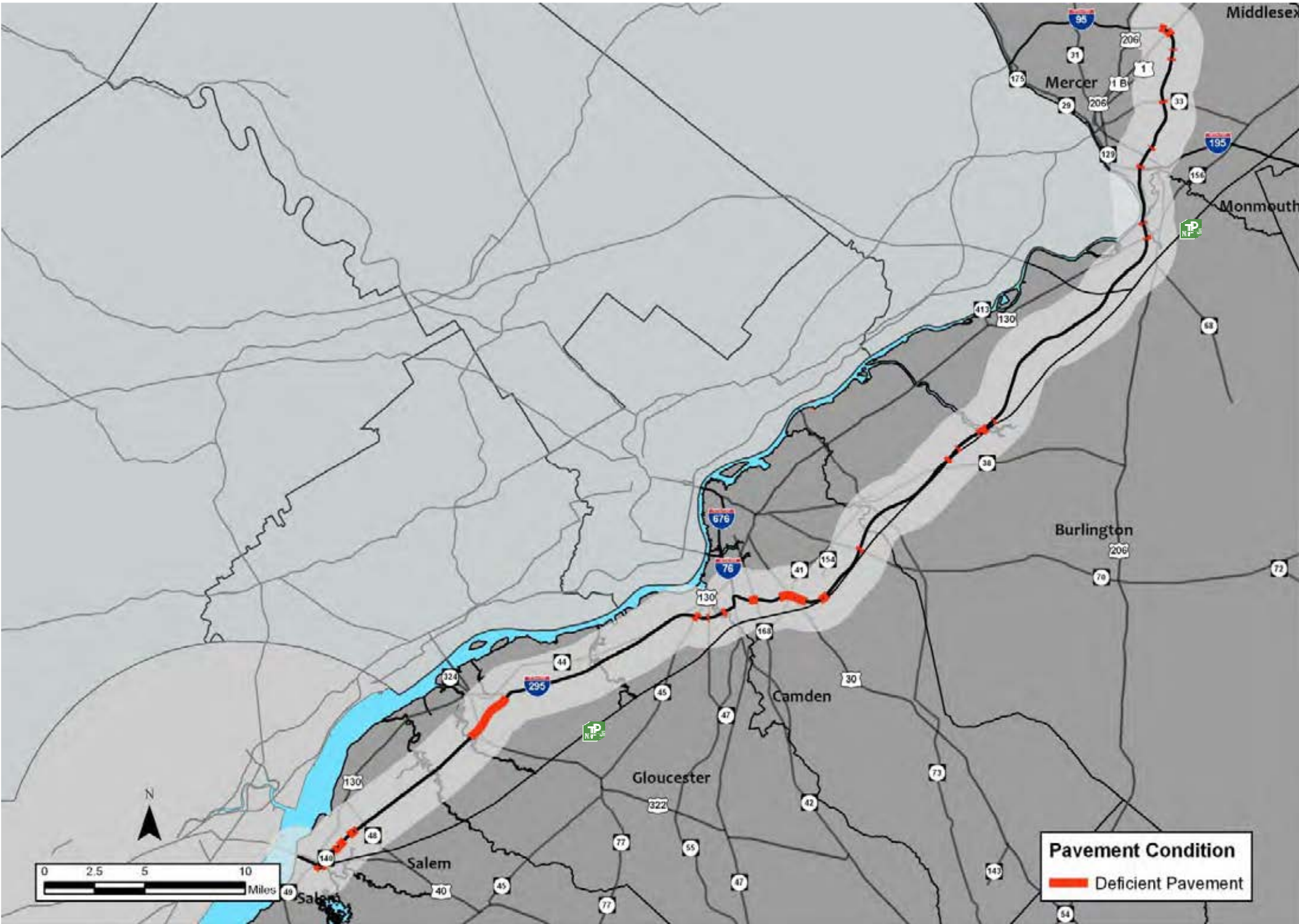


Figure 79—Pavement conditions, Interstate 295

Crash Analysis

The project team reviewed three years of crash data (2006 through 2008) in order to identify clusters of crashes involving heavy vehicles (vehicle types 20-29). Based on this analysis, clusters were mapped for both Interstate 295 and the NJTPK (Figure 80 and Figure 81). While most clusters were associated with interchanges, several mainline clusters were noted as well. While all crashes impact traffic flows and affect delivery times for the trucking industry, crashes involving heavy trucks are more likely to have injuries and fatalities, and often result in more damage to other vehicles or properties. Crashes impact through-travel times and delivery times for freight traffic. During the review of crash data for the NJTPK, it was determined that the coding of crashes is done based on MPs tied to NJDOT's Straight Line Diagrams, as opposed to the exact location of the crash. Therefore, the number of crashes at each cluster is significantly higher than other corridors reviewed as part of this project, and these clusters represent crash concerns at each interchange without respect to specific ramps or locations within an interchange.

Interstate 295

Two major crash clusters were identified along Interstate 295, both in the vicinity of heavily congested areas near Camden. They include:

- **Interchange 26** (Interstate 76, Interstate 676, and NJ Route 42)—This Interchange is a major access point to multiple connecting roadways running east and west. It is located within a segment of congested roadway with poor pavement conditions.
- **Interchange 28** (NJ Route 168)—This Interchange is located on a two-lane segment that causes serious bottlenecks and exhibits poor pavement conditions.

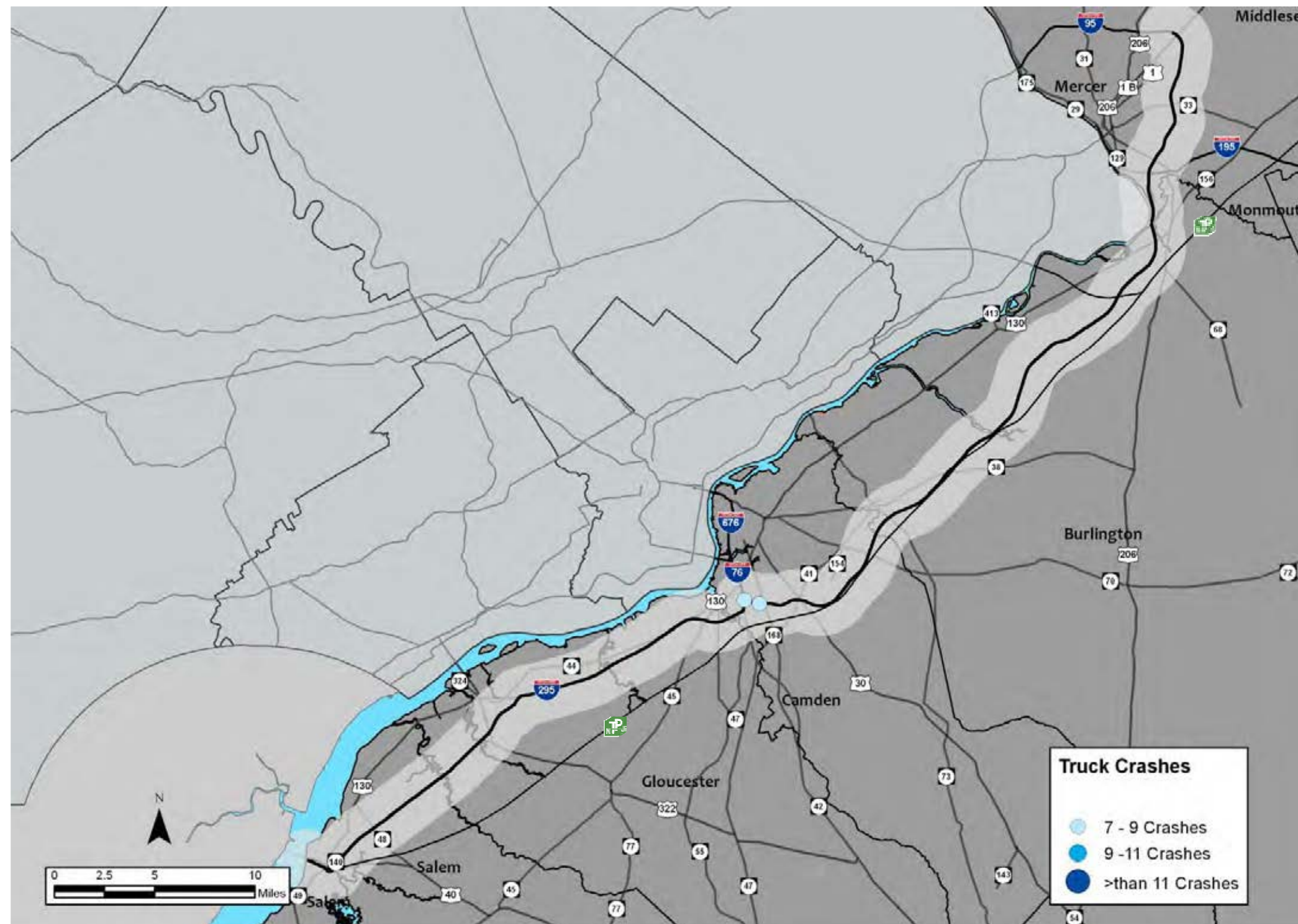


Figure 80—Truck crash hot spots, Interstate 295, 2006 through 2008



Additionally, the project team reviewed the NJDOT's document *Large Truck Safety*, Volumes 1-4, prepared by NJIT. This report reviews large truck crash data for the entire state for the same years analyzed above (2006 through 2008). From a statewide perspective, Interstate 295 ranked seventh out of all roadways with 555 large truck crashes, for a 2.0 percent statewide share. In terms of severity, it was sixth in the state, with nine crashes causing severe injury (1.6 percent of the corridor's large truck crashes).

New Jersey Turnpike

Several major crash clusters were identified along the NJTPK, the highest of which are predominantly found at interchanges in the northern portion of the highway. Those clusters include:

- **Interchange 9** (U.S. Route 1/NJ Route 18) (SLD MP 38.07/NJTPK MP 83.4)—This interchange is located adjacent to several industrial complexes in East Brunswick Township and also provides access to U.S. Route 1, which functions as a non-tolled parallel alternative to the NJTPK.
- **Interchange 10** (Interstate 287/NJ Route 440) (SLD MP 42.73/NJTPK MP 88.1)—This interchange provides a key link to another major freight corridor (Interstate 287) and the dense conglomeration of industrial uses in Somerset and Middlesex Counties. It links to points east via the Outerbridge Crossing.
- **Vicinity of Grover Cleveland Service Area** (SLD MP 47.38/NJTPK MP 92.9)—This service area is a heavily used stopover point for heavy-vehicle traffic.
- **Interchange 13** (Interstate 278) (SLD MP 53.76/NJTPK MP 99.4)—This interchange exhibited some of the heaviest crash occurrences within the corridor and provides a link to the Bayway refinery and other industrial uses in Linden as well as a direct link to Staten Island via the Goethals Bridge.

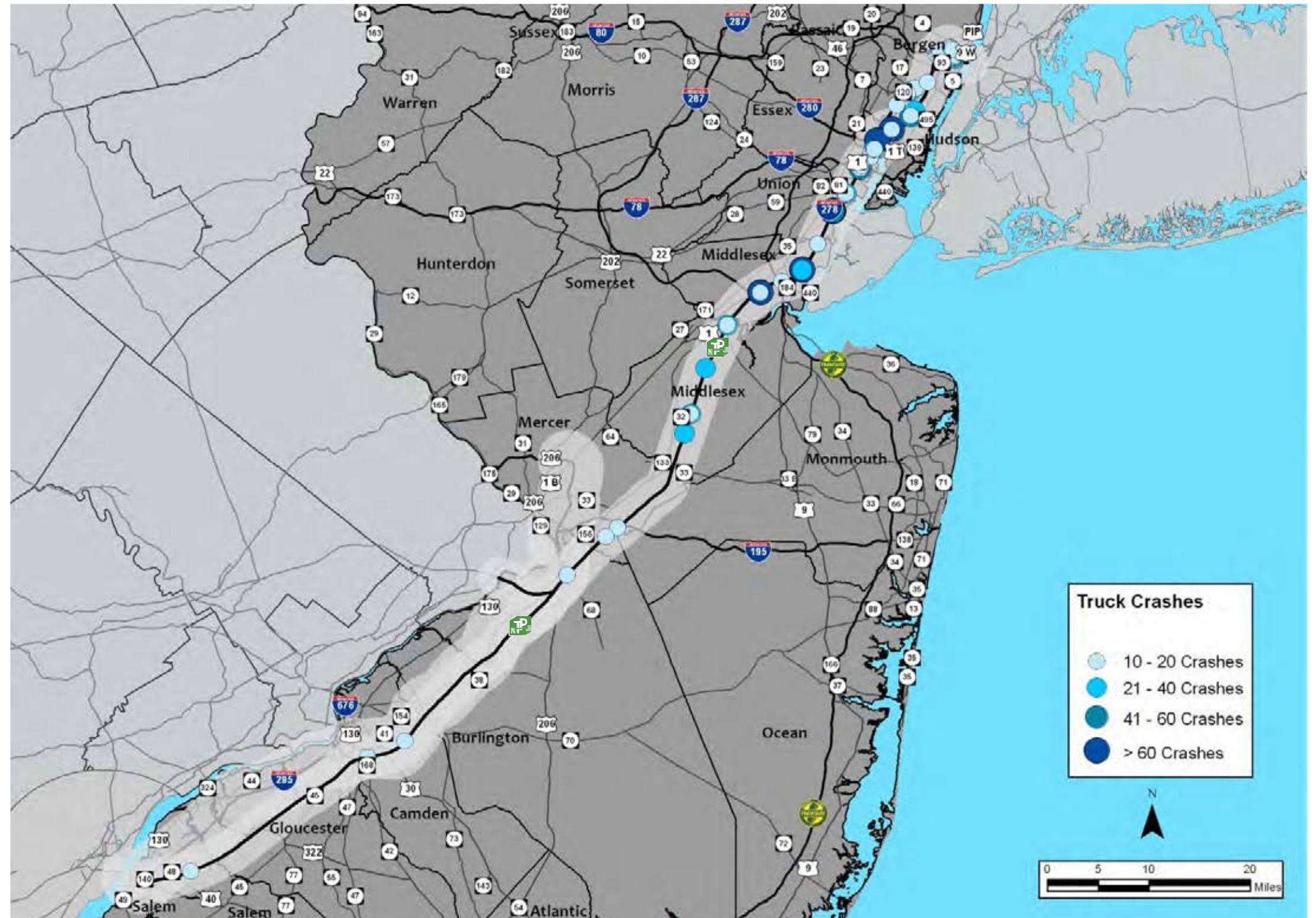


Figure 81—Truck crash hot spots, New Jersey Turnpike, 2006 through 2008

- **Interchange 14** (Interstate 78) (SLD MP 58.19/NJTPK MP 104.7)—This interchange links the NJTPK with the east-west freight corridor and also serves as a connection to Newark Liberty Airport and the Port of Newark/Elizabeth.
- **Eastern Spur/Western Spur bridges over Passaic River** (MP 62.52/NJTPK MP E107.8)—The vertical curve of this location and heavy congestion through this area is a likely cause of many crashes within this location.
- **Eastern Spur bridge over Hackensack River** (MP 64.48/NJTPK E109.8)—While this location carries significant vehicular and truck volumes, no significant issue was readily identifiable here.
- **Interchange 16E** (NJ Route 3) (SLD MP 67.60/NJTPK MP E 112.3)—This interchange links the NJTPK with the numerous industrial uses within Secaucus as well as points east via the Lincoln Tunnel.

Based on NJDOT’s document *Large Truck Safety*, Volumes 1-4, the NJTPK/Interstate 95 system had the highest number of large-truck crashes in the state, with 5,268 crashes for a 19.3-percent statewide share. It also had the highest number of large-truck crashes resulting in severe injury, with 38 crashes (0.7 percent of the corridor’s large truck crashes). Additionally, segments of the NJTPK/Interstate 95 corridor represent eight of the top ten road segments in the state for large-truck crashes, including all of the clusters listed above. The top three segments in the state are on the northern portion of the NJTPK in Elizabeth (498 crashes, MP 53.86 to MP 58.18, vicinity of Interchange 13), Secaucus (489 crashes, MP 64.48 to MP 69.17, vicinity Hackensack River bridge and Interchange 16E), and Newark (412 crashes, MP 58.18 to MP 62.52, vicinity of Interchange 14 for Interstate 78, Interchange 15E for U.S. Route 1 Truck, and the Passaic River bridge).

Congestion

NJDOT provided CMS³⁰ data for the entire Interstate 295 and NJTPK corridors within New Jersey. CMS scores indicate areas of recurring congestion along New Jersey’s highway network, which can have significant impacts on freight traffic. Recurring congestion significantly impacts travel times and the on-time delivery of freight plus adds to the overall cost of freight movement in terms of lost time and increased fuel usage. NJDOT’s CMS database also provides information related to the state’s “105 most congested commuter corridors,” and “problem area interchanges” which are priority locations in terms of recurring congestion along New Jersey’s highway network.

Three segments along the north-south corridor are among the top 105 most congested commuter corridors. This recurring congestion ensures that freight traffic associated with industrial uses in these areas will have to deal with impacts and costs associated with lost time to travel schedules. Further illustrating the impacts of congestion along Interstate 295 and the NJTPK are the 28 interchanges along the north-south freight corridor that have been identified by NJDOT as problem area interchanges.

Interstate 295

A review of CMS data for the Interstate 295 corridor (Figure 82) indicated that approximately 18 percent of the roadway was classified as *very congested*. The largest segment of very-congested roadway is a nearly 8-mile segment located between Interchange 34 (NJ Route 70) and Interchange 43 (County Route 635).

Anecdotal information provided by NJDOT indicated that a more than 20-mile bi-directional segment (MP 27.00/NJ Route 42 to MP 47.50/County Route 541) is ranked 32nd on NJDOT’s list of 105 most congested

commuter corridors, indicating that it suffers from some of the highest recurring congestion levels in the entire state. Six interchanges on Interstate 295 have been identified as problem area interchanges:

- Interchange 26 (NJ Route 42)
- Interchange 29 (U.S. Route 30)
- Interchange 32 (Camden County Route 561)
- Interchange 36 (NJ Route 73)
- Interchange 40 (NJ Route 38)
- Interchange 67 (U.S. Route 1)

New Jersey Turnpike

A review of CMS data for the NJTPK corridor (Figure 83) indicated several segments of severely and very-congested roadway throughout the Interstate 95 portion of the roadway. This includes a nearly 14-mile segment classified as *severely congested* located between Interchange 11 (U.S. Route 9/GSP) and Interchange 14 (Interstate 78). This section of the corridor is in close vicinity to many industrial parks and retail clusters and also spans the most densely populated region of New Jersey. The heaviest amounts of freight tonnage are moved through this segment based on FAF3 Model volumes detailed earlier. As a result, the severe congestion on this segment of roadway can have negative impacts on the trucking industry through delayed travel time, crashes, and other incidents.

Anecdotal information provided by NJDOT indicated that two bi-directional segments are ranked on NJDOT’s list of 105 most congested corridors, indicating that it suffers from some of the highest recurring congestion levels in the state:

- MP 6.60 (Interchange 6—PA Turnpike Extension) to MP 77.96 (George Washington Bridge)—Ranked #2
- Western Spur, MP 0.00 to MP 11.03—Ranked #26

Twenty-two interchanges on the NJTPK have been identified as problem area interchanges:

- Interchange 3 (NJ Route 166)
- Interchange 4 (NJ Route 73)
- Interchange 5 (Burlington County Route 541)
- Interchange 6 (Interstate 276/PA Turnpike Extension)
- Interchange 7A (Interstate 195)
- Interchange 9 (NJ Route 18)
- Interchange 10 (Interstate 287)
- Interchange 11 (U.S. Route 9/GSP)
- Interchange 13 (Interstate 278)
- Interchange 13A (NJ Route 81)
- Interchange 14 (Interstate 78)
- Interchange 15E, western alignment (U.S. Routes 1&9T)
- Interchange 15E, eastern alignment U.S. Routes 1&9T
- Interchange 15W (Interstate 280)
- Interchange 16E (NJ Route 3)
- Interchange 16W (NJ Route 3)

³⁰ The CMS data provided are based on 2006 ADT data and for each link includes maximum v/c ratios, congestion description, county and MPO ranking, and ultimately a priority score and rating (low, medium, or high).



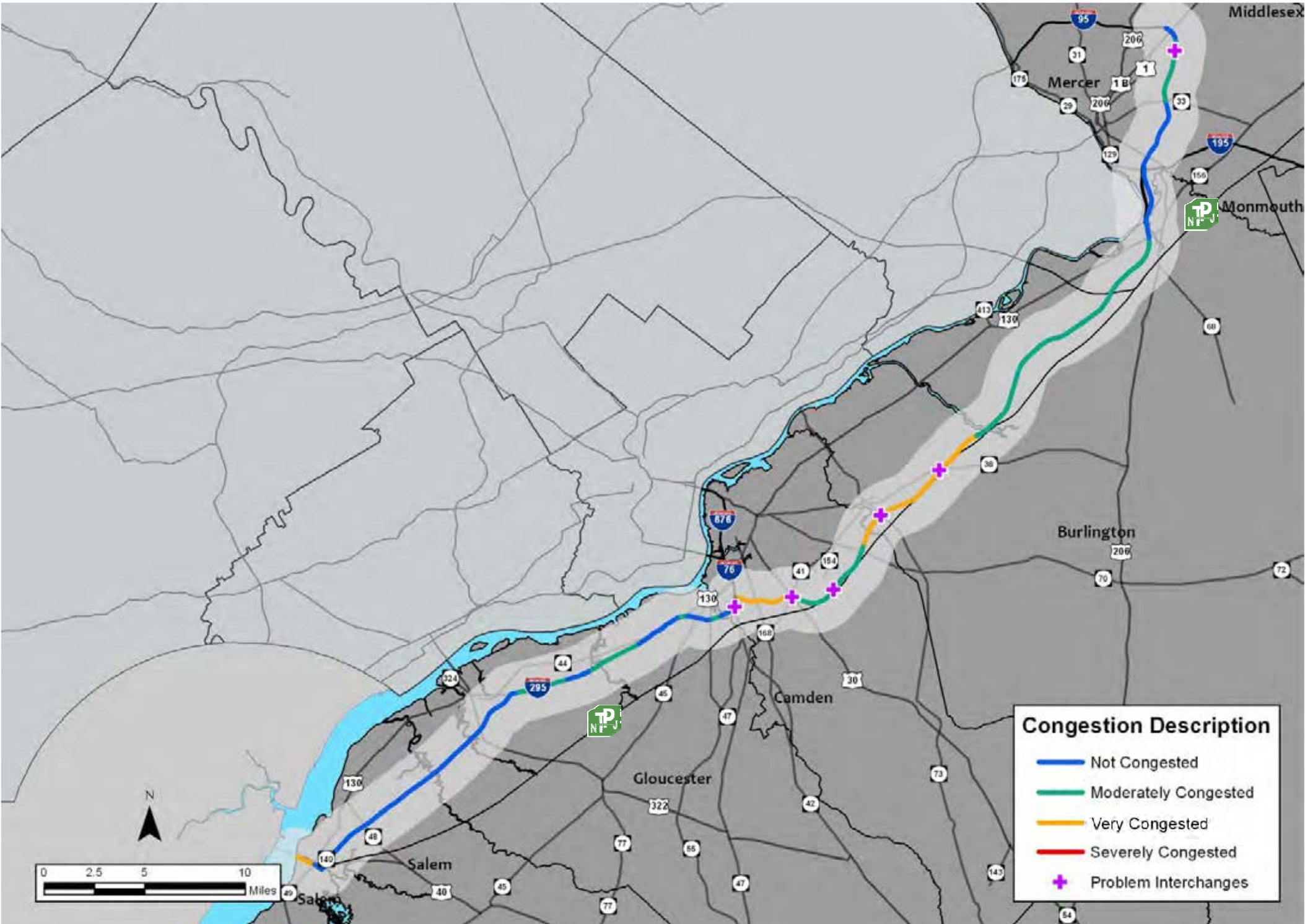


Figure 82—CMS score, Interstate 295



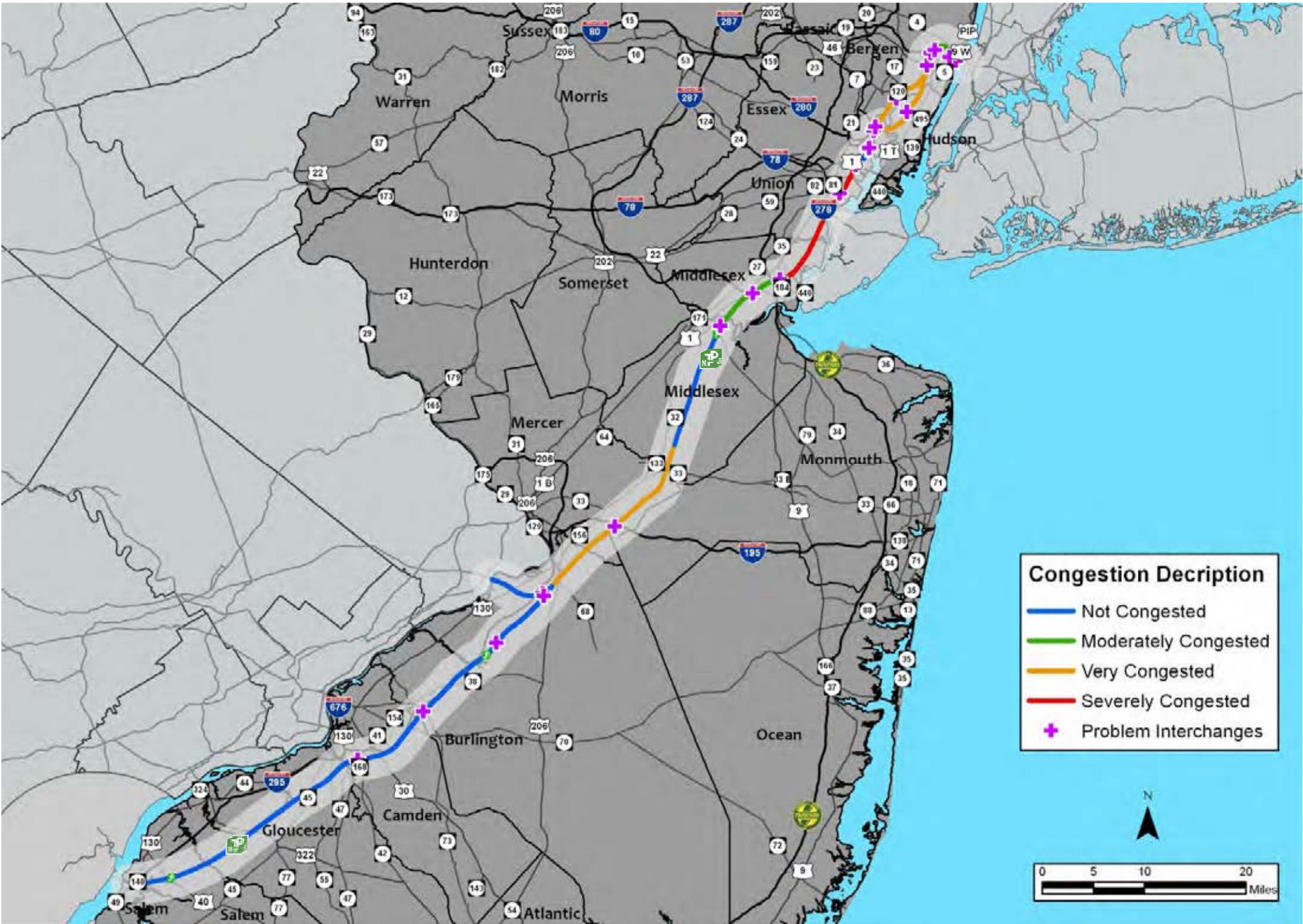


Figure 83—CMS score, New Jersey Turnpike



Bridge Data

A review of the NJDOT 2009 BMS data³¹ indicated a significant number of bridges that were determined to either be structurally deficient or functionally obsolete.³² Bridges that are structurally deficient may adversely impact freight traffic throughout the region if the issues leading to the structurally deficient classifications progress further and require load restrictions. While load restrictions on major roadways like Interstate 295 or the NJTPK are unlikely, the maintenance, rehabilitation, or replacement work required to return the structurally deficient bridges to a satisfactory level of service would likely cause major disruptions to freight traffic, in the form of lane closures, reduced lane widths, slower speeds, or lengthy detours. Construction may further compound freight movement given the tendency for many highway construction projects to be scheduled for off-peak commuter periods when freight traffic is often higher.

Interstate 295

The BMS includes a total of 185 bridges along or crossing Interstate 295 in New Jersey. Figure 84 illustrates the bridges along the corridor that are classified as structurally deficient. As shown in Table 30 , three of these structures are on the mainline of Interstate 295, including a structure at the interchange with NJ Route 41.

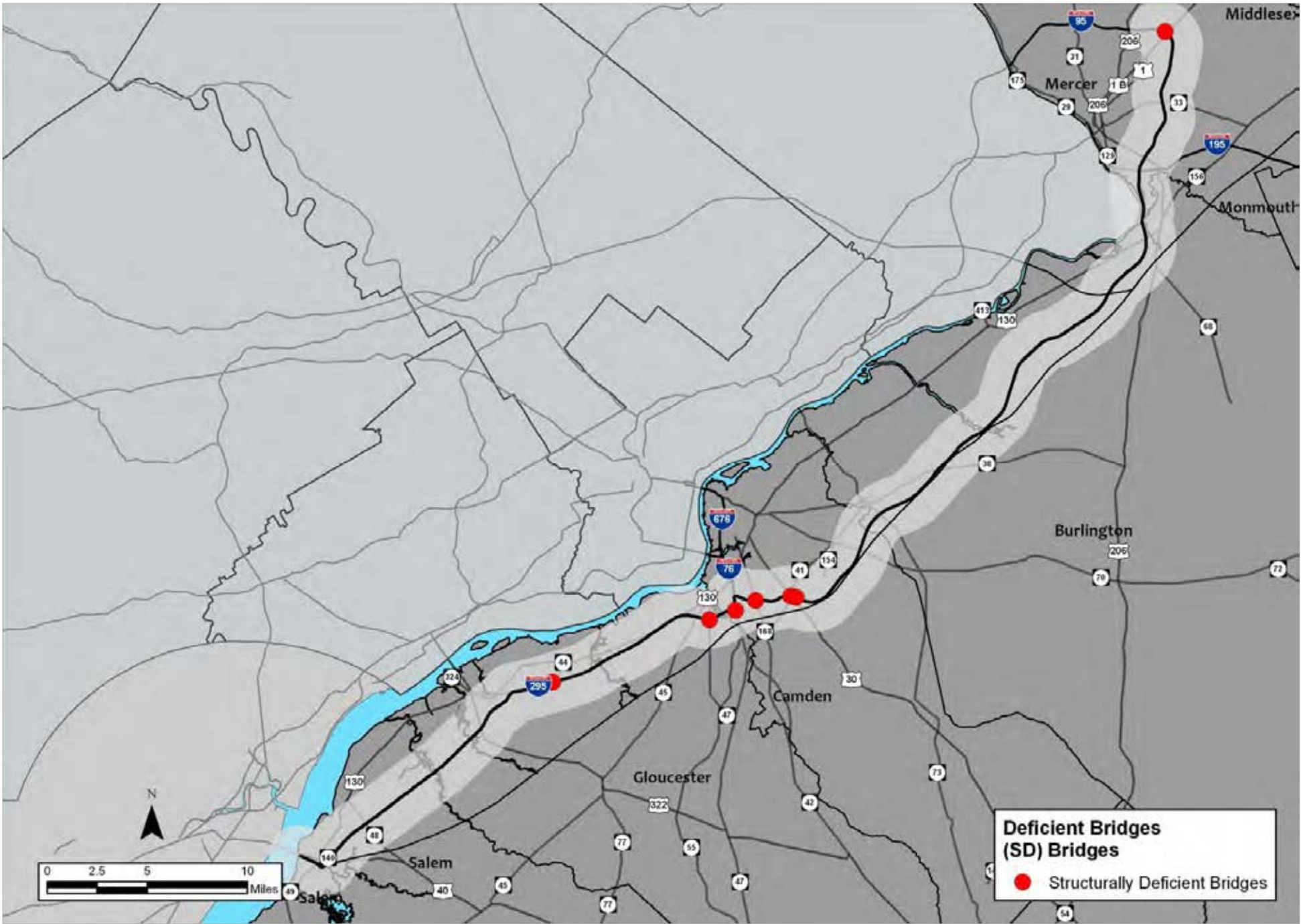


Figure 84—Structurally deficient bridges, Interstate 295

³¹ NJDOT’s Bridge Management System (BMS) is an inventory of all bridges with a span over 20 feet in New Jersey. It includes information on their physical characteristics, condition, and ownership. Bridges are inspected biennially and the condition of various bridge elements is rated on numerical scale. The scale ranges from zero to nine, with a zero representing a failed condition and a nine representing an excellent condition.

³² A bridge is deemed structurally deficient if the condition rating of its deck, superstructure, substructure or culvert is 4 (poor) or less; or if either its structural evaluation for load capacity or its water adequacy has an appraisal rating of 2 (critical) or less. Structural deficiency does not necessarily mean that a bridge is unsafe. It often indicates that a bridge has been load posted and is unable to handle vehicle loads that would normally be expected on the roadway, requires rehabilitation to remain to open, or is closed. Any bridge that is classified as structurally deficient is excluded from the functionally obsolete category. A bridge is classified as functionally obsolete if the deck geometry, underclearances (vertical and horizontal), approach roadway alignment, overall structural evaluation for load capacity, or waterway adequacy has an appraisal rating of 3 (serious) or less. Functional obsolescence typically means that the bridge geometry (clearances, lane widths, etc) no longer meets the current design criteria for the roadway system for which it is a part.



The NJDOT BMS also uses a variety of data to create a holistic view of a bridge’s condition and its relative importance to the transportation network, and thereby create a priority ranking for statewide bridge maintenance purposes.³³ An analysis of the BMS rankings shows no bridges along Interstate 295 that are amongst the highest priority rankings within the BMS. Bridges on this corridor are critical nodes in the transportation network with characteristics that tend to emphasize them within the NJDOT ranking system (high ADTs, urban interstate, long detour lengths), so any significant signs of deterioration would push them towards the top of the priority list.

Table 30—Summary of structurally deficient bridges, Interstate 295

Route	Feature Intersected	Interstate 295 Milepost	Municipality	County
County Route 673	County Route 673 (Democrat Road) over Interstate 295 (MP 16.42)	16.42	Greenwich Township	Gloucester
NJ Route 47	NJ Route 47 over Interstate 295	25.18	Westville Borough	Gloucester
NJ Route 168	NJ Route 168 over Interstate 295	28.16	Bellmawr Borough	Camden
Interstate 295	Interstate 295 over NJ Route 41	29.95	Barrington Borough	Camden
Interstate 295	Interstate 295 over Copley Road (County Route 666)	30.22	Barrington Borough	Camden
Interstate 295	Interstate 295 Ramps G and C over D and R Canal	67.67	Lawrence Township	Mercer

Source: NJDOT Bridge Management System Database, 2011

New Jersey Turnpike

The BMS includes a total of 519 bridges along or crossing the NJTPK statewide. Of these, none were found to be structurally deficient.

The NJDOT BMS also uses a variety of data to create a holistic view of a bridge’s condition and its relative importance to the transportation network and, thereby, create a priority ranking for statewide bridge maintenance purposes. An analysis of the BMS rankings shows no bridges along the NJTPK among the highest priority rankings within the BMS.

Stakeholder Feedback

Meetings were held with the Motor Trucking Association and the Commercial Real Estate Developers Association (NIAOP) to discuss key issues identified and gain their feedback on problem locations, issues and potential solutions.

Participants in the trucking industry discussion noted that:

- Ramp geometry is problematic at interchanges on the northern sections of the NJTPK.
- Several turnpike interchange toll plazas need to be expanded to handle expanded truck volumes.
- The Goethals Bridge and Outerbridge Crossing are older structures which do not meet current engineering standards (e.g., lanes are too narrow to accommodate current tractor- trailer widths).

Participants in the trucking industry discussion recommended several improvement priorities in the north-south corridor, including:

- Initiate widening of NJTPK from exit 6 (Pennsylvania Turnpike) to exit 1 (Delaware Memorial Bridge).
- Allow overweight trucks on the NJTPK from exit 1 to 14.
- Upgrade U.S. Route 130, which compliments and parallels Interstate 295/Interstate 95 corridors—the road condition was considered terrible by participants. The trucking firms consider 130 *neglected*. Several participants noted that the NJDOT approach to Routes 1/9, which recognized the interaction of the routes with the NJTPK, could be applied to U.S. Route 130.
- Add more rest stops in the corridor and on the NJTPK—current rest stops at Bordentown and Paulsboro should be expanded. A large (400 truck spaces) proposed rest area at Cherry Hill was stopped because of local opposition. These are critical needs for safety reasons, and the improvements could be linked with the 10-hour rest rules.
- Improve flow at the toll lanes at George Washington Bridge—additional higher speed EZ-Pass lanes should be opened to improve congestion and safety issues.

³³ The ranking is a weighted average of the following bridge characteristics (weighting in parenthesis): average daily traffic (10 percent), functional class (5 percent), deck condition (5 percent), sufficiency rating (30 percent), structurally deficient (25 percent), functionally obsolete (10 percent), bypass detour length (5 percent), scour critical (5 percent), and fracture critical (5 percent). The formula produces a score ranging from 0—500, which then corresponds to a 1—10 priority ranking, with a ranking of 1 representing the highest priority. Bridges with a score greater than 450 are highest priority, scores 400—450 are second, 350—399 are third, etc. Any bridge required to have interim inspections between its biennial inspections receive a minimum score of 399. Engineers at NJDOT review the ranking list and refine it further based on engineering judgment.



Participants in the industrial developer and property owner discussion further recommended:

- That the focus on improvements should center on north-south movements rather than east-west to support development in New Jersey rather than Pennsylvania.
- Rail and maritime access to key facilities should be assessed—such access could impact traffic flow and congestion in key corridors, particularly the north-south corridor. Possible new developments to explore could be an intermodal rail yard in Middlesex County on the NJTPK and barge service/short sea shipping from Port Raritan.
- Overweight trucks and tri-axle trucks should be permitted on the NJTPK. The participants felt that this would help keep business in New Jersey.
- Making the truck lanes on the turnpike “truck only” lanes should be considered.
- Improvements should be made at Interchange 13A and North Avenue to support port-related truck movements.

Corridor Priority Projects

An analysis of crash hot spots involving trucks, poor pavement locations, and areas with a high CMS score is illustrated on Figure 85 and Figure 86 for Interstate 295 and the NJTPK. When combined, these problems can severely impact on-time freight deliveries and shift route choice to the state, county, and local road network or even influence the decision making on the siting of distribution facilities.

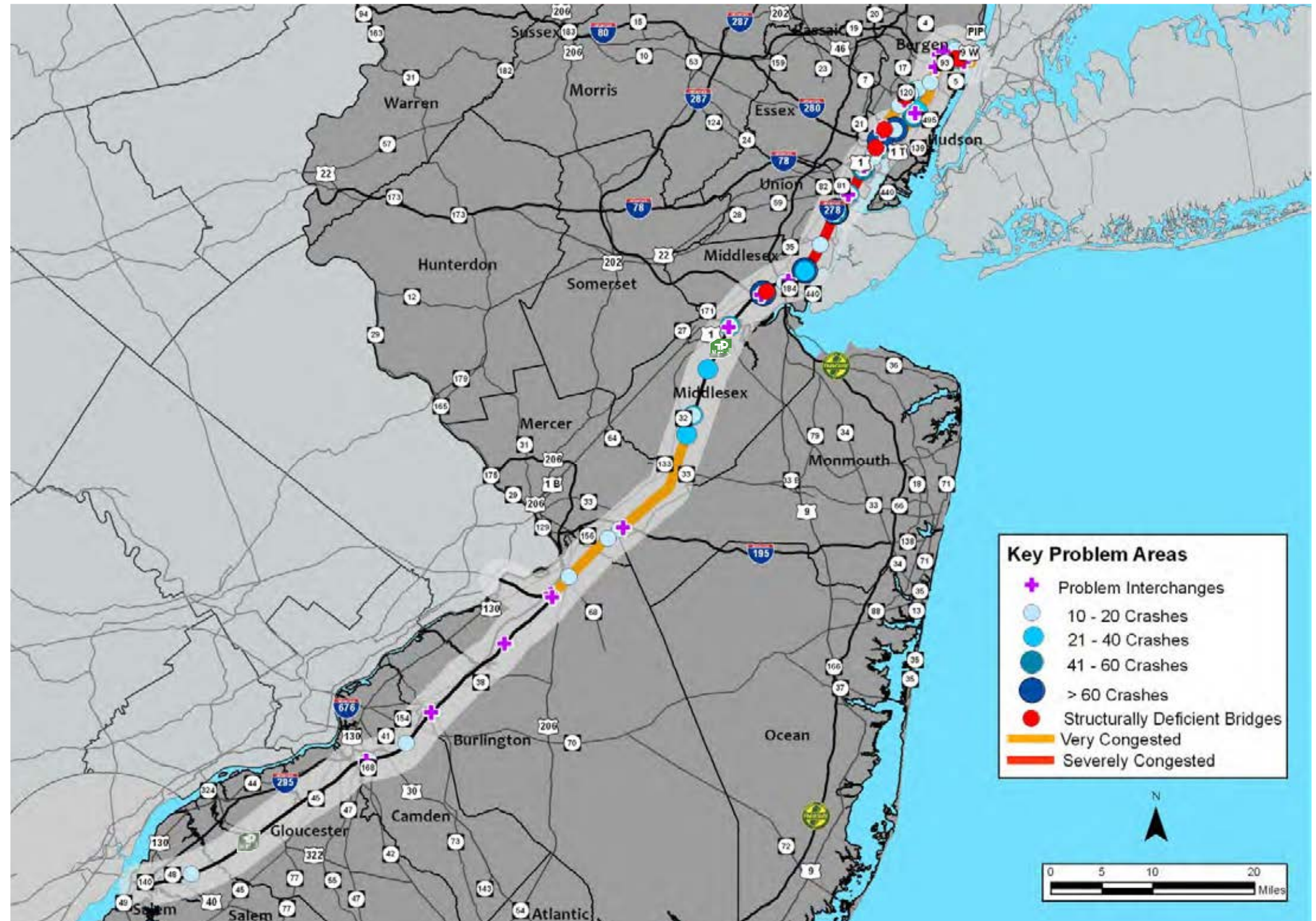


Figure 85—Key problem areas, New Jersey Turnpike

Planned Improvements

A list of planned projects included in the NJTPA's Transportation Improvement Program (TIP) for Fiscal Years 2010–2013 is included below. Information on NJTPK Projects was available for FY 2009–2018. These improvements were reviewed against the problem area list and, if identified issues were addressed, the problem area was eliminated from the list.

Interstate 295

- **Interstate 295/NJ Route 42/Interstate 76 Interchange Improvements** (MP 25.71 to MP 28.20, Camden County)—Relieve the existing bottleneck and address major congestion and safety issues by constructing a six-lane mainline direct connection on Interstate 295 through the interchange, eliminating dangerous merging and weaving movements, upgrading ramp geometries, and providing shoulders throughout the interchange. The project is currently in design, which will be completed in FY 2013. Construction will run through FY 2019 (the last year for which NJDOT funding projections are available).
- **Interstate 295/NJ Route 42 Missing Moves, Bellmawr** (MP 25.71 to MP 26.0, Camden County)—Provide new ramps and related improvements to enable motorists to make movements between Interstate 295 northbound/NJ Route 42 southbound and NJ Route 42 northbound/Interstate 295 southbound that are not possible in the current configuration. Construction is expected to be completed in FY 2016.
- **ITS Improvements at Northbound approach to U.S. Route 1 Interchange** (MP 67.0 to MP 67.5, Mercer County)—Install ITS technologies to open the northbound shoulder for use as a deceleration lane only during periods of peak demand. This project is an interim solution to relieve backups into the Interstate 295 northbound through lanes near the U.S. Route 1 Interchange during the AM peak hours. Preliminary Engineering is scheduled for FY 2012, and it will be implemented during FY 2014.
- **Pavement Repair and Resurfacing, Rancocas-Mount Holly Road to U.S. Route 130** (MP 45.0 to MP 57.6 northbound, MP 47.0 to MP 57.6 southbound, Burlington County)—Pavement repair and resurfacing of Interstate 295 were identified by NJDOT's Pavement Management System as being in poor condition. Resurfacing will be completed by the end of FY 2012.

New Jersey Turnpike

- **Tremley Point Connector Road** (Interchange 12, Middlesex and Union Counties)—Construct a new roadway over the Rahway River, linking Brownfield redevelopment areas in Linden's Tremley Point and Carteret's International Trade and Logistics Center (Interstate Port 12) development with Interchange 12. This new roadway will provide a direct connection for commercial vehicles to access the NJTPK without traveling through the local roadway network. The project facilitates development of more than 6 million square feet of industrial space and approximately 2,000 new jobs. The project is in the design and right-of-way phases.
- **Hackensack Easterly Bridge Rehabilitation** (Essex and Hudson Counties)—Complete bridge redecking, structural repairs, and seismic retrofitting of the existing NPTK Eastern Hackensack River Bridges (structure #E109.8). The project is currently in the design phase and the rehabilitation is scheduled for completion in FY 2013.
- **Interchange 6/9 Widening Program** (MP 43 to MP 83, Burlington and Mercer Counties)—Relieve congestion by constructing three additional northbound and three additional southbound lanes

between interchange 6 and Interchange 8A. Additionally, one lane northbound and one lane southbound will be added between Interchange 8A and Interchange 9. Upon completion, the NJTPK will be a 12-lane, dual-dual (separated "cars only" and "cars/buses/trucks" lanes) roadway between Interchange 6 and Interchange 9, set to accommodate projected traffic demand through 2032. Construction is underway and anticipated to be complete in late FY 2014.

- **Interchange 8A to U.S. Route 130 Connection** (Middlesex County)—Address significant traffic congestion on NJ Route 32 between Interchange 8A and U.S. Route 130. NJ Route 32 is a major connector road for traffic traveling to/from the NJTPK in Middlesex County.
- **Interchange 9 Improvements** (Middlesex County)—This project will include widening the ramp from Route 18 southbound to the NJTPK to two lanes. The merge of Route 18 northbound traffic with vehicles entering from the NJTPK will be modified to improve traffic flow.
- **Interchange 16W to Interchange 18W Widening** (Bergen County)—Relieve congestion and accommodate future traffic volume by adding a third lane in each direction between Interchange 16W and Interchange 18W.
- **Delaware River—Turnpike Toll Bridge**—This project will construct a second span linking New Jersey and Pennsylvania along Interstate 276, operating in conjunction with the to-be-constructed interchange linking the Pennsylvania Turnpike with Interstate 95 in Bucks County, Pennsylvania. The new span project is partially funded and a date for construction has not yet been set.

Remaining Problem Locations

As noted above, the following locations are the remaining problem areas to be addressed along the NJ Turnpike and I-295 corridors once the already planned improvements are addressed.

Interstate 295

Like flows found on the New Jersey Turnpike, Interstate 295 serves several key industries in New Jersey, including chemicals, petroleum, and food and kindred. These industries serve New Jersey, New England, as well as the Midwestern and Southern United States. This corridor carries significant flows that originate or are destined to New Jersey.

Along Interstate 295, the section of roadway between Interchange 26 (NJ Route 42/Interstate 76) and Interchange 29 (U.S. Route 30) was identified as having recurring congestion, deficient pavement, safety issues, identified interchange deficiencies, and proximity to major local and freight nodes. This area is being addressed by existing projects noted above. One remaining problem location along Interstate 295 is summarized below. As projects are advanced through the Pipeline for these areas, additional deficiencies and issues may be identified.

Milepost 14.2 (Interchange 13—U.S. Route 130) (Figure 87)

There is an existing weaving section between U.S. Route 130 northbound and Interchange 14 (Gloucester County Route 684) that should be addressed at this location.

New Jersey Turnpike

The New Jersey Turnpike serves several key industries in New Jersey, including chemicals, petroleum, and food and kindred. These industries serve New Jersey, New England, as well as the Midwestern and Southern United States. The northern segments of the Turnpike serve more through NJ commodities however; the southern segments have higher percentages of internal to, inbound to, or outbound from NJ commodities.



Initial deficiencies identified for each problem location are summarized below along with summary graphics provided at the end of this section. As projects are advanced through the Pipeline for these areas, additional deficiencies and issues may be identified.

Clara Barton/John Fenwick Service Areas (Vicinity of Milepost 5.4) (Figure 88)

This section is adjacent to the southernmost service areas along the New Jersey Turnpike. Improvements should be identified to address the crash cluster that was identified in the vicinity of the service areas, with 19 crashes involving trucks reported between 2006 and 2008.

Milepost 42.2–78.0 (Interstate 287 to Northern Terminus) (Figure 89)

The analysis identified that the corridor most in need of improvements on the NJTPK is between its interchange with Interstate 287 and the roadway's terminus at the George Washington Bridge. While pavement and bridge conditions within this section are not deficient, the continuous severe congestion issues, identified interchange deficiencies, numerous safety concerns, significant freight flows, and proximity to major local and regional freight nodes make this section of the corridor a key location for further analysis.

Two locations within this corridor were identified as most critical in terms of existing deficiencies. The area in the vicinity of the Thomas Edison/Grover Cleveland Service Areas (Milepost 47.6) (Figure 90) is located along a section of the NJTPK classified as Severely Congested. This section carries more than 18,000 trucks daily, with nearly 90% of domestic flows in this area originating in or destined to New Jersey. Within the three year period assessed, this area had 116 crashes involving heavy vehicles between 2006 and 2008. Improvements should seek to eliminate geometric or congestion related issues that may influence these crashes and reduce congestion to improve efficient goods movement through this critical corridor.

The structure over the Passaic River located at Milepost 62.5 (Figure 91) carries more than 12,000 trucks daily, with nearly 50 percent of the commodity flows originating in or destined to New Jersey. This location has a truck crash cluster, with 85 crashes involving trucks occurring on the structure between 2006 and 2008. NJDOT's Congestion Management System ranks this area as Very Congested. Improvements should seek to address the crashes and reduce congestion on this structure.

Problem statement summaries graphics were developed for each of the key locations described above. The summaries include an aerial overview of the location, identified critical areas, and pertinent information about the location, including AADT, AADTT, Crash Data, NJDOT Management Systems Data, and applicable NJDOT Capital Investment Strategy categories. The problem statement summaries for the New Jersey Turnpike and Interstate 295, traveling north to south, are included in the following pages.





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



I-295: Milepost 14.2 (Interchange 13 – US 130)
Logan Township
Gloucester County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

Challenging weaving section
between U.S. 130 and Exit 14

High NJ-Based Truck Flows

BACKGROUND DATA

ROADWAY:	I-295
JURISDICTION:	NJDOT
MILEPOSTS:	14.2
ROADWAY PROFILE:	NB – 2-3 Lanes SB – 2-3 Lanes
COUNTY:	Gloucester
MUNICIPALITY:	Logan
AADT:	50,862 (2010)
PEAK HOUR %:	
NJ-BASED TRUCK FLOW %:	76%
AADTT (2007 FAF3)	5,139
CRASH DATA:	6 crashes involving heavy vehicles (2006-2008)

NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Not Congested CMS Score 4.16
DRAINAGE:	Not on list
BRIDGE:	No deficient structures
PAVEMENT:	Not Deficient

APPLICABLE CIS PROGRAM CATEGORY

- Bridge Assets
- Roadway Assets**
- Mass Transit Assets
- Airport Assets
- Transportation Support Facilities Assets
- Safety Management
- Congestion Relief
- Multimodal Support
- Local System Support



Figure 87 – Problem Locations, MP 14.2, Interstate 295



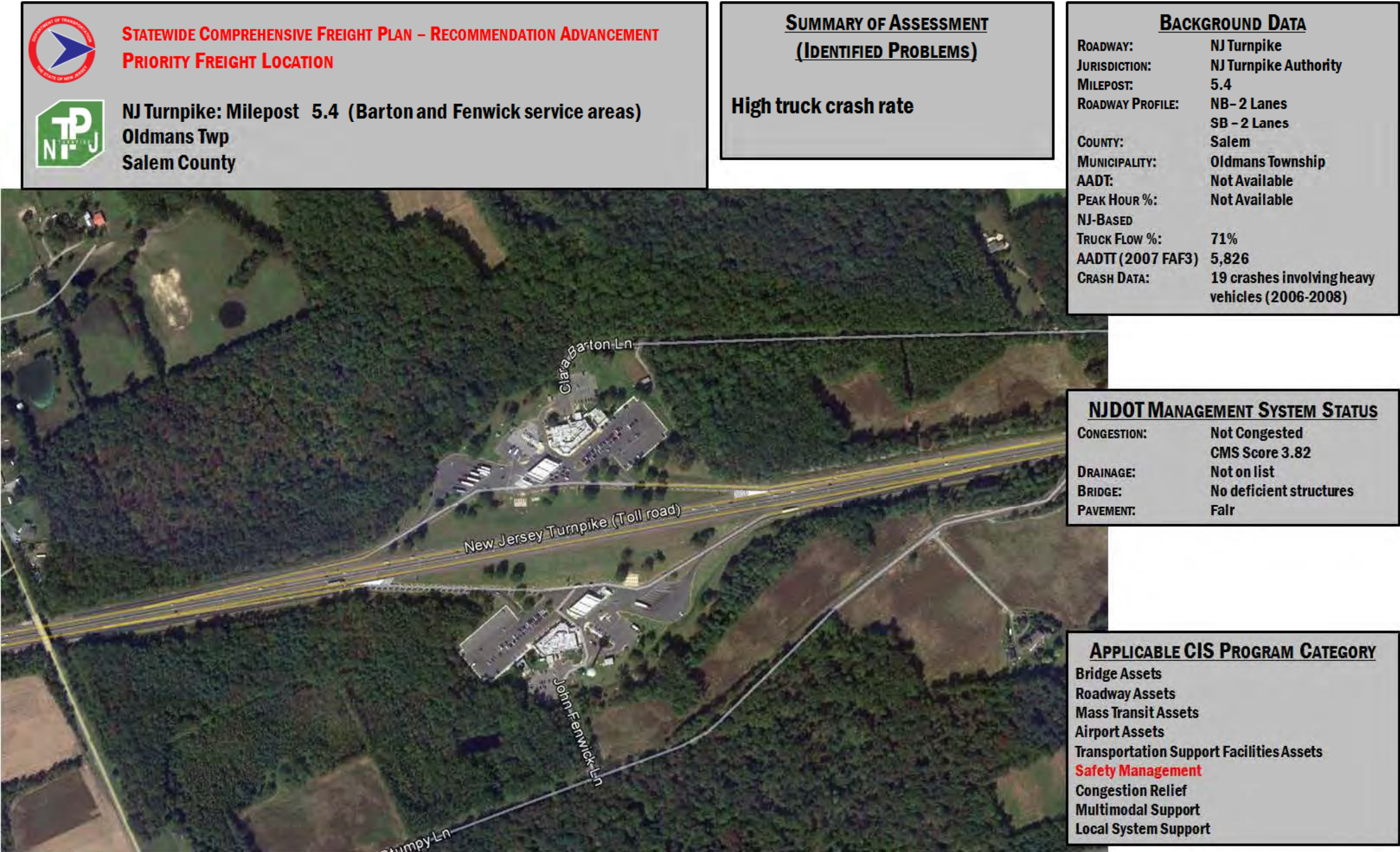


Figure 88 – Problem Locations, MP 5.4, NJ Turnpike





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION

NJ Turnpike: MP 42.2/88.1* – 78.0/W113.8* (Interstate 287 to Northern Terminus)
Numerous Municipalities
Middlesex/Union/Essex/Hudson/Bergen Counties

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

High truck crash rate
Severe congestion

BACKGROUND DATA

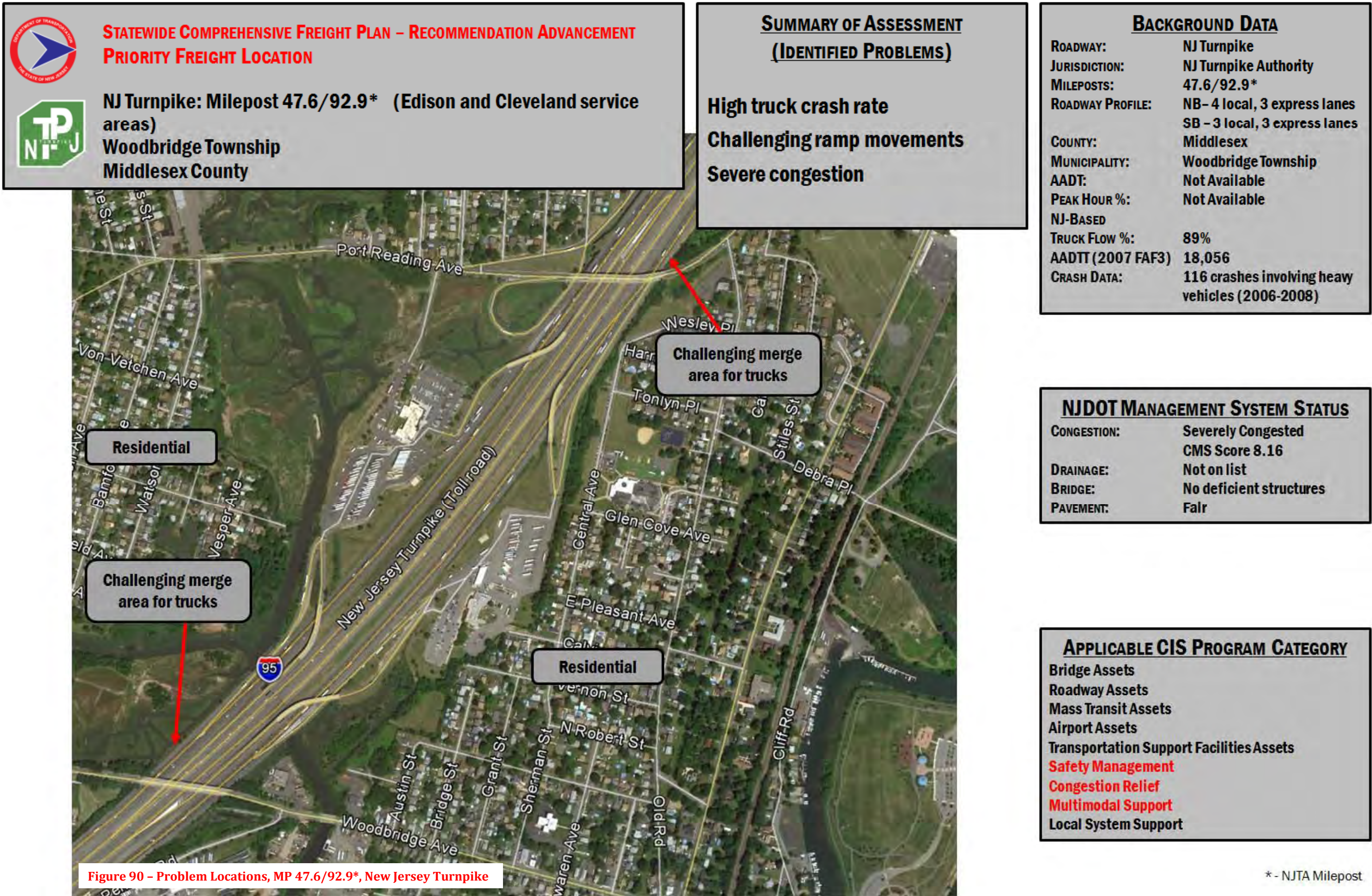
ROADWAY:	NJ Turnpike
JURISDICTION:	NJ Turnpike Authority
MILEPOSTS:	42.2/88.1* - 78.0/W113.8*, W0.0 – W11.0
ROADWAY PROFILE:	NB – 2-3 local, 2-4 exp lanes SB – 2-3 local, 2-4 exp lanes NB (W. SPUR) – 2-4 lanes SB (W. SPUR) – 2-3 lanes
COUNTY:	Middlesex/Union/Essex/Hudson/Bergen
MUNICIPALITY:	Numerous



Figure 89 – Problem Locations, MP 42.2/88.1* - 78.0/W113.8*, New Jersey Turnpike

* - NJTA Milepost





NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Severely Congested CMS Score 8.16
DRAINAGE:	Not on list
BRIDGE:	No deficient structures
PAVEMENT:	Fair

APPLICABLE CIS PROGRAM CATEGORY

- Bridge Assets
- Roadway Assets
- Mass Transit Assets
- Airport Assets
- Transportation Support Facilities Assets
- Safety Management**
- Congestion Relief**
- Multimodal Support**
- Local System Support

* - NJTA Milepost





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



NJ Turnpike: Milepost 62.5/E107.8* (Passaic River crossing)
Newark City, Kearny Town
Essex County, Hudson County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

High truck crash rate
High congestion

BACKGROUND DATA

ROADWAY:	NJ Turnpike
JURISDICTION:	NJ Turnpike Authority
MILEPOSTS:	62.5/E107.8*
ROADWAY PROFILE:	NB – 4 Lanes SB – 3 Lanes
COUNTIES:	Essex, Hudson
MUNICIPALITIES:	Newark City, Kearny Town
AADT:	Not Available
PEAK HOUR %:	Not Available
NJ-BASED TRUCK FLOW %:	49%
AADTT (2007 FAF3)	12,230
CRASH DATA:	85 crashes involving heavy vehicles (2006-2008)

NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Very Congested CMS Score 6.49
DRAINAGE:	Not on list
BRIDGE:	No deficient structures
PAVEMENT:	Fair

APPLICABLE CIS PROGRAM CATEGORY

Bridge Assets
Roadway Assets
Mass Transit Assets
Airport Assets
Transportation Support Facilities Assets
Safety Management
Congestion Relief
Multimodal Support
Local System Support



Figure 91 – Problem Locations, MP 62.5/E107.8*, New Jersey Turnpike

* - NJTA Milepost



BERGEN COUNTY CONNECTOR CORRIDOR PROFILE (NJ ROUTE 17)

NJ Route 17 is a critical north-south route in Northeastern New Jersey. The section of NJ Route 17 of most importance to freight traffic extends for 23 miles through Bergen County from NJ Route 3 in the south to its northern terminus at the interchange with Interstate 287 in Mahwah at the New York State line to the north. This section of NJ Route 17 is generally a six-lane divided highway with partial access control and speed limits between 50 and 55 mph. South of the interchange with NJ Route 3, NJ Route 17 functions as a local roadway with signalized intersections and a speed limit between 25 and 40 mph. Data was collected and reported for the entire length of Route 17; however, the local section does not carry significant truck traffic and as such should not be considered as part of the priority corridor.

NJ Route 17 is a key conduit for freight traffic, as noted through input from industry stakeholders:

- It serves as a link between Port Newark/Port Elizabeth and New England/Eastern Canada.
- It is surrounded by dense pockets of manufacturing areas that serve as a *tarmac* for the metropolitan New York City market.
- Freight flows indicate that during the winter months when the St. Lawrence River is ice bound, containers that normally would travel inbound through the Port of Montreal are diverted to all-season ports, including Port Newark/Port Elizabeth.

Unfortunately, NJ Route 17 struggles to serve freight traffic because it is highly congested during the daytime. Also, since it is not a limited access highway, the numerous curb cuts and interchanges in close proximity to serve retail facilities, smaller malls, and large shopping centers create challenging conditions for heavy trucks.

Geographic Context/Corridor Description

As illustrated on Figure 92, NJ Route 17 serves as an important link for freight traffic moving between Northeastern New Jersey and New York State. Northern freight traffic not traveling to or from New York City or points east of the Hudson River utilizes Route 17 or Interstate 287. Since the GSP in Northern New Jersey prohibits truck traffic, freight moves along NJ Route 17 as a critical extension of the main north-south freight corridor, linking Eastern New Jersey to Upstate New York and into New England and Canada.

Connections between NJ Route 17 and the main north-south freight corridor (NJTPK) occur at two primary locations. At the southern terminus of the NJ Route 17 freight corridor in Rutherford, traffic can connect to the NJTPK approximately 2 miles to the east via NJ Route 3. This connection can also be made 5 miles north via the interchange with Interstate 80. Interstate 80 provides one of the key east-west freight routes across New Jersey and terminates at the NJTPK in Teaneck east of NJ Route 17. These connections to the NJTPK link NJ Route 17 to the major marine port facilities in Newark and Elizabeth, as well as Newark Liberty Airport. Additionally, NJ Route 17 also provides direct access to the Teterboro Airport, located approximately 1 mile south of its interchange with Interstate 80.

An interstate connection is provided at the corridor's northern terminus where NJ Route 17 intersects with Interstate 287 south of the New York state border. This provides a critical link for freight traffic destined north to Canada (via Interstate 87/New York State Thruway) or New England (via the Tappan Zee Bridge).

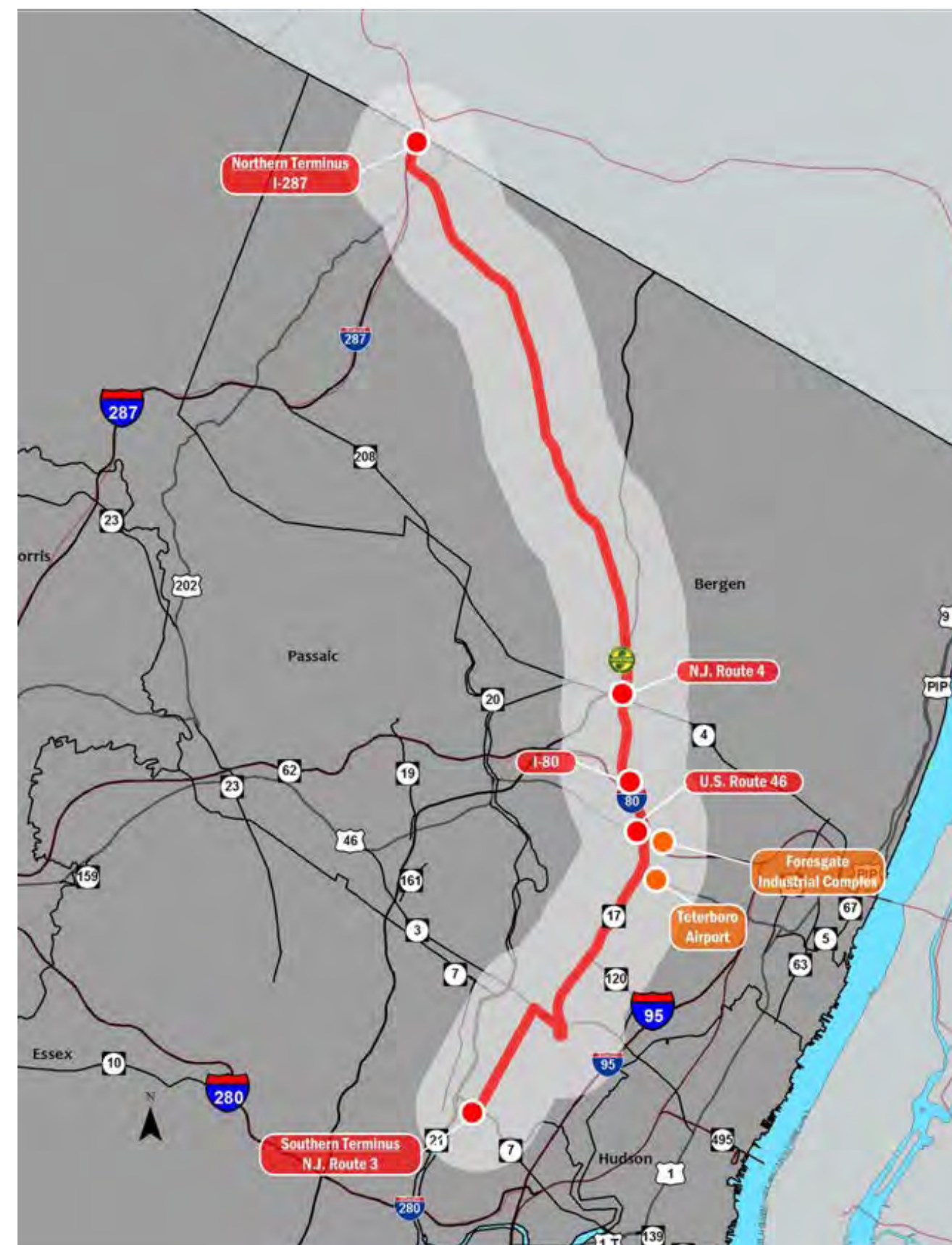


Figure 92—Route 17 freight corridor



In addition to its interstate route connections noted above, NJ Route 17 is connected to the regional highway network and local markets via interchanges with numerous state, county, and local routes, including NJ Route 3, NJ Route 4, U.S. Route 46, and U.S. Route 202. As a state route with partial access control, NJ Route 17 also has numerous large commercial, retail, and industrial clusters with frontage along the corridor that attracts freight traffic.

Demographic Assessment

A general review of development patterns along NJ Route 17 illustrates the variance in land uses as it traverses New Jersey. The southern portion of the NJ Route 17 study area (south of Interstate 80) is dominated by industrial uses to the east and older dense residential communities to the west. North of Interstate 80, NJ Route 17 has several clusters of retail and commercial properties, with high- and medium-density residential communities located in the periphery of the corridor. The largest of these clusters is located in Paramus Borough, between the GSP and Bergen County Route 110. An industrial cluster and several commercial clusters exist in the vicinity of the northern terminus of NJ Route 17 at Interstate 287. Other commercial clusters are evident at major interchanges, including NJ Route 4. A map detailing general land use patterns is included in Figure 93.

A review of employment densities (Figure 94) illustrates the significant density of employment that NJ Route 17 bisects. The most notable centers are those in the vicinity of the interchange of NJ Route 17 and Interstate 80, as well as those along the southernmost section of NJ Route 17. Statewide population densities (Figure 95) are highest west of NJ Route 17 in the southern portion of its length. North of Interstate 80, most municipalities along the NJ Route 17 corridor have lower population densities compared to most of Northeastern New Jersey.

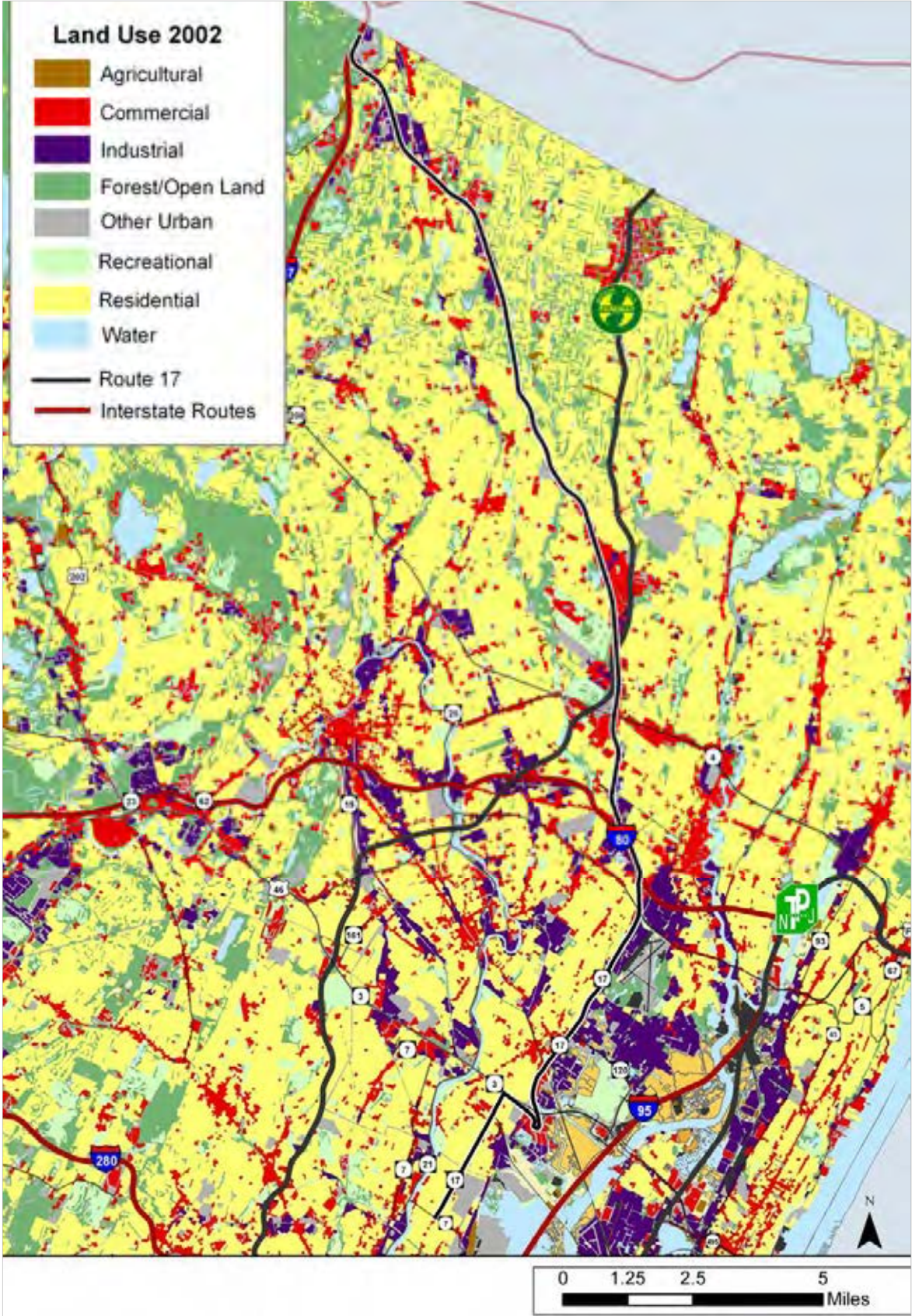


Figure 93—Land uses, NJ Route 17



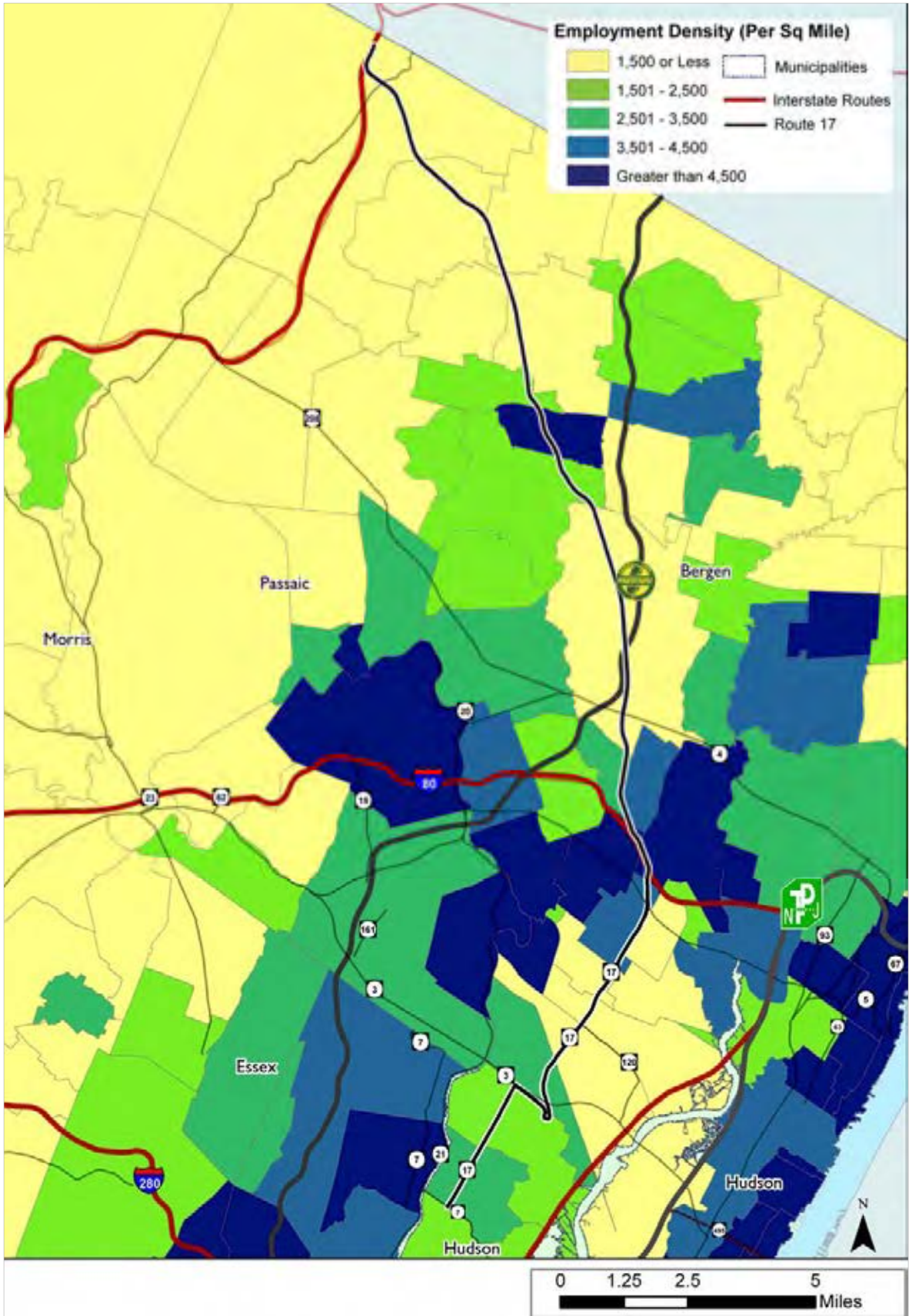


Figure 94—Employment density by municipality, Bergen County

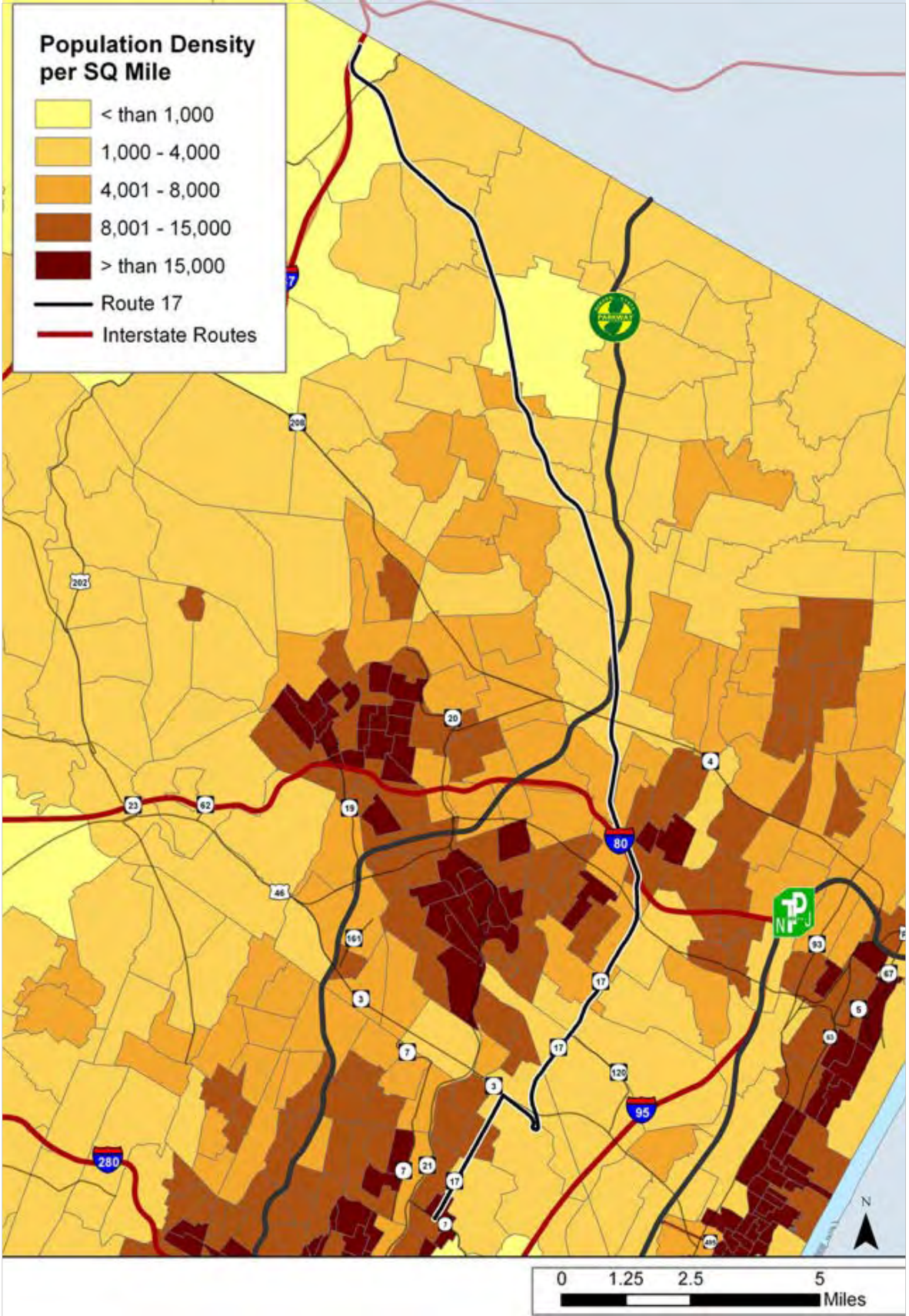


Figure 95—Population density by municipality, Bergen County



Key Freight Facilities

NJ Route 17 provides an important connection between major freight facilities in Northern New Jersey, located predominantly in Newark and Elizabeth, and points north and east into New York, New England, and Canada. These freight facilities service not only freight movements originating in or destined to New Jersey, but also serve regional, national, and internationally significant freight movements that play a key role in the global economy. Figure 92 illustrates the major freight facilities located adjacent to or in the vicinity of the north-south freight corridor.

Major ports

NJ Route 17 is indirectly linked to the major Northern New Jersey freight terminals located in Essex and Hudson Counties, described in further detail within the east-west freight corridor summary, including the Port of Newark/Elizabeth Marine Terminal, the Global Marine Terminal/Northeast Auto Terminal, and the Newark Liberty Airport and off-airport cargo facilities.

Distribution centers

The location of warehouses and distribution centers along the NJ Route 17 corridor is shown on Figure 96. The industrial buildings located along this corridor tend to be smaller and older than those found elsewhere in New Jersey. According to a CB Richard Ellis executive, the area was heavily developed between the 1960s and 1980s.³⁴ While land parcels directly on NJ Route 17 are more oriented to retail and office space uses, significant warehouse space exists in several locations, including Carlstadt, Moonachie, Teterboro, Secaucus, and Clifton. The area in the vicinity of the interchange of U.S. Route 46 and NJ Routes 3 and 23 includes over 57 million square feet of space, and the Northwest Bergen County market area includes over 19 million square feet of industrial space.³⁵ However, as Figure 96 indicates, the warehouse buildings are generally smaller properties.

New buildings appear oriented to industrial uses other than distribution. Data center development in support of the financial industry has been noted at locations in Northern Bergen County and Clifton. For example, the New York Stock Exchange’s parent company opened a 400,000-square-foot data processing center in Mahwah in a structure located along NJ Route 17 and MacArthur Boulevard.³⁶

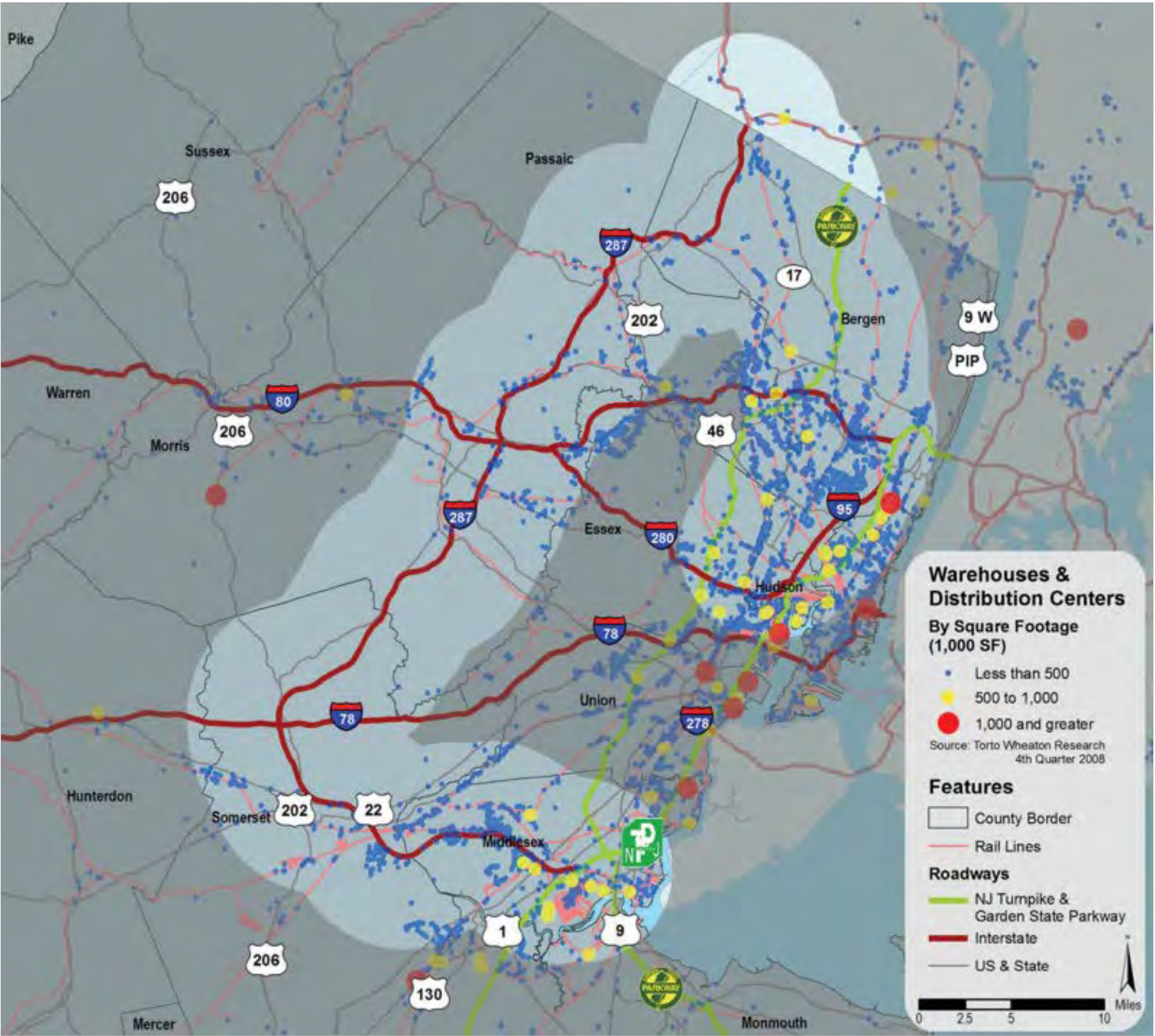


Figure 96—Warehouses and distribution centers, NJ Route 17

³⁴ Discussion with William Waxman, CB Richard Ellis, September 20, 2010.
³⁵ CBRE Industrial Report, Fourth Quarter 2010.
³⁶ http://www.northjersey.com/news/bergen/Putting_stock_in_Mahwah_center.html



Retail Clusters

Figure 97 illustrates the clustering of retail employers (SIC Major Groups 52-59) that are primary receivers of freight within New Jersey. Retail locations with more than 50 employees located within 1 mile of NJ Route 17 are indicated in red, while retail locations with more than 50 employees located beyond 1 mile of NJ Route 17 are shown in grey. Significant clusters are evident along most of NJ Route 17, with the exception of a section through the boroughs of Ridgewood, Ho-Ho-Kus, Allendale, and Saddle River. The largest clusters are primarily centered around major interchanges, including the GSP; Interstates 80 and 287; U.S. Routes 46 and 202; NJ Route 4; and Bergen County Routes 80, 85, 110, and 507. A cluster is also evident east of the signalized intersection of NJ Route 17 and Bergen County Route S32 in East Rutherford Borough.

The location of major retail clusters is important because they are key destinations for truck shipments. In addition, participants in the trucking industry discussion noted that truck accidents may correlate with the number of retail clusters (delivery locations) and increased interaction with auto traffic proximate to retail locations.

Truck Facilities

Like many limited access New Jersey and U.S. routes in New Jersey, NJ Route 17 lacks traditional rest areas and parking areas. A discussion of existing truck facilities (Figure 98) is included within the following sections.

Rest areas/parking areas

No rest areas or parking areas exist on NJ Route 17, which is typical of most state and U.S. highways found throughout Northern and Central New Jersey.

Weigh stations

No weigh stations exist on NJ Route 17, which would be expected on a limited access state highway within Northern and Central New Jersey.

Private truck stops

Three private truck stops exist along NJ Route 17 approaching its interchange with Interstate 287:

- The International Motor Plaza is located on NJ Route 17 southbound adjacent to Mountainside Avenue and Stag Hill Road. This facility provides limited truck services, including 14 parking spaces.
- The Mahwah Fuel Stop is located on NJ Route 17 northbound adjacent to Leisure Lane and Cross Road. It is the only private truck stop along NJ Route 17 northbound and provides limited truck services, including 12 parking spaces.
- The Pilot Travel Center is located on NJ Route 17 southbound south of the interchange with Bergen County Route 100 (Ramapo Avenue). It provides the most significant level of amenities of the three facilities, including 65 parking spaces.

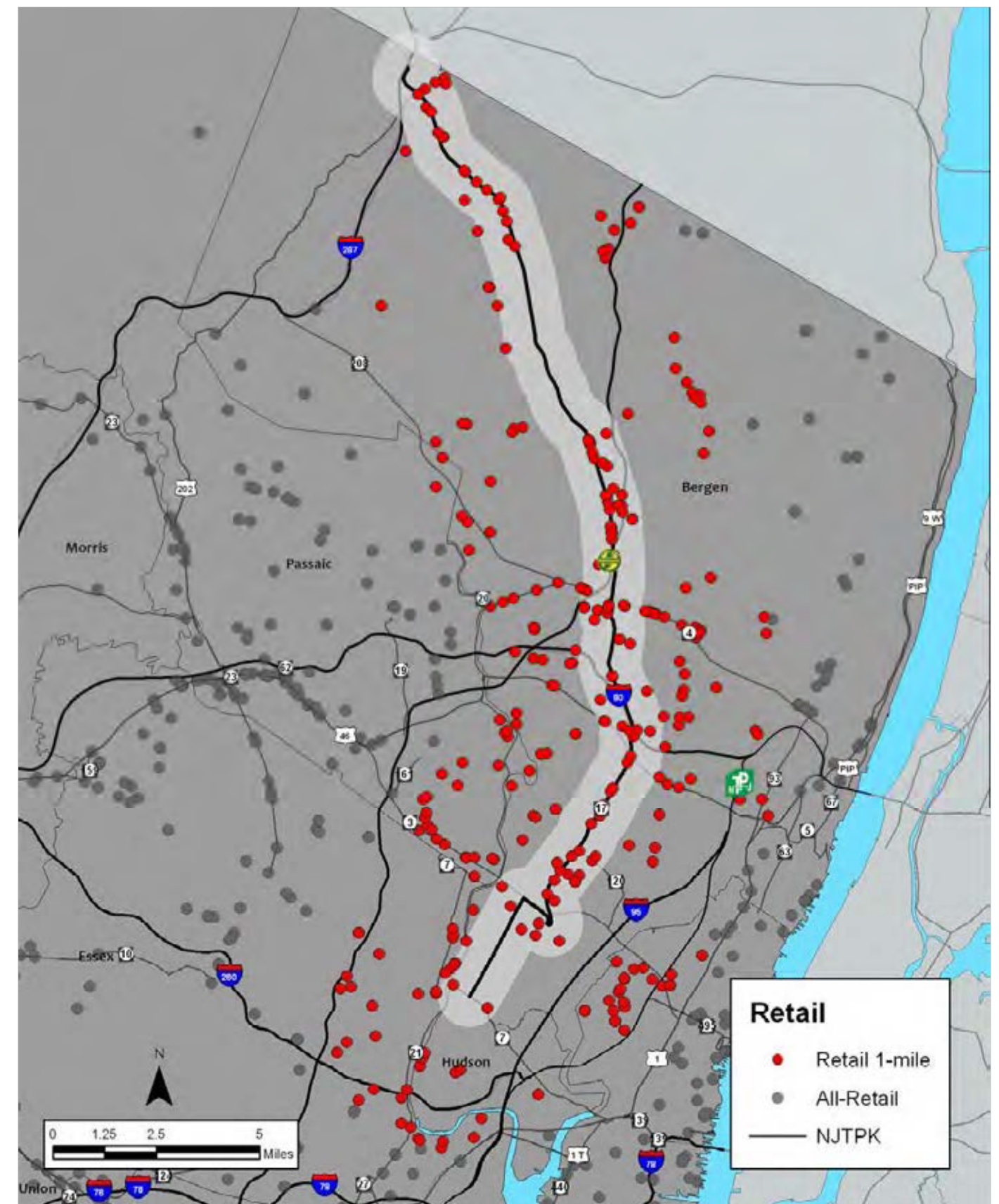


Figure 97—Retail establishments, NJ Route 17



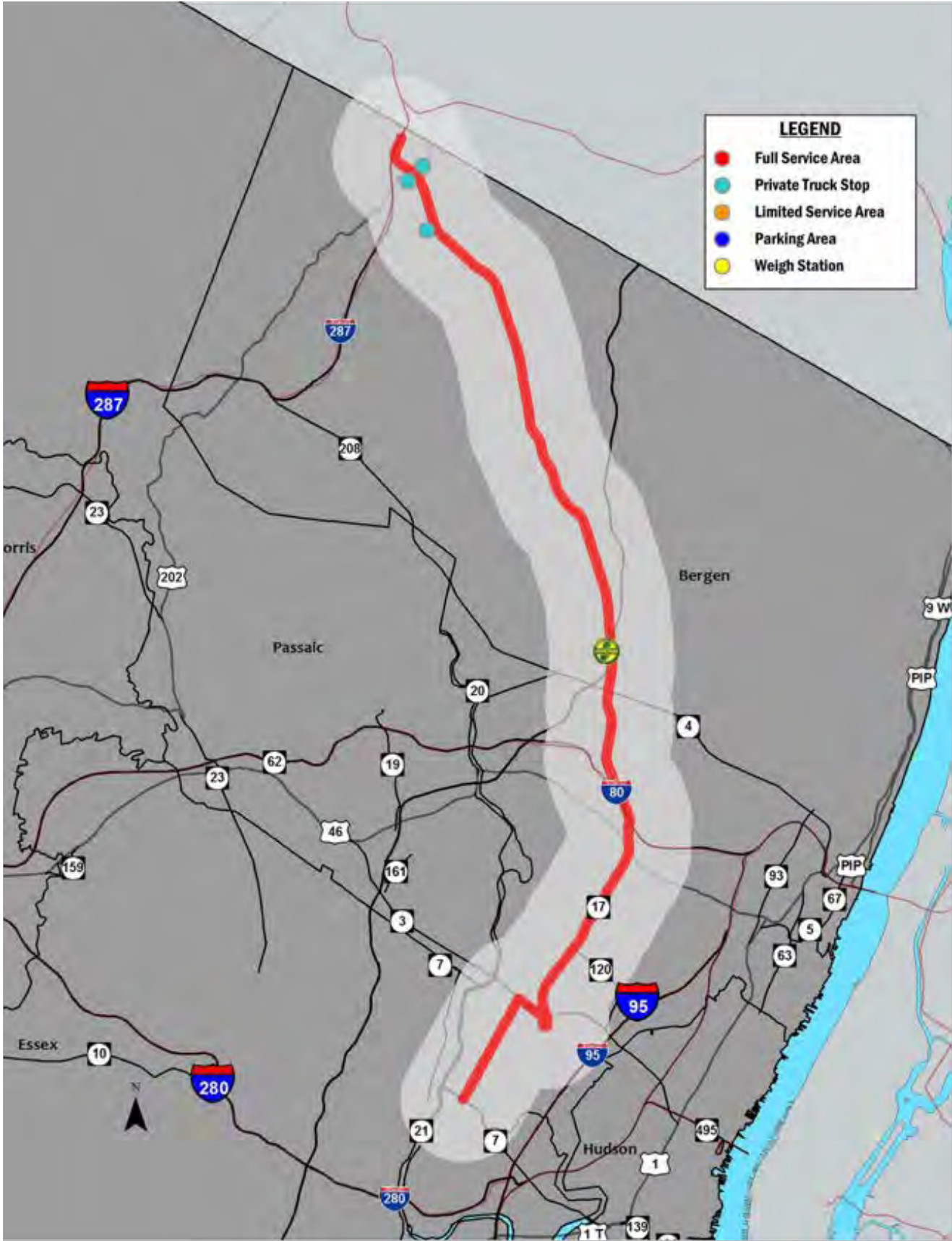


Figure 98—Truck facilities, NJ Route 17

Roadway Summary

As shown in Table 31, NJ Route 17 has two primary cross sections. South of MP 3.5 (Interchange with NJ Route 3), NJ Route 17 is primarily a two-lane roadway through several densely populated urban areas with numerous signalized and non-signalized intersections. North of MP 3.5, NJ Route 17 widens to a four- to six-lane barrier-separated highway. While there are five signalized intersections north of MP 3.5, they are all located within an approximately 2-mile section between MP 4.5 and MP 6.5. North of MP 6.5, NJ Route 17 functions as an arterial highway with grade-separated interchanges.

Table 31—NJ Route 17 characteristics

Milepost Start	Milepost End	Length (miles)	Jurisdiction	Total Lanes NB	Shoulder Width NB (feet)	Total Lanes SB	Shoulder Width SB (feet)	Posted Speed Limit
0	3.5	3.5	NJDOT	1-2	0	1-2	0	25-40
3.5	10.1	6.6	NJDOT	2-3	0-12	2-3	12	40-50
10.1	12.0	1.9	NJDOT	2	10	2	10	50
12.0	16.5	4.5	NJDOT	3	12	3	12	50
16.5	26.8	10.3	NJDOT	3	12	3	12	55

Truck Volumes

Since no statewide database for heavy-vehicle traffic volumes was available, the project team used the 2007 FHWA FAF3 travel model (Version 3.1.1) to provide estimates of current travel patterns. These volumes serve as an important measure of freight demand along New Jersey’s key corridors and were a significant component of the rating system used to prioritize the identified locations for investment. Available NJDOT WIM data provided snapshots of actual heavy-truck volumes at several locations along the corridors. While this allows a useful comparison of truck volumes at several points on a corridor and the ability to review changes in volume over time, there are not enough WIM stations to paint a complete picture of corridor volumes. For this task, the consultant team used the FHWA FAF3 model. FAF3 is a national model that uses a variety of data sources to estimate commodity movements by truck. While the model does not consider a detailed understanding of local conditions (as illustrated by the high number of truck trips allocated to the truck-restricted GSP), it provides a reasonable, high-level estimate of AADTT from 2007, the model’s base year, which can indicate trends along a corridor, such as identifying areas of high truck traffic.

Based on the FAF3 model, AADTT on New Jersey Route 17 ranges from approximately 6,600 to 12,700 trucks. Volumes are highest along the segment between the interchange with Interstate 80 and the vicinity of the GSP, where volumes range from 10,700 to 12,700 trucks (Figure 99).



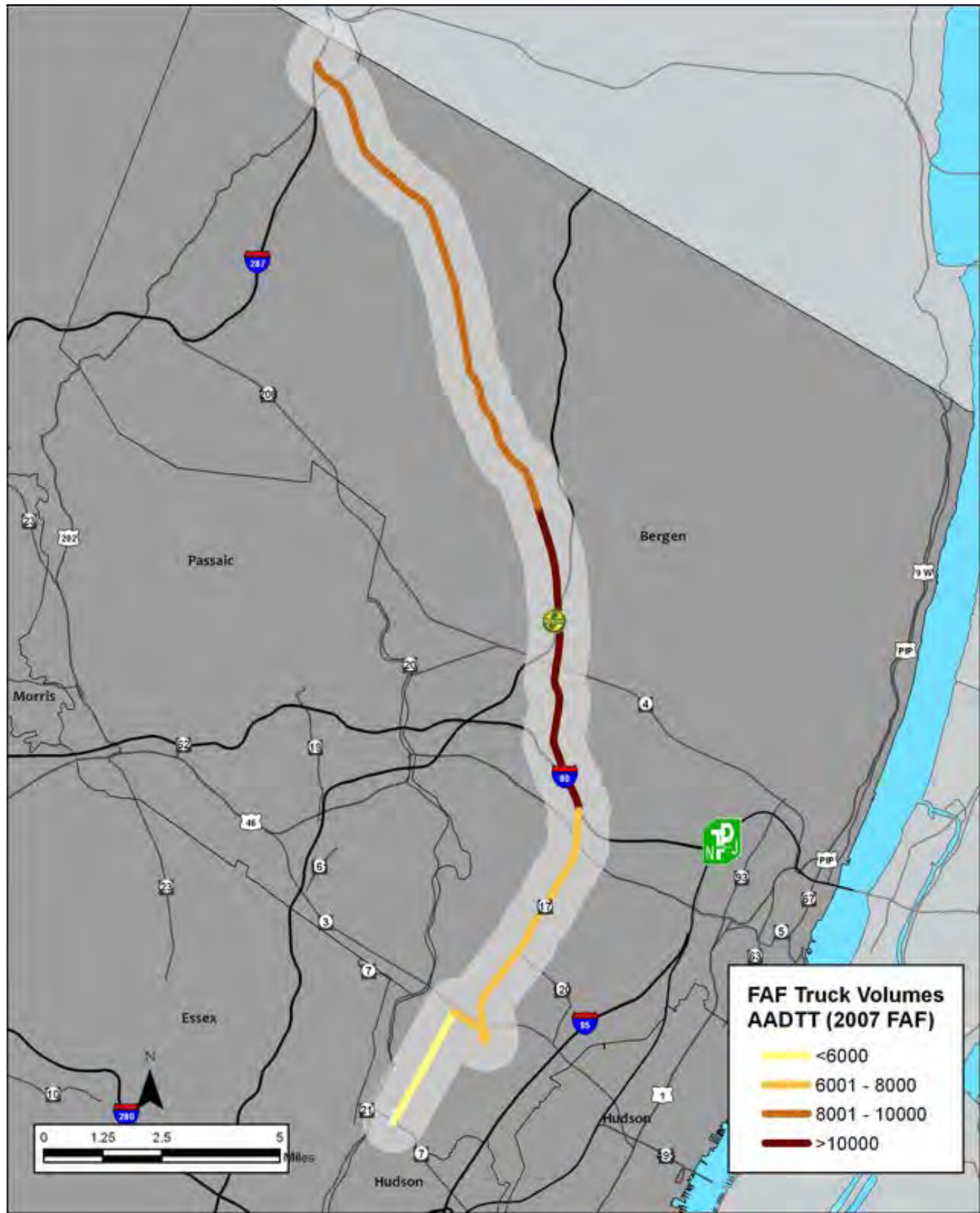


Figure 99—FAF3 truck volumes, NJ Route 17

Goods Movement

Heavy-truck tonnage flows by origin-destination

Figure 100 shows the composition of heavy-truck tonnage by origin-destination pattern moving along NJ Route 17. The figure shows the share of tonnage on NJ Route 17 traversing Bergen County by:

- Inbound share (terminating in New Jersey)
- Outbound share (originating in New Jersey)
- Internal share (originating and terminating in New Jersey)
- Through share (neither originating nor terminating in New Jersey)

Examining through-state tonnage determines how much of the truck tonnage on NJ Route 17 is related to supporting the state’s economy versus the economies of its neighbors. In total, 38 percent of origin-destination tonnage from Bergen County originates and terminates within the state. Inbound tonnage to New Jersey is the next highest category at 33 percent. Outbound tonnage from New Jersey is the third highest category at 22 percent while through traffic is the smallest category at only 7 percent.

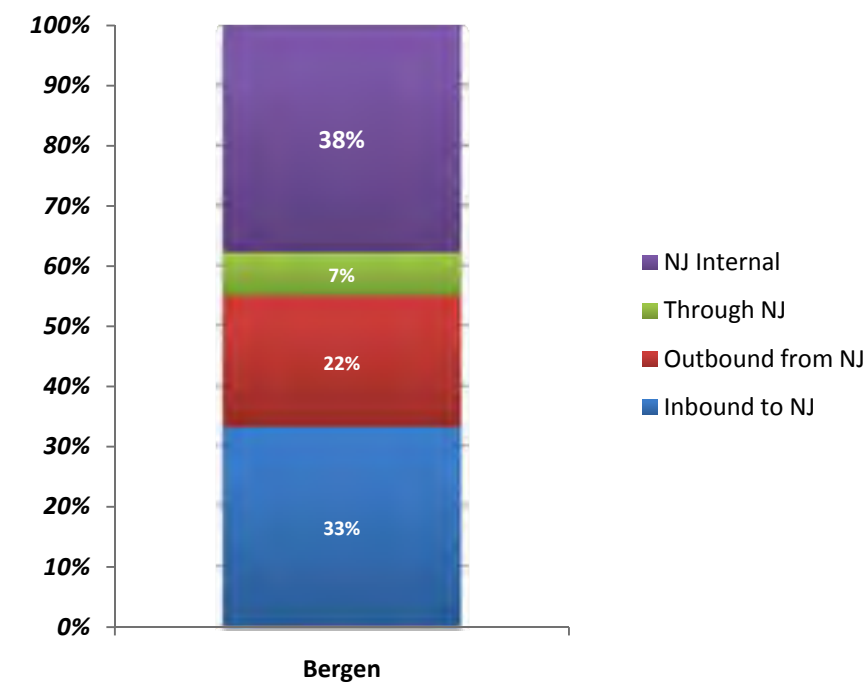


Figure 100—Origin-destination shares considering *through-state* traffic, NJ Route 17



Leading origins of heavy-truck inbound flows

New Jersey origin-destination flows are the predominant heavy-truck shares along NJ Route 17, with through traffic only accounting for 7 percent. The assignment of TRANSEARCH data to the FAF3 network allows for a detailed breakdown of these origin-destination patterns as summarized in Table 32 and Leading destinations of heavy-truck outbound flows

The largest destination for outbound tonnage flows along NJ Route 17 is Northern New Jersey, accounting for 68 percent of total tonnage. New York City is a distant second at 11 percent, while the remainder of New England is third at 7 percent.

Table 33 and shown on Figure 101 and Figure 102.

For inbound tonnage on NJ Route 17, the top origin for heavy-truck tonnage is Northern New Jersey, responsible for 52 percent of total tonnage. The second leading origin is the remainder of New England, which is responsible for 15 percent of inbound tonnage. New York City is the third largest origin at 8 percent.

Table 32—Leading origins for inbound heavy-truck tonnage, NJ Route 17

Top Origins	Bergen
NJ North	51.9%
NJ South	7.6%
PA Phil	5.5%
NY NYC	8.4%
New England rem	15.4%
All others (non top 5)	11.2%

NJ North = New Jersey counties north of Burlington County
NJ South = New Jersey counties south of and including Burlington County
PA Phil = Philadelphia area including surrounding counties
NY NYC = New York City area and surrounding boroughs and counties within NY
New England rem = remainder of New England—RI, MA, VT, NH, ME

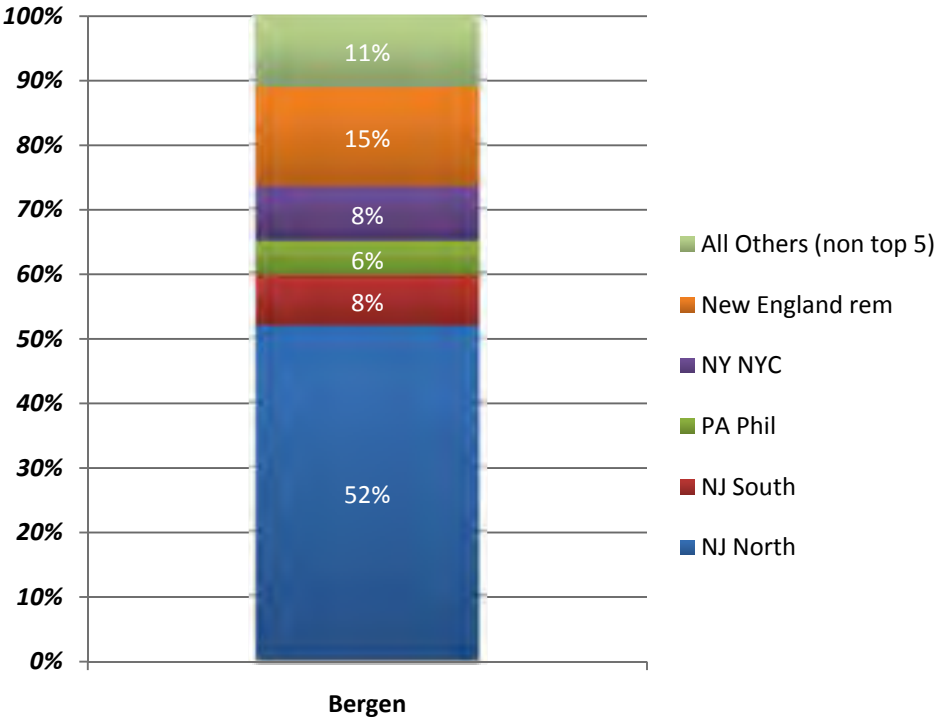


Figure 101—Heavy-truck tonnages by origin share, NJ Route 17

Leading destinations of heavy-truck outbound flows

The largest destination for outbound tonnage flows along NJ Route 17 is Northern New Jersey, accounting for 68 percent of total tonnage. New York City is a distant second at 11 percent, while the remainder of New England is third at 7 percent.

Table 33—Leading destinations for outbound heavy-truck tonnage, NJ Route 17

Top Destinations	Bergen
NJ North	67.9%
NJ South	3.0%
NY NYC	10.7%
NY rem	6.4%
New England rem	6.9%
All others (non top 5)	5.1%

NJ North = New Jersey counties north of Burlington County
NJ South = New Jersey counties south of and including Burlington County
NY NYC = New York City area and surrounding boroughs and counties within NY
NY rem = remainder of NY, excluding NYC, Long Island, and southeastern counties
New England rem = remainder of New England—RI, MA, VT, NH, ME



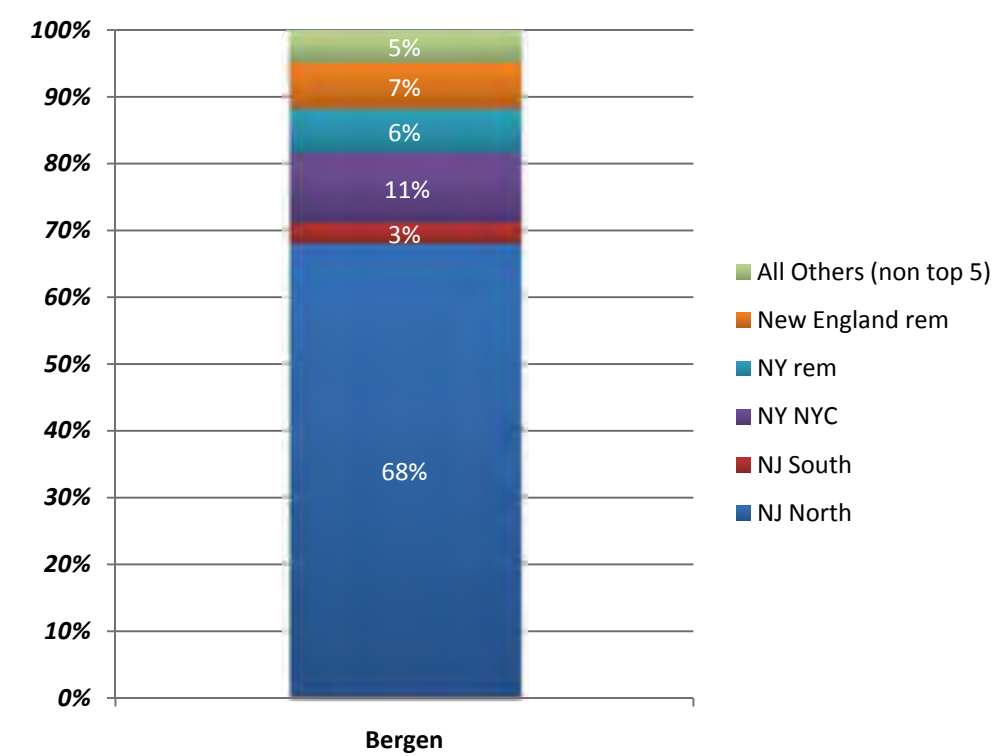


Figure 102—Heavy-truck tonnages by destination share, NJ Route 17

Heavy-truck tonnage flows by commodity

Through commodities

To understand the key commodity flows, it is useful to distinguish between origin-destination commodities and pass-through commodities (using the through-state definition of through commodities). The top pass-through commodities on NJ Route 17 are warehousing and distribution products, which make up one-third (33 percent) of the total. Non-metallic minerals make up 11 percent of total tonnage while food and kindred products make up 9 percent. The breakdown of pass-through commodities on NJ Route 17 is shown on Figure 103.

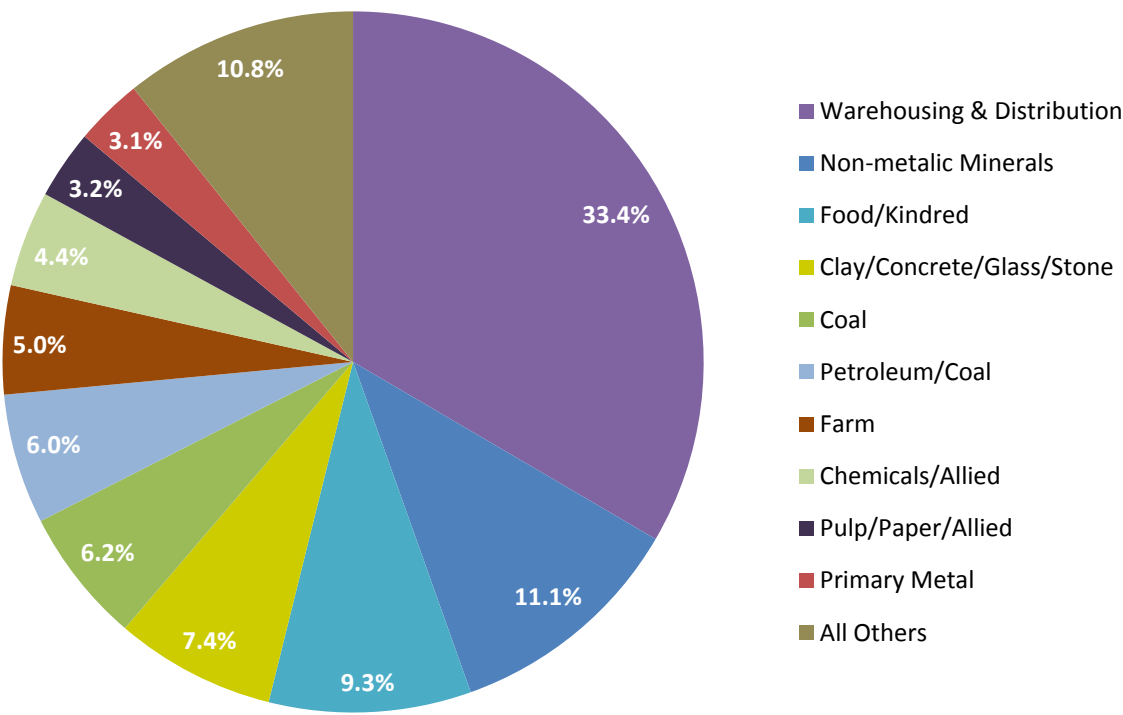


Figure 103—Leading pass-through commodities, NJ Route 17

Origin-destination commodities

The distribution of heavy-truck tonnage by commodity type is slightly different when considering origin-destination traffic (that is, tonnage that originates or terminates in Bergen County along NJ Route 17). For origin-destination tonnage, non-metallic minerals constitute the largest share of the total at 25 percent, followed by warehousing and distribution products at 22 percent. Chemical/allied products; clay, concrete, glass, and stone; and food and kindred products each represent 9 percent of the market. The data is shown in



Table 34 and on Figure 104.

Table 34—Origin-destination heavy-truck tonnage by commodity type, NJ Route 17

Rank	Commodity	Bergen
1	Non-metallic minerals	25.1%
2	Warehousing and distribution	21.9%
3	Chemicals/allied	9.2%
4	Clay/concrete/glass/stone	8.7%
5	Food/kindred	8.7%
6	Petroleum/coal	6.7%
7	Truck drayage from rail	4.4%
8	Lumber/wood	2.5%
9	Truck drayage to rail	1.7%
10	Printed matter	1.6%
	All others	9.4%

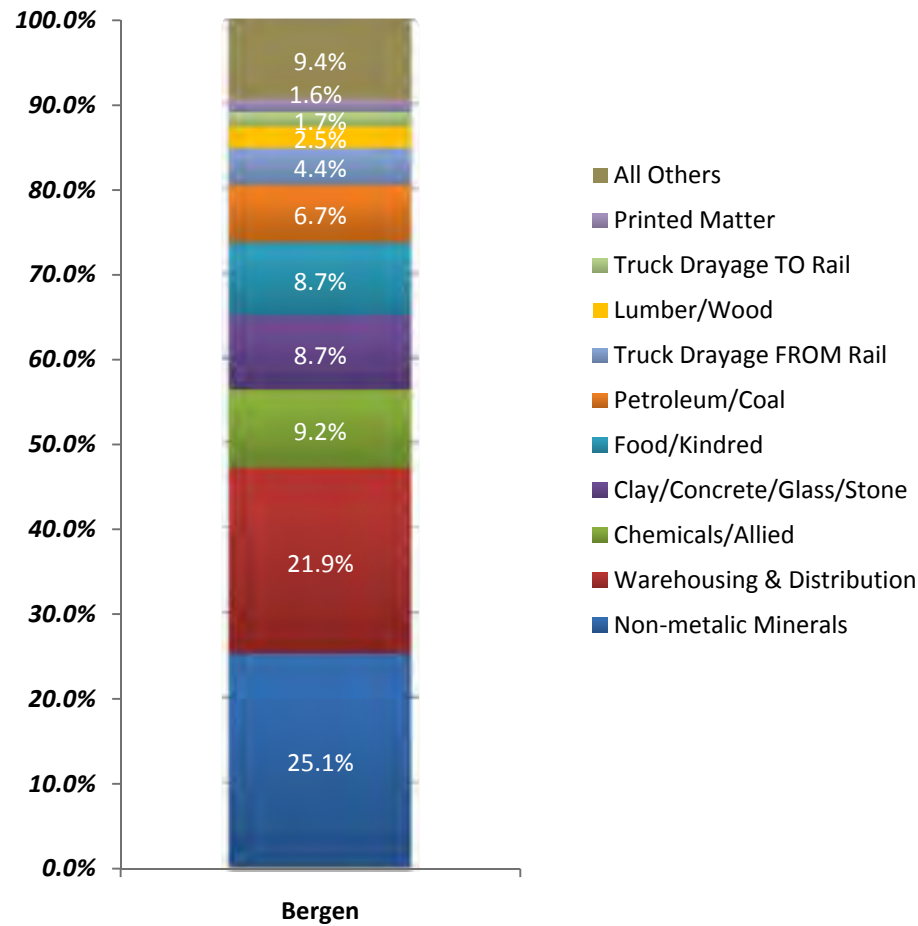


Figure 104—Origin-destination heavy-truck tonnage by commodity type, NJ Route 17



Goods movement overall findings

NJ Route 17 is contained entirely within Bergen County and serves a unique function in that it connects much of Northern New Jersey—especially locations not proximate to Interstate 287—to the NY Thruway north (to upstate New York) and east (over the Tappan Zee Bridge to Westchester County, New York City, and New England). It provides the truck connectivity that is not available via the GSP, which is closed to trucks in this part of the state. As a result, the great majority of truck traffic on NJ Route 17 has an origin or destination in Northern New Jersey.

Pavement Condition

The project team reviewed PMS data provided by NJDOT to identify locations where deficient pavement exists along the corridor. PMS data compiled throughout 2011 indicating deficient pavement locations was used in this analysis.³⁷ Figure 105 illustrates pavement ratings along NJ Route 17.

The prevalence of poor pavement along NJ Route 17 can have a significant impact on delivery times and travel speeds plus safety for heavy vehicle traffic. Poor pavement can increase overall trucking costs due to increased maintenance costs for vehicles using these roadways. Any major resurfacing projects along this route will also dramatically impact freight movement, especially since many highway construction projects take place during non-commuter peak travel periods during which the number of heavy-truck trips is still significant.

As shown on Figure 105, approximately 50 percent of NJ Route 17 exhibits deficient pavement. This includes three segments longer than 3 miles, including the southernmost 3.5 miles (non-barrier separated section) of Route 17, a 5.5-mile southbound section between MP 11.4 and MP 6.9, and a 7-mile southbound section between MP 19.5 and MP 26.5.

Crash Analysis

The project team reviewed three years of crash data (2006 through 2008) in order to identify clusters of crashes involving heavy vehicles (Vehicle types 20-29). Clusters were mapped along NJ Route 17 (Figure 106).

While most clusters were associated with interchanges, mainline clusters were noted as well. While all crashes impact traffic flows and affect delivery times for the trucking industry, crashes involving heavy trucks are more likely to have injuries or fatalities and often result in more damage to other vehicles or properties. Crashes impact through-travel times and delivery times for freight traffic.

A review of crash data for NJ Route 17 indicated several major clusters, predominantly located along a 4-mile section between U.S. Route 46 and NJ Route 4. Key crash clusters along NJ Route 17 include:

- **U.S. Route 46 Interchange**—This interchange is located adjacent to Teterboro Airport and a cluster of associated industrial and commercial properties. The existing interchange is a mix of numerous ramps, including left-hand movements, as well as challenging weaving sections. U.S. Route 46 also provides a parallel, local alternate route to Interstate 80 as well as direct access to the George Washington Bridge and points east.

³⁷ Pavement rankings were determined using International Roughness Index (IRI) ratings, along with guidelines developed by NJDOT. A ranking of good (IRI rating less than 95), fair (IRI rating equal to or greater than 95 but less than or equal to 170), or poor (IRI rating greater than 170) was identified for 0.1 mile segments along each of the major highway corridors analyzed as part of this study.

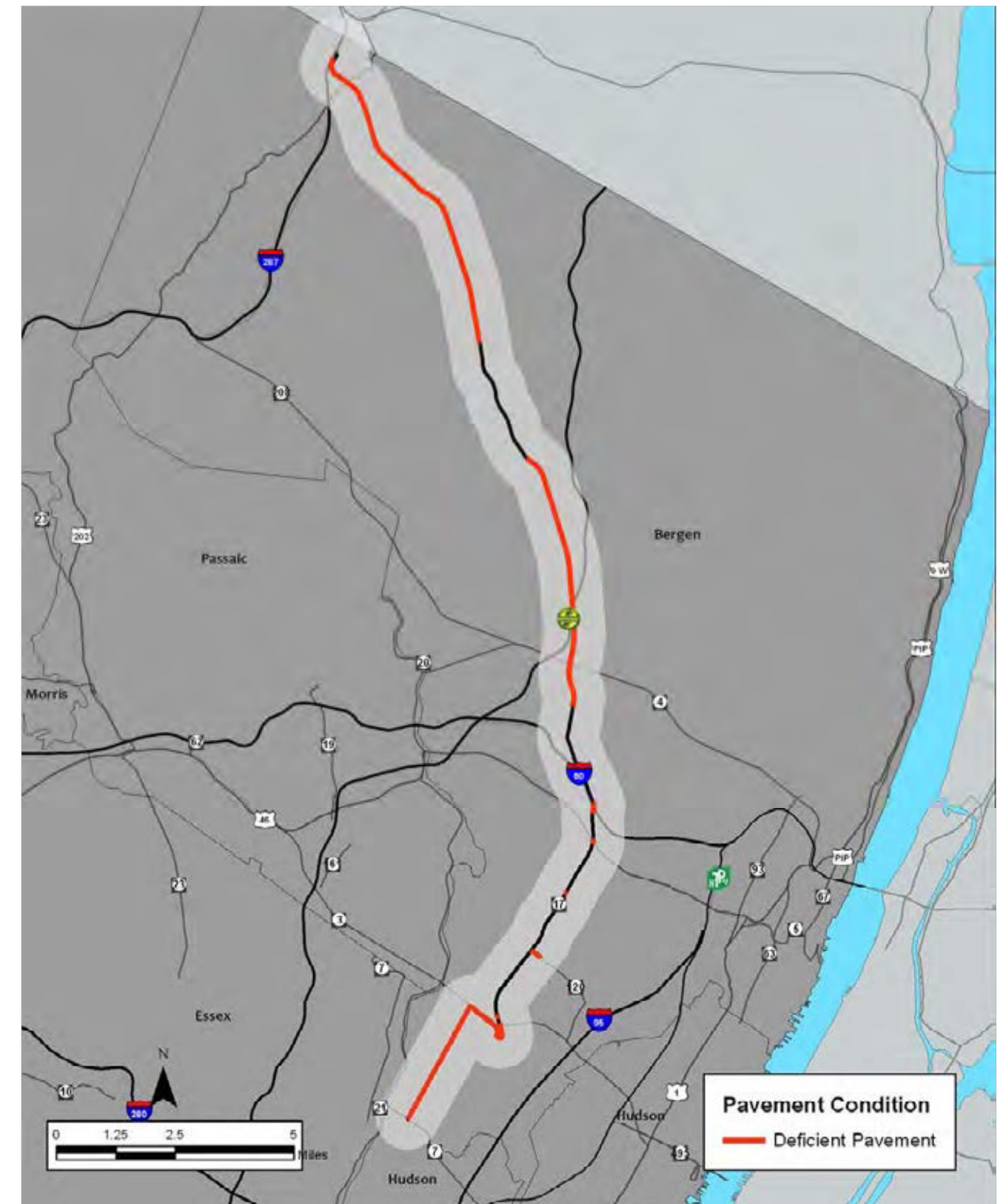


Figure 105—Pavement conditions, NJ Route 17





- Additionally, the project team reviewed NJDOT's document *Large Truck Safety*, Volumes 1-4, prepared by NJIT. This report reviews large truck crash data for the entire state for the same years analyzed above (2006 through 2008). From a statewide perspective, NJ Route 17 ranked ninth out of all roadways with 383 large truck crashes, for a 1.4-percent statewide share. NJ Route 17 through Paramus (MP 11.55 to MP 16.54) had the second highest number of large truck crashes (114) among segments of arterial roadways (non-interstates). This segment includes the crash clusters noted above at the NJ Route 4 Interchange and north to Bergen County Route 61 (Fairview Avenue). In terms of the number of large-truck crashes causing severe injury, it did not rank in the top ten roadways in the state.

NJDOT provided CMS data for the entire NJ Route 17 corridor within New Jersey. Figure 107 illustrates the CMS congestion description for NJ Route 17.³⁸ Anecdotal data provided by NJDOT indicates that the entire length of NJ Route 17 within New Jersey is considered a congested commuter corridor. This data further indicated that NJ Route 17 is ranked seventh on the congested commuter corridor list, indicating that it experiences some of the worst recurring congestion within New Jersey. This recurring congestion ensures that freight traffic associated with the many industrial uses located along NJ Route 17, as well as traffic destined for points along Interstates 80 and 287 or numerous state, county, and local routes, will have to deal with impacts and costs associated with lost time to travel schedules. The entire length of NJ Route 17 is either classified as *very congested* or *severely congested*.³⁹ NJ Route 17 north of its interchange with Route 3 is classified as severely congested. NJ Route 17 south of that interchange is classified as very congested.

³⁹ The NJDOT CMS indicates that segments with a volume to capacity ratio greater than 0.9 but less than 1.1 are “very congested,” while segments with a volume to capacity ratio greater than 1.1 are “severely congested.”

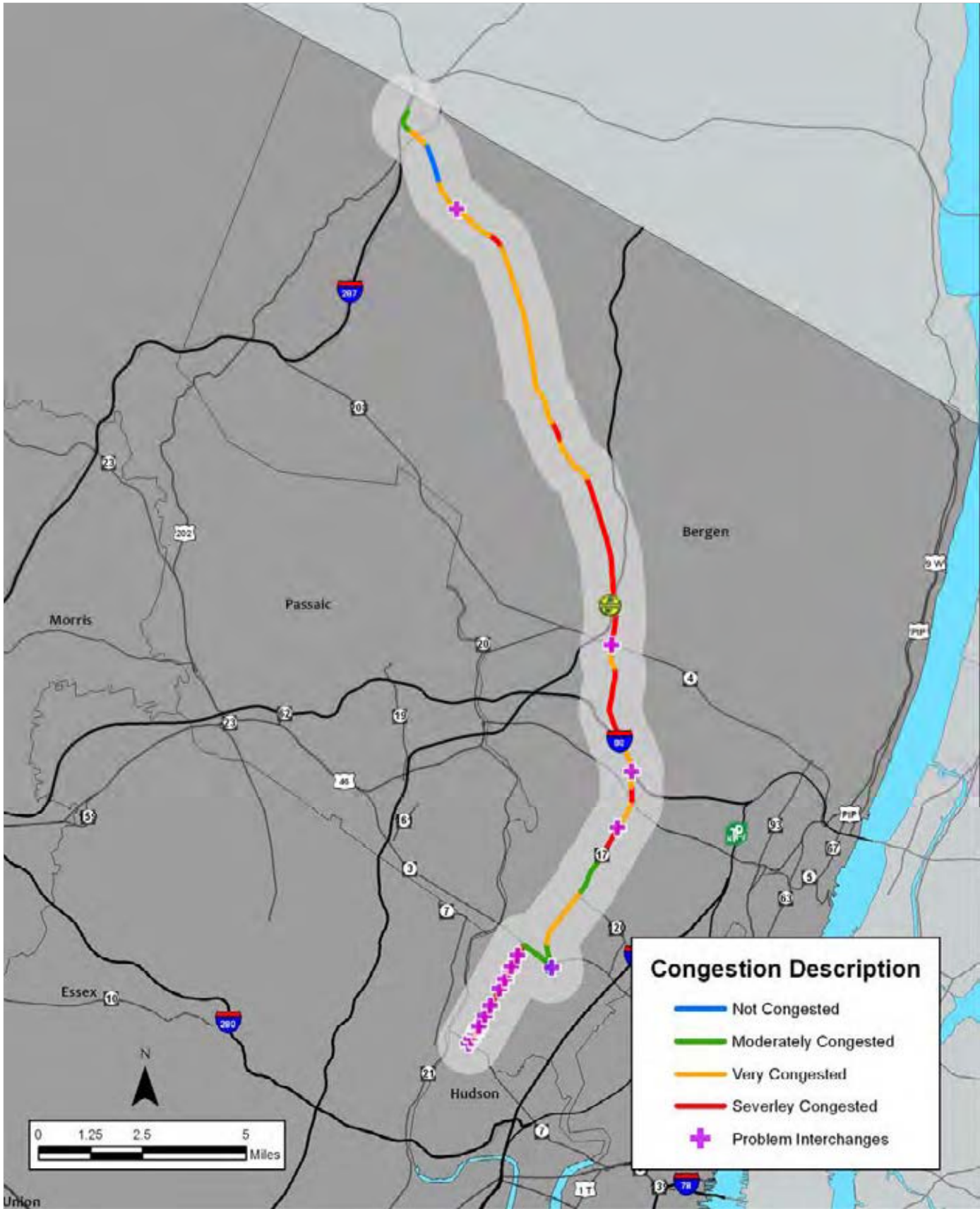


Figure 107—CMS score, NJ Route 17

Further illustrating the impacts of congestion along NJ Route 17 are the four interchanges that have been identified by NJDOT as problem area interchanges and 14 signalized intersections that are on NJDOT’s list of 372 high-need signalized intersections. Since NJ Route 17 has 27 signalized intersections along the length of its route, the fact that more than half of them are on NJDOT’s high-need list further reinforces the significant levels of congestion that the southern, local portion of the roadway experiences daily. Likewise, all four interchanges represent key junctions for goods movement along NJ Route 17:

- **NJ Route 3** (MP 3.88)—This interchange is located adjacent to a concentration of commercial and industrial uses in Lyndhurst Township. It provides access for traffic destined to points east via the Lincoln Tunnel as well as access to the NJTPK via Route 3.
- **Interstate 80** (MP 9.13)—This interchange links NJ Route 17 with the east-west freight corridor, which serves longer trips destined east via the George Washington Bridge or west into Pennsylvania.
- **NJ Route 4** (MP 12.33)—This interchange is located adjacent to the Garden State Plaza. Route 4 provides a parallel, local alternate route to Interstate 80 and provides access to the George Washington Bridge and points east.
- **Bergen County Route 85** (Macarthur Boulevard/Island Road) (MP 24.60)—This interchange provides direct access for a significant number of industrial and distribution sites located in southern Mahwah Township.

The fourteen signalized intersections along NJ Route 17 that are on NJDOT’s high-needs intersection list are:

- NJ Route 7 (Belleville Turnpike) (MP 0.0)
- Harding Avenue/Garden Terrace (MP 0.13)
- Inman Place/Melrose Avenue (MP 0.27 to MP 0.29)
- Abbott Place/Illford Avenue (MP 0.39)
- Franklin Place (MP 0.43)
- Church Place (MP 0.47)
- Crystal Street (MP 0.77)
- Ridge Park Drive/Noel Drive (MP 1.05)
- Ten Eyck Avenue/Summer Avenue (MP 1.51 to MP 1.52)
- Page Avenue (MP 1.77)
- New Jersey Avenue (MP 2.03)
- Valleybrook Avenue (MP 2.12)
- Second Avenue (MP 2.41)
- Franklin Avenue/Malcolm Avenue (MP 7.69)

All but one of these locations is located south of the interchange with NJ Route 3; as such, impacts to freight movement are not significant. However this does illustrate the severe challenges that drivers who traverse NJ Route 17 face.



Bridge Data

A review of the NJDOT 2009 BMS data⁴⁰ indicated a significant number of bridges were either structurally deficient or functionally obsolete.⁴¹ Bridges that are structurally deficient may adversely impact freight traffic throughout the region if the issues leading to the structurally deficient classifications progress further and require load restrictions. The maintenance, rehabilitation, or replacement work required to return the structurally deficient bridges to a satisfactory level of service would likely cause major disruptions to freight traffic, in the form of lane closures, reduced lane widths, slower speeds, or lengthy detours. Construction may further compound freight movement given the tendency for many highway construction projects to be scheduled for off-peak commuter periods when freight traffic is often higher.

The BMS includes a total of 54 bridges along NJ Route 17. Figure 108 illustrates the bridges along the corridor that are classified as structurally deficient. As shown in Table 35 two of these structures are along the mainline of NJ Route 17, including a structure at the interchange with Interstate 80.

The NJDOT BMS also uses a variety of data to create a holistic view of a bridge's condition and its relative importance to the transportation network and thereby create a priority ranking for statewide bridge maintenance purposes.⁴² An analysis of the BMS rankings shows that two bridges carrying NJ Route 17 traffic in this corridor fall into the highest priority rankings.

Table 35—Summary of structurally deficient bridges, NJ Route 17

Route	Feature Intersected	Route 17 Milepost	Municipality	County
NJ Route 120	NJ Route 120 over New Jersey Transit/Adjacent to NJ Route 120/NJ Route 17 Interchange	5.76	East Rutherford Borough	Bergen
U.S. Route 46	U.S. Route 46 over NJ Route 17 northbound	8.44	Hasbrouck Heights Borough	Bergen
U.S. Route 46	U.S. Route 46 over NJ Route 17 southbound	8.44	Hasbrouck Heights Borough	Bergen
NJ Route 17	NJ Route 17 northbound over Interstate 80 and Ramp K	9.13	Hackensack City	Bergen
NJ Route 17	NJ Route 17 over Central Avenue (County Route 44)	10.91	Rochelle Park Township	Bergen
County Route 85	Macarthur Boulevard-Island Road (County Route 85) over NJ Route 17 (MP 24.60)	24.60	Mahwah Township	Bergen

Source: NJDOT Bridge Management System Database, 2011

Locations in bold indicate high priority rankings

⁴⁰ NJDOT's BMS is an inventory of all bridges with a span over 20 feet in New Jersey. It includes information on their physical characteristics, condition, and ownership. Bridges are inspected biennially and the condition of various bridge elements is rated on numerical scale. The scale ranges from zero to nine, with a zero representing a failed condition and a nine representing an excellent condition.

⁴¹ A bridge is deemed structurally deficient if the condition rating of its deck, superstructure, substructure or culvert is 4 or less; or if either its structural evaluation for load capacity or its water adequacy has an appraisal rating of 2 or less. Structural deficiency does not necessarily mean a bridge is unsafe. It often indicates a bridge has been load posted and is unable to handle vehicle loads that would normally be expected on the roadway, requires rehabilitation to remain to open, or is closed. Any bridge classified as structurally deficient is excluded from the functionally obsolete category. A bridge is classified as functionally obsolete if the deck geometry, underclearances, approach roadway alignment, overall structural evaluation for load capacity, or roadway adequacy has an appraisal rating of 3 or less. Functional obsolescence typically means the bridge geometry (clearances, lane widths, etc) no longer meets the current design criteria for the roadway system for which it is a part.

⁴² The ranking is a weighted average of the following bridge characteristics (weighting in parenthesis): average daily traffic (10 percent), functional class (5 percent), deck condition (5 percent), sufficiency rating (30 percent), structurally deficient (25 percent), functionally obsolete (10 percent), bypass detour length (5 percent), scour critical (5 percent), and fracture critical (5 percent). The formula produces a score ranging from 0—500, which then corresponds to a 1—10 priority ranking, a ranking of 1 is the highest priority. Bridges with a score greater than 450 are highest priority, scores 400—450 are second, 350—399 are third, etc. Any bridge required to have interim inspections between its biennial inspections receive a minimum score of 399. Engineers at NJDOT review the ranking list and refine it further based on engineering judgment.

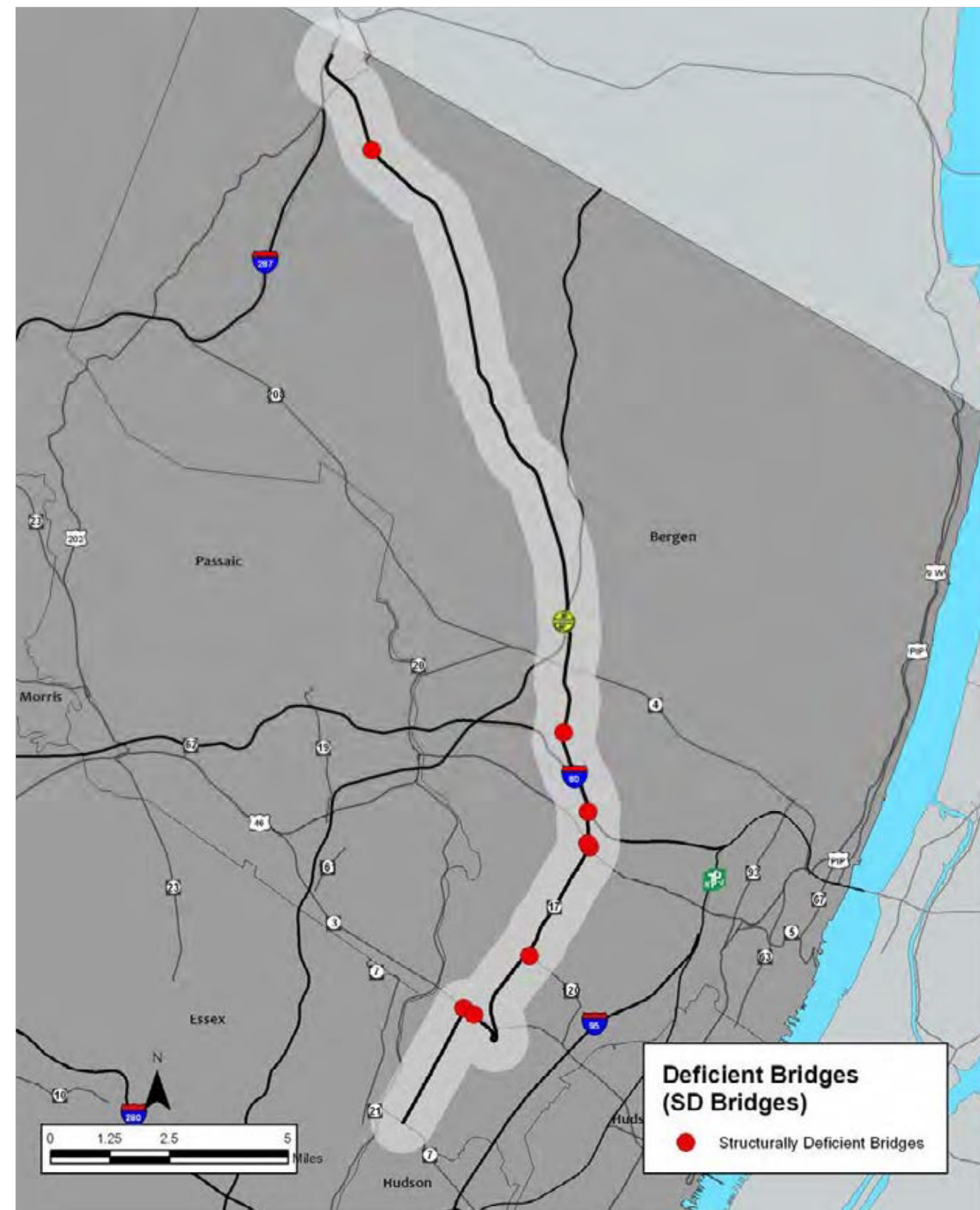


Figure 108—Structurally deficient bridges, NJ Route 17



Stakeholder Feedback

Meetings were held with the Motor Trucking Association and the Commercial Real Estate Developers Association (NIAOP) to discuss key issues identified and gain their feedback on problem locations, issues, and potential solutions.

Participants in the trucking industry discussion noted targeted locations where improvements would have a significant positive impact on freight movement:

- At the interchange of NJ Route 17 and the GSP in Paramus, the merging of car traffic from the Parkway with truck traffic on NJ Route 17 is a significant issue. Trucks are moving at higher speeds as car traffic merges/weaves onto the roadway crossing
- At the interchange of NJ Route 17 at U.S. Route 46 and NJ Route 3 in Great Notch, the merging of two routes is problematic and constrains overall traffic flow.
- In the Lodi area, traffic lights and intersections constrain traffic flow on NJ Route 17.
- At the interchange of NJ Route 17 and NJ Route 3 in Rutherford, the geometry of ramps and acceleration/deceleration lanes is insufficient to meet the needs of heavy-vehicle traffic.
- Truck stop areas on NJ Route 17 are limited to areas at the northern end of the corridor.

Corridor Priority Projects

An analysis of crash hot spots involving trucks, poor pavement locations, and areas with a high CMS score is illustrated on Figure 109. Since nearly all of NJ Route 17 is classified as severely congested and more than half of the roadway exhibits poor pavement condition, it is difficult to prioritize specific locations based on those factors. Locations with high crash incidence that are in the vicinity of structures classified as structurally deficient, would take precedence. Given the levels of congestion and amount of freight tonnage moved on NJ Route 17, the entire corridor north of its interchange with NJ Route 3 should be considered for improvements. These problems can severely impact on-time freight deliveries and shift route choice to the state, county, and local road network or even influence the decision making on the siting of distribution facilities.

Once identified, the project team reviewed planned improvements along the corridor versus the problem areas. If planned improvements addressed the identified issues, the problem area was eliminated from the list for the identification of new problem statements. A list of planned projects on NJ Route 17 included in the North Jersey Transportation Planning Authority’s (NJTPA) *Transportation Improvement Program (TIP)* for fiscal years (FY) 2010–2013 is included in this section.

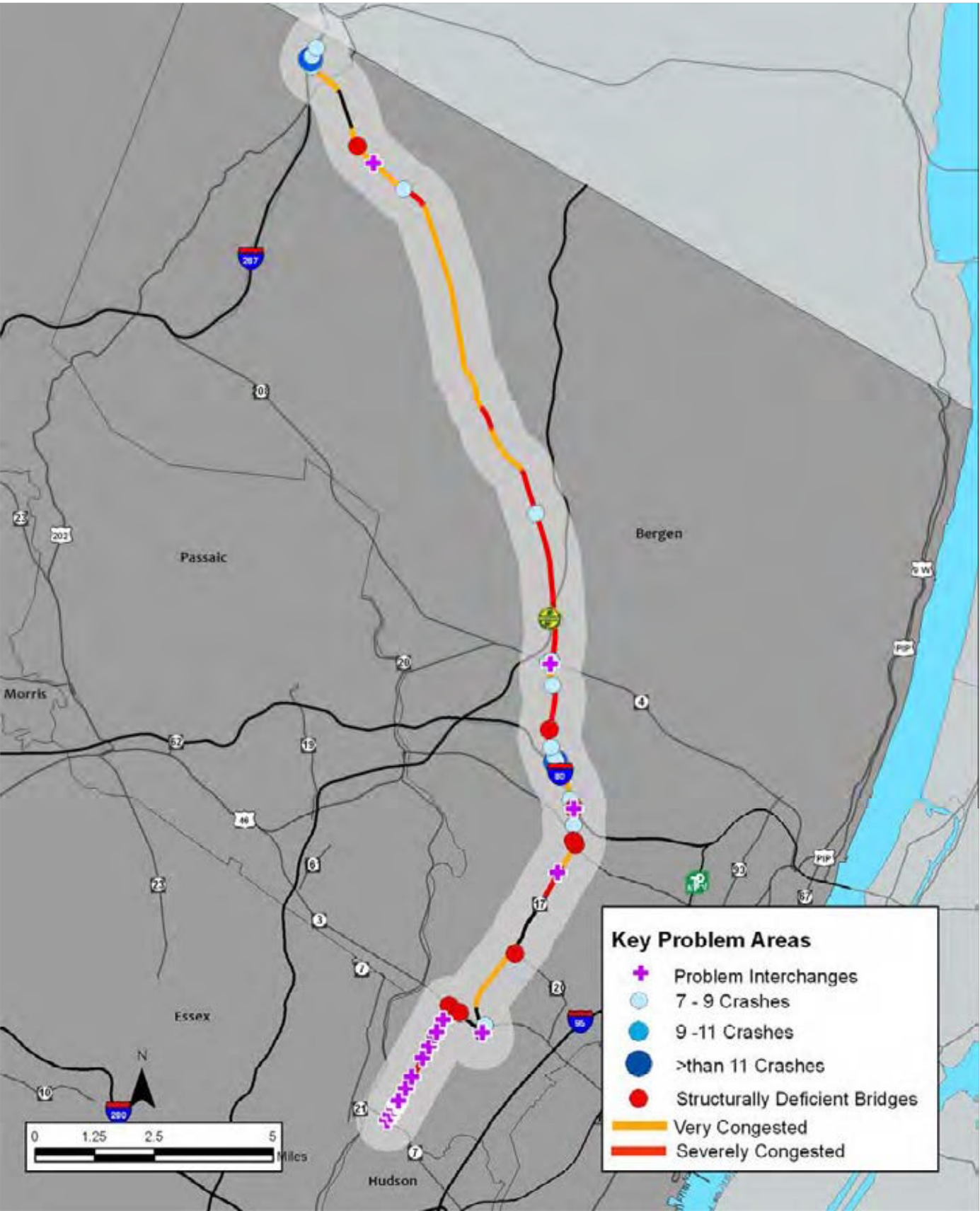


Figure 109—Overall performance, NJ Route 17



Next, each of these projects (in addition to those identified in the other three priority corridors) was ranked based on freight-specific indicators, as detailed in the Blueprint for Investment section earlier in this report. A review of commodity flows for each corridor indicates that these deficiencies impact the movement of goods that are critical to New Jersey's economy.

The following sections highlight the already programmed improvements and the remaining problem locations to be addressed.

Planned Improvements

A list of planned projects included in the NJTPA's Transportation Improvement Program (TIP) for Fiscal Years 2010–2013 is included below. These improvements were reviewed against the problem area list and if identified issues were addressed, the problem area was eliminated from the list.

- **NJ Route 17, Williams Avenue to Interstate 80** (MP 8.3 to MP 9.9)—Study to investigate widening of NJ Route 17 mainline to provide six lanes of through traffic (Bergen County).
- **NJ Route 17, Northbound over Interstate 80** (MP 9.1 to MP 9.2)—Repair and widening of existing bridge deck, reconstruction of existing ramps (Bergen County).
- **NJ Route 17, Essex Street to Route 4** (MP 10.19 to MP 12.04)—Widening of NJ Route 17 mainline to provide six lanes of through traffic (Bergen County).
- **NJ Route 17, Central Avenue Bridge** (MP 10.9)—Replacement of bridge structure (Bergen County).
- **NJ Route 17 at Railroad Avenue Drainage Improvements** (MP 4.93)—Provide additional inlets and new pipe systems along NJ Route 17 northbound and southbound (Bergen County).

Remaining Problem Locations

NJ Route 17 serves several key industries in New Jersey, including chemicals, food and kindred, and petroleum. Chemical and food and kindred commodity flows within the corridor serve the national economy as flows originate or are destined to the Midwestern and Southern United States. Additionally this corridor carries significant flows that originate or are destined to New Jersey. Each location along Route 17 is of particular importance to New Jersey-based traffic, as more than 90 percent of commodity flows along this segment either originate in or are destined to New Jersey.

As noted above, the following locations are the remaining problem areas to be addressed along the Route 17 corridor once the already planned improvements are addressed. Summary graphics are provided at the end of this section. As projects are advanced through the pipeline for these areas, additional deficiencies and issues may be identified.

Milepost 26.0–26.3 (U.S. Route 202 to Stag Hill Road) (Figure 110)

This segment of NJ Route 17 includes a weaving section between Stag Hill Road and U.S. Route 202. Two truck stops are located along this section and are used by truck traffic on NJ Route 17 and Interstate 287, located north of this segment. Access is a concern within this segment as several commercial uses have driveway access to NJ Route 17. Improvements to minimize conflicts with driveways, address the weaving areas, and ensure efficient movements to and from the truck parking facility will improve overall goods movement and truck mobility.

Milepost 24.5–24.8 (Interchange with Bergen County Route 85) (Figure 111)

This interchange is located adjacent to numerous commercial and industrial sites. NJDOT Congestion Management System data indicates this segment is Very Congested, while pavement data indicates portions of this corridor are deficient. The interchange includes several challenging ramps with tight turning radii. Access is a concern near the interchange as several commercial uses have driveway access to NJ Route 17. Additionally access to MacArthur Boulevard from Route 17 northbound requires a hard left turn at the ramp, which is very difficult for trucks and therefore limits the intersection capacity. Improvements to intersection and ramp geometry, minimize conflicts with driveways, address the congestion, and improve truck mobility will help ensure efficient goods movement for New Jersey-based commodity flows.

Milepost 11.8–15.8 (Bergen County Route 61—Bergen County Route 80) (Figure 112)

This segment of NJ Route 17 is located adjacent to numerous major regional shopping centers, including the Paramus Mall, Garden State Plaza, and IKEA. Two major interchanges are located within this four mile portion, including NJ Route 4 and the Garden State Parkway. Most of this section is classified as Severely Congested, with the highest possible score (10.0) on NJDOT's Congestion Management System, indicating the highest levels of congestion statewide. Nearly 145,000 vehicles and 13,000 trucks travel along this section of NJ Route 17 daily. Access is also a concern along this segment as numerous commercial uses have driveway access to NJ Route 17. Improvements to address the congestion, minimize conflicts with driveways, and improve truck mobility will help ensure efficient goods movement for New Jersey-based commodity flows.

Milepost 10.0–10.5 (Essex Street/Sears Distribution Center) (Figure 113)

This segment of NJ Route 17 has the highest possible score (10.0) on NJDOT's Congestion Management System, indicating the highest levels of congestion statewide. Further, this segment is identified as a mainline bottleneck. The interchange with Essex Street is incomplete, forcing truck to make circuitous trips to several distribution centers, including the Sears Distribution Center located adjacent to NJ Route 17 northbound. Several ramps at the interchange also have tight turning radii. Improvements to address the congestion, eliminate the mainline bottleneck, and improve truck mobility will help ensure efficient goods movement for New Jersey-based commodity flows.

Milepost 9.0–9.4 (Interchange with Interstate 80) (Figure 114)

NJDOT Congestion Management System data indicates that this segment of NJ Route 17 is Very Congested. This interchange includes several challenging ramp movements and includes merging traffic from both the right and left side of the highway. A large conglomeration of commercial and industrial sites is located south of this interchange. Improvements to address the congestion and ramp movements including rationalizing the ramp movements to improve efficient goods movement should be investigated.

Milepost 8.3–8.7 (Interchange with U.S. Route 46) (Figure 115)

This segment is classified as Severely Congested, indicating it is among the most heavily congested links in New Jersey. NJDOT pavement data indicates that portions of this interchange have deficient pavement. A large conglomeration of commercial and industrial sites is located adjacent to the interchange to the east. This interchange includes several challenging ramp movements and includes merging traffic from both the right and left sides of the highway which impact safety and congestion as well as introduce driver confusion. Further, several ramps within the interchange have tight turning radii. Improvements at this interchange to improve efficient goods movement should be advanced.

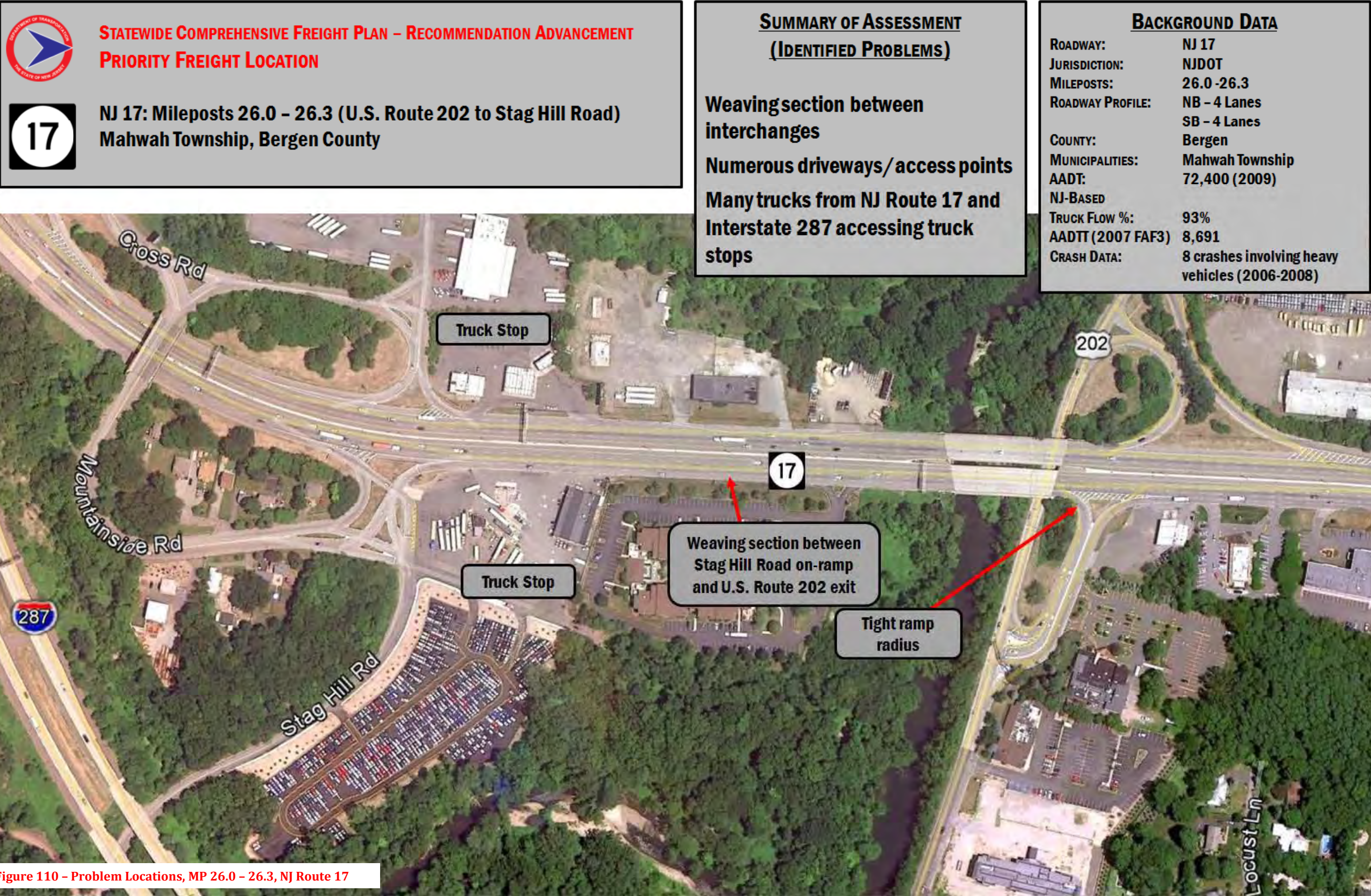


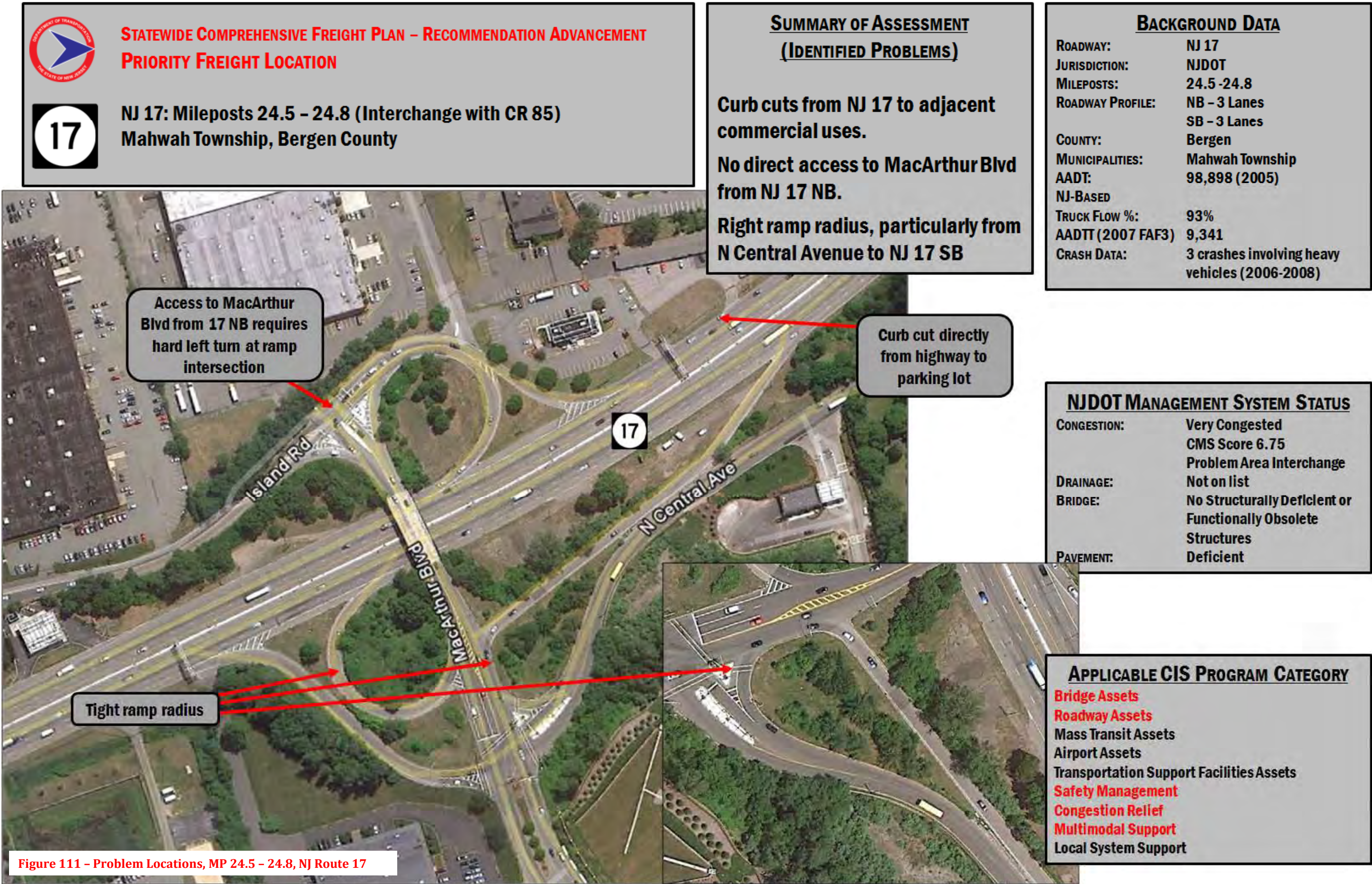
Milepost 3.8–4.2 (Interchange with NJ Route 3) (Figure 116)

This segment is the southernmost portion of the freeway section of NJ Route 17 and includes several ramps with tight ramp radii. Further complicating circulation through the interchange is the challenging movement from NJ Route 17 northbound to NJ Route 3 westbound, which forces trucks to traverse a short weaving section. This location includes portions of deficient pavement and is ranked number 3 statewide on NJDOT’s Drainage Management System.

Problem statement summary graphics were developed for each of the key locations described above. The summaries include an aerial overview of the location, identified critical areas, and pertinent information about the location, including AADT, AADTT, Crash Data, NJDOT Management Systems Data, and applicable NJDOT Capital Investment Strategy categories. The problem statement summaries for Route 17, traveling south to north, are included in the following pages.









STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



NJ 17: Mileposts 11.8 – 15.8 (CR 61 – CR 80)
Paramus Borough, Bergen County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

Curb cuts from NJ 17 to adjacent commercial uses.

Two major shopping centers adjacent to NJ 17

Interchanges with NJ 4 and GSP

High truck crash rate

BACKGROUND DATA

ROADWAY:	NJ 17
JURISDICTION:	NJDOT
MILEPOSTS:	11.8 – 15.8
ROADWAY PROFILE:	NB – 3-4 Lanes SB – 2-5 Lanes
COUNTY:	Bergen
MUNICIPALITIES:	Paramus Borough
AADT:	144,950 (2009)
NJ-BASED	
TRUCK FLOW %:	93%
AADTT (2007 FAF3)	12,726
CRASH DATA:	101 crashes involving heavy vehicles (2006-2008)

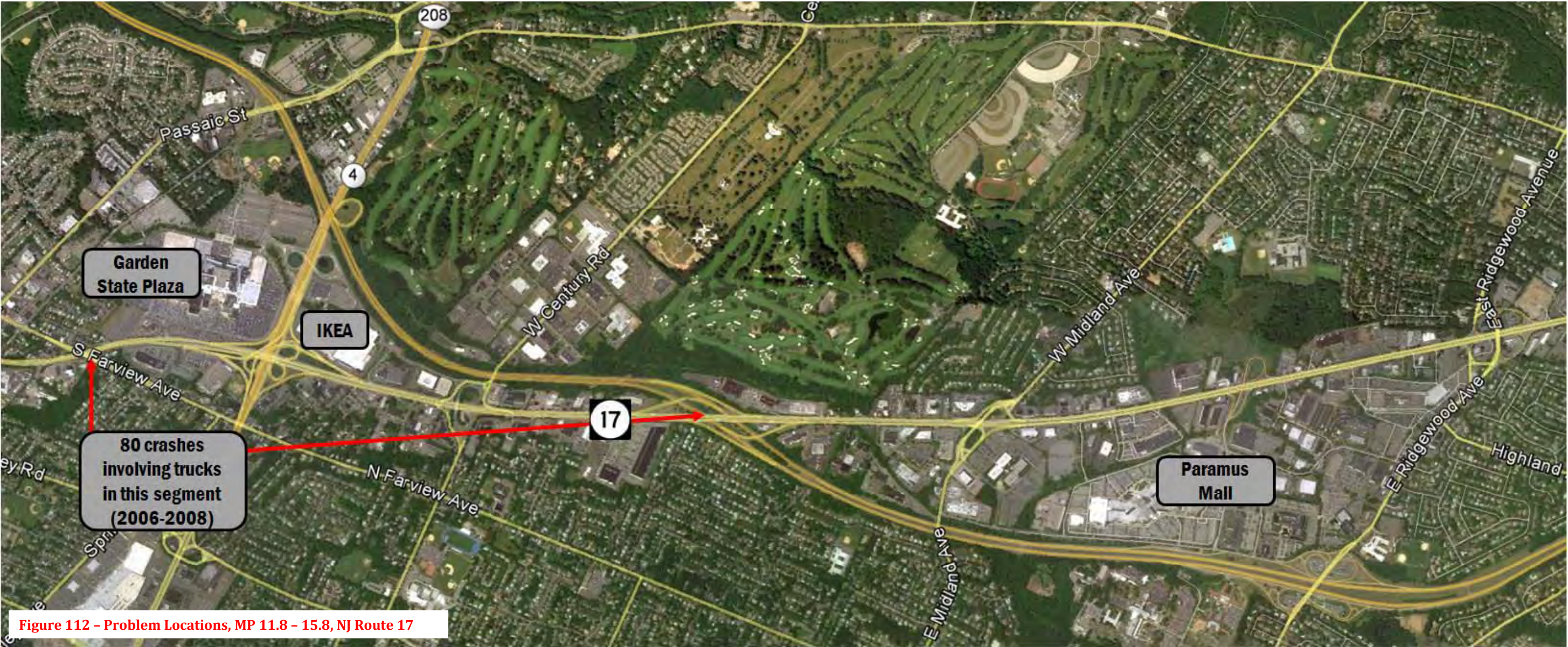


Figure 112 – Problem Locations, MP 11.8 – 15.8, NJ Route 17





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION

17

NJ 17: Mileposts 10-10.5 (Sears Distribution Center)
Lodi Borough, Maywood Borough, and Rochelle Park Township
Bergen County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

Severe congestion.
Incomplete interchange requires
distance on Essex Street to reach
distribution center from 17 SB
Right ramp radii

BACKGROUND DATA

ROADWAY:	NJ 17
JURISDICTION:	NJDOT
MILEPOSTS:	10-10.5
ROADWAY PROFILE:	NB – 2 to 3 Lanes SB – 2 to 3 Lanes
COUNTY:	Bergen
MUNICIPALITIES:	Lodi Borough, Maywood Borough, and Rochelle Park Township
AADT:	80,905 (2007)
NJ-BASED	
TRUCK FLOW %:	93%
AADTT (2007 FAF3)	10,728
CRASH DATA:	10 crashes involving heavy vehicles (2006-2008)

NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Severely Congested CMS Score 10.0 Mainline Bottleneck
DRAINAGE:	Not on list
BRIDGE:	No Structurally Deficient or Functionally Obsolete Structures
PAVEMENT:	Not Deficient

APPLICABLE CIS PROGRAM CATEGORY

- Bridge Assets
- Roadway Assets
- Mass Transit Assets
- Airport Assets
- Transportation Support Facilities Assets
- Safety Management
- Congestion Relief
- Multimodal Support
- Local System Support

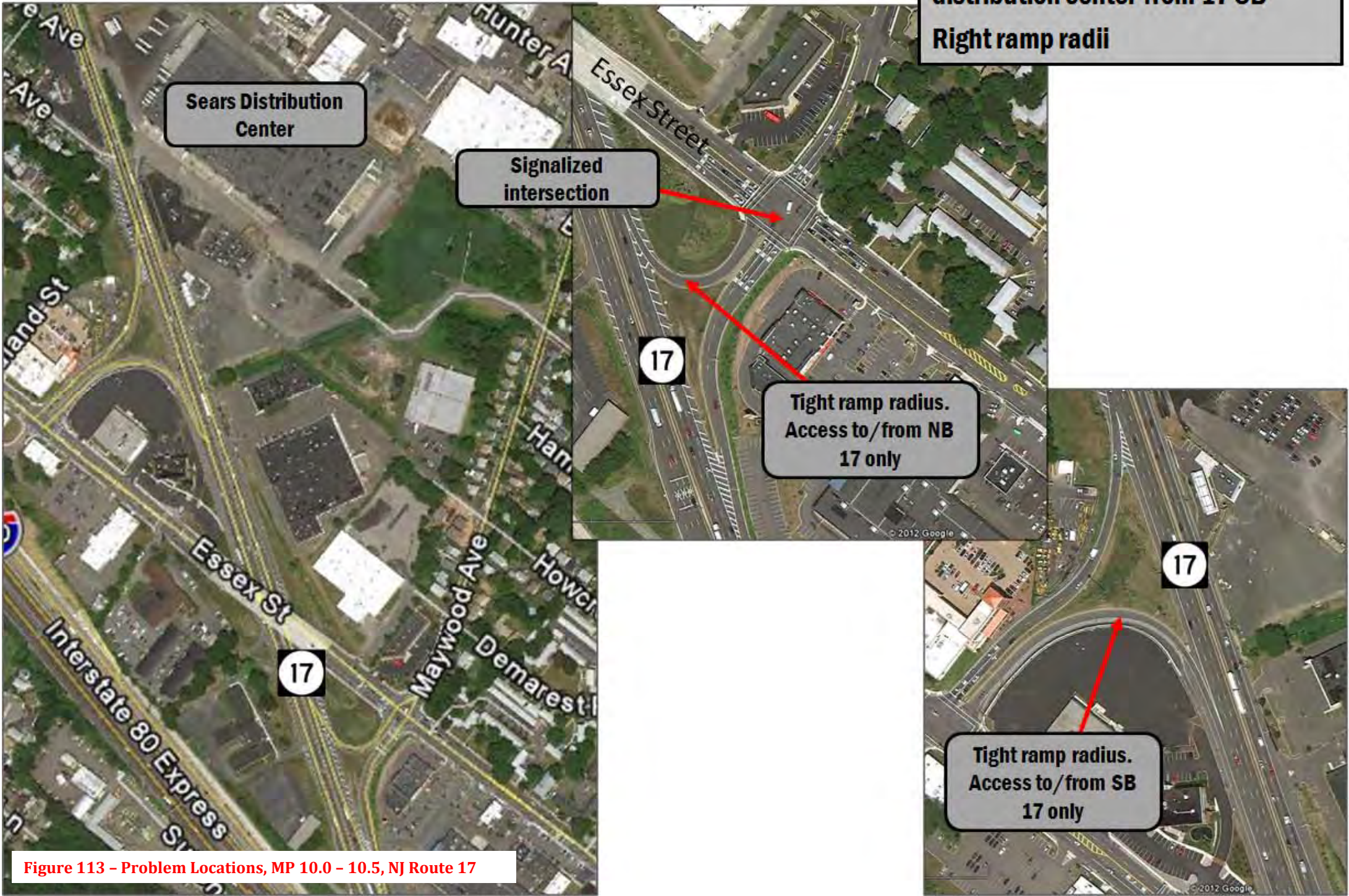


Figure 113 – Problem Locations, MP 10.0 – 10.5, NJ Route 17





**STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION**

17

**NJ 17: Mileposts 9.0-9.4 (Rt. 17 SB to I-80 EB)
Hackensack City, Bergen County**

**SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)**

**Very congested interchange
Numerous ramp movements**

BACKGROUND DATA	
ROADWAY:	NJ 17
JURISDICTION:	NJDOT
MILEPOSTS:	9.0 -9.4
ROADWAY PROFILE:	NB – 2 to 3 Lanes SB – 3 Lanes
COUNTY:	Bergen
MUNICIPALITIES:	Hackensack City
AADT:	80,905 (2007)
PEAK HOUR %:	7%
NJ-BASED	
TRUCK FLOW %:	93%
AADTT (2007 FAF3)	9,027
CRASH DATA:	0 crashes involving heavy vehicles (2006-2008)



NJDOT MANAGEMENT SYSTEM STATUS	
CONGESTION:	Very Congested CMS Score 8.55
DRAINAGE:	Not on list
BRIDGE:	No Structurally Deficient or Functionally Obsolete Structures
PAVEMENT:	Deficient

- APPLICABLE CIS PROGRAM CATEGORY**
- Bridge Assets
 - Roadway Assets
 - Mass Transit Assets
 - Airport Assets
 - Transportation Support Facilities Assets
 - Safety Management
 - Congestion Relief
 - Multimodal Support
 - Local System Support

Figure 114 – Problem Locations, MP 9.0 – 9.4, NJ Route 17



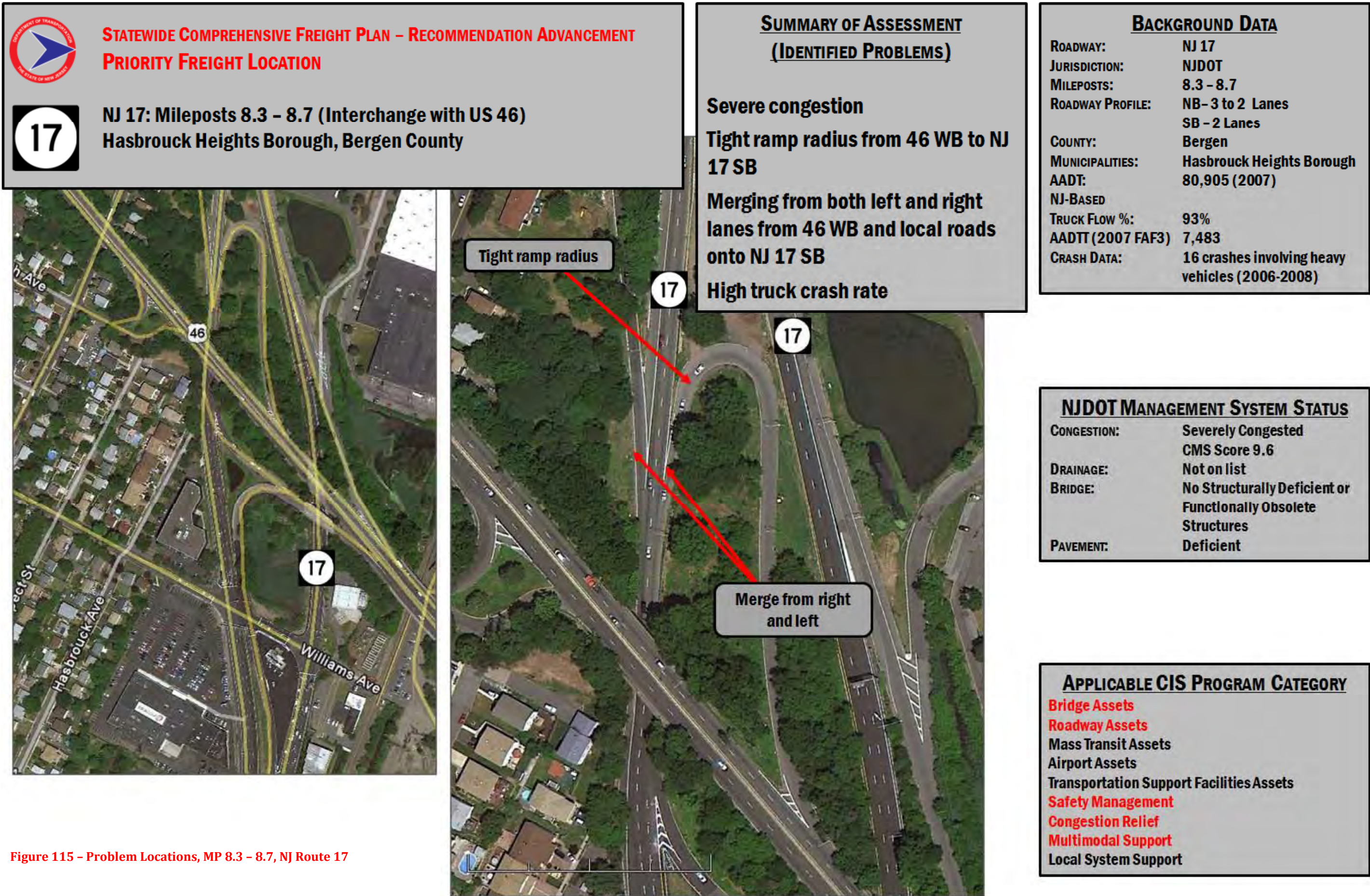


Figure 115 – Problem Locations, MP 8.3 – 8.7, NJ Route 17



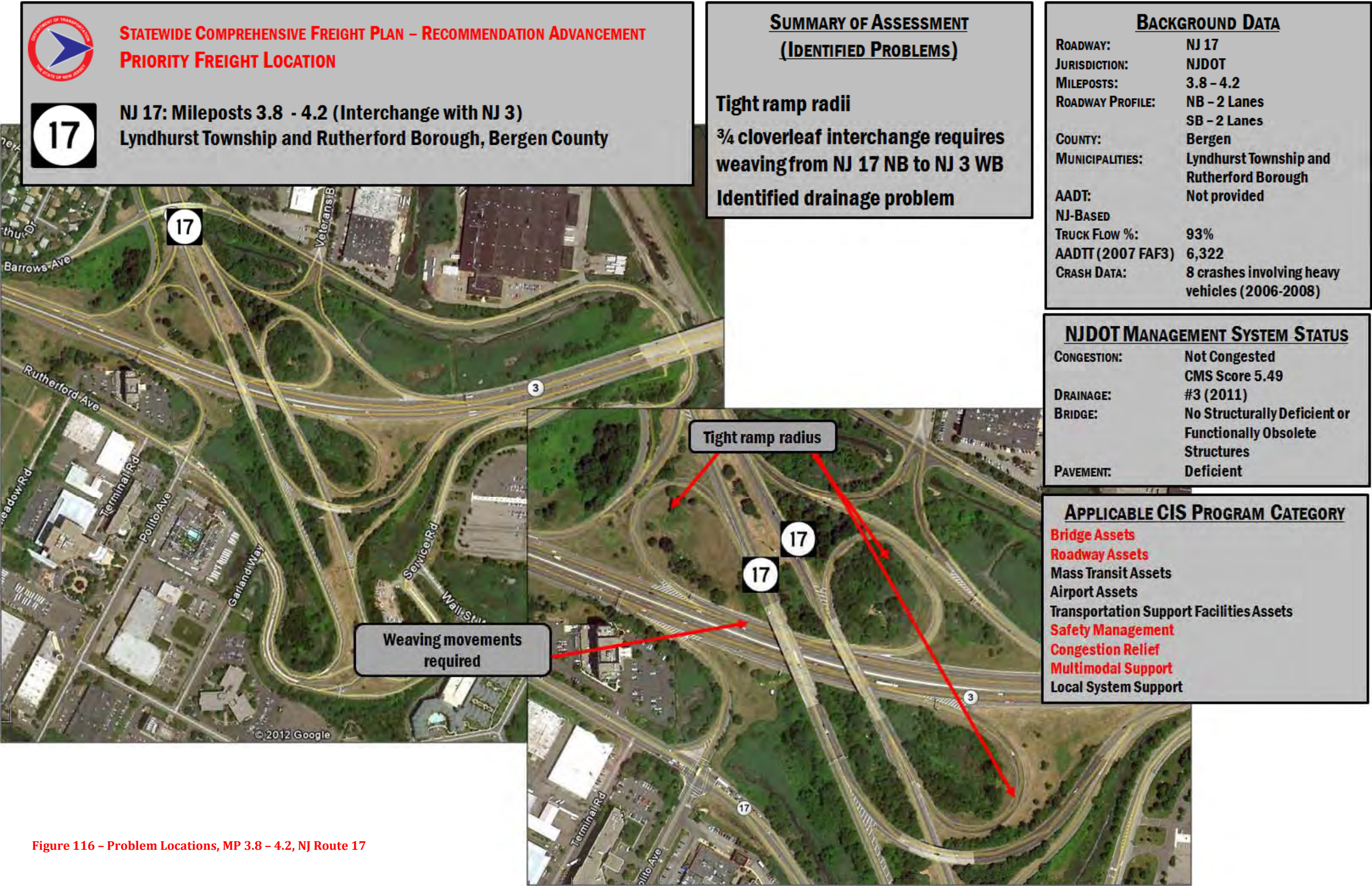


Figure 116 – Problem Locations, MP 3.8 – 4.2, NJ Route 17





NORTHEASTERN NEW JERSEY BELTWAY CORRIDOR PROFILE (INTERSTATE 287)

Interstate 287 is an important north-south route through the northern third of New Jersey, serving as a beltway around the densely populated counties of Northern New Jersey and the greater New York City metropolitan region. From its southern terminus in Edison at its interchange with the NJTPK/Interstate 95, Interstate 287 extends in a westerly direction to Somerville and Bridgewater, where it then takes a more northerly route to the New York state line near Mahwah. Within New Jersey, the corridor is 68 miles long and traverses portions of Middlesex, Somerset, Morris, Passaic, and Bergen Counties.

As pointed out by the trucking executives, Interstate 287 serves a key role for freight traffic in New Jersey:

- Linkages to other major freight routes within New Jersey (Interstates 78, 80, 280, NJTPK, NJ Route 17)
- Connects to regionally significant routes within New York, including the Outerbridge Crossing and New York State Thruway (Interstate 87)
- Provides the most direct limited access link between Interstates 78 and 80

Geographic Context/Corridor Description

As illustrated on Figure 117, Interstate 287 is indirectly linked to the major port and airport facilities near Newark by the NJTPK/Interstate 95, Interstate 78, and Interstate 280. Most importantly, the Interstate 287 corridor is a critical route for freight traveling to/from New York State and through interior parts of Northern New Jersey. While the primary north-south freight corridor through New Jersey (NJTPK/Interstate 95) travels northeast and crosses the Hudson River to New York City, Interstate 287 provides a direct route north to Rockland County, New York, bypassing the congestion associated with New York City. After crossing the New York state line, traffic can continue north towards Albany and Canada via Interstate 87/New York State Thruway or to/from New England. By continuing on Interstate 287 into New York, connections with Interstate 95 and Interstate 684 can be accessed via the Tappan Zee Bridge. Since the GSP in Northern New Jersey prohibits truck traffic, freight traffic utilizes Interstate 287 as a key link from the NJTPK into New York and points north into New England and Canada.

Interstate 287 provides connections into New York at its southern terminus as well. While Interstate 287 terminates at its junction with the NJTPK/Interstate 95, traffic may continue east via NJ Route 440 into Staten Island through to Brooklyn and Long Island via Interstate 278 and the Verrazano Narrows Bridge.

Connections within New Jersey link the corridor to other important interstate routes, including the north-south freight corridor (NJTPK/Interstate 95) and the east-west freight corridor (Interstate 78 and Interstate 80). Additionally, numerous interchanges with New Jersey and U.S. routes connect the corridor to the regional network, accessing local markets and distributors. Most notably, U.S. Route 202 parallels Interstate 287 for much of its run through Northern New Jersey, connecting at several interchanges.

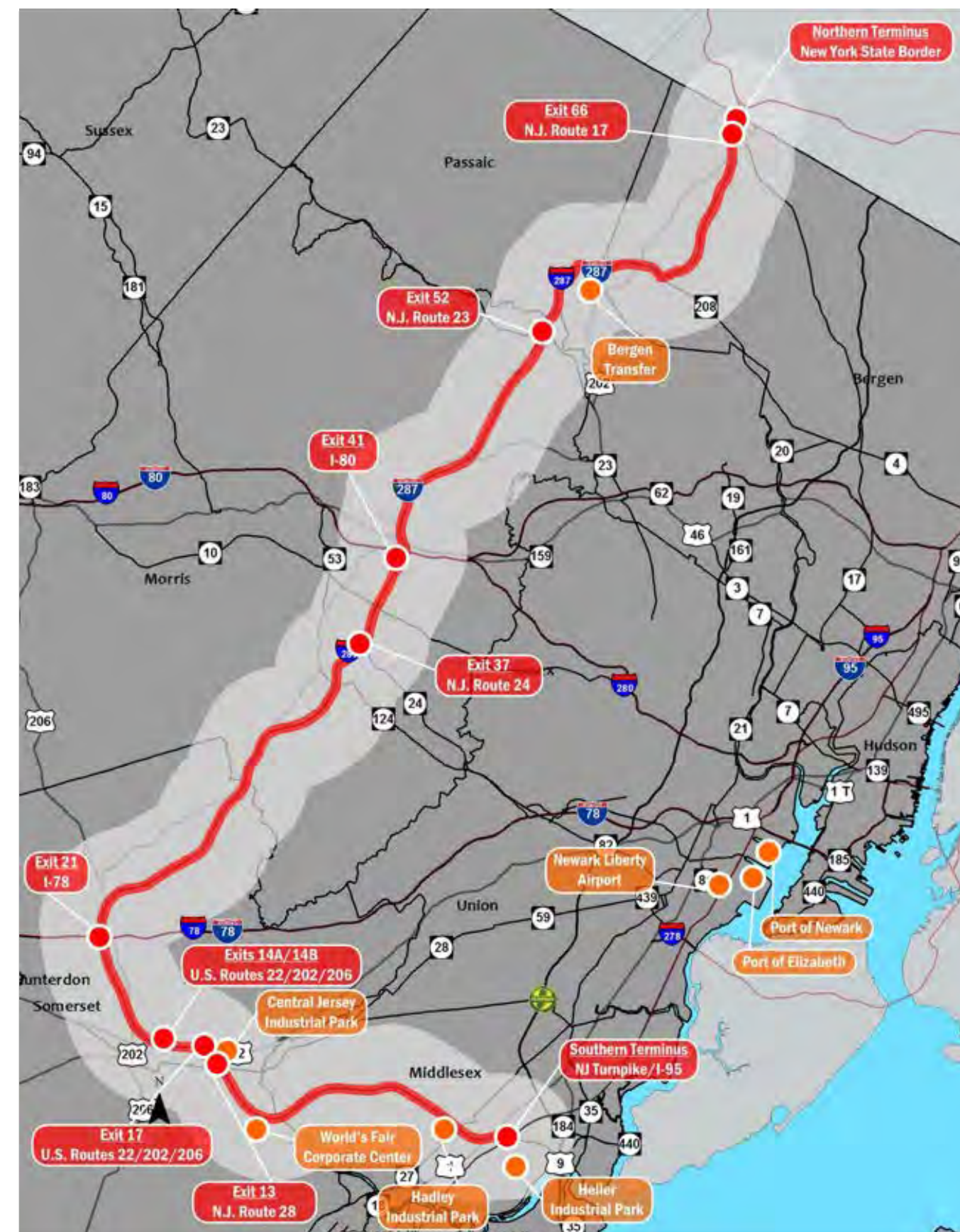


Figure 117—Northeastern New Jersey Beltway



Demographic Assessment

A review of land uses along Interstate 287 in New Jersey show several character changes as the corridor moves from south to north through the northeastern portion of the state.

In Middlesex County, Interstate 287 is primarily surrounded by commercial and industrial uses, given the proximity of its interchange with the NJTPK.

Within Somerset County, in the vicinity of the interchange of Interstate 287 and Interstate 78, surrounding land uses east of Interstate 287 are primarily commercial and residential, while land uses west of Interstate 287 are more commonly agricultural or open space. This land use pattern continues north into Morris County until a marked change in land use type and density is apparent. Between NJ Route 124 and U.S. Route 202, Interstate 287 is surrounded by a mix of commercial, industrial, and residential land uses, including several clusters in Parsippany and Morris Plains.

Within Essex, Passaic, and Bergen Counties, Interstate 287 is primarily surrounded by residential uses east of the highway and forested land to the west of the highway. However, as Interstate 287 approaches its interchange with NJ Route 17 and ultimately the New York State border, land uses shift to a mix of residential, commercial, industrial, and open space.

The densest conglomerations of industrial and commercial uses are located near interchanges with major routes, including Interstates 78 and 80; U.S. Routes 22, 202, and 206; NJ Routes 17, 18, 24, 28, and 124; and the NJTPK. Figure 118 is a map detailing general land use patterns.

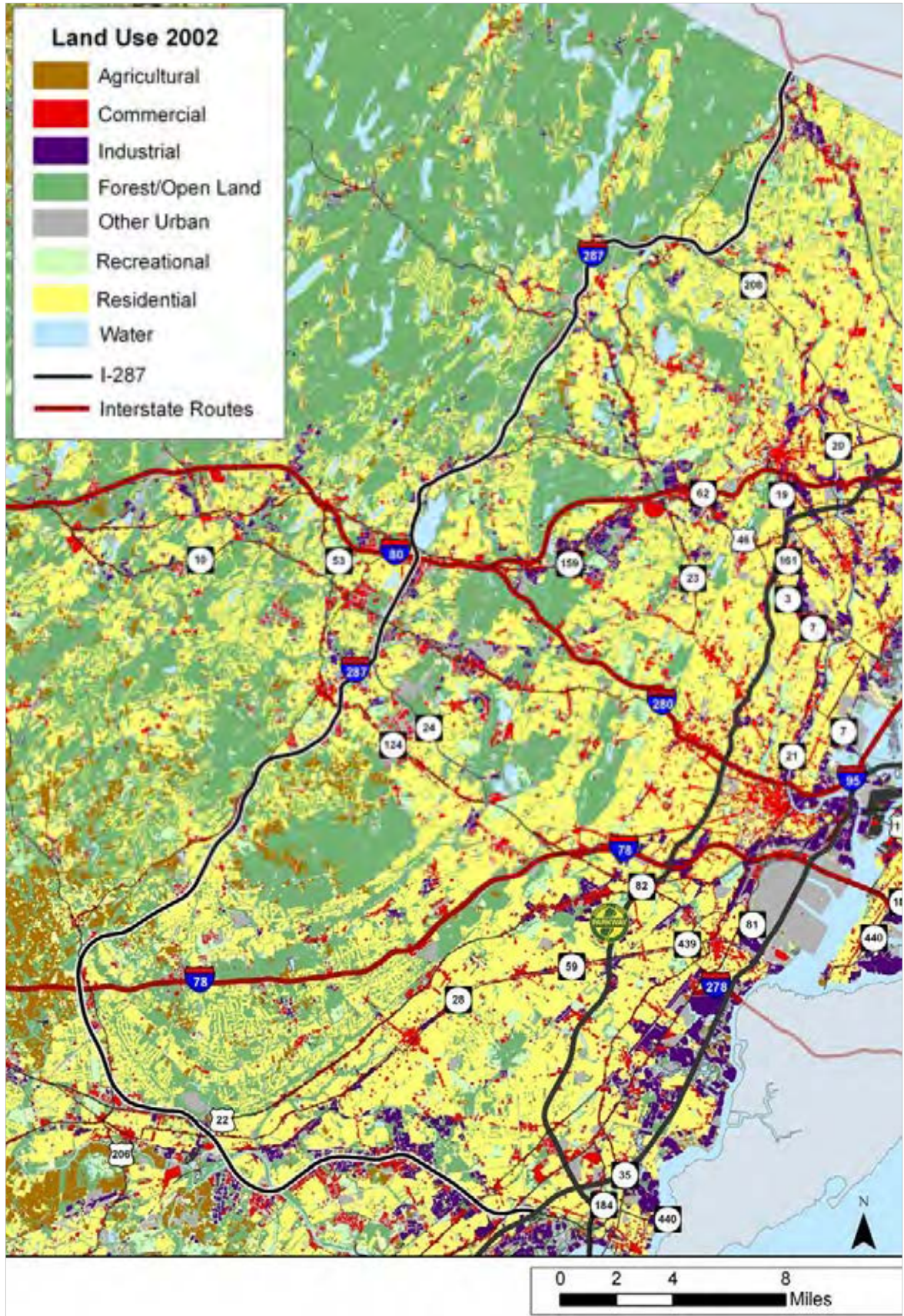


Figure 118—Land uses, Interstate 287



A review of employment densities (Figure 119) illustrates the function that Interstate 287 serves—as a beltway around the densest employment centers in Northeastern New Jersey. With the exception of Morristown and Boonton Towns and Pompton Lakes Borough, employment centers adjacent to Interstate 287 are predominantly found along the southern section of the highway in Somerset and Middlesex Counties. Statewide population densities (Figure 120) illustrate a similar phenomenon, with Interstate 287 serving as a beltway around the most densely populated areas located in Eastern New Jersey.

Key Freight Facilities

While Interstate 287 does not directly link to major port facilities in Northern New Jersey, it does serve a significant number of distribution centers and industrial parks that are clustered along the southern portion of the highway in Somerset and Middlesex Counties.

Distribution centers

The locations of warehouses and distribution centers along the Interstate 287 corridor are shown on Figure 121. The industrial buildings located along this corridor include smaller and larger warehouses, with the larger buildings located in Middlesex County (though no buildings exceed 500,000 square feet).

A considerable amount of industrial space exists in this location—CB Richard Ellis reports that over 99 million square feet of industrial property exists in the Interstate 287/NJTPK market.⁴³ This market location includes both the Heller Industrial and Raritan Center developments, along with individual facilities located along the length of the corridor in Middlesex County. Stakeholders noted that facilities along the Interstate 287 corridor focus on garments and light weight markets, thus the corridor is not considered a market for bulk distribution.

Raritan Center covers 2,350 acres and has access to both Interstate 287 and the NJTPK. This former arsenal is now considered a freight village with a wide range of land uses, including, but not limited to distribution, office space, hotels, and an exposition center. The tenants in the park include a wide range of large national and international corporations from many different industries.⁴⁴

The Interstate 287 corridor provides highway access to the New York market place and connects to New England markets. However, the significant congestion along this corridor has impacted demand for industrial property that must rely solely on Interstate 287.

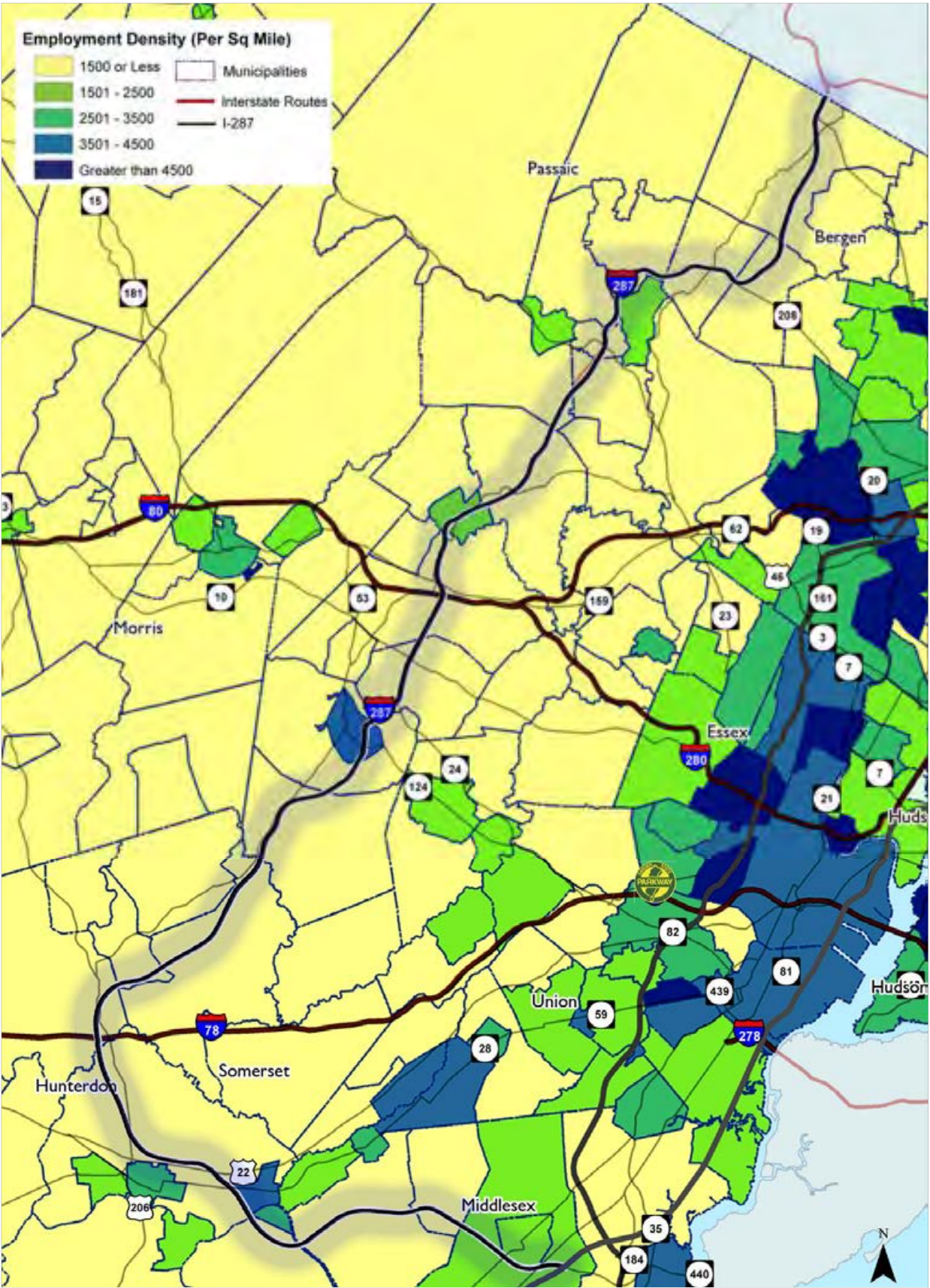


Figure 119—Employment density by municipality, Interstate 287

⁴³ CB Richard Ellis, New Jersey Industrial Report, Second Quarter of 2010.

⁴⁴ <http://www.federalbusinesscenters.com>



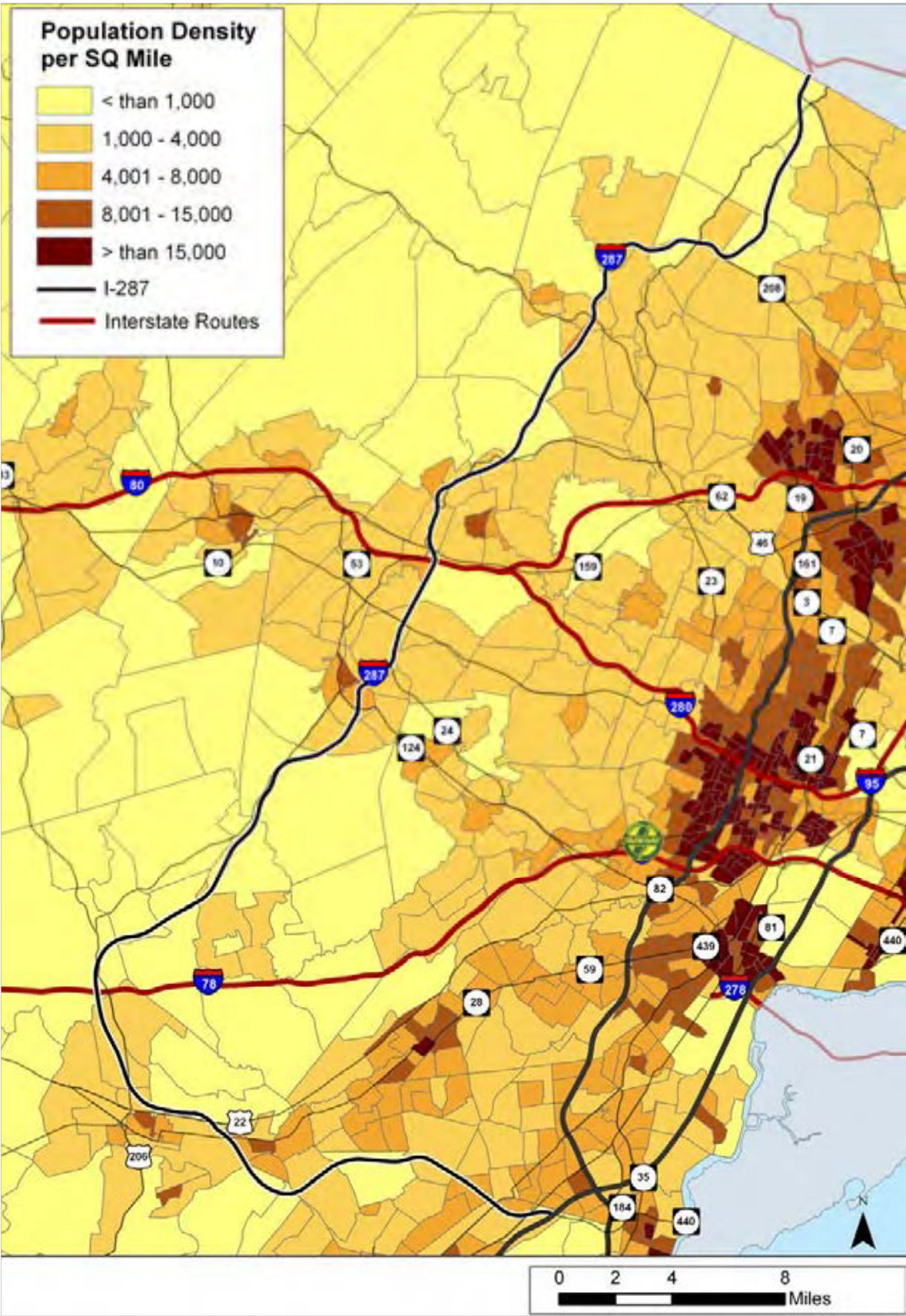


Figure 120—Population density by municipality, Interstate 287

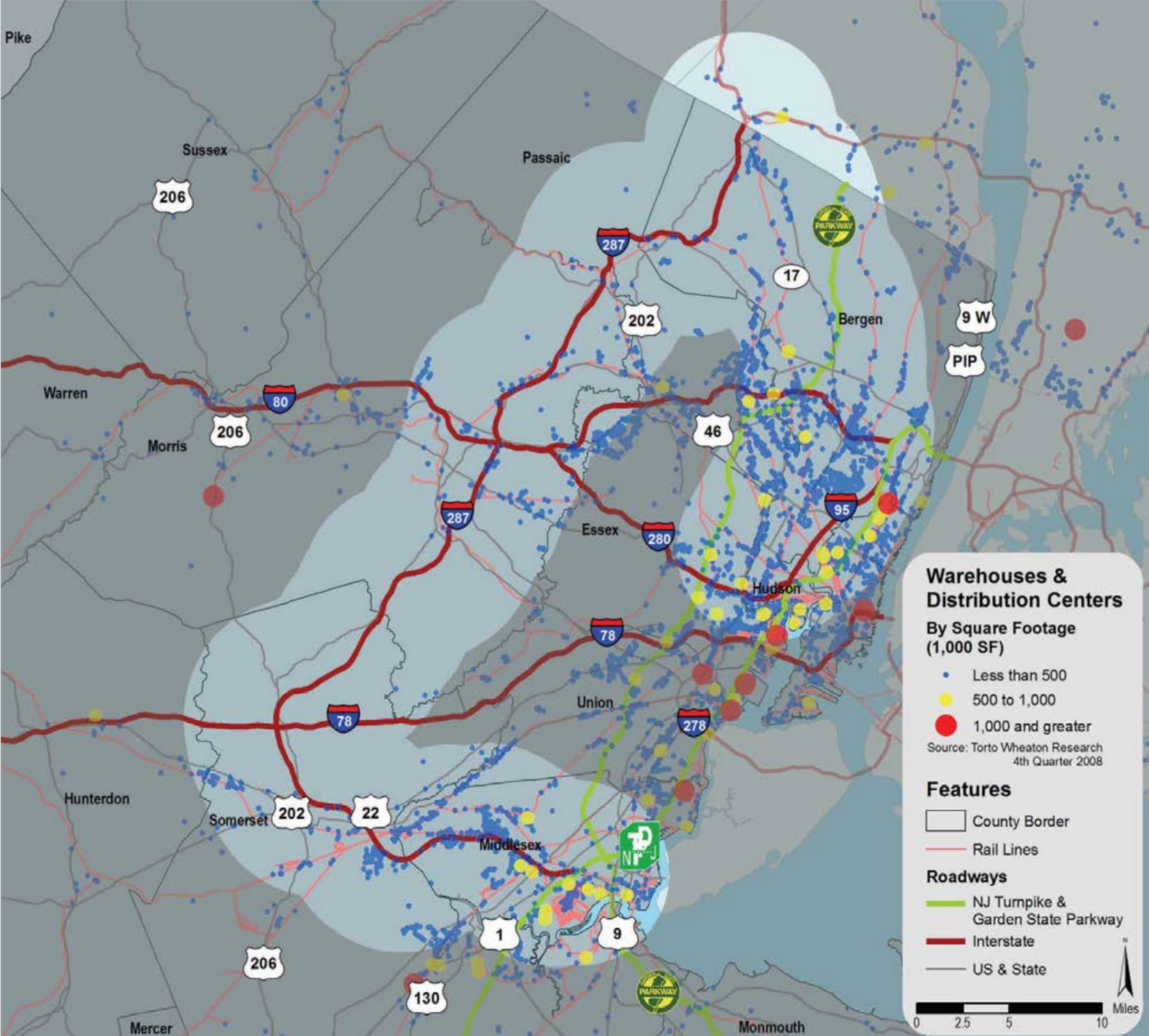


Figure 121—Warehouses and distribution centers, Interstate 287



Roadway Summary

As shown in Table 36, Interstate 287 is generally a six- to eight-lane, 65-mph roadway. This typical profile changes at several critical nodes along the corridor. As Interstate 287 approaches its junction with the NJTPK/Interstate 95 at its southern terminus, an additional two lanes are provided and the speed limit is lowered to 55 mph to accommodate merging traffic. Near the interchanges with U.S. Route 202 and Interstate 78 near Bridgewater, an additional two lanes are again provided and the profile temporarily changes to an express/local configuration. An express/local configuration also briefly occurs for southbound traffic only to provide capacity for traffic merging from Interstate 80 westbound in Parsippany–Troy Hills.

Table 36—Interstate 287 characteristics

Milepost Start	Milepost End	Length (miles)	Jurisdiction	Total Lanes NB	Shoulder Width NB (feet)	Total Lanes SB	Shoulder Width SB (feet)	Posted Speed Limit
0.0	0.7	0.7	NJDOT	5	12	4	12	55
0.7	2.3	1.6	NJDOT	4	12	4	10	65
2.3	17.8	15.5	NJDOT	3	12	3	12	65
17.8 (express)	21.0 (express)	3.2	NJDOT	3	12	3	12	65
17.8 (local)	21.0 (local)	3.2	NJDOT	2-3	12	2	3-6	65
21.0	24.8	3.8	NJDOT	4	7-12	3	12	65
24.8	36.0	11.2	NJDOT	3	12	3	12	65
36.0	38.3	2.3	NJDOT	4	12	4	12	55
38.3	39.3	1.0	NJDOT	5	12	5	12	55
39.3	40.8	1.5	NJDOT	4	12	4	12	55
40.4 (SB express)	41.9 (SB express)	1.5	NJDOT	—	—	2	12	55
40.8	41.9	1.1	NJDOT	5	12	5	12	55
41.9	43.1	1.2	NJDOT	3	12	3	12	55
43.1	49.2	6.1	NJDOT	3	12	3	12	65
49.2	51.7	2.5	NJDOT	4	12	3	12	65
51.7	59.8	8.1	NJDOT	3	12	3	12	65
59.8	66.9	7.1	NJDOT	2	12	2	12	65
66.9	67.5	0.6	NJDOT	3	12	3	12	55

Corridor Performance

The most recent WIM data (2008) was analyzed by NJIT for NJDOT and published in the *WIM Station Annual Report for 2008*. The data used in the report went through an extensive review process to remove any suspect data (due to observed anomalies in volume, WIM station malfunctions, badly formatted records, missing/extra hourly data, etc.). To avoid skewing the analysis of truck traffic volumes, the data were then filtered to analyze only non-holiday weekday traffic. For any missing months of data, NJIT used a forecasting algorithm to estimate those monthly volumes. After that filtering was complete, the data at each WIM station

were summarized to illustrate the annual distribution and variation of heavy-truck traffic volume, the diurnal distribution of heavy-truck traffic, and a comparison to heavy-truck traffic in the previous year.

Since no statewide database for heavy-vehicle traffic volumes was available, the project team used the 2007 FHWA FAF3 travel model (Version 3.1.1) to provide estimates of current travel patterns. These volumes serve as an important measure of freight demand along New Jersey’s key corridors and were a significant component of the rating system used to prioritize the identified locations for investment. Available NJDOT WIM data provided snapshots of actual heavy-truck volumes at several locations along the corridors. While this allows a useful comparison of truck volumes at several points on a corridor and the ability to review changes in volume over time, there are not enough WIM stations to paint a complete picture of corridor volumes. For this task, the project team used the FHWA FAF3 model, version 3.11. FAF3 is a national model that uses a variety of data sources to estimate commodity movements by truck. While the model does not consider a detailed understanding of local conditions (as illustrated by the high number of truck trips allocated to the truck-restricted GSP), it provides a reasonable, high-level estimate of AADTT from 2007, the model’s base year, which can indicate trends along a corridor, such as identifying areas of high truck traffic.

WIM data summary

NJDOT operates two WIM stations along Interstate 287, only one of which provides data in both travel directions. Data from stations 287 and 287A are reviewed below; they provide information on how traffic volumes shift between the central and northern portions of Interstate 287.

As shown in Table 37, overall northbound traffic on Interstate 287 decreases as traffic moves from south to north. However, the heavy-truck percentage for northbound traffic increases more than 50 percent between the two WIM sites. At the same time, the overall volume of heavy trucks does not decrease significantly, indicating that many trucks traveling on Interstate 80 likely do not use Interstate 287 to access it.

Southbound traffic data at the northernmost site indicates a significant heavy-truck percentage; however, comparable data for the southernmost WIM site was not available.

Table 37—Summary of 2008 WIM station weekday traffic volumes, Interstate 287

WIM Station ➔	287A (MP 31.70)		287 (MP 61.70)	
Direction ➔	NB	SB	NB	SB
2008 ADT	53,680	N/A	29,187	28,144
Heavy truck ADT	4,221	N/A	3,584	3,254
Heavy truck percentage	7.9%	N/A	12.3%	11.6%

Source: NJDOT 2008 WIM station raw data, weekday volumes

ADT = average daily traffic

Heavy truck = FHWA classification 8 through 13



FAF3 data summary

Based on the FAF3 model and illustrated on Figure 124, AADTT on Interstate 287 ranges from approximately 6,100 to 17,700 trucks. Highest volumes are located through Bergen County, which provides a connection to origins and destinations in New York State and NJ Route 17. Other segments with higher truck volumes include between the interchanges with NJ Routes 10, 24, and 124 in Morris County (approximately 10,600 and 11,800 trucks); in the vicinity of interchanges with U.S. Route 22 and NJ Route 28 in Somerset County (approximately 12,700 trucks); and approaching the interchange with the NJTPK (approximately 14,100 trucks).

Goods Movement

Heavy-truck tonnage flows by origin-destination

Figure 125 shows the composition of heavy-truck tonnage by origin-destination pattern moving along Interstate 287. The figure shows the share of tonnage on Interstate 287 traversing each county by:

- Inbound share (terminating in New Jersey)
- Outbound share (originating in New Jersey)
- Internal share (originating and terminating in New Jersey)
- Through share (neither originating nor terminating in New Jersey)

Examining through-state tonnage determines how much of the truck tonnage on Interstate 287 is related to supporting the state’s economy versus the economies of its neighbors. The breakdown of heavy-truck tonnage on Interstate 287 is summarized by county:

- **Somerset County** Interstate 287 heavy-truck flows show a similar split between inbound (30 percent) and outbound (27 percent) New Jersey flows. The bulk of the remaining flows are internal to New Jersey, constituting 41 percent of the total tonnage. Through-traffic accounts for only 2 percent of the total.

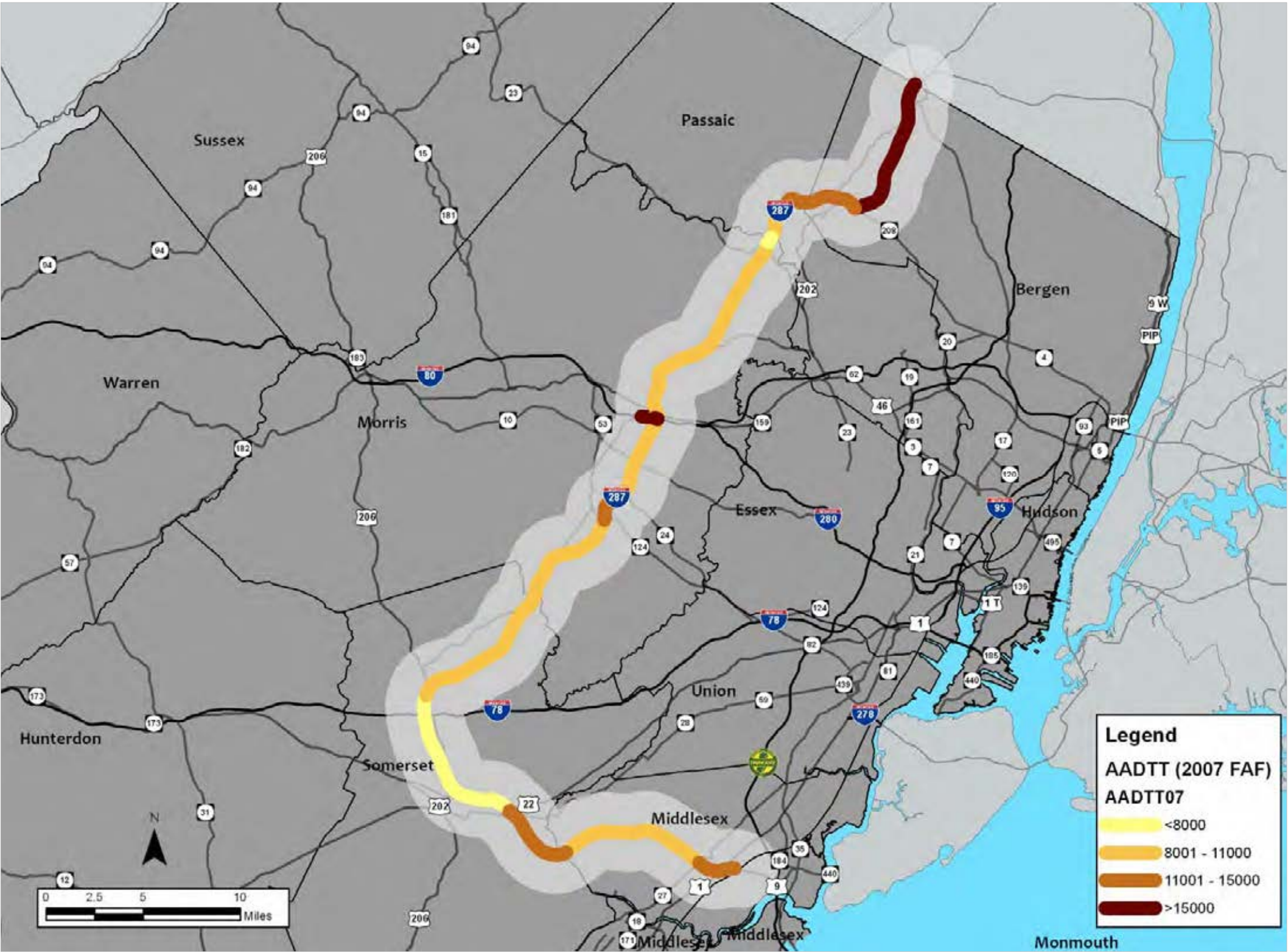


Figure 124—FAF3 truck volumes, Interstate 287



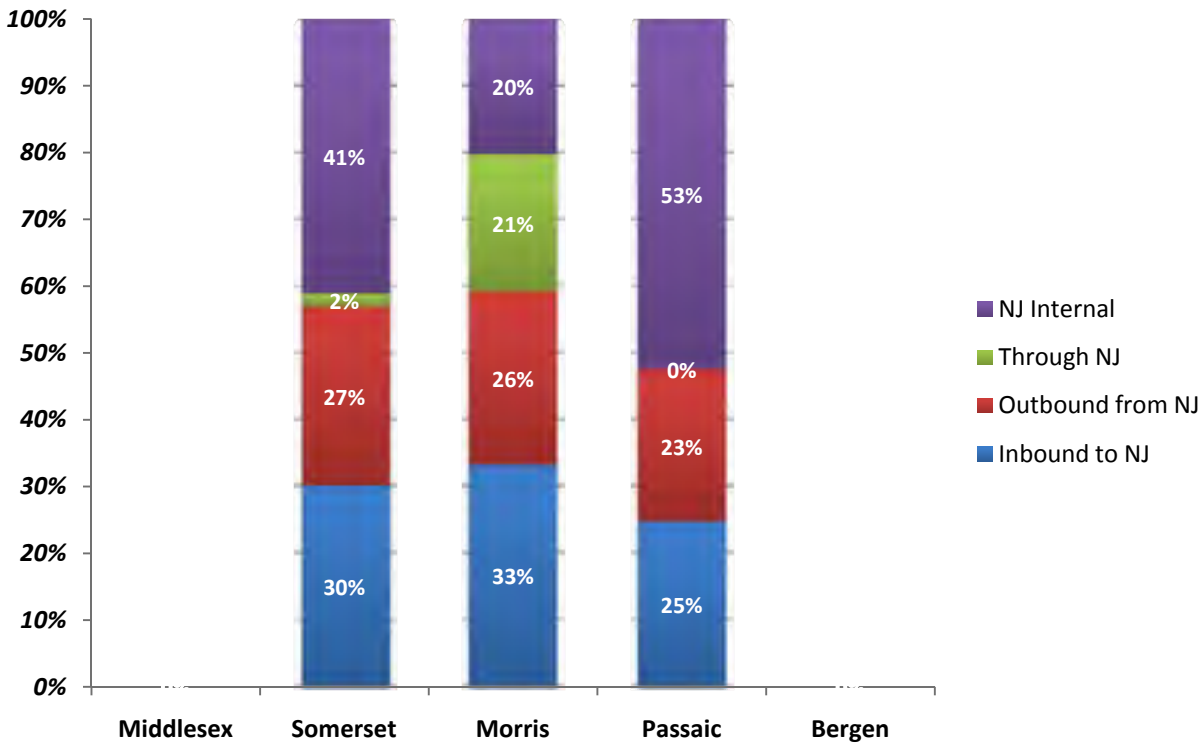


Figure 125—Origin-destination shares considering through-state traffic, Interstate 287

- **Morris County** flows are evenly distributed among all types. Inbound New Jersey flows represent the highest portion of tonnage at 33 percent, while the other flow types account for 20 to 26 percent of total tonnage.
- **Passaic County** has virtually no through-state traffic. Internal New Jersey flows account for the majority of the Interstate 287 heavy-truck tonnage at 53 percent. The remaining tonnage on Interstate 287 is split almost evenly between inbound (25 percent) and outbound (23 percent) flows.

Leading origins of heavy-truck inbound flows

New Jersey origin-destination flows are the predominant heavy-truck shares along Interstate 287, accounting for 79 to 100 percent of tonnage (Table 38). The assignment of TRANSEARCH data to the FAF3 network allows for a detailed breakdown of these origin-destination patterns as summarized in Table 38 and Table 39 and Figure 126 and Figure 127.

The breakdown of origins for heavy-truck tonnage on Interstate 287 is summarized by county below. Across all counties, Northern New Jersey is the leading origin, accounting for 40 percent of tonnage or greater. In Morris County, the New York City area accounts for 19 percent of tonnage, making it the only other origin that has a share greater than 10 percent of total tonnage in any county.

- **Somerset County's** top origin for inbound truck tonnage is Northern New Jersey, accounting for over half of total tonnage at 58.7 percent. Northern New Jersey is followed by Southern New Jersey at 9.4 percent and the East-North-Central region of the U.S. at 4.9 percent.

- **Morris County's** top origin for inbound truck tonnage is Northern New Jersey at 40.4 percent, followed by New York City at 19.4 percent and the East-North-Central region of the U.S. at 6.9 percent.
- For **Passaic County**, almost three quarters (71.1 percent) of truck tonnage on Interstate 287 originates from Northern New Jersey. Philadelphia is the second largest origin at 7.0 percent.

Table 38—Leading origins for inbound heavy-truck tonnage, Interstate 287

Top Origins	Middlesex	Somerset	Morris	Passaic	Bergen
NJ North	No Data	58.7%	40.4%	71.1%	No Data
NJ South		9.4%	5.9%	4.3%	
PA Phil		4.2%	1.7%	7.0%	
NY NYC		0.4%	19.4%	1.7%	
PA rem		4.5%	5.8%	2.9%	
NY rem		4.5%	5.2%	1.5%	
New England rem		1.0%	1.9%	3.0%	
East North Central		4.9%	6.9%	1.9%	
All others (non top 5)		18.1%	21.5%	11.6%	

Bold = top 5 within county
NJ North = New Jersey counties north of Burlington County
NJ South = New Jersey counties south of and including Burlington County
PA Phil = Philadelphia area including surrounding counties
NY NYC = New York City area and surrounding boroughs and counties within NY
PA rem = remainder of PA, excluding Philadelphia region and eastern counties
NY rem = remainder of NY, excluding NYC, Long Island, and southeastern counties
New England rem = remainder of New England—RI, MA, VT, NH, ME
East North Central = WI, MI, IL, IN, OH

Table 39—Leading destinations for outbound heavy-truck tonnage, Interstate 287

Top Destinations	Middlesex	Somerset	Morris	Passaic	Bergen
NJ North	No Data	65.3%	50.1%	74.4%	No Data
NJ South		6.0%	3.5%	2.8%	
NY NYC		7.0%	0.1%	5.7%	
PA rem		3.9%	12.1%	2.8%	
NY rem		3.6%	11.2%	2.0%	
New England rem		0.9%	0.2%	2.6%	
East North Central		2.4%	7.0%	0.8%	
Canada		1.6%	6.5%	1.5%	
All others (non top 5)		14.2%	13.0%	11.8%	

Bold = top 5 within county
NJ North = New Jersey counties north of Burlington County
NJ South = New Jersey counties south of and including Burlington County
NY NYC = New York City area and surrounding boroughs and counties within NY
PA rem = remainder of PA, excluding Philadelphia region and eastern counties
NY rem = remainder of NY, excluding NYC, Long Island, and southeastern counties
New England rem = remainder of New England—RI, MA, VT, NH, ME
East North Central = WI, MI, IL, IN, OH



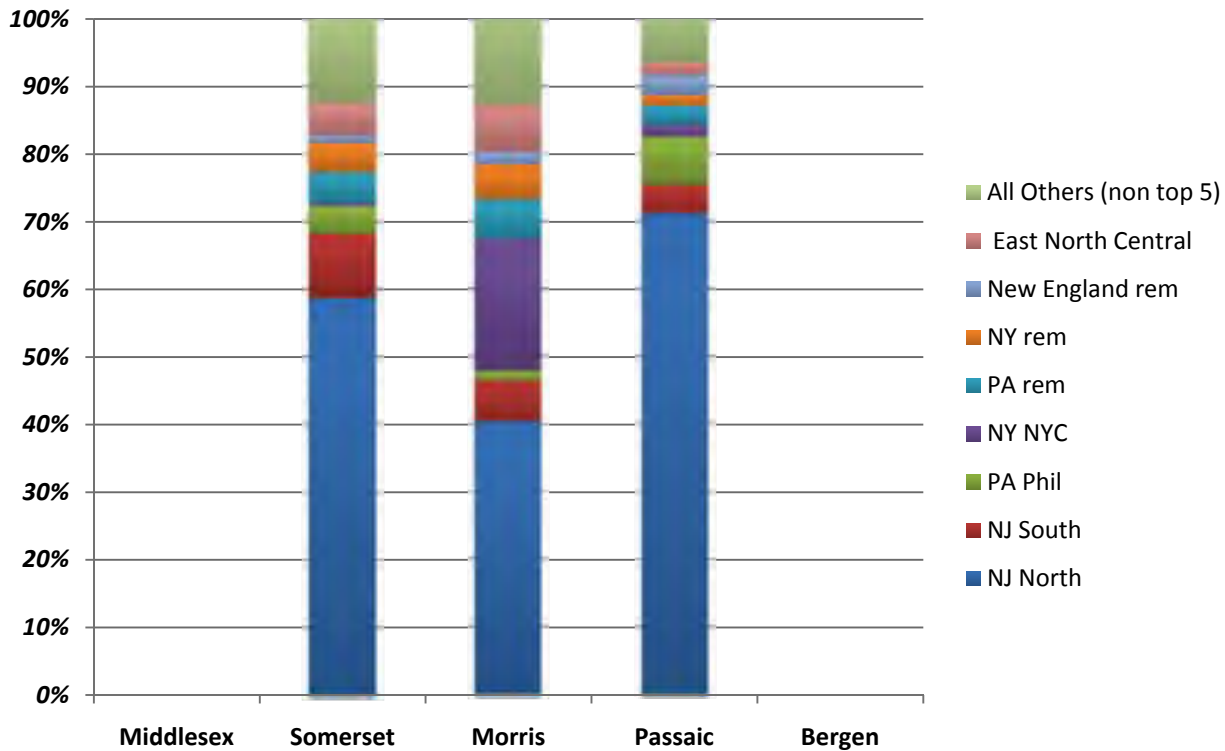


Figure 126—Heavy-truck tonnages by origin share, Interstate 287

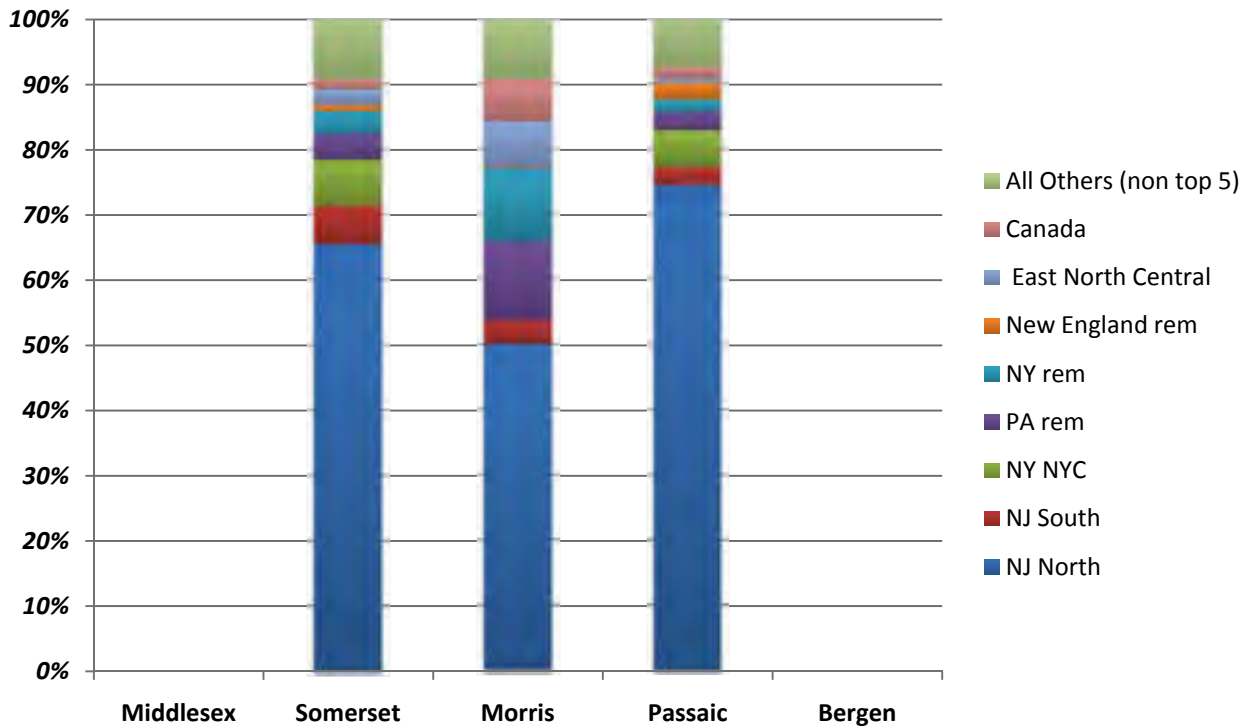


Figure 127—Heavy-truck tonnages by destination share, Interstate 287

Leading destinations of heavy-truck outbound flows

The breakdown of destinations for heavy-truck tonnage on Interstate 287 is summarized by county below. As with the leading origins, the breakdown of top destinations is dominated by locations in Northern New Jersey, making up over 50 percent of destination tonnage across the corridor.

- **Somerset County's** leading destination for truck tonnage is Northern New Jersey, accounting for 65 percent of total tonnage. New York City is a distant second, accounting for only 7 percent of total outbound tonnage.
- From **Morris County**, exactly half of outbound tonnage is destined for Northern New Jersey. Pennsylvania (remainder) serves as the second most significant destination, accounting for 12 percent of total truck tonnage. New York (remainder) is the third most important destination.
- In **Passaic County**, nearly three quarters (74 percent) of truck tonnage is destined for Northern New Jersey. New York City is the second largest destination, responsible for 6 percent of total shipments.

Heavy-truck tonnage flows by commodity

Through commodities

To understand the key commodity flows, it is useful to distinguish between origin-destination commodities and pass-through commodities (using the through-state definition of through commodities). Figure 128 shows that warehousing and distribution commodities constitute the single largest share of pass-through commodities on the New Jersey portion of Interstate 287. Food and kindred products are the second highest category (14 percent) with clay, concrete, glass, and stone the third highest (13 percent).

Origin-destination commodities

The distribution of heavy-truck tonnage by commodity type is slightly different when considering origin-destination traffic (that is, tonnage along Interstate 287 that originates or terminates in New Jersey). For corridor-wide origin-destination tonnage, warehousing and distribution products are the leading commodity (25 percent of tonnage), followed closely by non-metallic minerals (21 percent) and then clay, concrete, glass, and stone (11 percent). The data is shown in Table 40 and on Figure 129, and the breakdown of origin-destination heavy-truck tonnage on Interstate 287 by county is summarized below:

- For **Somerset County**, non-metallic minerals constitute 30 percent of total tonnage, followed by warehousing and distribution (24 percent) and clay, concrete, glass, and stone (11 percent).
- In **Morris County**, warehousing and distribution products are the largest single commodity type, accounting for 23 percent of the total. Clay, concrete, glass, and stone account for 13 percent, followed by chemicals at 12 percent and non-metallic minerals at 12 percent.
- In **Passaic County**, 39 percent of tonnage is classified as warehousing and distribution. Non-metallic minerals is the next highest category at 25 percent with clay, concrete, glass, and stone third at 8 percent.



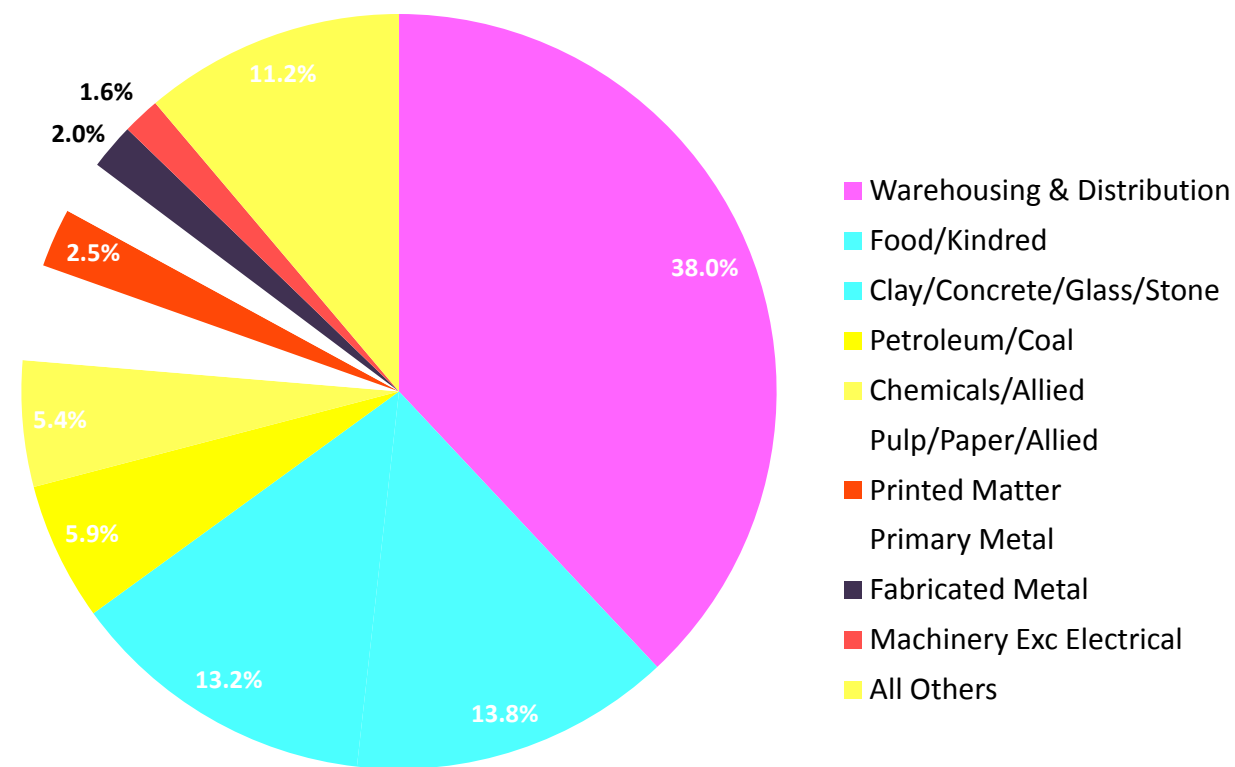


Figure 128—Leading pass-through commodities, Interstate 287

Table 40—Origin-destination heavy-truck tonnage by commodity type, Interstate 287

Rank	Commodity	Corridor	Middlesex	Somerset	Morris	Passaic	Bergen
1	Warehousing and distribution	25.1%	No Data	24.0%	22.8%	38.8%	No Data
2	Non-metallic minerals	21.3%		29.8%	11.7%	24.5%	
3	Clay/concrete/glass/stone	11.2%		10.6%	12.5%	8.4%	
4	Chemicals/allied	9.9%		8.3%	12.1%	7.9%	
5	Food/kindred	7.7%		6.4%	10.1%	3.2%	
6	Petroleum/coal	6.0%		5.4%	6.3%	7.6%	
7	Primary metal	2.6%		2.0%	3.6%	1.4%	
8	Farm	2.4%		2.3%	3.0%	0.6%	
9	Pulp/paper/allied	2.0%		1.3%	2.9%	1.0%	
10	Fabricated metal	1.5%		1.1%	2.1%	0.8%	
	All others	10.3%		8.8%	13.0%	5.8%	

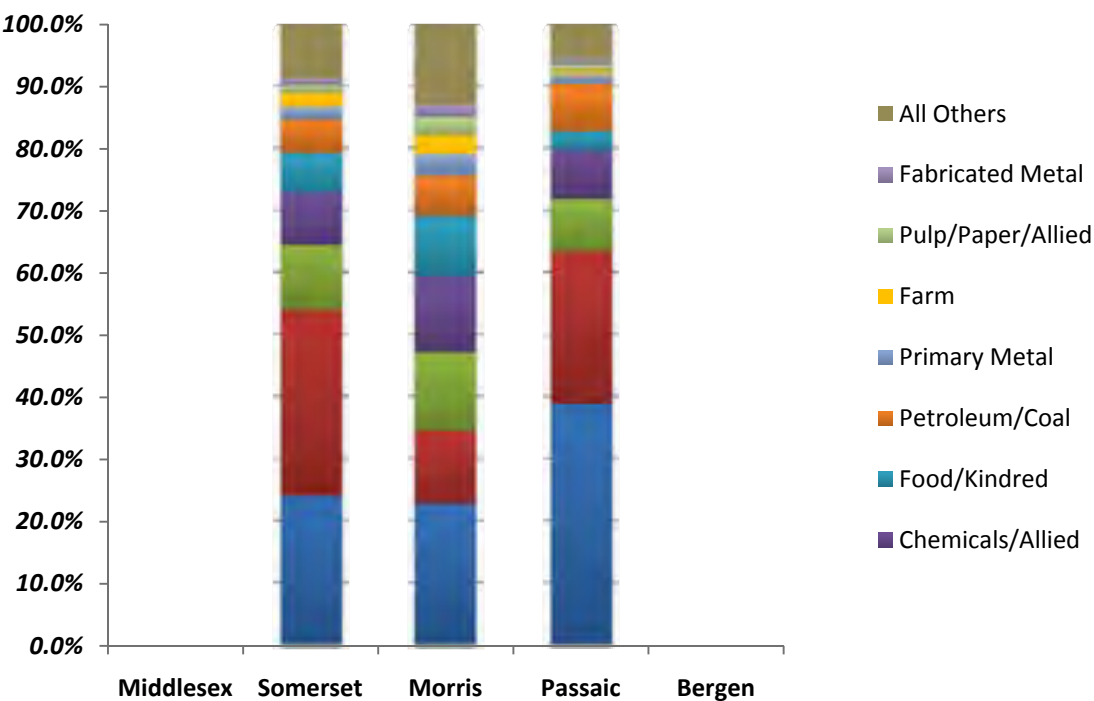


Figure 129—Origin-destination heavy-truck tonnage by commodity type, Interstate 287

Goods movement overall findings

Interstate 287 is characterized by a high percentage of consumer goods—warehouse/distribution products, construction materials, foods, and fuels. It is primarily a local-serving route; most of the traffic on Interstate 287 has an origin or destination in the state of New Jersey. Interstate 287 provides critical links between the five counties it traverses and also serves to connect Interstate 78 and Interstate 80 with the NJTPK and NJ Route 17.

The fact that much of its traffic is local in nature creates a challenge for the FAF3 assignment methodology, which is based on county *centroids*. Interstate 287 is not the preferred route to get to the centroids of Middlesex and Bergen counties and, therefore, no FAF3 trucks can be assigned to the route. Of course there are trucks on Interstate 287 through these counties; it is simply that the analysis process cannot shed useful light on their composition. However, based on the general similarities among the three counties for which results can be presented, Bergen and Middlesex traffic should show comparable characteristics.



Pavement Condition

The project team reviewed PMS data provided by NJDOT to identify locations where deficient pavement exists along the corridor. PMS data compiled throughout 2011 indicating deficient pavement locations was used in this analysis.⁴⁷ Figure 130 illustrates pavement rankings along Interstate 287 for both directions of travel.

The prevalence of poor pavement along Interstate 287 can have a significant impact on delivery times and travel speeds plus safety for heavy-vehicle traffic. Poor pavement can increase overall trucking costs due to increased maintenance costs for vehicles using these roadways. Any major resurfacing projects along either of these routes will also dramatically impact freight movement, especially since many highway construction projects take place during non-commuter peak travel periods during which the number of heavy-truck trips is still significant.

As shown on Figure 130, approximately 25 percent of Interstate 287 exhibits deficient pavement. This includes four sections longer than 2 miles, all in Somerset County, including a 5.2-mile mainline southbound section between MP 14.7 and MP 19.9, a 2.7-mile express southbound section between MP 17.8 and MP 20.5, a 3-mile express northbound section between MP 17.9 and MP 20.9, and a 10-mile mainline southbound section between MP 20.1 and MP 30.1. All these locations are in the vicinity of Interchange 21 (Interstate 78).

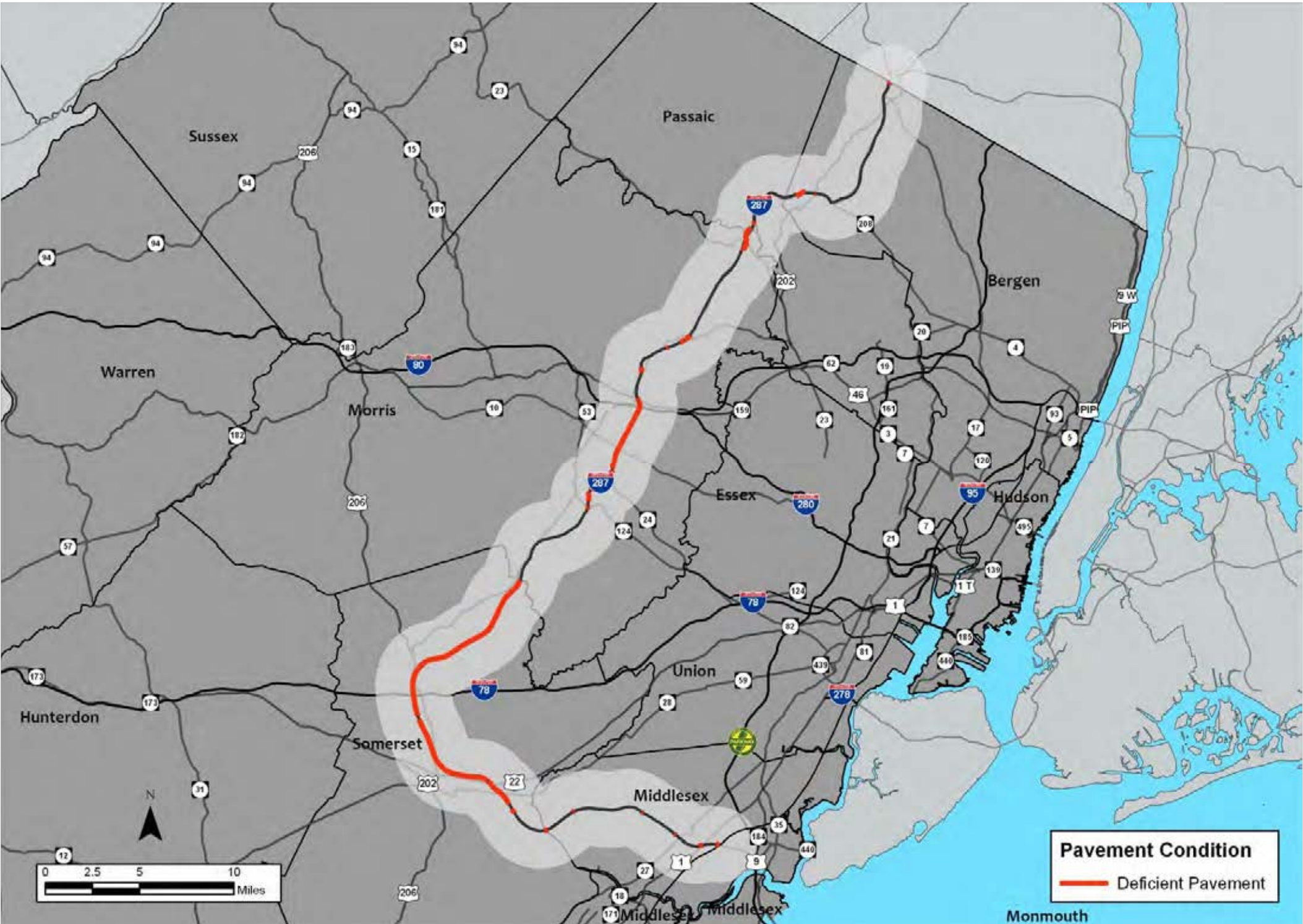


Figure 130—Pavement conditions, Interstate 287

⁴⁷ Pavement rankings were determined using International Roughness Index (IRI) ratings, along with guidelines developed by NJDOT. A ranking of good (IRI rating less than 95), fair (IRI rating equal to or greater than 95 but less than or equal to 170), or poor (IRI rating greater than 170) was identified for 0.1 mile segments along each of the major highway corridors analyzed as part of this study.



Crash Analysis

The project team reviewed three years of crash data (2006 through 2008) in order to identify clusters of crashes involving heavy vehicles (Vehicle types 20-29). Clusters were mapped for Interstate 287 (Figure 131). While most clusters were associated with interchanges, several mainline clusters were noted as well. While all crashes impact traffic flows and affect delivery times for the trucking industry, crashes involving heavy trucks are more likely to have injuries or fatalities and often result in more damage to other vehicles or properties. Crashes impact through-travel times and delivery times for freight traffic.

A review of crash data for Interstate 287 indicated several major clusters, predominantly along the southern portion of the highway between U.S. Route 22 and the NJTPK. Those clusters include:

- **Interchange 1** (U.S. Route 1)—Due to the proximity of this interchange to the NJTPK, as well as the significant number of industrial and commercial clusters in Edison Township and Metuchen Borough, the number of truck movements within Interchange 1 is likely significant.
- **Interchange 2** (NJ Route 27)—The proximity of this interchange to numerous large distribution and warehousing centers in Edison Township increases the likelihood of significant truck movements within this interchange. The lack of a complete interchange at New Durham Road (Interchange 3) forces traffic traveling between those distribution centers in western Edison Township and the NJTPK to use NJ Route 27.
- **Interchange 14** (U.S. Route 22)—This interchange serves the numerous commercial and industrial areas in Bridgewater Township. The interchange design may create challenging movements for heavy vehicles since it includes several left-lane movements and weaving conditions.

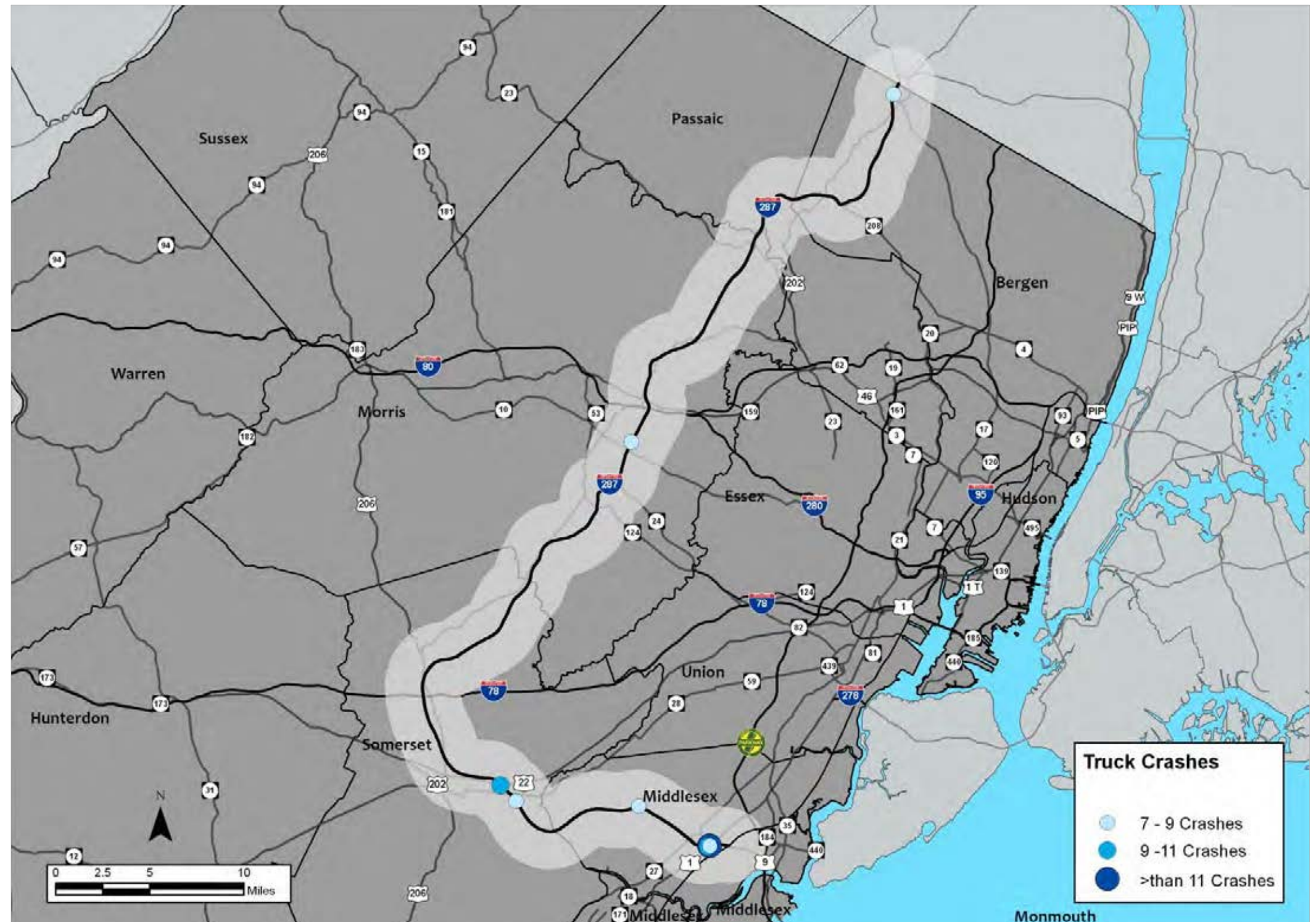


Figure 131—Crash clusters, Interstate 287



Congestion

NJDOT provided CMS data for the entire Interstate 287 corridor within New Jersey. Figure 132 illustrates the CMS congestion description for Interstate 287.⁴⁸ Anecdotal data provided by NJDOT indicates that the entire length of Interstate 287 within New Jersey is considered a congested commuter corridor, ranked 22nd of the top 105 congested corridors statewide. This recurring congestion ensures that freight traffic associated with the many industrial uses located along Interstate 287, as well as traffic destined for points along Interstates 78, 80, and 280, will have to deal with impacts and costs associated with lost time to travel schedules. Further illustrating the impacts of congestion along Interstate 287 are the nine interchanges that have been identified by NJDOT as problem area interchanges.

Nearly 35 miles of the corridor statewide (approximately 50 percent) are classified as very congested, while two segments totaling 1.5 miles (west of NJ Route 27 and the vicinity of Interstate 287) are classified as severely congested.

The nine interchanges along Interstate 287 identified as “problem area interchanges” include:

- Interchange 9 (Middlesex County Route 622) (River Road)
- Interchange 10 (Somerset County Route 527) (Easton Avenue)
- Interchange 12 (Somerset County Routes 610/623) (Weston Canal Road)
- Interchange 17 (U.S. Routes 202/206)
- Interchange 21 (Interstate 78)
- Interchange 22 (U.S. Routes 202/206)
- Interchange 37 (NJ Route 24)
- Interchange 39 (NJ Route 10)
- Interchange 41 (Interstate 80)

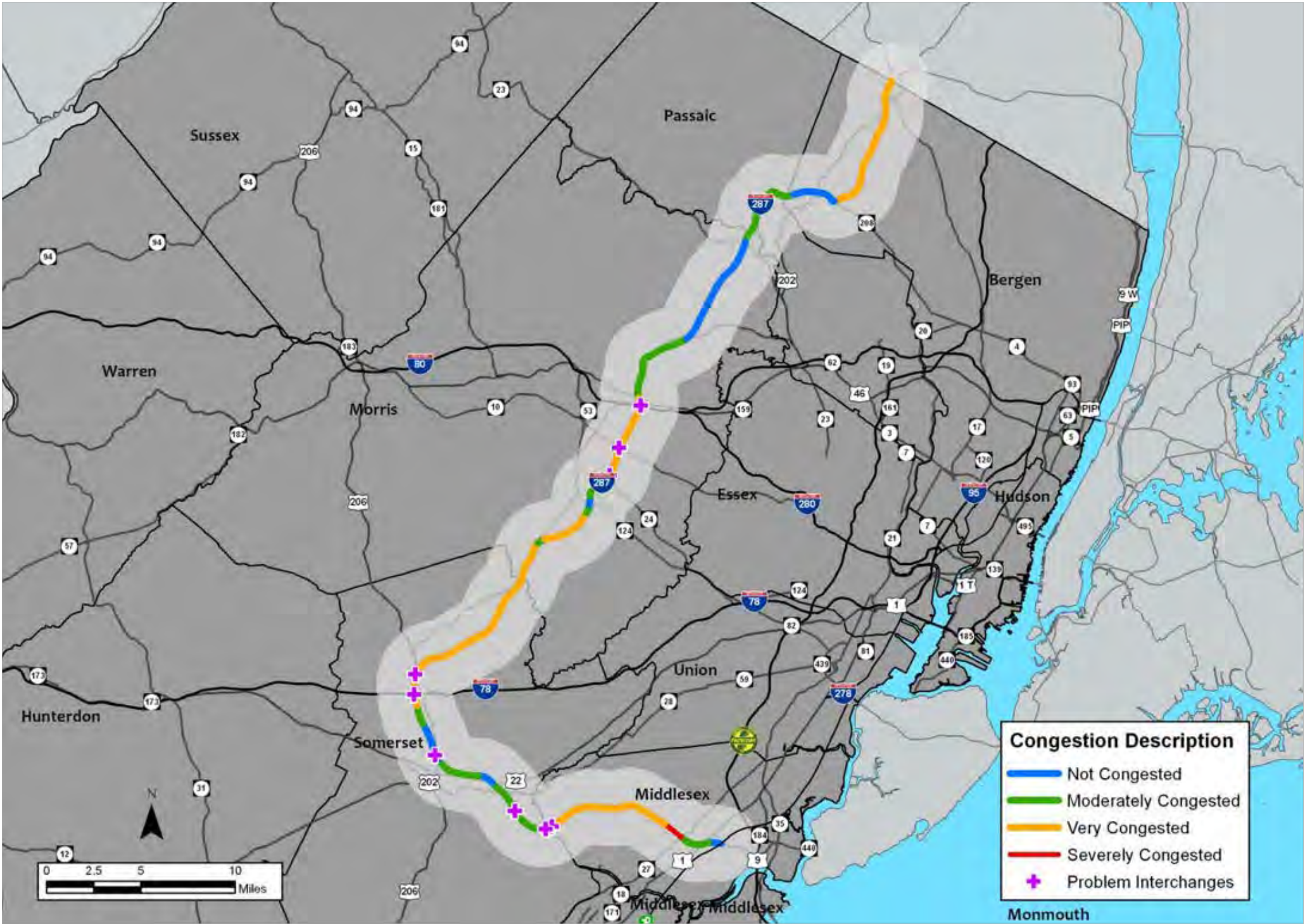


Figure 132—CMS conditions, Interstate 287, 2006 to 2008

⁴⁸ The CMS data provided are based on 2006 ADT data and for each link includes maximum v/c ratios, congestion description, county and MPO ranking, and ultimately a priority score and rating (low, medium, or high). CMS scores indicate areas of recurring congestion along New Jersey’s highway network, which can have significant negative impacts on freight traffic. Recurring congestion significantly impacts travel times, the on-time delivery of freight, and adds to the overall cost of freight movement in terms of lost time and increased fuel usage. NJDOT’s CMS database also provides information related to the state’s “79 most congested commuter corridors,” and “problem area interchanges” which are priority locations in terms of recurring congestion along New Jersey’s highway network.



Bridge Conditions

A review of the NJDOT 2011 BMS data⁴⁹ indicated a significant number of bridges are either structurally deficient or functionally obsolete (Figure 133).⁵⁰

Bridges that are structurally deficient may adversely impact freight traffic throughout the region if the issues leading to the structurally deficient classifications progress further and require load restrictions. While load restrictions on major roadways like Interstate 287 are unlikely, the maintenance, rehabilitation, or replacement work required to return structurally deficient bridges to a satisfactory level of service would likely cause major disruptions to freight traffic in the form of lane closures, reduced lane widths, slower speeds, or lengthy detours. Construction may further compound freight movement given the tendency for many highway construction projects to be scheduled for off-peak commuter periods when freight traffic is often higher.

The BMS includes a total of 188 bridges along or crossing Interstate 287 in New Jersey. Figure 133 illustrates the bridges along the corridor that are classified as structurally deficient. As shown in Table 41, two of these structures are on the mainline of Interstate 287.

⁴⁹ NJDOT’s Bridge Management System (BMS) is an inventory of all bridges with a span over 20 feet in New Jersey. It includes information on their physical characteristics, condition, and ownership. Bridges are inspected biennially and the condition of various bridge elements is rated on numerical scale. The scale ranges from zero to nine, with a zero representing a failed condition and a nine representing an excellent condition.

⁵⁰ A bridge is deemed structurally deficient if the condition rating of its deck, superstructure, substructure or culvert is 4 (poor) or less; or if either its structural evaluation for load capacity or its water adequacy has an appraisal rating of 2 (critical) or less. Structural deficiency does not necessarily mean that a bridge is unsafe. It often indicates that a bridge has been load posted and is unable to handle vehicle loads that would normally be expected on the roadway, requires rehabilitation to remain to open, or is closed. Any bridge that is classified as structurally deficient is excluded from the functionally obsolete category. A bridge is classified as functionally obsolete if the deck geometry, underclearances, approach roadway alignment, overall structural evaluation for load capacity, or waterway adequacy has an appraisal rating of 3 (serious) or less. Functional obsolescence typically means that the bridge geometry (clearances, lane widths, etc) no longer meets the current design criteria for the roadway system for which it is a part.

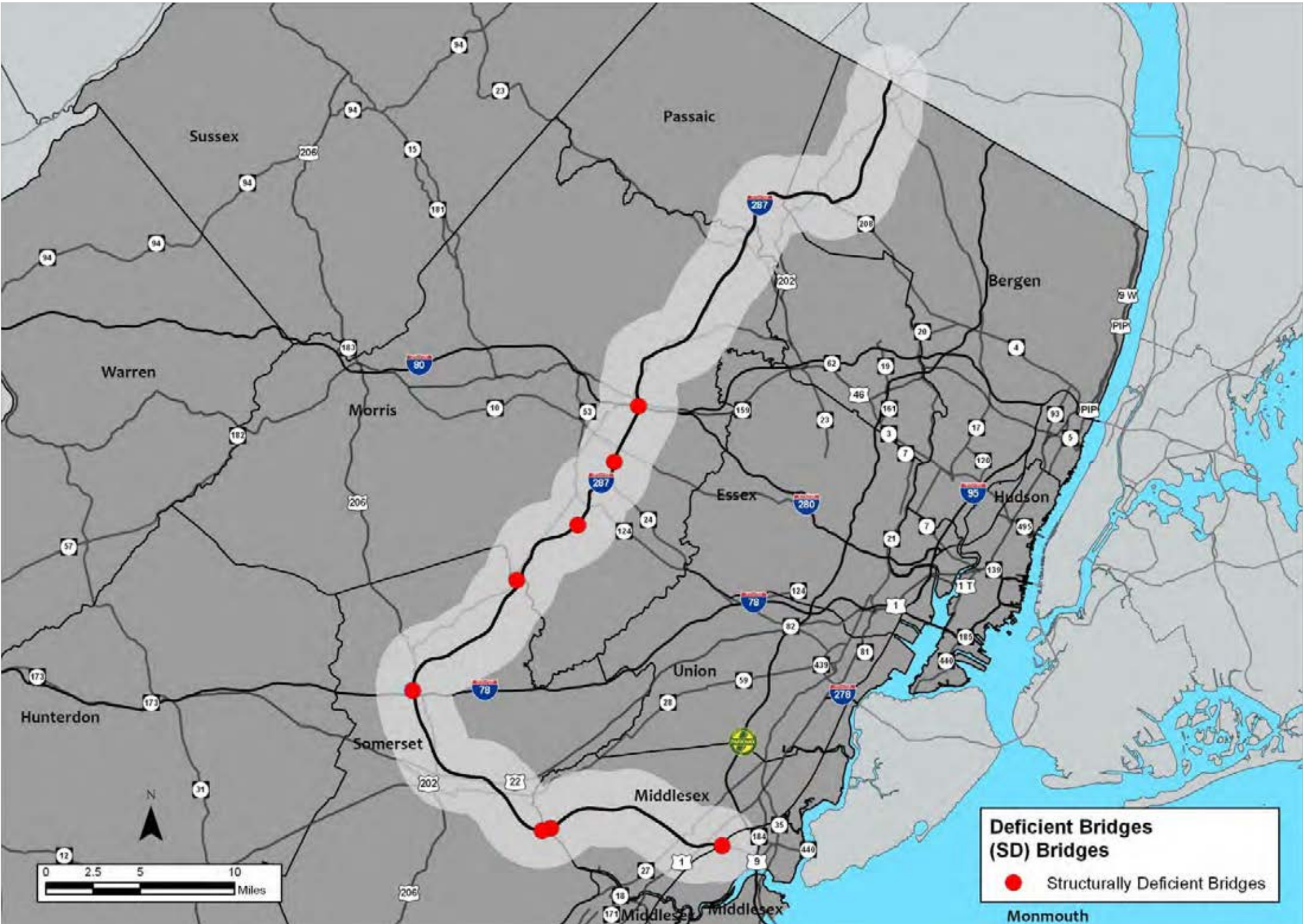


Figure 133—Structurally deficient bridges, Interstate 287



Table 41—Summary of structurally deficient bridges, Interstate 287

Route	Feature Intersected	Interstate 287 Milepost	Municipality	County
County Route 622	River Road (County Route 622) over Interstate 287 (MP 9.95)	9.95	Piscataway Township	Middlesex
Interstate 287	Interstate 287 Ramp A over Ramp B	10.43	Franklin Township	Somerset
County Route 620	Burnt Mills Road (County Route 620) over Interstate 287 southbound	21.44	Bedminster Township	Somerset
County Route 663	James Street (County Route 663) over Interstate 287	34.67	Morris Township	Morris
Interstate 287	Interstate 287 over Eden Lane/Whippany River/Morristown & Erie RR	38.75	Hanover Township	Morris
Interstate 80	Interstate 80 Ramp D over Interstate 287 northbound and Ramps D and H	42.02	Parsippany-Troy Hills Township	Morris

Source: NJDOT Bridge Management System Database, 2011

The NJDOT BMS also uses a variety of data to create a holistic view of a bridge’s condition and its relative importance to the transportation network and, thereby, create a priority ranking for statewide bridge maintenance purposes.⁵¹ An analysis of the BMS rankings shows that no bridges along the Interstate 287 corridor fall into the highest priority rankings.

Stakeholder Feedback

Meetings were held with the Motor Trucking Association and the Commercial Real Estate Developers Association (NIAOP) to discuss key issues identified and gain their feedback on problem locations, issues and potential solutions. Stakeholder input indicated key targeted areas where roadway improvements would significantly benefit freight movement:

- Improve access and connectivity to the NJ Route 18 corridor in Piscataway
- Improve connectivity to the U.S. Route 9 corridor in Woodbridge
- Explore the former Ford rail yard (Metuchen Yard) for re-use as an intermodal facility
- Expand or improve existing interchanges at U.S. Route 22 and NJ Route 28

⁵¹ The ranking is a weighted average of the following bridge characteristics (weighting in parenthesis): average daily traffic (10 percent), functional class (5 percent), deck condition (5 percent), sufficiency rating (30 percent), structurally deficient (25 percent), functionally obsolete (10 percent), bypass detour length (5 percent), scour critical (5 percent), and fracture critical (5 percent). The formula produces a score ranging from 0—500, which then corresponds to a 1—10 priority ranking, with a ranking of 1 representing the highest priority. Bridges with a score greater than 450 are highest priority, scores 400—450 are second, 350—399 are third, etc. Any bridge required to have interim inspections between its biennial inspections receive a minimum score of 399. Engineers at NJDOT review the ranking list and refine it further based on engineering judgment.



Corridor Priority Projects

An analysis of crash hot spots involving trucks, poor pavement locations, and areas with a high CMS score (Figure 134) identified key segments where all three issues are currently evident along Interstate 287. When combined, these problems can severely impact on-time freight deliveries and shift route choice to the state, county, and local road network or even influence the decision making on the siting of distribution facilities.

Once identified, the project team reviewed planned improvements along the corridor versus the problem areas. If planned improvements addressed the identified issues, the problem area was eliminated from the list for the identification of new problem statements. A list of planned projects on Interstate 287 included in the North Jersey Transportation Planning Authority’s (NJTPA) *Transportation Improvement Program* (TIP) for fiscal years (FY) 2010–2013 is included in this section.

Next, each of these projects (in addition to those identified in the other three priority corridors) was ranked based on freight-specific indicators, as detailed in the Blueprint for Investment section earlier in this report. As noted, several locations along Interstate 287 were identified as having a combination of problem interchanges, existing congestion, poor pavement conditions, or crash problems. A review of commodity flows for each corridor indicates that these deficiencies impact the movement of goods that are critical to New Jersey’s economy. These segments include problem interchanges located in areas where heavy freight movements are likely occurring based on the density of distribution centers and other freight traffic generators located within their vicinity.

The following sections highlight the already programmed improvements and the remaining problem locations to be addressed.

Planned Improvements

A list of planned projects included in the NJTPA’s TIP for FY 2010–2013 is included below. These improvements were reviewed against the problem area list, and if identified issues were addressed, the problem area was eliminated from the list.

- **Interstate 287/Interstate 78/U.S. Route 202/U.S. Route 206 Interchange Improvements** (MP 20.9 to MP 22.4, Somerset County)—Development of interchange improvements at the Interstate 78 and Interstate 287 interchange (Interstate 78, Interchange 29) and the interchange of Interstate 287 and U.S. Route 202/206 to address safety issues. The Interstate 287 southbound to Interstate 78 westbound ramp will be widened from one to two lanes; the Interstate 78 eastbound to Interstate 287 northbound ramp will be shifted from a left-lane to a right-lane entrance, eliminating a five-lane weave for vehicles traveling from Interstate 78 eastbound to the Interstate 287 northbound/U.S. Route 202/206 interchange. Additionally, a missing move ramp will be provided for U.S. Route 202/206 northbound to Interstate 287 southbound. The project is currently in the design phase; construction is scheduled to be completed during FY 2014.
- **Glaser’s Pond Long-term Drainage Improvements** (MP 67.0 to MP 68.0, Bergen County)—Study and implementation of drainage system upgrades in the project area. An existing outfall in the area is currently conveying sediment and garbage to a private pond, leading to flooding of private property. The project is currently in design, and improvements will be constructed during FY 2013.

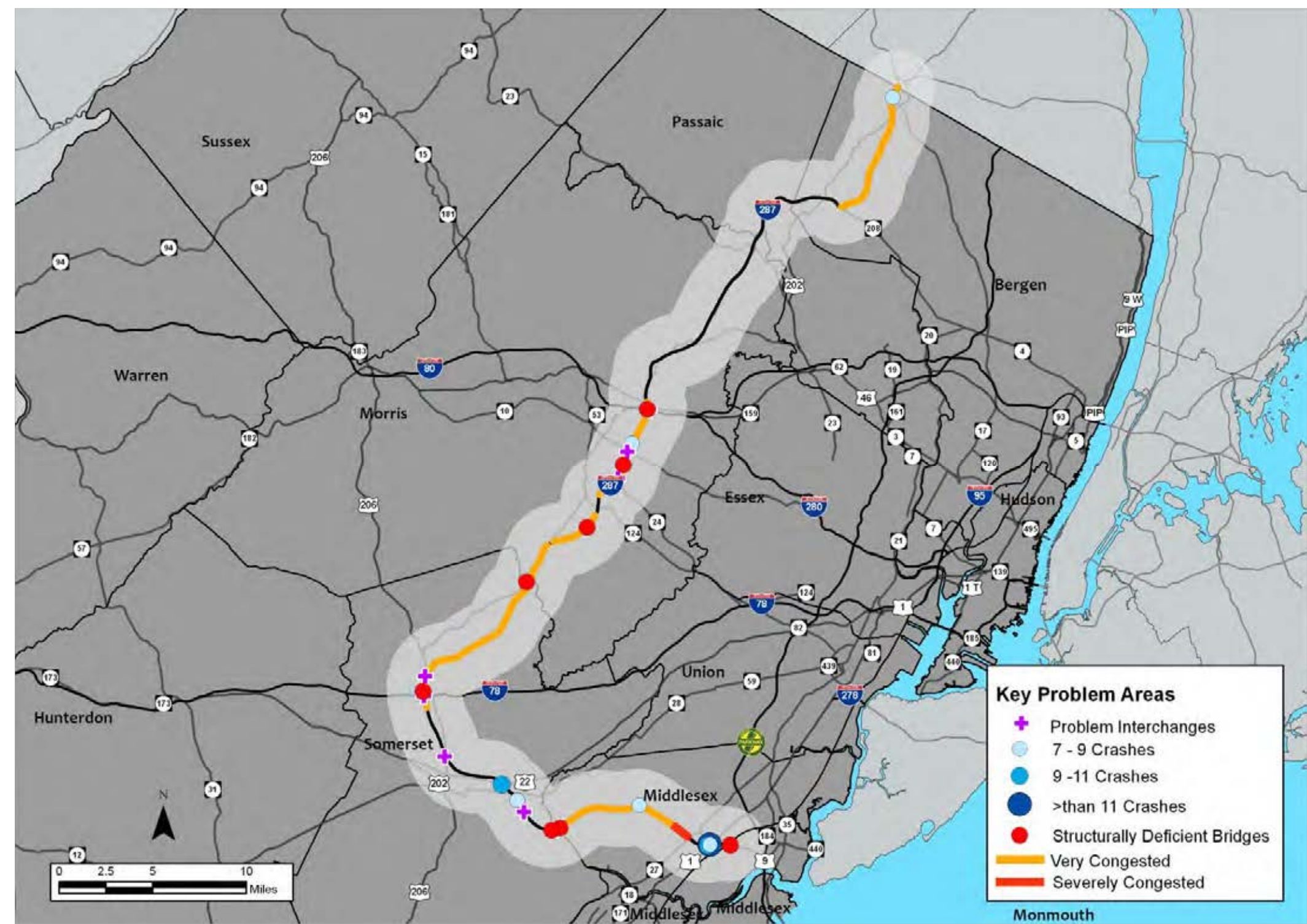


Figure 134—Overall corridor conditions, Interstate 287

Remaining Problem Locations

Interstate 287 serves several key industries in New Jersey, including chemicals, food and kindred, and petroleum. Chemical and food and kindred commodity flows within the corridor serve the national economy as flows originate or are destined to the Midwestern and Southern United States. While New Jersey-based

truck flow percentages were not available for the southern portion of the corridor, the remaining portion of the corridor carries significant flows that originate or are destined to New Jersey.

The following summarizes the initial deficiencies identified for the remaining problem areas to be addressed along Interstate 287. As projects are advanced through the pipeline for these areas, additional deficiencies and issues may be identified.

**Interchange 41 (Milepost 41.7–42.2—Interstate 80)
(Figure 135)**

NJDOT Congestion Management System data indicates that this location is Very Congested and is a problem interchange, while pavement data indicates that this segment of Interstate 287 includes sections of deficient pavement. This interchange links two of New Jersey’s key freight corridors and includes a series of challenging ramps, many of which have tight turning radii. Thirty-eight (38) crashes involving trucks were reported within this segment between 2006 and 2008. This interchange has merging traffic from both the left and right lanes onto I-287 from I-80 and local roadways. Improvements should seek to minimize truck crashes, improve merging areas, and reduce congestion at this interchange to facilitate improved truck mobility.

**Interchange 39 (Milepost 39.3–39.8—NJ Route 10)
(Figure 136)**

NJDOT Congestion Management System data indicates that this location is Very Congested and is a problem interchange, while pavement data indicates that this segment of Interstate 287 includes sections of deficient pavement. This interchange includes one ramp (NJ Route 10 eastbound to Interstate 287 northbound) with a tight radius. Thirty-eight (38) crashes involving trucks were reported within this segment between 2006 and 2008. Numerous freight uses are located in the vicinity of this interchange along NJ Route 10. Improvements should seek to minimize truck crashes and reduce congestion at this interchange to facilitate improved truck mobility.

Interchange 21 (Milepost 20.5–21.6—Interstate 78) (Figure 137)

This interchange links two of New Jersey’s key freight corridors, and is particularly important to New Jersey’s economy, as nearly 100 percent of all truck traffic along this portion of Interstate 287 is either destined to or originates in New Jersey. NJDOT Congestion Management System data indicates that this location is Severely



Congested and is a problem interchange, while pavement data indicates that this segment of Interstate 287 includes sections of deficient pavement. The local/express lane configuration within this section can result in unexpected movements from vehicles unfamiliar with the area. Improvements to eliminate congestion and improve overall operations at this interchange to two of the State's Priority Highway Corridors for Freight will improve overall goods movement in this priority location.

Interchange 14A (Milepost 14.1–14.9—U.S. Route 22) (Figure 138)

This interchange had a significant truck crash cluster with 42 truck crashes reported between 2006 and 2008. This segment is particularly important to New Jersey's economy, as nearly 100 percent of all truck traffic along this portion of Interstate 287 is either destined to or originates in New Jersey. This interchange includes several ramps with tight turning radii. This segment of Interstate 287 includes sections of deficient pavement. A cluster of commercial and industrial sites is located adjacent to the interchange. Improvements to minimize truck crashes will improve overall goods movement in this priority location.

Interchange 4 (Milepost 4.4–4.9—Durham Road) (Figure 139)

This interchange includes a challenging ramp from Durham Road to Interstate 287 southbound, resulting in a five lane cross section on Interstate 287 that quickly drops to three lanes. This interchange had a significant truck crash cluster with 25 truck crashes reported between 2006 and 2008. This location carries more than 100,000 vehicles and nearly 11,000 trucks daily. NJDOT Congestion Management System data indicates that this location is Very Congested. This segment of Interstate 287 includes sections of deficient pavement. Improvements to resolve the pavement deficiencies, address congestion, and minimize truck crashes will improve overall goods movement in this corridor.

Interchange 2 (Milepost 2.1–2.45—NJ Route 27) (Figure 140)

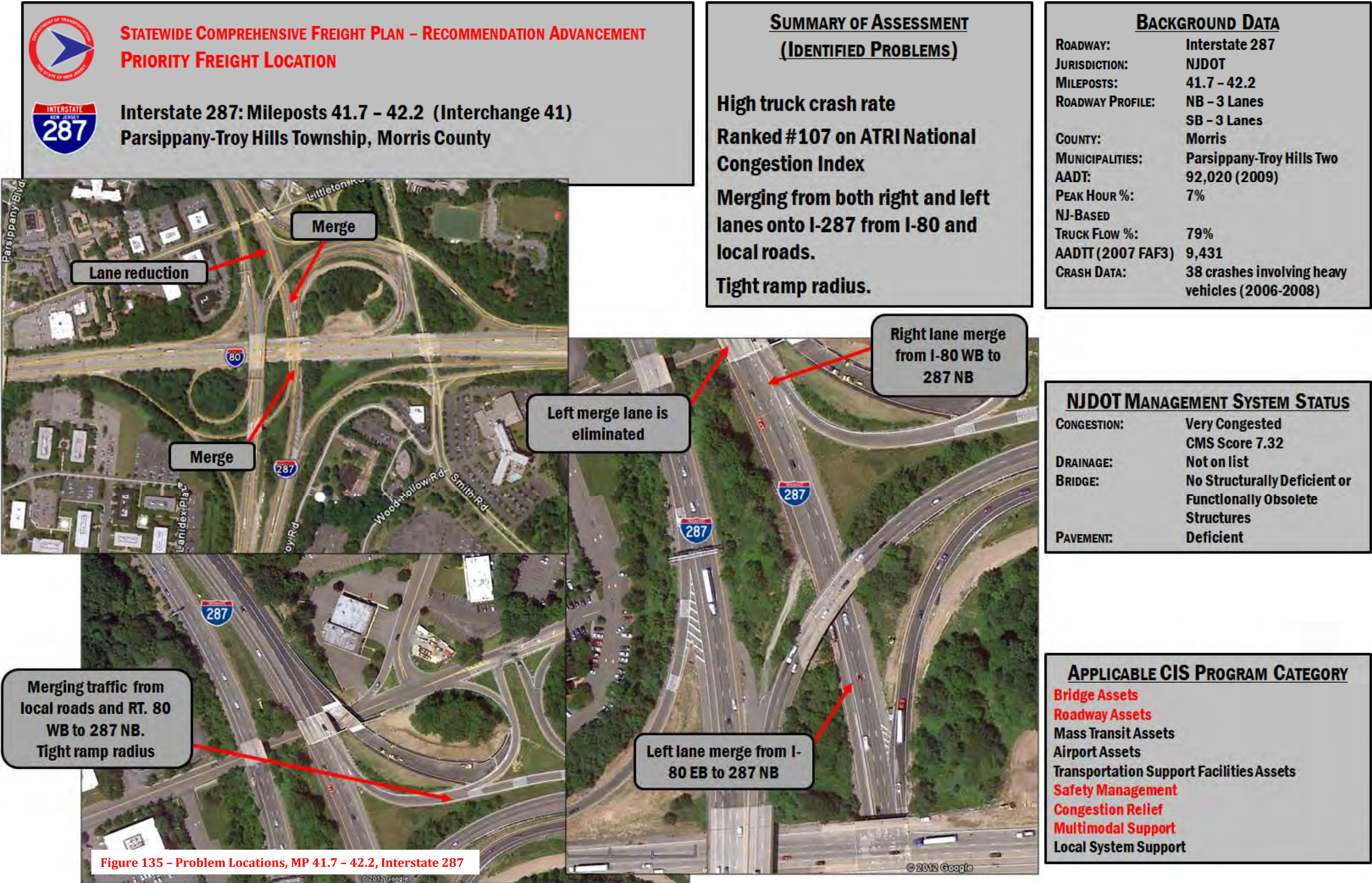
This interchange had a significant truck crash cluster with 21 truck crashes reported between 2006 and 2008, which should be examined further. Several ramps at the interchange have tight turning radii, creating a challenging environment for trucks. This location carries nearly 130,000 vehicles and more than 12,000 trucks daily. NJDOT Congestion Management System data indicates that this location is Severely Congested. This interchange is also incomplete, allowing exiting traffic from Interstate 287 northbound and entering traffic from Interstate 287 southbound only. Improvements to address the truck crashes and reduce congestion will improve truck mobility and accessibility. Investigation to the need and ability to provide a complete interchange should also be considered.

Interchange 1 (Milepost 0.8–1.0—U.S. Route 1) (Figure 141)

This interchange had the highest number of truck crashes (54) for any location along Interstate 287 between 2006 and 2008. Several ramps at the interchange have tight turning radii, and the close spacing of merging and exit locations creates a challenging environment for trucks. This location carries more than 125,000 vehicles and more than 14,000 trucks daily. This interchange was identified as having a heavy truck movement for trucks bypassing tolls on the NJTPK. Improvements should seek to address the truck crash issues and improve the ramp geometry and merge areas to allow more efficient truck flows and improve safety.

Problem statement summary graphics were developed for each of the key locations described above. The summaries include an aerial overview of the location, identified critical areas, and pertinent information about the location, including AADT, AADTT, Crash Data, NJDOT Management Systems Data, and applicable NJDOT Capital Investment Strategy categories. The problem statement summaries for Interstates 287, traveling south to north, are included in the following pages.







STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



Interstate 287: Mileposts 39.3 – 39.8 (Interchange 39)
Hanover Township, Morris County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

High truck crash rate
Tight ramp radius from 10E to I-287N
Heavy congestion during peaks

BACKGROUND DATA

ROADWAY:	Interstate 287
JURISDICTION:	NJDOT
MILEPOSTS:	39.3 – 39.8
ROADWAY PROFILE:	NB – 4 to 5 Lanes SB – 4 to 5 Lanes
COUNTY:	Morris County
MUNICIPALITIES:	Hanover Township
AADT:	81,183 (2008)
NJ-BASED	
TRUCK FLOW %:	79%
AADTT (2007 FAF3)	10,178
CRASH DATA:	38 crashes involving heavy vehicles (2006-2008)

NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Very Congested CMS Score 7.76
DRAINAGE:	Not on list
BRIDGE:	No Structurally Deficient or Functionally Obsolete Structures
PAVEMENT:	Deficient

APPLICABLE CIS PROGRAM CATEGORY

Bridge Assets
Roadway Assets
Mass Transit Assets
Airport Assets
Transportation Support Facilities Assets
Safety Management
Congestion Relief
Multimodal Support
Local System Support

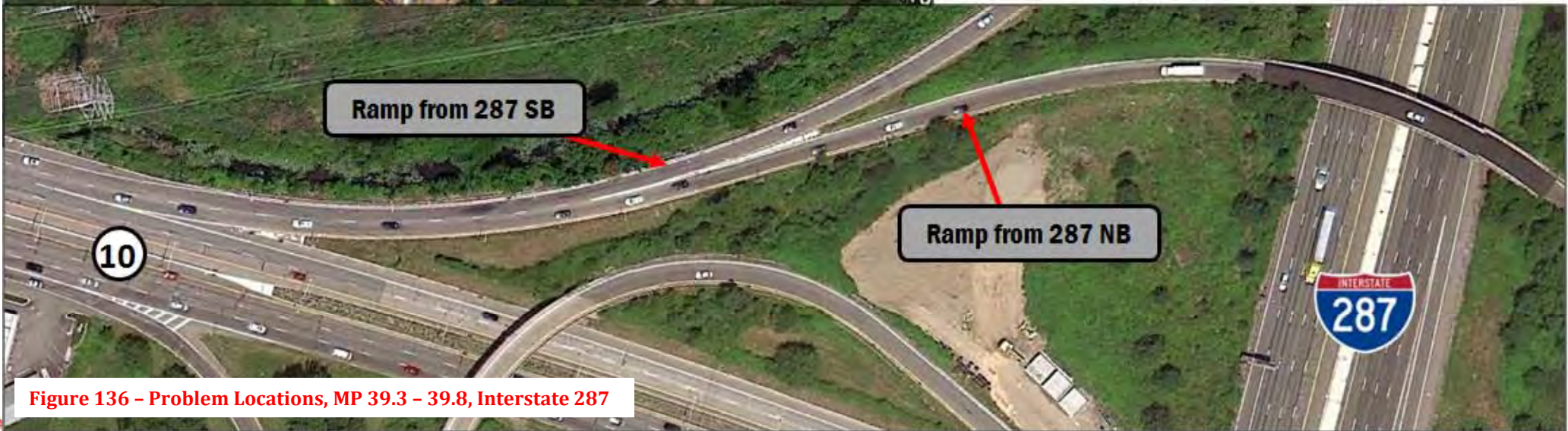


Figure 136 – Problem Locations, MP 39.3 – 39.8, Interstate 287



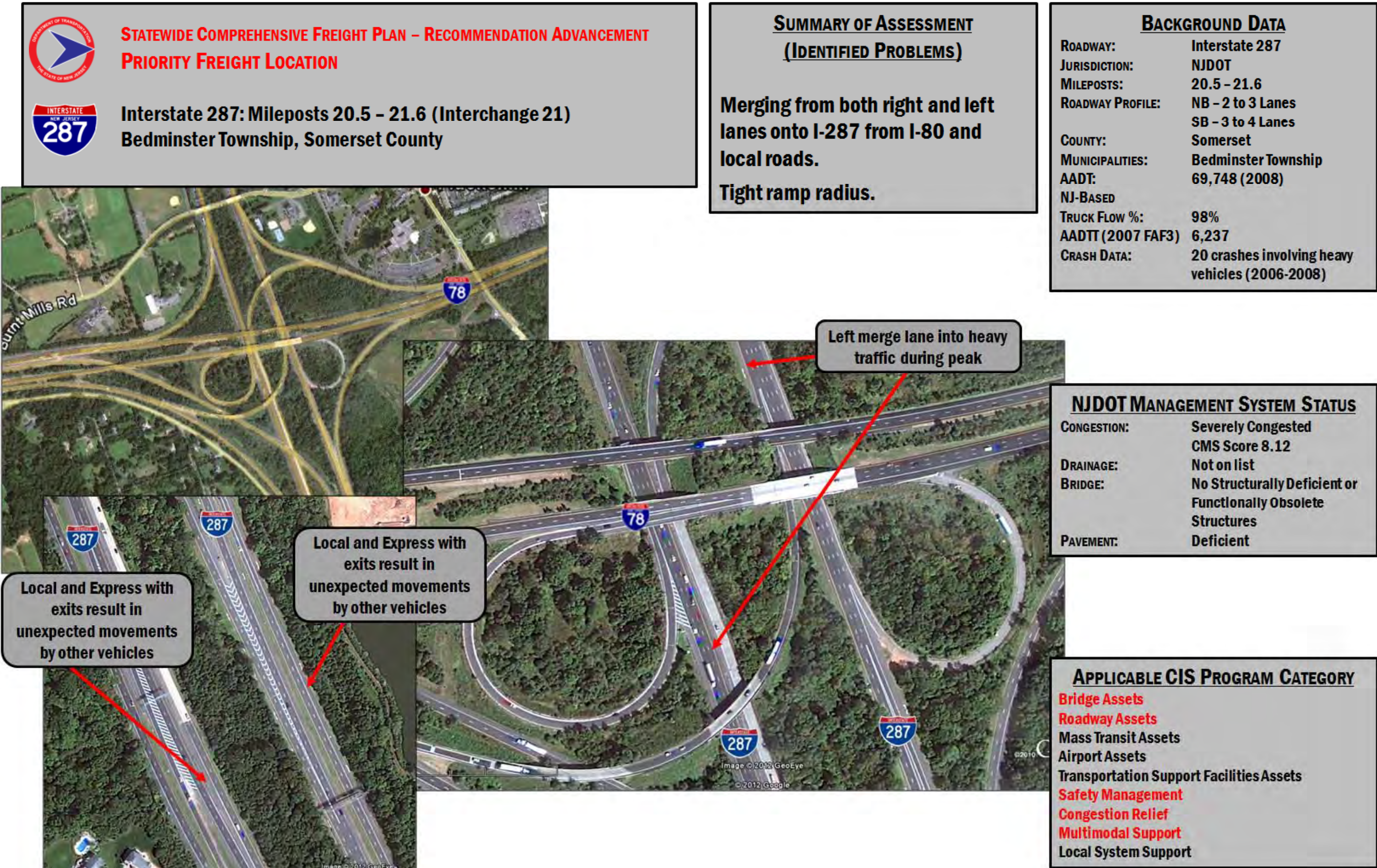


Figure 137 – Problem Locations, MP 20.5 – 21.6, Interstate 287



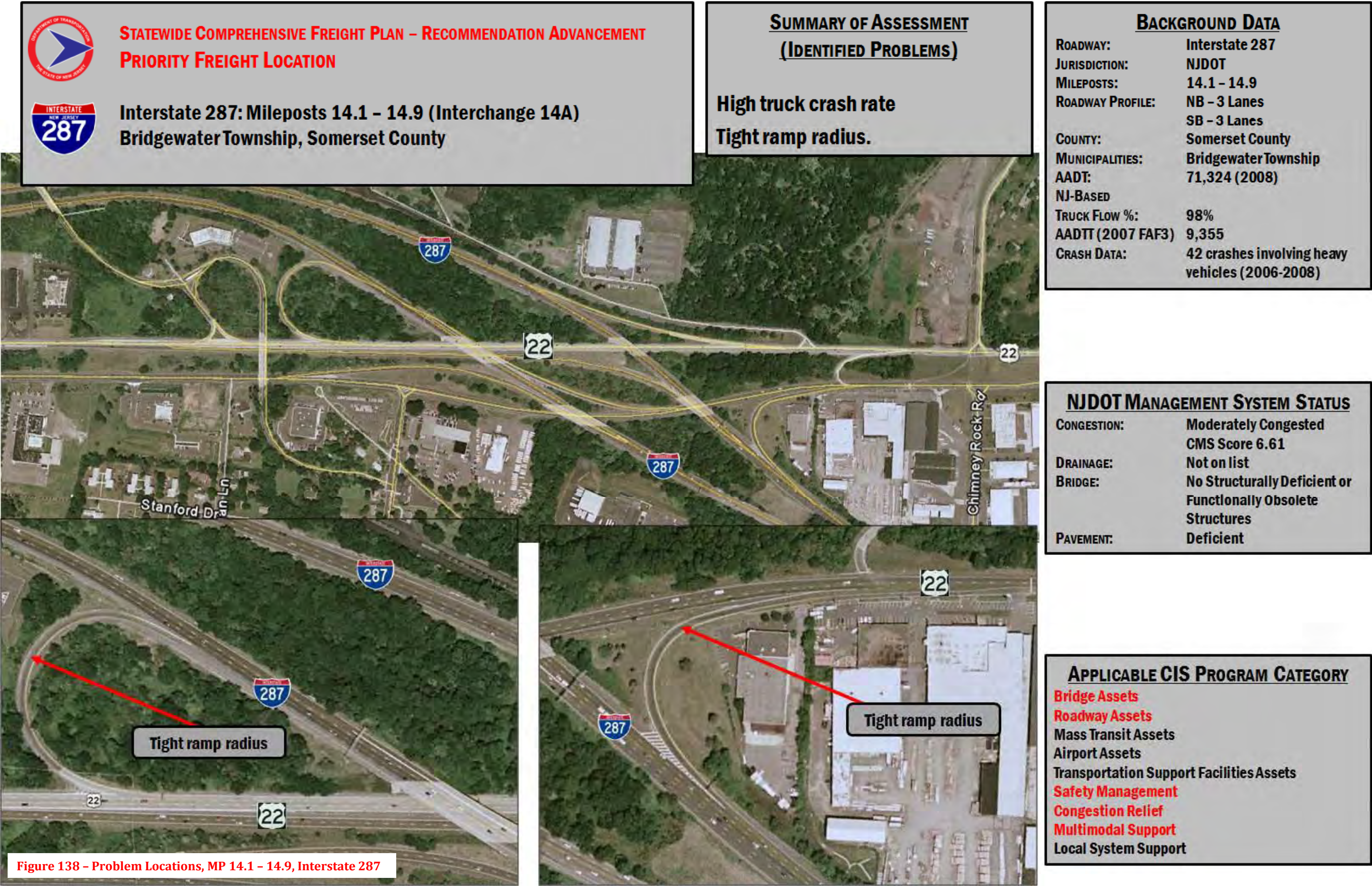


Figure 138 – Problem Locations, MP 14.1 – 14.9, Interstate 287

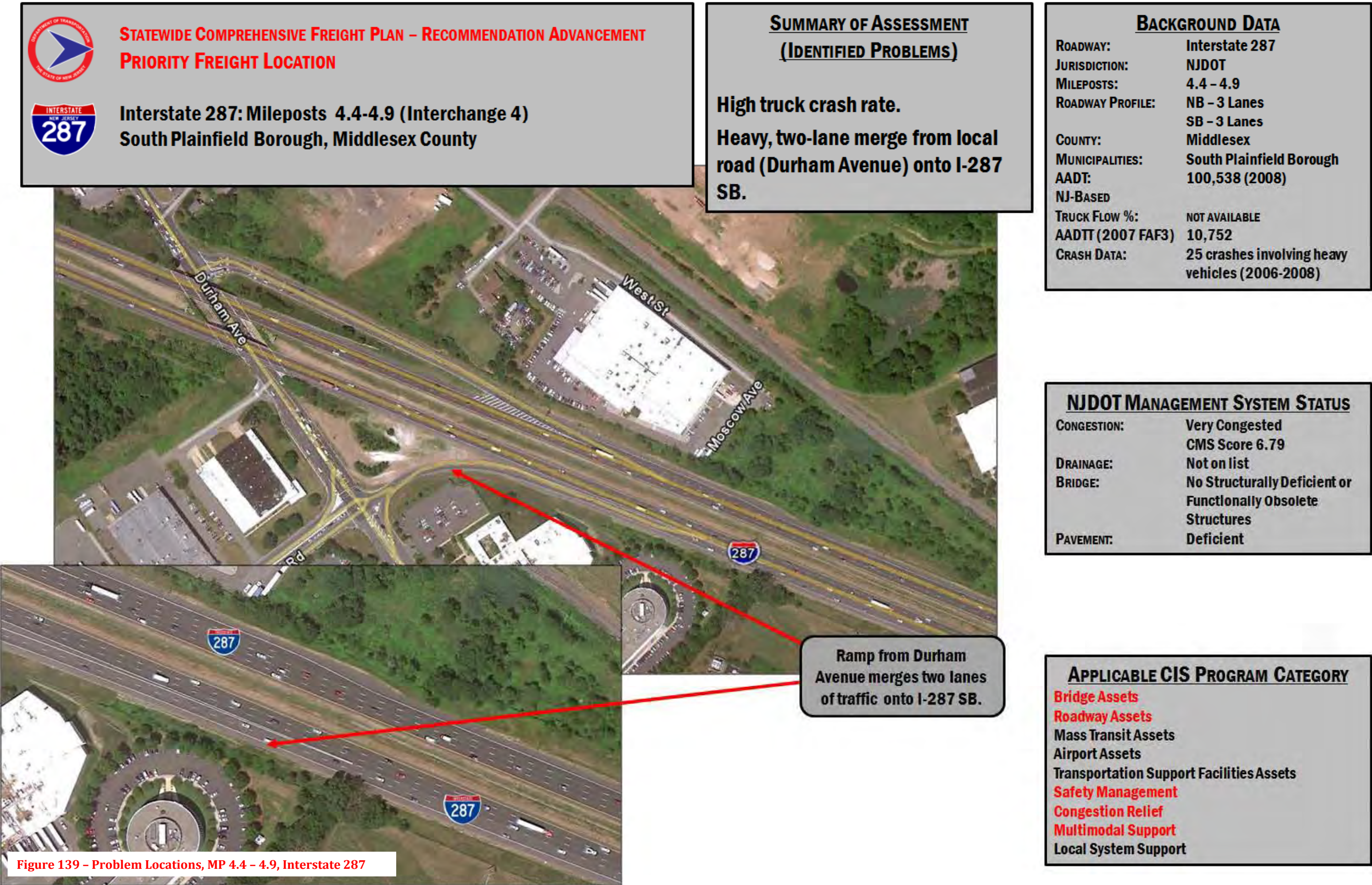


Figure 139 – Problem Locations, MP 4.4 – 4.9, Interstate 287





STATEWIDE COMPREHENSIVE FREIGHT PLAN – RECOMMENDATION ADVANCEMENT
PRIORITY FREIGHT LOCATION



Interstate 287: Mileposts 2.1 -2.45 (Interchange 2)
Edison Township, Middlesex County

SUMMARY OF ASSESSMENT
(IDENTIFIED PROBLEMS)

Incomplete interchange (NB exit only; SB entrance only)

Tight ramp radius.

Severe congestion.

BACKGROUND DATA

ROADWAY:	Interstate 287
JURISDICTION:	NJDOT
MILEPOSTS:	2.1 – 2.45
ROADWAY PROFILE:	NB – 3 Lanes SB – 3 Lanes
COUNTY:	Middlesex
MUNICIPALITIES:	Edison Township
AADT:	128,418 (2008)
NJ-BASED	
TRUCK FLOW %:	NOT AVAILABLE
AADTT (2007 FAF3)	12,443
CRASH DATA:	21 crashes involving heavy vehicles (2006-2008)

NJDOT MANAGEMENT SYSTEM STATUS

CONGESTION:	Severely Congested CMS Score 8.2
DRAINAGE:	Not on list
BRIDGE:	No Structurally Deficient or Functionally Obsolete Structures
PAVEMENT:	Not Deficient

APPLICABLE CIS PROGRAM CATEGORY

Bridge Assets
Roadway Assets
Mass Transit Assets
Airport Assets
Transportation Support Facilities Assets
Safety Management
Congestion Relief
Multimodal Support
Local System Support

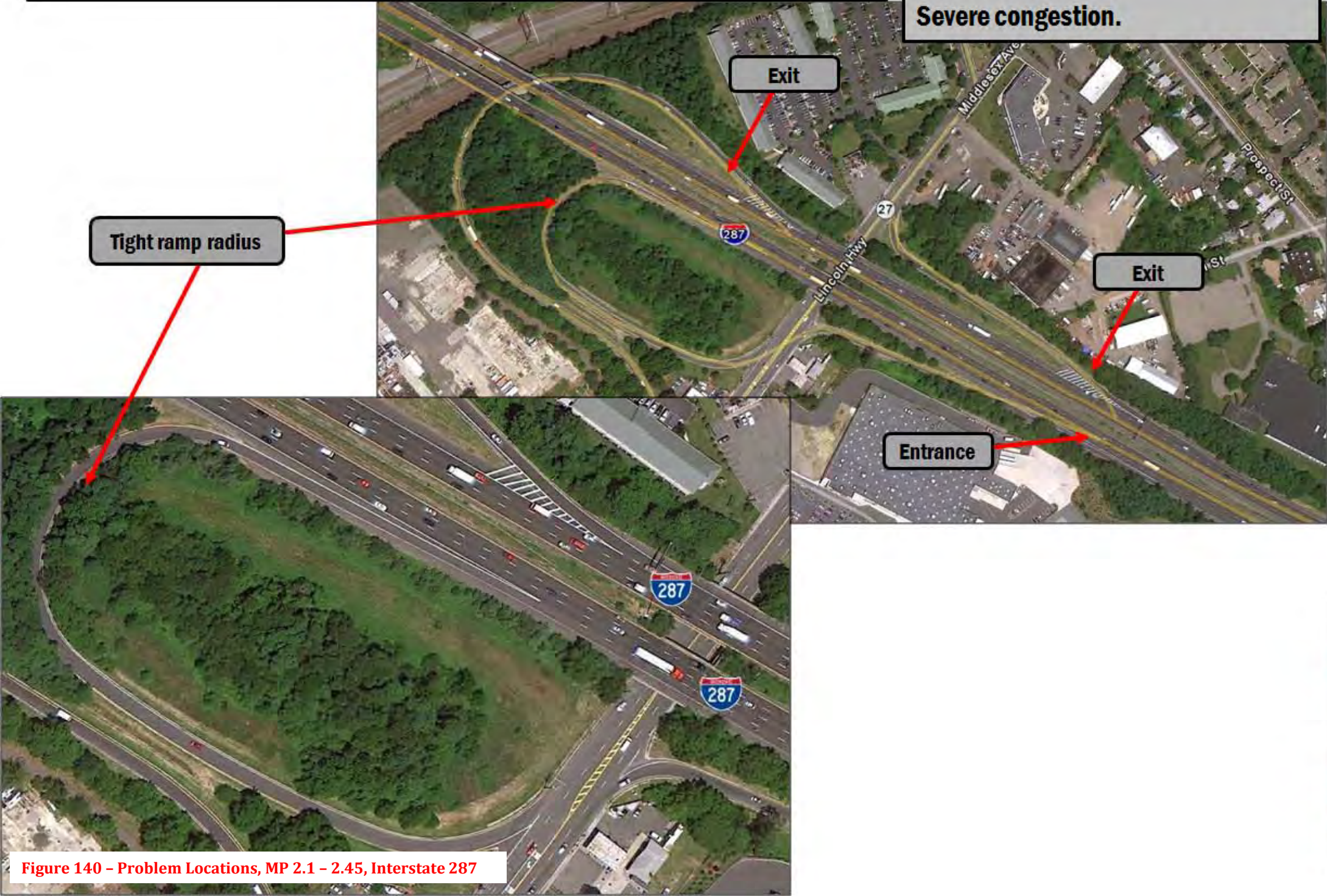


Figure 140 – Problem Locations, MP 2.1 – 2.45, Interstate 287



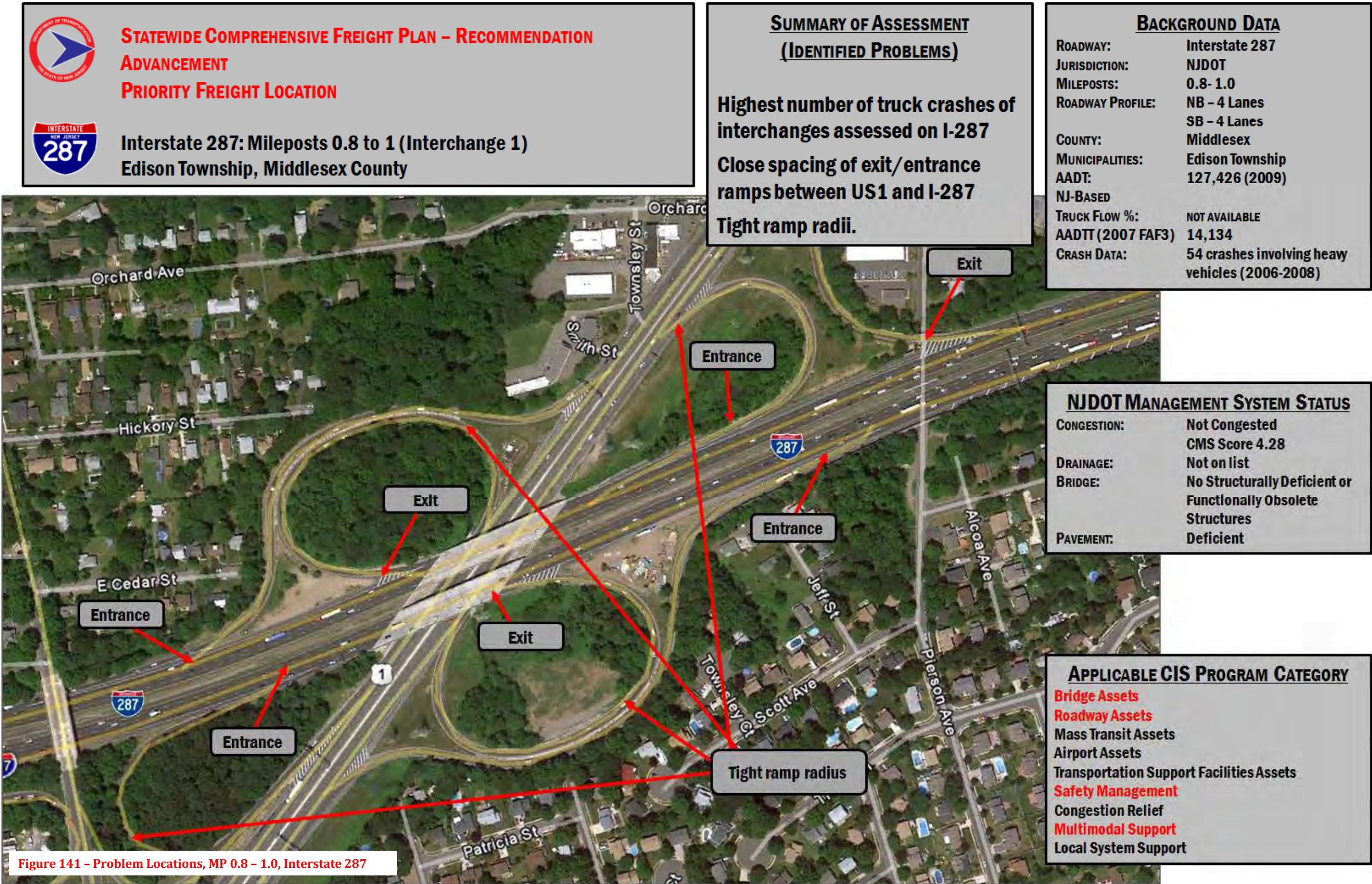


Figure 141 – Problem Locations, MP 0.8 – 1.0, Interstate 287



APPENDIX A – COMMODITY FLOWS



KEY INDUSTRY AND COMMODITY FLOWS

Stemming from its strong consumer market, large employment base, geographic location, existing infrastructure, and natural resources, New Jersey’s economy is composed of a broad array of major industries. According to the State Plan key industries include:

- Bio/Pharmaceuticals and Life Science
- Transportation, Logistics, and Distribution (including all forms of transportation: passenger and freight, distribution/warehousing, and wholesaling)
- Finance
- Advanced Manufacturing (including chemical manufacturing, computer and electronic product manufacturing, machinery manufacturing, and transportation equipment manufacturing)
- Health Care
- Leisure, Hospitality, and Retail
- Green Economy (including green energy production and renewable energy, green building design and construction, and environmental remediation/waste management/reduction)
- Agricultural and Seafood Production (Not in the State Plan, however it is integral to New Jersey’s economy)

These key industries rely on a freight infrastructure system to efficiently and reliably move goods, including everything from raw materials to finished products, along the supply chain. Four major commodity groups in the state support these key industries – agriculture, chemicals, food and kindred, and petroleum. The following analysis evaluates the employment data for industries supported by each commodity as well as the IHS Global Insight’s TRANSEARCH data assigned to the Federal Highway Administration’s (FHWA) Freight Analysis Framework (FAF) highway network. Together, these data sets illustrate where key industries are located in the state, areas of high demand, and critical highways that support the transport of the commodities.



Agriculture

As shown in Figure 1, the agricultural industry is widely distributed throughout the ‘Garden State’, with the exception of the Pine Barrens region. Employer concentrations tend to be slightly higher in the more rural southwestern and western counties. Despite the statewide employer distribution, agricultural commodities are primarily transported via Interstate 80 in the northern part of the state, as illustrated by the high truck tonnage in . Utilizing this route, agricultural commodities tend to be destined to or originating from the southwestern and southern regions of the United States (Figure 3).

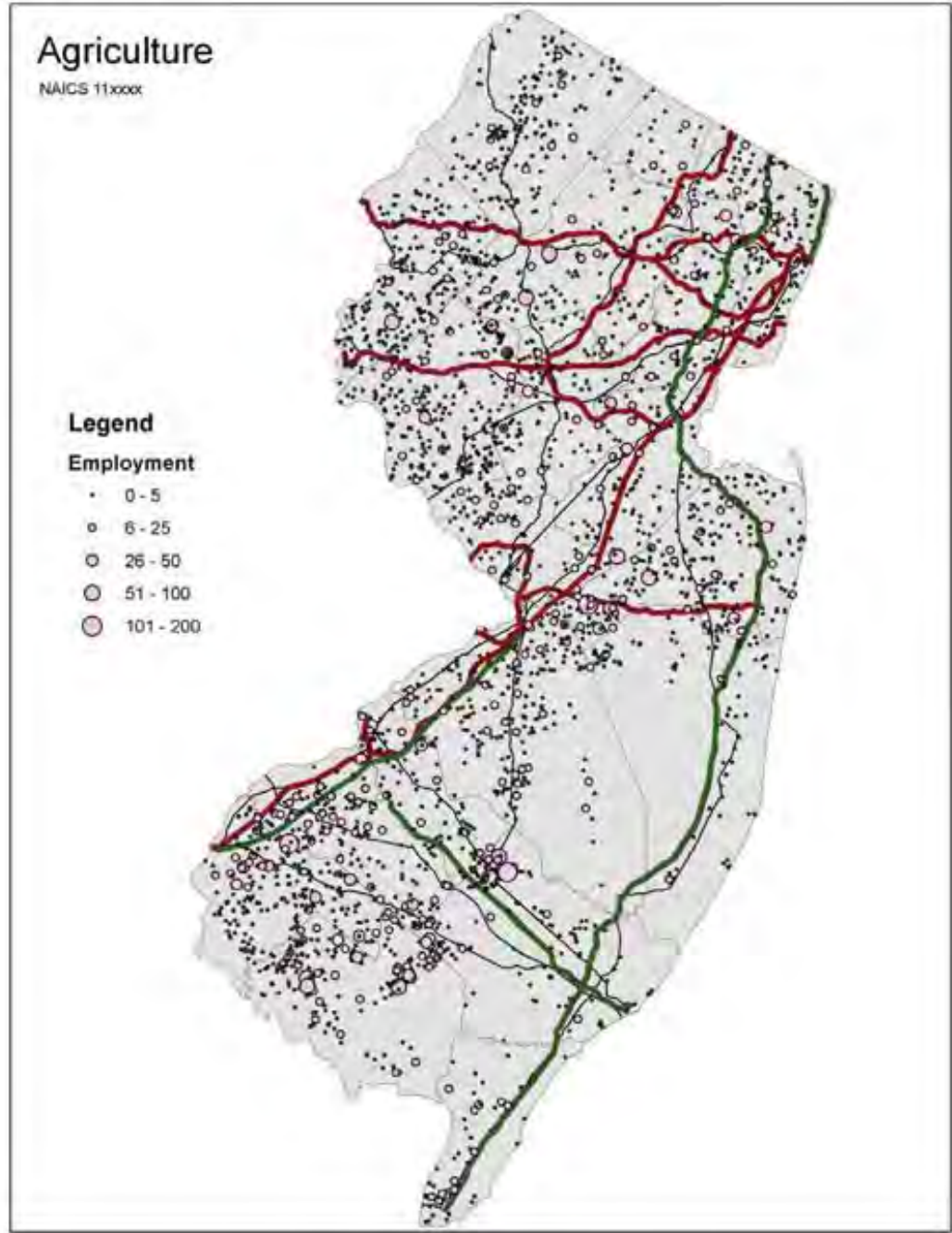


Figure 1: Distribution of agriculture-related industries throughout New Jersey, by employment size

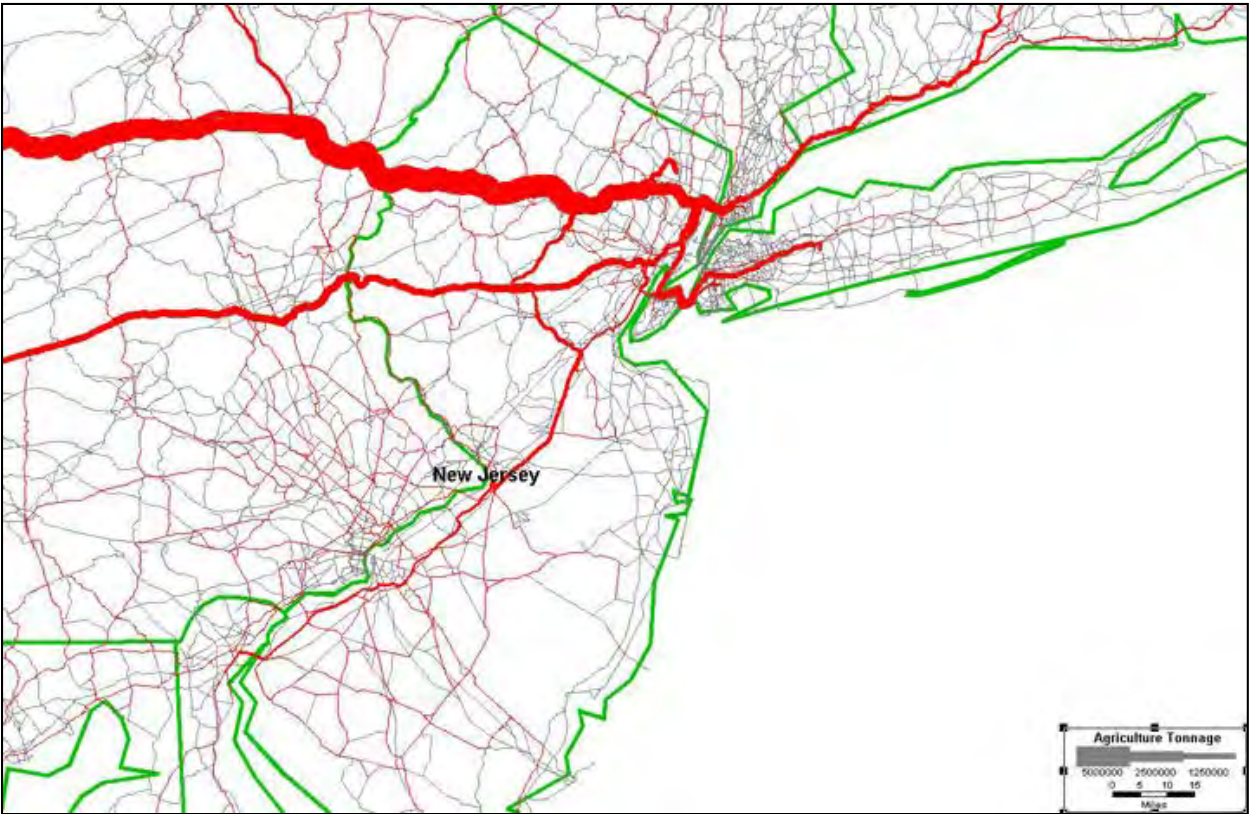


Figure 2: Heavy truck tonnage of agricultural commodities in New Jersey.

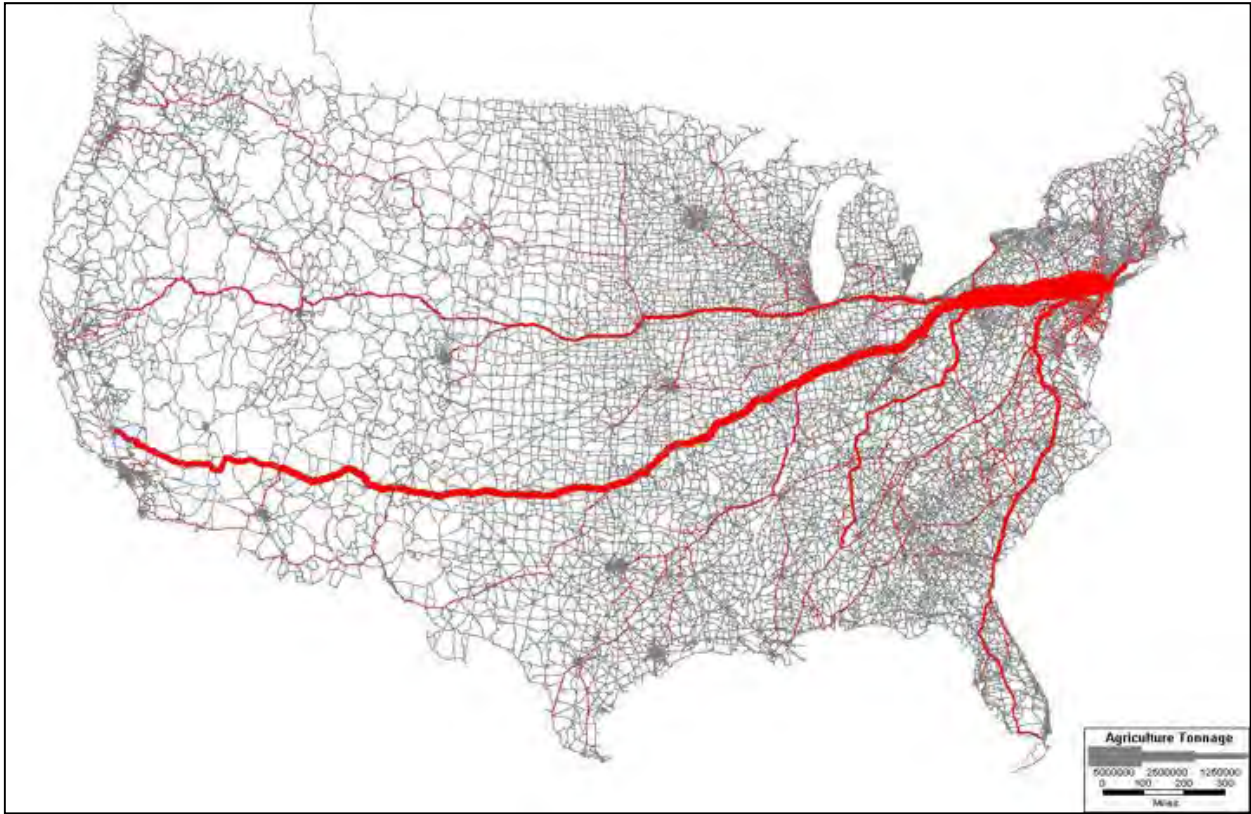


Figure 3: Heavy truck tonnage of agricultural commodities nationwide to/from New Jersey.



Chemicals

The demand for chemical products is illustrated by pharmaceutical employers, a key industry in the state that is dependent the transport of chemical products. Pharmaceutical companies are largely concentrated along interstate corridors, particularly in the northeastern part of New Jersey within the Interstate 287 beltway and where interstates intersect (Figure 4). Correspondingly, the truck tonnage of chemicals is highest in the northern half of the state along Interstate 78, Interstate 80, and Interstate 95/New Jersey Turnpike (Figure 5). Demand for chemical commodities is high between New Jersey and New York/New England, Chicago/northern Midwest, the central and south-central regions of the United States, and the eastern seaboard from New Jersey to Florida (Figure 6).

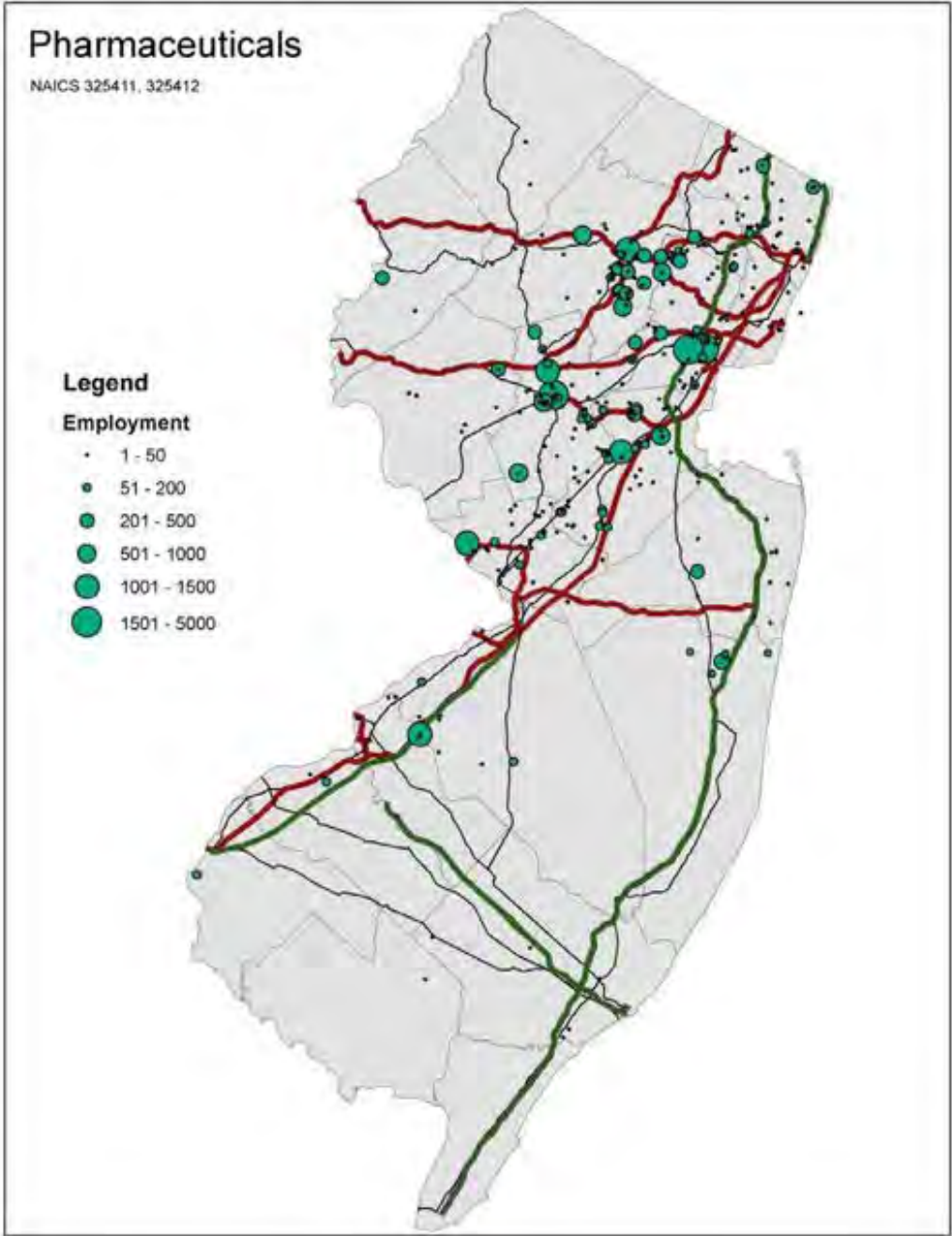


Figure 4: Distribution of pharmaceutical industries throughout New Jersey, by employment size



Figure 5: Heavy truck tonnage of chemical commodities in New Jersey

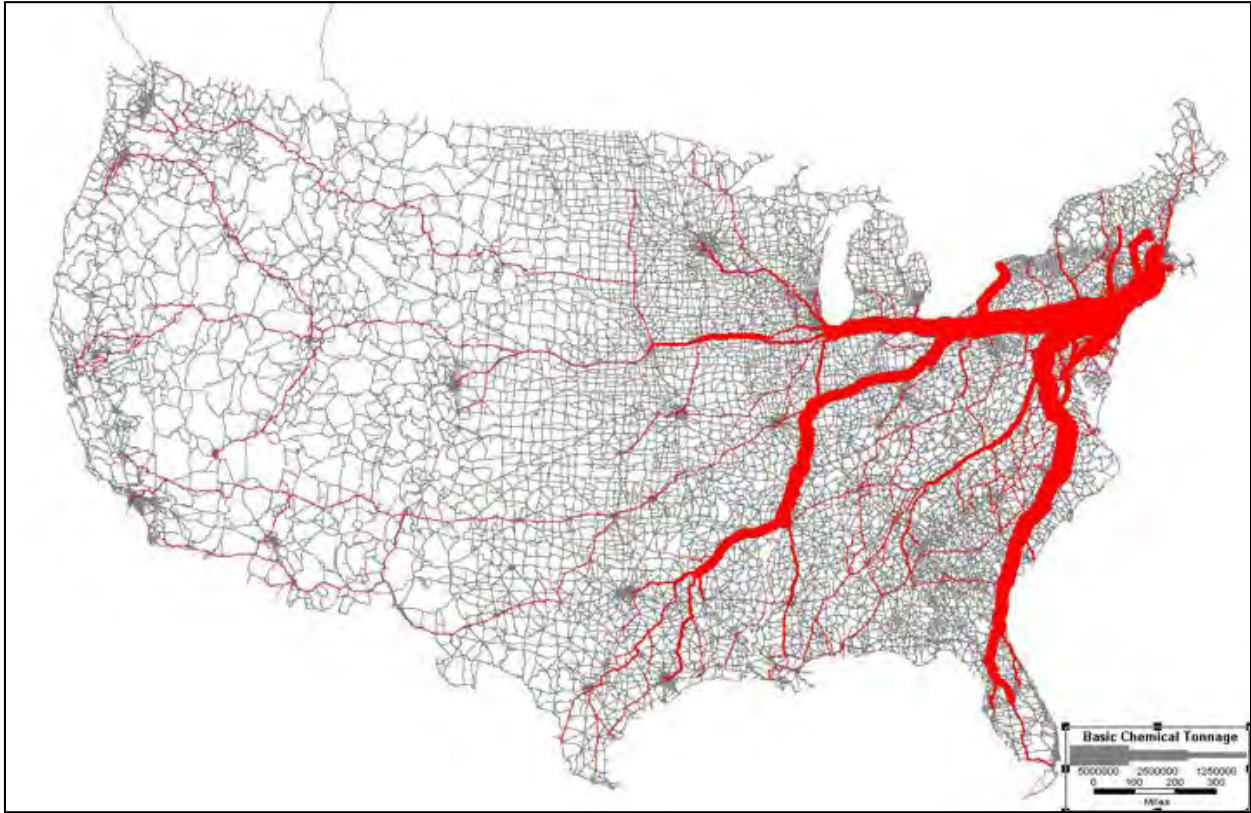


Figure 6: Heavy truck tonnage of chemical commodities nationwide to/from New Jersey



Food and Kindred

Food industries are generally located along interstate corridors and highly concentrated in northeastern New Jersey, particularly along Interstate 80 and Interstate 95/New Jersey Turnpike. Another cluster of large employers is located near Camden (Figure 7). These locations both provide access to marine ports. As shown in Figure 8, Interstate 78, Interstate 80, and Interstate 95/New Jersey Turnpike are critical roadways for the transport of food commodities via truck. In southern New Jersey, near the Camden industry cluster, Interstate 295 is also a significant roadway. The demand pattern for food and kindred commodities is very similar to that seen for chemical commodities. Demand is highest between New Jersey and New York/Long Island/New England, Chicago/northern Midwest, the central and south-central regions of the United States, and the eastern seaboard from New Jersey to Florida (Figure 9).

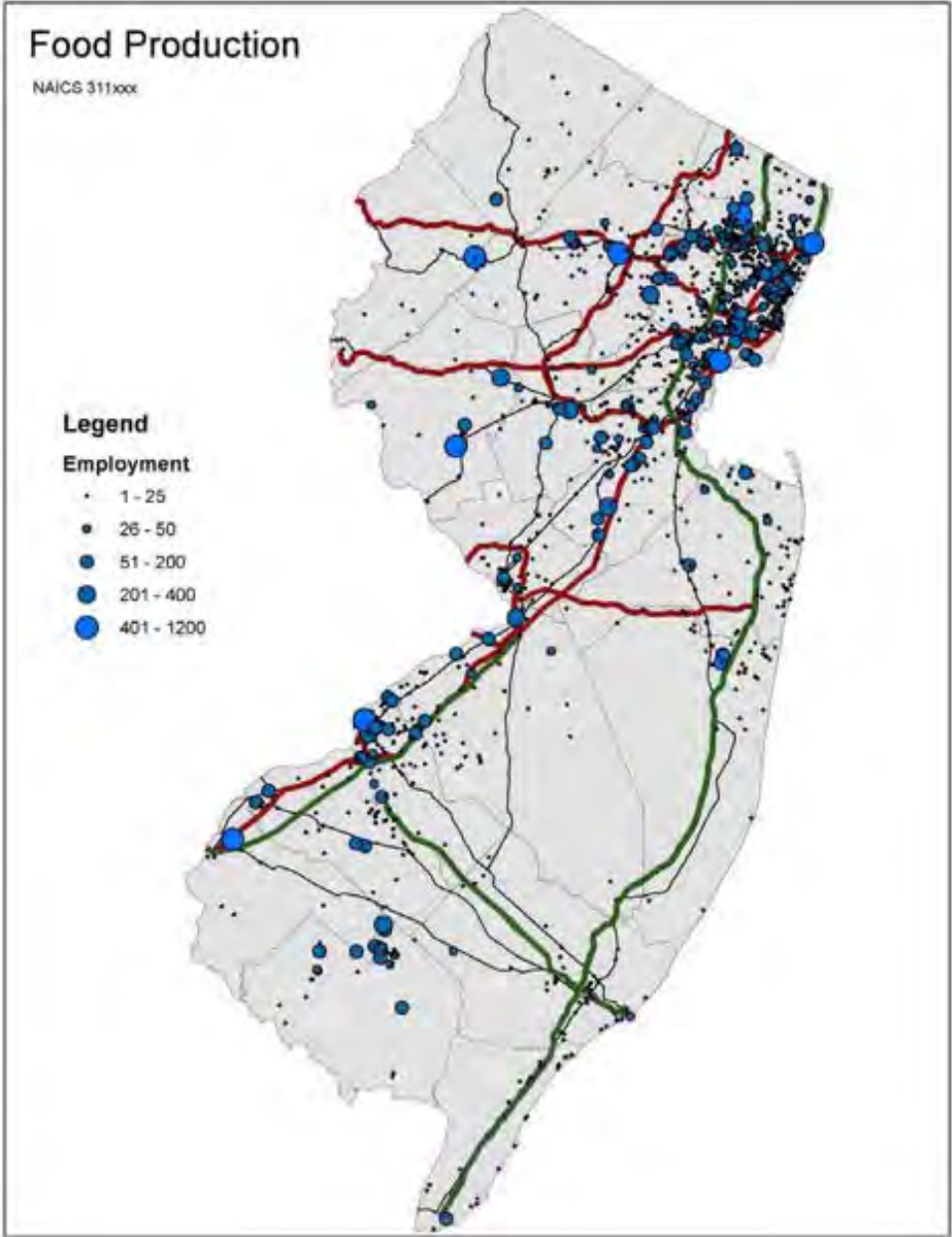


Figure 7: Distribution of food production industries throughout New Jersey, by employment size

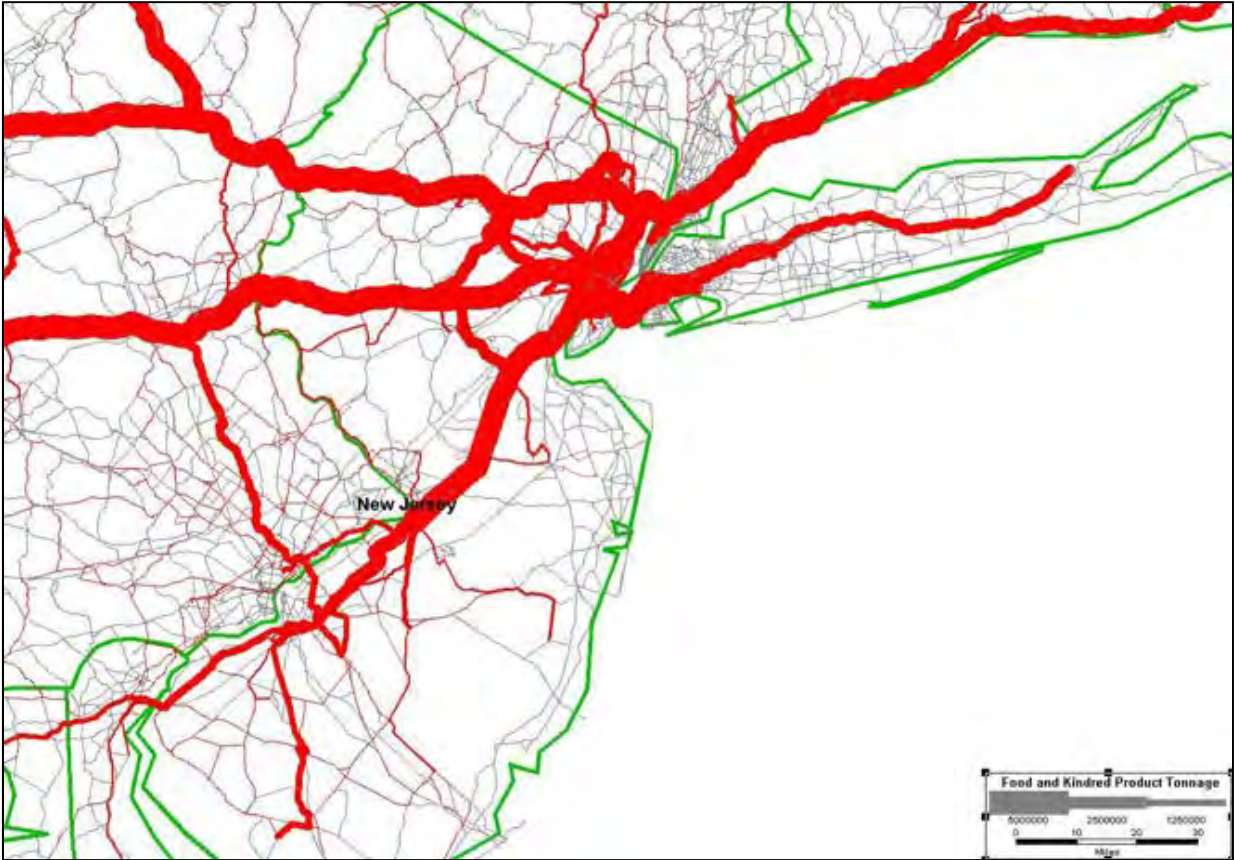


Figure 8: Heavy truck tonnage of food and kindred commodities in New Jersey

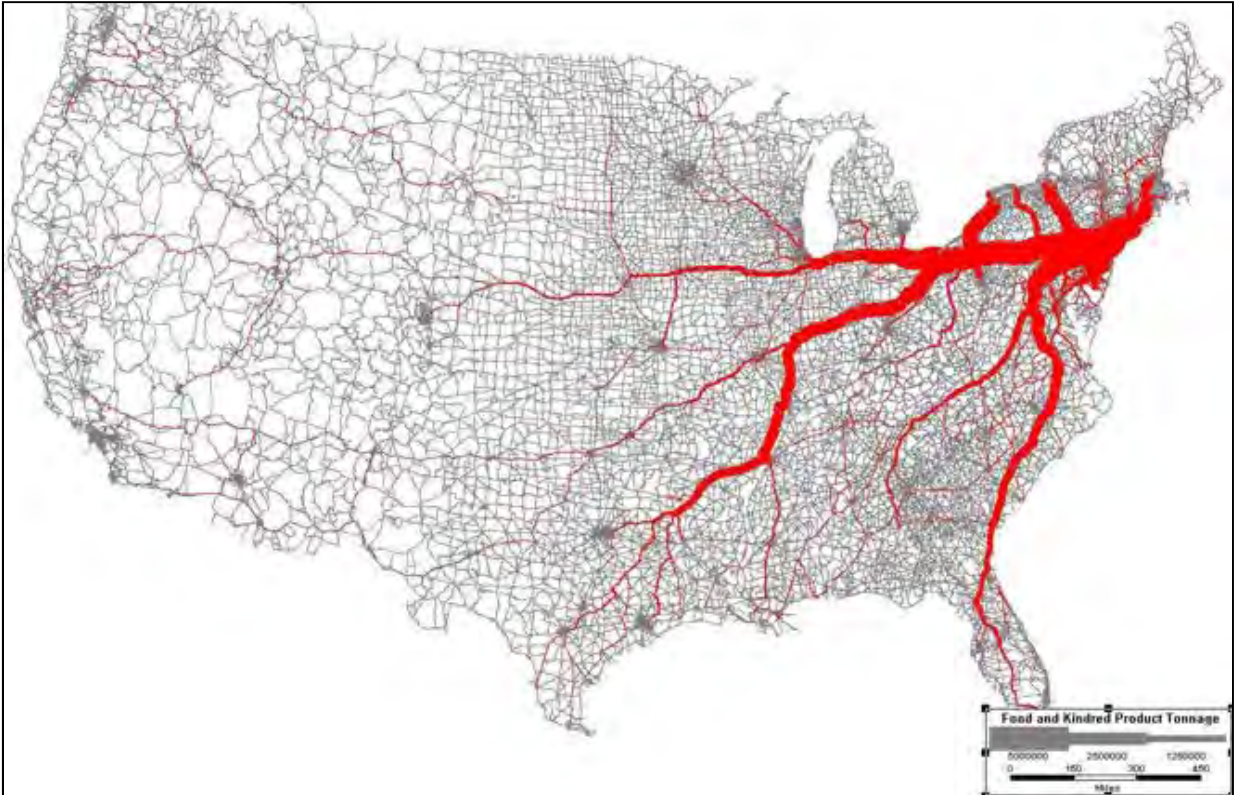


Figure 9: Heavy truck tonnage of food and kindred commodities nationwide to/from New Jersey



Petroleum

Petroleum industries are located throughout the state, with the largest concentration in northeastern New Jersey near Interstate 95/New Jersey Turnpike. Other pockets of the petroleum industry are located along Interstate 78, Interstate 80, and Interstate 287; the eastern terminus of Interstate 195; and along Interstate 295 in the vicinity of Camden and the port of Paulsboro (Figure 10). The FAF analysis shows that petroleum transported by truck predominantly uses Interstate 78 and Interstate 95/New Jersey Turnpike. Interstate 80, the central portion of Interstate 287, and the southern portion of Interstate 295 carry petroleum commodities to a lesser degree (Figure 11). The transport of petroleum commodities by truck is largely confined to the northeastern United States, with high demand between New Jersey and Pennsylvania, New York, New England, and south through Virginia (Figure 12).

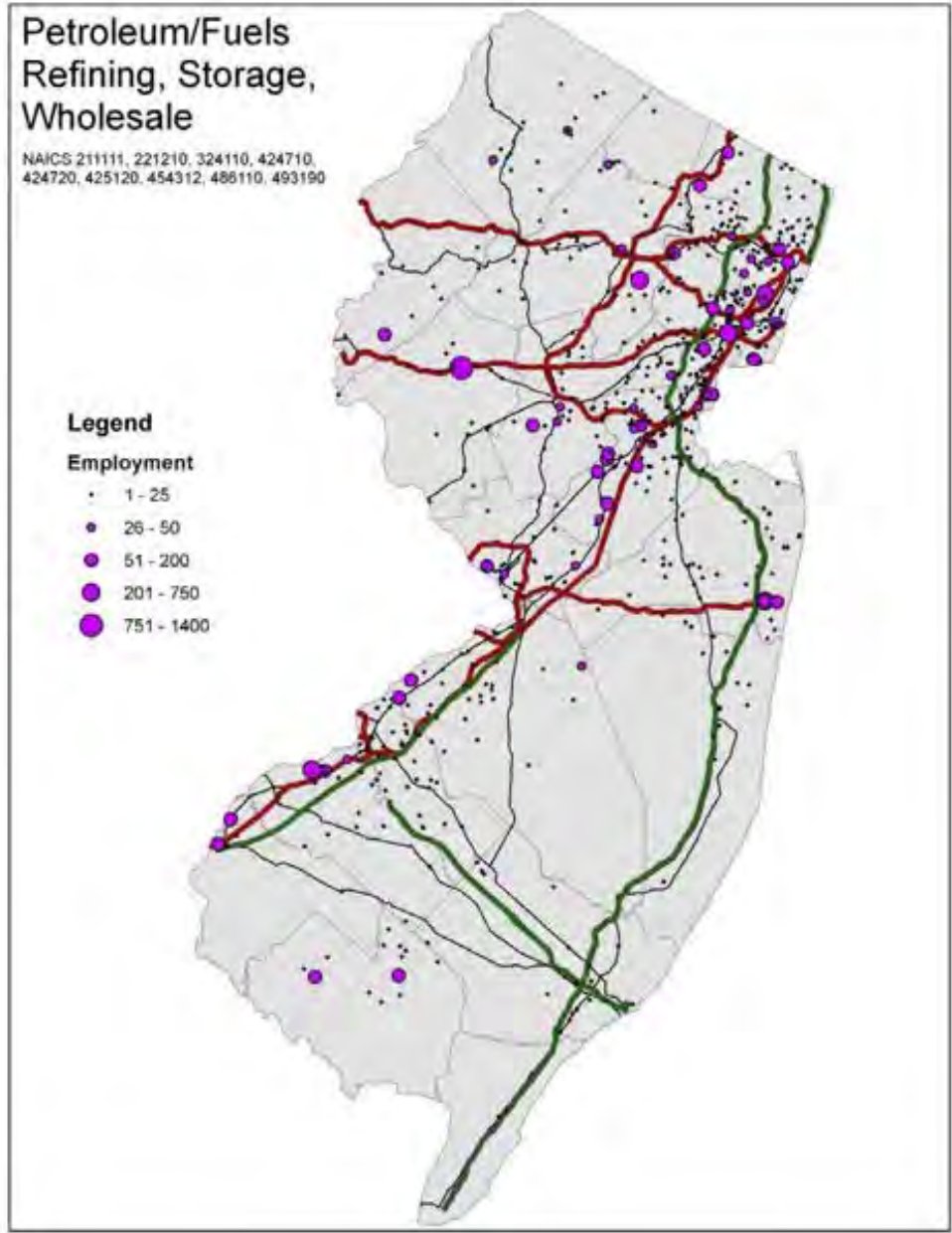


Figure 10: Distribution of petroleum-related industries throughout New Jersey, by employment size



Figure 11: Heavy truck tonnage of petroleum commodities in New Jersey

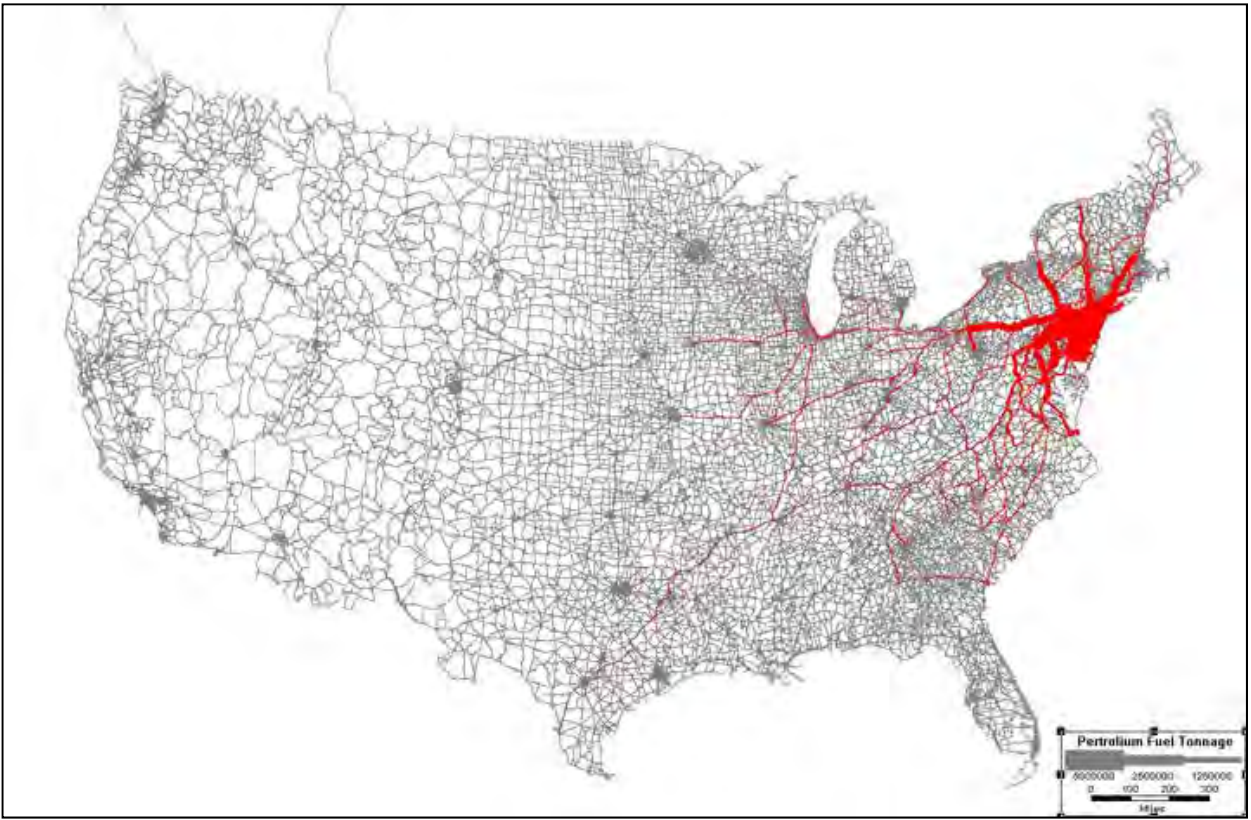


Figure 12: Heavy truck tonnage of petroleum commodities nationwide to/from New Jersey



APPENDIX B – STAKEHOLDER INVOLVEMENT



STAKEHOLDER INVOLVEMENT

This appendix summarizes the stakeholder involvement undertaken as part of this project. The involvement was in two forms:

- Active discussions with private sector entities using or served by the corridors.
- An advisory committee comprised of the public organizations with decision making roles involving the corridors.

The project involved major private sector stakeholders in validating and discussing the information developed on each of the corridors. These dialogues were designed to review the data, identify locations within each corridor with specific issues, and discuss overall considerations in prioritizing corridors and the improvements within the corridors.

The key points that emerged from discussions were incorporated into the analyses and are reflected in the actions and recommendations emerging from this project.

Private Sector Involvement

Two discussions were held – one with trucking companies that use the roadways and a second with industrial developers and brokers familiar with the trends and considerations in each area.

Trucking Community/NJMTA Discussion – October 6, 2010

The first discussion was held on October 6, 2010 with the trucking community with the assistance of the New Jersey Motor Truck Association. The objectives of the discussion were to review and validate corridor specific information developed by the team, identify additional considerations and key issues, and obtain informed opinions on improvement priorities.

Key statewide and corridor-specific concerns and issues, in addition to overall recommendations that impact the logistics industry are detailed below.

Issues Impacting Statewide Commodity Flows

- Unilever is moving its NJ operations to a 500,000 ft² US Cold Storage facility in Hazelton, Pennsylvania. The company is consolidating three facilities into the PA building. Two of the facilities being closed are in New Jersey.
- Six truck rest areas have been closed since the data used in the analysis was collected. Truck Rest facilities are closing in I-295 Corridor at Carney's Point and at the northern end of I-287. The closings occurred as part of a public funding decision. In Clinton, along I-78, Johnnies Truck Stop was taken over by Pilot Travel Centers.
- New Jersey Motor Truck Association is proposing federal legislation that would allow states to lease the land and allow the establishment of a food only rest area to be run by the private sector companies under contract. The private sector would pay leasing fees and share profits with state as part of contract terms.
- New Jersey is a "conduit state." The primary truck freight flows include:
 - Pennsylvania through New Jersey for distribution east of the Hudson River (New York/New England)
 - Pennsylvania into New Jersey for warehousing/cross docking/consolidation then forwarded east of the Hudson to New York/New England.

- New Jersey Freight (Warehoused/cross docked/consolidated) then forwarded east of the Hudson to New York/New England.
- Federal Hours of Service (HOS) Regulations are being revised. Currently drivers require a minimum of 10 hours off duty - this will likely be increased to 11 hours in the near future. This could affect productivity, thereby requiring additional truck movements and rest facilities along the primary freight corridors.
- Truck accidents may correlate with the number of retail clusters (delivery locations) and increased interaction with auto traffic proximate to retail locations.
- Inadequate signage could be affecting congestion.
- Some major retailers are shifting cargo from New Jersey to Savannah and south ports as the cost of business is high in this port area, south Atlantic ports have improved their rail connections, and population centers have shifted. Further, a coalition of ports (including Norfolk, Savannah and Baltimore) has been courting retail customers currently using the Port of New York-New Jersey.

Corridor-Specific Issues

Interstates 78 and 80

- I-78 is a major conduit for freight flows from Port Newark/Elizabeth to Eastern Pennsylvania Distribution Centers (Allentown/Bethlehem/Macungie/Harrisburg). Trucks also use this route to connect with rail intermodal yards (with domestic and West Coast port shipments) in Harrisburg, Chambersburg and Mechanicsburg (PA).
- I-80 Freight flows to/from northeastern Pennsylvania and areas further to the west including areas in and around Lehigh, Berwick, Bloomsbury, and Milton.
- I-78 and NJ 24/82 interchanges in Springfield. Tight radius curvature on ramps from 78 to 24 west; Truck acceleration and deceleration on uphill and down hill requires adequate length at interchange ramps. The right/left ramps at the same time are also an issue. The road geometries in this Union County location lead to accidents. Passenger vehicles tend to cut off trucks trying to weave across to exits on the left and on the right while on a hill.
- National Retail Systems (NRS) picks up in the Allentown-Bethlehem-Easton area and goes to its facility in North Bergen for final delivery for several clients including Macy's and TJ Maxx. NRS also has a terminal in Tobyhanna, Pennsylvania. NRS usually has a 5-to-6 AM start time.
- New England Motor Freight (NEMF) also has a facility in Allentown.
- I-78 and 287 interchange in Somerset County. Truck acceleration and deceleration on uphill and down hill requires adequate length interchange ramps. West of I-287, the trucking firms reported that acceleration and deceleration lanes are relatively short for trucks; the trucks cannot get up to speed. The topography is steeper, and a fourth lane should be added for slower trucks.
- I-78 sun glare issue: This is a major concern in western end of I-78 in Warren/Hunterdon County areas where mountains are crossed. Eastbound uphill movements are impacted by low angle sun glare in the morning. Both truck and car movements are impacted by sight /visibility impairments caused by glare. A fourth lane may be needed for trucks on uphill sections.
- I-80 overall issues: Acceleration and deceleration lanes are too short; not enough maneuvering room for tractor-trailers.
- I-80 /287 ramps in Parsippany: tight radius curves on interchange ramps cause many trucks to tip. This interchange is maneuvered by many trucks at the end of their trip when fatigue is higher.
- I-80 is a particularly difficult route in the winter months.



- If tolls were enacted at the Pennsylvania border of I-78 and I-80, then trucking firms indicated that they would use alternative parallel roads. Several of the trucking firms indicated that instead, fuel tax should be increased. (Fuel tax is lower variable cost per dollar in operating expenses for truck operators than tolling).
- Toll collection plazas increase congestion which is a major cost factor to route choice.
- Reduce volumes on Interstates 78 and 80 by offering mass transit alternatives to decrease automobile traffic. Follow through on studies to extend rail passenger service into Hunterdon County.
- Provide rail hubs (park and rides) for commuters to drive to in western part of state to connect to new rail service extensions.
- Provide variable message signing at key locations in corridors to redirect traffic away from bottlenecks or warn drivers of upcoming congestion to allow them time to find adequate rest stops to meet the 10 hour rest requirements.
- There are first time drivers in this corridor/area, so wayfinding and VMS signing are important.
- Improve/provide more rest areas and offer more parking to encourage carpooling to reduce congestion involving passenger vehicles.

Interstates 95 (New Jersey Turnpike) and 295

- Primary truck commodity flow is to serve the Philadelphia and New York regional markets from distribution centers located at or near key interchanges.
- Ramp geometry is problematic at interchanges on the northern sections of the NJ Turnpike.
- Several turnpike interchange toll plazas need to be expanded to handle the expanded volume of truck traffic.
- The Goethals Bridge and Outerbridge Crossing are older infrastructures which do not meet current engineering standards (e.g. lanes are too narrow to accommodate current tractor-trailer widths).
- Participants recommended several improvement priorities, including:
 - Continue the long overdue widening of the NJ Turnpike from exit 8A (South Brunswick, Cranbury) to exit 6 (Pennsylvania Turnpike)
 - Initiate widening of NJ Turnpike from exit 6 (Pennsylvania Turnpike) to exit 1 (Delaware Memorial Bridge)
 - Allow overweight trucks on the NJ Turnpike from exit 1 to 14.
 - Route 130, which complements and parallels 295/95 corridors, should be upgraded; the road condition was considered terrible by participants. The trucking firms consider 130 “neglected.” Several participants noted that the NJDOT approach to Routes 1/9, which recognized the interaction of the Routes with the Turnpike, could be applied to Route 130.
 - More rest stops are needed in corridor and on the Turnpike. Current rest stops at Bordentown and Paulsboro should be expanded. A large (400 truck spaces) proposed rest area at Cherry Hill was stopped because of local opposition. These are critical needs for safety reasons, and the improvements could be linked with the 10 hour rest rules.
 - Improvement of flow at the toll lanes at George Washington Bridge is needed. Additional higher speed EZPass lanes should be opened to improve congestion and safety issues.

NJ Route 17

- Truck Freight from the Port and distribution centers use this route for access to the NY State Thruway to New York State/New England, Montreal and Eastern Canada.
- Freight flows indicate that during the winter months when the St Lawrence River is ice bound, containers inbound through the Port of Montreal are switched to all season ports such as Port Newark/Port Elizabeth.
- In the Lodi area, traffic lights and intersections constrain traffic flow on Route 17.

- Route 17 is not a limited access highway with several curb cuts and interchanges in close proximity to serve many retail facilities, small malls and large shopping centers.
- At the interchange of Route 17 and the Garden State Parkway in Paramus, the merging of car traffic coming off the Parkway with truck traffic on Route 17 is a significant issue. Trucks are moving at higher speeds as slower car traffic merges/weaves on to the roadway crossing in front of trucks traveling at higher speeds.
- At the interchange of Routes 46 and 3 at Great Notch, the merging of two routes is problematic and constrains overall traffic flow.
- At the interchange of Routes 17 and 3 in Rutherford, the geometry of ramps and acceleration/deceleration lanes needs to be improved.
- There are limited rest facilities, but this route is utilized early in the trip (from the Port) and as such would use the Ramapo facilities in New York.
- Accessing truck stop areas on Route 17 from I-287 is problematic (must exit I-287 to access Route 17).
- The trucking firms suggested that in the longer term, if night operations were implemented at the port, it could shift much of the through container freight flows out of the daytime traffic mix and improve overall traffic flows.

Interstate 287

- Severe congestion on I-287 during peak periods significantly compromises the value of using the route.
- Paving of I-287 has helped traffic flow.
- I-287 to 440 southbound to the NJ Turnpike/Route 1 and Raritan Center was considered a “nightmare” by participants in terms of congestion.
- There is a need to improve the U.S. 22/NJ 28/I-287 interchange in Bridgewater. Here, four lanes merge into three lanes in an area with a large amount of retail, business, and housing development.
- In several areas I-287 is used for local movements. That caused many conflicts along the interstate with longer distance movements.
- Need to increase the capacity of this roadway. However, it is the understanding of the trucking firms that certain sections of I-287 cannot be expanded and will remain extremely problematic.

Overall Recommendations for the Logistics Industry

- Consider truck-only lanes on several of these routes.
- The Turnpike is a high priority. More restricted access on Route 17 and Route 130 are longer range goals.
- Complete the widening of the New Jersey Turnpike to Exit 1. This should be a high priority.
- Consider improvements to Route 130.
- Toll lane improvements at the George Washington Bridge in particular; improve toll lanes in general.
- Night opening of Port Newark/Port Elizabeth for vendors who could benefit from night delivery of goods.
- Additional truck parking areas for overnight rests. There is a shortage of 1300 spaces per night. There are many unofficial truck stops, including some Home Depot lots that allow parking. There are safety and security concerns with the lack of parking.
- Must be vigilant on port competition. Large retailers can be attracted to smaller ports to the south such as Wilmington, North Carolina, Charleston, South Carolina, Norfolk, Virginia, and Savannah, Georgia.
- Consider express truck lanes throughout the state.



Industrial Broker/Developer Discussion – October 19, 2010

The second private sector discussion occurred on October 19, 2010. Similar to the trucking discussion, the objectives of the discussion with industrial brokers and developers were to review and validate corridor specific information developed by the team, identify additional considerations and key issues, and obtain informed opinions on improvement priorities.

The key points from the discussion included:

Overarching Considerations in Industrial Park Development Impacting Location Decisions

- Buildings usually need to be leased a minimum of 5 years before they are “bankable,” which means that loans can be secured based on the anticipated lease revenues. Longer leases can also translate into a more stable flow of trucks.
- Real Estate Investment Trusts (REITs) tend to keep Wall Street Investors upbeat about investments and will significantly lower lease rates (approximate \$2.00 ft² leases reported for the 8A marketplace) to keep real estate occupied. Filling the currently vacant space in the 8A marketplace will increase truck movements to/from this location; it is unclear whether these movements will represent net new traffic to New Jersey or a redistribution of truck movements as companies relocate from current facilities to the 8A area.
- Some corporations are reducing their warehouse space and downsizing when renewing/extending leases. For example, Burlington Coat Factory consolidated 1.2 million ft² of facilities into a 600,000 ft² facility.
- Significant empty space and available properties in the Interstate 295/NJ Turnpike corridors.
- Some million square foot users are subdividing and leasing out space as needs and logistics patterns change. Examples include:
 - Some goods are now moving directly from the “dock” to the retail store “door,” bypassing warehouses and cross-docking facilities.
 - Consolidation and value added activities taking place in Far East as integrated logistics companies, such as UPS and FedEx, expand operations in Asia.
- Wal-Mart and other big box stores are no longer just retailers, but have become their own logistics companies. Thus, locational decision-making focusing more on shifting supply chains.
- Competitive factors affecting Pennsylvania vs. New Jersey locational decision makings include the following:
 - Expiration of the Keystone Opportunity Zone tax waivers which are and continue to be an important incentive for development in Pennsylvania. This will increase the cost of maintaining certain facilities constructed under this program.
 - Fuel prices will rise, thereby encouraging distribution facilities to locate closer to markets.
- Negative competitive factors affecting Pennsylvania versus New Jersey locational decisions include corporate taxes, payroll taxes, income taxes and real estate taxes that are all higher in New Jersey.
- Competitive factors appearing not to affect Pennsylvania versus New Jersey locational decisions include the following:
 - There appears to be an equalization of the labor markets in eastern Pennsylvania and New Jersey. In Pennsylvania there are labor pools of eastern European immigrants previously employed in the coal and steel industries. In New Jersey, there is a labor pool of more recent immigrants from Central and South America and urban area residents.
 - Energy rates do not appear to be a factor in locational decision-making.

- Locations in Pennsylvania can more easily access the Interstate 81 corridor, which has emerged as a competitor north-south route to Interstate 95. According to participants, national retailers prefer I-81 because there are no tolls and there is less traffic than I-95 (which has tolls and is regularly congested).

- Manufacturers/processing facilities that qualify for duty free status on products will import for assembly in United States. Parts are combined at an assembly facility and sent to dealers and distributors.
- Opening of the Heartland Corridor (Cincinnati/Columbus, Ohio to Norfolk, Virginia) now provides opportunity for rail in short haul corridors.
- Rail lines need to be capable of handling 286K loadings to be competitive. For example, Raritan Center has current customers who could expand use of rail if 286K capability existed. Building materials and paper products are two commodity areas that could be expanded and/or attracted to Raritan Center.
- Certain brownfield sites may offer opportunities for the establishment of freight villages/logistics centers. The Hercules Powder Property in Morris County adjacent to Interstate 80 and the Norfolk Southern rail line and the Union Carbide Property in Piscataway in the 287 Corridor adjacent to the Conrail Port Reading line are examples of potential sites.
- The Scranton/Wilkes-Barre area has seen more growth recently as a result of the Keystone Opportunity Zone program.
- According to some of the participants, the use of rail between the Port of Long Beach and Harrisburg is cheaper from Shanghai than the all-water route through the Port of New York and New Jersey. Accordingly, use of I-78 to move international shipments from Harrisburg to the New York-New Jersey market will continue. It was noted that increased use of all-water routes between overseas markets and the Port of New York and New Jersey, which some see as increasing, could affect some truck movements.

Corridor-Specific Discussions of Development and Freight Flows

Interstates 78 and 80

- Harrisburg area tends to have larger regional facilities and tends to be served by containerized cargo from the Port of Los Angeles/Long Beach; Eastern Pennsylvania areas tend to be served by Port of New York/New Jersey (Exception is the NS service provided to the Bethlehem Intermodal terminal).
- Participants noted that six-to-12 deals have been done in the Scranton area (Interstate 80) over the last three-to-four years and that Keystone Opportunity Zones played a large role. Participants did note that the expiration of the Keystone Opportunity Zone initiative and other fiscal issues in Pennsylvania could change the location decision dynamics.
- Eastern Pennsylvania has attracted major retailers, such as the Gap and Wal-Mart.
- Developers noted that companies have found labor in New Jersey to be more productive than other locations for a similar wage. A participant noted that some warehouses in the Harrisburg area need to shut for two weeks in December to accommodate hunting season.
- Participants noted that “big box” warehouse users are looking at New Jersey and the Interstate 81 corridor in Pennsylvania. Participants noted that some Pennsylvania towns are becoming less accepting of warehouse development than in the past.
- Big Box retail Distribution Centers have shifted out of the congested I-95 corridor to the I-81 and I-84 corridors. Thus, Interstate 78 and 80 are key access routes to the NY-NJ marketplace.
- In California, the Ports of Long Beach/Los Angeles have support and distribution facilities located in the middle/eastern part of the state in what is known as the Inland Empire area. This area in distance would be roughly analogous to the Eastern Pennsylvania area that is served by Port Newark/Port Elizabeth. In



essence, the participants felt that New Jersey’s “Inland Empire” is Eastern Pennsylvania. Given the restrictions of the Highlands Act, there will not likely be much industrial development in these corridors.

- The participants recommended tolling of Interstate 78 and 80, which would help to equalize costs between New Jersey and Pennsylvania and help keep jobs in New Jersey.
- Participants also noted that raising tolls on the NJ Turnpike would severely and negatively affect any decisions to locate in New Jersey and favor of Pennsylvania.

NJ Turnpike and Interstate 295

- Turnpike allowing tri-axle trailers to move between the Port and Carteret to carry overweight shipments. Overweight trucks move on non-DOT roads in and around Port Newark/Port Elizabeth. This allows, for example, a wine distributor to reduce container usage from four to three (25% reduction) on certain shipments.
- Rail accessibility to 8A on the NJ Turnpike is limited by clearance and weight restrictions. For example, Sappie Paper would utilize doublestack domestic containers but is limited by height and weight restrictions on the rail lines. Sappie Paper is getting four rail cars a day from Maine.
- International Paper (located in the Haines Industrial Park) is getting 13 rail cars delivered every three days.
- The participants recommended:
 - Night pick up and drop off from the Port
 - Widening of the NJ Turnpike should move forward; consideration should be given to creating truck lanes only.
 - Reconfiguring 13A Interchange at Goethals Bridge/NJ Turnpike
 - Improvements needed at 14A on NJ Turnpike extension

Route 17

- The participants noted that the area between Route 3 and Interstate 80 is a pocket of manufacturing facilities, a market which is shrinking. The area, according to the participants, is the “tarmac” for serving the New York City market.
- The corridor is considered highly congested during the daytime. The participants suggested that night pick-up and drop off at port would alleviate some of the congestion.
- In the Meadowlands area, distribution facilities primarily service New York. Participants estimated that two out of three trucks in this area are bound for New York City.
- The participants noted that there are no or minimal night time drop restrictions in the area.

Interstate 287

- The corridor is considered highly congested and “easy to market against” by the participants.
- The participants that facilities along the I-287 corridor focus on garments and light weight markets; the corridor is not considered a market for bulk distribution.
- There is a weigh station on Interstate 287 near River Road in Somerset County (Exit 10). This discourages overweight containers from the Port to use this route.
- The participants recommended:
 - Better access and connectivity to the Route 18 corridor in Piscataway.
 - Better connectivity to the Route 9 corridor in Woodbridge.
 - The former Ford rail yard in Metuchen (Metuchen Yard) should be explored for reuse as an intermodal facility.

Overall Recommendations from Discussion:

- The participants recommended that the primary goal of any corridor improvements plan should be to keep jobs in New Jersey.
- The participants indicated that the air draft issue at the Bayonne Bridge and current state of the Goethals Bridge must be addressed. Some participants thought that the slow reaction to the Bayonne Bridge might already be too late since clients are already making plans to relocate to other ports.
- The participants noted that rail and maritime access to key facilities could impact traffic flow and congestion in key corridors. Possible new developments to explore could be an intermodal rail yard in Middlesex County on the NJ Turnpike and barge service/short sea shipping from Port Raritan.
- Overweight trucks and tri-axle trucks allowed on the NJ Turnpike would help keep business in NJ.
- Consider making the truck lanes on the turnpike truly “Truck Only” lanes.
- Improvements at 13A, 14A and North Avenue are needed to support port-related truck movements.
- Tolls should be initiated on Interstates 78 and 80 at the PA border.
- It was suggested to focus on North-South movements rather than East-West to support development in New Jersey rather than Pennsylvania.
- Renewal of the New Jersey Transportation Trust Fund was considered critical. Participants noted that it could be supported by an increase in the gas tax.

Also noted was the need to address the 286K issue on the rail side to potentially produce significant increased attractiveness of industrial sites in certain areas of New Jersey (e.g. Raritan Center and Heller Industrial).

Public Sector Involvement

The Advisory Committee established for the project included staff from:

- The Metropolitan Planning Organizations (MPOs) with responsibilities in the corridors – the North Jersey Transportation Planning Authority, the Delaware Valley Regional Planning Commission, and the South Jersey Transportation Planning Organization.
- The New Jersey Turnpike
- The New Jersey Port Agencies – the Port Authority of New York and New Jersey and the South Jersey Port Corporation.

Advisory Committee meetings were held at key points during the project, including:

- A kick off meeting on February 24, 2010 to discuss the project, obtain relevant data from the organizations, and identify considerations regarding the corridors from the agencies’ perspectives.
- A meeting on February 16, 2011 to discuss the findings for each of the corridors, as well as the input obtained during the private sector discussions.

Advisory Committee members were also invited to attend the two private sector discussions detailed above.

In addition to the Advisory Committee, the New Jersey Department of Transportation (NJDOT) established an internal committee consisting of the relevant groups needed to act on the recommendations emerging from the project. The project findings and recommendations were presented and discussed with this group on January 25, 2012.



APPENDIX C – ENHANCED OPPORTUNITIES: INTERNATIONAL FREIGHT



International Freight Development

Presented to:

The New Jersey Department of Transportation

September, 2011

Prepared by:



Introduction

The objective of this report is to quantify the impact, in terms of trips, of the 2007 to 2035 forecasted roadway traffic generated by the growth of international cargo at the ports of New York and New Jersey (PONYNJ) and Camden (POC).

The report concludes that the density of annual international throughput-related truck trips will increase by 132% between 2007 and 2035, from roughly 5.2 million to about 12 million. The structure of these traffic flows will also change by 2035; in 2007, the ratio of import-related truck trips to export-related truck trips was 2.2:1; by 2035 the ratio will be 1.8:1. Among the three route/roadways the analysis focuses on (I-95/NJTP, I-78, and the route made up of I-280 and I-80), four segments close to PONYNJ of these routes were chosen (shown in Figure 19): I-95/NJTP north of the port complexes of Elizabeth and New York Container Terminal on Staten Island, I-95/NJTP south of the port complexes, I-280, and I-78. The report shows that in 2007, on the I-95/NJTP (to the south) segment, international throughput-related truck traffic accounted for 21.6% of truck traffic, while accounting for 33.8% for I-95/NJTP (to the north), 28% for I-280, and 7% for I-78. By 2035, international truck traffic will constitute a serious share of total truck traffic on the segments; 35.7% for I-95/NJTP (to the south), 50.8% for I-95/NJTP (to the north), 61.3% for I-280, and 7% for I-78.

Three other segments of the three routes/roadways the analysis focused on were also chosen. These segments, a little further away from PONYNJ than the previous segments, are shown in Figure 21: I-80, I-78, and I-95/NJTP (to the south). While 2007 international port-related truck traffic made up about 12% of truck traffic on the I-80 and I-95/NJTP (to the south) segments, it was responsible for about 8% of truck traffic on the I-78 segment. By 2035, international port-related truck traffic will account for about a quarter of the truck traffic on the I-80 and I-95/NJTP (to the south) segments, but only 6% on the I-78 segment.

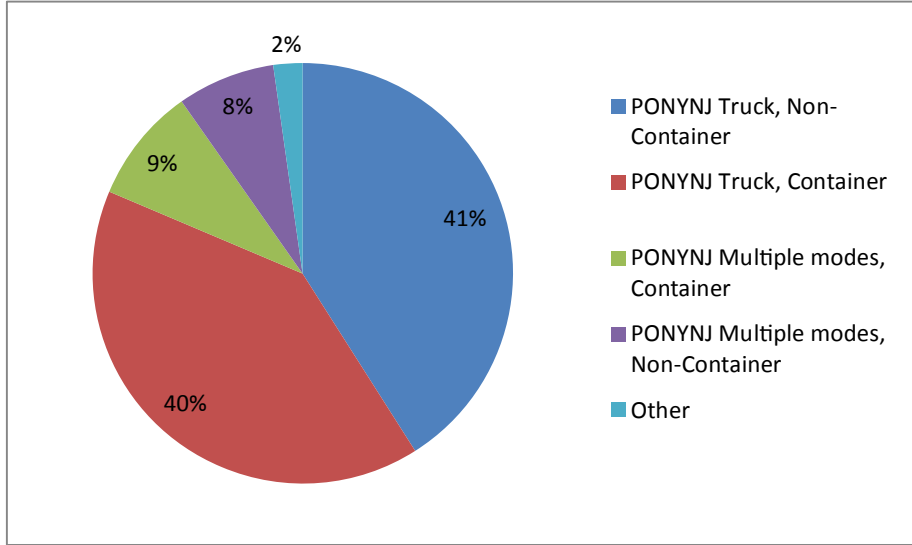
All performance data considered, by 2035 international port traffic on I-95/NJTP (to the north of PONYNJ) and especially on I-280 is liable to suffer delays. Because of the role it plays, I-280/I-80 in New Jersey requires that special attention be given to examine remedial capacity enhancing improvements. The time and cost it takes trucks (carrying containers) to negotiate both I-95/NJTP (to the south of PONYNJ) and I-280/I-80 between the marine terminals and international distribution centers (IDC) complexes constitute a key component in the competitiveness of PONYNJ relative to its competitor ports, namely POLA, POLB, and Norfolk. Special attention should be given to I-280/I-80 for the above reason, plus its additional role in linking PONYNJ with export producing Midwest agricultural areas.

The report proceeds by first giving an overview of the two ports (especially PONYNJ). Next it describes the methodology used to estimate truck trips from international port volumes. After discussing the forecasts and traffic maps, the report concludes with conclusions and recommendations.

Overview of PONYNJ and POC Cargo

The two ports analyzed by this report are PONYNJ and POC. Figure 1 compares PONYNJ and POC 2007 international over-land volumes (by truck, rail, or multiple modes). This was done by taking the international port volumes for PONYNJ and POC from the Census of Foreign Trade and distributing these volumes by FAF modes of transportation (at the commodity level) for FAF region 341 (the New Jersey part of the New York-Newark-Bridgeport NY-NJ-CT-PA Combined Statistical Area) for PONYNJ and FAF Region 342 (the New Jersey part of the Philadelphia-Camden-Vineland PA-NJ-DE-MD Combined Statistical Area) for POC. (Note: These two FAF regions are shown visually in Figure 11, and combined statistical areas are aggregates of adjacent statistical areas that are linked by commuting ties). In terms of cargo volumes handled, PONYNJ dominates the picture, with POC over-land volumes accounting for less than 1% of the combined total of PONYNJ and POC. PONYNJ trucked volumes, which made up the majority of the volumes, are almost evenly split between containerized and non-containerized volumes.

Figure 1: PONYNJ and POC 2007 International Over-Land Volumes Breakdown by Type of Transportation



Source: FAF, USA Trade Online, Moffatt & Nichol

Among the data sources used, Census of Foreign Trade data (from USA Trade Online) was used for both PONYNJ and POC, while MARAD data on TEUs was also used for PONYNJ (these are discussed in further detail in the methodology section). Below, Table 1 shows the 2007 international volumes for PONYNJ and POC. According to the Census of Foreign Trade data, PONYNJ handled over 80 million metric tons of international cargo in 2007, while POC only handled around 350,000 metric tons.

Table 1: 2007 Census of Foreign Trade Volumes for PONYNJ and POC

2007 (Metric Tons)			
PONYNJ		Camden	
Import	62,506,330	Import	264,494
Export	17,660,538	Export	91,547

Source: USA Trade Online

Table 2 shows the international volumes of loaded TEUs handled at PONYNJ in 2007, according to MARAD. As can be seen, in total, PONYNJ handled over 4 million loaded import and export TEUs in 2007, with about 64% of them being imports.

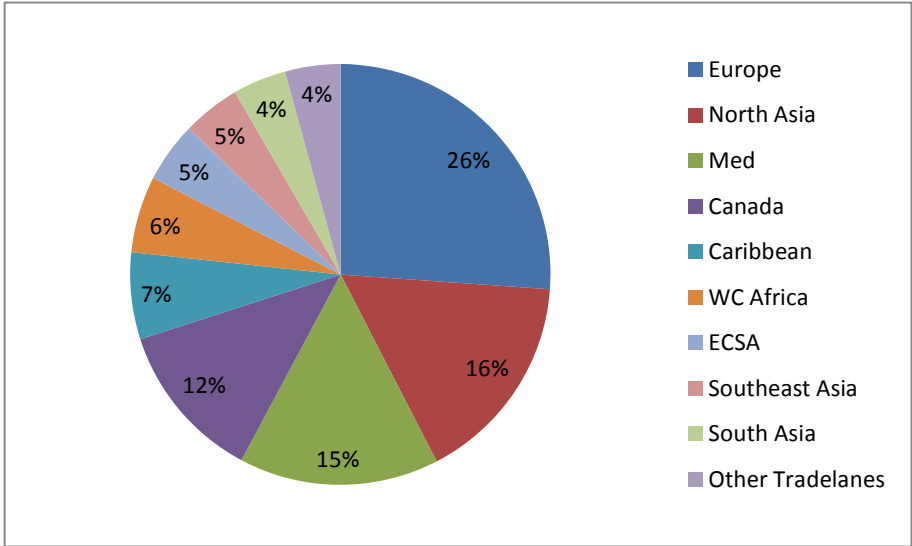
Table 2: 2007 Loaded International TEUs at PONYNJ

PONYNJ 2007 Loaded TEUs	
Import	2,619,592
Export	1,477,903

Source: MARAD

Figure 2 shows PONYNJ 2007 total imports based on the trade-lane over which they were shipped. Europe accounted for about a quarter of imports while North Asia only accounted for 16%. The Mediterranean and Canada were third and fourth with 15% and 12%, respectively.

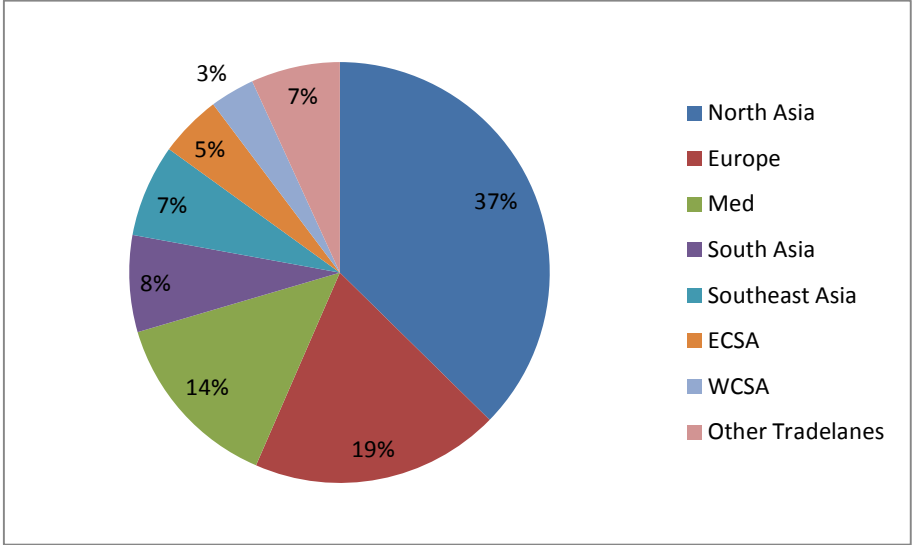
Figure 2: PONYNJ 2007 Total Imports by Trade-lane (by Weight)



Source: USA Trade Online, Moffatt & Nichol

Figure 3 2007 containerized imports by the trade-lane over which they were shipped. The trade-lane make-up for containerized imports differs a little from the trade-lane make-up for total imports, which was seen in Figure 2. Looking at Figure 3, North Asia can be seen to account for 37% of containerized imports, compared to only 16% of total imports by weight, while Europe, which was responsible for 26% of total imports by weight, accounts for only 19% of containerized imports.

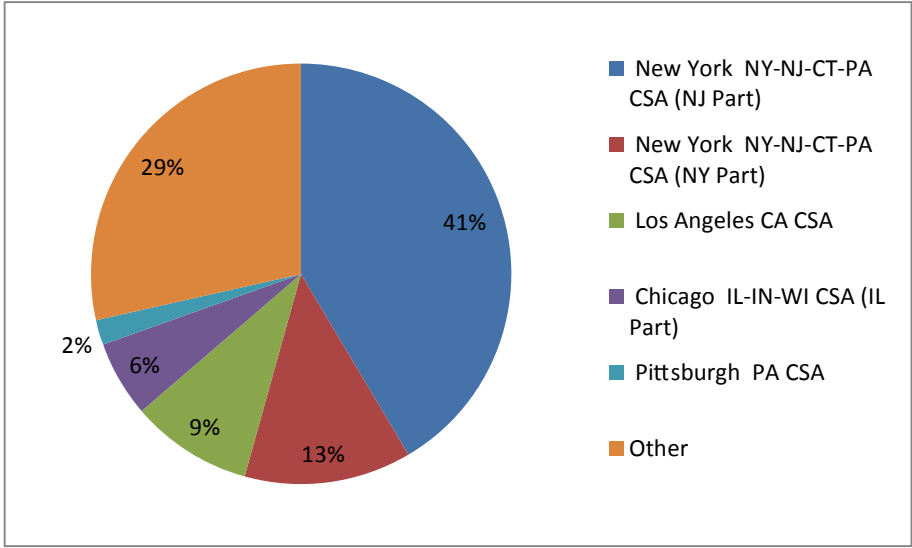
Figure 3: PONYNJ Containerized Imports by Trade-lane for 2007 (Based on Estimated TEUs)



Source: USA Trade Online, Moffatt & Nichol

Figure 4 shows the origin of total exports by weight through PONYNJ in 2007. This was done by taking PONYNJ volumes from the Census of Foreign Trade and basing the origins (at the commodity level) on the origins of exported commodities for FAF Region 341. The New Jersey part of the New York Combined Statistical Area (CSA), which is FAF Region 341, was responsible for the most exported weight (41%), while the New York part of the New York CSA added 13%, giving the New York and New Jersey parts of the New York CSA a combined total of 54%. The Los Angeles CSA and the Illinois part of the Chicago CSA accounted for 9% and 6%, respectively.

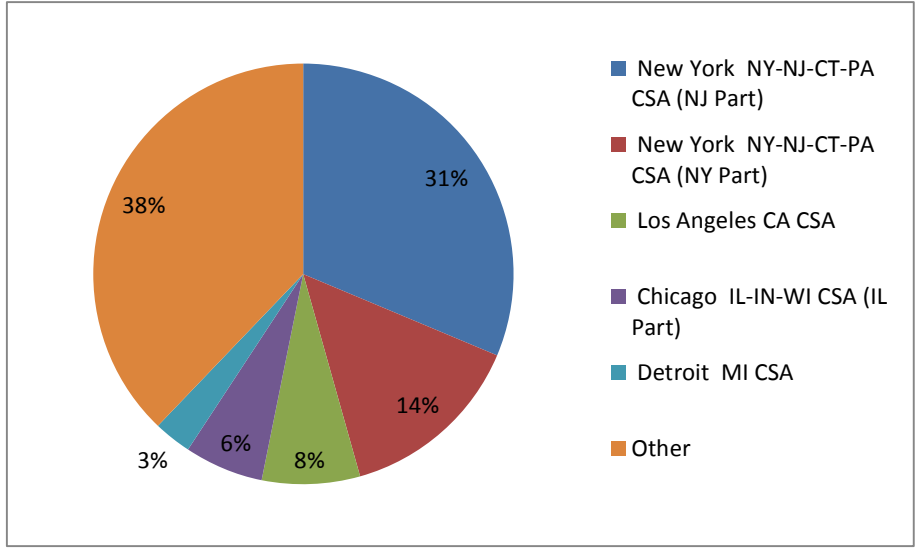
Figure 4: Origin of 2007 PONYNJ Total Exports, by Weight



Source: USA Trade Online, FAF, Moffatt & Nichol

Figure 5 shows the origins of containerized exports through PONYNJ in 2007. These were found by using Census of Foreign Trade data for PONYNJ and basing the origins (at the commodity level) on the origins of exported commodities for FAF Region 341. The origins of the containerized exports are somewhat similar to the origins of PONYNJ total exports, as shown in Figure 4. The New Jersey part of the New York CSA accounted for the most containerized exports with 31% of the total, which is 10% less than its share of total PONYNJ exports. The New York part of the New York CSA, the Los Angeles CSA, and the Illinois part of the Chicago CSA accounted for similar proportions of containerized exports through PONYNJ as they did for total exports through PONYNJ. In total, there were 76 FAF regions that were origin to at least 1,000 TEUs exported through PONYNJ in 2007.

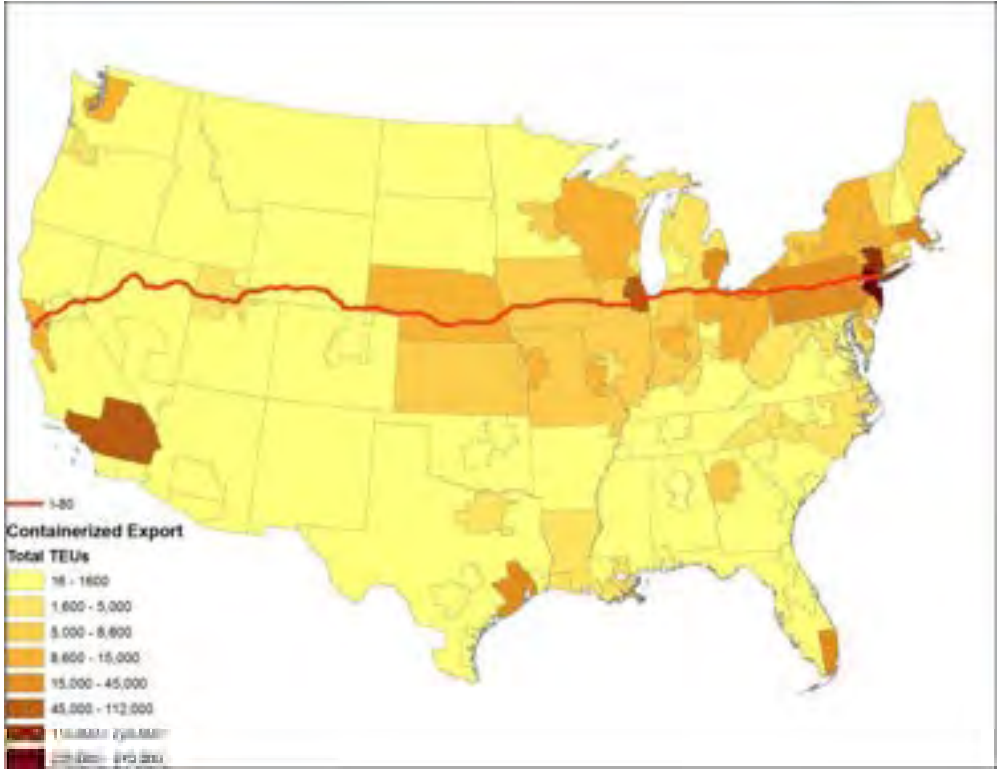
Figure 5: Origins of Containerized Exports through PONYNJ in 2007 (Based on Estimated TEUs)



Source: USA Trade Online, FAF, Moffatt & Nichol

Figure 6 shows the origins of containerized exports through PONYNJ in 2007, with I-80 outlined on the map. The origins were found by distributing Census of Foreign Trade data by FAF. As can be seen I-80 goes through regions generating PONYNJ containerized exports.

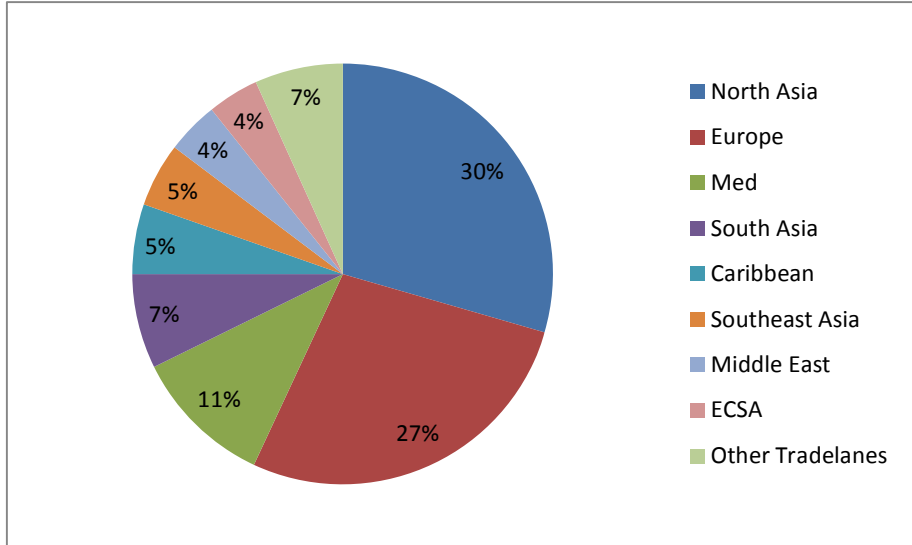
Figure 6: Map of Origins of 2007 PONYNJ Containerized Exports



Source: USA Trade Online, FAF, Moffatt & Nichol

Figure 7 shows the trade-lanes over which PONYNJ containerized exports were shipped in 2007. North Asia and Europe were the main destinations for PONYNJ containerized exports, combining for 57% of the total.

Figure 7: PONYNJ Containerized Exports by Trade-lane for 2007 (Based on Estimated TEUs)



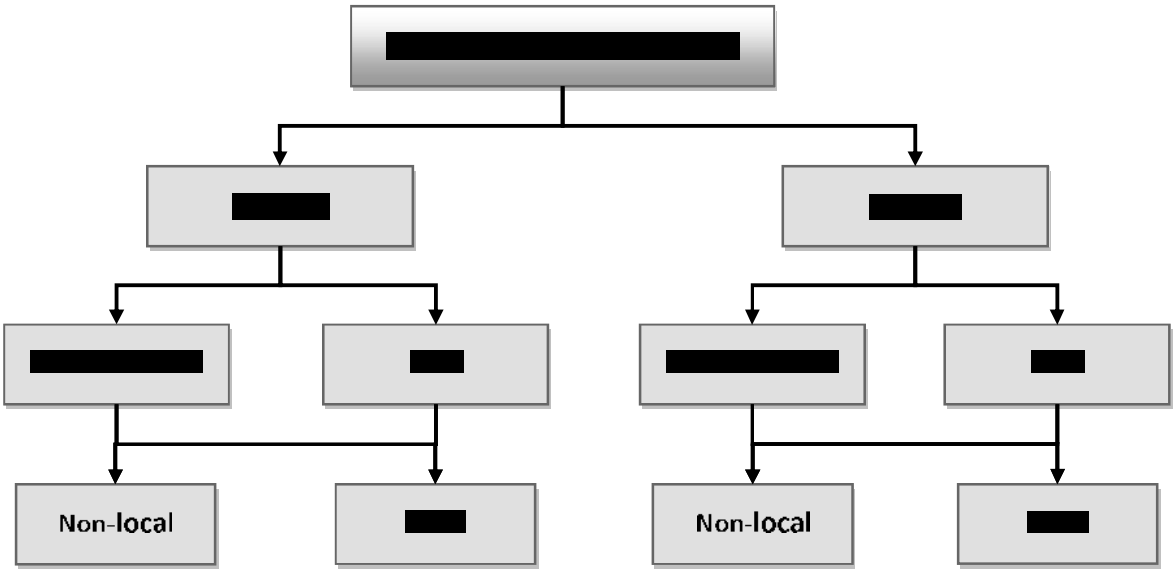
Source: USA Trade Online, Moffatt & Nichol

Methodology

The major steps in the modeling process employed by Moffatt & Nichol to develop the cargo routing and estimate international throughput-related truck trips are described in the flow diagram shown in

The process began with Moffatt & Nichol collecting information and defining the international cargo flows that use PONYNJ or POC as their port of entry/exit, then looking at the flows’ domestic origin or destination as well as their inland mode of transportation. From this point on, imports and exports are handled separately in that, while these flows have some inter-dependence, shippers nevertheless use different supply chains, i.e., international distribution centers are used regularly for trans-loading containerized imports, whereas these are rarely part of the export supply chain. Commodity flows for both imports and exports are then separated into container units or truck loads for bulk cargos. These volumes are then routed to or from the port based on their respective modes. An additional step is included in the routing of containerized imports to account for trans-loading.

Figure 8: Process Flow Diagram for Calculating Truck Counts



Source: Moffatt & Nichol

Figure 9 below shows the six FAF regions, highlighted in brown, that make up the local region. The local region is used for different reasons, including in the determination of whether a containerized import qualifies for a potential trip to an IDC, and in the determination of whether an export or import of containerized cargo will involve an empty container trip. These are discussed later in more detail.

Figure 9: "Local Region" Made up of Six FAF Regions



Available Data Sources

Multiple data sets were used to model the international freight flows. Two sets of data dominated the analysis: Census of Foreign Trade and FAF.

- Census of Foreign Trade data, which also provides information on country of origin/destination, port of entry, vessel value and volume, and containerized value and volume, was used to identify commodity level volume for international cargo traffic through PONYNJ and POC.
- FAF: The next important dataset was the Freight Analysis Framework version 3 (FAF3). This dataset incorporates many of the commodity flow, economic, and transportation volume datasets available for the US, including the PIERs 2007 dataset. The FAF3 dataset combines the above described data in order to provide a single source of data for transportation planners. The data provided includes information on flows between:
 - various domestic origins and destinations, as well international origin/destinations for US imports/exports,
 - the type of commodity (by SCTG code),
 - the value and weight of the commodity,
 - [redacted]

- Other data sets used include Port Import Export Reporting System (PIERS), County Business Patterns, Manufacturing Census, Census of Agriculture, MARAD Waterborne Commerce Database, BEA-IO (Economic Input-Output) tables, and Torto Wheaton data on the number of warehouses/distribution centers by size grouping for a number of counties.

The PIERs and Census of Foreign Trade data are both developed from import and export bills of lading collected by US Customs.

Imports

The process of routing PONYNJ and POC imports that travel by truck is carried out as follows. Volumes that are moving by rail are separated out based on the FAF3 mode designation. FAF3 also has a designation of multimodal. These volumes were treated as if they, in the case of PONYNJ and POC, travel by truck and rail (rather than truck/water or rail/water). It was also assumed that rail was the mode used to get from the port (and that truck was likely used as the “last-mile”), so these were not taken into account in the truck trips.

Census of Foreign Trade data was used for the volumes imported through PONYNJ and POC. 2007 PIERs import data was used to calculate the stowage factors for different commodities, and these stowage factors were then applied to Census of Foreign Trade data on containerized weight to estimate the number of international containers handled by PONYNJ and POC. Additionally, for PONYNJ (but not POC), the container count was controlled against MARAD data; the container count is matched by adjusting the stowage factors. The next step involved applying the FAF O&D/Modal Split on controlled PONYNJ and POC volumes to create a commodity-FAF region level O&D matrix with modal split.

Non-containerized imports

Imported non-containerized freight traveling by truck to its final destination follows a much different supply chain than containerized imports (eg. in that there is no reason to trans-load these commodities) so they tend to travel directly from the port to their final destination. For non-local cargo, the final destination for non-containerized items is based on the destination FAF region. The local cargo is routed to a destination county in the FAF region it is destined to based on the interim demand calculated using multiple data sources (these are done at the commodity level). The number of truck trips was derived using average truck payload equivalent factors as reported by the FHWA. These factors are shown in Table 3 (Class 5 was used).

Table 3: Sample Truck Payloads for Different Commodities and Truck Classes

Commodities	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Animal feed or products animal origin	9,428	24,576	32,395	15,086	44,674	23,302
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	54,474
All other agricultural products	8,711	24,059	37,659	15,684	41,891	50,540
[redacted]	[redacted]	[redacted]	-	[redacted]	[redacted]	[redacted]

Fertilizers and fertilizer materials	10,624	24,745	20,375	13,049	45,315	43,441
			-			-
All other chemical products	6,604	23,810	31,031	14,833	45,692	35,833
			-			-
Bakery and milled grains	2,851	19,322	-	25,448	40,729	69,588
			-			50,000
Tobacco products	8,045	*	-	*	42,444	-
						51,519
All units in pounds						
Class 1 – Single Unit: 2-axle		Class 5 – Truck/Tractor Trailers: 5-axle				
Class 2 – Single Unit: 3-axle		Class 6 – Truck/Tractor Trailers: 6-axle or more				
Class 3 – Single Unit: 4-axle or more		Class 7 – Combination Trucks: 5-axle or less				
Class 4 – Truck/Tractor Trailers: 4-axle or less		Class 8 – Combination Trucks: 6-axle				
		Class 9 – Combination Trucks: 7-axle or more				

Containerized Imports

Unlike non-containerized cargo, which is loaded from the vessel or dock into a truck or railcar and moved to or near its final destination, containerized cargo, in many cases, may be drayed from the port to an international distribution center where the contents of 40 foot ocean containers can be transferred to 53 foot trailers and driven to their final destinations. While a number of reasons can be cited for trans-loading, the primary operational reasons can be qualified as:

- Reduced transportation costs- If the distance from the port to the final destination and the volumes handled are large enough, a shipper can realize a cost-savings from trans-loading. A general rule of thumb is that five ocean containers can be trans-loaded into three 53 foot trailers; thus fewer trucks and drivers are required to transport the goods from the international distribution center to a regional distribution center (in the case of final consumer good) or the final destination (in the case for intermediate goods).
- Cross docking- A shipper of multiple commodities can deconsolidate and reconsolidate the mix of goods that arrive in different containers while transferring cargo from 40 foot boxes into 53 foot vans, thereby optimizing truck capacity heading to different markets.
- Empty Container Depots- If the final inland destination is located off one of the main inland international distribution routes, there could be a cost savings to the shipper from trans-loading and then leaving the ocean container closer to the port.

When choosing between trans-loading or not, shippers will usually choose the path with the lowest cost. The costs considered by Moffatt & Nichol when simulating whether a shipper will choose to trans-load (as opposed to shipping directly) are:

- Cost of direct shipping: this is the trucking cost of shipping a marine container from the port directly to its final destination;

- Cost of shipping via trans-loading: this includes three cost elements: 1) the cost of draying a container from the port to the international distribution center, 2) the fee for trans-loading cargo from the marine containers into 53 foot vans, and 3) the cost of trucking the 53 foot van from the international distribution center to its final destination.

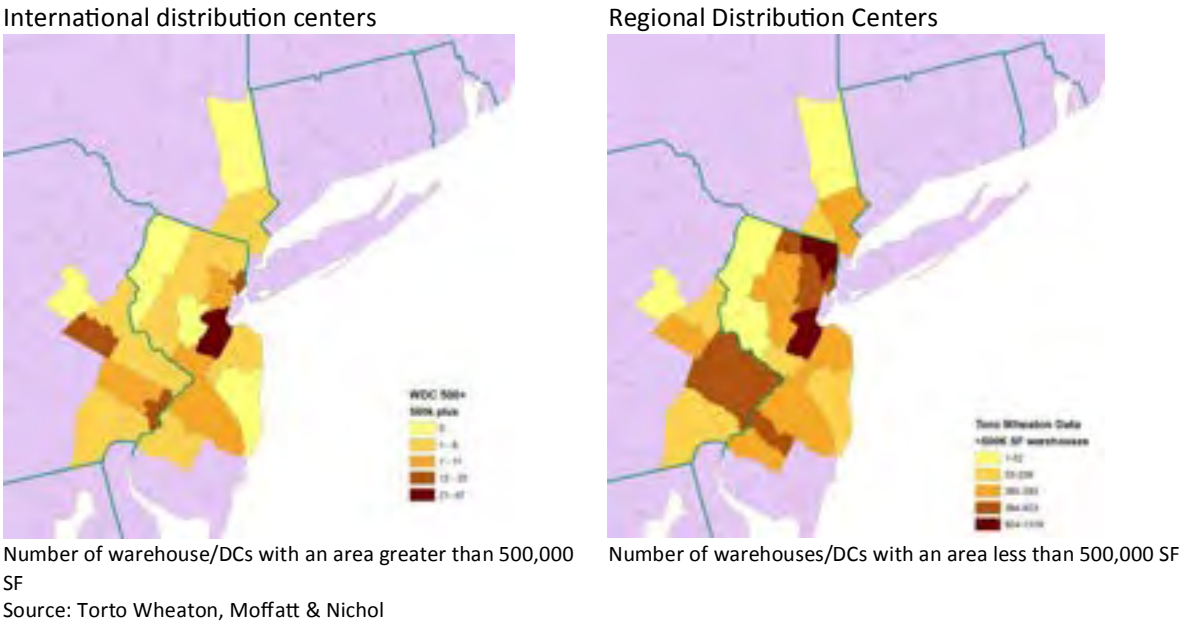
The containerized imports for specific O&Ds were divided among the options of direct shipping or trans-loading in any of the counties specified in Figure 10 (they need to have at least one IDC proxy to be considered for trans-loading) depending on how attractive each of the options was. This attractiveness was determined by the costs listed above for direct shipping and for shipping via trans-loading in each of the counties specified in Figure 10 (the fee for trans-loading was affected by availability of IDCs in that county as well as estimated operating costs involving estimated utility costs, labor costs, and property costs).

Containerized imports with a final destination in the local region are not given the option to trans-load and are allocated to an RDC (regional distribution center). The containerized cargo destined for one of the six FAF regions that make up the local region is assigned to counties within that FAF region based on availability of regional warehouse space. Torto Wheaton data on warehouse and distribution center locations for 29 counties was used to estimate regional distribution center locations. Facilities in the dataset with an area less than 500,000 square feet were assumed to be regional distribution centers (the counties for which Moffatt & Nichol had data, and those counties’ number of assumed RDCs is shown in the right hand side of Figure 10). One limitation was not having data for all the counties in the local region. In these cases, the RDC cargo destined for one of the six local FAF regions was only sent to counties for which Moffatt & Nichol had Torto Wheaton data to estimate the availability of RDCs. For FAF Region 92 in Connecticut, Moffatt & Nichol didn’t have Torto Wheaton data for any of the counties, so all containerized imports destined for that FAF region were sent to New Haven County.

Containerized imports with a final destination outside of the local region were routed to their FAF region destinations with a possibility of trans-loading in the identified counties in Figure 10. Torto Wheaton data was also used as a proxy for available international distribution centers. In this dataset, facilities with an area greater than 500,000 square feet were used as a proxy for international distribution centers, and are therefore candidates for trans-loading activities. These are shown in the left hand side map of Figure 10. In this step as well, lack of data was another limitation, as Moffatt & Nichol didn’t have the Torto Wheaton data for all of the counties in the six local FAF regions. This means that the counties for which Moffatt & Nichol didn’t have data were not trans-loading options.

Containerized imports that have a final destination in the local region (meaning that the import will be assigned to a county identified in Figure 10 to go to an RDC) and containerized imports that go to an IDC will also involve a truck trip of the empty container back to the port.

Figure 10: Torto Wheaton Warehouse and Distribution Center Locations



Exports

Census of Foreign Trade data was used for the volumes exported through PONYNJ and POC. 2007 PIERS export data was used to calculate the stowage factors for different commodities, and these stowage factors were then applied to Census of Foreign Trade data on containerized weight to estimate number of international containers handled by PONYNJ and POC. Additionally, for PONYNJ (but not POC), the container count was controlled against MARAD data; the container count is matched by adjusting the stowage factors. The next step involved applying the FAF O&D/Modal Split on controlled PONYNY and POC volumes to create a commodity-FAF region level O&D matrix with modal split.

Similar to imports, export volumes that were designated as multimodal by FAF were treated as if they travel by truck and rail (rather than truck/water or rail/water). It was also assumed that rail was the mode used to get to the port (and that tr - volumes were not taken into account in the truck trips.

Both containerized and non-containerized exports are routed directly from the origin to the port. If the origin is outside of the local region, the origin will be a FAF region. If the origin is within the local region, the origin will be a producing county in the FAF region the cargo is originating from (this is determined by comparing county production levels at the commodity level).

Containerized exports that have an origin in the local region will involve a truck trip of an empty container from the port. This is because it is assumed that the empty containers are obtained at or near the port.

Routing

For routing cargoes, the O&Ds and volumes for containerized and non-containerized cargo are fed into the GIS system and routed based on the fastest route. A route will start or end at either a county s in the local region, or at a FAF region centroid, if it’s outside of the local region. The traffic count of a roadway segment is calculated by summing up the traffic count of all routes using that roadway segment. To facilitate analysis, segments of major highways were selected for further analysis.

Newark, NJ volumes were routed through Elizabeth Marine Terminal in Union County, while the New York, NY volumes were routed through New York Container Terminal on Staten Island.

One thing to note is that in the model, the Union County centroid was manually moved so that it is in the same place as Elizabeth marine terminal. This means that imports originating or exports terminating in Union county that utilize Elizabeth terminal are not represented in the map, because there is no travel involved to get from the port to the county centroid.

Forecasts

This section discusses the impact that international port volumes will have on New Jersey. Table 4 shows the truck trips due to imports and exports. As can be seen, truck trips related to imports and exports are estimated to increase by 132% between 2007 and 2035, from roughly 5.2 million in 2007 to about 12 million in 2035, which equates to a compounded annual growth rate of 3% over this period. Truck trips relating to PONYNJ imports are estimated to increase by 115%, while truck trips relating to exports are estimated to increase by 168%.

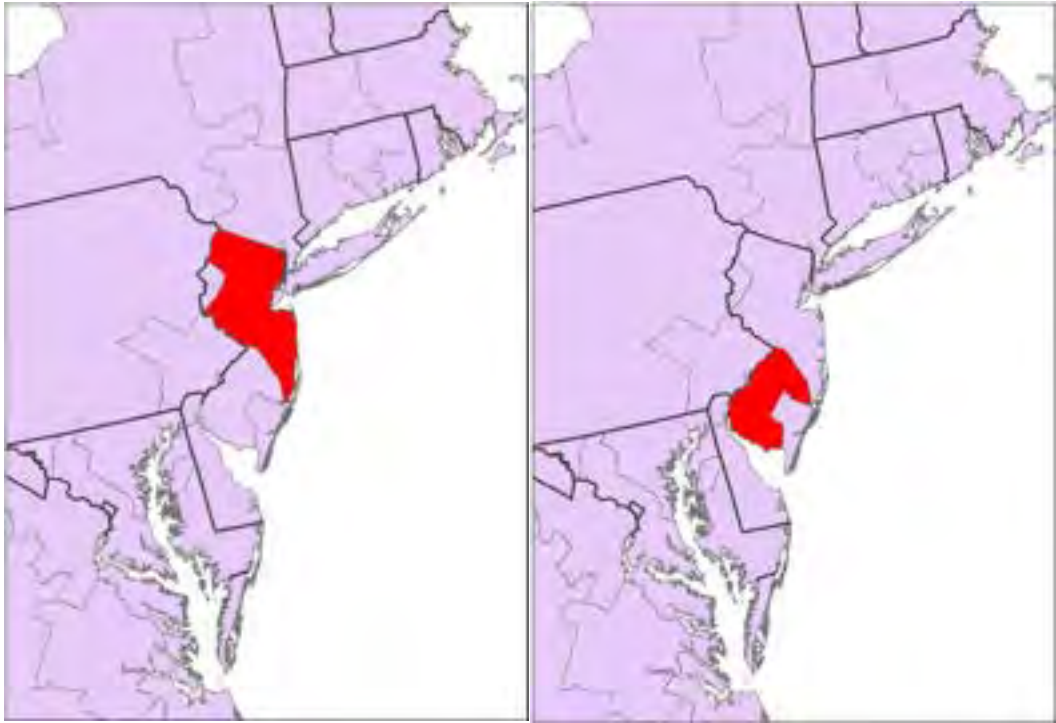
Table 4: Truck Trips Due to Imports and Exports

Trip Type	2007	2035
Containerized Import		
Port to IDC (direct)	269,291	705,327
Port to final non-local destination (direct)	212,248	495,241
Port to RDC (direct)	756,986	1,912,871
Trips of empty containers	1,026,277	2,618,198
Non-containerized Import		
Port to final destination (direct)	1,306,646	1,963,075
Total Non-IDC generated Import	3,571,448	7,694,712
Exports		
Local	720,410	1,740,974
Non-Local	390,791	1,388,968
Trips of empty containers	484,012	1,140,706
Total Export	1,595,213	4,270,648
Grand Total	5,166,661	11,965,360

Source: Moffatt & Nichol

The port volumes were grown using FAF forecasts. The commodity level forecasts, with SCTG commodity classification, were used to grow volumes from 2007 to 2035. This involved the Census of Foreign Trade data for POC and PONYNJ being translated to SCTG classification before being grown at the commodity level. The forecasts for FAF region 341, shown on the left-hand side of Figure 11, were used to grow the PONYNJ volumes, while the forecasts for FAF region 342, shown on the right-hand side of Figure 11, were used to grow the POC volumes.

Figure 11: FAF Regions 341 (Left) and 342 (Right)



Source: Moffatt & Nichol

While the volumes were grown at the commodity level, Table 5 shows the forecasted growth for each port at the import and export level, as well as at the containerized import volume and containerized export volume levels (by weight).

Table 5: Forecasted Import and Export Growth for PONYNJ and POC (2007-2035)

	Total International Volumes			
	PONYNJ		POC	
	Import	Export	Import	Export
Growth ('07-'35)	78%	220%	145%	176%
CAGR ('07-'35)	2.1%	4.2%	3.3%	3.7%
	Total International Container Volumes			
	PONYNJ		POC	
	Import	Export	Import	Export
Growth ('07-'35)	130%	226%	155%	196%
CAGR ('07-'35)	3.0%	4.3%	3.4%	3.9%

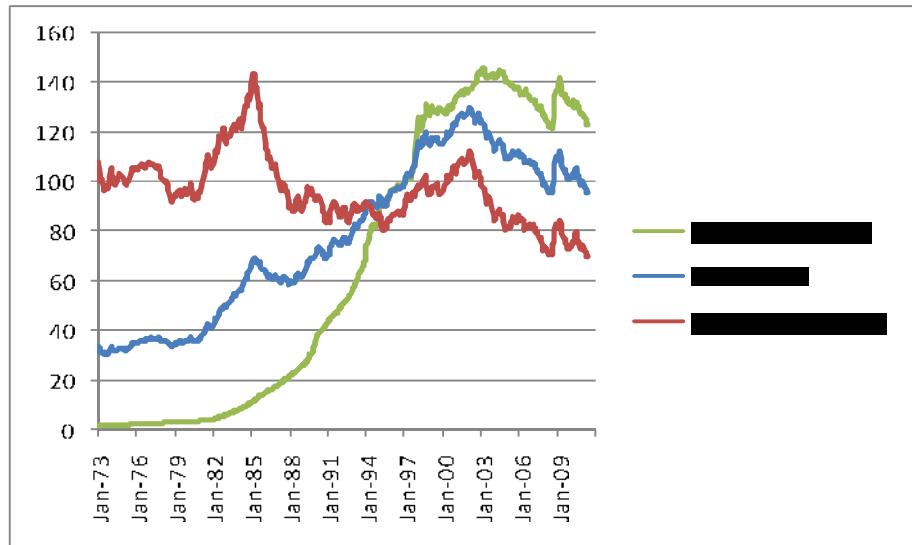
Source: FAF, Moffatt & Nichol

At both the containerized volume level and the total volume level, exports for both PONYNJ and Port of Camden are forecasted to grow more than imports between 2007 and 2035.

Some possible factors for greater growth of exports than imports may include:

- The foreign exchange value of the US dollar has been declining since 2002. This is a broad trend illustrated in Figure 12 below, which shows trade weighted indexes of the US dollar against three baskets of currencies: the Broad index (which includes the top 26 trading partners of the US), the Developed Markets (which includes countries in the Broad index whose currencies are heavily traded outside their home country), and the Emerging Markets index (which includes the countries from the Broad index whose currencies are generally not traded in world currency markets). While the dollar may recover some value against Developed Market currencies, it is unlikely to do so against Emerging Market currencies because those countries have higher expected economic growth rates and higher interest rates.
- Growth rates for Emerging Market economies, which have been gaining share of US exports, are expected to remain high because they are expected to maintain higher population and output per person growth rates through the forecast period. Higher income growth in those countries means higher demand for US exports.

Figure 12: Trade Weighted US Dollar Exchange Rate Indexes



Source: US Federal Reserve

The combination of the dollar remaining at a low level for much of the forecast period (but over time recovering some value against developed market currencies) and high income growth in the emerging market countries that already have a large share of US exports may result in forecasts of higher export growth rates than those for imports.

Traffic Counts

This section deals with the results of the routing processes. The figures and tables in this section relate to international port throughput-related truck trips and include truck trips after trans-loading (at an IDC) as well as truck trips of empty containers. A truck trip of an empty container was included in the following situations:

- If there was a containerized import with a final destination in the local region (meaning it was assigned to an RDC in one of the counties identified in Figure 10) or a containerized import goes to an IDC for trans-loading in one of the counties identified in Figure 10, a truck trip of the empty container back to the port was included.
- If there was a containerized export that originated in the local region, a truck trip of an empty container from the port was included.

Figure 13 shows the 2007 import-related truck trips for PONYNJ and POC (excluding roads with less than 60 import-related truck trips per day in 2007) with selected highways labeled, such as I-80, I-280, I-78, and I-95/NJTP. It is no surprise that I-95/NJTP is heavily used, with portions of the road exceeding 1,000,000 import-related truck trips in 2007.

Figure 14 is similar to Figure 13 except that the import-related truck counts are labeled in certain places. The top number is the 2007 import-related truck trips, while the bottom number is the 2035 import-related truck trips.

Some observations that can be made of the 2007 import-related truck trips are:

- I-95/NJTP is heavily used. A segment of I-95/NJTP to the north of the PONYNJ terminals (Elizabeth Marine Terminal and NYCT) and a segment to the south of the PONYNJ terminals have over 1,000,000 import-related truck trips. Further south on I-95/NJTP, while there is a large drop-off in import-related truck trips, the number of trips still remains relatively high (roughly around half a million). Around the area where the I-95/NJTP part of the route ends, further dissipation of truck trips occurs, leaving a section of NJTP with a little over 100,000 trips, later followed by I-295 with roughly 100,000 trips decreasing to about 80,000.
- The route made up of I-80 connecting with I-280 starts with a high number of import-related truck trips that drops quickly and then stays relatively flat for the remainder of the state. Coming off of a feeder road, the first portion of I-280 on the route starts with over 600,000 import-related truck trips. This soon drops to around 385,000 trips. As the route switches over to I-80, there is soon further dissipation of import-related truck trips as the total for 2007 ends up dropping to about 220,000. However, the number of truck trips remains relatively stable from there on as I-80 continues on to the border of Pennsylvania, and the piece of the road at the end of New Jersey actually has more trips (around 230,000).

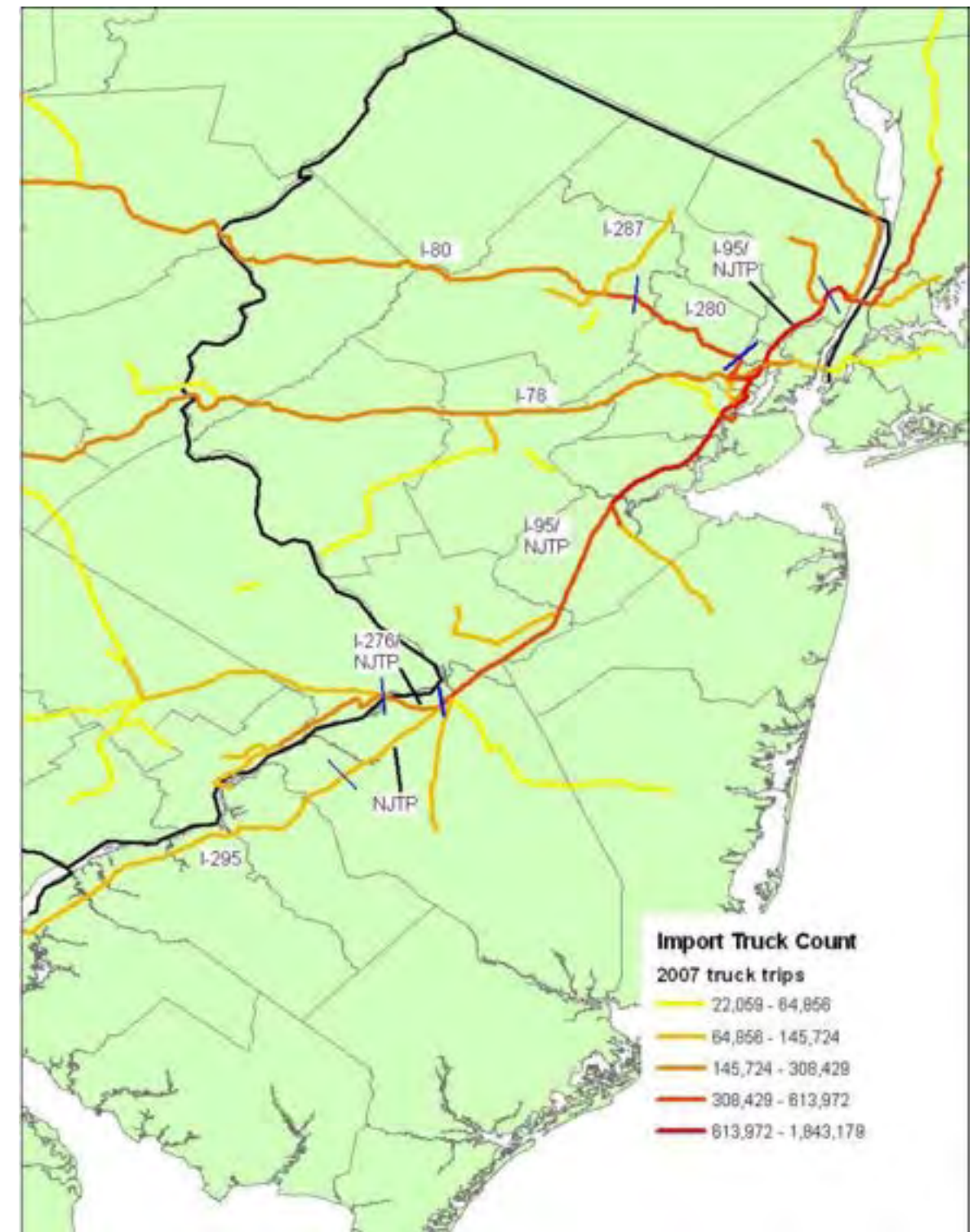
- Outside of the group of roads around the PONYNJ terminals, I-78 has about 270,000 import-related truck trips in 2007, before actually increasing to over 300,000 trips as it moves away from PONYNJ. While the number of import-related truck trips has a drop-off right before the border of Pennsylvania (down to 174,000), it only drops to 234,000 before that.

Some observations that can be made about the 2035 numbers are:

- I-95/NJTP seems to have the most PONYNJ and POC import-related traffic among the three routes discussed (I-95/NJTP, I-78, and I-80/I-280) – although this doesn't necessarily include pieces of the route after the I-95/NJTP part ends. Sections of I-95/NJTP to the north and south of the PONYNJ terminals have well over 2 million import-related truck trips in 2035. Although there is significant dispersion of volumes heading further south on I-95/NJTP, the volumes still remain high. Around the area where the I-95/NJTP part of the route ends, further dissipation of truck trips occurs, leaving a section of NJTP with about 280,000 trips, and I-295 with roughly 280,000 trips decreasing to about 190,000.
- The route made up of I-80 and I-280 starts out with almost 1.35 million import-related truck trips on I-280. As the route gets further away from the PONYNJ terminals, this number soon drops to about 900,000. After a temporary and slight increase in volumes as I-80 takes over, this number soon ends up dropping to about 540,000. However, this volume stays relatively stable as the route gets further away from the PONYNJ terminals until it rises to about 590,000 import-related truck trips near the border of Pennsylvania.
- Outside of the group of roads around the PONYNJ terminals, the I-78 route starts out with about 450,000 truck trips, which then increases to about 500,000 as the route gets further away from PONYNJ. Moving further away, there is dispersion of truck trips, until the piece of the route before the Pennsylvania border has about 300,000 import-related truck trips in 2035.

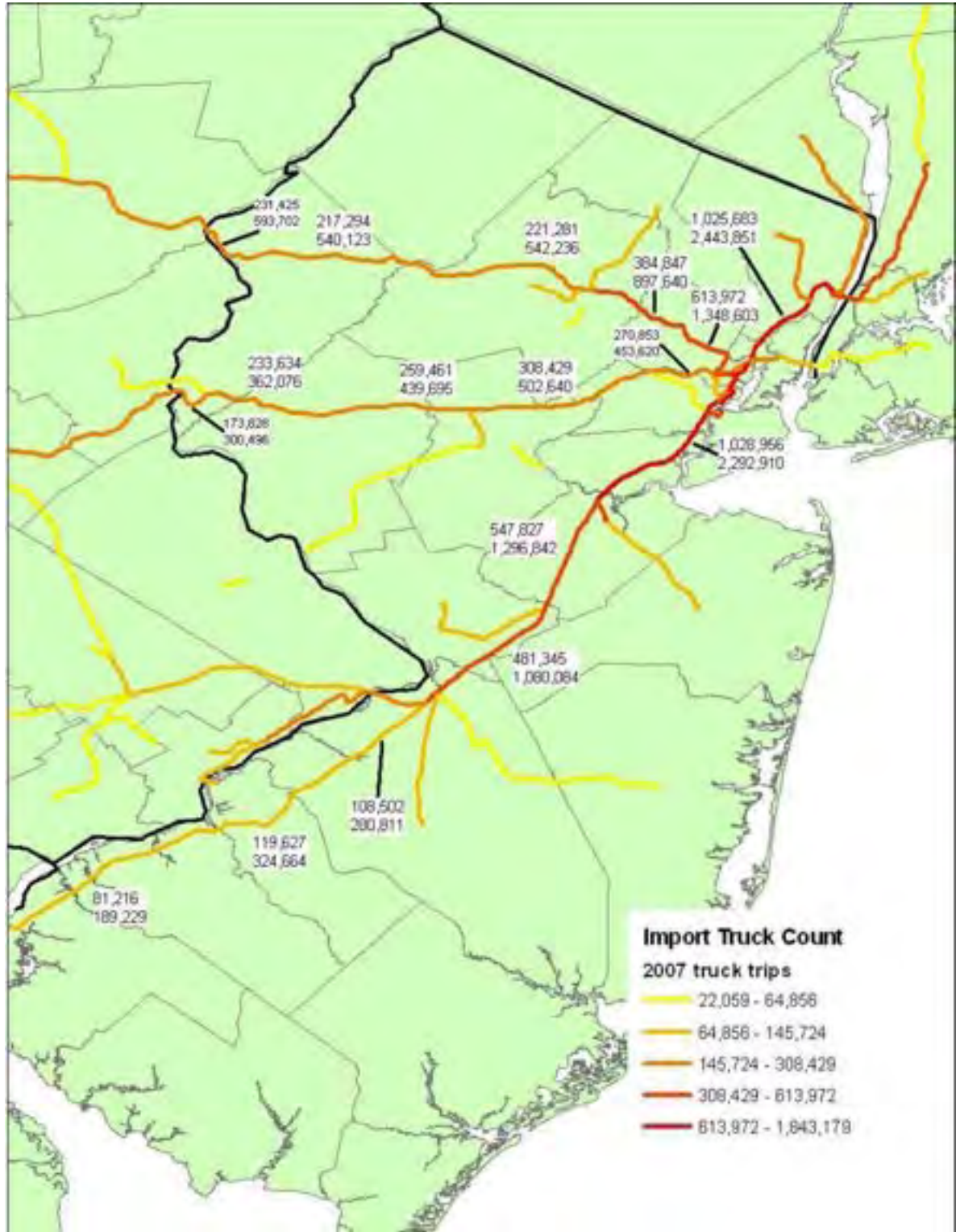
Figure 15 shows the ratio of 2035 import-related truck trips to 2007 import-related truck trips for PONYNJ and Port of Camden (excluding roads with less than 60 import-related truck trips in 2007) in certain places. As can be seen, I-280 and I-80 as well as I-95/NJTP appear to grow faster than I-78.

Figure 13: 2007 Import-Related Truck Trips for PONYNJ and Port of Camden



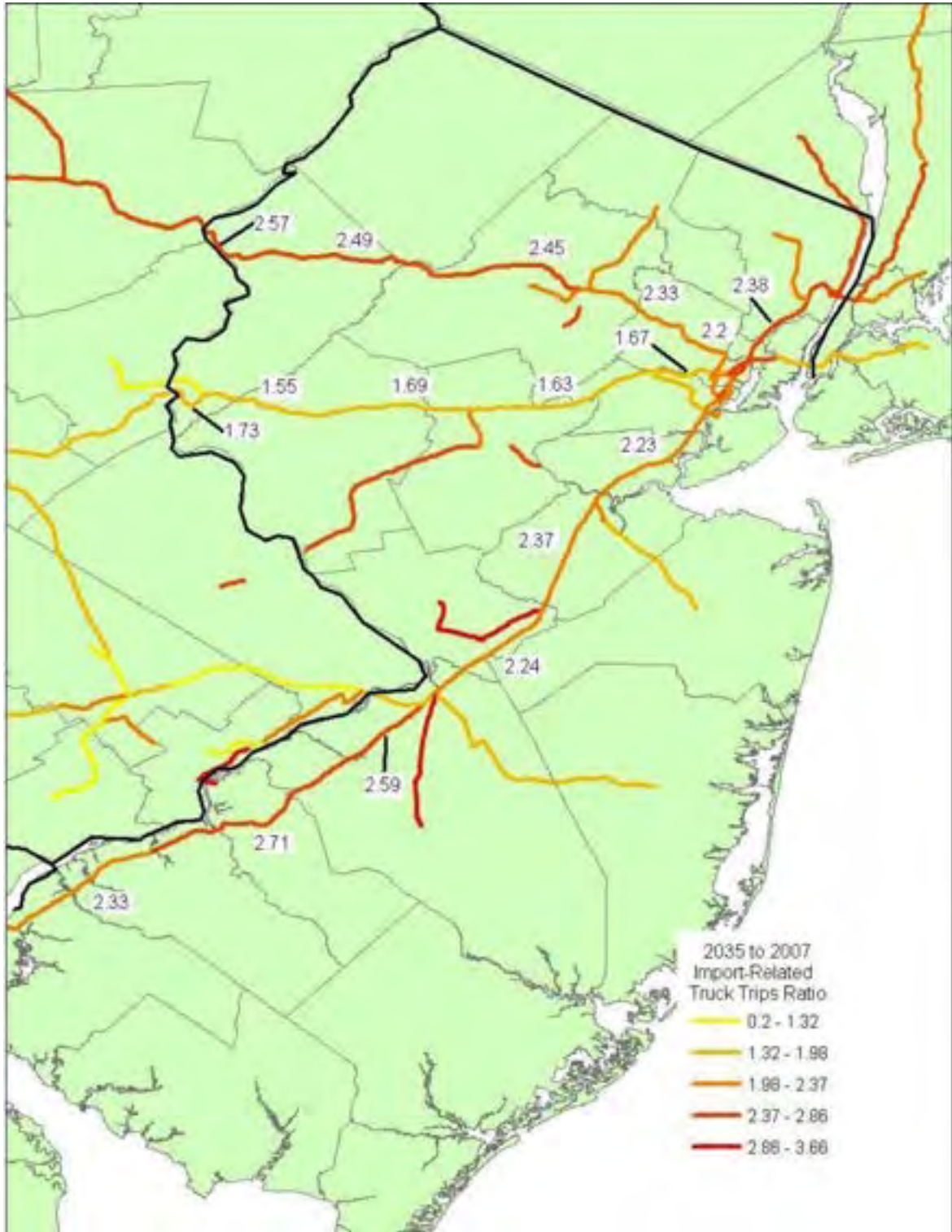
Source: Moffatt & Nichol

Figure 14: 2007 and 2035 Import-Related Truck Trips for PONYNJ and Port of Camden



Source: Moffatt & Nichol

Figure 15: Ratio of 2035 Import-Related Truck Trips to 2007 Import-Related Truck Trips for PONYNJ and Port of Camden



Source: Moffatt & Nichol

Figure 16 shows the 2007 export-related truck trips for PONYNJ and POC excluding roads with less than 25 export-related truck trips per day in 2007. As can be seen, I-78 has relatively low export-related truck traffic. Parts of I-95/NJTP have relatively high volumes, with the part to the south of the PONYNJ terminals, however, losing a lot of trips as it gets further from the PONYNJ terminals. The combination of I-80 and I-280 sustains high volumes with I-80 having nearly 300,000 2007 export-related truck trips near the border of Pennsylvania and New Jersey which increases to over 400,000 trips as I-280 nears PONYNJ.

Figure 17 is similar to Figure 16 except that the export-related truck counts are labeled in certain places. The top number is the 2007 export-related truck trips, while the bottom number is the 2035 export-related truck trips.

Some observations that can be made about the 2007 numbers are:

- The route made up of I-80 and I-280 has a high number of export-related truck trips for all of the time it's in New Jersey. I-280 starts out near the PONYNJ terminals with over 400,000 export-related truck trips. Although this number of trips does drop, the rest of the route doesn't go much below 300,000 trips for its time in New Jersey.
- While some parts of I-95/NJTP have a high volume of export-related truck trips, the portion to the south of the PONYNJ terminals also has a lot of dissipation. I-95/NJTP to the south of the PONYNJ terminals starts with over 400,000 export-related truck trips in 2007. This ends up dissipating to about 100,000 trips near the end of the I-95/NJTP part of the route (and actually drops even lower at the very end). After the I-95/NJTP part of the route is over, the rest of the route to the south is mostly made up of NJTP and I-295 (with the majority being I-295), with the majority of the rest of this route having a 2007 export-related truck trip volume of around 30,000 - 40,000.
- The I-78 route has a low volume of export-related truck trips. The first part of I-78 outside of the group of roads around the terminals has roughly 20,000 2007 export-related truck trips. Although this increases to almost 50,000 as it gets further away from PONYNJ, it ends up dropping to about 30,000 2007 export-related truck trips.

Some observations that can be made about the 2035 numbers are:

- Of the routes made up of I-95/NJTP, I-280 and I-80, and I-78, the route made up of I-280 and I-80 has the most 2035 export-related truck trips. The section of I-280 closest to the PONYNJ terminals has 1,350,000 export-related 2035 truck trips, while the whole route of I-80 and I-280 in New Jersey has over 1,100,000 2035 export-related trips.
- I-95/NJTP has a significant number of export-related truck trips at some sections, but also has fewer truck trips at other sections. For instance, the section of I-95/NJTP to the south of the PONYNJ terminals has over 930,000 2035 export-related truck trips. However, this ends up dissipating down to 272,000 (and even drops more right before the I-95/NJTP part of the route ends). After the I-95/NJTP part of the route ends, the back part of the route is mainly made up

of NJTP and I-295, and this part of the route has about 125,000 export-related truck trips and

- Compared to I-80/I-280 and I-95/NJTP, the route made up of I-78 doesn't have a lot of 2035 export-related truck trips. The first part of I-78 outside of the group of roads around the PONYNJ terminals has less than 50,000 2035 export-related truck trips. Going away from PONYNJ, this number actually increases as part of the route has 133,000 trips. Going even further from PONYNJ, this number ends up dissipating to around 98,000 2035 export-related truck trips.

Figure 18 shows the ratio of 2035 export-related truck trips to 2007 export-related truck trips for PONYNJ and POC in certain places, excluding roads with less than 25 export-related truck trips in 2007. A few observations:

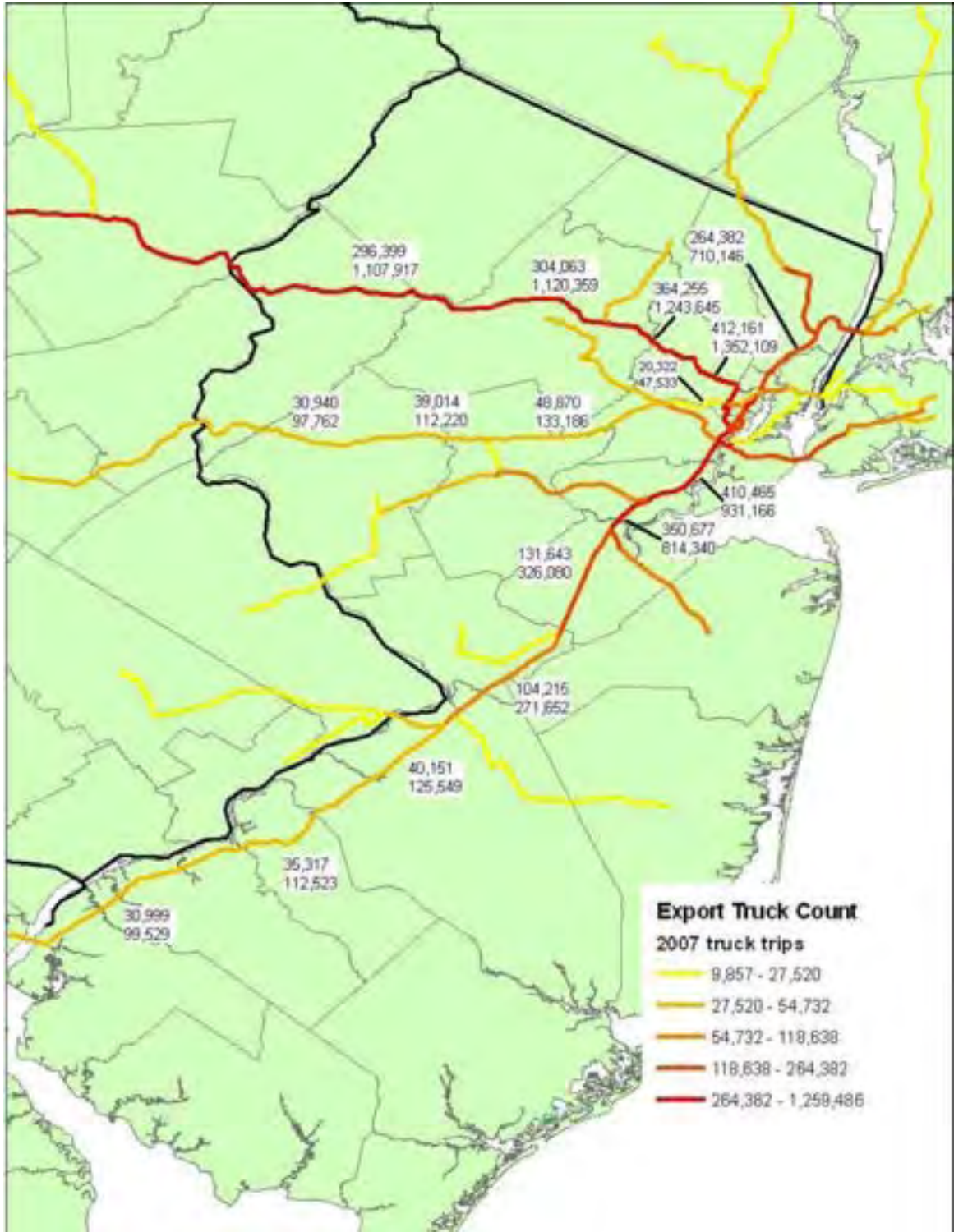
- The growth on I-78, I-95/NJTP, and I-80 and I-280 seems to generally be higher than the growth on these routes for import-related truck trips.
- Generally, growth along the routes just mentioned seems to get larger as they get further away from the PONYNJ terminals.
- Among the routes just mentioned, I-80 and I-280 seems to have the most growth, while I-78 seems to generally have a little more growth than I-95/NJTP (although after the I-95/NJTP part of the route ends on the part of the route south of the PONYNJ terminals, the growth rates increase).

Figure 16: 2007 Export-Related Truck Trips for PONYNJ and Port of Camden



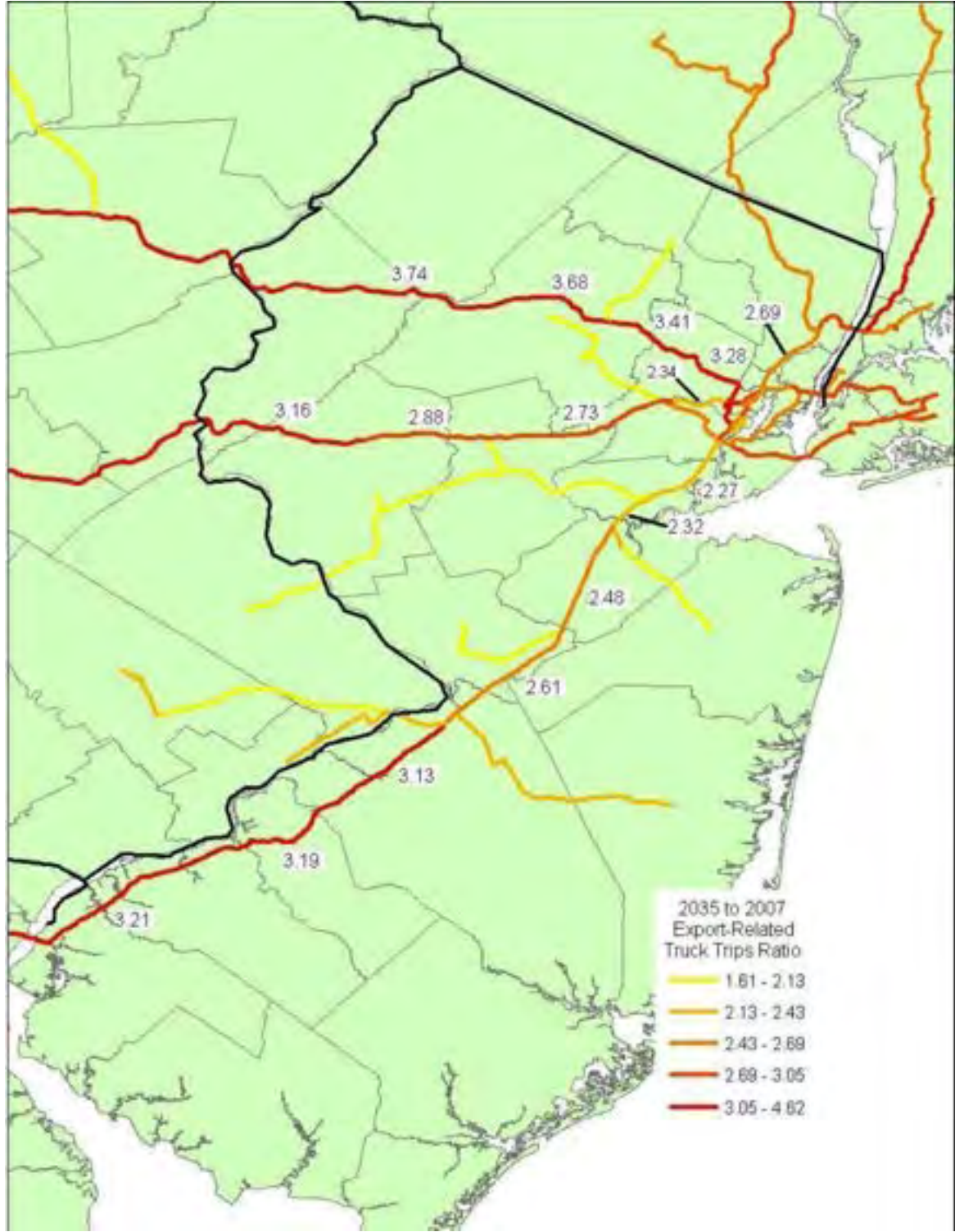
Source: Moffatt & Nichol

Figure 17: 2007 and 2035 Export-Related Truck Trips for PONYNJ and Port of Camden



Source: Moffatt & Nichol

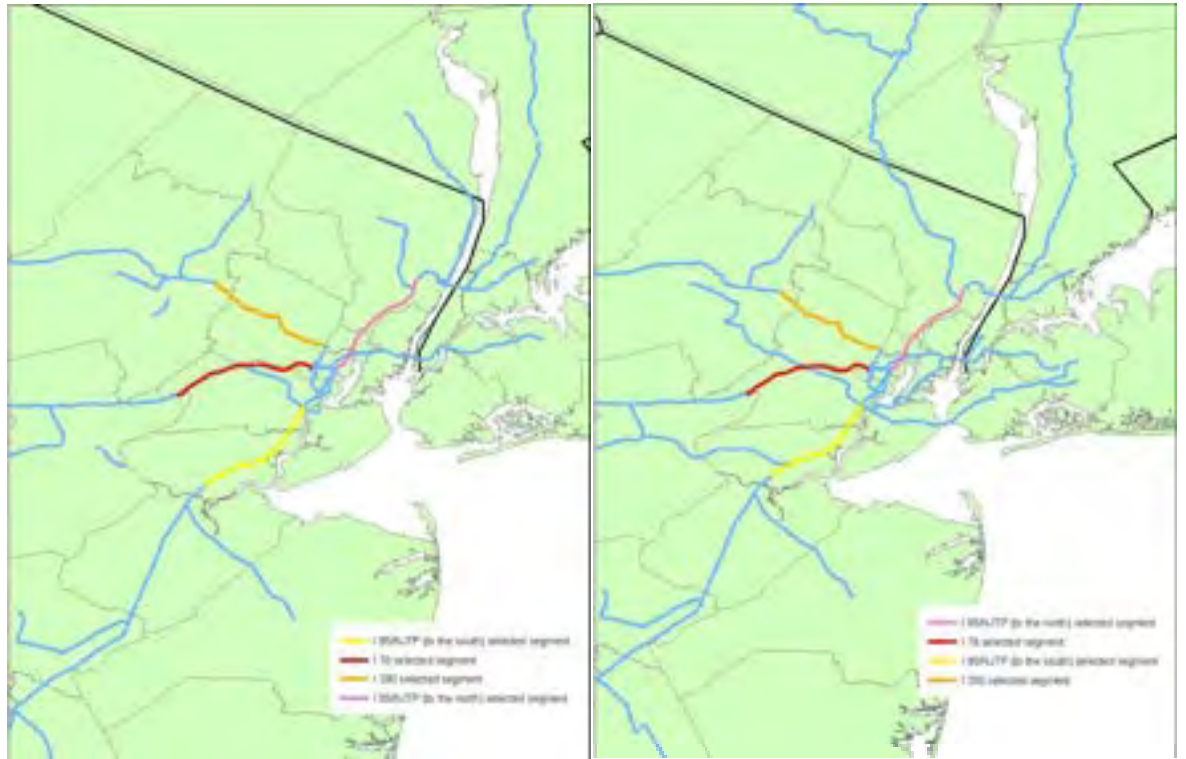
Figure 18: Ratio of 2035 Export-Related Truck Trips to 2007 Export-Related Truck Trips for PONYNJ and Port of Camden



Source: Moffatt & Nichol

It is also useful to look at smaller sections of key highways. These sections, which are portions close to the PONYNJ terminals, are shown in Figure 19 with the import selected segments on the left-hand side and the export selected segments on the right-hand side. Later in the report, more segments of the roads will be analyzed. Because the segments shown in Figure 19 are closer to PONYNJ than the segments which will be analyzed later (shown in Figure 21), the segments in Figure 19 will be referred to as the near-port segments, while the segments in Figure 21 will be referred to as the distant segments.

Figure 19: Selected Near-Port Highway Segments



Source: Moffatt & Nichol

The average import and export-related truck trips due to PONYNJ and POC were calculated for these key segments. The average import and export-related truck counts on the segments were added together to get an estimate of the total international throughput truck trips. In addition, the average of total traffic and average of truck traffic on the import and export segments were averaged together so that statistics like the percentage of total traffic on the segment accounted for by international throughput truck trips could be calculated. Table 6 analyzes the near-port segments' 2007 traffic, while Table 7 analyzes the near-port segments' traffic in 2035. The 2007 total traffic and truck traffic is from FAF, while the 2035 total traffic and truck traffic is derived from FAF.

Table 6 shows that, of the four selected near-port segments of highway, in 2007, the selected segment of I-95/NJTP to the south of the PONYNJ terminals has the most import-related truck trips as well as the

most export-related truck trips. The section of I-95/NJTP to the north of the PONYNJ terminals has the second most 2007 international throughput-related truck trips (it is a close second for most import-related truck trips), while the selected section of I-280 has the third most (it is a close second for most export-related truck trips), with the selected section of I-78 having the least. 2007 international throughput-related truck traffic also makes up a smaller percentage of total traffic and of truck traffic on that section of I-78 compared to the other selected segments, while it makes up the largest percentage of total traffic and truck traffic for I-95/NJTP (to the north) of the four selected near-port segments.

Table 6: Selected Near-Port Segments' 2007 International Port-Related Truck Trips as a Percentage of Total Traffic and Truck Traffic

2007					
Selected Segment	2007 import-related truck trips	2007 export-related truck trips	2007 Total International Throughput Truck Trips	Percentage of estimated 2007 total traffic	Percentage of estimated 2007 truck traffic
I-280	481,734	384,351	866,085	2.9%	28.0%
I-78	292,241	36,444	328,686	0.7%	7.0%
I-95/NJTP (to the north)	1,005,458	253,633	1,259,091	3.1%	33.8%
I-95/NJTP (to the south)	1,025,702	398,476	1,424,178	2.2%	21.6%

Source: Moffatt & Nichol, FAF

The table below shows that in 2035, the selected near-port segment of I-95/NJTP to the north of the PONYNJ terminals has the most import-related truck trips, while the selected near-port segment of I-280 easily has the most export-related truck trips. In addition, it is estimated that international throughput-related traffic will compose large shares of truck traffic on the near-port segments of I-280, I-95/NJTP (to the north), and I-95/NJTP (to the south) to the tune of 61.3%, 50.8%, and 35.7%, respectively.

Table 7: Selected Near-Port Segments' 2035 International Port-Related Truck Trips as a Percentage of Total Traffic and Truck Traffic

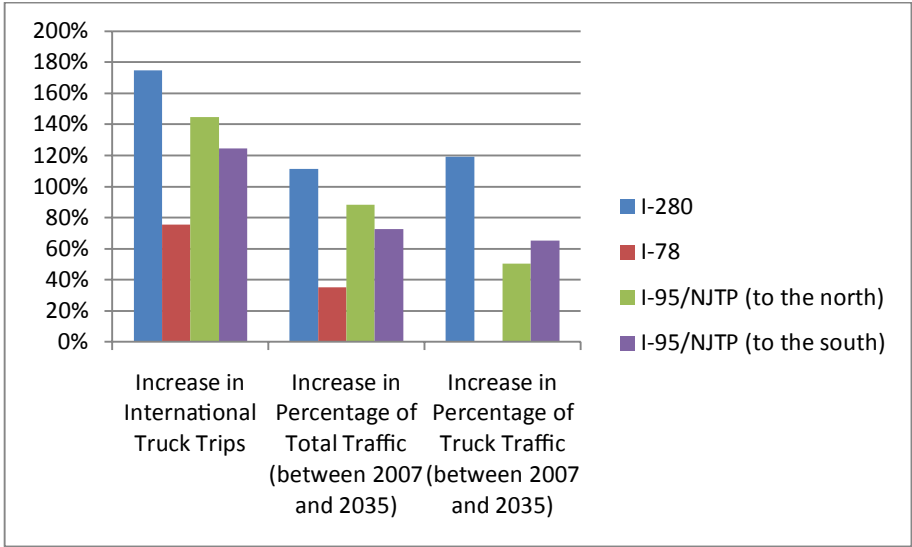
2035					
Selected Segment	2035 import-related truck trips	2035 export-related truck trips	2035 Total International Throughput Truck Trips	Percentage of estimated 2035 total traffic	Percentage of estimated 2035 truck traffic
I-280	1,088,332	1,289,144	2,377,476	6.0%	61.3%
I-78	481,522	95,905	577,428	0.9%	7.0%
I-95/NJTP (to the north)	2,400,526	682,323	3,082,849	5.8%	50.8%
I-95/NJTP (to the south)	2,286,489	907,740	3,194,229	3.7%	35.7%

Source: Moffatt & Nichol, FAF

Figure 20 analyzes data from Table 6 and Table 7, comparing the 2007 numbers to the 2035 numbers. As can be seen, among the four selected near-port highway segments, the I-280 near-port segment has the highest growth in international throughput-related truck trips (175%), while the I-78 near-port segment has the lowest growth (76%). Additionally, from 2007 to 2035, the I-280 near-port segment also has the highest increases in percentage of total traffic and percentage of truck traffic accounted for

by international throughput-related truck trips, while the I-78 selected near-port segment has the lowest increases in these categories.

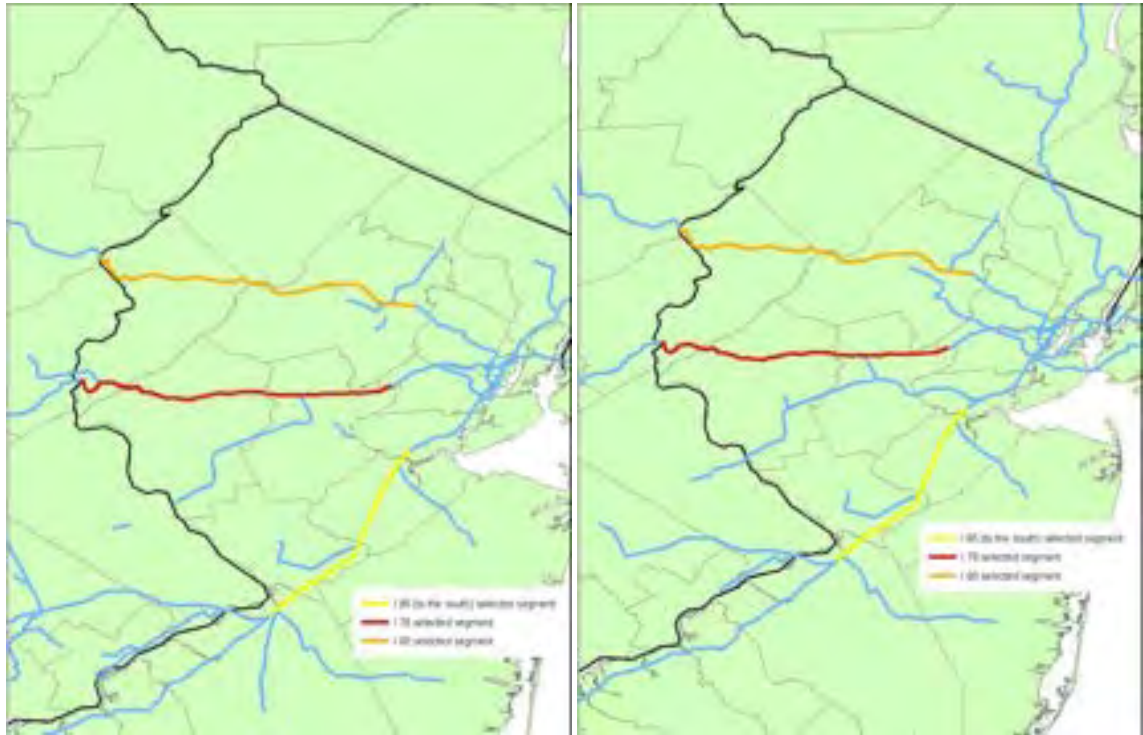
Figure 20: Selected Near-Port Segments' Changes between 2007 and 2035



Source: Moffatt & Nichol

Figure 21 shows another set of selected highway segments (I-80, I-78, and I-95/NJTP (to the south of PONYNJ)) which basically pick up where the near-port segments left off (Import segments are on the left, while Export segments are on the right). These segments will be referred to as the distant segments.

Figure 21: Selected Distant Highway Segments



Source: Moffatt & Nichol

Similar analysis was done with the segments in Figure 21 (the distant segments) as was done with the segments in Figure 19 (the near-port segments). Table 8 shows the distant [REDACTED] international port-related truck trips as a percentage of 2007 total traffic and 2007 truck traffic. As can be seen, the 2007 international port-related truck trips accounted for a larger portion of total traffic and truck traffic on the distant segments of I-80 and I-95/NJTP (to the south) than it did for the I-78 distant segment.

Table 8: Selected Distant Segments' 2007 International Port-Related Truck Trips as a Percentage of Total Traffic and Truck Traffic

2007					
Selected Segment	2007 import-related truck trips	2007 export-related truck trips	2007 Total International Throughput Truck Trips	Percentage of estimated 2007 total traffic	Percentage of estimated 2007 truck traffic
I-80	230,765	302,035	532,800	1.6%	11.8%
I-78	256,777	38,397	295,174	0.9%	8.3%
I-95/NJTP (to the south)	549,451	135,442	684,893	1.4%	11.7%

Source: Moffatt & Nichol, FAF

Table 9 shows the distant [REDACTED]-related truck trips as a percentage of 2035 total traffic and 2035 truck traffic. As can be seen, international port-related truck trips on the selected I-80 distant segment accounts for the highest percentage of total traffic among the three selected distant segments (3.9%), while it is the lowest for the I-78 distant segment (1.3%). International port-related truck trips account for about a quarter of the I-80 and I-95/NJTP (to the south) distant [REDACTED] truck traffic, while only accounting for 6% of the I-78 distant segment's 2035 truck traffic.

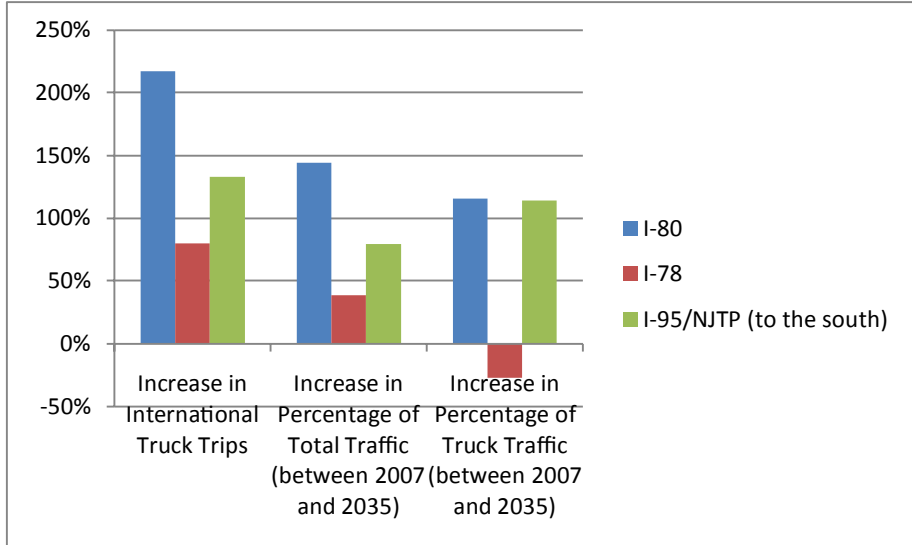
Table 9: Selected Distant Segments' 2035 International Port-Related Truck Trips as a Percentage of Total Traffic and Truck Traffic

2035					
Selected Segment	2035 import-related truck trips	2035 export-related truck trips	2035 Total International Throughput Truck Trips	Percentage of estimated 2035 total traffic	Percentage of estimated 2035 truck traffic
I-80	569,668	1,118,611	1,688,279	3.9%	25.5%
I-78	419,302	112,030	531,332	1.3%	6.0%
I-95/NJTP (to the south)	1,258,041	337,655	1,595,696	2.5%	25.0%

Source: Moffatt & Nichol, FAF

Figure 22 analyzes data from Table 8 and Table 9, comparing the 2007 numbers to the 2035 numbers. As can be seen, between 2007 and 2035, among the three selected distant segments, the I-80 distant segment has the largest increases in average international port-related truck trips, percentage of total traffic, and percentage of truck traffic, while the I-78 distant segment has the lowest increases in these three categories (and even a decrease in percentage of truck traffic).

Figure 22: Selected Distant Segments' Changes between 2007 and 2035



Source: Moffatt & Nichol

Conclusions and Recommendations

The density of international throughput-related truck trips will increase by 132% between 2007 and 2035, from roughly 5.2 million in 2007 to about 12 million in 2035, which equates to a compounded annual growth rate of 3% over this period. The structure of these traffic flows will also change by 2035; in 2007, the ratio of import-related truck trips to export-related truck trips was 2.2:1; by 2035 the ratio will be 1.8:1.

The analysis focuses on three roadways/routes: I-95/NJTP, I-78, and the route made up of I-80 and I-280. To help further focus the analysis, segments of these routes were selected. Segments of these routes near PONYNJ were selected (shown in Figure 19) and are referred to as the near-port segments: I-95/NJTP north of the port complexes of Elizabeth and New York Container Terminal, I-95/NJTP to the south of the port complexes, I-280, and I-78. Additionally, three more segments, a little further from PONYNJ, were selected and will be referred to as the distant segments: I-80, I-78, and I-95/NJTP (to the south).

In none of the four near-port segments did 2007 international throughput-related truck traffic account for a significant share of total traffic. They ranged from 3.1% in the case of I-95/NJTP (to the north), 2.9% for I-280, 2.2% for I-95/NJTP (to the south), to .7% for I-78. By 2035 shares of total traffic will increase, but remain low: I-95/NJTP (to the north) at 5.8%, I-280 at 6%, I-95/NJTP (to the south) at 3.7%, and I-78 at .9%. However, as a percentage of total truck traffic, the picture looks different. In 2007, international throughput-related truck traffic accounted for 33.8% of truck traffic on the selected near-port segment of I-95/NJTP (to the north), 28% for I-280, 21.6% for I-95/NJTP (to the south), and 7% for I-78. By 2035 international throughput-related truck traffic due to PONYNJ and POC will constitute a serious share of total truck traffic on three of the selected near-port segments: 50.8% for I-95/NJTP (to the north), 61.3% for I-280, 35.7% for I-95/NJTP (to the south), and 7% for I-78.

Among the three distant segments, international port-related truck trips do not account for a major percentage of total traffic. In 2007, international throughput-related truck traffic accounted for 1.6% of total traffic on the I-80 distant segment, while accounting for 1.4% on I-95/NJTP (to the south) and .9% on I-78. These shares do increase by 2035, but still remain relatively low: 3.9% for the I-80 distant segment, 2.5% for the I-95/NJTP (to the south) distant segment, and 1.3% for the I-78 distant segment. 2007 international port-related truck traffic accounted for 11.8% of I-80 distant [REDACTED] while being responsible for 11.7% for the I-95/NJTP (to the south) distant segment and 8.3% for the I-78 distant segment. While 2035 international port-related truck traffic will only account for 6% of I-78 distant [REDACTED]-80 and I-95/NJTP (to the south) distant segments.

In terms of comparative growth of the four near-port segments between 2007 and 2035, I-78 is the least affected. Of the other three near-port segments, I-280 experiences the most rapid growth of international throughput-related truck traffic due to PONYNJ and POC.

In terms of comparative growth between 2007 and 2035 of the three distant segments, the I-80 distant segment experiences the largest increase in international throughput-related truck traffic, as well as the

largest increases in percentages of total traffic and truck traffic accounted for by the international throughput-related truck traffic. The I-78 distant segment has the lowest increases in these three categories, including a decrease in the percentage of truck traffic accounted for by international port-related truck traffic.

International port-related truck traffic due to PONYNJ and POC clearly add truck traffic to New Jersey roads, although compared to total traffic, it is a minor share. PONYNJ is likely more of a victim rather than a major cause of highway congestion. When looking at the near-port and distant segments that were analyzed, although international throughput-related truck traffic constituted healthy portions of truck traffic -- and usually were estimated to account for a much higher percentage of truck traffic in 2035-- [REDACTED] While not being a major cause of congestion, congestion due to growth in total traffic [REDACTED] competitiveness, causing in turn a reduction of the benefits the economy of the region derives from the ports.

All performance data considered, by 2035 international port traffic on I-95/NJTP (to the north of PONYNJ) and especially on I-280 is liable to suffer delays. Because of the role it plays, I-280/I-80 in New Jersey requires that special attention be given to examine remedial capacity enhancing improvements. The time and cost it takes trucks (carrying containers) to negotiate both I-95/NJTP (to the south of PONYNJ) and I-280/I-80 between the marine terminals and IDC complexes constitute a key component in the competitiveness of PONYNJ relative to its competitor ports, namely POLA, POLB, and Norfolk. Special attention should be given to I-280/I-80 for the above reason, plus its additional role in linking PONYNJ with export producing Midwest agricultural areas.



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