

PERFORMANCE MEASURES AND TARGET SETTING

Long-Range Transportation Plan

State of Rhode Island



**MOVING
FORWARD** **RI**
2040

PREPARED FOR

Statewide Planning Program
Division of Planning
Rhode Island Department of Administration

May 2020



Table of Contents

Performance Measures and Target Setting	1
Introduction.....	1
Establishing Performance Measures.....	2
Performance Measures.....	2
Target Setting	3
Proposed Performance Measures and Targets.....	4

Performance Measures and Target Setting

Adopting performance measures and setting targets are important steps in the long-range planning process. This document presents the methodology for selecting performance measures which will be used to evaluate the progress of the Long Range Transportation Plan and the process for setting measurable targets for each performance measure for the years 2025, 2030 and 2040.

Introduction

Performance measurement is a key aspect of performance-based planning and programming, or PBPP. The Federal Highway Administration defines PBPP as "...the application of performance management principles within the planning and programming processes of transportation agencies to achieve desired performance outcomes for the multimodal transportation system."¹ Federal law requires that long range transportation plans be developed through a performance-driven, outcome-based approach to planning.

Performance measures (PMs) are closely related to the adopted goals and objectives for this Long Range Transportation Plan (LRTP), as they are used to assess progress toward meeting objectives and in turn LRTP goals. PMs are key to how performance of the LRTP is defined and measured, and they inform the type of projects and strategies that will be proposed and implemented.

Some performance measures are required to be collected on a routine basis by the Federal Highway and Federal Transit Administrations (FHWA and FTA). Other PMs were selected relative to the agreed goals developed for the plan.

Performance measures are part of the Planning Framework for the LRTP. The Planning Framework sets out the overall vision for the LRTP. It includes goals, objectives, strategies and performance measures. Ultimately, performance measures are intended to advance objectives, goals and strategies within the Planning Framework.

¹ U.S. Department of Transportation. (2013). Performance-Based Planning and Programming Guidebook. U.S. Federal Highway Administration. URL: https://www.fhwa.dot.gov/planning/performance_based_planning/pbpp_guidebook/pbppguidebook.pdf.

Establishing Performance Measures

Goals for the LRTP were developed in consultation with project stakeholders, including the Rhode Island Department of Transportation (RIDOT), Rhode Island Public Transit Authority (RIPTA), Rhode Island Department of Health, other state agencies and members of the public. The adopted goals aim to attain a future that *envisions a multimodal transportation network that connects people, places and goods in a safe and resilient manner by providing effective and affordable transportation choices that are supportive of healthy communities, provide access to jobs and commercial centers, and promote a sustainable and competitive Rhode Island economy.*

This plan has the following goals:

- › Connect People and Places,
- › Maintain Transportation Infrastructure,
- › Strengthen Communities,
- › Promote Environmental Sustainability, and
- › Support Economic Growth.

Stakeholder outreach efforts helped provide greater substance for these goals by way of a series of objectives for each goal and strategies intended to meet each objective.

Performance Measures

Performance measures serve as the report card to determine whether or not the LRTP is meeting its goals and is therefore on track to achieve its vision. Performance measures included:

- › Measures required by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) to gauge progress toward national goals and targets;
- › Measures recommended by the Rhode Island Division of Statewide Planning as priority measures for determining progress toward agreed-upon vision, goals and objectives for the LRTP; and
- › Measures which will be tracked to help the state keep tabs on trends. Key reasons why a measure would be tracked versus targeted are that it may be indirectly linked to transportation (e.g. a public health outcome) or there may be insufficient or irregular data that may make it difficult to replicate tracking year-over-year.

PERFORMANCE-BASED PLANNING AND PROGRAMMING (PBPP)

Performance measures are central to implementing a performance-based planning process, since how performance is defined and measured will significantly affect the types of projects and strategies that are advanced.

PMs serve five critical purposes for PBPP:

- > Clarify the definition of goals
- > Monitor or track performance over time
- > References for target setting
- > Basis for supporting policy and investment decisions by comparing alternative options
- > To assess the effectiveness of projects and strategies.

An effort was made to choose performance measures also being recorded by partner agencies. This ensures consistency in reported values and methodologies and allows measures to be easily replicated in the future. Performance measures were reviewed by key stakeholders such as the Rhode Island Department of Transportation (RIDOT), Rhode Island Public Transit Authority (RIPTA) and Rhode Island Department of Health (RIDOH) in one-on-one meetings and during monthly staff meetings.

Target Setting

Targets that do not originate from existing plans and policies were set independently. Targets are based on what are considered reasonable and attainable outcomes. Some PMs are tracked, rather than having a defined target. This, again, is because a PM may be only indirectly linked to transportation or there may be inadequate data that could make it difficult to keep tabs on a PM regularly. Instead, the “target” is a directional trend. Tracked PMs may become targeted in the future as better data becomes available or if policy priorities change.

Proposed Performance Measures and Targets

This section includes a description of each performance measure in the performance measure tracking matrix, the baseline value for each measure, targets for 2025, 2030 and 2040, and the methodology for establishing the baseline and targets.

Twenty-four PMs have been defined as part of this LRTP; however, seven of these are multiple-part PMs. In total, forty-eight discrete measures are being targeted or tracked. Twenty-nine PMs are federally-mandated; seven are recommended targets; and twelve are recommended for tracking. Note: some federally-mandated PMs are required only for non-attainment/maintenance jurisdictions. Rhode Island is currently in attainment. A detailed matrix of all performance measures is appended to this report.

1. Percent of Non-Single-Occupancy Vehicle Travel

This measure is linked to the objective of reducing travel congestion under the *Connect People and Places* goal in the Planning Framework. However, it is relevant to all the LRTP goal areas, including *Maintain Transportation Infrastructure, Strengthen Communities, Promote Environmental Sustainability* and *Support Economic Growth*.

This PM tracks the share of the commute-to-work trips made using a mode other than drive alone. It represents a collection of different transportation modes, including carpooling, public transportation, bicycling, walking, and ride sharing/taxi. This PM also includes working from home (not taking part in the work commute).

PM Type: Federally-required for non-attainment and maintenance jurisdictions

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline	Not Applicable
----------	----------------

Methodology: RIDOT does not track this measure because Rhode Island is currently in attainment for air quality. If this status changes to non-attainment or maintenance, the requirement to collect this data would change.

2.A. Percent of the Person-Miles Traveled on the Interstate that are Reliable

This measure is linked to the objective of reducing travel congestion under the *Connect People and Places* goal. Travel time reliability is a measure of unexpected delay. FHWA defines travel time reliability as: “the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day.” This measure is important because it allows travelers to make better use of their time, and because greater reliability in travel times generates more user satisfaction than when travel times are unpredictable.

PM Type: Federally-required

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline (2017)	78.2 Percent
------------------------	---------------------

Baseline Methodology: Baseline values are from RIDOT MAP-21 Performance Measure tracking. The methodology is consistent with federal guidelines.

Target Setting Methodology: Targets originate from RIDOT’s FHWA performance measure tracking. Targets were set for 2019 and 2021. The 2021 target is 71.6 percent reliability. This value was held through 2040.

	2025	2030	2040
Target	71.6	71.6	71.6

2.B. Percent of the Person-Miles Traveled on the Non-Interstate NHS that are Reliable

This measure is linked to the objective of reducing travel congestion under the *Connect People and Places* goal. Similar to PM 2.A, this tracks reliability for non-interstate highways that are part of the National Highway System. The National Highway System is comprised of strategic highways that serve major airports, freight terminals, railway stations, pipeline terminals and other strategic transportation facilities.

PM Type: Federally-required

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline (2019)	77.6 Percent
------------------------	---------------------

Baseline Methodology: Baseline values are from RIDOT MAP-21 Performance Measure tracking. The methodology is consistent with federal guidelines.

Target Setting Methodology: Targets originate from RIDOT’s FHWA performance measure tracking. Targets were set for 2019 and 2021. The 2021 target is 77.3 percent reliability. This value was held through 2040.

	2025	2030	2040
Target	77.3	77.3	77.3

2.C. Annual Hours of Peak Hour Excessive Delay Per Capita

This measure is linked to the objective of reducing travel congestion under the *Connect People and Places* goal. It measures the cumulative hours of excessive delay experienced by all people traveling through all reporting segments of the Rhode Island NHS during peak hours for the full calendar year.

PM Type: Federally-required for non-attainment and maintenance jurisdictions

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline	Not Applicable
----------	----------------

Methodology: RIDOT does not track this measure because Rhode Island is currently in attainment for air quality. If this status changes to non-attainment or maintenance, the requirement to collect this data would change.

3. Transit Ridership

This measure is linked to the objectives of expanding connectivity across modes, reducing travel congestion, and improving regional connectivity under the *Connect People and Places* goal. This is a measure of total annual transit ridership on all RIPTA vehicles, as well as Massachusetts Bay Transportation Authority (MBTA) Commuter trains serving Rhode Island.

PM Type: RI State Priority

Source: RIPTA and RIDOT Office of Transit

Responsible Agency: RIPTA and RIDOT Office of Transit

Baseline & Targets

Baseline (SFY 2017)	17,490,243 Riders
---------------------	-------------------

Baseline Methodology: Transit ridership was reported by RIPTA and RIDOT Office of Transit.

Target Setting Methodology: Increased ridership is consistent with the vision and goals of the LRTP, but also largely linked to funding and investment in transit infrastructure.

	2025	2030	2040
Target	Upward Trend		

4. On-Time Performance for RIPTA Service

This measure is linked to the objectives of expanding connectivity across modes and reducing travel congestion under the *Connect People and Places* goal. It measures the reliability of RIPTA transit service in terms of on-time arrivals at scheduled destinations.

PM Type: Tracking

Source: RIPTA

Responsible Agency: RIPTA

Baseline & Targets

Baseline (2016)	79 Percent
------------------------	-------------------

Baseline Methodology: The baseline value was provided by RIPTA.

Target Setting Methodology: Improved on-time performance is consistent with the vision and goals of the LRTP.

	2025	2030	2040
Target	Upward Trend		

5. Number of Bottlenecks in the NHS

This measure is linked to the objectives of reducing travel congestion and improving regional connectivity under the *Connect People and Places* goal. It looks at the occurrence of bottlenecks on some of the most congested roads in the state. A bottleneck, for the purposes of this measure, refers to a localized section of highway that experiences reduced speeds and inherent delays due to a recurring operational influence.

PM Type: Tracking

Source: TrafInfo analysis of National Performance Management Research Data Set (NPMRDS), January 10, 2018.

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline (2017)	28 Bottlenecks
------------------------	-----------------------

Baseline Methodology

Note that a more detailed description of this methodology is appended to this report. The baseline evaluation of bottlenecks uses travel time index data for the National Highway System (NHS) segments in Rhode Island. The travel time index is a measure of average congestion; it is derived from the National Performance Management Research Data Set (NPMRDS). NHS segments were considered congested if they had a travel time index equal to or greater than 2.00 for a given 5-minute interval during peak periods, and also if an index of 2.00 was maintained for

at least 33 percent of either the AM or PM peak periods (1 out of 3 hours reviewed for each).

Vehicles miles traveled (VMT) per day were computed for each segment by multiplying the segment length by the average daily traffic. Segments were then ranked by VMT with the largest VMT identified as the most congested segments. The list of segments was trimmed to only those with a daily congested VMT of 75,000 or more.

Additional scrutiny of these segments must be conducted to determine the root cause of congestion on these segments. It is assumed that this performance measure will be re-evaluated or replaced by the upcoming Congestion Management Process.

	2025	2030	2040
Target	Downward Trend		

6.A. Percentage of Pavements of the Interstate System in Good Condition

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the condition of roadway pavement on the interstate highway system.

PM Type: Federally-required

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline (2018)	55.05 Percent
------------------------	----------------------

Baseline Methodology: The baseline value is from RIDOT MAP-21 Performance Measure tracking.

Target Setting Methodology: Targets originate from RIDOT's FHWA performance measure tracking. Targets were set for 2019 and 2021. The 2021 target is ≥ 55 percent of the interstate in good condition. The 2021 target is held through 2040.

	2025	2030	2040
Target	$\geq 55\%$	$\geq 55\%$	$\geq 55\%$

6.B. Percentage of Pavements of the Interstate System in Poor Condition

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the condition of roadway pavement on the interstate highway system.

PM Type: Federally-required

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline (2018)	0.0 Percent
------------------------	--------------------

Baseline Methodology: The baseline value is from RIDOT MAP-21 Performance Measure tracking.

Target Setting Methodology: Targets originate from RIDOT's FHWA performance measure tracking. Targets were set for 2019 and 2021. The 2021 target is ≥ 5 percent of the interstate system in poor condition. The target is held through 2040.

	2025	2030	2040
Target	$\leq 5\%$	$\leq 5\%$	$\leq 5\%$

6.C. Percentage of Pavements of the Non-Interstate NHS in Good Condition

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the condition of roadway pavement on the non-interstate NHS system.

PM Type: Federally-required

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline (2018)	18.01 Percent
------------------------	----------------------

Baseline Methodology: The baseline value is from RIDOT MAP-21 Performance Measure tracking.

Target Setting Methodology: Targets originate from RIDOT's FHWA performance measure tracking. Targets were set for 2019 and 2021. The 2021 target is ≥ 10 percent of the non-interstate NHS in good condition. The 2021 target is held through 2040.

	2025	2030	2040
Target	$\geq 10\%$	$\geq 10\%$	$\geq 10\%$

6.D. Percentage of Pavements of the Non-Interstate NHS in Poor Condition

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the condition of roadway pavement on the non-interstate NHS system.

PM Type: Federally-required

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline (2018)	19.91 Percent
------------------------	----------------------

Baseline Methodology: The baseline value is from RIDOT MAP-21 Performance Measure tracking.

Target Setting Methodology: Targets originate from RIDOT's FHWA performance measure tracking. Targets were set for 2019 and 2021. The 2021 target is ≤ 20 percent of the non-interstate NHS in good condition. The 2021 target is held through 2040.

	2025	2030	2040
Target	$\leq 20\%$	$\leq 20\%$	$\leq 20\%$

6.E. Percentage of NHS Bridges in Good Condition

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the condition of bridges on the NHS system.

PM Type: Federally-required

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline (2018)	13.1 Percent
------------------------	---------------------

Baseline Methodology: The baseline value is from RIDOT MAP-21 Performance Measure tracking.

Target Setting Methodology: Targets originate from RIDOT's FHWA performance measure tracking. Targets were set for 2019 and 2021. The 2021 target is ≥ 16 percent of NHS bridges in good condition. The 2021 target is held through 2040.

	2025	2030	2040
Target	$\geq 16\%$	$\geq 16\%$	$\geq 16\%$

6.F. Percentage of NHS Bridges in Poor Condition

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the condition of bridges on the NHS system.

PM Type: Federally-required

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline (2018)	24.0 Percent
------------------------	---------------------

Baseline Methodology: The baseline value is from RIDOT MAP-21 Performance Measure tracking.

Target Setting Methodology: Targets originate from RIDOT’s FHWA performance measure tracking. Targets were set for 2019 and 2021. The 2021 target is ≤ 21 percent of NHS bridges in poor condition. 2025 – 2040 targets align with FHWA requirement for 10 percent bridge sufficiency.

	2025	2030	2040
Target	<10%	<10%	<10%

7.A. Rolling Stock - Bus: The Percentage of Revenue Vehicles that Exceed the Useful Life Benchmark (ULB).

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the age of the public transportation revenue vehicle fleet (buses). The Useful Life Benchmark set by the FTA for a bus is 12 years or 500,000 miles. A smaller percentage reflects a newer vehicle fleet in compliance with this standard.

PM Type: Federally-required

Source: RIPTA

Responsible Agency: RIPTA

Baseline & Targets

Baseline (2018)	16 Percent
------------------------	-------------------

Baseline and Target Methodology: Baseline and target values are from RIPTA. RIPTA provided a baseline value and targets for 2020 and 2022. This methodology extends the 2020 and 2022 targets to 2025 and beyond.

	2025	2030	2040
Target	16%	16%	16%

7.B Rolling Stock – Cutaway Bus (Paratransit) - The Percentage of Revenue Vehicles that Exceed the Useful Life Benchmark (ULB).

This measure is the same as with PM 7.A, but for cutaway bus paratransit vehicles. The Useful Life Benchmark for these vehicles is five-to-seven years and 150,000-200,000 miles.

PM Type: Federally-required

Source: RIPTA

Responsible Agency: RIPTA

Baseline & Targets

Baseline (2018)	55 Percent
------------------------	-------------------

Baseline and Target Methodology: Baseline and target values are from RIPTA. RIPTA provided a baseline value and targets for 2020 and 2022. This methodology extends the 2020 and 2022 targets to 2025 and beyond.

	2025	2030	2040
Target	35%	35%	35%

7.C. Rolling Stock – Cutaway Bus (Flex) - The Percentage of Revenue Vehicles that Exceed the Useful Life Benchmark (ULB).

This measure is the same as with PM 7.A, but for cutaway bus flex vehicles. The Useful Life Benchmark for these vehicles is five-to-seven years and 150,000-200,000 miles.

PM Type: Federally-required

Source: RIPTA

Responsible Agency: RIPTA

Baseline & Targets

Baseline (2018)	35 Percent
------------------------	-------------------

Baseline and Target Methodology: Baseline and target values are from RIPTA. RIPTA provided a baseline value and targets for 2020 and 2022. This methodology extends the 2020 and 2022 targets to 2025 and beyond.

	2025	2030	2040
Target	35%	35%	35%

7.D. Equipment: The Percentage Non-Revenue Service Vehicles that Exceed the Useful Life Benchmark (ULB).

This measure is linked to the objectives of achieving a state of good repair and enhancing transportation network resiliency under the *Maintain Transportation Infrastructure* goal. It is a measure of the age of ancillary, non-revenue vehicles within a public transportation agency's fleet.

PM Type: Federally-required

Source: RIPTA

Responsible Agency: RIPTA

Baseline & Targets

Baseline (2018)	44 Percent
------------------------	-------------------

Baseline and Target Methodology: Baseline and target values are from RIPTA. RIPTA provided a baseline value and targets for 2020 and 2022. This methodology extends the 2020 and 2022 targets to 2025 and beyond.

	2025	2030	2040
Target	56%	56%	56%

7.E. Facilities-Admin/Maintenance: Percentage of facilities Within an Asset Class Rated Below 3.0 Transit Economic Requirements Model (TERM) scale.

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency under the *Maintain Transportation Infrastructure* goal. It tracks the general condition of transit system assets, such as administrative and maintenance facilities. The TERM scale rates facilities on a scale from 1.0 (poor) to 5.0 (excellent). A rating of 3.0 and above indicates facilities in adequate (3.0-3.9) to good (4.0-4.7) to excellent (4.8-5.0) condition.

PM Type: Federally-required

Source: RIPTA

Responsible Agency: RIPTA

Baseline & Targets

Baseline (2018)	0 Percent
------------------------	------------------

Baseline and Target Methodology: Baseline and target values are from RIPTA. RIPTA provided a baseline value and targets for 2020 and 2022. This methodology extends the 2020 and 2022 targets to 2025 and beyond.

	2025	2030	2040
Target	0%	0%	0%

7.F. Facilities-Passenger: Percentage of facilities Within an Asset Class Rated Below 3.0 Transit Economic Requirements Model (TERM) scale.

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency under the *Maintain Transportation Infrastructure* goal. It tracks the general condition of passenger facilities that are part of the public transit system.

PM Type: Federally-required

Source: RIPTA

Responsible Agency: RIPTA

Baseline & Targets

Baseline (2017)	100 Percent
-----------------	-------------

Baseline and Target Methodology: Baseline and target values are from RIPTA. RIPTA provided a baseline value and targets for 2020 and 2022. This methodology extends the 2020 and 2022 targets to 2025 and beyond.

	2025	2030	2040
Target	0%	0%	0%

7.G. Infrastructure: Percentage of Track Segments with Performance Restrictions

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the condition of rail fixed guideway systems. A performance restriction is a segment of track miles where the maximum permissible speed of transit vehicles is set to a value below the guideway's full service speed.

PM Type: Federally-required

Source: RIDOT Office of Transit

Responsible Agency: RIDOT Office of Transit

Baseline & Targets

Baseline	Not Applicable
----------	----------------

Baseline and Target Methodology: Baseline and target values are from RIDOT. RIDOT has indicated that there are no applicable passenger rail track segments under public ownership in Rhode Island.

8.A. Number of Annual Traffic Fatalities

This measure is linked to the objective of enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. This tracks traffic fatalities across the state. Values represent five-year rolling averages (calculated as

PM Type: Federally-required

Source: RIDOT Office of Highway Safety

Responsible Agency: RIDOT Office of Highway Safety

Baseline & Targets

Baseline (2019)	59 Fatalities
------------------------	----------------------

Baseline Methodology: The number of fatalities is a five-year rolling average. This is calculated using the four years leading up to and including the reporting year. For example, this baseline value for 2017 is the average number of traffic fatalities from 2013-2017. Rolling averages give more reliable insight into trends over time and help to de-emphasize outlying years with notably high or low numbers.

Target Setting Methodology: Values are computed based on the State Highway Safety Improvement Plan, which targets a three percent annual reduction in traffic fatalities. This trend is extrapolated out to 2040.

	2025	2030	2040
Target	46	37	24

8.B. Number of Annual Traffic Serious Injuries

This measure is linked to the objective of enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks serious traffic injuries across the state. A serious injury is defined as preventing the injured person from walking, driving or normally continuing the activities the person was capable of doing before the injury occurred (i.e. an incapacitating injury).

PM Type: Federally-required

Source: RIDOT Office of Highway Safety

Responsible Agency: RIDOT Office of Highway Safety

Baseline & Targets

Baseline (2019)	351 Serious Injuries
------------------------	-----------------------------

Baseline Methodology: Five-year rolling average for serious traffic injuries. See baseline methodology for PM 8.A.

Target Setting Methodology: Values are computed based on the State Highway Safety Improvement Plan, which targets a four percent annual reduction in serious traffic injuries. This trend is extrapolated out to 2040.

	2025	2030	2040
Target	290	241	163

8.C. Rate of Annual Traffic Fatalities per 100 Million Vehicle Mile Travelled (VMT)

This measure is linked to the objective of enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. This tracks the traffic fatality rate.

PM Type: Federally-required

Source: RIDOT Office of Highway Safety

Responsible Agency: RIDOT Office of Highway Safety

Baseline & Targets

Baseline (2019)	0.74 Fatalities per 100M VMT
------------------------	-------------------------------------

Baseline Methodology: Five-year rolling average for fatality rate. See baseline methodology for PM 8.A.

Target Setting Methodology: Targets are computed based on the State Highway Safety Improvement Plan, which targets a three percent annual reduction in the traffic fatality rate. This trend is extrapolated out to 2040.

	2025	2030	2040
Target	0.56	0.45	0.28

8.D. Rate of Annual Traffic Serious Injuries per 100 Million VMT

This measure is linked to the objective of enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. This tracks the traffic injury rate.

PM Type: Federally-required

Source: RIDOT Office of Highway Safety

Responsible Agency: RIDOT Office of Highway Safety

Baseline & Targets

Baseline (2019)	3.50 Serious Injuries per VMT
------------------------	--------------------------------------

Baseline Methodology: Five-year rolling average for injury rate. See baseline methodology for PM 8.A.

Target Setting Methodology: Targets are computed based on the State Highway Safety Improvement Plan, which targets a 3.6 percent annual reduction in the serious traffic injury rate. This trend is extrapolated out to 2040.

	2025	2030	2040
Target	2.90	2.40	1.65

8.E. Number of pedestrian/bicycle annual traffic fatalities and serious injuries

This measure is linked to the objective of enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks serious traffic injuries across the state. This tracks fatalities and serious injuries among non-motorized transportation users.

PM Type: Federally-required

Source: RIDOT Office of Highway Safety

Responsible Agency: RIDOT Office of Highway Safety

Baseline & Targets

Baseline (2019)	78 Fatalities + Serious Injuries
------------------------	---

Baseline Methodology: Five-year rolling average for pedestrian and bicycle fatalities. See baseline methodology for PM 8.A.

Target Setting Methodology: Targets are computed based on the State Highway Safety Improvement Plan, which targets a 2.5 percent annual reduction in non-motorized users killed or seriously injured in traffic incidents. This trend is extrapolated out to 2040.

	2025	2030	2040
Target	69	61	47

9.A. Transit Fatalities

This measure is linked to the objective of enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. Transit fatalities are deaths due to collision, derailment, fire, hazardous material spill, acts of God, system or personal security events (including suicides), or other safety events. This excludes fatalities occurring because of illness or other natural causes in a transit facility or vehicle.² RIPTA is required to prepare a Public Transportation Agency Safety Plan by December 31, 2020 after which this measure will be updated.

PM Type: Federally-required

Source: RIPTA and RIDOT Office of Transit

Responsible Agency: RIPTA and RIDOT Office of Transit

Baseline & Targets

Baseline	TBD Fatalities
----------	----------------

Baseline and Target Setting Methodology:

	2025	2030	2040
Target	TBD	TBD	TBD

9.B. Transit Injuries

This measure is linked to the objective of enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the number of serious transit injuries. A transit injury must be reported for any damage or harm to a person that requires immediate medical attention away from the scene of the event. Additional criteria are required to define a serious injury for a rail mode event.³ This measure is based on the RIPTA Public Transportation Agency Safety Plan.

PM Type: Federally-required

Source: RIPTA and RIDOT Office of Transit

Responsible Agency: RIPTA and RIDOT Office of Transit

Baseline & Targets

Baseline	TBD Injuries
----------	--------------

Baseline and Target Setting Methodology: Baseline and target values are from RIPTA and RIDOT.

	2025	2030	2040
Target	TBD	TBD	TBD

² U.S. Department of Transportation. (2018). Safety & Security Reporting Manual. Federal Transit Administration. URL: <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/ntd/69096/2018-safety-and-security-policy-manual.pdf>.

³ Ibid.

9.C. Transit Safety Events

This measure is linked to the objective of enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks annual transit safety events, which include collisions, fires, derailments, hazardous material spills, acts of God, other safety events, system security events (such as arson or vandalism) and personal security events (such as assault or robbery). RIPTA is required to prepare a Public Transportation Agency Safety Plan by December 31, 2020 after which this measure will be updated.

PM Type: Federally-required

Source: RIPTA and RIDOT Office of Transit

Responsible Agency: RIPTA and RIDOT Office of Transit

Baseline & Targets

Baseline	TBD Transit Safety Events
----------	---------------------------

Baseline and Target Setting Methodology: Baseline and target values are from RIPTA and RIDOT.

	2025	2030	2040
Target	TBD	TBD	TBD

9.D. Mean Distance Between Major Mechanical Transit Failures

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It is a measure of the mechanical reliability of a transit agency's fleet that looks at the average distance between vehicle breakdowns or failures. A failure is any incident that precludes a revenue vehicle from completing its trip or beginning its next scheduled trip. This measure is based on the RIPTA Public Transportation Agency Safety Plan.

PM Type: Federally-required

Source: RIPTA and RIDOT Office of Transit

Responsible Agency: RIPTA and RIDOT Office of Transit

Baseline & Targets

Baseline	TBD Mean Distance Between Failures (MDBF)
----------	---

Baseline and Target Setting Methodology: Baseline and target values are from RIPTA and RIDOT.

	2025	2030	2040
Target	TBD	TBD	TBD

10. Bicycle Dedicated Lane Miles

This measure is linked to the objectives of designing roadways to increase transportation choices, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It tracks the length of lane miles specific to bicycling (bicycle lanes and buffered or separated bicycle lanes). Bicycle dedicated lane miles also includes shared use paths.

PM Type: RI State Priority

Source: RIDOA, Division of Statewide Planning

Responsible Agency: RIDOA, Division of Statewide Planning

Baseline & Targets

Baseline (2019)	100 Bicycle Lane Miles
------------------------	-------------------------------

Baseline and Target Setting Methodology: Baseline and target values are from the Bicycle Mobility Plan BMP, developed in concert with this Long Range Transportation Plan. The assumption is that 60 percent of the total number of dedicated bicycle lane miles set forth under the BMP would be realized by 2040.

	2025	2030	2040
Target	165	195	310

11. Bus Transit Dedicated Lane Miles

This measure is linked to the objectives of designing roadways to increase transportation choices and enhancing transportation network resiliency under the *Maintain Transportation Infrastructure* goal. It tracks lane miles dedicated to bus transit. Lane miles are the total length of a facility, multiplied by the number of lanes. For example, a one-mile long section of road with bus lanes in two directions would have two bus lane miles. It is assumed that this measure could be revised or replaced by a measure adopted by the Transit Master Plan.

PM Type: RI State Priority

Source: RIDOA, Division of Statewide Planning

Responsible Agency: RIDOA, Division of Statewide Planning

Baseline & Targets

Baseline (2019)	0.8 Bus Transit Lane Miles
------------------------	-----------------------------------

Baseline Methodology: Targets will track with the adopted Transit Master Plan, which is in development alongside this Long Range Transportation Plan. The baseline of 0.8 miles consists of Providence's East Side Transit Tunnel.

Target Setting Methodology: The target reflects the planned addition of 1.5 miles of dedicated bus lanes associated with the Downtown Transit Connector. The methodology for mid- and long-range targets assumes 1.5 miles of additional bus lanes every two years. These will be supplanted by the Transit Master Plan targets when available.

	2025	2030	2040
Target	7	10.5	18

12.A. Number of Bridges Vulnerable to Sea Level Rise (SLR)

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It records the number of bridges vulnerable to sea level rise, either because a bridge was not designed to for higher sea levels or because sea level rise may leave the bridge inaccessible.

PM Type: Tracking

Source: RIDOA, Division of Statewide Planning

Responsible Agency: RIDOA, Division of Statewide Planning

Baseline & Targets

Baseline	77 Bridges Vulnerable
-----------------	------------------------------

Baseline Methodology: The baseline source: RI Statewide Planning Technical Paper 164, Vulnerability of Transportation Assets to Sea Level Rise (January 2015).

Target Setting Methodology: The LRTP recommends tracking this value across time with a downward trend target.

	2025	2030	2040
Target	Downward Trend		

12.B. Miles of Roadway Vulnerable to SLR

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It records the length of roadways under state management or control vulnerable to sea level rise.

PM Type: Tracking

Source: RIDOA, Division of Statewide Planning

Responsible Agency: RIDOA, Division of Statewide Planning

Baseline & Targets

Baseline	84 Miles of Roadway Vulnerable to SLR
-----------------	--

Baseline Methodology: The baseline source: RI Statewide Planning Technical Paper 164, Vulnerability of Transportation Assets to Sea Level Rise (January 2015).

Target Setting Methodology: The LRTP recommends tracking this value across time with a downward trend target.

	2025	2030	2040
Target	Downward Trend		

12.C. Number of Intermodal Freight Hubs Vulnerable to SLR

This measure is linked to the objectives of achieving a state of good repair and enhancing transportation network resiliency under the *Maintain Transportation Infrastructure* goal. It records intermodal freight hubs vulnerable to sea level rise.

PM Type: Tracking

Source: RIDOA, Division of Statewide Planning

Responsible Agency: RIDOA, Division of Statewide Planning

Baseline & Targets

Baseline	6 Intermodal Freight Hubs Vulnerable to SLR
----------	---

Baseline Methodology: The baseline was set using the STORMTOOLS analysis tool by the University of Rhode Island to identify the landward extent of rising sea levels. More detailed information on this analysis is appended to this report.

Target Setting Methodology: The LRTP recommends tracking this value across time with a downward trend target.

	2025	2030	2040
Target	Downward Trend		

12.D. Number of Intermodal Passenger Hubs Vulnerable to SLR

This measure is linked to the objectives of achieving a state of good repair, enhancing transportation network resiliency, and enhancing transportation safety under the *Maintain Transportation Infrastructure* goal. It records the number of intermodal passenger hubs vulnerable to sea level rise.

PM Type: Tracking

Source: RIDOA, Division of Statewide Planning

Responsible Agency: RIDOA, Division of Statewide Planning

Baseline & Targets

Baseline	2 Intermodal Passenger Hubs Vulnerable to SLR
----------	---

Baseline Methodology: The baseline was set using the STORMTOOLS analysis tool, developed by the Rhode Island Coastal Commission. More detailed information on this analysis is appended to this report.

Target Setting Methodology: The LRTP recommends tracking this value across time with a downward trend target.

	2025	2030	2040
Target	Downward Trend		

13. Number of Cities/Towns with Complete Streets Ordinances

This measure is linked to the objectives of improving individual and community health, fostering social equity, and encouraging connected communities under the *Strengthen Communities* goal. It records the number of Rhode Island cities and towns with adopted Complete Streets Ordinances.

Complete Streets are a design approach that requires streets be planned, designed, operated and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities, regardless of their mode of transportation. Ordinances facilitating the creation of complete streets play an important role in facilitating a greater diversity of transportation options.

PM Type: Tracking

Source: RI Department of Health (RIDOH)

Responsible Agency: RIDOH

Baseline & Targets

Baseline (2018)	1 Municipality
------------------------	-----------------------

Baseline Methodology: The baseline value was set through a review of local policies for Rhode Island Cities and towns. Central Falls is the only known unit of government with an adopted Complete Streets Ordinance. Several additional municipalities have enacted Complete Streets resolutions, but not ordinances.

Target Setting Methodology: The LRTP recommends tracking this value across time with a downward trend target.

	2025	2030	2040
Target	Upward Trend		

14. Percentage of Population Living within ¼ Mile of a Bike Lane or Shared-Use Path

This measure is linked to the objectives of improving individual and community health, fostering social equity, and encouraging connected communities under the *Strengthen Communities* goal. It tracks the percentage of Rhode Island’s population living in close proximity to a bike lane or shared-use path.

PM Type: RI State Priority

Source: RIDOA – Division of Statewide Planning

Responsible Agency: RIDOA – Division of Statewide Planning

Baseline & Targets

Baseline	15.6 % RI Population within ¼ mi of a Bike Lane
-----------------	--

Baseline Methodology: The baseline value originates from the 2018 Bicycle Mobility Plan.

Target Setting Methodology: Targets originate from the 2018 Bicycle Mobility Plan.

	2025	2030	2040
Target	28%	36%	50%

15. Transportation Equity Benefit Analysis (TEBA)

This measure is linked to the objectives of fostering social equity and encouraging connected communities under the *Strengthen Communities* goal. It tracks transportation spending in areas with significant population of low income and minority residents.

PM Type: Tracking

Source: RIDOA – Division of Statewide Planning

Responsible Agency: RIDOA – Division of Statewide Planning

Baseline & Targets

Baseline	65.8 % STIP Project Funds Allocated to Environmental Justice Special Population Group Census Tracts
-----------------	--

Baseline Methodology: A TEBA is included as part of the adopted State Transportation Improvement Program. The TEBA assesses the distribution of transportation investments across select populations protected (or linked to protected populations) under Title VI of the Civil Rights Act of 1964. It asks what percentage of STIP project funding was allocated to census tracts designated as having significant presence of special population groups protected under Title VI. This measure looks specifically at the Environmental Justice Special Population Group – a combination of minority populations and populations living in poverty.

Target Setting Methodology: The LRTP recommends tracking this value across time with an upward trend target.

	2025	2030	2040
Target	Upward Trend		

16. Percentage Change in Tailpipe CO₂ Emissions on the National Highway System, Compared to 2017 Base Level Data

This measure is linked to the objectives of reducing vehicle miles travelled and reducing transportation greenhouse gases under the *Promote Environmental Sustainability* goal. It tracks carbon dioxide emissions on the NHS. Note that as of May 22, 2018, this measure has been repealed by FHWA.

PM Type: Federally-required for non-attainment and maintenance jurisdictions

Source: RIDOT Office of Performance Management

Responsible Agency: RIDOT Office of Performance Management

Baseline & Targets

Baseline	Not Applicable
-----------------	-----------------------

Methodology: RIDOT does not track this measure because Rhode Island is currently in attainment for air quality. If this status changes to non-attainment or maintenance, the requirement to collect this data would change.

17. Vehicle Miles Travelled Annually (Million VMT)

This measure is linked to the objectives of reducing vehicle miles travelled and reducing transportation greenhouse gases under the *Promote Environmental Sustainability* goal. It tracks statewide VMT.

PM Type: RI State Priority

Source: RIDOA – Division of Statewide Planning

Responsible Agency: RIDOA – Division of Statewide Planning

Baseline & Targets

Baseline (2017)	8,197 Million VMT
------------------------	--------------------------

Baseline Methodology: The baseline value comes from FHWA’s “Travel Monitoring” data for 2017.⁴ It is a monthly report based on hourly traffic count data reported by states.

Target Setting Methodology: The targets represent the goals of the Rhode Island Executive Climate Change Coordinating Council (EC⁴), two percent reduction in 2014 VMT by 2035 and ten percent by 2050.⁵ These goals were translated into annual percent reductions in VMT to determine target values for the LRTP target years. Note that the 2014 baseline VMT indicated as a starting point for EC⁴ goals (7,677 million VMT) is less than VMT reported for 2018, so VMT trends since 2014 are currently not moving in the desired direction.

	2025	2030	2040
Target	7,600	7,560	7,310

18. Total Emissions Reductions

This measure is linked to the objectives of reducing transportation greenhouse gases under the *Promote Environmental Sustainability* goal. It tracks total greenhouse gas emission reductions across the state and is a required measure for Congestion Management and Air Quality (CMAQ) On-Road Mobile Source Emissions.

PM Type: Federally-required for non-attainment and maintenance jurisdictions

Source: RIDOT – Office of Performance Management

Responsible Agency: RIDOT – Office of Performance Management

Baseline & Targets

Baseline	Not Applicable
-----------------	-----------------------

Baseline and Target Setting Methodology: The baseline value and targets are provided by RIDOT. This measure is required for MPOs in non-attainment or maintenance status for ozone, carbon monoxide, or particulate matter. Rhode Island has been in attainment for these measures; the requirement to measure these values is contingent upon remaining in attainment.

19. Number of Registered Electric Vehicles

This measure is linked to the objectives of reducing transportation greenhouse gases under the *Promote Environmental Sustainability* goal. It tracks total number of registered electric vehicles in Rhode Island.

⁴ U.S. Department of Transportation. (2018). “Travel Monitoring.” Federal Highway Administration. URL: https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm.

⁵ Rhode Island Executive Climate Change Coordinating Council. 2016. *Rhode Island Greenhouse Gas Emissions Reduction Plan*. December 2016. URL: <http://climatechange.ri.gov/documents/riggerr16.pdf>.

PM Type: Tracking

Source: RI Department of Motor Vehicles & Office of Energy Resources

Responsible Agency: RI Department of Motor Vehicles & Office of Energy Resources

Baseline & Targets

Baseline (2017)	1,345 Registered Electric Vehicles
------------------------	---

Baseline Methodology: The baseline value and targets are provided by RIDMV. In 2017, RIDMV implemented the Rhode Island Motor vehicle System (RIMS), a major replacement of the previous computer system that will improve database quality and allow for better tracking of factors such as this performance measure.

Target Setting Methodology: The LRTP recommends tracking this value across time with an upward trend target.

	2025	2030	2040
Target	Upward Trend		

20. Truck Travel Time Reliability Index (TTTR)

This measure is linked to the objectives of improving freight connectivity access to national/global freight markets under the *Support Economic Growth* goal. It tracks travel time reliability for freight trucks. Travel time reliability is a measure of unexpected delay. FHWA defines travel time reliability as: “the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day.” This measure is important because it allows travelers to make better use of their time.

PM Type: Federally-required

Source: RIDOT – Office of Performance Management

Responsible Agency: RIDOT – Office of Performance Management

Baseline & Targets

Baseline	1.72 Truck Travel Time Reliability Index
-----------------	---

Baseline Methodology: The baseline value is from RIDOT MAP-21 Performance Measure tracking. The methodology is consistent with federal guidelines.

Target Setting Methodology: Targets originate from RIDOT’s FHWA performance measure tracking. Targets were set for 2019 and 2021. The 2021 target for truck travel time reliability index is 1.94. This target was held through 2040.

	2025	2030	2040
Target	1.96	1.96	1.96

21. Percentage of Construction Projects Delivered On-Time

This measure is linked to the objectives of expanding connections to jobs and growth centers, improving freight connectivity access to national/global freight markets, and making transportation investments supportive of tourism under the *Support Economic Growth* goal. It tracks the percentage of state transportation construction projects delivered on-time.

PM Type: RI State Priority

Source: RIDOT – Office of Performance Management

Responsible Agency: RIDOT – Office of Performance Management

Baseline & Targets

Baseline (2019)	100 Percent of Projects Delivered On-Time
------------------------	--

Baseline Methodology: Baseline data is provided by RIDOT.

Target Setting Methodology: Currently at 100 percent on-time project delivery, the target is to maintain this high level of efficiency.

	2025	2030	2040
Target	100%	100%	100%

22. Percentage of Construction Projects Delivered On-Budget

This measure is linked to the objectives of expanding connections to jobs and growth centers, improving freight connectivity access to national/global freight markets, and making transportation investments supportive of tourism under the *Support Economic Growth* goal. It tracks the percentage of state transportation construction projects delivered on-budget.

PM Type: RI State Priority

Source: RIDOT – Office of Performance Management

Responsible Agency: RIDOT – Office of Performance Management

Baseline & Targets

Baseline (2019)	100 Percent of Projects Delivered On-Budget
------------------------	--

Baseline Methodology: Baseline data is provided by RIDOT.

Target Methodology: Currently at 100 percent, the target is to maintain this high level of efficiency.

	2025	2030	2040
Target	100%	100%	100%

23A. Residents within ½ mile of frequent transit

This measure is linked to the objectives of expanding connections to jobs and growth centers under the *Support Economic Growth* goal. It tracks the population that has access to effective transit services.

PM Type: Tracking

Source: RIDOA, Division of Statewide Planning

Responsible Agency: RIDOA, Division of Statewide Planning

Baseline & Targets

Baseline	376,090 residents
-----------------	--------------------------

Baseline Methodology: This measure totals the number of residents living within ½ mile (as the crow flies) of frequent transit. Frequent transit is transit with headways of 20 minutes or less during peak operations including RIPTA Key Corridors and Rapid Bus as defined by the agency service guidelines. Residents are counted using 2018 US Census data and are summed by block group. Total population for a block group that falls within the half-mile buffer of an identified transit stop is summed to develop the baseline for this measure.

Target Methodology: The LRTP recommends tracking this value across time with an upward trend target.

	2025	2030	2040
Target	Upward Trend		

	RAPID BUS	KEY CORRIDOR	URBAN RADIAL	NON-URBAN/ SUBURBAN/ CROSSTOWN	REGIONAL	EXPRESS/ COMMUTER	FLEX
Weekdays							
Early AM	30	30	60	60	60	—	n/a
AM Peak	10	20	30	60	60	3 trips	n/a
Midday	10	20	60	60	60	—	n/a
PM Peak	10	20	30	60	60	3 trips	n/a
Night	30	30	60	60	120	—	n/a
Saturdays							
All Day	15	30	60	60	—	—	n/a
Sundays							
All Day	15	30	60	60	—	—	n/a

<https://www.ripta.com/ripta-service-guidelines>

23B. Jobs within ½ mile of frequent transit

This measure is linked to the objectives of expanding connections to jobs and growth centers under the *Support Economic Growth* goal. It tracks jobs that can be accessed by effective transit services.

PM Type: Tracking

Source: RIDOA, Division of Statewide Planning

Responsible Agency: RIDOA, Division of Statewide Planning

Baseline & Targets

Baseline	200,923 Jobs
-----------------	---------------------

Baseline Methodology: This measure totals the number of jobs within ½ mile (as the crow flies) of frequent transit. For consistency with measure 23A, frequent transit is transit with headways of 20 minutes or less during peak operations including RIPTA Key Corridors and Rapid Bus. Jobs were identified by block group using Longitudinal Employer-Household Dynamics data from the Census for 2017. Similarly, all jobs for a block group that falls within the half-mile buffer of an identified transit stop is summed to develop the baseline for this measure.

Target Setting Methodology: The LRTP recommends tracking this value across time with an upward trend target.

	2025	2030	2040
Target	Upward Trend		

24. Number of Electric Vehicle Charging Stations

This measure is linked to the objectives of reducing transportation greenhouse gases under the *Promote Environmental Sustainability* goal. It tracks total number of registered electric vehicle charging stations in Rhode Island.

PM Type: Tracking

Source: Office of Energy Resources

Responsible Agency: Office of Energy Resources

Baseline & Targets

Baseline (2019)	117 Electric Vehicle Charging Stations
------------------------	---

Baseline Methodology: The baseline value and targets are provided by the Office of Energy Resources.

Target Setting Methodology: The LRTP recommends tracking this value across time with an upward trend target.

	2025	2030	2040
Target	Upward Trend		

Appendix

PM Tracking - 05/22/2020				Plan Alignment	Baseline		Target Setting			
No.	Performance Measure	Responsible Agency	Priority	L RTP	Baseline Measurement	Date	Methodology	2025 Target	2030 Target	2040 Target
1.	Percent of non-SOV Travel	DOA Div. of Planning	FHWA - required	Connect People and Places	N/A		Not required in attainment.			
2.A	Percent of the Person-Miles Traveled on the Interstate that are Reliable	RIDOT - Office of Performance Management	FHWA - required	Connect People and Places	78.2%	CY 2017	align with RIDOT 2020=71.4%, 2022=71.6%	71.6%	71.6%	71.6%
2.B	Percent of the Person-Miles Traveled on the Non-Interstate NHS that are Reliable	RIDOT - Office of Performance Management	FHWA - required	Connect People and Places	77.6%	CY 2019	align with RIDOT 2021=77.3%	77.6%	77.3%	77.3%
2.C	Annual Hours of Peak Hour Excessive Delay Per Capita	RIDOT - Office of Performance Management	FHWA - required	Connect People and Places	N/A		Not applicable when in attainment.			
3.	Transit Ridership	RIPTA & RIDOT Office of Transit	RI - Tracking	Connect People and Places	17,490,243	SFY 2017		upward trend		
4.	On-Time Performance for RIPTA Service	RIPTA	RI - Tracking	Connect People and Places	79%	2016		upward trend		
5.	Number of Bottlenecks in the NHS	RIDOT - Traffic	RI - Tracking	Connect People and Places	28	2017		downward trend		
6.A	Percentage of Pavements of the Interstate System in Good Condition	RIDOT - Office of Performance Management	FHWA - required	Maintain Transportation Network	55.05%	CY 2018	align with RIDOT 2022>=55%	≥55%	≥55%	≥55%
6.B	Percentage of Pavements of the Interstate System in Poor Condition	RIDOT - Office of Performance Management	FHWA - required	Maintain Transportation Network	0.00%	CY 2018	align with RIDOT 2022 =4%	≤ 5%	≤ 5%	≤ 5%
6.C	Percentage of Pavements of the Non-Interstate NHS in Good Condition	RIDOT - Office of Performance Management	FHWA - required	Maintain Transportation Network	18.01%	CY 2018	align with RIDOT 2020>=10%, 2022>=10%	≥10%	≥10%	≥10%
6.D	Percentage of Pavements of the Non-Interstate NHS in Poor Condition	RIDOT - Office of Performance Management	FHWA - required	Maintain Transportation Network	19.91%	CY 2018	align with RIDOT	≤ 20%	≤ 20%	≤ 20%
6.E	Percentage of NHS Bridges in Good Condition	RIDOT - Office of Performance Management	FHWA - required	Maintain Transportation Network	13.10%	CY 2018	align with RIDOT 2020>=20%, 2022>=20%	≥ 16%	≥ 16%	≥ 16%
6.F	Percentage of NHS Bridges in Poor Condition (Structurally Deficient)	RIDOT - Office of Performance Management	FHWA - required	Maintain Transportation Network	24.00%	CY 2018	align with RIDOT and Federal Req.	<10%	<10%	<10%
7.A	Rolling Stock - Bus: The percentage of revenue vehicles that exceed the useful life benchmark (ULB).	RIPTA	FTA - required	Maintain Transportation Network	16%	2018	align with RIPTA 2020=16%, 2022=16%	16%	16%	16%
7.B	Rolling Stock - Cutaway Bus (paratransit): The percentage of revenue vehicles that exceed the useful life benchmark (ULB).	RIPTA	FTA - required	Maintain Transportation Network	55%	2018	align with RIPTA 2020=35%, 2022=35%	35%	35%	35%
7.C	Rolling Stock - Cutaway Bus (Flex): The percentage of revenue vehicles that exceed the useful life benchmark (ULB).	RIPTA	FTA - required	Maintain Transportation Network	35%	2018	align with RIPTA 2020=35%, 2022=35%	35%	35%	35%
7.D	Equipment: The percentage non-revenue service vehicles (by type) that exceed the ULB.	RIPTA	FTA - required	Maintain Transportation Network	44%	2018	align with RIPTA 2020=56%, 2022=56%	56%	56%	56%
7.E	Facilities - Admin/Maintenance: Percentage of facilities within an asset class rated below 3.0 Transit Economic Requirements Model (TERM) scale.	RIPTA	FTA - required	Maintain Transportation Network	0%	2018	align with RIPTA (TERM 3.1) 2020=0%, 2022=0%	0%	0%	0%
7.F	Facilities - Passenger: Percentage of facilities within an asset class rated below 3.0 Transit Economic Requirements Model (TERM) scale.	RIPTA	FTA - required	Maintain Transportation Network	100%	2018	align with RIPTA (TERM 2.5) 2020=0%, 2022=0% Awaiting - Wickford Junction	0%	0%	0%
7.G	Infrastructure: Percentage of track segments (by mode) with performance restrictions	RIDOT Office of Transit	FTA - required	Maintain Transportation Network	N/A		No applicable track segments			
8.A	No. of annual traffic fatalities (5 year avg)	RIDOT - OHS/Traffic	FHWA - required	Maintain Transportation Network	59	CY2019	4.5% reduction annually	46	37	24
8.B	No. of annual traffic serious injuries (5 year avg)	RIDOT - OHS/Traffic	FHWA - required	Maintain Transportation Network	351	CY2019	3.75% reduction annually	290	241	163
8.C	Rate of annual traffic fatalities per 100M VMT (5 year avg)	RIDOT - OHS/Traffic	FHWA - required	Maintain Transportation Network	0.74	CY2019	4.5% reduction annually	0.56	0.45	0.28
8.D	Rate of annual traffic serious injuries per 100M VMT (5 year avg)	RIDOT - OHS/Traffic	FHWA - required	Maintain Transportation Network	3.50	CY2019	3.75% reduction annually	2.9	2.4	1.65
8.E	No. of ped./bike annual traffic fatalities and serious injuries (5 year avg)	RIDOT - OHS/Traffic	FHWA - required	Maintain Transportation Network	78	CY2019	2.5% reduction annually	69	61	47
9.A	Transit Fatalities	RIPTA & RIDOT Office of Transit	FTA measure	Maintain Transportation Network	N/A		To be aligned with RIPTA Safety Plan			
9.B	Transit Injuries	RIPTA & RIDOT Office of Transit	FTA measure	Maintain Transportation Network	N/A		To be aligned with RIPTA Safety Plan			
9.C	Transit Safety Events	RIPTA & RIDOT Office of Transit	FTA measure	Maintain Transportation Network	N/A		To be aligned with RIPTA Safety Plan			
9.D	Mean Distance between major mechanical failures (transit)	RIPTA & RIDOT Office of Transit	FTA measure	Maintain Transportation Network	N/A		To be aligned with RIPTA Safety Plan			
10.	Bicycle Dedicated Lane Miles	DOA Div. of Planning	RI State Priority	Maintain Transportation Network	100	2017	interpolate based on BMP targets	165	195	310
11.	Bus Transit Dedicated Lane Miles	DOA Div. of Planning	RI State Priority	Maintain Transportation Network	0.8	2017	Future: align with TMP targets Interim: Add 1.5 miles every other year	6.8	10.6	18.1

PM Tracking - 05/22/2020				Plan Alignment	Baseline		Target Setting				
No.	Performance Measure	Responsible Agency	Priority	L RTP	Baseline Measurement	Date	Methodology	2025 Target	2030 Target	2040 Target	
12.A	No. of bridges vulnerable to sea level rise	DOA Div. of Planning	RI - Tracking	Maintain Transportation Network	77					downward trend	
12.B	Miles of roadways vulnerable to sea level rise	DOA Div. of Planning	RI - Tracking	Maintain Transportation Network	84					downward trend	
12.C	No. of freight intermodal hubs vulnerable to sea level rise	DOA Div. of Planning	RI - Tracking	Maintain Transportation Network	6					downward trend	
12.D	No. of passenger intermodal hubs vulnerable to sea level rise	DOA Div. of Planning	RI - Tracking	Maintain Transportation Network	2	2018				downward trend	
13.	No. of cities/towns with Complete Streets Ordinances	RIDOH	RI State Priority	Strengthen Communities	1	Jan-18				upward trend	
14.	Percentage of population living within 1/4 mile of a bike lane	DOA Div. of Planning	RI State Priority	Strengthen Communities	15.60%				28%	36%	50%
15.	Transportation Equity Benefit Analysis	DOA Div. of Planning	RI - Tracking	Strengthen Communities	65.8%	2018				upward trend	
16.	Percent Change in CO2 emissions (tailpipe) on the NHS compared to the Calendar year 2017 level	RIDEM	FHWA - required	Promote Environmental Sustainability	N/A				Not required in attainment.		
17.	Vehicle Miles Traveled Annually (Million VMT)	DOA Div. of Planning	RI State Priority	Promote Environmental Sustainability	8,197	2018			7,600	7,560	7,310
18.	Total Emissions Reductions	RIDOT - Office of Performance Management	FHWA - required	Promote Environmental Sustainability	N/A				Not applicable when in attainment.		
19.	No. of registered EVs	RI DMV / OER	RI - Tracking	Promote Environmental Sustainability	1,345	CY 2017					upward trend
20.	Truck Travel Time Reliability Index (TTTR)	RIDOT - Office of Performance Management	FHWA - required	Support Economic Growth	1.72	CY 2017			1.96	1.96	1.96
21.	Percent of Construction Projects On-Time	RIDOT - Office of Performance Management	RI State Priority	Support Economic Growth	100%	FFY 2017		Maintain 100%.	100%	100%	100%
22.	Percent of Construction Projects On-Budget	RIDOT - Office of Performance Management	RI State Priority	Support Economic Growth	100%	FFY 2017		Maintain 100%.	100%	100%	100%
23.A	Residents within 1/2 mile of frequent transit	DOA Div. of Planning	RI - Tracking	Support Economic Growth	376,090	2018					upward trend
23.B	Jobs within 1/2 mile of frequent transit	DOA Div. of Planning	RI - Tracking	Support Economic Growth	200,923	2017					upward trend
24.	Number of Electric Vehicle Charging Stations	DOA Div. of Planning	RI - Tracking	Support Economic Growth	117	2019					upward trend

To: Michael D'Alessandro, AICP
RI Division of Planning

Date: August 23, 2018

Project #: 72867.00

From: Kristin Caouette, PE
VHB

Re: PM #5 and #31: Number of Bottlenecks and Freight Bottlenecks in
the NHS

Identifying Bottlenecks

FHWA loosely defines bottlenecks as *localized sections of highway that experience reduced speeds and inherent delays due to a recurring operational influence or a nonrecurrent impacting event*. Bottlenecks differ from congestion in that they occur in a segment of a parent facility, whereas congestion occurs more pervasively along the entire facility. Bottlenecks represent routine traffic over-taxation of determinant, subordinate segments of a roadway.

For this analysis, bottlenecks were identified using a methodology developed by TrafInfo to determine the most congested roadways in Rhode Island for the AM (6:30AM to 9:30AM) and PM (3:30PM to 6:30PM) peak periods. The methodology identifies highway links that have a travel time index – a measure of average congestion – over a specified threshold for a duration of the peak periods.

TrafInfo downloaded data for October 2017 from the National Performance Management Research Data Set (NPMRDS) to identify congested roadways on the National Highway System (NHS) in Rhode Island. The NPMRDS is a monthly archived speed and travel time data set that covers the NHS. Data was gathered for each traffic message channel (TMC) throughout the state; these generally span a stretch of road from one exit or entrance ramp to the next. A total of 1,872 TMCs comprise the NHS in Rhode Island.

The travel time index identifies how much longer, on average, travel times are during congestion as opposed to during light traffic. For instance, a travel time of 3.0 would mean that travel during that period of time over a particular segment takes three times longer than during the peak period. Segments were deemed congested when:

- A TMC had a travel time index equal to or greater than 2.00 for a given 5-minute interval during the peak periods;
- A travel time index of 2.00 was maintained for at least 33 percent of the peak periods (1 out of the 3 hours).

This analysis yielded 542 congested TMCs during the AM peak hour and 735 congested TMCs during the PM peak hour.

Vehicles Miles Traveled (VMT) per day were computed for each segment by multiplying the segment length (adjacent TMCs were joined up together as one segment) by the average daily traffic. Segments were then ranked by VMT with the largest VMT identified as the most congested segment.

Finally, the list was trimmed to include roadways with VMT greater than or equal to 75,000 VMT per day. The results are shown below. The analysis shows **28 bottleneck segments**. Note that one segment (Airport Road/RI-117A from US-1 to W. Shore Road) appears on both the morning and evening congestion corridor lists. Additional scrutiny and engineering judgment must be applied to this list to determine the particular root causes of congestion on these segments.

1 Cedar Street
Suite 400
Providence, RI 02903-1023
P 401.272.8100

Due to a lack of data, the TrafInfo analysis did not include I-95 north of Branch Avenue in Providence. This is a significant stretch of busy interstate highway, and it is probable that segments of this road would be included on the congested segments list if data were available. The data inconsistency is currently being resolved by RIDOT and FHWA's database contractor.

Table 1: Morning Peak Congestion Corridors

Segment	Length (mi.)	Average Daily Traffic (ADT)	Vehicle Miles Traveled (VMT)
I-95 N from RI-37 to RI-10	2.95	167,357	493,498
I-195 W from Mass. State Line to Exit 3	3.41	99,468	339,335
RI-146 S from RI-15 to RI-7	2.55	65,898	168,243
I-95 S from Branch Ave On-Ramp to RI-7 Overpass	0.72	132,175	94,589
RI-15 E from US-44 Bypass to RI-122	4.51	20,510	92,547
US-1 S from RI-37 On-Ramp to Centerville Rd (Apponaug)	4.09	22,280	91,210
US-6 E from Broadway Overpass to Memorial Blvd	1.01	89,958	90,991
Airport Rd from US-1 to RI-117A (Warwick Ave); RI-117A from Airport Rd to RI-117 W. Shore Rd	3.82	20,995	80,252
I-95 N from Eddy St Overpass to Oxford St	0.47	159,577	75,588

Table 2: Evening Peak Congestion Corridors

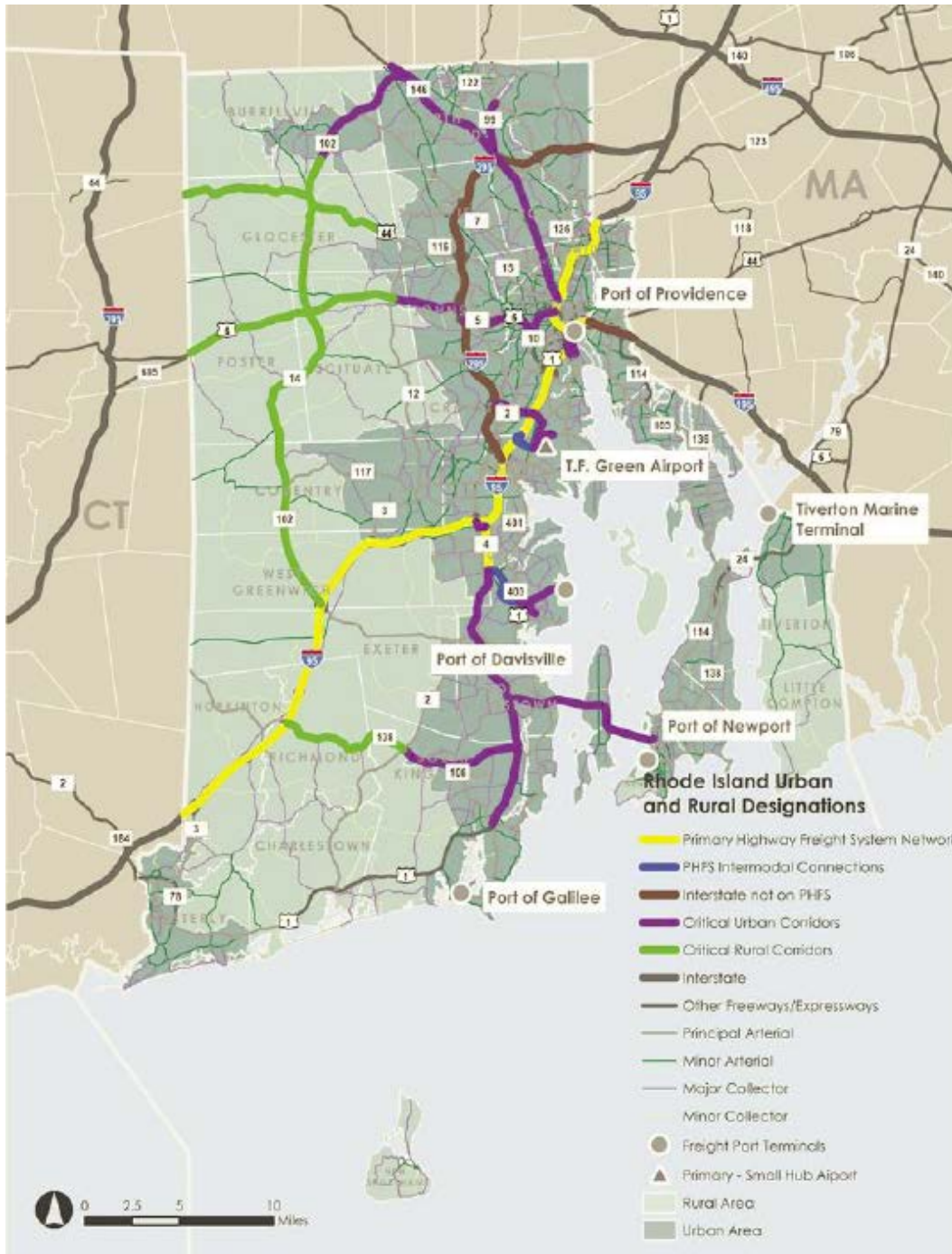
Segment	Length (mi.)	Average Daily Traffic (ADT)	Vehicle Miles Traveled (VMT)
I-195 W from Massachusetts state line to I-95 S	4.42	120,996	534,222
I-95 N from RI-37 to Exit 16	2.10	171,556	360,035
I-95 N from Exit 20 to Memorial Blvd	2.05	116,204	237,714
I-95 N from south of Broad St overpass to US-1A	1.36	156,403	213,431
I-95 S from end of Branch Ave to Exits 22 CBA	1.05	164,703	172,291
I-95 S from RI-113 Overpass to Exit 10B	1.05	137,884	144,901
RI-2 N from RI-3 Off-Ramp to Bald Hill Rd	4.87	24,969	121,718
RI-2 S from RI-33 On-Ramp to RI-115	4.49	24,926	111,916
RI-117 W from RI-1 to S. Main St	5.98	17,941	107,293
RI-146 S from Branch Ave Off-Ramp to RI-7 On-Ramp	1.48	67,173	99,526
RI-5 N from Oaklawn Ave to RI-6A	5.55	17,745	98,404
US-6 W from I-95 to Exit 5	1.07	89,698	96,251
RI-15 E from W. Greenville to RI-122	4.59	20,325	93,294
RI-5 S from Greenville Ave to RI-14	5.22	17,788	92,853
RI-15 W from RI-126 to RI-104	4.51	20,510	92,547
US-1 N: T.F. Green Airport Connector Rd Overpass to US-1A	4.59	19,827	91,033
US-44 W from I-295 Off-Ramp to RI-116	2.98	28,459	84,849
Airport Rd from US-1 to RI-117A (Warwick Ave); RI-117A from Airport Rd to RI-117 W. Shore Rd	3.85	20,949	80,661
I-95 S from Exit 18 to Eddy St Overpass	0.48	159,105	76,368

Identifying Freight Bottlenecks

This analysis reviewed the list of 28 bottleneck segments to determine the baseline for Performance Measure #31: Number of Bottlenecks on Truck Routes. To identify freight bottlenecks, the NHS segments identified above were reviewed against the Rhode Island Freight & Goods Movement Plan. This plan catalogued and mapped critical urban and rural freight corridors, including the Primary Highway Freight System (PHFS), interstate highways not designated as part of the PHFS, and other critical urban and rural corridors. This map is shown in Figure 1.

Freight bottleneck corridors identified as part of this cross-comparison are listed in Table 3. The analysis found **17 bottleneck segments** that were included both with the initial bottleneck analysis and the Freight Forward Critical Urban and Rural Corridors Map and Tables. Again, additional evaluation must be applied to this list to determine the root causes of congestion on these segments and how this might be alleviated.

Figure 1: Rhode Island Critical Urban and Rural Corridors Map



Rhode Island Department of Administration. 2016. *Freight Forward RI: State of Rhode Island Freight and Goods Movement Plan*. September 2016. URL: <http://www.planning.ri.gov/documents/trans/freight/freight-plan.pdf>.

Table 3: Freight Bottleneck Locations

Segment	Length (mi.)	Average Daily Traffic (ADT)	Vehicle Miles Traveled (VMT)
I-95 N from RI-37 to RI-10	2.95	167,357	493,498
I-195 W from Mass. State Line to Exit 3	3.41	99,468	339,335
RI-146 S from RI-15 to RI-7	2.55	65,898	168,243
I-95 S from Branch Ave On-Ramp to RI-7 Overpass	0.72	132,175	94,589
US-1 S from RI-37 On-Ramp to Centerville Rd (Apponaug)*	4.09	22,280	91,210
US-6 E from Broadway Overpass to Memorial Blvd	1.01	89,958	90,991
Airport Rd from US-1 to RI-117A (Warwick Ave); RI-117A from Airport Rd to RI-117 W. Shore Rd*	3.82	20,995	80,252
I-95 N from Eddy St Overpass to Oxford St	0.47	159,577	75,588
I-195 W from Massachusetts state line to I-95 S	4.42	120,996	534,222
I-95 N from RI-37 to Exit 16	2.10	171,556	360,035
I-95 N from Exit 20 to Memorial Blvd	2.05	116,204	237,714
I-95 N from south of Broad St overpass to US-1A	1.36	156,403	213,431
I-95 S from end of Branch Ave to Exits 22 CBA	1.05	164,703	172,291
I-95 S from RI-113 Overpass to Exit 10B	1.05	137,884	144,901
RI-146 S from Branch Ave Off-Ramp to RI-7 On-Ramp	1.48	67,173	99,526
US-6 W from I-95 to Exit 5	1.07	89,698	96,251
I-95 S from Exit 18 to Eddy St Overpass	0.48	159,105	76,368

* Denotes segments only partially included in the Freight Forward Critical Urban and Rural Freight Corridors Map. The segments indicated in the bottleneck analysis were longer than what was shown in the Freight Forward document.

To: Michael D'Alessandro, AICP
RI Division of Planning

Date: August 21, 2018

Project #: 72867.00

From: Kristin Caouette, PE
VHB

Re: PM #13.C: Intermodal Freight Hubs Vulnerable to Sea Level Rise

Identifying Intermodal Freight Hubs

Intermodal freight hubs are those hubs that provide the movement of goods between modes of transportation. Examples include ports (water-borne transport to rail or road), rail transfer facilities (rail to road or sea) and airports (air to ground transport).

Based on these criteria the following intermodal freight hubs have been identified.

- Port of Providence, Providence
- T.F. Green Airport, Warwick
- Tiverton Marine Terminal, Tiverton
- Port of Davisville, North Kingstown
- Seaview Junction, North Kingstown
- Quonset Business Park, North Kingstown
- Port of Newport, Newport
- Port of Galilee, Narragansett

These hubs are evaluated using for the anticipated impacts of sea level rise below.

Intermodal Hub Vulnerability to Sea Level Rise

A sea level rise tool called STORMTOOLS was developed at the University of Rhode Island to help identify the landward extent of rising sea levels. The tool, available at <http://www.beachsamp.org/stormtools/> maps the following extents statewide:

- 1-foot SLR by 2035
- 2-feet SLR by 2050
- 3-feet SLR by 2065
- 5-feet SLR by 2085
- 7-feet SLR by 2100

Although the timing of SLR can be disputed, the landward extents can be useful for future planning efforts.

Using the basic STORMTOOLS for Beginners module, a street address can be typed into the search box to find out if a property will be affected by sea level rise. This method was applied to all nine transit hubs.

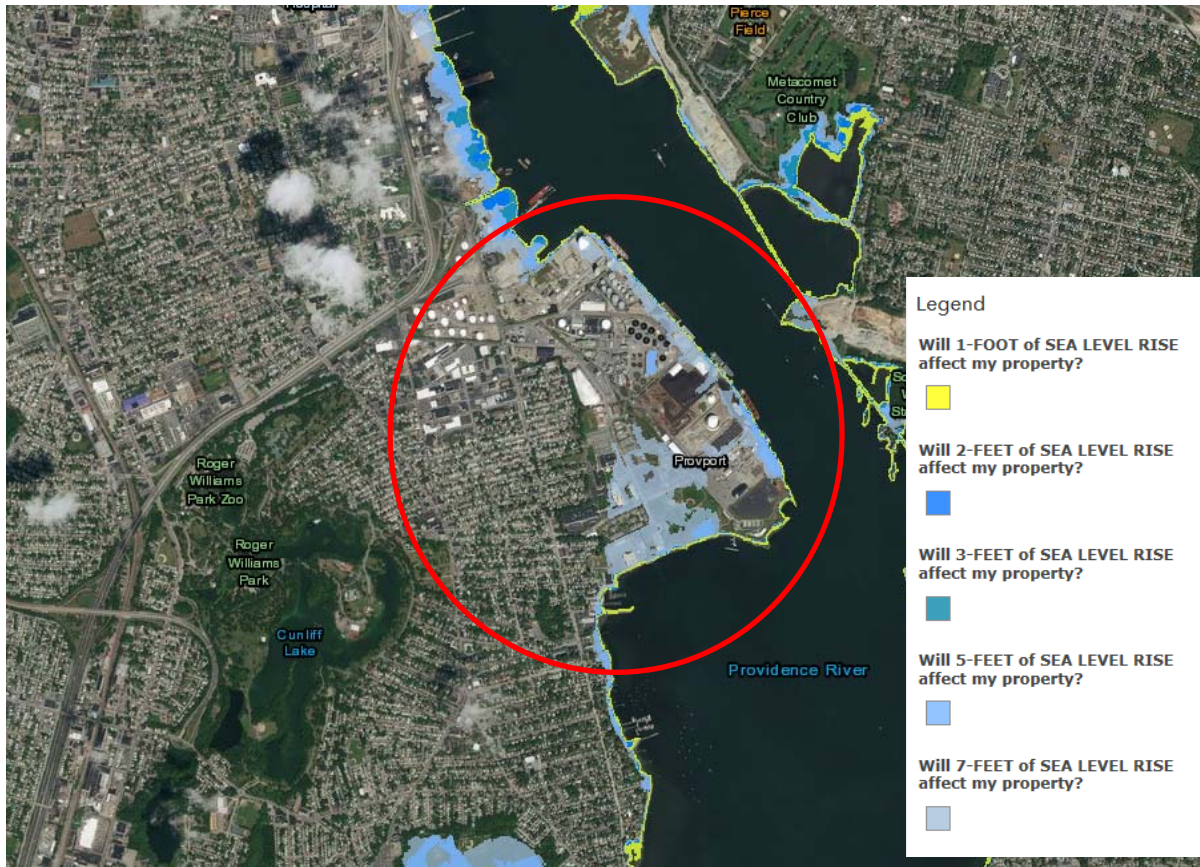
Note that STORMTOOLS is a planning tool, not a model of certainty at a specific location. The maps are only as good as the data they were built from. The STORMTOOLS maps were generated using the 2012 NOAA sea level rise data with all elevations given referenced to NAVD88. The statewide Rhode Island 2011 LIDAR Digital Elevation Model was also used. These simplified maps do not take into consideration structure height, only surface flood elevations.

Using this methodology, six of the identified intermodal hubs were found to be susceptible to impacts of sea level rise.

Intermodal Freight Hub	Magnitude of sea level rise
Port of Providence	2-foot sea level rise – moderate impact 7-foot sea level rise – significant impact
Tiverton Marine Terminal	7-foot sea level rise – moderate impact
Port of Davisville	7-foot sea level rise – significant impact
Quonset Business Park and Airport	3-foot sea level rise – significant impact 5- and 7-foot sea level rise – widespread significant impact
Port of Newport	2 to 3-foot sea level rise – moderate impact 5-foot sea level rise – widespread significant impact
Port of Galilee	3-foot sea level rise – moderate impact 5-foot sea level rise – widespread significant impact

Port of Providence

The Port of Providence is mainly susceptible to seven or more feet of sea level rise in some areas, though there are pockets vulnerable to sea level rise as low as two feet.



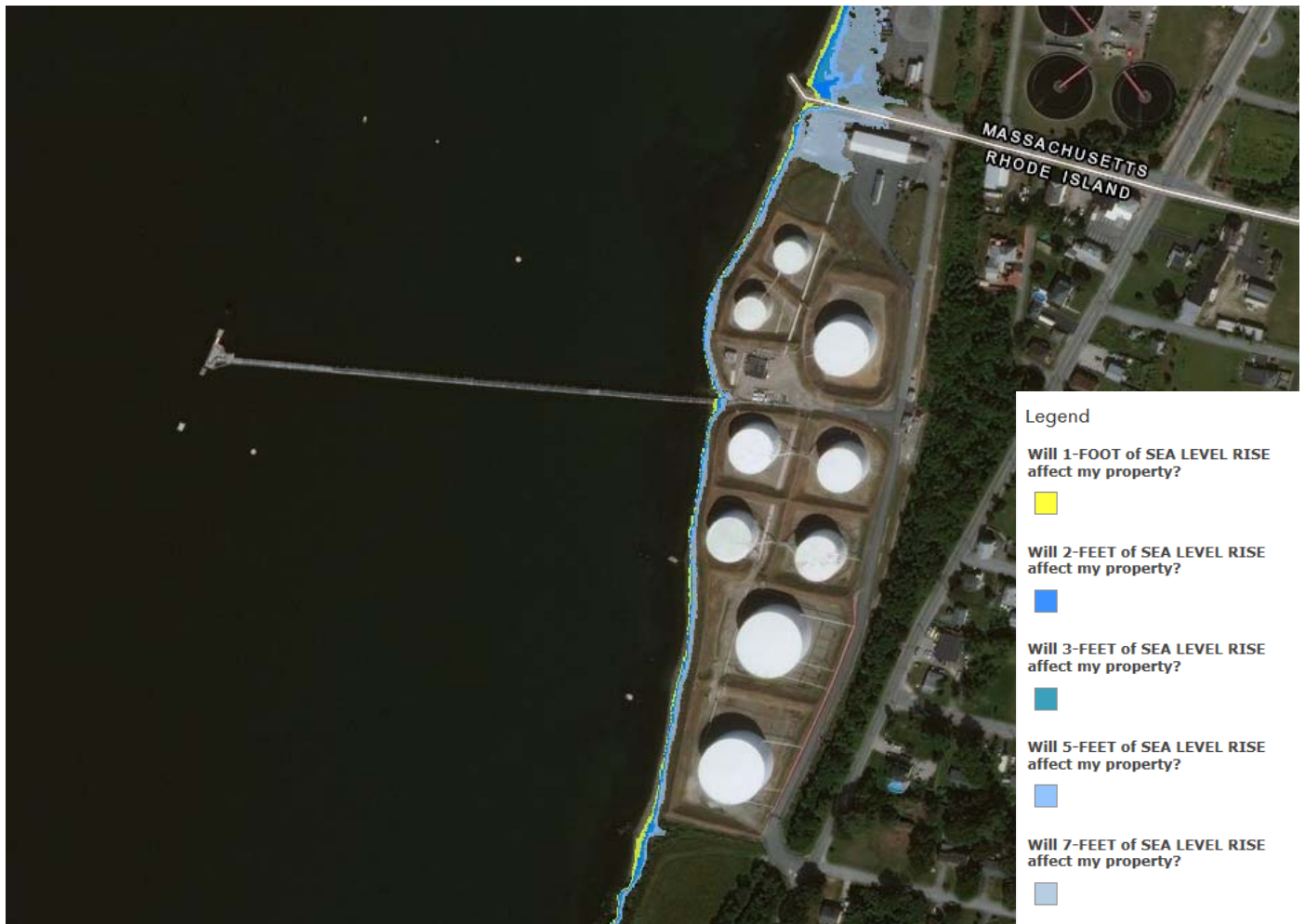
T.F. Green Airport

T.F. Green Airport in Rhode Island is not susceptible to sea level rise impacts.



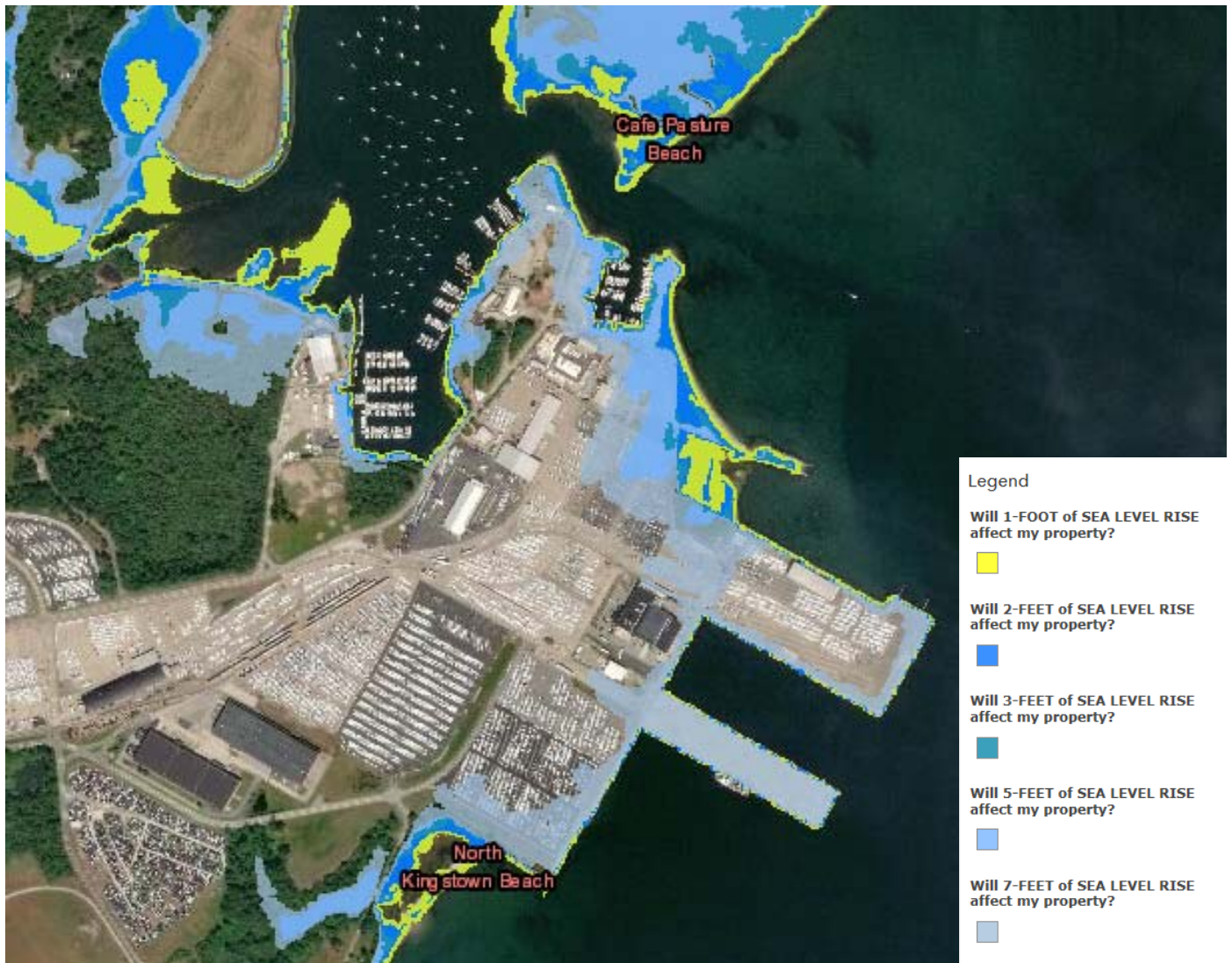
Tiverton Marine Terminal

The Tiverton Marine Terminal susceptible to sea level rise of seven feet or more mainly at the northerly end of the site.



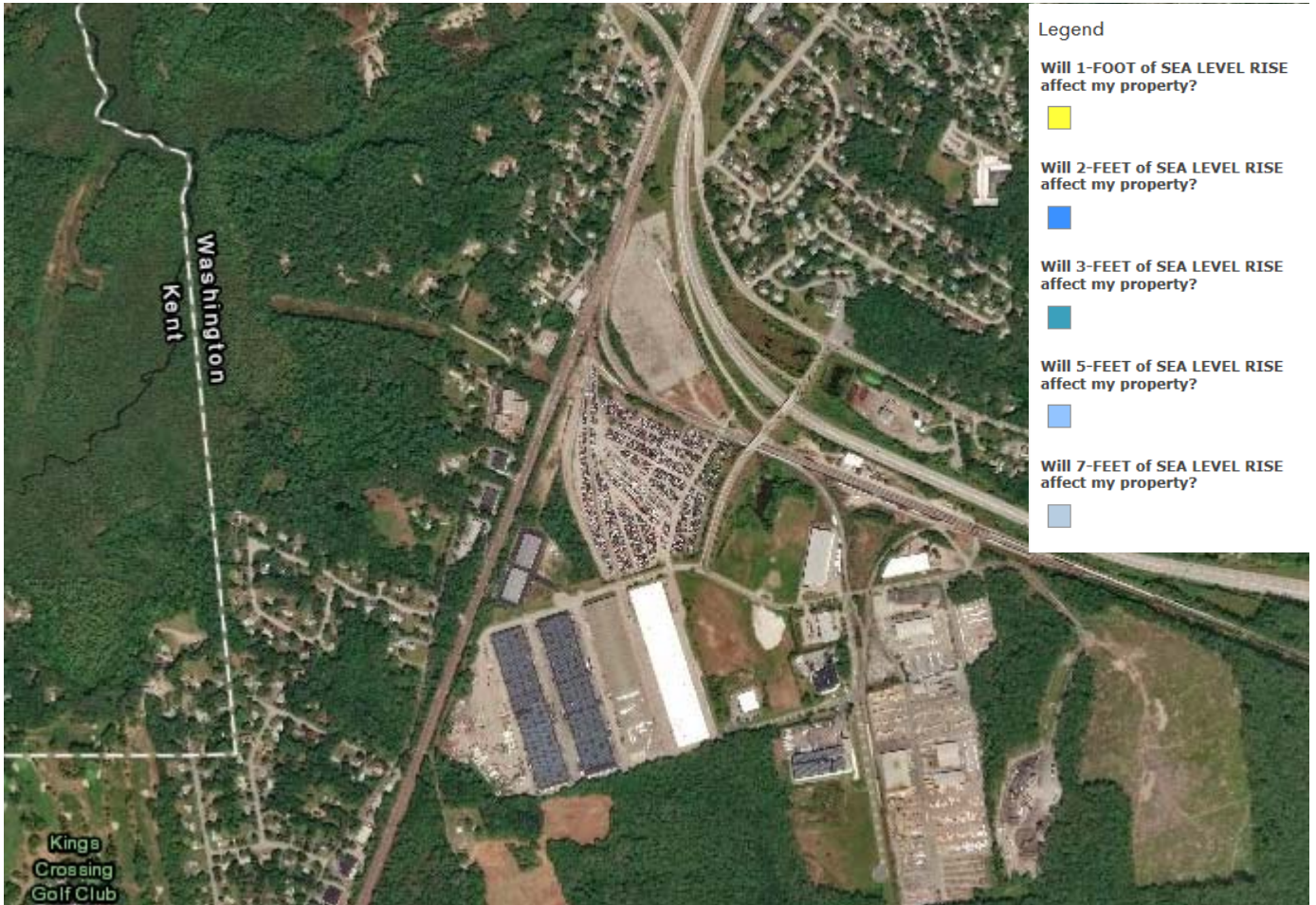
Port of Davisville

The Port of Davisville is anticipated to experience impacts mainly at seven feet of sea level rise and greater. Other flooding is indicated at the margins of the site, though these are mainly wetland and beach areas as opposed to the port facility proper. The effect of seven-foot SLR would be widespread across the port site.



Seaview Junction

Seaview Junction, where the Seaview Railroad intersects the Northeast Corridor rail alignment, is not anticipated to have any sea level rise impacts.

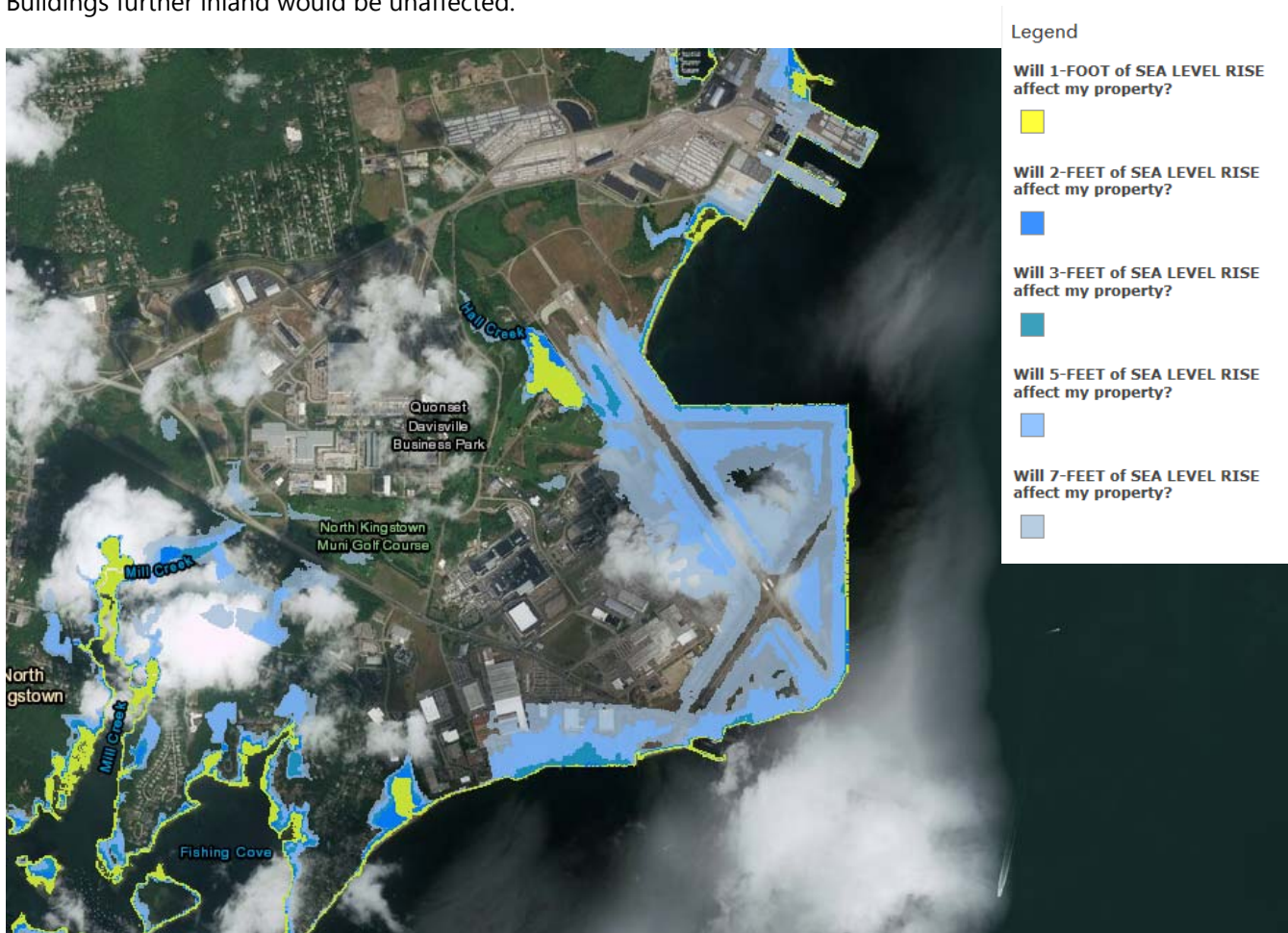


Quonset Business Park and Quonset Airport

The airport areas of Quonset Business Park will be acutely impacted by sea level rise, mainly at the five- and seven-foot levels. Large portions of the airport areas would be affected, including the main runway and many ancillary airport facilities.

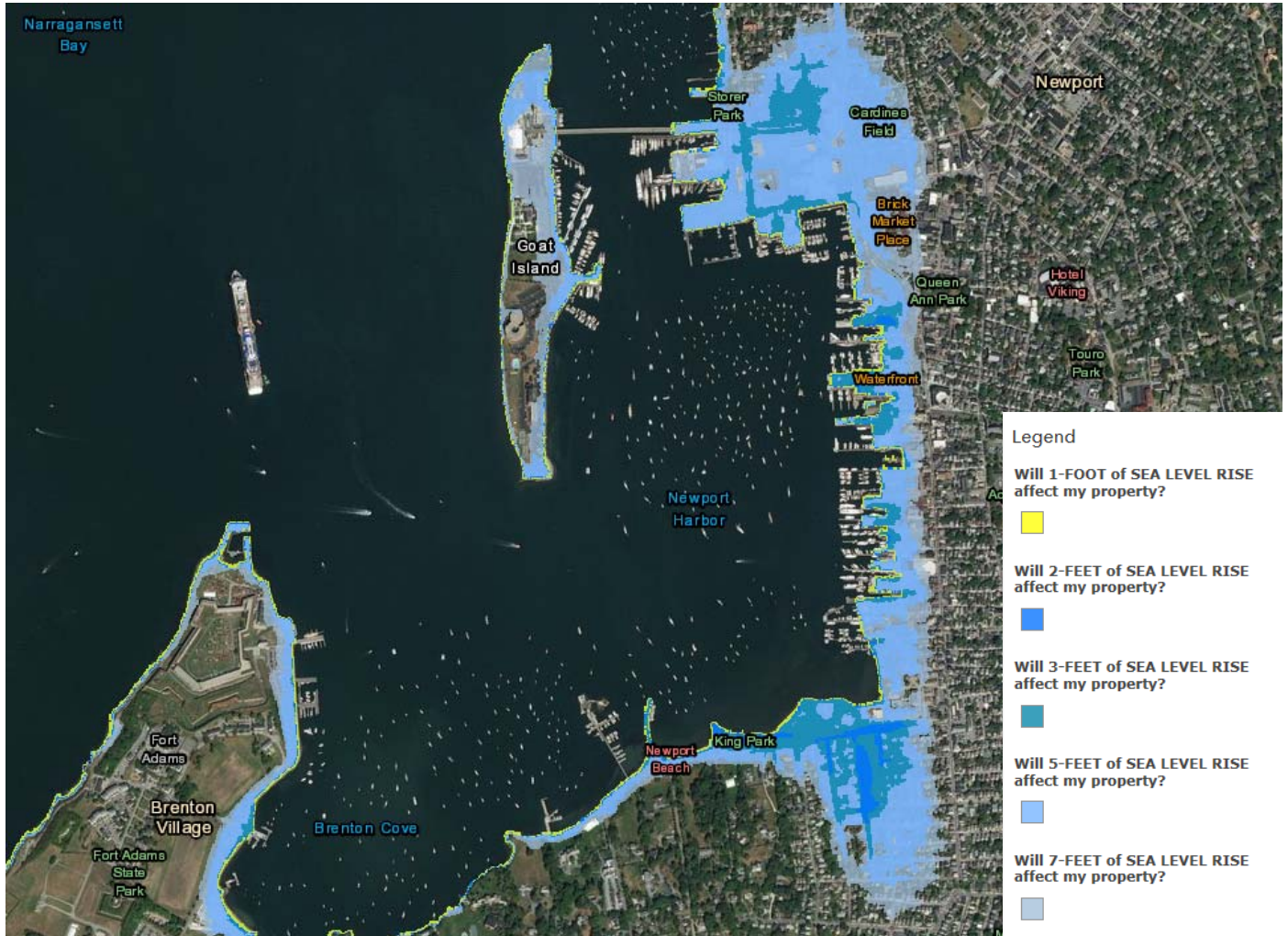
Port facilities to the south of the airport, including the Senesco Terminal and others locations west of the North Kingstown Beach would be significantly impacted starting at the three-foot level, and impacts would be widespread at sea level rise of five and seven feet.

Buildings further inland would be unaffected.



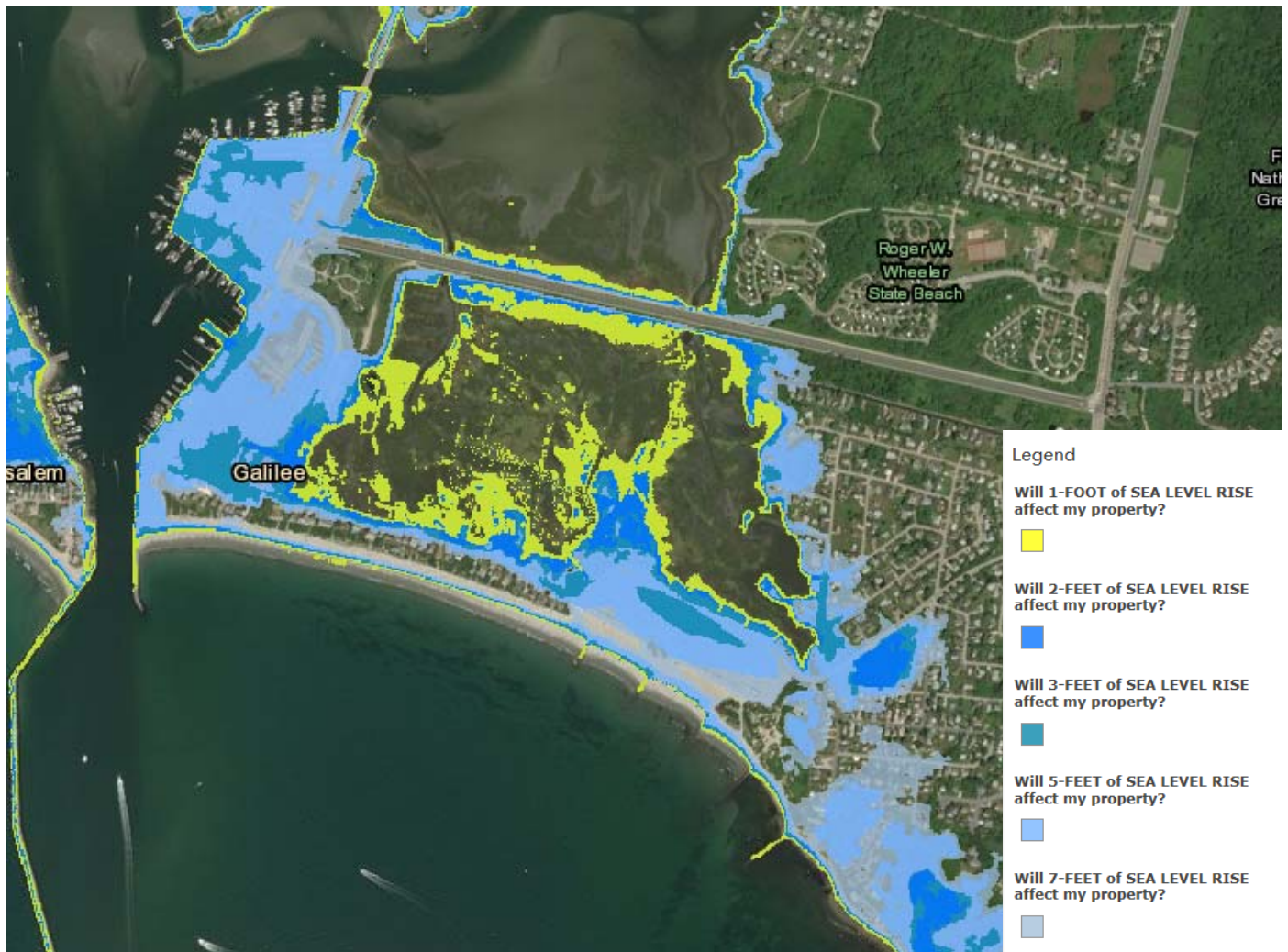
Port of Newport

The Port of Newport is expected to experience significant and widespread impacts from sea level rise of five feet for the length of the site, with some limited pockets of port areas affected by sea level rise of two to three feet. Portions of Goat Island and more inland areas near the Port of Newport would be impacted by 7-foot sea level rise, as well.



Port of Galilee

The Port of Galilee – the busiest fishing port in Rhode Island and primary port facility serving Block Island – is expected to be entirely affected by sea level rise of five feet, with less severe impacts visible at three feet, as well. Inland marshes would be affected by lower levels of flooding, but this is unlikely to affect the port or road access to the port.



To: Michael D'Alessandro, AICP
RI Division of Planning

Date: August 21, 2018

Project #: 72867.00

From: Kristin Caouette, PE
VHB

Re: PM #13.D: Passenger Intermodal Hubs Vulnerable to Sea Level Rise

Identifying Intermodal Hubs

Intermodal hubs are those hubs that provide commuters the ability to connect between modes of transportation. The following criteria were used to identify intermodal hubs in Rhode Island:

- Any location that connects two or more modes
- Both modes provide connectivity to multiple destinations (a park-and-ride connecting to 1-2 RIPTA routes does not constitute a hub)
- The location is an identified RIPTA station
- Rail stations are considered hubs because they provide regional connectivity
- Ferry terminals are not commuter hubs
- No criteria has been identified for evaluating bicycle access to intermodal hubs

Based on these criteria the following Intermodal Hubs have been identified.

- Pawtucket Transit Center, Pawtucket
- Kennedy Plaza, Providence
- Providence Station, Providence
- East Providence Transit Hub
- T.F. Green Airport, Warwick
- Wickford Junction, North Kingstown
- Kingston Station, South Kingstown
- Westerly Station, Westerly
- Newport Gateway Center, Newport

Intermodal Hub Vulnerability to Sea Level Rise

A sea level rise tool called STORMTOOLS was developed at the University of Rhode Island to help identify the landward extent of rising sea levels. The tool, available at <http://www.beachsamp.org/stormtools/> maps the following extents statewide:

- 1-foot SLR by 2035
- 2-feet SLR by 2050
- 3-feet SLR by 2065
- 5-feet SLR by 2085
- 7-feet SLR by 2100

Although the timing of SLR can be disputed, the landward extents can be useful for future planning efforts.

Using the basic STORMTOOLS for Beginners module, a street address can be typed into the search box to find out if a property will be affected by sea level rise. This method was applied to all nine transit hubs.

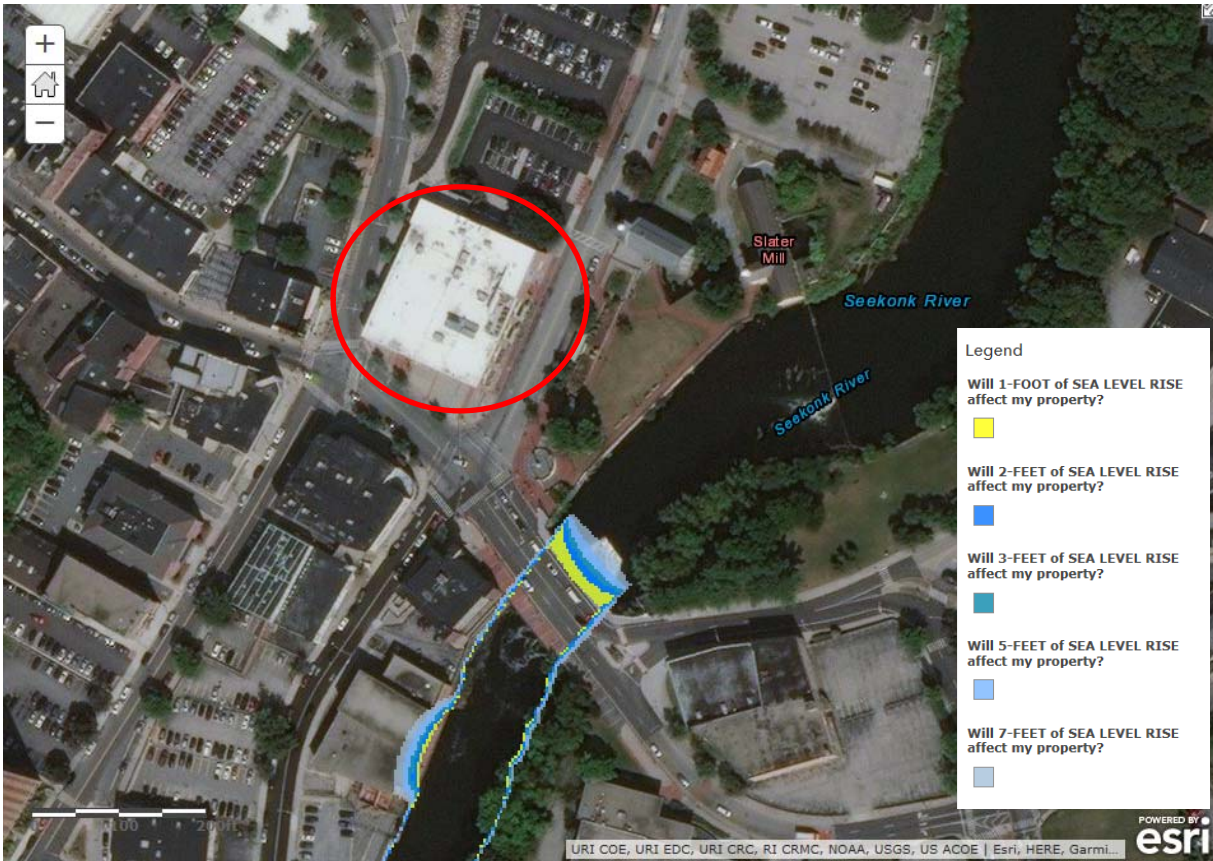
Note that STORMTOOLS is a planning tool, not a model of certainty at a specific location. The maps are only as good as the data they were built from. The STORMTOOLS maps were generated using the 2012 NOAA sea level rise data with all elevations given referenced to NAVD88. The statewide Rhode Island 2011 LIDAR Digital Elevation Model was also used. These simplified maps do not take into consideration structure height, only surface flood elevations.

Using this methodology, two of the identified intermodal hubs were found to be susceptible to impacts of sea level rise.

Intermodal Hub	Magnitude of sea level rise
Kennedy Plaza, Providence	7-foot sea level rise – significant impact
Newport Gateway Center	5-foot sea level rise – moderate impact 7-foot sea level rise – significant impact

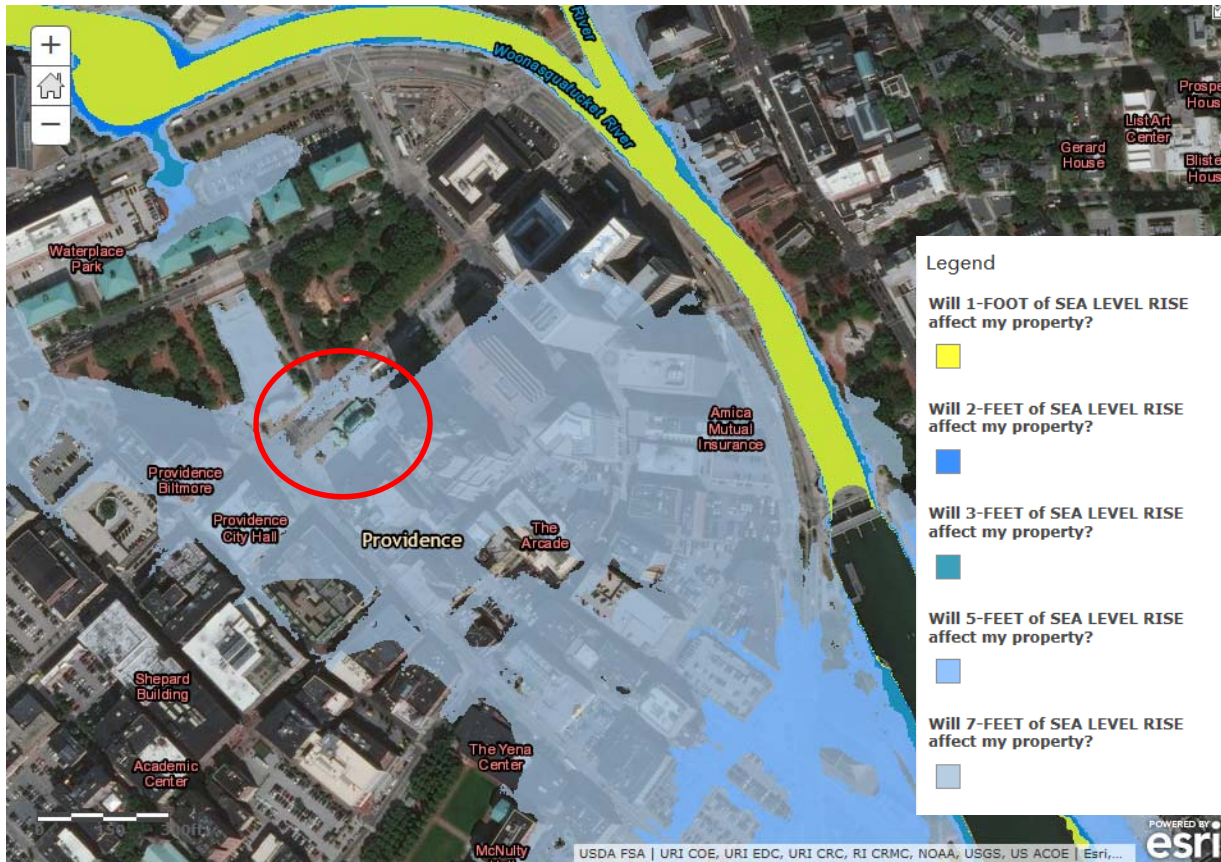
Pawtucket Transit Center (15 Roosevelt Avenue)

Although located next to the Seekonk River, the Pawtucket Transit Center is not susceptible to inundation of sea level rise.



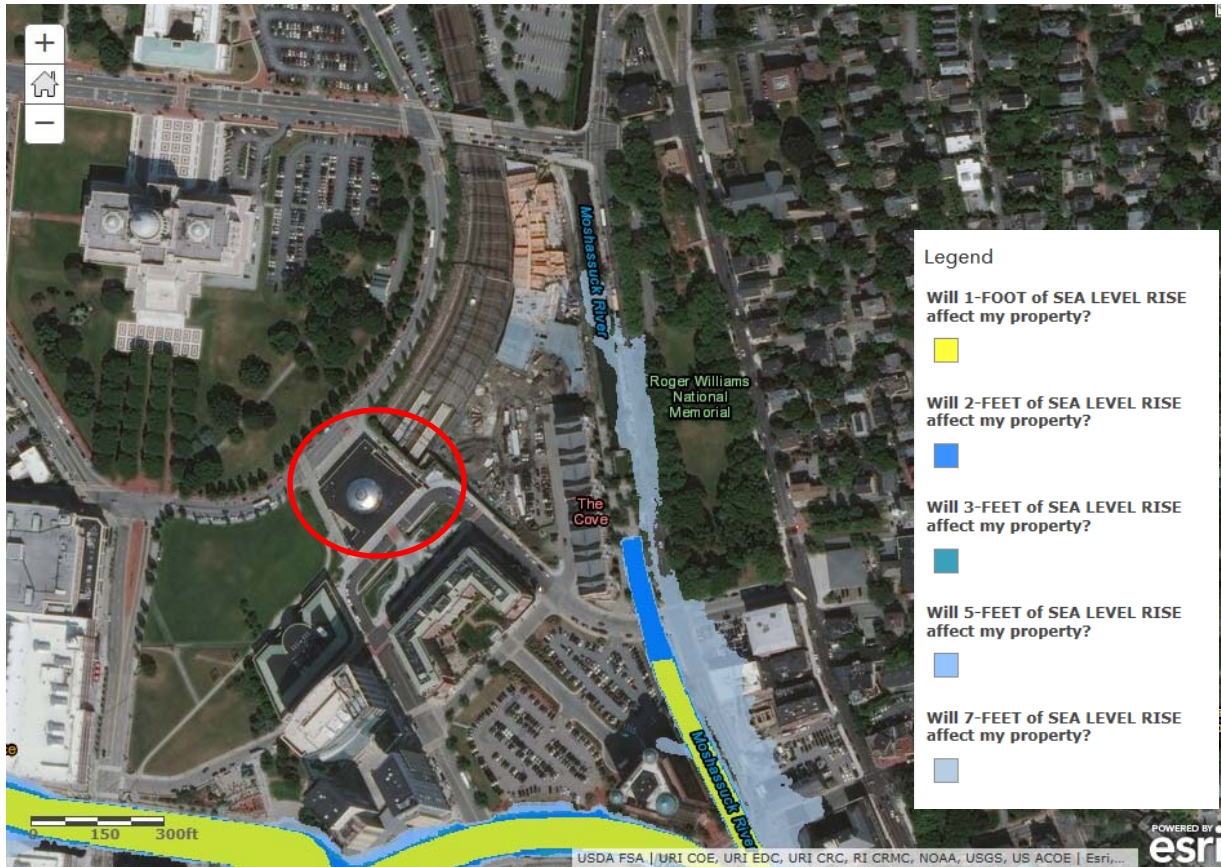
Kennedy Plaza

Kennedy Plaza in downtown Providence is susceptible to at least 7 feet of sea level rise. Although located upstream of the hurricane barrier, higher levels of sea level rise are expected to affect the low areas of downtown Providence along the Woonasquatucket River.



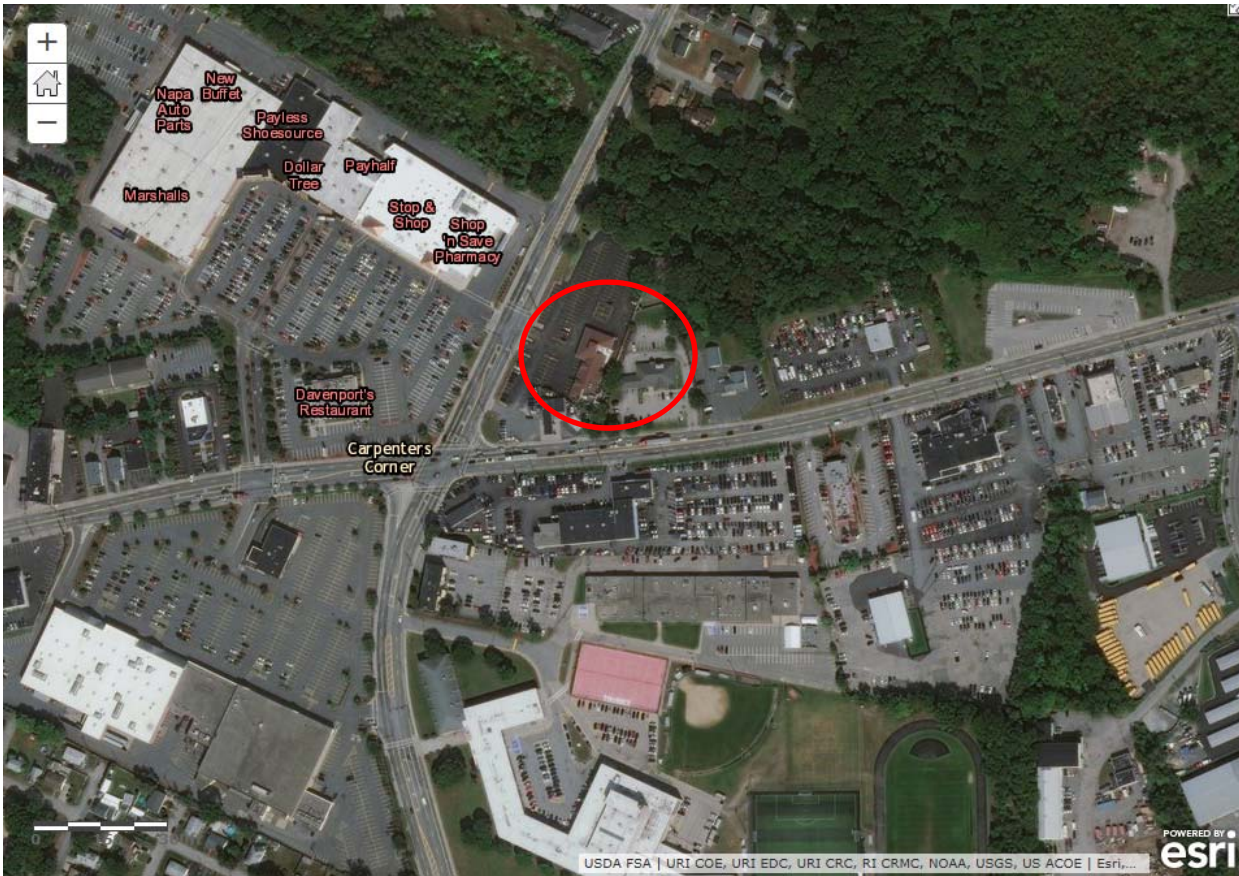
Providence Station

Providence Station, located inland from the Moshassuck River is not susceptible to sea level rise.



East Providence Transit Hub (618 Taunton Ave.)

The transit hub in East Providence is located away from the coast and is not susceptible to sea level rise impacts.



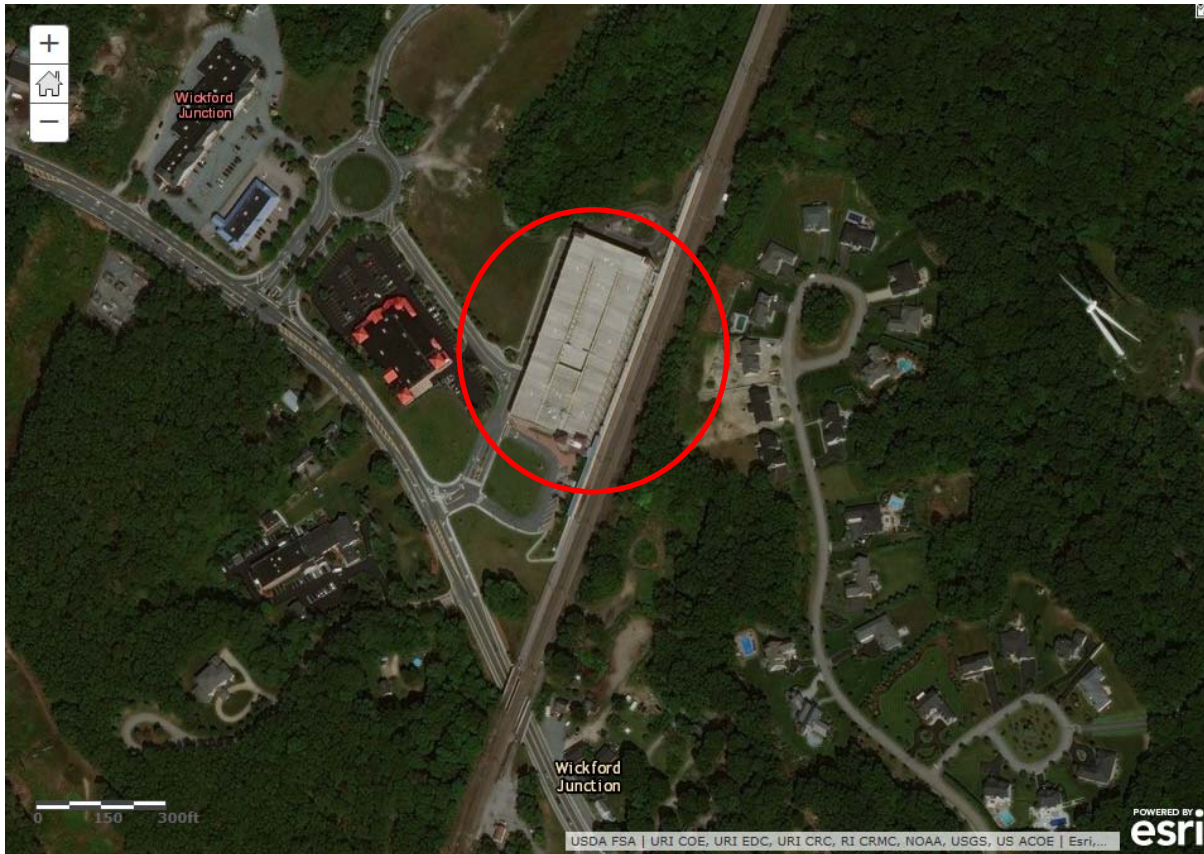
T.F. Green Airport

T.F. Green Airport in Rhode Island is not susceptible to sea level rise impacts.



Wickford Junction

The transit hub at Wickford Junction is located far enough inland and is not susceptible to sea level rise impacts.



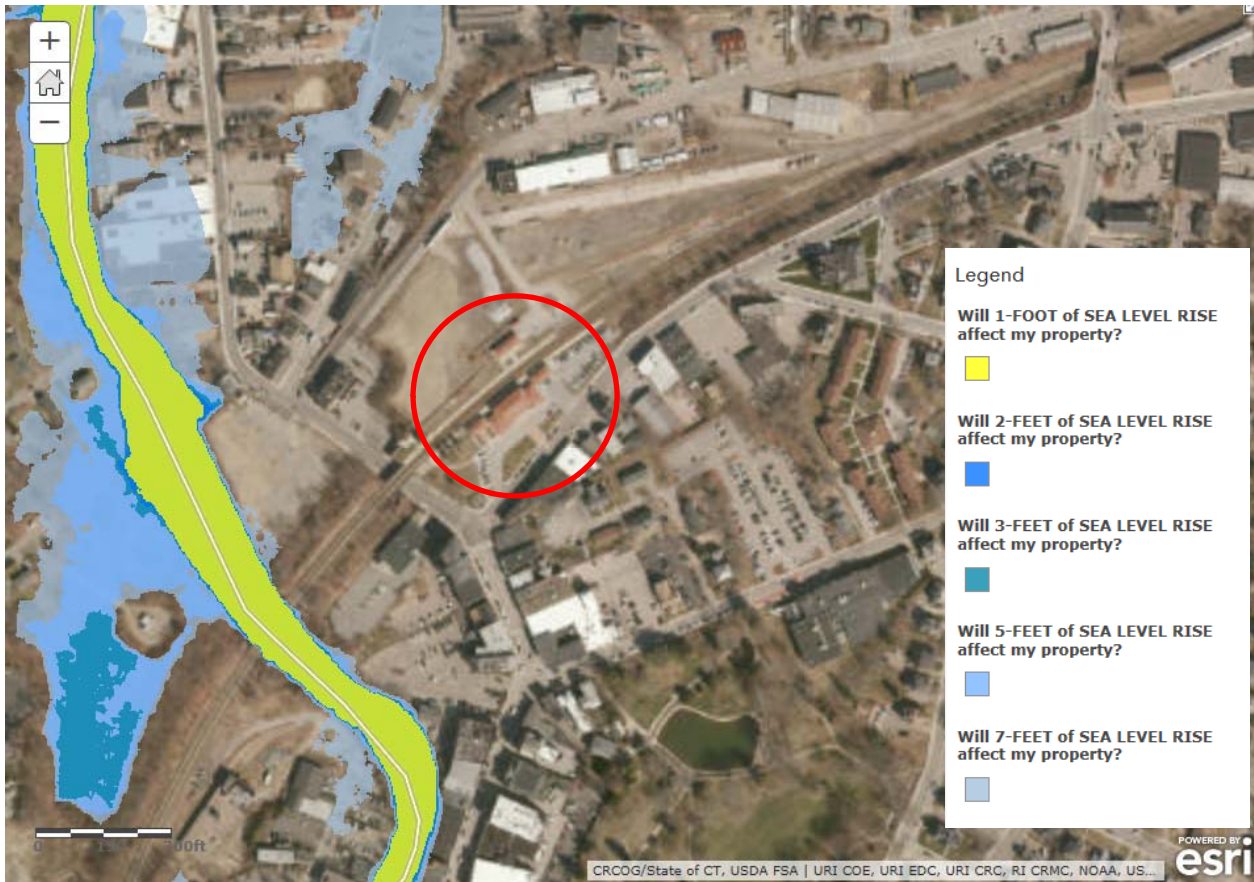
Kingston Station (West Kingstown)

Located far from the coast, Kingston Station is not vulnerable to sea level rise impacts.



Westerly Station

The Westerly Station is located near the Pawcatuck River but is not susceptible to sea level rise impacts. The rail tracks southwest of the station are elevated above the river.



Newport Gateway Center

The Newport Gateway Center and the surrounding downtown area will begin to feel the impacts from 3 feet of sea level rise.

