

APPENDIX 2:

**STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS (SWOT) ANALYSIS
CONDUCTED FOR SPECIFIC FREIGHT-RELATED INDUSTRIES**



2 STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS (SWOT) ANALYSIS CONDUCTED FOR SPECIFIC FREIGHT-RELATED INDUSTRIES

2.1 SWOT Analysis

As part of the freight plan's economic assessment, a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis was conducted for five different industries: Automobile Distribution, Final Mile, Fuels, High Tech Manufacturing, and Warehousing. The purpose of the SWOT analysis was to better understand the strengths and weaknesses of Rhode Island's logistics and shipping industry. The analysis also identifies opportunities to improve logistics and shipping in Rhode Island and provides insight on potential threats to the supply chain that could impede the ability for businesses to ship and receive goods and services. The SWOT analysis was based on available data and interviews with key stakeholders. The findings are provided below, and the complete analysis is provided in the Appendix of this freight plan.

2.1.1 Automobile Distribution

Rhode Island's freight infrastructure and facilities currently support four different automobile distribution operations: international imports, regional domestic distribution, international exports, and final mile distribution to dealerships in Rhode Island.

- Rhode Island receives automobiles through the Port of Davisville, including Volkswagens, Audis, Porches, Bentleys, Subarus, and Hondas manufactured in Europe, Mexico, and Japan. The Port of Davisville handles approximately 11 percent of the automobiles imported into the United States. The majority of these international imports from large automobile manufacturers are distributed regionally within the United States.
- Also located at the Port of Davisville, North Atlantic Distribution (NORAD) acts as the regional distribution and processing hub for domestic automobiles. From 2011-2014, approximately 25,000 cars and trucks were brought annually to Davisville by rail from Ford and Subaru's US manufacturing facilities and then distributed by truck to dealerships within the Northeast.
- Used automobiles are exported through ProvPort. In 2014, 19,264 units were shipped on 24 vessels, largely to the West African ports of Lome, Togo; Cotonou, Benin; and Lagos, Nigeria.
- New vehicles are shipped within Rhode Island from regional distribution locations to individual dealerships. These new automobiles are transported via trucks and frequency of deliveries is dependent upon car sales.

The key Strengths or Opportunities of Rhode Island's Automobile Distribution industry are:

- National market for car sales
 - No harbor maintenance tax for Davisville and uncongested portside-landside interface
 - Opportunity to attract market share from other nearby facilities
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- Potential to reload empty returning rail wagons
- Truck Driver shortage – more long haul distribution by rail may be possible

The key Weaknesses or Threats include:

- Competing ports in the region (e.g., Baltimore)
- Rhode Island’s location does not favor exports of new vehicles
- Changes in car production dynamics, regulation/taxation abroad
- Sizes of pure car carriers (PCC) and tri-level auto racks are increasing and there may be draught issues at Davisville

The complete SWOT analysis for Automobile Distribution is provided in Table 1.

Table 1: Automobile Distribution SWOT Summary

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ▪ The automotive industry in the US accounts for approximately 3.5 percent of US gross domestic product.¹ According to Fortune.com, the US has experienced increasing annual car sales over the last five years, 16.5 million sold in 2014, versus 10.4 million in 2010. A further strength is that the average age of a car in the US is 11 years, and age and maintenance issues will eventually require people to purchase a newer vehicle. ▪ 32.4 million people are located within a four-hour drive of Providence, a significant market for car importers and dealerships selling new cars and for the export of used cars. ▪ No harbor maintenance tax for Davisville – the only major car importer port without it. This amounts to \$30 to \$40 per imported automobile. ▪ Davisville has an uncongested portside-landside interface. This lack of congestion typically results in more reliable and efficient operations. ▪ Automotive import and export operations require significant space to stage cars 	<ul style="list-style-type: none"> ▪ The import car handling and processing market is a very competitive market with ports competing for trade. Examples of competing ports with Rhode Island include Port of Boston, New York/New Jersey and Baltimore. ▪ Other competing ports are closer to larger centers of population. For example, Baltimore is the closest east coast auto import/export port to both the Midwest and population centers on the east coast. ▪ While other ports such as Baltimore, Brunswick and Charleston have benefitted from increasing US car exports, Rhode Island’s location does not favor exports of new vehicles. These ports are typically closer to the traditional centers of US car manufacturing and newer plants in the south of the country.

¹ Select USA. The Automotive Industry in the United States.

efore and after unloading/loading from a ship, and staging prior to distribution to dealerships. Unlike other car import ports across the US, Davisville has room for expansion. ProvPort also has potential to expand with the redevelopment of 9.3 acres.

- New England is recognized as a net importer of goods, which typically leads to trucks leaving New England empty. This also applies to trucks delivering cars into New England. Cars imported at Davisville help reduce the flow of empty southbound specialized car carrying trailers.

OPPORTUNITIES	THREATS
<ul style="list-style-type: none">■ While proximity to other car handling operations can be viewed as a threat, it can also be viewed as an opportunity to attract market share away from those facilities. Issues associated with port congestion, significant challenges associated with expanding port facilities, poor labor relations, all affect factors such as cost, performance, productivity, reliability and flexibility that automotive logistic managers consider when locating their operations.■ The use of larger vessels, but fewer sailing frequencies is likely to put pressure on existing ports' capabilities to stage and store vehicles. Ports such as Davisville, with room to expand, may capture importers who are capacity-constrained and need to relocate.■ The truck driver shortage is expected to result in some longer distance cargoes, which could include automobiles, being transferred to rail, and facilities such as Davisville being increasingly used for domestic distribution.	<ul style="list-style-type: none">■ The most significant threat, but also an opportunity, is that the automotive sector is changing where it produces automobiles. This affects distribution channels. Automotive production is now undertaken on a global basis by the main automotive companies. Companies decide where car plants are located based on many factors, including access to domestic and regional consumers, exploiting trade agreements such as NAFTA, and accessing low-cost, but quality manufacturing labor markets. This change to global production has seen car manufacturing centers move away from traditional locations in North America and Europe to countries such as Mexico. In North America, Mexico produces about one in five cars; this is expected to grow to one in four by 2020.² Furthermore, new car plants and additional production capacity in states such as Alabama, Tennessee, South Carolina and Georgia, for car manufacturers such as Mercedes Benz and BMW, have reduced imports to the US from European facilities. US-produced cars for

² Detroit Free Press, June 15th 2015.

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- Mexico car production is increasing and may be an opportunity, depending on how cars are exported from the country (i.e., by rail or marine vessel). It currently represents 25% of Davisville's volume and is growing.
 - Railcars bringing automobiles into Davisville typically return empty to either an intermediary point or back to the Midwest production centers. One opportunity is to explore how these empty rail cars can be loaded with imported cars to improve the efficiency of the rail network and reduce truck movements.
- domestic consumers are more likely to be transported by rail and truck to dealerships.
- Production facilities in Mexico typically serve US distribution operations directly with rail. This is not always the case, however, as shown with VW's use of a round-trip-shipping service that maximizes use of vessels by loading cars in Europe and offloading at ports along the US east coast. The ship then loads Mexican-produced cars for offloading at east coast ports on the return journey back to Europe.
 - While some Mexican car production export car operations use east coast ports such as Veracruz, other centers of production, such as Nissan's production site at Aguascalientes, are closer to the Mexican west coast. This is also likely to result in more use of rail transport for cars destined for the US, rather than the use of short sea shipping. Larger vessels and reduced sailing frequencies could see increased port congestion and capacity issues at ports in Mexico and reduce exports by short sea shipping.
 - Automotive ports are vulnerable to storms and especially flooding. In 2012, Super Storm Sandy damaged 16,000 cars at Newark, largely due to flooding. The proximity of car-staging facilities close to areas that are vulnerable to flooding and storm surges is likely to be an increasing concern over the long-term with future sea level rises.
 - Rhode Island is in close proximity to other car-handling facilities. There are other existing rail-served car terminals throughout New England, including the New England Automotive Gateway located in East Brookfield/Spencer, MA (which has a capacity to process 200,00 vehicles per annum) ³ and the import/export operations focused at the Newark terminals of the Port of New York and New Jersey which, in 2014,

³ Central Massachusetts Regional Planning Commission.

handled 392,749 units.⁴

- Nigeria is one of the largest importers of used vehicles from the US⁵ However, a number of vehicle manufacturers are establishing car assembly plants in Africa, which could reduce the demand for imported vehicles, including those passing through ProvPort. Additionally, an increase associated with import taxes on cars by West African countries could affect demand. Nigeria recently increased import duty from 35 percent to 70 percent for previously owned vehicles.
- The size of pure car carriers (PCC) and pure car truck carriers (PCTC) is increasing. Post Panamax ships, with a carrying capacity of 8,500 car equivalent units (CEU) are being introduced. These vessels have a draft of nearly 34 feet, which if fully loaded would prevent such vessels from serving Davisville. The size of PCCs and PCTCs vessels operating into Davisville and ProvPort are typically in the 6,000 to 7,000 CEU range.

2.1.2 Final Mile

The term “Final Mile” is often used to describe the final phase of the movement of freight to a receiver or consumer. Examples of final mile deliveries include:

- A home delivery package from Amazon for example, to a Rhode Island resident
- Medical supplies and consumables to a hospital
- Food and alcohol to a restaurant
- Retail goods to a shop
- Components to a manufacturer
- Cash to a bank
- Heating oil to a home

The final mile is a critical part of the overall supply chain as it is where title and ownership of goods typically changes hands from the shipper to the receiver. Other

⁴ Automotive Logistics Magazine.

⁵ Department of Commerce, US Commercial Service, Global Automotive Team, Quarterly Newsletter Spring 2015.

dynamics also influence the final mile delivery including delivery timing (which could be imposed by the shipper or receiver or decided by the freight company), size of delivery truck and special handling requirements such as product temperature control and hazardous materials. Many deliveries to consumers are undertaken on a multi-drop basis, where the delivery vehicle makes between 20 and 50 deliveries a day. For some package delivery companies, this is much higher. The Council of Supply Chain Management Professionals estimates that as much as 28 percent of all transportation costs occur in the last mile.

The key Strengths or Opportunities of Rhode Island's Final Mile Distribution industry are:

- Proximity to Boston/NY and major port-of-call for fuels
- Good highway network
- Access to wide range of freight transportation modes
- Opportunity to increase alternative fuel delivery vehicles
- Alternative Delivery solutions (e.g., lock boxes, consolidation)

The key Weaknesses or Threats include:

- Loading capacity in some locations (e.g., Newport)
- Access constraints for larger vehicles and bridge weight
- Existing and future congestion
- Limited warehousing space in Rhode Island

The complete SWOT analysis for Final Mile Distribution is provided in Table 2.



Table 2: Final Mile Distribution SWOT Summary

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ▪ Rhode Island’s proximity to suppliers and shippers in the metropolitan areas of New York and Boston. This includes food wholesale markets such as the New England Produce Center (Chelsea, MA) and New York’s Produce, Meat and Fish markets (Hunts Point, NY). ▪ Access to good highway networks. 	<ul style="list-style-type: none"> ▪ On-street loading capacity at certain locations such as Bristol, Newport, Providence, Wakefield, Warren. ▪ Access and geometry constraints for larger vehicles in areas such as Providence.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ▪ Off-hour deliveries. Pilot trials have found that delivery productivity and fuel efficiency increase when undertaking off hour deliveries. It can also reduce congestion by removing trucks from peak travelling times. ▪ Increasing the number of alternative fuelled vehicles to improve air quality and reduce greenhouse gas emissions. Final mile deliveries tend to be short in length. Many urban delivery trucks travel less than 100 miles per day, which are within the operating ranges of small electric trucks. Trucks always returning to a home base at the end of the working day could utilize Liquid Natural Gas (LNG) or Compressed Natural Gas (CNG) fuels, as the fueling requirements often mean that LNG or CNG fuelling facilities are not always readily available and at convenient locations. ▪ Manage short-term, on-street truck parking outside local businesses, improving deliveries and reducing impact of stopped delivery vehicles on other road users. ▪ Identify optimal local commercial and truck routes for access to local business and truck generators including warehouses, distribution centers, intermodal facilities, manufacturing facilities, and landfill/resource recovery locations. ▪ Improve roadway geometry when identifying local commercial routes or when trying to optimize them for truck traffic, as it is important to recognize that trucks require different roadway geometry than passenger vehicles. Consider 	<ul style="list-style-type: none"> ▪ Constrained truck driver supply can also impact final mile deliveries, though the impact in this particular segment of the trucking industry is expected to be less than longer distance trucking, due to two main characteristics: 1). Lifestyle – The majority of final mile delivery drivers will return home at the end of the day, unlike longer distance truck drivers; 2). Commercial driver’s license (CDL) – Only trucks above a gross vehicle weight rating of 26,001 pounds require a driver to have a CDL. A significant proportion of final mile delivery trucks operate under this weight limit and so access to a wider driver market is possible.

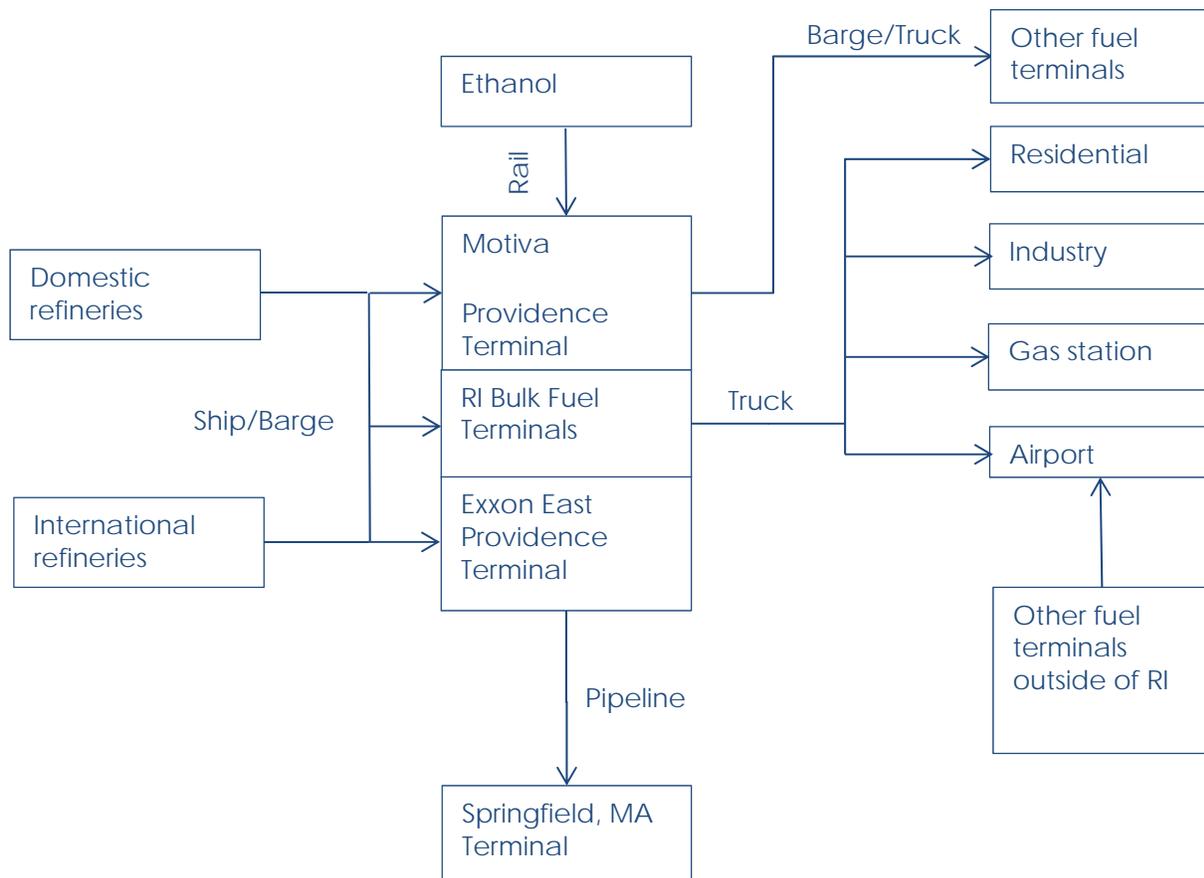
characteristics to improve roadway geometry including pavement quality, roadway and shoulder widths, turning radii, signage, advanced access management, dedicated left- and right-turning lanes and traffic signal timings.

2.1.3 Petroleum/Fuel

Rhode Island plays a prominent role in the distribution of refined petroleum and fuel products to residents and consumers in New England. Fuel products include gasoline, fuel oil, diesel and propane, also known as Liquid Petroleum Gas (LPG).

Rhode Island’s fuel supply chain relies on water transportation to bring refined petroleum products into the region from refineries located in New Jersey and Pennsylvania, but also from Canada and further afield, namely Great Britain and the Netherlands. In 2013, terminals in the Port of Providence received 36 percent of petroleum products by US domestic shipment, 29 percent from Canada and 35 percent from other foreign ports. As shown in Figure 2, the fuel and petroleum is then distributed by rail or truck within the state or region. Rhode Island’s petroleum/fuel distribution is multi-modal and relies heavily on marine access at the Port of Providence, as shown below.

Figure 2: Rhode Island Petroleum/Fuel Distribution Flow Chart



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Trucks are used to distribute product from the bulk fuel terminals to end users who are typically located within a 75-mile radius of the various fuel terminals. Rail is also used for the transportation of other petroleum related products, including ethanol and LPG. Ethanol is a biofuel and is typically blended with gasoline to produce E10, a blend of 90 percent gasoline and 10 percent ethanol. The blending process often occurs when fuel is loaded to the delivery tanker at the fuel terminal. The majority of the US-produced ethanol originates from the agricultural Midwest. Unlike other parts of the US, Rhode Island is not experiencing a surge in rail transport associated with domestic oil transportation. This rail movement is focused on moving crude oil from domestic production sites such as the Bakken Formation in North Dakota to oil refineries across the US and Canada. This increase in rail traffic is largely due to domestic crude oil sources either not being connected to a crude oil pipeline network or suffering a lack of pipeline capacity.

In 2013, Rhode Island terminals had a 40 percent market share of the distillate fuel oil imported through facilities in the Port of Boston, New Bedford, Fall River, Providence, New London, and the Thames River. This excludes the Tiverton terminal, as this location is included in Fall River for US Army Corps of Engineers cargo reporting purposes. Rhode Island terminals also handled 31.5 percent of gasoline and 21 percent of residual fuel oil, a classification describing heavier fuel oils used for ship fuel, production of electric power and other industrial purposes.

The key Strengths or Opportunities of Rhode Island's Petroleum/Fuels industry are:

- Multi modal fuel terminals – recent reinvestment
- 32.4 million people within a four-hour drive
- Home heating oil
- Transportation-related consumption

The key Weaknesses or Threats include:

- Queuing and wait times at terminals
- Hazmat restrictions at Providence rail station
- Home heating alternatives becoming increasingly available
- Lower transportation fuel demand in future
- Weather impacts on fuel supply chain

The complete SWOT analysis for the Petroleum/Fuels industry is provided in Table 3.

Table 3: Petroleum/Fuel SWOT Summary

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ■ Six water served fuel terminals are located in Rhode Island: <ul style="list-style-type: none"> ○ Sprague Operating Resources LLC - Providence ○ NE Petroleum Terminal LLC ○ Capitol Terminal Company ○ Motiva Enterprises LLC ○ ExxonMobil Oil Corp. ○ Inland Fuel Terminal, Inc. ■ Heating fuel oil remains a key fuel source for home heating. In 2013, 32.6 percent of households in Rhode Island, 31 percent in Massachusetts and 43.7 percent in Connecticut used fuel oil for home heating. In New England, 60 percent of home energy consumption is related to space heating, versus the US average of 41 percent. ■ Significant volumes of petroleum product are consumed in the transportation sector and this is expected to continue in the short- to mid-long-term. In 2013, energy expenditure associated with the transportation sector in Rhode Island amounted to \$1,685 million, 0.2 percent of the US share. ■ Proximity to T.F. Green Airport, which consumes 27.5 million gallons of fuel per annum. For reasons of fuel resiliency, 25 percent of fuel is sourced from Connecticut and Massachusetts. ■ Rhode Island’s location means it can source fuel from Canada, US domestic sources, and further afield such as Europe. ■ Of the 12 major power generating plants in Rhode Island, six of them have a dual fuel capability utilizing fuel oil. ■ Motiva’s terminal also exports ethanol from Rhode Island using barge services. ■ Rhode Island hosts one of the two New England LPG import terminals. The other is located in Newington, New Hampshire. A propane-served rail facility also opened recently in Davisville to receive domestic shipments of LPG. ■ Newport Biodiesel is a company that collects waste vegetable oil from Rhode Island’s restaurants’ oil and converts it into biodiesel for use in diesel engines and 	<ul style="list-style-type: none"> ■ Queuing and wait times at Rhode Island fuel terminals have been cited by industry as an issue. ■ Restrictions associated with Hazmat materials passing through the Providence train station create additional operational complexity for moving these materials to destinations south of the train station. This includes the rail-served Motiva ethanol terminal at the Port of Providence and the propane facility at Davisville.

home heating furnaces. It is one of 101 biodiesel producers in the US

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ■ Reducing truck queuing time at terminals and improving terminal access could improve driver schedules and vehicle productivity. At times of high demand, terminals could operate a slot system, giving drivers more certainty over arrival and departure times and reducing queues on surrounding streets and neighborhoods. ■ Increasing demand in the use of biofuels. The Rhode Island Biodiesel Heating Oil Act of 2013 requires No2. distillate sold in the state to contain five percent of a bio-based product by 2017. While this may just substitute fossil fuel volume for a biomass volume, it does provide opportunities for companies that have invested in biofuel transport infrastructure, such as Motiva. ■ In March 2015, the Defense Logistics Agency (DLA) posted a notice to seek interest from businesses capable of storing and distributing the North East Home Heating Oil Reserve (NEHHOR). The NEHHOR was established by the Department of Energy (DOE) in 2000 to provide an emergency stock of heating oil in the event of a winter supply shortage. The DLA is seeking responses for three areas: New York Harbor (250,000 barrels), Boston (500,000 barrels), and coastal Connecticut and Rhode Island, including Providence, New London/Groton, New Haven and Bridgeport (250,000 barrels). Currently no fuel terminals in Rhode Island are part of the NEHHOR, and the DLA notice presents a potential business opportunity for Rhode Island terminals. It is also an opportunity for the state to improve its resiliency by easing access to fuel stocks during a 	<ul style="list-style-type: none"> ■ Demand for residential heating fuel oil is declining as people transition to natural gas and other forms of fuel for home heating, as well as more fuel efficient systems. US Energy Information Administration (EIA) Annual Energy Outlook 2015 identifies fuel distillate consumption declining by 2.7 percent per year (nationally). Between 2002 and 2012, Rhode Island experienced a 22 percent drop in the demand for home heating oil from 129.2 million gallons to 101.2 million gallons.⁷ Sales of kerosene have also declined significantly. In 2008, 630 thousand gallons were sold in Rhode Island, but in 2013, this had reduced to 274 thousand gallons. ■ Movement of fuel by water can be affected by weather; for example, icing of the Narragansett Bay and storms or hurricanes can close or damage port facilities affecting fuel stocks and pricing. Icing of marine highways during significant cold snaps also coincides with high demands for heating products. ■ Reducing travel demand, resulting in lower vehicles miles travelled, will impact fuel consumption within the transportation sector. Improved fuel efficiency of motor vehicles will also reduce fuel consumption. ■ Greater awareness of fossil fuel impacts upon the environment and government policies to reduce greenhouse gas emissions are influencing consumers in selecting “greener” products (e.g., low emission and zero emission vehicles). This factor may also impact fuel consumption by trucking fleets through the uptake of compressed and liquid natural gas fuels. ■ Competition from other ports outside of Rhode Island can influence where fuel is

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- supply disruption.
- The NEHHOR⁶ was established with a two million barrel stockholding to provide a 10-day supply, because ten days was identified as the necessary time to bring additional fuel from Gulf coast ports to the Northeast. Fuel supplies would be held in commercial facilities and DOE would establish contracts with storage suppliers. In 2011, two contracts were awarded to terminals in Groton, Connecticut and Revere, Massachusetts. In 2012, the fuel reserve was reduced to one million barrels and currently stocks are stored at two terminals, 500,000 barrels at Groton and 500,000 barrels at Revere. Releases from the NEHHOR were authorized following Super Storm Sandy and severe winter conditions during November 2012.
- Other fuel terminals outside of Rhode Island constitute the Northeast Gasoline Supply Reserve, which holds one million barrels of gasoline distributed across terminals in the New York harbor area, Boston and South Portland, Maine. This is the first federal regional refined product reserve and was established in 2014, largely as a result of the fuel supply issues following Super Storm Sandy. Contracts for the purchase and storage of fuel were placed in the summer of 2014.
- landed. Boston, Groton and New Bedford can access some of Rhode Island's fuel market.
- Lack of hazmat-trained drivers could increase transportation costs.
- Truck access to the western terminals in Providence Harbor to I-95 south means trucks have to traverse local streets. Community concerns and any resulting restrictions on truck movements could influence the cost-competitiveness of these terminals.

⁷ Congressional Research Service, "The Northeast Heating Oil Supply, Demand, and Factors Affecting its Use." <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/R43511.pdf>.

⁶ According to the US Department of Energy, this reserve gives Northeast consumers supplemental fuel supplies for approximately 10 days, the time required for ships to carry additional heating oil from the Gulf of Mexico to New York Harbor. During 2011, the Northeast Home Heating Oil Reserve (NEHHOR) was converted to a one million barrel Reserve and the fuel stored was changed from No. 2 heating oil to cleaner burning ultra-low sulfur distillate (ULSD).

2.1.4 High Technology Industry

A number of definitions exist to describe high technology manufacturing. For the purposes of this analysis, the plan used the industries identified by the Bureau of Labor Statistics (BLS) in 1999, which are based on SIC codes and were updated to reflect the NAICs codes in 2003. The BLS definition: *"An industry is considered high tech if employment in technology-oriented occupations accounted for a proportion of that industry's total employment that was at least twice the 4.9-percent average for all industries."* According to an analysis of the Commerce Rhode Island's Manufacturers' database, there are approximately 199 companies within Rhode Island that can be classified as High Tech Manufacturers.

High technology manufacturing relies upon freight transportation to support the inbound flow of raw materials and components that are processed to form manufactured articles and the outbound movement of those articles to customers worldwide.

Characteristics associated with inbound flows include:

- Chemicals arriving in bulk form are likely to be transported by road and rail from domestic sources. Some chemicals such as Sodium Hydroxide arrive by ship from foreign sources and are processed through the Port of Providence.
- Small, high value components tend to be shipped using packaged services such as FedEx and UPS.
- Trucking is the mode that will be used to deliver the majority of inbound products to Rhode Island's manufacturing facilities.

Outbound freight transportation attributes include:

- The movement of consignments to international destinations will typically be in intermodal containers and use the ports of Boston and New York/New Jersey.
- The movement of consignments to domestic destinations will use trucking services, including less than full truck load and full truck load services.
- Small, high value shipments will often travel using package services and FedEx and UPS services from T.F. Green and Boston Logan for both international and domestic locations.

The key Strength or Opportunities of Rhode Island's High Technology industry are:

- Access to a wide range of freight transportation modes
- Proximity to Boston, NY/NJ for exports and imports
- Northeast inbound is greater than outbound freight
 - Very cost competitive outbound transport market
 - High inbound trucking cost
 - Driver shortage, which increases costs and may impact reliability of trucking services
- Re-shoring could bring additional manufacturing operations to Rhode Island

The key Weaknesses or Threats include:

- Many high tech companies are legacy based in Rhode Island. Increased fuel and transportation costs could influence where those companies undertake their manufacturing operations.

The complete SWOT analysis for the High Technology industry is provided in Table 4.

Table 4: High Technology Industry SWOT Summary

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ▪ Rhode Island’s high technology manufacturers have access to a wide range of global and domestic freight transportation modes including trucking, rail, maritime and air cargo services. ▪ Proximity to the ports and airports of Boston and New York/New Jersey for those manufacturers who export and import raw materials and components and export finished products. ▪ Feedback from the trucking industry suggests that the imbalance of freight moving into New England versus outbound freight results in a very cost competitive outbound transport market. Rhode Island manufacturers can take advantage of this situation. 	<ul style="list-style-type: none"> ▪ The imbalance of trade flows into the region results in high inbound trucking costs.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ▪ The reshoring of certain manufacturing activities could bring additional manufacturing operations to Rhode Island. 	<ul style="list-style-type: none"> ▪ Feedback from some manufacturers identified that their presence in Rhode Island is legacy related and not based upon proximity to suppliers or customers. Increased fuel and transportation costs could influence where those companies undertake their manufacturing operations. ▪ A constrained truck driver supply is also likely to increase transport costs and the imbalance of freight flows associated with Rhode Island and the wider New England freight market. This could impact not only transport costs, but the reliability of freight services.

2.1.5 Warehousing/Distribution

Warehousing and distribution facilities essentially provide two functions: the safe and secure receipt and storage of goods, and a ready inventory to dispatch goods and fulfill customer orders. There are significant warehousing and distribution operations in Rhode Island, including Ocean State Job Lot, CVS, Dean Warehousing, Mancini Liquor and Greencore. Key factors affecting business decisions about warehousing operations include facility location, cost, size and interior configuration.

Facility location is influenced by a variety of factors, including access to a plentiful supply of labor, access and proximity to customers and suppliers, utilities (e.g., high pressure gas line), energy costs, and the local business and regulatory environment. The supply and suitability of existing warehouse facilities at market prices to accommodate a company's storage and processing requirements will influence whether a company leases or acquires space. If supply is not adequate, the availability of suitable land and the cost of new construction will also influence locational decisions.

Facility size is typically determined by the amount of goods a warehouse is expected to store and the dimensions necessary to accommodate related processes such as the picking, packing and dispatching of products. Further requirements include adjacent hardtop for truck and trailer deliveries, as well as employee parking. Big box warehouses (a term often used to describe warehouses over one million square feet), are typically used within the consumer goods/retail and food and beverage sectors, to support regional and national distribution functions for these companies. The majority of warehouses are much smaller than that, however. Feedback from Rhode Island-based commercial real estate companies, including representatives of Hayes & Sherry and CBRE-New England, suggests that most companies looking for warehousing space in the Rhode Island or southeastern New England market are seeking smaller buildings, in the 80,000 -100,000 square foot range or smaller.

Warehouse interior characteristics also influence choice and suitability of a facility to meet a company's needs. These include:

- **Internal height.** Warehouses need to be high enough to accommodate racking that allows for the vertical storage of goods on pallets. Other more advanced processes including automation and conveyer systems, and order fulfillment may require mezzanine floors resulting in a need for higher warehouses. Typically the interior height needs to be 20-30 feet.
- **Space between internal supporting columns.** Greater distance between columns allows the space to be used flexibly and makes for more efficient warehouse layouts and the ability to accommodate materials handling equipment, such as automation.
- **Number of loading docks.** Having more than one loading dock allows goods to be simultaneously received and dispatched. Warehouses dispatching high volumes of goods will often need multiple docks.

The key Strengths or Opportunities of Rhode Island's Warehousing/Distribution industry are:

- Proximity to larger consumer market, good transportation access
- Land availability, pre-permitting at Quonset Business Park
- Opportunity to initiate statewide e-permitting initiative
- Identify/preserve land for future industrial and warehousing growth

The key Weaknesses or Threats include:

- Lack of warehouse supply
 - Real or perceived time delays in permitting
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- High construction costs
- Differences between states (e.g., regulations, taxes, incentives)
- Other locations offer similar access to metro areas

The complete SWOT analysis for the Warehousing/Distribution industry is provided in Table 5.

Table 5: Warehousing/Distribution SWOT Summary

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ▪ Proximity to large consumer market. This is the greatest strength associated with the warehousing and distribution sector in Rhode Island. Companies looking to service both the Boston and New York metropolitan areas, and the populous regions of New England with short order lead times from one location, are ideally served by being located in Rhode Island. An estimated 32.4 million people are located within a four-hour drive of Providence. Proximity to population and these metropolitan areas was a factor identified by Greencore, which recently opened a 107,000 square foot food processing facility in Quonset. ▪ Access to I-95, I-195, I-295 and State Route 146. A strong interstate system, combined with good regional connections, is an important consideration for warehousing and distribution businesses. Interstate 95 provides access to the Boston metropolitan area, CT and NY. I-195 provides access to southeastern MA, and State Route 146 to Worcester, Massachusetts and western Massachusetts. ▪ Proximity to multi-modal infrastructure. Stakeholder outreach with the freight community identified proximity to Boston and New York ports and freight railroads as an advantage. T.F Green Airport is also viewed as an accessible amenity for both freight and passenger traffic. ▪ Land availability and pre-permitting at Quonset Business Park. The business park managed by the Quonset Development Corporation has available capacity and “Pad Ready Building sites” to support growth. The use of Uniform Development Regulations by the Town of North 	<ul style="list-style-type: none"> ▪ Lack of supply. There is a limited supply of existing large warehouses within Rhode Island. Feedback from local commercial brokers indicates facility size and configuration are more important than location within the regional market. Brokers cited examples of existing Rhode Island companies looking to expand locally, but ultimately moving into adjacent states when warehousing specifications could not be met in the state. ▪ Age and quality of industrial space within Rhode Island. Older buildings tend to have lower internal heights and are space constrained by structural columns. Available warehousing stock often does not match the needs of prospective tenants. ▪ Lack of expansion capability. Many warehouse sites have no planned expansion capability and so companies looking to grow, or consolidate multiple smaller sites into one location, are forced to move elsewhere. ▪ Construction costs to build are high (Rhode Island construction costs are similar to Boston market). ▪ Real or perceived time delays in permitting. Although the Town of North Kingstown has Uniform Development regulations and streamlined approval and permitting processes, these mechanisms are not in widespread use across the state.

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STATE OF RHODE ISLAND FREIGHT AND GOODS MOVEMENT PLAN

Kingstown has streamlined the approval and permitting process and allows construction to commence within 90 days of site control.

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ■ Incentivizing companies that are seeking expansion opportunities of existing warehouse space, through improved regulatory and tax credits, to remain in Rhode Island rather than relocating out of the state. ■ The piloting of a Rhode Island statewide e-permitting initiative to modernize the permitting process and expedite property transactions can ease the regulatory process associated with warehouse development. ■ Identification and preservation of land for future industrial and/or warehousing growth, and encouraging greater use of Uniform Development regulations by communities strategically positioned and interested in industrial growth. ■ Rhode Island already has a Foreign Trade Zone (FTZ#105 – designated in 1984, but modified in 2008), though this is not currently utilized. It includes three areas: 32 acres at ProvPort, 43 acres at the Airport Business Park near T.F. Green Airport, and Quonset Business Park. An outreach program to Rhode Island’s businesses to provide company-specific advice associated with using FTZ’s, could be specifically targeted at Rhode Island’s importers and warehouses. ■ Include criteria within the yet-to-be-defined Rebuild Rhode Island Tax Credit (which provides capital to qualified real estate projects that demonstrate a finance gap), for the modernization and reconfiguration of Rhode Island’s older facilities to better serve the modern-day needs of users of industrial and warehousing facilities. 	<ul style="list-style-type: none"> ■ Stakeholder outreach identified a number of companies that were originally based in Rhode Island, but outgrew their current facilities and moved to Fall River, where more suitable and up-to-date warehouse accommodation was available. ■ Differences in state regulations, taxation and schemes associated with attracting new businesses also influence where warehouses get developed. For example, the Massachusetts Economic Assistance Coordinating Council approved \$2.89 million in local tax breaks and granted \$600,000 in state tax credits to Amazon associated with the development of a new warehouse in Fall River. ■ Other areas in close proximity to Rhode Island also offer the same locational advantages with access to the interstate system and proximity to the Boston and New York metropolitan areas; for example, the I-91 corridor between New Haven and Hartford in Connecticut. ■ Real or perceived higher costs of doing business. Although utility costs are high throughout New England, many stakeholders felt the cost of utilities was higher in Rhode Island than in adjacent markets. ■ Any increase in congestion on I-95 and other access routes to key metropolitan areas affects truck journey time, cost and on-time reliability. This congestion effect “shrinks” the market that can be cost-effectively served by Rhode Island’s distribution centers and warehouses.