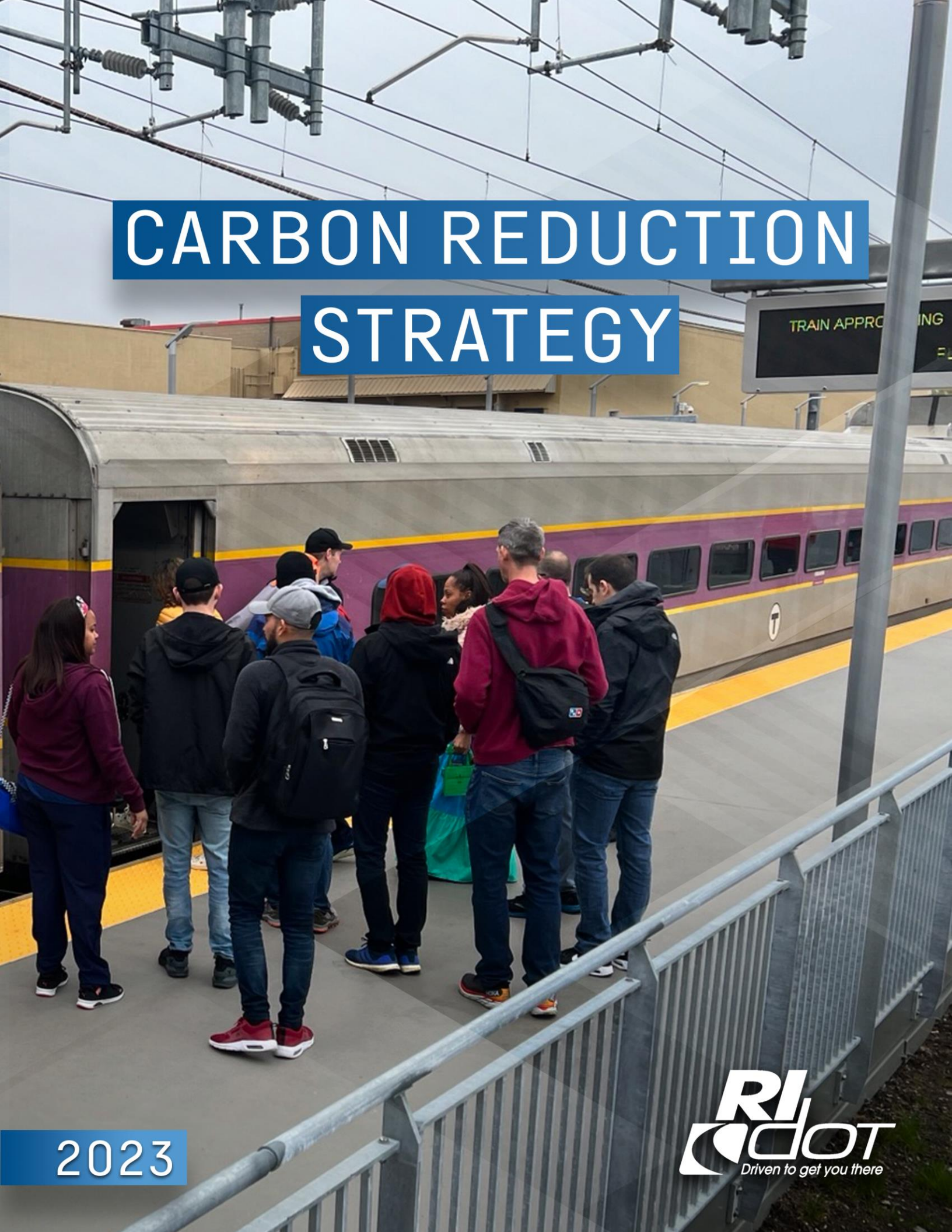


CARBON REDUCTION STRATEGY



2023

Carbon Reduction Strategy

Rhode Island Department of Transportation

date

November 2023



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1.0 EXECUTIVE SUMMARY

1.1 Objectives

The Rhode Island Department of Transportation (RIDOT) created this Carbon Reduction Strategy (CRS) with the following objectives:

- To support **implementation of the 2021 Act on Climate** requiring the state to achieve net zero greenhouse gas (GHG) emissions by 2050.¹
- To complete a **baseline assessment and forecast** of the carbon impacts of the transportation sector in Rhode Island.
- To identify **funding priorities** for U.S. Department of Transportation (U.S. DOT) Carbon Reduction Program funds.
- To establish a **framework for the future of carbon reduction planning at RIDOT** and identify additional strategies that RIDOT and its partners should engage in to reduce emissions.

This document fulfills U.S. DOT requirements for each state to develop a Carbon Reduction Strategy. Implementation of projects funded through the Carbon Reduction Program is just one step on the path to achieving net zero. RIDOT recognizes that implementation of projects funded through the Carbon Reduction Program is just one step on the path to achieving net zero and that implementation of the CRS will assist us in accomplishing that mission. RIDOT and other state agency partners in the RI EC4 are actively working on an expanded effort to fully achieve that goal. While this document proposes additional steps for RIDOT's involvement, a complete plan to decarbonize Rhode Island's transportation sector is being developed through a multi-agency, stakeholder-driven process to meet the state's more ambitious 2025 Climate Action Plan update.

1.2 Development Process

The CRS' development process consisted of:

- A baseline assessment and forecast of transportation GHG emissions, including a sensitivity test for alternative electrification futures.
- A review of existing RIDOT and other State of Rhode Island plans supporting emissions reductions.
- Collecting and summarizing information on the effectiveness of transportation GHG reduction strategies.

¹ State of Rhode Island. (2022, June 21). Act on Climate. Act on Climate | Climate Change. Retrieved May 1, 2023, from <https://climatechange.ri.gov/act-climate>.



- A review of quantified GHG emissions reductions from projects included in the Statewide Transportation Improvement Program (STIP).
- Identification and prioritization of projects to be funded through the Carbon Reduction Program.
- Identification of additional strategies and actions to reduce Rhode Island’s transportation GHG emissions.

The process included consultation with key stakeholders, including the state’s Metropolitan Planning Organization (MPO), as well as other state agencies, a sampling of advocacy groups, and the general public through a 30-day public comment period on the draft CRS. Engagement opportunities included: 1) direct consultation with other agencies; 2) a stakeholder workshop in September 2023 to identify and prioritize additional strategies; 3) presentations for the Transportation Advisory Committee (TAC) and State Planning Council (SPC), at meetings open to the public; and 4) a 30-day public comment period. Stakeholder input was especially considered in the formulation of additional recommendations as well as priorities for CRP program funding.

1.3 Baseline Transportation GHG Inventory and Alternative Forecast Scenarios

Base year emissions were estimated for four transportation categories: on-road private mobile sources, on-road public transit, rail transit, and construction and maintenance activities. Emissions were then forecasted at five-year intervals through 2050, at which time the State of Rhode Island is statutorily required reach net zero greenhouse gas emissions under the [2021 Act on Climate](#). These estimates were informed by recent trends and current policies. An alternative forecast also was developed considering the potential for accelerated adoption of zero-emission vehicles.

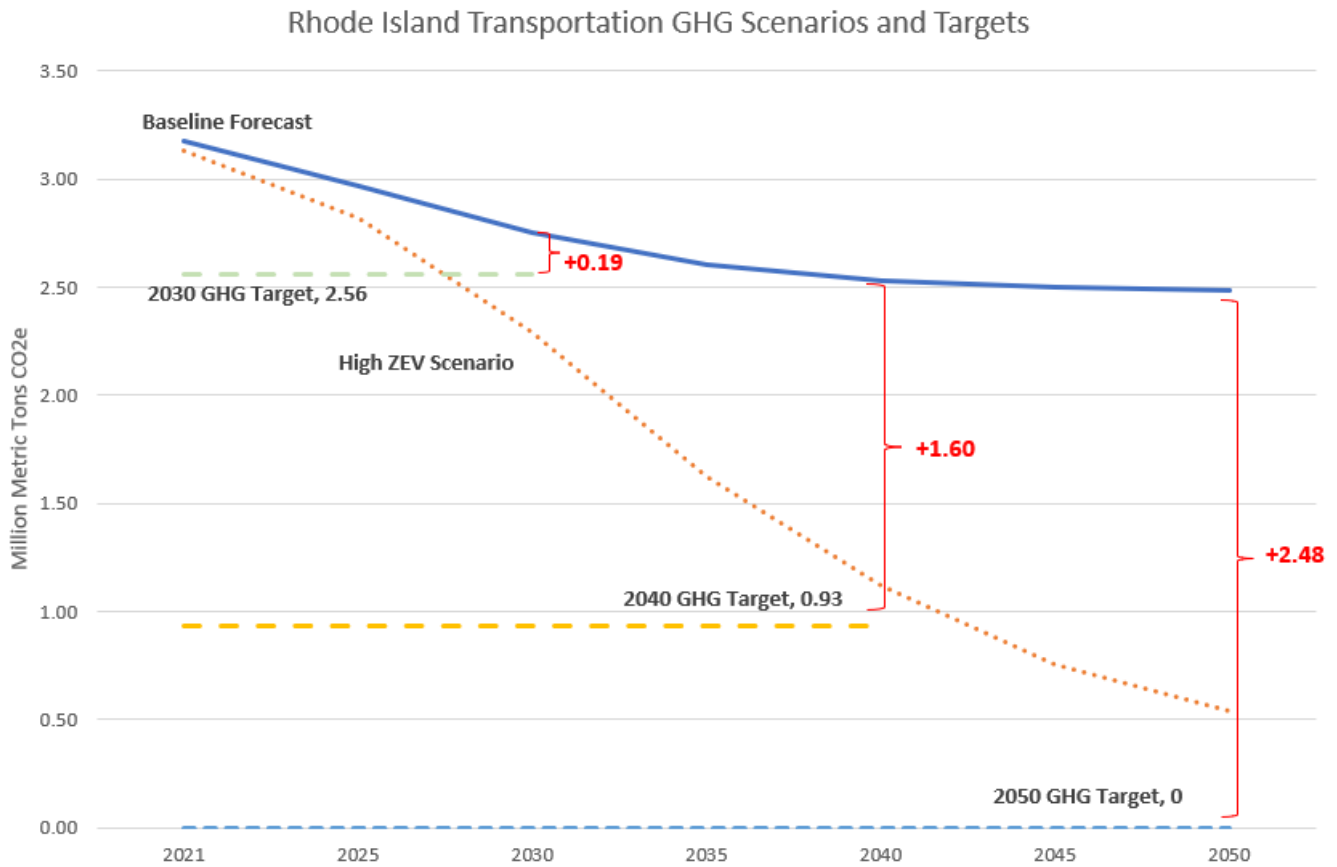
In 2021, it was estimated that on-road sources, rail transportation, and roadway construction and maintenance activities were responsible for a total of 3.2 million metric tons (MMT) of carbon dioxide-equivalent (CO_{2e}) emissions. The vast majority (nearly 99 percent) of emissions are from on-road cars and trucks, with 1.4 percent from buses, rail vehicles, and construction and maintenance activities.

Under current adopted policies, emissions are projected to decline to 2.8 MMT in 2030 and about 2.5 MMT in 2040 in 2050—leaving a very significant gap compared to the state’s goal of net-zero emissions (Figure 1.1). With high rates of zero-emission vehicle adoption as proposed under Advanced Clean Cars 2 and Advanced Clean Cars Trucks rules, emissions would decline to about 1.1 MMT in 2040 and 0.5 MMT in 2050—an 80 percent reduction from the baseline projection in 2050, but still well short of the net-zero requirement. A principal objective of this plan is to identify strategies for policymaking and investment that will facilitate the pursuit of the net-zero targets codified in state law and recent action plans.

Even with the adoption of advanced clean cars and trucks rules, Rhode Island is expected to fall well short of the transportation emission reductions needed to achieve state requirements. A principal objective of this Plan is to identify policies and investments that will facilitate the pursuit



Figure 1.1 Rhode Island Transportation GHG Emissions Scenarios and Targets



Note: GHG targets were calculated based on 1990 transportation emissions of 4.65 million metric tons CO₂e, as reported in the [Rhode Island 2022 Climate Update](#). For consistency in target-setting, the 1990 emission value excludes aviation. There are some minor accounting differences in the estimation of offroad emissions sources between the 1990 baseline and the projected emissions assessment in this report.

1.4 Current Plans Supporting Transportation GHG Emissions Reduction

The state’s 2021 Act on Climate set GHG targets of 45 percent below 1990 levels by 2030, 80 percent below 1990 levels by 2040, and net zero by 2050.² The 2016 *Greenhouse Gas Emissions Reduction Plan*, and a 2022 update of this plan, provide a strategy for reducing the state’s emissions, including transportation sector

² <http://webserver.rilin.state.ri.us/Statutes/TITLE42/42-6.2/42-6.2-9.htm>.



recommendations. The state’s 2021 *Clean Transportation and Mobility Innovation Report* outlined a strategic plan aimed toward fostering clean transportation and mobility in the state.

RIDOT and the Division of Statewide Planning have developed a variety of plans that support carbon reduction. One of five goal areas in the Long-Range Transportation Plan, *Moving Forward RI-2040*, is to “promote environmental sustainability;” the plan identifies the need to reduce vehicle-miles of travel. The 2020 *Congestion Management Plan* recommends congestion management strategies and solutions that can reduce carbon emissions by reducing inefficient driving in low-speed and stop-and-go traffic. The Transit Master Plan, *Transit Forward RI-2040*, presents a program to better meet the transportation needs of the state’s residents, workers, and visitors, reducing emissions by encouraging mode shift away from driving. Similarly, the 2020 *Statewide Bicycle Mobility Plan* identifies bicycle infrastructure and policy that can encourage mode shift. A policy guide for electrifying transportation and the *State Plan for Electric Vehicle Infrastructure Deployment* chart a path towards building out public infrastructure to support statewide electrification.

1.5 Benefits and Cost-Effectiveness of GHG Reduction Strategies

The 2021 *Clean Transportation and Mobility Innovation Report* provided information on other benefits of GHG reduction strategies as well as the relative cost-effectiveness of these strategies, or how much benefit can be obtained per dollar invested. Strategies were rated according to cost-effectiveness for reducing GHG emissions, as shown in Table 1.1.

Table 1.1 Transportation GHG Reduction Strategies by Cost-Effectiveness

Moderate	Strong	Very Strong
<ul style="list-style-type: none"> • Transit and rail service expansion • Shared ride incentives • Pedestrian investment 	<ul style="list-style-type: none"> • Micromobility (electric bicycles) • Bicycle infrastructure • Bus service efficiency improvements • Travel demand and mobility management 	<ul style="list-style-type: none"> • Electrification and alternative fuels • Traffic flow improvements • Land use (compact, walkable development near transit)

Note: Based on State of Rhode Island (2021). *Clean Transportation and Mobility Innovation Report*. <https://climatechange.ri.gov>.

The strategies were also identified as having varying degrees of other important benefits, including mobility, equity, air quality, and health benefits.

1.6 Evaluation of RIDOT’s Capital Program

RIDOT’s State Transportation Improvement Plan contains a range of projects that are likely to impact carbon emissions. At this point RIDOT has not quantified the GHG impact of individual STIP projects. However, three

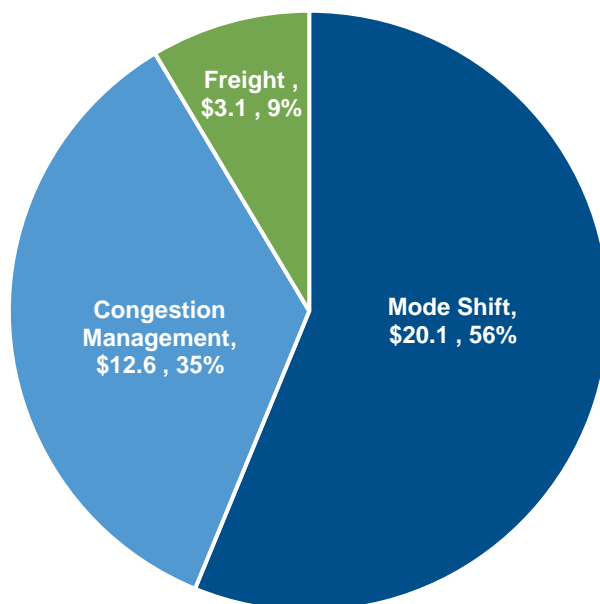


projects of regional significance—the Opening of the Cranston Canyon, Route 146 Reconstruction, and Completion of the I-95 Missing Move and Quonset Connector Ramps—were subject to quantification of GHG emissions in their planning and design stages. These projects were estimated to collectively reduce approximately 10,000 metric tons of GHGs per year. The scale of emission reduction is relatively small compared to total transportation emissions and projects in Rhode Island’s construction program will not substantially “move the needle” when it comes to carbon reduction. Nevertheless, these projects are also providing critical mobility and safety benefits for Rhode Island’s residents, visitors, and freight industry.

1.7 Carbon Reduction Program Funding

The Carbon Reduction Program will provide an estimated \$35.7 million to the state between Federal Fiscal Years 2022 and 2026. Around \$13.1 million has been spent on existing projects in the Statewide Transportation Improvement Program, with just over half of those funds expended on congestion management projects and the remainder on projects that encourage mode shifting and reduce freight emissions. The remaining \$22.6 million will be allocated primarily towards projects that support mode shift. Figure 1.2 provides an overview of the levels of funding and types of projects funded through the CRS.

Figure 1.2 Assignment of Carbon Reduction Program Funding (\$millions)



1.8 Additional Strategies to Reduce Emissions

Carbon Reduction Program funding represents an important step in helping decarbonize Rhode Island’s transportation sector and support the state’s greenhouse gas reduction goals. RIDOT recognizes that implementation of projects funded through the Carbon Reduction Program is just one step on the path to



achieving net zero and that implementation of the CRS will assist us in accomplishing that mission. RIDOT and other state agency partners in the RI EC4 are actively working on an expanded effort to fully achieve that goal. While this document proposes additional steps for RIDOT's involvement, a complete plan to decarbonize Rhode Island's transportation sector is being developed through a multi-agency, stakeholder-driven process to meet the state's more ambitious 2025 Climate Action Plan update. Considering the strategies identified in existing state planning documents, as well as the outcomes of the stakeholder workshop and other involvement conducted in support of this Strategy, RIDOT will work with its partners to undertake the following actions:

1. Continue to support statewide **electrification/zero-emission vehicle transition** by developing public charging infrastructure and supporting fleet transition efforts.
2. Within constraints of available funding, prioritize **mode shift projects** in programming, including transit service enhancements consistent with the Transit Master Plan, pedestrian and bicycle infrastructure, and micromobility, rideshare, and carshare services.
3. Undertake research, development, and demonstration needed to reduce **emissions from RIDOT's activities**, including clean fleets, low carbon materials, and green infrastructure.
4. Update and expand **plans, policies, and analysis methods** to support carbon reduction, including a Complete Streets plan and guidelines, improved data and modeling systems, revised project selection criteria, and support for smart land use practices.
5. Work with the legislature and partner agencies to explore potential **alternative funding sources** to support additional carbon reduction project and strategy implementation.



2.0 OVERVIEW AND OBJECTIVES

Key Takeaways:

- *This Carbon Reduction Strategy guides RIDOT's use of Federal Carbon Reduction Program funds, while also identifying broader strategies to reduce emissions from the transportation sector and help the state meet its greenhouse gas emission reduction requirements.*

2.1 Rhode Island's Carbon Reduction Strategy Objectives

The Rhode Island Transportation Carbon Reduction Strategy was created with the following objectives:

- To support **implementation of the 2021 Act on Climate**, which requires the state to reduce GHG emissions 45 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2040, and achieve net zero emissions by 2050.³
- To complete a **baseline assessment and forecast** of the carbon impacts of the transportation sector in Rhode Island.
- To identify **funding priorities** for U.S. DOT Carbon Reduction Program funds provided to Rhode Island for the federal fiscal years 2022 through 2026.
- To establish a **framework for the future of carbon reduction planning at RIDOT** and identify additional strategies that RIDOT and its partners should engage in beyond the projects funded by the Carbon Reduction Program.

Given the transportation sector is responsible for nearly 40 percent of the state's GHG emissions, a focus on reducing transportation carbon emissions is essential to ensuring that Rhode Island stays on track with its climate goals.⁴

While this document is mainly focused on addressing U.S. DOT requirements for each state to develop a Carbon Reduction Strategy, implementation of projects funded through the Carbon Reduction Program is just one step on the path to achieving net zero. RIDOT recognizes that implementation of projects funded through the Carbon Reduction Program is just one step on the path to achieving net zero and that implementation of the CRS will assist us in accomplishing that mission. RIDOT and other state agency partners in the RI EC4 are actively working on an expanded effort to fully achieve that goal. While this document proposes additional steps for RIDOT's

³ State of Rhode Island. (2022, June 21). Act on Climate. Act on Climate | Climate Change. Retrieved May 1, 2023, from <https://climatechange.ri.gov/act-climate>.

⁴ Rhode Island Department of Environmental Management. Greenhouse Gas Emissions Inventory. <https://dem.ri.gov/environmental-protection-bureau/air-resources/greenhouse-gas-emissions-inventory>.



involvement, a complete plan to decarbonize Rhode Island’s transportation sector is being developed through a multi-agency, stakeholder-driven process to meet the state’s more ambitious 2025 Climate Action Plan update.

2.2 Federal Carbon Reduction Program Requirements

This Strategy is developed in accordance with the U.S. DOT requirement to develop and submit a Carbon Reduction Strategy by November 15, 2023⁵. Pursuant to the Infrastructure Investment and Jobs Act of 2021, states are required to develop a Carbon Reduction Strategy in consultation with any Metropolitan Planning Organization (MPO) designated within the state (23 U.S.C. 175(d)(1)).

According to U.S. DOT program guidance, each state’s Carbon Reduction Strategy should:⁶

- Support efforts to reduce transportation emissions.
- Identify projects and strategies to reduce transportation emissions.
- At the discretion of the state, quantify the total carbon emissions from the production, transport, and use of materials used in the construction of transportation facilities within the state.
- Be appropriate to the population density and context of the state.

The Carbon Reduction Strategy must be updated at least once every four years. States and MPOs are encouraged to obligate program funding for projects that support implementation of the state’s Carbon Reduction Strategy. Program funding may be used on a wide range of projects that support the reduction of transportation emissions.

2.3 Contents of the Strategy

The remainder of this document is organized as follows:

- Section 3.0 of this document describes the process by which it was developed, including stakeholder consultation.
- Section 4.0 presents a baseline assessment and forecast of transportation GHG emissions for the state through 2050.
- Section 5.0 presents an alternative forecast assuming the state adopts advanced clean vehicle standards.
- Section 6.0 describes existing plans and policies in the state supporting transportation emissions reduction.

⁵ U.S. Department of Transportation. (2022, April 20). *Bipartisan Infrastructure Law—Carbon Reduction Program (CRP) fact sheet: Federal Highway Administration. Bipartisan Infrastructure Law—Carbon Reduction Program (CRP) Fact Sheet | Federal Highway Administration.* https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp_fact_sheet.cfm.

⁶ Federal Highway Administration. *Carbon Reduction Program (CRP) Implementation Guidance (Memorandum), April 1, 2022.*



- Section 7.0 presents information on the cost-effectiveness and co-benefits of carbon reduction strategies.
- Section 8.0 discusses the State Transportation Improvement Program and how emissions are considered in developing the program.
- Section 9.0 identifies projects programmed or proposed for the use of CRP funds.
- Section 10.0 identifies additional strategies that RIDOT and partner agencies can undertake to reduce transportation emissions.
- Appendix A provides more detail on the projects programmed or proposed for CRP funding.
- Appendix B provides more detail on the baseline inventory and forecast.
- Appendix C provides the public comments received on the draft CRP and RIDOT's response to those comments.



3.0 STRATEGY DEVELOPMENT PROCESS AND STAKEHOLDER COORDINATION

Key Takeaways:

- *RIDOT engaged other state agencies and a sampling of advocacy groups in the development of carbon reduction strategies and priorities through an in-person workshop, in addition to providing the opportunity for public comment on the draft strategy.*
- *Presentations were made to councils of the state's MPO, ensuring MPO coordination in CRS development; as well as to a broader group of state agencies charged with reducing GHG emissions.*

3.1 Summary of CRS Development Process

The Carbon Reduction Strategy's development process consisted of three phases:

- Phase 1: Background research, analysis, and preliminary drafting.
- Phase 2: Stakeholder outreach, identification of priority projects and strategies, and development of the final Strategy document.

During Phase 1, RIDOT's Planning Division, supported by its consultant Cambridge Systematics, advised a team of Brown University Master of Public Affairs (MPA) students in conducting a set of background research and analytical tasks. These included: reviewing existing plans and policies; developing a baseline assessment with alternative forecasts; researching information on the cost-effectiveness and co-benefits of carbon reduction strategies; and developing a preliminary draft strategy. During Phase 2, the Planning Division and consultant team conducted additional stakeholder engagement to identify priorities for the use of program funds as well as additional emission reduction strategies; fully developed the draft document and provided it for public comment; and made final revisions to the strategy document.

3.2 Stakeholder Engagement and MPO Consultation

Stakeholder engagement in the development of the Carbon Reduction Strategy included the following methods:

- **Presentations** to the Rhode Island Executive Climate Change Coordination Council (RI-EC4), Transportation Advisory Committee (TAC), State Planning Council (SPC). The presentations included (1) the development of the Carbon Reduction Strategy; and (2) the draft strategy findings and recommendations.



The TAC and SPC are councils of the Rhode Island Division of Statewide Planning, Rhode Island's sole MPO, thereby ensuring MPO consultation during the process. These presentations also gave multiple state agencies, as well as any public members attending the meetings, the opportunity to provide feedback. See the sidebar for the membership of these groups.^{7,8,9}

- A **stakeholder workshop** to brainstorm and prioritize carbon reduction strategies. This workshop included staff from various state agencies, including the MPO, as well as a sampling of representative advocacy groups. More information on the workshop process and outcomes is provided in Section 3.3.
- **Consultation** with other internal and external partners, including members of RIDOT's construction and maintenance team, representatives of RIPTA, and the port manager at ProvPort,¹⁰ regarding baseline assumptions (for transit services and technology) and potential uses of funding.
- A 30-day **public comment** period on the draft Carbon Reduction Strategy.

Councils and Committees Engaged in Carbon Reduction Strategy Development

*The **Transportation Advisory Committee** meets monthly and includes representatives from RIDOT, the Department of Health (RIDOH), Division of Statewide Planning, Public Transit Authority (RIPTA), Turnpike and Bridge Authority (RITBA), Department of Environmental Management (RIDEM), and the Governor's Commission on Disabilities (RIGCD). The committee also includes 12 private organizations, three municipal representatives, a representative from a Native American tribe, and a member of the public.*

*The **State Planning Council** is made up of state and municipal agencies, other organizations, and individuals that represent overall stakeholders in state planning. The State Planning Council includes two members of the public, seven representatives from local municipalities, 14 representatives of State level agencies, and two members representing non-profit housing and small businesses, respectively.*

*The **Rhode Island Executive Climate Change Coordination Council** was established to coordinate efforts between state agencies to reduce GHG emissions. The council includes representatives from the Department of Administration (RIDOA), RIDEM, RIDOH, RIDOT, RIPTA, Coastal Resources Management Council (RICRMC), the Division of Statewide Planning, Emergency Management Agency (RIEMA), Executive Office of Health and Human Services (RIOHHS), Infrastructure Bank (RIIB), Office of Energy Resources (RIOER), Division of Public Utilities and Carriers (RIDPUC), and the Commerce Corporation (CommerceRI). EC4 meetings are open to the public, accessible both online and in-person.*

3.3 Stakeholder Workshop

A 2.5-hour, in-person stakeholder workshop was held in September 2023 to identify and begin to prioritize additional strategies that RIDOT could implement, either on its own or in partnership with other agencies. A total of 21 participants from state agencies and advocacy groups were present at the workshop. The agencies and

⁷ [EC4 Summary | Climate Change \(ri.gov\)](#).

⁸ [Transportation Advisory Committee | Rhode Island Division of Statewide Planning \(ri.gov\)](#).

⁹ [State Planning Council | Rhode Island Division of Statewide Planning \(ri.gov\)](#).

¹⁰ Christopher Waterson, Port of Providence / Waterson Terminal Services.



organizations represented included RIDOT, RIPTA, the Division of Statewide Planning, Department of Environmental Management, Office of Energy Resources, Quonset Development Corporation, Grow Smart Rhode Island, and the Acadia Center.

Participants were divided into breakout groups and asked to identify strategies in three categories:

- **RIDOT actions**—Actions that RIDOT could take on its own.
- **Partnerships**—Actions where RIDOT would need to work together with another agency or organization.
- **“Big Swings”**—More ambitious longer-term actions that would move the needle on emissions reduction but also would be challenging to implement and may require further study and planning work.

Participants then applied a three-tier prioritization scheme:

- 1—Top priority for short-term action.
- 2—Other priorities to advance.
- 3—Strategies needing more study or not having consensus.

The resulting strategies by category and priority are shown in Table 3.1.

Table 3.1 Transportation Carbon Reduction Strategies Proposed in Workshop

Category	1—Top Near-Term Priority	2—Other Priorities	3—More Study/Development
RIDOT actions	<ul style="list-style-type: none"> • Multimodal infrastructure • EV share/rideshare/bikeshare programs • RIDOT clean fleets 	<ul style="list-style-type: none"> • Remote work • Low-carbon materials • STIP project prioritization criteria • Solar at DOT & RIPTA facilities • EV charging infrastructure 	<ul style="list-style-type: none"> • Green infrastructure
Partnerships	<ul style="list-style-type: none"> • Fully fund/implement Transit Master Plan & Statewide Bicycle Plan • Increase MBTA service 	<ul style="list-style-type: none"> • Mobility as a Service/multimodal ticketing • Microtransit partnerships • Free/reduced fares 	<ul style="list-style-type: none"> • Transportation demand management & land use
Big Swings		<ul style="list-style-type: none"> • Statewide parking study • Statewide pedestrian plan 	<ul style="list-style-type: none"> • Car-free/zero emission zones • RI-based passenger rail • Congestion pricing • High occupancy vehicle/managed lanes • Gas guzzler tax



4.0 BASELINE INVENTORY AND FORECAST

Key Takeaways:

- *Rhode Island's transportation emissions were estimated to be about 3.2 million metric tons of carbon dioxide (MMT CO₂e) in 2021. Under current policies, emissions are forecasted to decrease to around 2.5 MMT CO₂e in 2050, with a much greater decrease to 0.5 MMT in 2050 if the state adopts advanced clean vehicle rules.*
- *Even with aggressive adoption of clean vehicles, the state's transportation sector will fall well short of its proportionate share of GHG reduction goals in 2040 and 2050, and further actions by RIDOT and other agencies will be needed to achieve these goals.*

4.1 Emissions Sources Included

The Rhode Island Department of Environmental Management develops and updates a statewide GHG emissions inventory covering all sectors. The 2019 inventory estimated that a total of 4.29 million metric tons of emissions were produced by the transportation sector, representing 39.7 percent of the state's emissions. Of these, 3.61 MMT were from highway vehicles, with aviation and nonroad sources accounting for the remainder.¹¹ RIDOT developed a new emissions assessment for the purposes of this Carbon Reduction Strategy to provide a more detailed and current look at specific transportation sector sources, as well to develop forecast year projections (through 2050) using sources and methods consistent with a base year inventory. The inventory results may differ somewhat due to differences in data sources and methods between the two inventories, in addition to having a different base year.

The baseline emissions assessment and forecast included the following sources: on-road private mobile sources, on-road public mobile sources, passenger and freight rail, and construction and maintenance activities. Within the on-road mobile sources group, emissions are further categorized by vehicle class and technology type. Public transportation's primary sources include demand response vehicles, motor buses, and vanpool services. Rail transit is comprised of both passenger and freight rail. Construction and maintenance activities refer to the building and repair plans included in the STIP.

4.2 Emissions Estimates and Projections

The year 2021 serves as the baseline year in the emissions inventory analysis, since that was the latest year for which most data sources were available at the time of the analysis. The baseline emissions estimates and

¹¹ <https://dem.ri.gov/environmental-protection-bureau/air-resources/greenhouse-gas-emissions-inventory>.



forecasts were calculated using a set of “business-as-usual” assumptions that reflect national vehicle fuel efficiency standards and state projections of vehicle-travel. Each transportation source’s baseline inventory was forecasted through the year 2050 using a range of assumptions specific to each source (see Appendix B for detailed methodologies). To enable cross-reference with the state’s intermediate goals toward net-zero emissions by 2050, the baseline forecast is presented in five-year intervals after the year 2025. Table 4.1 and Figure 4.1 below display the resulting estimates.

Table 4.1 Rhode Island Transportation Emissions Forecast

Units: Metric Tons CO₂e	2021	2025	2030	2035	2040	2045	2050
On-Road Mobile Sources	3,131,761	2,929,579	2,716,803	2,580,246	2,502,362	2,472,454	2,455,581
On-Road Public Transportation	19,845	18,106	18,207	17,429	17,301	17,301	17,301
Rail Transit	15,992	12,441	8,884	1,842	1,798	1,744	1,746
Construction and Maintenance	10,203	10,905	7,909	7,329	7,521	7,344	7,421
Grand Total	3,177,801	2,971,031	2,751,803	2,606,845	2,528,983	2,498,843	2,482,049

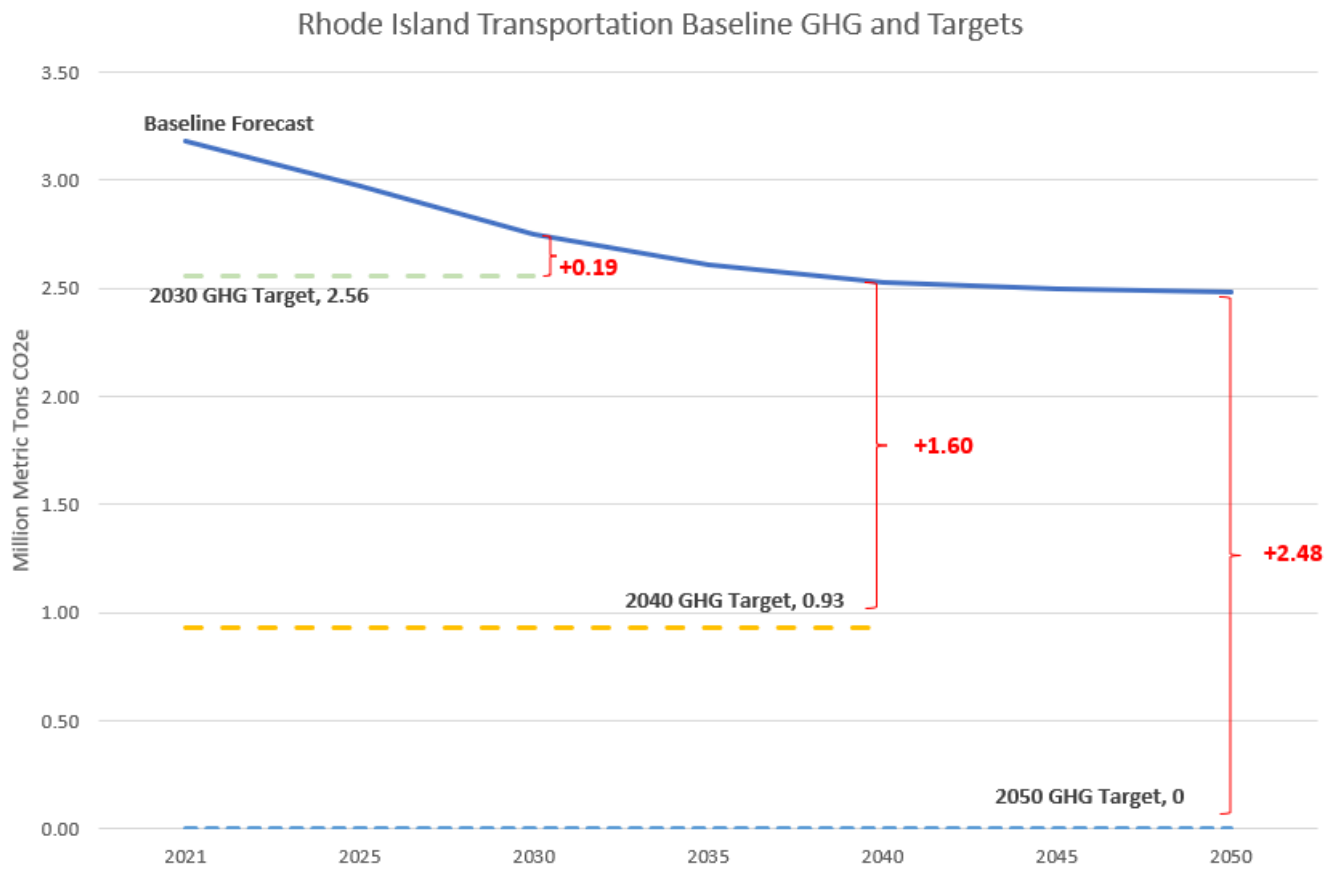
The vast majority of 2021 emissions (over 98 percent) are from on-road cars and trucks. On-road public transportation (buses), passenger and freight rail, and construction and maintenance of the state’s transportation network each contribute less than 1 percent.

Under the baseline forecast, transportation emissions are projected to decrease from about 3.2 million metric tons of carbon dioxide equivalent in 2021 to around 2.5 MMT CO₂e in 2050. Despite projected increases in vehicle miles traveled (VMT), the forecasted reductions in emissions can be primarily attributable to fuel economy improvements as well as modest increases in vehicle electrification for light duty passenger vehicles. On a much smaller scale, on-road public transportation emissions are projected to slightly decrease as RIPTA transitions its motorbus fleet toward electric and diesel-electric hybrid technologies.¹² A significant emissions reduction is projected for rail transit in accordance with Amtrak and Massachusetts Bay Transportation Authority (MBTA) plans to decarbonize rail transportation. Finally, the Federal Highway Administration’s Infrastructure Carbon Estimator (ICE) tool predicts a low-to-moderate reduction in construction and maintenance activity emissions through 2050. Figure 4.1 shows baseline projections compared to targets, and a series of tables in Appendix A detail the projected patterns of emissions sources within each transportation category. While RIDOT is not far from hitting its 2030 target, the projected emissions leave a gap of 1.6 MMT in 2040 and nearly 2.5 MMT in 2050 compared to the net zero target. This suggests that a much more aggressive shift to clean vehicles and fuels, and/or efforts to reduce vehicle-travel, will be needed to come close to or achieve the 2040 and 2050 targets.

¹² Under the baseline scenario, RIPTA will integrate nearly 40 new battery-electric buses by 2026, representing just over 10 percent of the fleet, while the remainder of the diesel buses are to be replaced with diesel-hybrid buses at the end of their useful life.



Figure 4.1 Rhode Island Transportation Baseline GHG and Targets



Note: GHG targets were calculated based on 1990 transportation emissions of 4.65 million metric tons CO₂e, as reported in the [Rhode Island 2022 Climate Update](#). For consistency in target-setting, the 1990 emission value excludes aviation. There are minor accounting differences in the estimation of offroad emissions sources between the 1990 baseline and the projected emissions assessment in this report.



5.0 SCENARIO ANALYSIS OF HIGH ZERO EMISSION VEHICLE FUTURE

5.1 Alternative Vehicle Technology Scenarios and Policy Assumptions

Key Takeaways:

- *The adoption of zero emission vehicle (ZEV) policies, specifically the proposed Advanced Clean Cars II and Advanced Clean Truck rules, is estimated to have a substantial impact on emissions reductions.*
- *Compared to baseline forecasts, adoption of ZEV policies could reduce emissions 50 percent below the baseline forecast in 2030, and 80 percent below the baseline forecast in 2050, to as low as 0.5 MMT CO₂e – still short of the net-zero target.*

RIDOT opted to use a conservative scenario for the baseline forecast and assume modest levels of electrification. This section estimates the additional emissions reductions possible through the adoption of Advanced Clean Cars II (ACCI) and Advanced Clean Trucks (ACT) rules that have recently been adopted by the State of California as well as neighboring states, including Massachusetts and New York, and proposed in Connecticut. In May 2023, RIDEM proposed a draft rule to adopt these standards in Rhode Island as well and the rule is likely to be adopted in early 2024.¹³

These rules would place zero-emissions vehicle sales requirements upon manufacturers selling vehicles in Rhode Island. Zero-emissions vehicle sales must constitute an increasingly large fraction of car and truck sales from 2024 to 2035, then remain at constant, high levels beyond 2035 (100 percent for light-duty passenger vehicles, 55 percent for light-medium trucks, 75 percent for medium and heavy-duty trucks).^{14,15} California's Air Resources Board has modeled the vehicle technology shares that they anticipate will accompany the implementation of their clean transportation regulations. These technology shares have been slightly modified for translation onto the RI vehicle fleet, yielding the emissions pattern observed in Figure 4.1.

The proposed rule would help to implement previously proposed strategies to incentivize electric vehicle expansion throughout the state. The Clean Transportation and Mobility Innovation Report outlines the state's

¹³ 250-RICR-120-05-37: Rhode Island's Low-Emission and Zero-Emission Vehicle Programs. <https://dem.ri.gov/sites/g/files/xkqbur861/files/2023-05/250-RICR-120-05-37-redline-d0523.pdf>.

¹⁴ State of California. (2023). California Air Resources Board. Advanced Clean Cars Program | California Air Resources Board. <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program>.

¹⁵ State of California. (2023). California Air Resources Board. Advanced Clean Trucks | California Air Resources Board. <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks>.



goal to deploy 400,000 EVs on the road by 2030, with an interim goal of 50,000 EVs by 2025.¹⁶ The state's EV goals roughly align with the ZEV magnitudes that would be seen under the advanced clean cars and trucks rules.

Zero-emission vehicles are currently more costly than conventional vehicles and require new charging or refueling infrastructure. The availability of vehicles meeting consumer and business performance requirements is also limited but improving. It is likely that significant state investment and incentives will still be needed to achieve the levels of ZEV sales and use required under the proposed rules. The Rhode Island 2021 Act on Climate proposes supporting policies, including rebates for EV purchases and construction of EV charging stations.¹⁷ The [DRIVE^{EV} program](#) provides rebates of up to \$1,500 for the purchase or lease of new battery electric vehicles and fuel-cell electric vehicles and up to \$1,000 for new plug-in hybrid electric vehicles, with additional rebates for income-qualified consumers. RIDOT and OER are using Federal and state funding, including the National Electric Vehicle Infrastructure (NEVI) Program and Volkswagen settlement funds, to support the development of public charging infrastructure, and have applied for additional federal funding through the U.S. DOT Charging and Fueling Infrastructure (CFI) Program.

5.2 Projections and Comparison with Baseline Forecasts

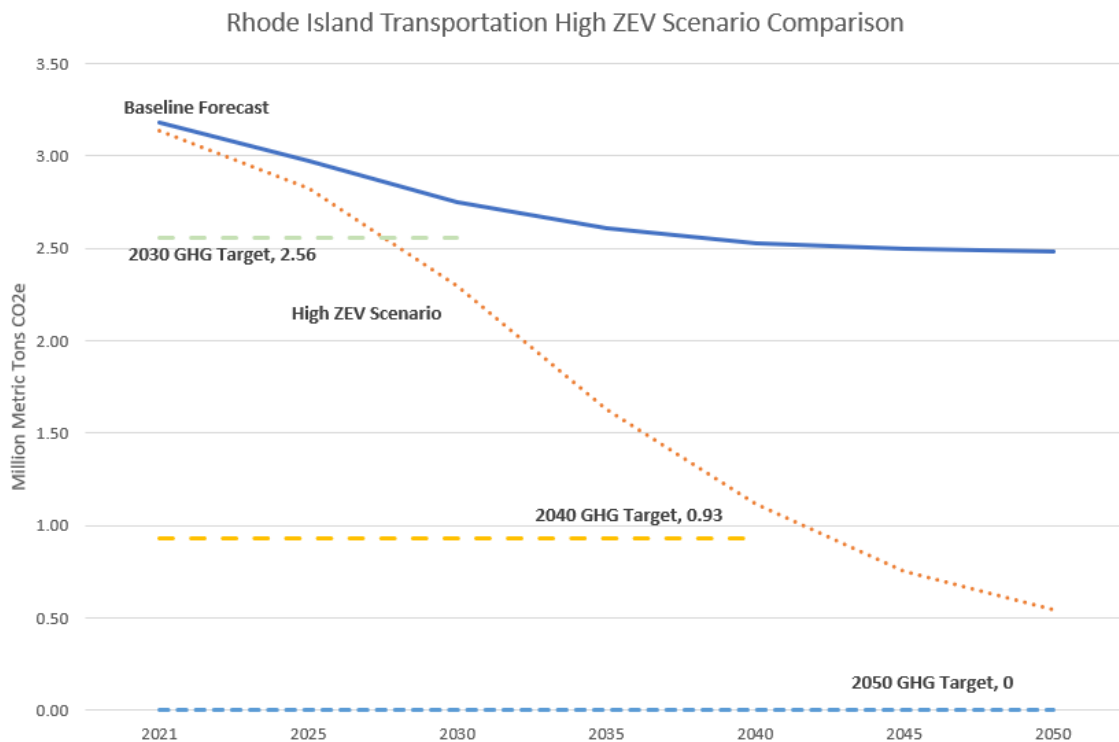
In the vehicle electrification scenario described above, annual emissions from private on-road mobile sources are substantially reduced in comparison to the baseline forecast. Annual emissions in the ZEV scenario are about 50 percent lower than the baseline level in 2030, 1.5 MMT CO_{2e} lower in 2040, and 2 MMT CO_{2e} lower in 2050 or 80 percent below the baseline. These annual reductions culminate in about 30 MMT fewer total CO_{2e} emissions during the period from 2021 through 2050, relative to baseline conditions. Even with the high levels of electrification, a gap of 0.5 MMT would still remain in 2050 compared to the net-zero requirement.

¹⁶ State of Rhode Island. (2021). *Clean Transportation and Mobility Innovation Report*. [Climatechange.ri.gov](https://climatechange.ri.gov). <https://climatechange.ri.gov/sites/g/files/xkqbur481/files/documents/ec4-0304-mwg-final-report-pres.pdf>.

¹⁷ State of Rhode Island. (2022). *Act on Climate | Climate Change*. <https://climatechange.ri.gov/act-climate>.



Figure 5.1 Rhode Island Transportation High ZEV Scenario Comparison





6.0 CURRENT POLICIES AND PLANS SUPPORTING TRANSPORTATION GHG EMISSIONS REDUCTION

Key Takeaways:

- *Statewide emissions reduction targets outlined in the 2021 Act on Climate provide the legal foundation for collective planning and action.*
- *Existing plans include strategies to promote electric vehicles, improve public transit, encourage alternative fuels, support innovation, and encourage collaboration in the implementation of emissions reduction measures.*

6.1 Summary

The 2021 Act on Climate establishes enforceable emissions reduction mandates for the State of Rhode Island. The state’s Greenhouse Gas Emissions Reduction Plan provides a strategy for reducing the state’s emissions. In addition, existing transportation plans for Rhode Island developed by RIDOT, the Department of Statewide Planning, and the Office of Energy Resources support emissions reductions in various ways. Table 6.1 summarizes the various carbon reduction strategies referenced in existing plans.

Table 6.1 Summary of Existing Strategies to Reduce Carbon Emissions

Promoting Electric Vehicles	<ol style="list-style-type: none"> 1. Increasing the availability of electric vehicle charging infrastructure. 2. Incentivizing the purchase of electric vehicles. 3. Expanding public awareness and education about the benefits of electric vehicles.
Improving Public Transit	<ol style="list-style-type: none"> 1. Expanding public transit options and improving the efficiency and effectiveness of public transit to encourage their use over personal vehicles. 2. Improving walking and cycling infrastructure to encourage transport mode shifts.
Encouraging Alternative Fuels	<ol style="list-style-type: none"> 1. Emphasizing the take-up of alternative fuels (such as hydrogen, biodiesel and renewable natural gas) for various transportation applications to reduce total emissions attributed to fossil fuels.
Supporting Innovation	<ol style="list-style-type: none"> 1. Development and adoption of new clean transportation technologies, such as micromobility and connected infrastructure, to improve transportation efficiency and reduce emissions. 2. Improvement of overall traffic efficiency and improved land use policies.



Encouraging Collaboration

1. Building partnerships and collaboration among stakeholders (Government agencies, private businesses, and community organizations) to support the implementation of clean transportation solutions.
 2. Co-existence of efforts in reducing transportation emissions with other efforts outlined in the Act on Climate (e.g., improving building efficiency and enhancing the state's climate resilience). This requires interagency coordination.
 3. Collaboration as a part of key interventions: in the promotion of and investment in a multimodal transportation system (public transport, biking, walking infrastructure, efficient freight and logistics operations), engagement with transit riders, community organizations, and local officials, ensures that interventions align with community needs.
-

6.2 State Emission Reduction Policies, Plans, and Strategies

6.2.1 Rhode Island 2021 Act on Climate¹⁸

The 2021 Act on Climate establishes enforceable emissions reduction mandates for the State of Rhode Island alongside several sector-specific supportive requirements. The emissions reduction mandates—45 percent below 1990 levels by 2030, 80 percent below 1990 levels by 2040, and net-zero by 2050—were signed into law by Governor Dan McKee, thus legitimizing their enforcement on behalf of the RI General Assembly. As the state's transportation sector contributes approximately 40 percent of the state's GHG emissions, RIDOT's carbon reduction efforts are an essential component to help reach the Act's requirements. Additionally, the Act's formalization of plans to decarbonize the electricity grid by 2030 bolsters the high emissions reduction potential of electric vehicles.

6.2.2 Rhode Island Greenhouse Gas Emissions Reduction Plan¹⁹

The 2016 Rhode Island Greenhouse Gas Emissions Reduction Plan provides a strategy for reducing the state's greenhouse gas emissions. Developed by the Rhode Island Executive Climate Change Coordinating Council and its cross-divisional members (Office of Energy Resources, Department of Environmental Management, Division of Statewide Planning, RIDOT), the study identifies major GHG emissions sources and mitigation strategies that engage actors across a range of sectors. The study notably recognizes the transportation sector's disproportionately large share of total statewide emissions and recommends expansion of electric vehicle use and public transportation capacity.

¹⁸ State of Rhode Island. (2021). 2021 Act on Climate. <https://climatechange.ri.gov/act-climate>.

¹⁹ State of Rhode Island. (2016). Rhode Island Greenhouse Gas Emissions Reduction Plan. [climatechange.ri.gov. https://climatechange.ri.gov/sites/g/files/xkqbur481/files/documents/ec4-ghg-emissions-reduction-plan-final-draft-2016-12-29-clean.pdf](https://climatechange.ri.gov/sites/g/files/xkqbur481/files/documents/ec4-ghg-emissions-reduction-plan-final-draft-2016-12-29-clean.pdf).



An update to the 2016 study was published in 2022.²⁰ Key recommendations of the update are shown in the sidebar.

Summary of Transportation Recommendations in the Rhode Island 2022 Climate Update

- *Target 10 percent EV penetration by 2030 by adopting ACCII and with ZEV-focused programs such as DRIVE EV.*
- *Adopt the Advanced Clean Trucks Rule.*
- *Incentivize electric mobility.*
- *Decarbonize Rhode Island’s transit fleet.*
- *Look to the Transit Master Plan and Bicycle Mobility Plan for next steps (as resources are available).*
- *Develop a ‘Complete Streets’ State Plan and Design Guidelines.*
- *Model climate impacts of transportation demand, including CRP analysis and other GHG modeling improvements and performance measures.*

6.2.3 Energy 2035²¹

Energy 2035, a report released in 2016 by the Office of Energy Resources, develops a long-term vision for the state’s future regarding energy use. The report outlines a plan for meeting the state’s energy needs while reducing greenhouse gas emissions and promoting energy efficiency. RIDOT’s planning leverage is implicated in the report’s recommendation to increase the use of electric vehicles and promote alternative transportation modes, such as biking and walking.

6.2.4 Clean Transportation and Mobility Innovation Report²²

The Clean Transportation and Mobility Innovation Report, released by the Governor’s Office in 2021, outlines a strategic plan aimed toward fostering clean transportation and mobility in the state. This plan’s development was collaborative, with key input from stakeholders in the public sector (including RIDOT, RIDSP, and RIPTA), industry, and academia. A major objective of this plan was to support the direction of new investment anticipated from implementation of a multi-state Transportation and Climate Initiative Program. Although this program was

²⁰ RIEC4 (2022). Rhode Island 2022 Climate Update. <https://dem.ri.gov/press-releases/state-climate-panel-votes-accept-updated-greenhouse-gas-emissions-reduction-plan>.

²¹ State of Rhode Island. (2015). Energy 2035 Rhode Island State Energy Plan. [Planning.ri.gov. https://planning.ri.gov/sites/g/files/xkqbur826/files/documents/LU/energy/energy15.pdf](https://planning.ri.gov/sites/g/files/xkqbur826/files/documents/LU/energy/energy15.pdf).

²² State of Rhode Island. (2021). Clean Transportation and Mobility Innovation Report: Rhode Island’s Roadmap to a Clean Transportation Future. [Climatechange.ri.gov. https://climatechange.ri.gov/sites/g/files/xkqbur481/files/documents/ec4-0304-mwg-final-report-pres.pdf](https://climatechange.ri.gov/sites/g/files/xkqbur481/files/documents/ec4-0304-mwg-final-report-pres.pdf).



not successfully adopted, the report still provides valuable ideas and information about emission reduction strategies.

The report compares illustrative portfolios of strategies based on cost-effectiveness at achieving emissions reductions and other benefits (see Section 7). Strategies are categorized as (1) electrification and alternative fuels; (2) vehicle travel reduction; (3) transit and rail; and (4) traffic efficiency. Benefit metrics include GHG emissions, air quality, mobility, health, and job creation. The report places a strong emphasis on identifying and designing strategies in a way that supports equitable outcomes and ensures that benefits of investments accrue to overburdened and underserved communities. The report also includes strategies to support economic development. The report includes 24 recommendations, summarized in the sidebar, as well as initial action steps. Some of these recommendations, such as adoption of requirements for zero-emission vehicle sales and development of an EV roadmap, have already been implemented.

Summary of Recommendations in the Clean Transportation and Mobility Innovation Report

- *Implement measures to ensure equity in transportation investments.*
- *Consider setting a transportation GHG reduction goal.*
- *Focus on implementation of Transit Forward RI, especially focusing on mobility for urban and rural underserved populations.*
- *Create Next Generation Transit Districts with rapid, high-capacity, high-interval electrified transit to spur transit-oriented development.*
- *Consider establishing a Task Force to review and revise existing land use statutes.*
- *Promote active mobility by implementing a new statewide bike and scooter share program.*
- *Enhance the Complete Streets program.*
- *Consider establishing goals for zero-emission vehicle sales and truck fleets.*
- *Electrify the rail system to support faster and more frequent service.*
- *Develop an EV roadmap.*
- *Establish/expand Intelligent Transportation Systems, telecommunications infrastructure, and deployment of connected and autonomous vehicles.*
- *Explore development of a Statewide Mobility Services Program to support transit access and short trips.*
- *Develop initiatives, policies, and incentives for workforce development and training to support new transportation vehicles and services.*



6.3 Transportation Plans Supporting Emissions Reductions

6.3.1 Long Range Transportation Plan—Moving Forward RI-2040²³

Rhode Island's Long Range Transportation Plan, Moving Forward RI-2040, establishes a long-range outline for investing in the state's transportation system that will help ensure Rhode Island remains a great place to live, work, and do business. One of five goal areas in the plan is to "promote environmental sustainability." The plan identifies the need to reduce VMT and that the EC4 has set targets to reduce VMT 2 percent by 2035 and 10 percent by 2050, relative to 2014.

6.3.2 Congestion Management Plan²⁴

The Congestion Management Plan, developed by the Division of Statewide Planning in 2020, is a systematic process for identifying the causes and locations of roadway traffic congestion, developing monitoring processes to measure transportation system performance and reliability, and developing congestion management strategies and solutions. The Plan includes an action plan with implementation steps that support mode shift as well as efficient traffic operations. Congestion management can help to reduce carbon emissions by reducing inefficient driving in low-speed and stop-and-go traffic.

6.3.3 Rhode Island Transit Master Plan 2040²⁵

Published in 2020, the Transit Master Plan "Transit Forward RI-2040" presents a program to enhance and develop Rhode Island's passenger transportation network to better meet near, and long-term, mobility needs of the state's residents, workers, and visitors. The plan includes an assessment of funding sources that could be used to implement the plan's recommendations. Transit Forward RI-2040 is a collaboration among RIDOT, RIPTA, and the Division of Statewide Planning. Transit services can help to reduce carbon emissions by encouraging mode shift away from driving. RIPTA has estimated that full implementation of the plan could reduce emissions by over 230,000 metric tons, or the equivalent of taking 50,000 cars off the road.

²³ Rhode Island Division of Statewide Planning. (2020). *Long Range Transportation Plan—Moving Forward RI-2040*. <https://planning.ri.gov/planning-areas/transportation/long-range-transportation-plan>.

²⁴ Rhode Island Division of Statewide Planning. (2020). *Congestion Management Plan*. <https://planning.ri.gov/planning-areas/transportation/congestion-management>.

²⁵ Rhode Island Public Transit Authority. (2020). *Rhode Island Transit Master Plan 2040: Transit Forward RI-2040*. <https://transitforwardri.com/>.



6.3.4 Rhode Island Statewide Bicycle Mobility Plan²⁶

The Rhode Island Statewide Bicycle Mobility Plan, developed in 2020 by the Division of Statewide Planning, identifies a wide range of bicycle enhanced corridors, programs, and policies recommended to achieve the vision for cycling across Rhode Island. Improved bicycle facilities can help to reduce carbon emissions by encouraging mode shift away from driving.

6.3.5 Electrifying Transportation: A Strategic Policy Guide for Improving Public Access to Electric Vehicle Charging Infrastructure in Rhode Island²⁷

This document is a plan for a statewide electric vehicle charging station infrastructure designed to make EV charging stations more accessible to the public. The plan was developed in 2021 by RIDOT, OER, and the Department of Motor Vehicles, with support from DEM and the Rhode Island Department of Public Health. The plan reviews the current status of electrification; makes recommendations based on public and stakeholder input; and provides a working document to support priorities and coordinated action. Priorities include: vehicle and infrastructure incentive programs; alignment of programs to center equity for underserved and overburdened communities; electrify transit and school buses; understanding revenue impacts and developing sustainable funding options; supporting a 100 percent renewable energy standard; developing a dashboard to track progress; and demonstrating action through commitments and accountability.

6.3.6 State Plan for Electric Vehicle Infrastructure Deployment²⁸

The state Plan for Electric Vehicle Infrastructure Deployment (2022) describes how Rhode Island will use funding from the National Electric Vehicle Infrastructure (NEVI) Program to help plan and strategize the build-out of a fast EV charging station network. The plan was developed by RIDOT in collaboration with the OER and DEM. The plan documents that RIDOT and OER had already implemented an EV charging pilot program starting in 2020. The plan sets a goal to fully build out charging along Interstate 95 and build two additional stations. The plan describes a competitive grant program to implement this infrastructure using federal and state matching funds. Deployment of fast-charge networks is important to support consumers with purchasing and using EVs and thereby reducing emissions.

²⁶ Rhode Island Division of Statewide Planning. (2020). Rhode Island Statewide Bicycle Mobility Plan. <https://planning.ri.gov/sites/g/files/xkqbur826/files/documents/LRTP/Bicycle-Mobility-Plan.pdf>.

²⁷ RIDOT, RI OER, and Department of Motor Vehicles (2021). Electrifying Transportation: A Strategic Policy Guide for Improving Public Access to Electric Vehicle Charging Infrastructure in Rhode Island. <https://energy.ri.gov/transportation/electrifying-transportation>.

²⁸ Rhode Island Department of Transportation. (2022). State Plan for Electric Vehicle Infrastructure Deployment. https://www.dot.ri.gov/projects/EVCharging/docs/Rhode%20Island%20Electric%20Vehicle%20Infrastructure%20Deployment%20State%20Plan_Draft%20for%20Review-Rev%2003.pdf.



6.3.7 Additional RIDOT Actions

In 2023, RIDOT adopted internal changes to its project prioritize process to better ensure that selected projects would align with state plans and goals. The agency updated its pre-scoping template to require the engineering team to consult existing state plans, including the Transit Master Plan, Bicycle Master Plan, Long-Range Transportation Plan, and statewide Freight Plan, to identify opportunities to include elements of these plans in the implementation of capital projects.

In addition to working to deploy NEVI funds consistent with the state Plan for Electric Vehicle Infrastructure Deployment, RIDOT has collaborated with the OER to write a grant proposal for the federal Charging and Fueling Infrastructure Program which would further support EV charging infrastructure deployment.

RIDOT has also submitted a grant application for a major highway/bridge reconstruction project along Northeast Corridor. As mitigation for construction disruptions, the project would include a “Rhody Express” pilot project to increase MBTA commuter rail service between Providence, T.F. Green International Airport, and Wickford Junction from 10 to 25 runs per day. Following the public support for expansion of intrastate railroad services received in the stakeholder’s engagement workshop and through the public comments’ portal, RIDOT has allocated additional CRP funding for an earlier implementation of the “Rhody Express”.

Additional RIDOT Actions to Reduce Emissions

- *Required engineering team to consult existing state plans for elements to include in capital projects, including emissions-reducing elements.*
- *Pursued federal grant funding to support EV infrastructure development.*
- *Directed funding to support early implementation of the Rhody Express commuter rail service.*



7.0 GHG REDUCTION BENEFITS, COST-EFFECTIVENESS, AND CO-BENEFITS BY PROJECT TYPE

Key Takeaways:

- *The 2021 Clean Transportation and Mobility Innovation Report identifies three categories of clean transportation projects—VMT Reduction and Mode Shift, Transportation System Efficiency, and Vehicle Fuel Technology—and evaluates the cost-effectiveness of projects within each category.*
- *Projects that promote alternative fuel technologies, decrease traffic congestion, or encourage smarter land use are identified as highly cost-effective for reducing emissions.*

As detailed in Section 9.0 of this report, RIDOT must consider a range of project selection criteria in its CRP funding allocation decisions to maximize the benefits and feasibility of project implementation. The expected GHG reduction benefits, co-benefits, and corresponding cost-effectiveness of each prospective project serve as important considerations to help guide the selection of projects identified for CRP funding. To evaluate project types based on these considerations, RIDOT has referred to the state’s 2021 Clean Transportation and Mobility Innovation Report, which evaluates and compares various emissions reduction strategies by project category. Table 7.1 defines the types of emissions reduction strategies considered in the report, and Table 7.2 summarizes the study’s key cost-effectiveness findings.

Table 7.1 Transportation Strategies with Emissions Reduction Potential²⁹

VMT Reduction and Mode Shift Strategies	
Shared Ride Incentives	Shared ride incentives refer to monetary rewards offered to encourage passengers to choose shared-ride options instead of solo-ride options when using ride-hailing services like Uber or taxi services.
Micromobility	Micromobility projects involve the use of shared electric scooter/bicycle programs. Subsidies for shared electric scooter/bicycle programs provide financial support for the startup and operating costs of such shared mobility programs. These subsidies also can include user-side incentives such as discounted rates.
Micromobility—E-bike Ownership Subsidies	Subsidies for e-bike ownership are financial incentives granted to persons who purchase electric bicycles for personal use.
Land Use/Smart Growth	Land use/smart growth refers to planning and development strategies that foster compact, mixed-use communities to accommodate various alternative modes of transportation.

²⁹ State of Rhode Island. (2021). *Clean Transportation and Mobility Innovation Report*. [Climatechange.ri.gov](https://climatechange.ri.gov). <https://climatechange.ri.gov/sites/g/files/xkqbur481/files/documents/ec4-0304-mwg-final-report-pres.pdf>.



VMT Reduction and Mode Shift Strategies

Bicycle Investment	Financial investments can be made to improve the infrastructure that accommodates bicycling—including bike lanes, bike parking and other amenities.
Pedestrian Investment	Financial investments that improve pedestrian infrastructure—such as sidewalks, crosswalks, and pedestrian bridges—can encourage citizens to choose walking over other modes of transportation.
Travel Demand and Mobility Management	Travel demand and mobility management refers to a set of strategies that aim to influence travel behavior. These strategies can leverage information provisions, economic incentives, and infrastructural design to promote energy-efficient practices like public transit, ridesharing and telework.

Transportation System Efficiency Projects

Bus Rapid Transit	Bus rapid transit (BRT) projects involve the construction and operation of new BRT services. BRT's use of dedicated roadways and stations offer these services greater reliability than conventional bus services.
Commuter/Intercity Rail	Commuter and intercity rail projects refer to the construction and operation of new and/or enhanced rail services.
Bus Service—Expansion	Bus service expansion entails adding more vehicle trips and increasing frequency or time-of-day coverage on existing routes.
Bus Service—Efficiency	Bus service efficiency improvements can be achieved through measures that help reduce run times, such as transit signal priority and queue jump lanes.
Electric Microtransit	Microtransit refers to app-enabled, flexible-route services using smaller vehicles than standard buses.
Traffic Flow Improvements	Traffic flow improvements can be achieved through various traffic management strategies, ranging from signal coordination to roadway reconfiguration.

Vehicle and Fuel Technology Projects

Light-duty Electric Vehicles	Financial incentives alongside accelerated development of public charging infrastructure and grid improvements can make EVs more accessible and convenient to the public. The state can expand its own public light-duty electric vehicle fleet by purchasing these vehicles directly.
Electric Transit Buses	Public agencies can make direct purchases of electric transit buses and/or charging infrastructure to promote their adoption.
Electric School Buses	Public agencies can promote electric school buses through direct purchase or reimbursements to school districts for their purchase of these buses and/or charging infrastructure.
Electric Trucks	Public agencies can offer incentives to medium-duty truck fleet operators for the purchase of new battery-electric trucks and/or charging infrastructure. Direct purchases also can be made for public fleets.
Hydrogen Trucks	Public agencies can invest in hydrogen refueling infrastructure and/or offer incentives for the purchase of hydrogen fuel cell trucks.



Table 7.2 Transportation Strategy Cost-Effectiveness

Transportation Strategy	GHG	PM _{2.5}	Jobs	Health Benefits
VMT Reduction and Mode Shift Projects				
Shared ride incentives	+	+	+	+
Micromobility	+	+	+	++
Micromobility—E-bike ownership subsidies	++	++	+	++
Land use/smart growth	+++	++	++	++
Bicycle investment	++	++	++	+++
Pedestrian investment	+	+	++	+++
Travel demand and mobility management	++	++	++	++
Transportation System Efficiency Projects				
Bus rapid transit	+	+	++	+
Commuter/intercity rail	+	+	++	+
Bus service—Expansion	+	-	+++	+
Bus service—Efficiency	++	+	+++	++
Electric microtransit	+	+	++	+
Traffic flow improvements	+++	-	+++	-
Vehicle and Fuel Technology Projects				
Light-duty electric vehicles	+++	+++	+	++
Electric transit buses	+++	+++	+	+++
Electric school buses	+++	+++	+	++
Electric trucks	+++	+++	++	++
Hydrogen trucks	+++	+++	++	++

+ Moderate; ++ Strong; +++ Very Strong; - NA

Note: State of Rhode Island. (2021). [Clean Transportation and Mobility Innovation Report](#). Cost-effectiveness is measured in terms of tons of emissions reduced, number of jobs created, or health cost savings per million dollars of investment in each strategy. The “very strong” category corresponds to at least 1,000 metric tons GHG, at least 100 pounds PM_{2.5}, at least 20 jobs created, or at least \$2.5 million in health benefits per million dollars of investment. See the 2021 Clean Transportation and Mobility Innovation Report for further details.

Source: Clean Transportation and Mobility Innovation Report.



8.0 GHG EMISSIONS AND REDUCTIONS ASSOCIATED WITH STIP PROJECTS

Key Takeaways:

- *RIDOT's Long-Range Transportation Plan sets the policy framework for considering environmental impact, including GHG emissions, as a criterion for STIP development and project selection.*
- *RIDOT evaluates prospective projects' impact on GHG emissions as a determinant of their selection for implementation.*
- *Although many projects have the potential to reduce emissions, only three projects of regional significance featured a project-level analysis of emissions impacts, all of which reduced emissions through congestion mitigation.*

8.1 Overview of the STIP

In accordance with Federal law, each state must develop a Statewide Transportation Improvement Program that identifies at least four years of funded projects. Transportation projects must be included within a state's STIP to secure eligibility for Federal funding. Rhode Island's STIP includes a wide range of current and prospective projects that vary in scope.

8.2 How GHG Emissions are Considered in STIP Development

Transportation projects can influence carbon emissions through a variety of channels—including mode shifts, traffic flow improvements, induced demand effects, clean technology transitions, transit vehicle operations, and construction and maintenance activities.

Proposed STIP projects are evaluated based on various criteria before being included in the STIP by the MPO. Consistent with the LRTP, one of the key goals of the state's STIP is to “promote environmental sustainability,” with associated objectives to reduce vehicle miles traveled, reduce transportation greenhouse gas emissions, and create a network of open space, trails, and paths.³⁰ GHG emissions will be more explicitly considered in the development of the next LRTP and STIP, as discussed in Section 8.4.

³⁰ [Section 1 STIPFinal MTP 5-23-23 0.pdf \(ri.gov\)](#).



8.3 Emissions Reductions Associated with STIP Projects

Quantifying emissions reductions associated with every project programmed in the STIP was beyond the scope of this effort and is subject to a great deal of uncertainty given the limited data available for most projects at the programming stage. However, three projects in the RIDOT STIP, which have secured funding for current or imminent implementation and constitute projects of regional significance for the state, underwent emissions analyses as part of project-specific studies. These projects are (1) Opening of Cranston Canyon; (2) Route 146 Reconstruction; and (3) Completion of the I-95 Missing Move and Quonset Connector Ramps. These projects are expected to reduce emissions by increasing roadway travel efficiency through traffic flow improvements. Collectively, these three projects are projected to reduce emissions by 10,500 tons CO₂e per year upon their completion. These projects are described below.

Opening of Cranston Canyon:³¹

- **Primary Actions**—Rebuild six structures in Bridge Group 51B; create and reorient lanes at I-295 North.
- **Project Type(s)**—Traffic operation and flow improvements; roadway state of good repair.
- **Total Projected Cost**—\$85 million.
- **Emissions Reduction**—Expected to reduce annual emissions by approximately 4,100 tons CO₂e/year upon completion.

Route 146 Reconstruction:³²

- **Primary Actions**—Bridge replacements; roadway repaving; traffic signal removal.
- **Project Type(s)**—Traffic operation and flow improvements.
- **Total Projected Cost**—\$196 million.
- **Emissions Reduction**—Expected to reduce annual emissions by approximately 5,900 tons CO₂e/year upon completion.

³¹ Rhode Island Rhode Island Department of Transportation. (2023). *Opening the Cranston Canyon: Safety and Congestion Improvements to Route 37 and I-295. Cranston Canyon—Rhode Island Rhode Island Department of Transportation.* <http://www.dot.ri.gov/projects/CranstonCanyon/>.

³² Rhode Island Department of Transportation. (2023). *Route 146 Reconstruction Project. Route 146—Rhode Island Rhode Island Department of Transportation.* <http://www.dot.ri.gov/projects/Route146/index.php#:~:text=Work%20will%20begin%20in%202022%20on%20a%20%24196,Route%20146%20between%20Providence%20and%20Worcester%20each%20day.>



Completion of the I-95 Missing Move and Quonset Connector Ramps:³³

- **Primary Actions**—Construct two new highway ramps to complete the interchange of I-95 and Route 4.
- **Project Type(s)**—Traffic operation and flow improvements; capacity expansion.
- **Total Projected Cost**—\$135 million.
- **Emissions Reduction**—Expected to reduce annual emissions by approximately 500 tons CO₂e/year upon completion.

These projects are not being proposed for Carbon Reduction Program funding, except for \$4 million programmed in FY 2023 for the Route 146 reconstruction to support bus-on-shoulder operations to improve bus speeds and reliability. They are included here to illustrate the magnitude of emissions reductions that might be expected from major projects to improve traffic flow. RIDOT has not yet quantified the emissions reductions that might be expected from other types of projects such as transit investments, pedestrian and bicycle paths, freight efficiency and modal shift, and micromobility programs. A high level of effort, relative to emissions reductions and other anticipated benefits, would be needed to estimate emissions associated with each of the many smaller-scale projects also included in the STIP. However, RIDOT is working to improve its data and modeling systems to better support quantification of the emissions benefits of other types of projects in the future.

8.4 GHG Considerations for Future STIP Development

The STIP is developed in accordance with the state’s Long-Range Transportation Plan—Moving Forward RI-2040, with projects required to be pulled directly from the LRTP to be included in the STIP. The LRTP reflects the values of the state as well as national transportation goals. A national goal for all LRTP projects is to “protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and municipal-planned growth and economic development patterns.” The State of Rhode Island reinforces this commitment by outlining challenges and opportunities being addressed through LRTP projects and in STIP development, including addressing traffic congestion, active transportation, smart growth, and climate impacts and resiliency.³⁴

RIDOT has been updating and improving its data and procedures for evaluating candidate STIP projects. As part of these enhancements, RIDOT will revisit its STIP project selection criteria to ensure GHG emissions are considered and given appropriate weight. This may include qualitative consideration for projects for which emissions impacts cannot be readily quantified.

³³ Rhode Island Department of Transportation. (2023). I-95 ‘Missing Move’ and Quonset Ramps Construction. Missing Move—Rhode Island Rhode Island Department of Transportation. <http://www.dot.ri.gov/projects/missingMove/>.

³⁴ [Final-LRTP-December-2020.pdf \(ri.gov\)](#).



9.0 CARBON REDUCTION PROGRAM FUNDING

Key Takeaways:

- *RIDOT considered cost-effectiveness and other internal priorities in its identification of CRP priority projects.*
- *About \$13.1 million of the estimated \$35.7 million available CRP funds were previously assigned to a set of existing FY2022 and FY2023 STIP projects that reduce emissions through congestion management, mode shift, and freight.*
- *The majority of the remaining \$22.6 million in funds will be allocated toward projects that promote mode shifting to reduce motor vehicle travel.*
- *Federal requirements mandate that 65 percent CRP funds be allocated to urbanized areas according to population, while 35 percent can be used anywhere within the state.*

In its selection of projects that would receive CRP funds, RIDOT considered project eligibility requirements as outlined in the Federal guidelines, in conjunction with other internally prioritized criteria throughout the strategy selection process, including:

- Project alignment with the cost-effectiveness table in the Clean Transportation Mobility Report.
- Project consistency with RIDOT's internal goals and operations to ensure execution within the department's logistical constraints.
- Project alignment with external stakeholder operations and community needs.
- Project scale (reasonably within the scope of available CRP funding).

9.1 STIP Projects Assigned for CRP Funding

Of the \$35.7 million prospective Federal funding available to RIDOT through the CRP, around \$13.1 million has been spent on existing projects in the STIP. RIDOT's internal priorities and logistical capacities show many readily available STIP projects associated with congestion management, mode shift, and freight. Table 9.1 details the STIP projects which have already been funded using CRP funds alongside their primary project categories and corresponding funding magnitudes.



Table 9.1 STIP Projects Already Funded with CRP Funding

STIP Project	Primary Category	Amount (\$M)
Bike Path Resurfacing and Preservation - Washington Secondary Bike Path (Depot Ave, Cranston to Whitford St., Coventry)	Mode Shift	2.7
Safety Service Patrol	Congestion Management	0.4
RIDOT Traffic Signal Systems Management Program	Congestion Management	0.1
Statewide Congested Corridor Upgrades (2022-2023)	Congestion Management	2.4
Statewide Congested Corridor Upgrades (2024-2025)	Congestion Management	0.1
Pawtucket Bridge Lighting and Bridge Strike Detection Systems	Freight	3.1
Bridge Group 96 - Route 146 Reconstruction (includes bus-on-shoulder)	Congestion Management	4.0
Prescoping Support	Mode Shift	0.3
Total Funded Allocation		13.1

9.2 Remaining Funding Allocation

Given the share of CRP funds preliminarily attached to congestion management STIP projects, RIDOT's allocation proposal for the remaining \$22.6 million aims to diversify the department's range of carbon reduction strategies. Specifically, in response to overwhelming support for pedestrian, bicycle, and transit strategies during the public comment period, the remaining funds place a greater emphasis on projects that promote mode shift away from private vehicles. The set of proposed mode shift strategies would expand and maintain the state's infrastructural capacity to accommodate bicycle travel and public transportation. Table 9.2 details the additional proposed funding for STIP projects using CRP funds.

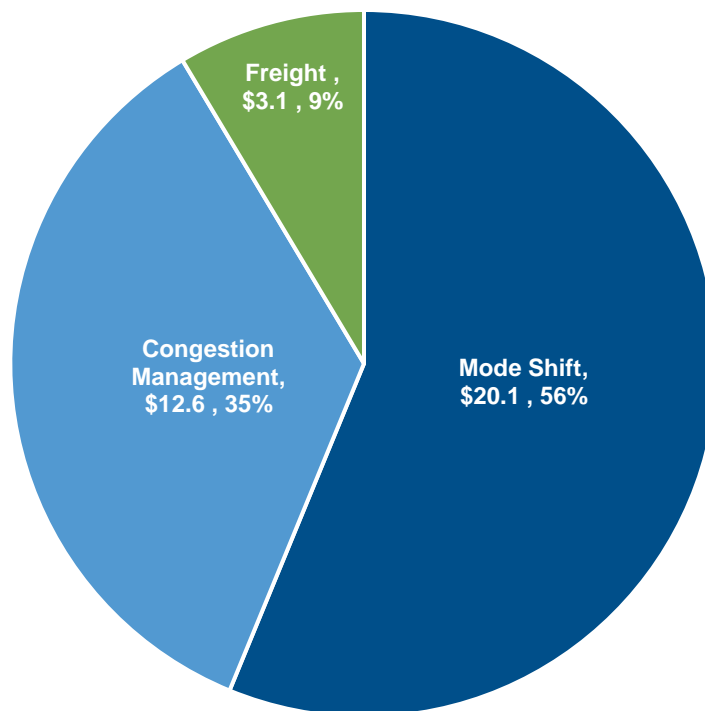
After totaling together all CRP funds (both spent and assigned), a majority of the CRP funds (\$20.1 million) is allocated towards projects that promote mode-shifting away from single-occupancy vehicle travel and towards alternative modes such as walking, biking and transit. The remaining \$15.6 million is allocated towards projects that will reduce emissions through congestion management and freight. Figure 9.1 depicts the final CRP funding totals by category area.



Table 9.2 STIP Projects Assigned with Remaining CRP Funding

STIP Project	Primary Category	Amount (\$M)
Sidewalks on Route 102 (Home Depot - Wickford Junction)	Mode Shift	0.6
Trestle Trail - West Section - Paving	Mode Shift	0.7
Bike Path Resurfacing and Preservation - Washington Secondary Bike Path (Depot Ave, Cranston to Whitford St., Coventry)	Mode Shift	3.2
Safety Service Patrol	Congestion Management	1.2
RIDOT Traffic Signal Systems Management Program	Congestion Management	0.8
Statewide Congested Corridor Upgrades (2024-2025)	Congestion Management	3.6
National Travel Survey	Mode Shift	0.6
Providence Ferry Landing	Mode Shift	1.5
Sidewalk Accessibility Improvements for RIPTA Bus Stops	Mode Shift	1.5
“Rhody Express”	Mode Shift	8.9
Total Assigned Allocation		22.6

Figure 9.1 Total RIDOT CRP Funds (\$Million) by Primary Category





9.3 Funding Suballocation

Per Federal regulation, 65 percent of the state’s CRP apportionment must be obligated based on the population shares within different urbanized area thresholds, with the remaining 35 percent allowed to be expended in any area of the state. As such, Table 9.3 outlines the allowable funding allocations across the State of Rhode Island based on the latest available census data. As CRP funds are disseminated, RIDOT will track and monitor these allocations to ensure they are in compliance with Federal regulations.

Table 9.3 Funding Suballocation

	Urbanized Area (UZA) Population Threshold	Rhode Island UZA(s)	Percent of Population	Total Funding (\$)
65%	Greater than 200,000	Providence	90.5%	21,041,818
	50,000 to 200,000	<i>None</i>	0%	0
	5,000 to 50,000	Charlestown, Westerly	0.3%	65,019
	Less than 5,000	<i>Not applicable</i>	9%	2,155,320
35%	Anywhere in State			12,525,777
Statewide Total				35,787,935

9.4 Expected Carbon Reduction Benefits

The projects outlined in this section are expected to yield carbon reduction benefits consistent with those detailed in the Section 7.0 cost-effectiveness summary. The 2021 Clean Transportation and Mobility Innovation Report ranks congestion management, electrification, and certain mode shift strategies among the more cost-effective project types in terms of their capacity to reduce GHG emissions. Following a 2021 U.S. Environmental Protection Agency report that examined freight emissions at Rhode Island’s Providence Port, the state is especially interested in monitoring and maximizing the carbon reduction benefits for this port.³⁵ The proposed queuing and routing software installations, if properly executed, would improve air quality and reduce noise in a historically underserved community, in addition to reducing carbon emissions, by reducing truck idling.

Quantification of GHG reduction benefits from individual projects can require information that may not be readily available (such as forecasts of bicycle or pedestrian traffic volumes on a new facility) or may require a level of effort for analysis disproportionate to the scale of the project. With that said, RIDOT is currently working to improve its data and modeling systems, including the statewide travel demand model, to provide better data to support analysis and forecasting of project benefits, including emission reduction benefits.

³⁵ RI.gov. (2022). Port of Providence Truck Count and Assessment Study. Port Of Providence Truck Count And Assessment Study | Rhode Island Division of Statewide Planning. <https://planning.ri.gov/planning-areas/transportation/freight-planning/port-providence-truck-count-and-assessment-study#:~:text=As%20part%20of%20this%20process%2C%20one%20of%20the,into%20and%20out%20of%20the%20Port%20of%20Providence.>



10.0 ADDITIONAL CARBON REDUCTION STRATEGIES

Key Takeaways:

- *The Carbon Reduction Program represents just one step in moving the state on a trajectory to reach net zero emissions by 2050.*
- *RIDOT must support and prioritize electrification, mode shift, and other carbon reducing activities.*
- *RIDOT cannot decarbonize the transportation sector on its own. Full implementation of carbon reduction strategies will require additional funding as well as partnerships with other agencies.*

Carbon Reduction Program funding represents an important step in helping decarbonize Rhode Island's transportation sector and support the state's greenhouse gas reduction goals. RIDOT recognizes that implementation of projects funded through the Carbon Reduction Program is just one step on the path to achieving net zero and that implementation of the CRS will assist us in accomplishing that mission. RIDOT and other state agency partners in the RI EC4 are actively working on an expanded effort to fully achieve that goal. Reaching net zero emissions will require complete decarbonization of transportation fuels, including electricity generated by other renewable energy and/or other zero-emission fuels such as renewables-based hydrogen. In interim years, reductions in vehicle travel and improvements in travel efficiency can work alongside low- and zero-emission vehicles to reduce emissions and help achieve targets.

Considering the strategies identified in state planning documents identified in Section 6 of this plan, as well as the outcomes of the stakeholder workshop and other involvement conducted in support of this Strategy, RIDOT will work with its partners to undertake the following actions:

1. Continue to support statewide electrification/zero-emission vehicle transition by:
 - a. Pursuing funding opportunities for **public charging infrastructure** and working with OER to build out this infrastructure on a timeline supporting the state's zero-emission vehicle sales requirements.
 - b. Supporting sister agency **fleet transition** efforts, including RIPTA and other state agencies, through formula and grant funding and technical support.
2. Within constraints of available funding, prioritize **mode shift projects** in programming, including:
 - a. **Transit service enhancements** consistent with the Transit Master Plan. These may include MBTA as well as RIPTA service enhancement, further piloting and implementation of microtransit where traditional



services are less effective, and exploration of mobility-as-a-service and integrated ticketing to make it as easy as possible to travel without a car.

- b. **Pedestrian and bicycle** infrastructure, including Complete Streets as well as shared-use paths.
 - c. Electric **micromobility, rideshare, and carshare** services, especially targeting underserved populations to improve mobility while also reducing emissions.
3. Undertake research, development, and demonstration needed to reduce **emissions from RIDOT's activities**, including:
- a. Transitioning agency and contractor fleets to low- or zero-emission vehicles, as vehicles with the required performance specifications become available. This will require planning for charging and fueling infrastructure as well as financial and technical support for fleet transition.
 - b. Developing and implementing specifications for low-carbon materials.
 - c. Developing green infrastructure practices, guidelines, and projects (e.g., carbon-sequestering vegetation, solar in rights-of-way).
4. Update and expand **plans, policies, and analysis methods** to support carbon reduction:
- a. Develop a '**Complete Streets**' State Plan and Design Guidelines to support mode shift on state and municipal roads.
 - b. Work to improve **data and modeling systems** to better evaluate the GHG effects of investment plans and projects.
 - c. Revisit STIP **project selection criteria** to ensure GHG emissions are considered and given appropriate weight.
 - d. Support efforts by other agencies, including DSP and the Office of Housing and Community Development, to implement **travel-efficient land use and transit-oriented development**, through project prioritization and planning activities that consider land use.
 - e. Actively participate in the Rhode Island 2025 **Climate Action Plan update** effort that will commence in 2024. This multi-agency, stakeholder-driven effort will be the primary step in further developing and implementing transportation carbon reduction strategies that extend beyond RIDOT's planning and programming.
 - f. Ensure that carbon reduction is a central theme in future updates to the state's **transportation planning and policy documents**, including the Long-Range Transportation Plan, corridor plans, and modal plans such as the state's freight and rail plans.



5. Work with the legislature and partner agencies to explore potential **alternative funding sources** to supplement existing funding for carbon reduction project and strategy implementation.
 - a. Some programs, such as a “cap-and-invest” program that sets a declining cap on carbon emissions, could potentially generate revenue while at the same time providing incentives to reduce emissions. Cap-and-invest programs have already been implemented by west coast states and New York State is in the process of designing a cap-and-invest program. Rhode Island could potentially join with other states’ efforts on these programs.
 - b. The Rhode Island Transit Master Plan includes a section, “Potential Funding Sources,” that identifies funding sources already in use in other states to fund transit, and that could be added or expanded to support implementation of the master plan. Some of these sources could potentially be used for other clean transportation purposes as well.

It is critical to note that most decarbonization strategies require funding to implement. While some opportunities may exist to redirect funding with RIDOT’s existing transportation budget, the state’s capital program mainly funds activities that are needed simply to keep the existing system in a state of good repair. The federal government has provided additional funding in recent years for decarbonization, through the Infrastructure Investment and Jobs Act of 2021 and the Inflation Reduction Act of 2023, but these sources are not guaranteed to be sustained in the future. RIDOT will need to work with partner agencies and state government to explore additional funding sources if the state’s full carbon reduction potential is to be realized and targets met.



APPENDIX A. PROJECTS SELECTED AND PROPOSED FOR CARBON REDUCTION PROGRAM FUNDING

Table A.1 provides additional information, including Statewide Transportation Improvement Program project identification numbers where available, for the projects listed in Section 9.0.

Table A.1 Carbon Reduction Program Funded and Proposed Projects

STIP ID	STIP Project	Primary Category
5127	Sidewalks on Route 102 (Home Depot - Wickford Junction)	Mode Shift
9002	Trestle Trail - West Section - Paving	Mode Shift
12111	Bike Path Resurfacing and Preservation - Washington Secondary Bike Path (Depot Ave, Cranston to Whitford St., Coventry)	Mode Shift
12119	Safety Service Patrol	Congestion Management
12121	RIDOT Traffic Signal Systems Management Program	Congestion Management
12113	Statewide Congested Corridor Upgrades (2022–2023)	Congestion Management
13113	Statewide Congested Corridor Upgrades (2024–2025)	Congestion Management
5391	Pawtucket Bridge Lighting and Bridge Strike Detection Systems	Freight
3250	Bridge Group 96 -- Route 146 Reconstruction	Congestion Management
	National Travel Survey	Mode Shift
	Providence Ferry Landing	Mode Shift
	Prescoping Support	Mode Shift
	Sidewalk Accessibility Improvements for RIPTA Bus Stops	Mode Shift
	“Rhody Express”	Mode Shift



APPENDIX B. GREENHOUSE GAS ASSESSMENT AND FORECASTS

B.1 Methods

B.1.1 On-road Private Mobile Sources

- A baseline forecast of emissions associated with on-road vehicle transportation required the following data inputs: statewide vehicle miles traveled, categorized by four vehicle classes (light-duty passenger, light-duty truck, medium-duty and heavy-duty); fuel technology fractions that constitute each vehicle class (e.g., gasoline, diesel, electric); fuel conversion factors; and fuel emissions factors.
- The total annual fuel consumption of each technology type within each vehicle class was calculated by multiplying the vehicle miles traveled within each class-technology combination by the corresponding combination's appropriately converted fuel economy. Projected fuel consumption for each class-technology category were then multiplied by each category's respective emissions factors. For several emissions factors that provided emissions per mile rather than per unit of fuel, the total CO₂e contribution was calculated by multiplying the factor by the total miles traveled, rather than the fuel consumption.
- The transportation emissions reduction targets displayed in Figure 4.1 (Rhode Island Transportation GHG Reduction Targets) were derived by multiplying the state's 1990 transportation emissions level by the percentage reduction targets established in the 2021 Act on Climate, adjusting the 2030 target downward from 45 percent to 40 percent.

B.1.2 On-road Public Transportation

- The baseline emissions calculations associated with on-road public transportation required the following data inputs: statewide vehicle miles traveled, categorized by three transportation services (Demand Response, Motorbus and Vanpool); fuel economy by vehicle-fuel type, a fuel conversion factor for diesel; fuel emissions factors.
- For each mode, the vehicle miles traveled were multiplied by the vehicle emissions rate, which was calculated using the fuel economy reported through the National Transit Database. For vanpool, all vehicles were assumed to be gasoline powered and for demand response, all vehicles were assumed to be diesel-powered, based on fuel reports to the NTD. For fixed-route bus service, buses were assumed to be converted from diesel to diesel-hybrid, with a small number of electric buses entering service in the near term based on inventory projections provided by correspondence with RIPTA.
- For all modes, no increases in service were assumed in future years.



B.1.3 Rail Transit

- A copy of the November 2022 Rhode Island Community Flows and Forecast Interim Update was obtained from the Rhode Island Division of Statewide Planning. This document includes calculated compound annual growth rates for inbound, outbound, and through bound freight. The Division of Statewide Planning clearly documents the types of freight and origins/destinations of each type, rendering these calculations robust and suitable for extrapolations. The Division of Statewide Planning Interim Freight Plan Update provides lengths of different officially delineated sections of track, in miles. These data inputs allow for rough rail freight ton-mileage to be derived by multiplying ton flows by the total length of rail trackage that freight would move on into, out of, or through Rhode Island.
- For passenger rail, passenger count data was obtained for the MBTA Providence/Stoughton line for January 2023. Using mileage information calculated from track schematics, it was then possible to add the total length of track between the Massachusetts-Rhode Island border and each of the three in-state MBTA stations (Providence, T.F. Green Airport, and Wickford Junction) for which counts were made. Once done, passenger rail-mileage was calculated by multiplying average weekly passengers to each of these stops by the appropriate length of track, summing these values, and multiplying to calculate the full years' worth of passenger-mileage. Amtrak rail passenger-mileage for the entirety of the State of Rhode Island was available for the year 2016, but more recent years were not accessible, and it was not possible to calculate more recent years given freely available data. As such, there was no basis for extrapolations for either MBTA or Amtrak passenger counts, so the assumption was made that rail passenger-mileage will remain roughly at pre-pandemic levels until 2050.

B.1.4 Construction and Maintenance Activities

- A copy of the RIDOT capital program (STIP) was obtained, then cleaned and coded to align with the input values for the FHWA ICE tool. Cleaning and coding involved the following steps:
 - Filtering out projects that already are completed.
 - Filtering out projects that are not relevant to categories in the FHWA ICE tool.
 - Categorizing projects using relevant capital attributes.
- Cleaned and coded data from the STIP was entered into the FHWA ICE tool to obtain annual GHG emissions associated with construction and maintenance activities from 2022 through 2031.
- Emissions projections beyond the year 2031 were calculated using a trailing 10-year average number.

B.1.5 On-Road Private Mobile Sources Scenario Analysis

To forecast emissions associated with the proposed Advanced Clean Cars 2 and Advanced Clean Trucks rules, a new technology share forecast was projected as an alternative to the shares used in the baseline inventory



analysis. All other variables and underlying assumptions remained consistent with the baseline analysis. Because the cars and trucks electrification rules involve different vehicle parameters and data sets, slightly different methodologies were used to obtain new technology share forecasts for light-duty vehicles and medium- and heavy-duty vehicles. Analyses for each of the vehicle class subgroups were performed as follows:

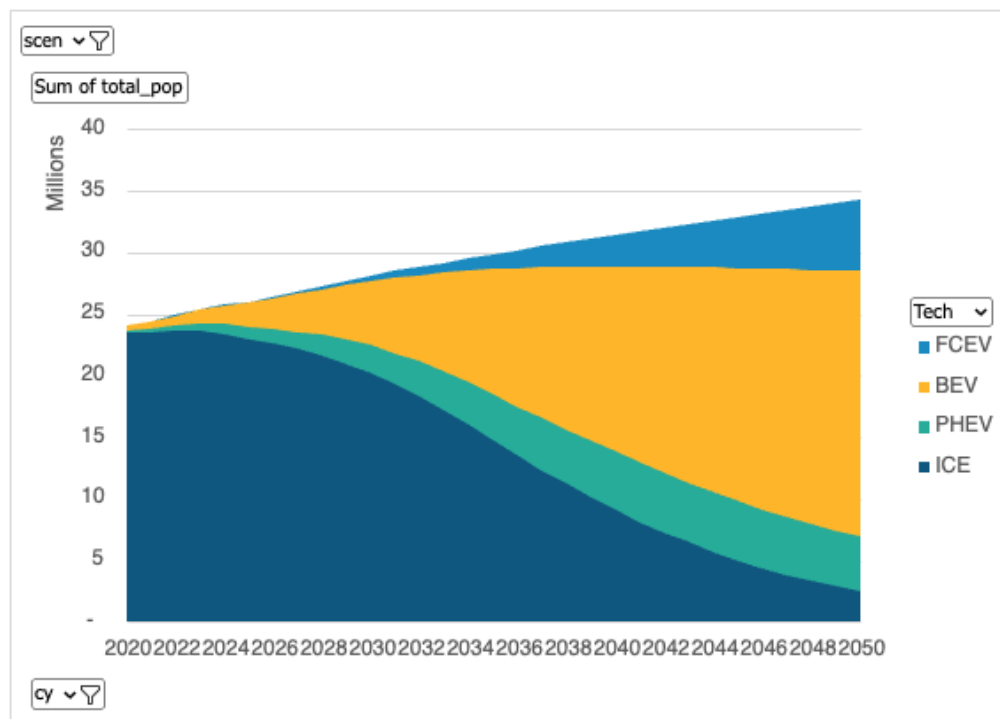
- **Light-duty Passenger Cars and Light-Duty Trucks.**

A spreadsheet was obtained from the California Air Resources Board, which forecasted vehicle technology shares for vehicle classes 1–4 from 2020 through 2050. The CARB data was used to recalibrate RI’s technology shares for both light duty cars and light duty trucks.

The CARB spreadsheet divided vehicle technologies into four broad categories—internal combustion engine (ICE), plug-in hybrid electric vehicle (PHEV), battery-electric vehicle (BEV), and hydrogen fuel cell (HFC). Figure B.1 provides a graphical representation of the spreadsheet data. For the purpose of this analysis, the HFC category—which constituted a small share of overall vehicles—was incorporated into the BEV category. The ICE category was interpreted to include gas, diesel, biofuel, compressed natural gas and gas-electric hybrid technology types. The PHEV share forecast was applied to the plug-in hybrid category.

For both the PHEV and BEV categories, the CARB technology share forecasts were directly applied to the RI forecast without any quantitative translation. The ICE category total share aligned with the CARB data, but the subcategories within the ICE group reflected the ICE-group shares exhibited in the baseline inventory analysis.

Figure B.1 California’s Technology Share Forecast for Light-Duty Vehicles Following ACC II Implementation





- **Medium-duty and Heavy-duty Vehicles.**

CARB provided a technology share forecast graph with different categories for vehicle classes subject to the Advanced Clean Trucks regulation. The different categories were interpreted in the following manner in their projection upon RI data:

All model years (MY) except MY2024+—all vehicles of every technology type purchased prior to the program’s commencement 2024.

MY 2024+: Non-ZEV—all non-electric vehicles except plug-in hybrid purchased after 2023.

MY 2024+: Others—all plug-in hybrid vehicles purchased after 2023.

MY2024+: ZEV—all “electric” vehicles purchased after 2023.

Discrete vehicle stock values were derived from the graph provided by CARB and applied to the state’s private mobile sources vehicle stock. A linear regression was performed on these fractions to extrapolate data for the years 2045 and 2050. For both the electric and plug-in electric vehicle categories, the graph’s corresponding vehicle shares were applied directly to the RI technology forecast; zero of these technology types existed in the RI medium and heavy-duty vehicle stock prior to the regulation. For all other vehicle categories (gasoline, compressed natural gas, diesel, and ethanol flex fuel), forecasts were calculated using a combination of baseline scenario technology share data, “All MY Except MY2024+” CA shares, and “MY2024+: Non-ZEV” CA shares. Because the program’s sales requirements begin in 2023, the baseline scenario’s 2023 technology shares served as the share fractions used in the remaining pre-2024 vehicle values. These pre-2024 shares were combined with post-2024 non-ZEV projections to determine overall non-ZEV and non-plug-in vehicle shares from 2024 through 2050.

B.2 Data Sources

B.2.1 On-road Private Mobile Sources

- **Rhode Island’s Travel Demand Model—**Growth rates and vehicle class shares for VMT data.³⁶
- **FHWA Highway Performance Monitoring System—**Baseline VMT in 2021.
- **U.S. Energy Administration’s Annual Energy Outlook tables—**Vehicle technology share forecast (2021–2050).³⁷

³⁶ RI.gov. (2023). *Travel demand model. Travel Demand Model | Rhode Island Division of Statewide Planning.* <https://planning.ri.gov/planning-areas/transportation/travel-demand-model>.

³⁷ U.S. Energy Information Administration. (2023). *Annual Energy Outlook—U.S. Energy Information Administration (EIA). Annual Energy Outlook 2023—U.S. Energy Information Administration (EIA).* https://www.eia.gov/outlooks/aeo/tables_ref.php.



- **VISION model AEO data tables**—Vehicle fuel economies for each class-technology combination.³⁸
- **U.S. Department of Energy**—Fuel conversion factors.³⁹
- **U.S. Environmental Protection Agency**—Fuel emissions factors.⁴⁰
- **Rhode Island Department of Environmental Management 2019 Greenhouse Gas Emissions Inventory**—1990 transportation emissions.⁴¹

B.2.2 On-road Public Mobile Sources

- **National Transit Database (2019)**—VMT, vehicle technology shares and fuel consumption data.
- **U.S. Department of Energy**—Consumption and conversion factors.⁴²
- **Environmental Protection Agency**—Emissions factors.⁴³
- **Rhode Island Public Transit Authority staff**—Fleet composition changes.

B.2.3 Rail Transit

- **Oak Ridge National Laboratory Transportation Energy Data Book (TEDB) Table 7.1 and 10.8**—BTU calculations and BTU/ton-mile data.⁴⁴
- **U.S. Energy Information Administration**—Diesel CO₂ emissions levels.⁴⁵
- **Rhode Island Commodity Flows and Forecast Report Addendum, November 7, 2022**—Freight tonnage calculations.⁴⁶

³⁸ Argonne National Laboratory (2023). VISION Model. <https://www.anl.gov/esia/vision-model>.

³⁹ U.S. Department of Energy. (2023). Fuel conversion factors to gasoline gallon equivalents. State & Alternative Fuel Provider Fleets: Fuel Conversion Factors to Gasoline Gallon Equivalents. <https://epact.energy.gov/fuel-conversion-factors>.

⁴⁰ Environmental Protection Agency. (2022, April 1). Emission factors for greenhouse gas inventories. Epa.gov. https://www.epa.gov/system/files/documents/2022-04/ghg_emission_factors_hub.pdf.

⁴¹ Rhode Island Department of Environmental Management. (2019). 2019 Rhode Island Greenhouse Gas Emissions Inventory. dem.ri.gov. <https://dem.ri.gov/sites/g/files/xkqbur861/files/2022-12/ridem-ghg-inventory-2019.pdf>.

⁴² U.S. Department of Energy. (2023). Fuel conversion factors to gasoline gallon equivalents. State & Alternative Fuel Provider Fleets: Fuel Conversion Factors to Gasoline Gallon Equivalents. <https://epact.energy.gov/fuel-conversion-factors>.

⁴³ Environmental Protection Agency. (2022, April 1). Emission factors for greenhouse gas inventories. Epa.gov. https://www.epa.gov/system/files/documents/2022-04/ghg_emission_factors_hub.pdf.

⁴⁴ Davis, S. C., & Boundy, R. G. (2022, June). Home—Transportation Energy Data Book Transportation Energy Data Book. tedb.ornl.gov. https://tedb.ornl.gov/wp-content/uploads/2022/03/TEDB_Ed_40.pdf.

⁴⁵ U.S. Energy Information Administration. (2022, October 5). U.S. Energy Information Administration—EIA—Independent statistics and analysis. EIA. https://www.eia.gov/environment/emissions/co2_vol_mass.php.

⁴⁶ State of Rhode Island. (2018, July 20). Addendum #3. Purchasing.ri.gov. <https://purchasing.ri.gov/rivip/stateagencybids/7612803.pdf>.



- **State of Rhode Island 2022 Freight and Goods Movement Plan—Interim Update**—Freight mileage and compound annual growth rate calculations.⁴⁷
- **RIDOT Passenger Count Surveys**—Bus passenger trips.
- **Amtrak**—Amtrak passenger rail miles.⁴⁸
- **Bureau of Transportation Statistics**—Amtrak energy intensity data (BTU per passenger-mile).⁴⁹
- Passenger growth rates projections are not publicly available, so passenger numbers are assumed to remain constant.

B.2.4 Construction and Maintenance Activities

- **Rhode Island Statewide Transportation Improvement Plan**—STIP project data used as inputs for the Federal Highway Administration’s Infrastructure Carbon Estimator tool.
- **Federal Highway Administration Infrastructure Carbon Estimator Tool**—emissions calculation methodology/source.⁵⁰

B.2.5 On-Road Private Mobile Sources Scenario Analysis

- **California Air Resources Board**—vehicle technology share projection for light, medium and heavy-duty vehicles.
- *All sources listed for On-Road Private Mobile Sources.

B.3 Key Assumptions

B.3.1 On-road Private Mobile Sources

- RI fulfills the state’s final and intermediate electricity-grid improvements (net-zero by 2030), and these improvements occur linearly.

⁴⁷ RI.gov. (2022). *Freight and Goods Movement Plan Interim Update, 2022. Freight and Goods Movement Plan Interim Update, 2022 | Rhode Island Division of Statewide Planning*. <https://planning.ri.gov/planning-areas/transportation/freight-planning/2016-freight-and-goods-movement-plan#:~:text=The%20Statewide%20Freight%20%26%20Goods%20Movement,the%20efficient%20movement%20of%20goods>.

⁴⁸ Amtrak. (2016). *Rhode Island 2016—Amtrak.com*. Amtrak.com. <https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/stateeconomicimpactbrochures/Rhode-Island-fy16.pdf>.

⁴⁹ U.S. Department of Transportation. (n.d.). *Energy intensity of Amtrak services. Energy Intensity of Amtrak Services | Bureau of Transportation Statistics*. <https://www.bts.gov/content/energy-intensity-amtrak-services>.

⁵⁰ Minnesota Department of Transportation. (2023). *Sustainability and Public Health. Greenhouse Gas Emissions Analysis Tool—Sustainability and Public Health—MnDOT*. <https://www.dot.state.mn.us/sustainability/ghg-analysis.html#:~:text=The%20FHWA%20Infrastructure%20Carbon%20Estimator,for%20materials%20and%20construction%20activities>.



- Gasoline-electric hybrid vehicles only yield gasoline-induced emissions.
- Plug-in hybrid vehicles only yield electricity-induced emissions.
- Fuel economies of electric and vehicles are weighted averages of this vehicle type's various subsets.
- Light-duty vehicles include vehicle classes 1–2.
- Medium-duty vehicles include vehicles classes 3–6.
- Heavy-duty vehicles included vehicle classes 7–8.
- Vehicle types with very small overall technology shares are omitted from analysis.
- Fuel economies are “on-road” rather than “new vehicle.”

B.3.2 On-road Public Mobile Sources

- RI on-road public transportation will exhibit no capacity changes from 2022 through 2050; vehicle miles remain constant.
- RI on-road public transportation's motorbus fleet will exhibit vehicle technology changes from 2022 through 2050 that are consistent with RIPTA's diesel-electric hybrid plan and anticipated electric bus additions. Vanpool and demand response vehicles will exhibit zero technological changes.
- 2022 public transportation figures approximate pre-pandemic magnitudes and provide an appropriate baseline estimate to extrapolate through 2050.
- Fuel economy estimates were sourced from RIPTA's reporting to the National Transit Database. For electric buses, fuel economy estimates were sourced from the National Renewable Energy Laboratory (NREL) Electrification Futures Study.

B.3.3 Rail Transit

- Rail passenger-mileage will remain at pre-2020 levels through 2050.
- The States of Rhode Island and Massachusetts will succeed in achieving their net-zero emissions goals, including both electricity and rail transportation, and these declines are roughly linear.
- Compound annual growth rates in freight tonnage calculated by the Rhode Island Department of Statewide Planning are borne out in practice.
- Estimates of total trackage mileage traversed by inbound, outbound, and throughbound freight are accurate and sufficient to estimate total rail freight-mileage for each type of freight transit.
- No additional passenger or freight lines will be constructed in the state in the next 27 years.



- The calculated annual growth rate for throughbound freight en route to Connecticut is -0.9 percent.
- The calculated annual growth rate for throughbound freight en route to Massachusetts is 2.4 percent.
- The calculated annual growth rate for outbound freight is 1.8 percent.
- The calculated annual growth rate for inbound freight is 1.8 percent.

B.3.4 Construction and Maintenance Activities

- According to the Census Bureau, an urbanized area is a continuously built-up area with a population of 50,000 or more. Also from the Census Bureau, there is no county in Rhode Island that has a population less than 50,000. It is therefore assumed that all areas in Rhode Island are urbanized.
- The lifetime of all constructions are 30 years.
- All sidewalks are off-street.
- Signages are included in all road constructions.
- Zero percent of roadways are constructed on rocky and mountain terrain.
- Construction of Specialty Buildings is not included in the calculations.
- Projects that are in a “proposed” condition are not counted.
- Statewide improvement programs with no specific locations are not included in the calculation.
- Intersections, crosswalks, and roundabouts are not included in the calculation.
- All future projections are calculated by using a trailing 10-year average number.

B.3.5 On-Road Private Mobile Sources Scenario Analysis

- Rhode Island’s private on-road mobile vehicle stock would exhibit approximately the same shifts in vehicle technology composition in response to the Advanced Clean Cars and Trucks regulations as those projected for California.
- When translating data from CARB’s technology projection spreadsheets to RI’s vehicle stock, technology categories are interpreted or combined in the manner previously outlined in the methodology section.



B.4 Key Uncertainties

B.4.1 On-road Private Mobile Sources

Several of the aforementioned data sources offered data forecasts as inputs for various components of this section's analysis. Uncertainty in this section's emissions forecasts therefore compound with each of the separate data forecasts that were used as inputs. Changes in Federal policy, technological capabilities, or driving culture and behaviors may alter projections of vehicle technology shares, fuel economies and travel demand, respectively. Changes in any of these external factors could influence the emissions forecast in positive or negative directions.

B.4.2 On-road Public Mobile Sources

As discussed in the previous sections, the public transportation baseline inventory projects vehicle miles traveled from the year 2022 upon each year through 2050. This assumption carries several uncertainties, including the assumption that 2022 miles traveled data appropriately reflect the magnitude and trajectory of pre-pandemic levels. This uncertainty is diminished by the similarity between VMT data for 2022 and the few years preceding 2020. Still, it is uncertain how future changes in policy, state projects, technology, or demand for public transportation may cause vehicle miles traveled and fleet technology composition to deviate from the 2022 baseline estimate.

B.4.3 Rail Transit

Amtrak does not appear to have Rhode Island-specific rail passenger-mileage for years after 2016, and publicly reported data do not make it possible to create rail passenger-mileage for more recent years. Given that the Covid-19 pandemic seriously impacted rail travel, it is likely that overall rail passenger mileage for the baseline is lower than reported. However, this cannot be verified. Emissions from rail passenger travel also may decarbonize faster, or more slowly, than expected due to technology uptake. Additionally, freight flow projections, and thus rail freight ton-mileage, may vary depending on larger economic shifts, potential industrial development, deployment of low- or zero-carbon freight railroad equipment, or other unidentified trends.

B.4.4 Construction and Maintenance Activities

Although the Rhode Island STIP lists the major construction and maintenance activities for the next 10 years, the STIP mostly includes standardized activities such as road and sidewalk rehabilitation. There are many unstandardized activities left unaccounted for by the ICE tool, such as the construction of EV charging infrastructure. Additionally, changes in the public's use of RI's transportation infrastructure could necessitate additional projects, such as rehabilitation work.



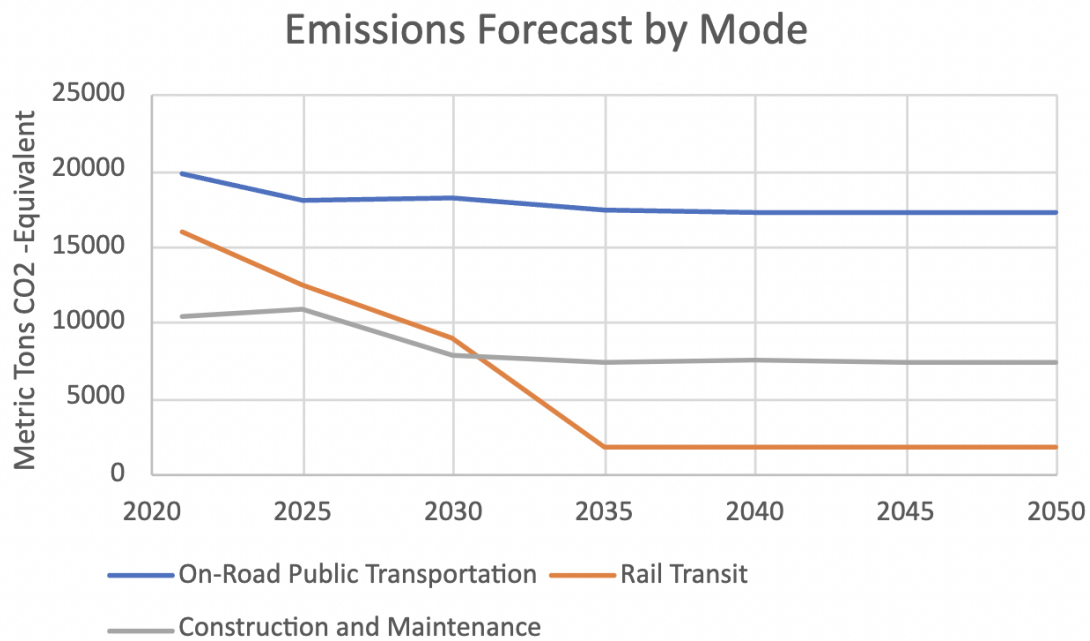
B.4.5 On-Road Private Mobile Sources Scenario Analysis

The scenario analysis makes key assumptions that are susceptible to error and uncertainty. It is unlikely that changes in Rhode Island’s private vehicle stock will precisely correspond to the projected changes in California’s vehicle stock, even under the same policy conditions. This uncertain interstate translation is compounded by uncertainty that California’s future changes in vehicle stock are consistent with the changes anticipated by CARB.

B.5 Additional Tables and Figures

B.5.1 Aggregate Emissions

Figure B.2 Emissions Forecast by Mode





B.5.2 On-Road Private Mobile Sources

Table B.2 On-Road Private Mobile Sources Baseline Inventory Forecast

Units: MT CO ₂ e	2021	2025	2030	2035	2040	2045	2050
Light-Duty Cars	900,853	802,974	694,076	594,930	531,433	502,399	485,813
Light-Duty Trucks	1,082,343	1,058,526	1,046,436	1,025,026	1,006,850	999,040	993,709
Medium-Duty Vehicles	486,662	456,908	424,061	420,242	422,382	426,114	427,285
Heavy-Duty Vehicles	661,903	611,171	552,230	540,048	541,697	544,901	548,774
Total	3,131,761	2,929,579	2,716,803	2,580,246	2,502,362	2,472,454	2,455,581

Figure B.3 On-Road Mobile Baseline Inventory Total Emissions Graph

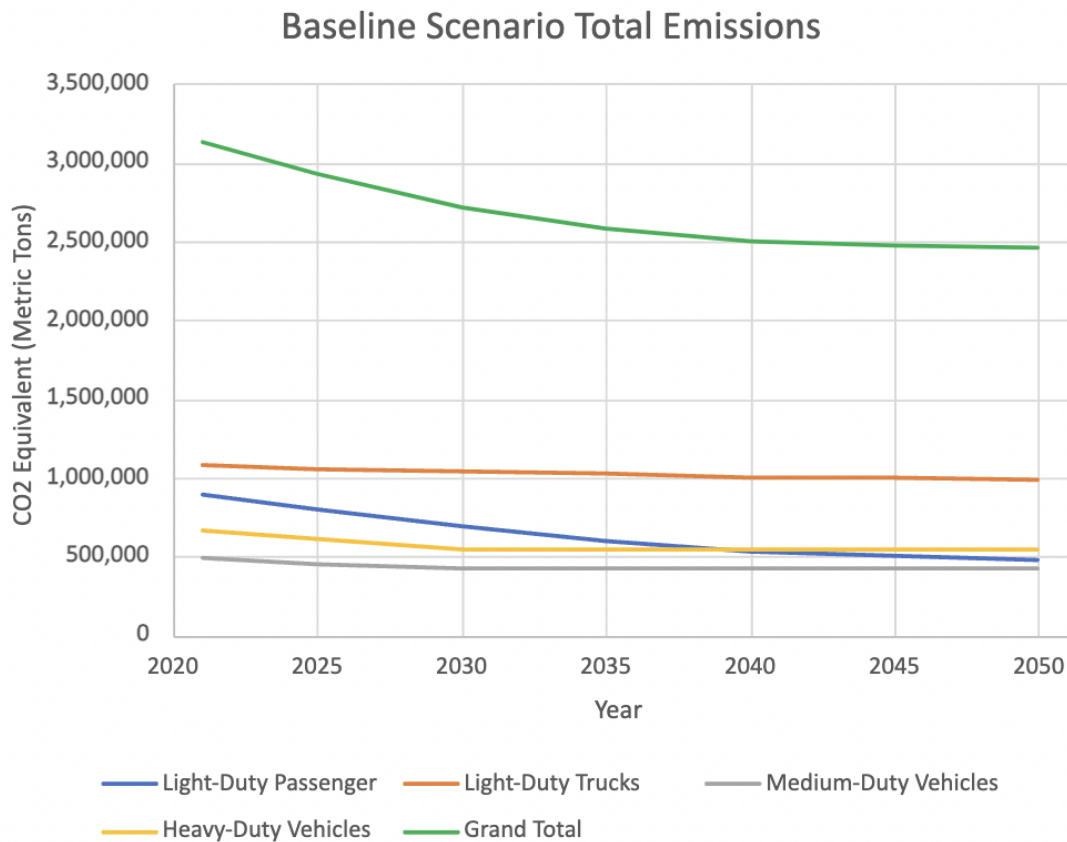
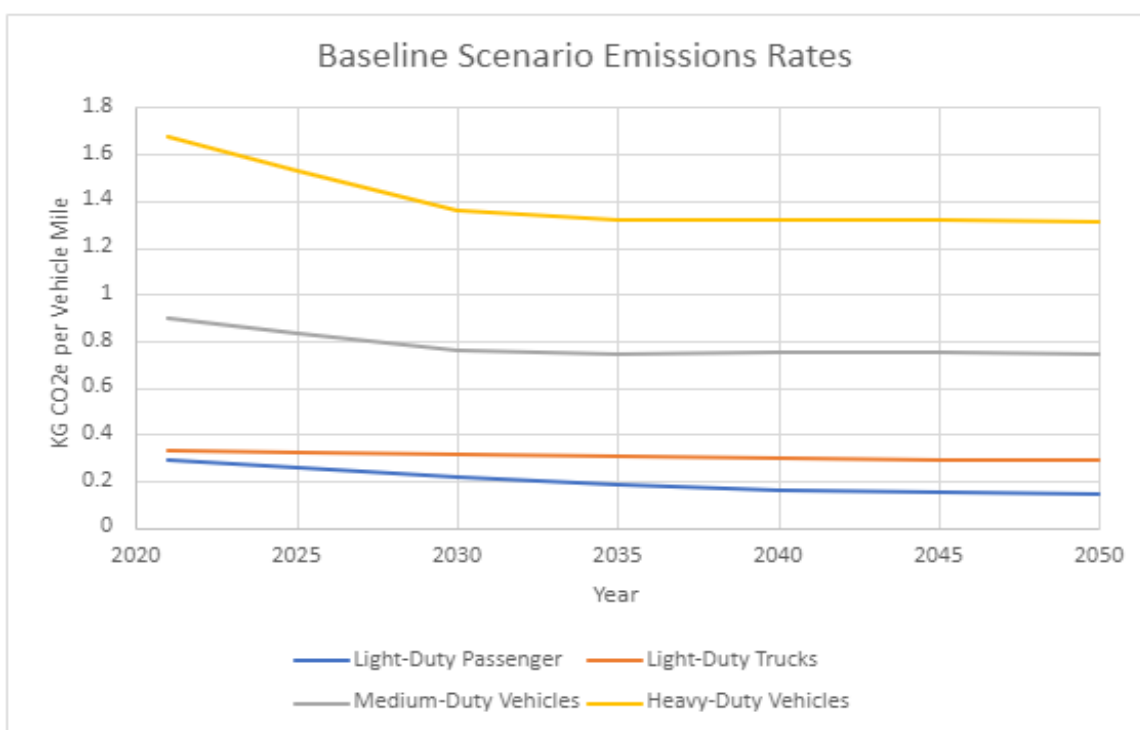




Table B.3 On-Road Private Mobile Sources Baseline Inventory Emissions Rates

Units: kg CO ₂ e/mile	2021	2025	2030	2035	2040	2045	2050
Light-Duty Cars	0.289	0.254	0.217	0.184	0.164	0.154	0.148
Light-Duty Trucks	0.331	0.320	0.312	0.303	0.296	0.292	0.288
Medium-Duty Vehicles	0.895	0.829	0.760	0.746	0.747	0.748	0.743
Heavy-Duty Vehicles	1.672	1.525	1.360	1.319	1.318	1.314	1.131

Figure B.4 On-Road Private Mobile Sources Baseline Inventory Emissions Rate Graph



B.5.3 On-road Public Mobile Sources

Table B.4 On-Road Public Transportation Baseline Inventory Forecast

Units: MT CO ₂ e	2021	2022	2025	2030	2035	2040	2045	2050
Demand Response	2,195	2,584	2,584	2,584	2,584	2,584	2,584	2,584
Motorbus	17,117	17,489	15,013	15,114	14,336	14,207	14,207	14,207
Vanpool	532	509	509	509	509	509	509	509
Total	19,845	20,582	18,106	18,207	17,429	17,301	17,301	17,301

B.5.4 Rail Transit

Table B.5 Passenger and Freight Rail Baseline Inventory Forecast

Units: MT CO ₂ e	2021	2025	2030	2035	2040	2045	2050
Passenger Rail	14,903	11,281	7,627	479	319	138	0
Freight Rail	1,089	1,160	1,257	1,363	1,479	1,606	1,746
Total	15,992	12,441	8,884	1,842	1,798	1,744	1,746

Construction and Maintenance Activities

Table B.6 Construction and Maintenance Baseline Inventory Forecast

Units: MT CO ₂ e	2022	2025	2030	2035	2040	2045	2050
Road Rehabilitation	9,125	8,496	5,528	5,447	5,484	5,409	5,469
Sidewalk Rehabilitation	392	625	275	502	561	532	544
New Sidewalk/Bike Lane	283	211	207	366	450	417	427
New Roadway	0	624	1,679	627	725	662	661
Bridge Replace/Repair	578	949	221	386	302	325	321
Total	10,378	10,905	7,909	7,329	7,522	7,344	7,421

On-Road Private Mobile Sources Scenario Analysis

Table B.7 CO₂e Total Emissions Forecast Under ZEV Scenario

Units: MT CO ₂ e	2021	2025	2030	2035	2040	2045	2050
Light-Duty Cars	883,641	750,706	566,399	351,479	198,387	103,639	49,618
Light-Duty Trucks	1,054,717	967,528	811,546	540,681	319,397	169,310	81,423
Medium-Duty Vehicles	486,666	456,499	385,338	312,399	254,272	202,490	170,108
Heavy-Duty Vehicles	661,906	605,016	495,954	396,200	321,161	254,968	214,907
Grand Total	3,086,929	2,779,748	2,259,237	1,600,759	1,093,217	730,407	516,054
Baseline Difference	-44,832	-149,830	-457,566	-979,487	-1,409,145	-1,742,047	-1,939,527



Table B.8 CO₂e Emissions Rates Forecast Under ZEV Scenario

Units: KG CO ₂ e	2021	2025	2030	2035	2040	2045	2050
Light-Duty Cars	0.283	0.238	0.177	0.109	0.061	0.032	0.015
Light-Duty Trucks	0.323	0.292	0.242	0.160	0.094	0.049	0.024
Medium-Duty Vehicles	0.895	0.829	0.690	0.555	0.450	0.355	0.296
Heavy-Duty Vehicles	1.672	1.509	1.221	0.967	0.781	0.615	0.514

Figure B.5 ZEV Scenario Emissions Rate per Vehicle-Mile

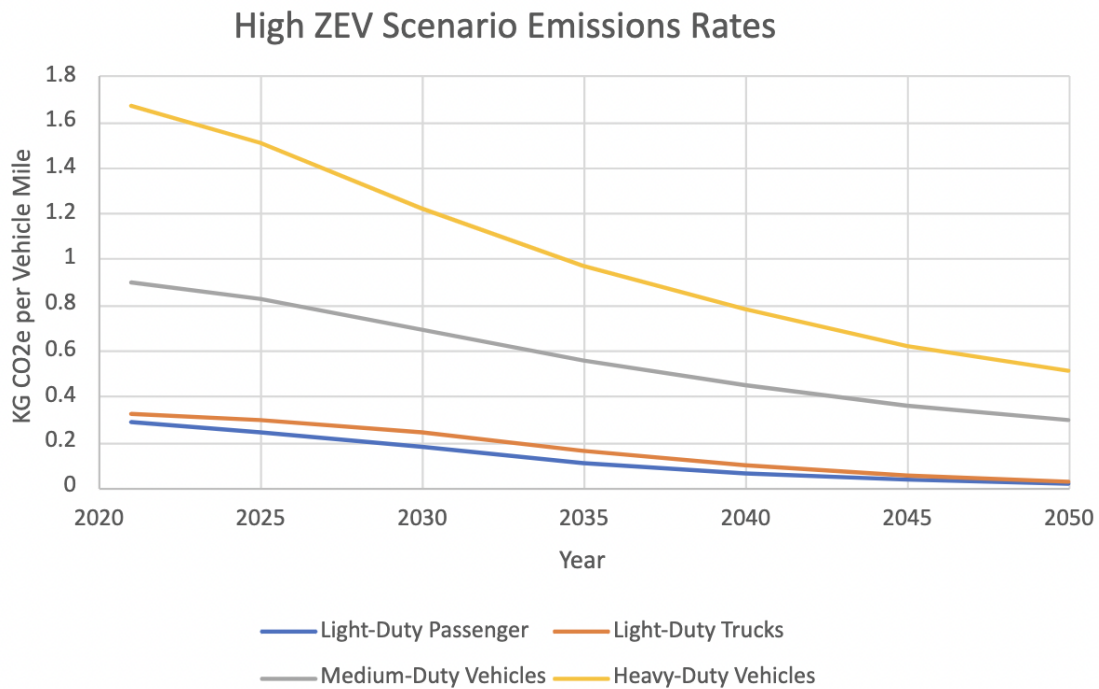




Table B.9 Advanced Clean Cars II Sales Requirements for LDVs

Model Year	Percentage Requirement
2026	35%
2027	43%
2028	51%
2029	59%
2030	68%
2031	76%
2032	82%
2033	88%
2034	94%
2035 and subsequent	100%

Note: State of California. (2023). California Air Resources Board. Advanced Clean Cars Program | California Air Resources Board. Retrieved May 1, 2023, from <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program>.

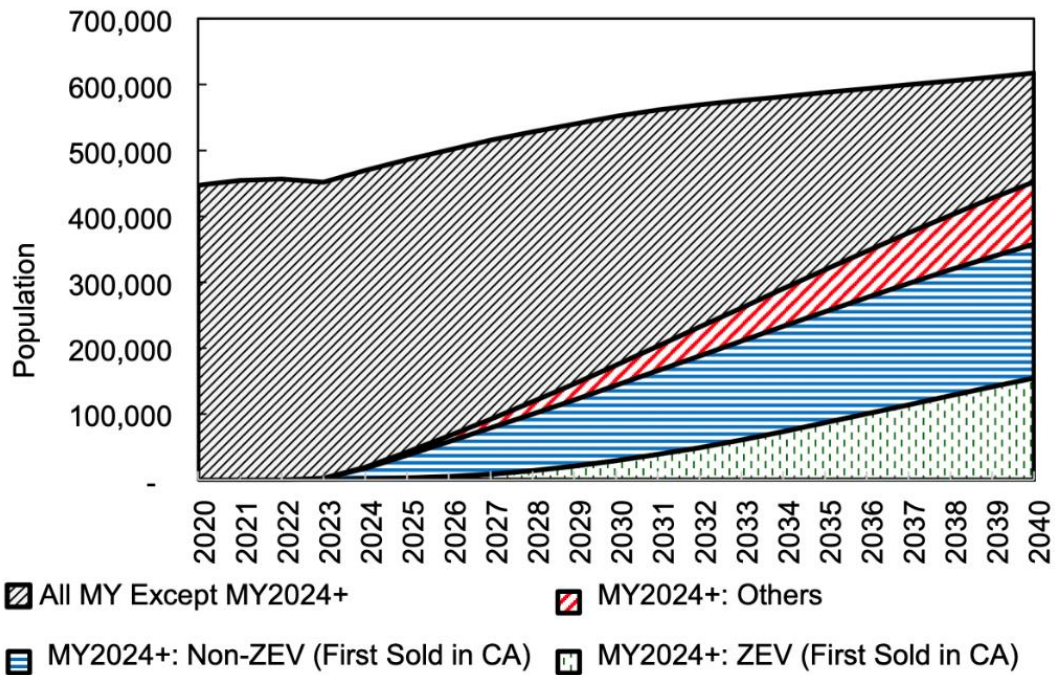
Table B.10 Advanced Clean Trucks ZEV Sales Percentage Schedule

Model Year	Class 2b–3 Group	Class 4–8 Group	Class 7–8 Tractors
2024	5%	9%	5%
2025	7%	11%	7%
2026	10%	13%	10%
2027	15%	20%	15%
2028	20%	30%	20%
2029	25%	50%	25%
2030	30%	55%	35%
2031	35%	55%	40%
2032	40%	60%	40%
2033	45%	65%	40%
2034	50%	70%	40%
2035	55%	75%	40%

Note: State of California. (2023). California Air Resources Board. Advanced Clean Trucks | California Air Resources Board. Retrieved May 1, 2023, from <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks>.



Figure B.6 California’s Technology Share Forecast for Medium- and Heavy-Duty Vehicles Following ACC II Implementation



Note: California Air Resources Board. (2021). Attachment D Emissions Inventory Methods and Results for the Proposed Advanced Clean Trucks Regulation Proposed Modifications. [arb.ca.gov. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/30dayattd.pdf](https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/30dayattd.pdf)



APPENDIX C. PUBLIC OUTREACH AND PUBLIC COMMENT

C.1 Overview

To elicit comments from the public and key stakeholders, Rhode Island Department of Transportation (RIDOT) provided a 30-day window for public comment from October 2, 2023, to November 3, 2023, via RIDOT's website. At the close of that period 65 participants provided a total of 68 comments. A summary of the major reoccurring comments and responses from RIDOT is found in the following section. The full set of comments received follows this summary. RIDOT would like to thank all the participants for their meaningful contributions.

C.2 Summary of Public Input

C.2.1 Investments in Modal-Shift Strategies

Several public comments urged RIDOT to increase investments in strategies that promote non-vehicular travel, including bicycle and pedestrian infrastructure, as well as transit investments.

RIDOT understands the importance of promoting non-vehicular travel to achieve greenhouse gas reduction goals, among other goals, and has committed even more funds for mode-shift strategies. As a result of the feedback received and in reassessing the proposed strategies, RIDOT is now allocating more than 50 percent of the \$35.7 million in Carbon Reduction Program funds to support modal shift strategies. Specifically, more than \$17.9 million, over half of Carbon Reduction Program funds, are now programmed or proposed for projects that support modal shift – an increase from the \$12 million in the draft CRS. These modal shift investments include, but are not limited to, sidewalk installation, supporting RIPTA's accessibility improvements at bus stops, shared-use path extensions, bike path resurfacing and preservation, and the expansion of passenger rail services.

C.2.2 Highway Expansion

Several public commenters expressed strong disapproval of the use of carbon reduction funds to “expand highways”.

No Carbon Reduction Programing funds are being used for highway expansion. A portion of the CRP funds are assigned to congestion management and traffic flow improvement projects that will have net benefits for emissions reduction.



C.2.3 Investments in Congestion Management Projects

Some public comments expressed concern about the use of funds for traffic flow improvements, and skepticism in the emissions benefits that would result.

FHWA's Carbon Reduction Program encourages the CRS to include projects and strategies for safe, reliable, and cost-effective options to facilitate approaches to the construction of transportation assets that result in lower transportation emissions as compared to existing approaches. RIDOT's modeling for three projects that would improve traffic flow, conducted using state-of-practice transportation and emissions models, suggest that these projects will have net benefits for emissions reductions while also increasing the safety and reliability of these corridors.

C.2.4 Addressing Rhode Island's Climate Targets

Some public commenters expressed concern that the plan does not have the proper level of ambition to meet the state's climate targets.

The Carbon Reduction Strategy is focused primarily on meeting U.S. DOT requirements for the Carbon Reduction Program, including identifying how Rhode Island's share of \$35 million in CRP funds will be spent and how they will benefit emission level reductions. RIDOT has added clarifying language noting that the plan is not a full transportation decarbonization plan, and that the CRS is one piece of a larger, multi-agency set of efforts to decarbonize the state's transportation sector. RIDOT will continue to support the state's decarbonization efforts through the Rhode Island Executive Climate Change Coordination Council (RI-EC4) and play an active role in assisting EC4 in achieving its mission to create a comprehensive statewide decarbonization plan.

C.2.5 Public Comment Duration

Some commenters also expressed concern or disapproval over the communications and time period provided for submission of public comments.

RIDOT provided a full 30-day comment period, consistent with what has been provided for other plans, including the State Transportation Improvement Program during a major amendment. Furthermore, the development of this strategy is just the first step in a larger process undertaken as part of EC-4's actions to meet the goals and requirements of the 2021 RI Act on Climate. RIDOT will refine its approach to carbon reduction in the future, as modeling develops under the EC4 2025 Climate Action Plan, to develop a comprehensive strategy to achieve net-zero emissions by 2050.



RIDOT Carbon Reduction Strategy Plan w. Map

Project Engagement

VIEWS
1,755

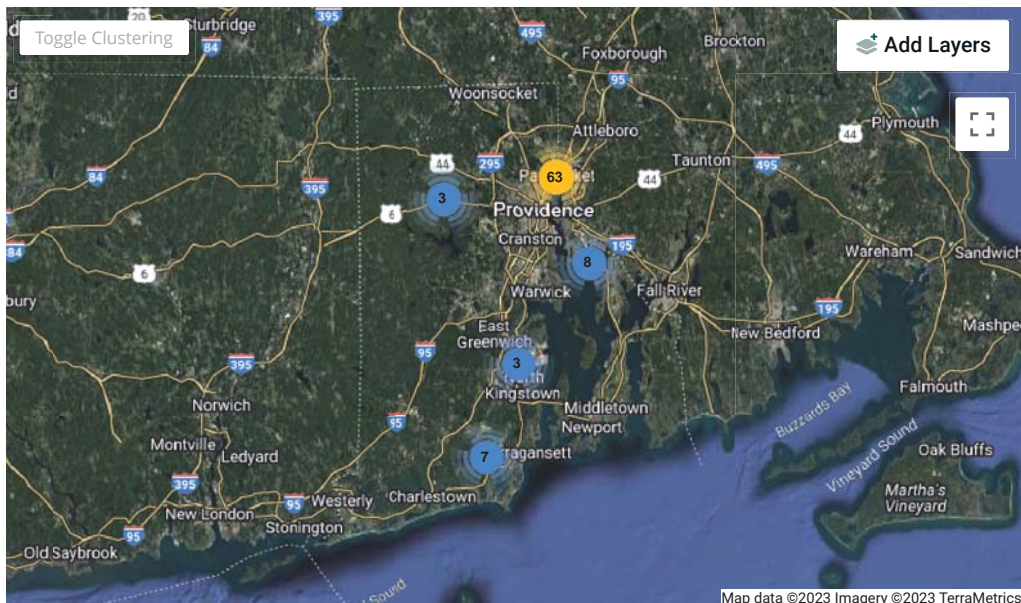
RESPONSES
0

SUBSCRIBERS
60


PARTICIPANTS
65


COMMENTS
68


RIDOT Carbon Reduction Strategy Plan Participant Locations



Use this space to leave your comments and please note the section on which you're commenting. If you wish to submit your comments in a document, you may upload them in PDF format by clicking the "Add Files" button. One document per person.

 **John Rosenwinkel** Using this funding to expand highways is unbelievably shortsighted. There is so much evidence that expanding highways doesn't solve anything, and it is a certainty this this will, in the medium and long term, make things worse -- from a climate perspective, from a transit perspective, and from a human health perspective.
4 days ago

 **Eric Rupert** So many Rhode Islanders use cars because there is no other option. Rather than making more concessions for cars, improve public transit, improve bike infrastructure, and improve pedestrian safety measures. All of these will reduce carbon emissions far better than giving away more of our state to cars.
4 days ago

 **Sean Bradley** See attached pdf for comments.

 [Carbon Reduction Plan Comments SB.pdf](#)

4 days ago

 **Julie Croll** Dear RIDOT,

It is upsetting as a Rhode Islander invested in improving green infrastructure in our state to hear that funds allocated for specific use, i.e. carbon reduction, are being used to support budget gaps for other projects - most upsettingly one that supports widening highways, which directly contributes to INCREASED emissions. RIDOT should not use any of the public funding allocated for carbon reduction in order to cover spending gaps in other realms not explicitly related to lowering emissions and carbon footprints. Please consider using the money allocated for carbon reduction to actually go into projects that support carbon reduction, and green infrastructure in our beautiful state. By improving green infrastructure, we improve the health and safety of all Rhode Island residents.

Sincerely,

Dr. Julie Croll, MB BCh BAO, MPH

4 days ago

 **Dylan Giles** To whom it may concern,

With the transportation sector being the largest source (almost 40%) of GHG emissions, it is incumbent upon the government to take an active and aggressive role in carbon reduction. There is no path to achieving the Act on Climate mandates without meaningful modeshifting and electrification in the transportation sector.

The priorities outlined in RIDOT's Carbon Reduction Strategy do not inspire confidence that the state will meet those goals or that leadership has any vision for how to achieve carbon reduction through 21st century technology and strategies.

- The strategy should eliminate costly projects that spend millions to expand highways, on the unfounded belief that increased capacity will lead to reduced emissions. See Induced Demand.
- The proposed plan devotes a large amount of funding to preserving existing bikeways, which does not expand the bike network and is unlikely to inspire modeshifting.
- The plan fails to show a financial commitment to the Transit Master Plan or Bike Mobility Plan to reduce vehicle miles traveled.
- The plan fails to evaluate emission reductions at the project level, allowing projects founded on junk science like congestion management to fly under the radar without evaluative oversight.
- RIDOT has failed to show meaningful and sincere interest in receiving public input about this plan.

Rhode Island has an abundant potential for modeshifting into active mobility and public transportation. This visionless plan shows a failure to value those strategies, in favor of outdated ideas and disproven techniques that will assuredly not put Rhode Island on a path to achieving our Act on Climate goals. I hope the input of myself and others will lead to meaningful change before this is submitted.

Respectfully,
Dylan Giles
919-880-0644
Pawtucket, Rhode Island

4 days ago

Alex Ellis The draft RIDOT Carbon Reduction Plan is not sufficiently ambitious and it relies on carbon reduction tools that are dubious at best and likely counterproductive in reaching the state's Act On Climate goals. In section 1.7 the plan states that 2/3 of the proposed funding will be directed to congestion mitigation, with only 1/3 directed to mode shift projects. Congestion mitigation does little to encourage lower-carbon transportation, while mode shift to transit, walking, and bicycling has substantial potential to not only achieve carbon reductions but also to lower congestion as a side benefit. Rhode Island is notorious in the community of transportation practitioners for focusing too much funding on highway projects while other states utilize the flexibility allowable by FHWA to spend more on supporting alternative transportation. This draft plan's reliance on congestion mitigation to achieve even moderate carbon reduction targets has a dubious justification, and I am concerned that FHWA will view this plan as checking a box rather than an honest roadmap to reducing carbon, and perhaps even deny Rhode Island federal funding. Other states conduct these exercise with substantially higher rigor, meticulously measuring Vehicle Miles Traveled and seeking out tools for carbon emission that are evidence-based and largely supportive of shifting mode to alternative transportation. As a father of a young child, I am frustrated that the urgency to achieve a zero-emission transportation system before climate instability makes our coastal community unlivable does not appear present in this plan. I believe that congestion mitigation should not be a component of this plan at all, because my understanding of the research on transportation emissions is that improving traffic flow incentivizes more people to choose to drive over the affected roadway, eliminating the flow benefits within a few years and encouraging more greenhouse gases to be emitted. I strongly encourage significant revisions of this plan to reflect a central commitment to mode shift goals that would support ambitious carbon reduction.

4 days ago

Helene Kisch It seems to me the clearest use of this funding would be to directly support public transportation, not to fund any existing or proposed Highway Construction. To do so would be in defiance of the intent to decrease carbon output.

5 days ago

Helene Kisch It is wrong to use carbon reduction funds to pay for Highway Construction. This is antithetical to the intent of this funding. Money should be used directly to support public transit.

5 days ago

David Mann Having read professional analysis of RIDOT's Carbon Reduction Strategy Plan, it is my understanding that the actions proposed in this plan are wholly inadequate to meet the State's 2050 goals. A serious strategy for a reduction in Vehicle Miles Traveled is essential to meet this goal and is not treated seriously by this plan. RIDOT'S strategy of widening highways to reduce emissions would be laughable if it we were not faced with the enormous and tragic implications of climate change. For the sake of Rhode Islanders, for the sake of our children and grandchildren, and for the sake of all humanity, our institutions must produce serious plans for reducing emissions. This plan does not begin to approach the level of action that is necessary.

5 days ago

Henry Walker Two things: 1) I only learned about the public comment period today for the RIDOT Carbon Reduction Strategy, 2) The deadline for public comments is today. The near-term priorities for the implementation of this strategy are insufficient. The transportation sector and building sectors are major contributors to RI GHG emissions. There is a need for a more aggressive Rules-based approach consistent with RI's stated goal of greening the electric grid, and rapidly building out the vehicle charging station network.

I've several questions:

Can an extension of the public comment period be granted?
Can a regional Transportation Climate Initiative be resurrected?

Transportation infrastructure, particularly bridges that span river and stream networks should make use of federal bridge construction standards with designs that allow flood waters to flow under bridges rather than through them. This may be being addressed by DOT in other ways, but in the past has depended on site-specific assessments, rather than an overarching improvement in bridge building codes. If better building codes were in place, FEMA money could be used following bridge wash out, rather than for bridge replacement of the same poor designs.

5 days ago



Fran Webber RIDOT's proposed Carbon Reduction Strategy is not a serious or good faith proposal to reduce carbon emissions resulting from transportation in Rhode Island. Moreover, the agency has not provided itself sufficient time to process public input and adapt the strategy accordingly before it is due, suggesting an attempt to sneak this inadequate plan past concerned Rhode Island residents who would like to see real reductions in carbon emissions from the transportation sector.

Rhode Island's transportation sector is not on track to meet its Act on Climate mandates. RIDOT acknowledges that its existing programs do not move the needle on carbon reduction. But, RIDOT fails to make tangible commitments to strategies that would move the state on a trajectory to reach net zero emissions by 2050. RIDOT should eliminate strategies that rely on costly highway expansion projects. These projects increase emissions via induced demand, where more drivers take to the road because the capacity of the road is increased.

RIDOT should commit to implementing Rhode Island's Transit Master Plan (TMP) and Bicycle Mobility Plan (BMP). The TMP is projected to achieve 80% of the State's 2050 target for reducing vehicle miles traveled and related emissions. And it will cost less per pound of greenhouse gas reduction than RIDOT's three listed highway projects. RIDOT must recognize that bike path preservation will not shift more drivers from the road. Robust investment in new bike infrastructure is needed to achieve this important change.

RIDOT must commit to developing an innovative tool modeled after one being used in Colorado to cut greenhouse gas emissions by estimating emissions for each transportation project in its pipeline. This allows emissions reduction goals to be met by either reprioritizing projects or investing in additional measures that reduce greenhouse gas emissions. Rhode Island should apply this approach to its 10-year, \$9 billion pipeline of transportation projects.

Finally, RIDOT must facilitate meaningful public involvement on the development and implementation of carbon reduction strategies. RIDOT should make the comments it receives public and respond to what aspects of public feedback are and are not incorporated into the plan. RIDOT should facilitate public workshops beyond the submission of the plan.

As I resident of Rhode Island, I strongly oppose RIDOT's proposed Carbon Reduction Strategy as it currently stands and am frustrated that this strategy will likely not be meaningfully updated to include Rhode Island resident's feedback.

5 days ago



Alex Diaz-Papkovich The Carbon Reduction Program funding is a poor allocation of funds for meeting the goals set out by RIDOT. Specifically in Section 1.5, in Table 1.1 the three most cost-effective approaches are listed as:

1. Electrification and alternative fuels
2. Traffic flow improvements
3. Land use

They are, however, misguided and contradictory, largely because they are heavily focused on (or ignore the impact of) personal automobiles.

Electric vehicles are expensive. They start at around \$30,000, plus costs for registration, maintenance, and charging infrastructure. A family that has two gas-powered vehicles with no alternative except for electric vehicles will pay tens (if not hundreds) of thousands of dollars to replace them.

Traffic flow improvements encourage people to drive more (since it becomes convenient) creating more traffic and eventually requiring more funding to reduce congestion. Personal automobiles also require enormous amounts of land for roads, interchanges, intersections, parking, etc. All of these become a drain on treasuries as they require expensive maintenance and cannot be used to collect property taxes. Encouraging vehicle usage, whether electric or internal combustion, makes it impossible to use land efficiently and reduce carbon emissions.

The far more cost-effective solution is to reduce the number of vehicles per household, but this requires safe and reliable alternatives. Active transportation, such as walking or cycling, reduces vehicle usage and carbon emissions. A new bicycle costs a few hundred dollars, and e-bikes are available starting at around \$1000. Most trips made by Americans are under 3 miles, well within the range of a bike.

I've recently moved to Providence for work and I was surprised by how difficult it is to walk or bike around here. Last week, my partner walked 20 minutes to the mall in downtown Providence and was nearly hit because of the dangerous roads, despite following all laws and obeying all crossing signals. She took an Uber back home—the lack of pedestrian infrastructure led her to use a car and generate carbon emissions and create traffic.

Cycling has a similar dilemma: many people I've spoken to here would love to bike to do errands or visit friends, but the lack of separated and protected lanes makes it far too dangerous. The few lanes that do exist are very basic and not well-connected to each other or to destinations. Without the infrastructure, people (myself included) end up driving even when we'd rather bike or walk. If we invest in this infrastructure, we will see gains towards our goal of reducing carbon emissions at a relatively low cost. Unfortunately, most of the funding outlined in Section 1.7 has been put towards congestion management with very little put towards new cycling or pedestrian infrastructure. This is a missed opportunity.

5 days ago



Micah The carbon reduction plan currently laid out by ridot is insufficient, misguided, and will not help remotely with the climate issue. This plan is an excuse to use funds to widen highways. Actual eco-friendly strategies and plans would call for increased transit capacity and coverage, and more accessibility by bike, walking, and other modes. It would attempt to REDUCE the number of cars on the road, regardless of whether they use gas, and would attempt to redeveloped RI in a way that makes it more feasible to not drive. This means making highways and other roads smaller, slower, and safer in order to prioritize the health and safety of the states residents.

5 days ago

Samantha Cote Please improve bus and bike infrastructure over expanding highways. There are so many Rhode Islanders like me who are not only isolated by continued prioritization of car infrastructure and highways specifically over practical and cheap solutions to reducing congestion and more importantly increasing pedestrian and cyclist safety. I have on multiple instances been injured or hit by a vehicle as a cyclist because of poor bike infrastructure (painted lines without protection that get used as parking lanes and desperately need to be repainted) or because of poorly maintained streets and sidewalks causing potholes and crashes. Road improvements like what was done on broad Street between downtown and Roger Williams should be expanded to streets like north main Street, Broadway, elmwood, hope street, etc. Vastly increased the safety of getting to the zoo by bicycle. Fixing the sidewalks statewide along bus corridors are also desperately needed for disabled pedestrians who take the bus. It's impossible to ride a wheelchair in most of Providence or the states sidewalks for more than a quarter or half mile unless you have tank treads and at least a 250 watt motor . Before you expand the highways as a misguided at best or malicious at worst way to reduce congestion and improve the carbon footprint in Rhode Islands transportation sector, build some more trains, trams, improve bike infrastructure (especially off road paths) improve pedestrian safety measures, increase bus routes, and do everything possible to reduce cars on the road. RI is so small massive improvements in transportation infrastructure, especially in commuter rail the same speed as mbta, could make an hour long trip from Narragansett to Providence by bus half that and even cut time off the car trip. If you wanna increase tourism, safety, and help the environment, maybe make it easier to travel the state without needing a 2000 lbs metal box that guzzles gas?

5 days ago

Amory Kisch This Carbon Reduction Strategy (CRS) is a perfect example of RIDOT's defeatist, business-as-usual attitude toward sustainable transportation. The Plan itself as well as comments from RIDOT's leadership demonstrate that RIDOT has committed itself to failure and is not making a good faith effort to meet the state's legally-mandated emissions reduction targets. RIDOT's chief public affairs officer Charles St. Martin explicitly stated this in a Brown Daily Herald article published Nov 1, 2023: "In order to meet the goals set out in the governor's 2050 emissions reduction plan, you would have to have a major cultural shift and change in the way people move around the state. We do not see that happening." RI's transportation sector contributes 40% of the state's greenhouse gas emissions – a major cultural shift is exactly what needs to happen and what has been called for in numerous policy plans and reports issued by the state over the past decade. RIDOT needs to start seeing this shift happening and that begins with revising the CRS.

Instead of aggressive investments to encourage mode shift away from single passenger automobiles, this plan doubles down on them. About 2/3 of the allocated funds are earmarked for "Congestion Management" – an ambiguous term that can mean anything from updating traffic lights to adding highway lanes. At the Transportation Advisory Committee meeting on Oct 26, RIDOT Planning Administrator Pamela Cotter admitted that the CRS will devote funds to cover cost overruns in ongoing highway expansion projects.

Of the remaining 1/3 of allocated funds, which are supposedly directed toward the "Mode Shift" category, \$6.6 million or roughly 84% is devoted to the ambiguously-named "Bike Path Preservation" project. At the Transportation Advisory Committee meeting, when pressured to explain the meaning of this, Cotter revealed that it means replacing bike path maintenance vehicles with electrified versions of these vehicles. While RIDOT should be applauded for its efforts to electrify its vehicle fleets, it is patently deceptive to categorize this project under "Mode Shift". The only funding assigned to actual Mode Shift infrastructure projects is \$1.3 million toward Sidewalk Installation and Greenway Enhancements, or 3.4% of the total.

Report after report and plan after plan has called for advancing the basic goals of reducing vehicle miles traveled, encouraging mode shift, changing land use patterns, and electric vehicle infrastructure. The 2016 Energy 2035 report, the 2016 Rhode Island Greenhouse Gas Emissions Reduction Plan and 2022 Update, the 2021 Clean Transportation and Mobility Innovation Report, the Rhode Island Transit Master Plan 2040, the Rhode Island Statewide Bicycle Mobility Plan, the Complete Streets design principles, and the CRS's own stakeholder workshop all propose actionable projects, incentives and investments to advance these goals; none of them has called for prioritizing highways.

RIDOT should apologize, request an extension to the federal application deadline, and go back to the drawing board. No more accounting sleight-of-hand, pseudoscientific cherry-picking, or handwavy promises to eventually try something different. The time to shift is now. We must demand that not a dime of this \$35.7 million should go toward existing highway projects. We must demand that the Carbon Reduction Strategy make a transparent, robust funding commitment to invest in the decarbonized transportation future envisioned by the government of the state of Rhode Island.

5 days ago



doug Shepard We are facing an existential crisis! Rhode Island's transportation sector is not on track to meet its Act on Climate mandates. RIDOT acknowledges that its existing programs do not move the needle on carbon reduction. RIDOT fails to make tangible commitments to strategies that would move the state on a trajectory to reach net zero emissions by 2050. RIDOT should eliminate strategies that rely on highway expansion projects. These projects increase emissions via induced demand, where more drivers take to the road because the capacity of the road is increased, the effort should be made instead to improve and expand public transportation. Robust investment into new bicycle infrastructure must be made to get people onto bikes and out of cars.

5 days ago



Hans Scholl I support the comments submitted by the Providence Urbanist Network.

5 days ago



Christian Roselund Please find in the attached .pdf Providence Urbanist Network's comments on RIDOT's Carbon Reduction Strategy.



[PUN Comments on RIDOT Carbon Reduction Strategy.pdf](#)

5 days ago



S. Feeley I share the concerns that have been expressed by John Flaherty and by Emily Koo. Making real progress in meeting our goals will require using enough of our funding for emissions reduction efforts, not just for building new highways. We are also not doing nearly enough on the challenging task of emissions reduction analysis.

5 days ago



Valerie Reishuk I'd like to address the concept of "congestion management strategies" in section 1.4. As a car-free Rhode Islander, I have a small carbon footprint; I use public transportation and foot travel and do not contribute to congestion. The idea of reducing emissions by managing cars on the highway seems wrong to me. We don't reduce emissions by moving cars; we reduce emissions by moving people out of cars, at least part-time. As I read through the projects in the Rhode Island STIP, it's all about building more lanes of car travel. Bike, bus and foot travel amenities are tacked on to highway projects as an afterthought. My climate warrior friends who sit on the TAC would like to see a project come through the STIP with transformative impact for networks of travel for those of us outside of cars. They would approve that kind of project! But alas, all the projects are car-centric. Perhaps someone from the FHWA will read this and nudge Rhode Island onto a steadier course toward achieving our Act On Climate Goals. We are densely populated. Lots of us--like me--are car-free/car-light and our ranks are growing. Ferry routes and light rail have not been explored. Rhode Island could be a laboratory of green-energy transportation projects, where people move efficiently to school, jobs, appointments, and fun. Instead, we are a thru-lane to Boston.

6 days ago



Ellen Zahniser I really appreciate RIDOT's work on this issue! I am concerned, however, that this plan doesn't get RIDOT on track to meet its own climate mandates to reach net zero emissions by 2050. Highway expansion projects that will increase the number of cars on the road is not the direction we should be going in; instead, we must commit to implementing TMP and BMP - this will be cheaper and vastly better for the environment in our state!! This is unbelievably important - please take dramatic action to ensure that our state remains livable for the foreseeable future by prioritizing climate mandates. Thank you!!

6 days ago



Benjamin Skrabak As a local Rhode Islander, I would like to see more funding being allocated to non-car related infrastructure. This will reduce emissions and traffic congestion, increase safety, and better our community. RIDOT will also benefit from increasing public awareness and incorporating their feedback into this plan.

6 days ago



Bill Ibelle Hello:

DOT's plan to devote a huge chunk of its \$37.5 million in federal carbon reduction funding to improvements in highway traffic flow is ill-conceived for two reasons:

- a) if they work, it will promote more driving, thus defeating the stated purpose
- b) they won't work

One need only look at the Big Dig in Boston to see that massive highway improvements do little to reduce emissions. This strategy is a classic example of stay-in-the-box thinking—using old strategies for new problems. In Boston, after \$24 billion and 15 years of construction, the city's highways are still logjammed with cars idling in stop-and-go traffic from dawn to dusk. There is no rush hour, only a permanent rush.

We need to change our transportation culture, not tinker with an old strategy. To have a meaningful impact, our strategies must inspire public buy-in on a massive scale. But let's face it, the American public is addicted to ease, so for any strategy to be effective, it also has to be easy for the general public.

So what changes to our transportation culture will be both effective and easy?

a) Electrification: it's just as easy to drive an electric car or ride an electric bus as a gas-powered one. So let's invest in strategies that electrify our private, public, and commercial fleets. And while we're at it, let's eliminate the biggest barrier to public buy-in by making it easy to charge these vehicles. We're not going to convince Americans to give up their cars, so let's make sure that all the cars, trucks, and buses idling in traffic are producing exactly zero carbon dioxide.

b) Ease and Affordability: If we want more people to ride public transportation, we need to make enormously convenient by increasing routes so people don't have to go through the trouble of deciphering complex schedules. And how about this: If you want to get people to start taking buses instead of driving their cars, tell them it's free. Bingo—instant ridership. How many free bus rides can we finance with the \$12.5 million devoted to highway traffic flow improvements?

The DOT plan includes other nice ideas like bike paths and sidewalks. But we're deluding ourselves if we think this is going to make a significant dent in carbon emissions. If you doubt this, just look through the windows of all those cars idling in traffic and ask yourself how many of these people are going to hop on a bike to do their grocery shopping or get to the mall.

Reducing carbon emissions 80 percent by 2040 is an ambitious goal and we aren't going to get there by driving in the same lanes that have gotten us into this logjam.

Bill Ibelle
Freelance Writer
bibelle31@gmail.com
401-633-4171
bill-ibelle.com

6 days ago



Elizabeth Goodspeed I am writing as a concerned Rhode Islander deeply invested in the future of our remarkable state. I wholeheartedly welcome the RIDOT Carbon Reduction Strategy Plan as a pivotal initiative to combat climate change and elevate the overall quality of life in our communities. However, I urge you to consider increasing funding for non-car-related infrastructure.

As a local Rhode Islander who has consciously chosen to live a car-free lifestyle, I have experienced firsthand the benefits of relying on buses, walking, and biking. This intentional choice not only allows me to reduce my carbon footprint but also fosters a stronger sense of community and a profound appreciation for our beautiful state.

Having relocated from New York, I have grown to love Rhode Island. However, the absence of reliable public transit has been a persistent issue, dissuading potential visitors and residents alike and prompting some natives to seek greener pastures elsewhere due to transportation frustrations. I am deeply concerned about RIPTA's limited operating hours, infrequent schedules, and intricate route configurations that sometimes require taking up to three buses and over an hour of waiting just to go a few miles.

I believe we must invest in a transportation system that aligns with the expectations and preferences of our modern, environmentally-conscious population—by prioritizing sustainable and inclusive transportation, we can diminish our carbon footprint and cultivate a more resilient Rhode Island, one that thrives on diversity, innovation, and progress. Increased investments in public transportation, pedestrian-friendly pathways, and cycling infrastructure can significantly curb emissions, mitigate traffic congestion, and promote a healthier, more sustainable Rhode Island for citizens of all backgrounds and income levels.

6 days ago

Maddock Thomas This plan's focus on electric vehicles and improving "traffic efficiency" will only further tie Rhode Island to harmful development patterns and undermine any meaningful transition. The state needs to immediately increase funding for RIPTA to run rapid service on all of its core lines and begin working with the MBTA to electrify the Providence line and increase rail frequencies to every 30 minutes. Both of these goals are comparatively cheap to the cost of highway expansion and have manifold benefits in addition to carbon reduction, such as increased car-free mobility, land-use improvements, and decreased pollution. We can not afford to continue viewing small tweaks to car-centric infrastructure as the most "cost-effective" simply because we are unwilling to make a bold move to a better future. Rhode Island has the potential to be a national leader in public transportation and car-free accessibility but investing only in traffic, EVs, and micro-mobility is a regressive move that undermines any chance for carbon neutrality by 2050.

6 days ago

Joshua Port After a few rambling attempts at this, here are my condensed thoughts:

- * Cars are at the heart of many of society's problems. They pollute heavily (green house gases, particulates, noise, etc.), cost a ton of money to own (increased costs for everyday folks), and take up a lot of space along with their infrastructure (which spreads out cities and towns, hurting tax efficiency and walkability, increasing infrastructure costs, further driving car dependency, etc.). They are dangerous for drivers and pedestrians alike, saddle municipalities with outrageously expensive projects to repair and expand car infrastructure, cause traffic (which wastes our lives, adds stress, causes even more pollution, hurts the economy, delays emergency vehicles, etc.), etc.
- * EVs only marginally improve over gas cars in terms of life cycle emissions. We are not getting to net-zero emissions by 2050 with marginal improvements and ~20% emissions reductions, and what's the point anyway when we're largely just outsourcing the emissions from producing these EVs to other parts of the world?
- * Getting people out of cars is the only way to address the climate crisis, along with a number of other problems in our state. To do this, we need to put a lot of energy and money into expanding and improving public transit and other non-car modes of transit (like biking).
- * This report misrepresents the benefits of transit investment by assuming no increases in service in future years for both trains and buses (page 35). The entire point of investing in transit is to make it a more attractive transportation option for more Rhode Islanders, so this assumption poisons nearly every data point in this report. The result is a long line of conclusions too absurd to even pass the sniff test, like hundred million dollar projects designed at improving traffic flow somehow being a much better climate solution than investing in transit. Improving traffic flow often only marginally and temporarily improves traffic, as because better road conditions induce more driving, which then results in more gridlock *and* more cars on the road. That is not to say that it's impossible to save energy via traffic flow - you can; roundabouts say hello - but this is the opposite of a climate solution. Reducing traffic without getting cars off the road just solidifies our car dependence, which is fundamentally at odds with our climate goals.

So, here's what I would like to see from RIDOT:

Do:

- * Heavily invest in the expansion and improvement of just about any non-car means of transportation in RI. That means buses, trains, bikes, walking, you name it. That also means heavily revising this plan.
- * Collaborate closely with entities like MBTA and RIPTA.
- * Work to educate the public about the benefits of alternate modes of transportation.
- * Work with others at the state level to align economic incentives to nudge folks towards more efficient modes of transportation (e.g. new weight-based and/or congestion-based tolling on highways with revenue earmarked for transit projects, bus pass rebates for people who recently sold a car). In other words, the cost burden for car infrastructure should fall more on drivers, while the cost burden for transit should fall more on the state. The state should incentivize the better, healthier choice.

Don't:

- * Spend hundreds of millions of dollars on car-centric infrastructure, like highway megaprojects. Getting more folks onto transit solves traffic more effectively than traffic flow changes ever would, and it helps address a number of other societal problems at the same time.
- * Bend over backwards to make transit investment look like a bad idea.

6 days ago

Andrew Nosal "Transportation GHG Reduction Strategies by Cost Effectiveness" quite correctly identifies "Land use (compact, walkable development near transit)" as "Very Strong" and "Travel demand and mobility management" as "Strong."

Not only are these strategies remarkably inexpensive, they provide large benefits besides GHG reduction such as safety, health and small business opportunity.

Nevertheless, spending priorities are overwhelmingly directed toward facilitating travel by motor vehicle. Zero attention is paid to even the most proven demand management strategies. For instance, simply enabling most children to walk or ride bikes to school would eliminate more peak hour congestion than all the proposed road construction projects combined. Similar rapid improvements would result from policies that promote groceries and other shops throughout neighborhoods instead of building more roads and interchanges for access to big box stores.

There is lip service to "walkable development near transit" but no recognition of the fact that much of Rhode Island's population already lives in densely populated areas that formerly allowed residents to accomplish daily travels without cars and would require only small investments to function that way again.

7 days ago

Camille Nixon RIDOT must facilitate meaningful public involvement on the development and implementation of carbon reduction strategies. RIDOT should make the comments it receives public and respond to what aspects of public feedback are and are not incorporated into the plan. RIDOT should facilitate public workshops beyond the submission of the plan. Many of us have good ideas like doing what they do in the Netherlands regarding road noise and its direct impact on pollution, not only sound but air pollution. And the in-city speed change from 30 MPH to 20 MPH can have huge effects on not only sound but air pollution which is important for inner-city dwellers who can tend to be lower-income.

7 days ago

Robert DiMuccio RIDOT must do its part to encourage walking, cycling, and public transit instead of defaulting to the needs of automobiles. It's egregious that RIDOT puts the flow of as much car traffic as possible above the lives of people killed on West Main, East Main, and North Main Roads and the quality of life of those that live next to those roads.

7 days ago

Robert DiMuccio RIDOT must do its part to encourage walking, cycling, and public transit instead of defaulting to the needs of automobiles. It's egregious that RIDOT puts the flow of as much car traffic as possible above the lives of people killed on West Main, East Main, and North Main Roads.

7 days ago

Jacob Rogers As a Rhode Islander who doesn't own a car and doesn't want one, I would like to see more funding being allocated to non-car related infrastructure. This will reduce emissions and traffic congestion, increase safety, and better our community. RIDOT will also benefit from increasing public awareness and incorporating their feedback into this plan.

8 days ago

caleb buffum I am a life-long Rhode Islander who lives in Providence. I am heartened to see the plans to expand mass transit options in this state, because I believe the key to reducing our carbon emissions is reducing the number of cars on our roads.

As feedback to this proposal, I would recommend prioritizing the expansion of RIPTA service over creating an EV charging network. I would greatly prefer to use RIPTA to commute to work, but I work 2nd shift and there are almost no buses running anywhere in the state when I get out of work. Expanding the hours that RIPTA routes operate would increase demand for mass transit and take more cars off our roads.

8 days ago

Ethan F As a local Rhode Islander, I would like to see more funding being allocated to non-car related infrastructure. This will reduce emissions and traffic congestion, increase safety, and better our community. While the already-vetted Transit Master Plan and Bicycle Master Plan are mentioned, they do not appear to be a priority. Basing the plan on the assumption that transit ridership and non-car travel will remain at pre-2020 levels indicates the plan is not serious about lowering emissions. Across the country, we've seen examples of "Traffic flow improvements" simply meaning road/lane widening and expansion. This induces congestion and actively works against the stated goals of the plan.

8 days ago

William Masse With the states goals of reaching net zero greenhouse gas emissions by 2050 it is unfortunate that the RIDOT has put forward here such a plan that fails to address the leading causes of greenhouse gasses. In section 1.3 of the Carbon Reduction Strategy it is identified that 99% of emissions the four transportation categories investigated were from on-road cars and trucks. Despite correctly identifying the source of greenhouse gas emissions, the majority of the plan fails to address this source, by instead focusing on highway expansions and additional road construction projects that will only serve to facilitate these sources of emissions. The plan, as currently written, is so egregious in its misuse of carbon reduction funds its submission puts the state at risk of losing federal dollars as it attempts to supplant these funds intended to carbon reduction into carbon intensive highway projects. If the RIDOT continues forward with the plan here it will undoubtedly guarantee the state does not meet its statutory requirements under the 2021 Act on Climate. RIDOT should rewrite this plan to ensure that federal dollars earmarked for carbon reduction are spent on appropriate projects that do as such.

In section 1.7 the RIDOT earmarks 23.7 million dollars towards projects that do not serve to reduce carbon. "Upgraded congested corridors," 6.3 million dollars, will only continue to serve the on-road cars and trucks that contribute to 99% of emissions. Here we also see 4 million dollars towards Bridge Overpasses, without mention of what types of vehicles these overpasses are intended for, we are left to assume that they also will be designed for use by cars and trucks, further exacerbating emissions. And while I applaud the RIDOT putting 6.6 million towards bike path preservation, preserving current paths will not reduce carbon, instead the RIDOT should put these federal dollars into creating new pathways that support active and carbon free transportation methods such as biking, electric scooters, and walking.

In section 1.8, bullet point 2, RIDOT correctly mentions Mode Shift as a viable method of reducing carbon. This is correct as fewer cars and trucks on the road, as well as an increase in users of active and public transportation would be the strongest way to reduce emissions in the state. Here however we see the RIDOT qualify the statement with "within constraints of available funding." This is where the RIDOT is in critical error, as these carbon reduction funds are designed for exactly this purpose. The funds are not constrained for this purpose. The constraints are directly created by RIDOT's misuse of the majority of funds towards carbon intensive projects, leaving little funds for projects that would actually help reduce carbon such as Mode Shift initiatives. RIDOT should remove from its plan the use of funds to support the movement of cars and trucks on our roads and redirect the funds here to increasing infrastructure required for active and public transportation.

In section 4.2 Emissions Estimate and Projections we see how On-Road Mobile Sources will continue to be the largest contributor of greenhouse gasses in our state. Furthermore any reduction in these emissions are 'primarily attributed to fuel economy improvements as well as modest increases in vehicle electrification.' Here we see that not only do cars and trucks continue to serve as the largest contributor of greenhouse gasses, but also that any reduction in emissions will not be attributed to "flow improvements" and highway expansion projects. This once again supports not including these types of projects in the carbon reduction plan.

Section 8.3 identifies three STIP projects that all fail to reduce greenhouse gas in meaningful ways, instead these projects only continue to serve on-road cars and trucks the largest source of greenhouse gas emissions.. These include a highway construction project (Opening of Cranston Canyon), a highway construction project (Route 146 Reconstruction) and finally a third highway construction project (I-95 Missing Move and Quonset Connector.) Once again, RIDOT places its priorities in projects that favor keeping on-road cars and trucks in use, instead of attempting to reduce their use across our state.

In section 9.1 we see the majority of Carbon Reduction Plan funding going towards carbon intense activities. Six of the outlined projects will serve to keep cars and trucks, the leading cause of emissions identified by the state, in use. Out of three of the remaining projects, two are simply "Preservation and Enhancement", neither of which serve to create new infrastructure to help assist in Mode Shift.

While the majority of this plan is misplaced in its priorities there are a few mentions of projects that would be significant contributors towards climate reduction. The plan makes mention of the state's "Transit Master Plan" (TMP.) The TMP is a robust and comprehensive plan for improving Public Transit in our state. Using Climate Reduction Funds to help support projects in the TMP would be substantial towards reducing emissions from cars and trucks as it actually supports initiatives that would lead to Mode Shift towards active and public transportation.

The plan also makes mention of the states "Bicycle Mobility Plan" (BMP,) the BMP would help create safe biking infrastructure as well as connect many of the states current paths to allow more individuals to utilize active transportation such as biking, scooters, and walking as viable means of transportation. This would again serve to tackle the largest contributor of greenhouse gasses, on-road cars and trucks.

In conclusion, RIDOT's Carbon Reduction Plan falls incredibly short of supporting its purpose of Reducing Carbon. RIDOT continues to fixate on placing the majority of its funding towards projects that aid in the mobility of on-road cars and trucks. RIDOT must shift its focus on reducing the number of on-road cars and trucks by using federal carbon reduction dollars on initiatives that support public transportation and active transportation options. As currently written I do not support this plan nor do I think the U.S. Department of Transportation should continue to award carbon reduction funding for projects that support carbon intensive activities such as those outlined in this plan. The RIDOT must rewrite this plan to focus on reducing the number of cars and trucks on the road and supporting carbon free transportation options.

William Masse,
Warwick RI

8 days ago



Daniel Shay The Providence area is dense enough to support real public transit while also being completely choked in cars and parking lots. The planned deconstruction of Kennedy Plaza is already enough of an outrage, but to plan the entire state's future on cars is beyond disappointing. It's disgusting. You fools will doom us all just so you never have to brush shoulders with a working person. Everyone involved in this plan should retire and move to Florida, where such ideas as theirs are welcome.

8 days ago



Abigail Demopolos Given RI's compact size, much more effort could be made to create safe bicycling options on separated paths and encourage use of cargo bikes. This could reduce car usage for short trips. More effort could also be made to integrate transportation options. For example, having RIPTA buses stop at the Amtrak/MBTA station in PVD, having a frequent clearly marked shuttle between Green Airport and downtown Providence. Also, towns need to be encouraged to make it simple for non-drivers to get to grocery and other basic stores.

8 days ago



Travis Beckman As a local Rhode Islander, I would like to see more funding being allocated to non-car related infrastructure. This will reduce emissions and traffic congestion, increase safety, and allow for the dense development required to address housing affordability and draw business to Rhode Island cities. I fully support electric vehicles, but growing urban areas across the country have shown that "adding one more lane" approaches never adequately address these issues. Furthermore, there are still uncertainties in how quickly the change to EVs will occur. I work in sustainability, and there are supply chain concerns regarding advanced batteries due to their reliance on non-renewable metals and minerals. Mass transit is a proven solution across the globe that mitigates the risk of car transportation not meeting the GHG reduction goals modeled out in this report. I love Rhode Island, and I use RIPTA buses and the commuter rail as often as I can. Additional bus lines, electrified, faster trains, and other creative mass transit solutions like light rail or trolley systems could make this state more dynamic and an even wonderful place to live.

8 days ago



Taylor Baldwin The plan needs a heavier focus on pedestrians, bicycles, and public transit. No carbon reduction plan can be considered to have a serious impact without these. Providence is also such a small and potentially walkable city, and things like bike lanes, increased public transit, bus stations, and pedestrian walkways would make it into an ideally livable city. Please please please focus more on these things over more automobile accommodations.

8 days ago



Jake Mooney I am a practicing ER physician at RIH/Miriam/Hasbro and would urge this strategy to place a greater emphasis on the development and preservation of pedestrian and micro mobility (bikes, scooters) pathways, in particular in the greater Providence area. This is an incredibly small city, with a large proportion of the year amenable to non-car commute. Despite the infrastructure of this city being incredibly unfriendly to pedestrians, bikes and scooters, more and more people are choosing to travel by these means. As a consequence, the impact on health, specifically the number of people who experience traumatic injuries I believe is vastly under appreciated in this state. Our city's ERs are filled everyday with pedestrians/bicyclist/scooters who have either been struck by vehicles or crashed as a consequence of poor road conditions. The most efficient means to reduce emissions, improve health and reduce traffic congestion is to encourage the use of non-vehicle transport through more robust infrastructure.

8 days ago



Ash Wolski Hi this seems like a very short sighted plan made entirely by people who drive everywhere. This plan discusses primarily a shift to electric vehicles rather than anything that could affect carbon emissions now as well as other forms of pollution that assuming everyone will still have a car does not. Electric vehicles are also terrible for the environment. Any type of car is. This plan also seems to assume that everyone will get an electric vehicle once the infrastructure is there, ignoring the cost that most people can't afford and the increased difficulty of finding mechanics and shorter lifespan of the car because of the battery. By investing in public transit as fast as possible and expanding service so it covers the entire state more thoroughly and frequently, a lot of people would be able to take transit rather than drive. People now don't take it because it's wildly impractical in most of the state and areas of Providence are iffy as well. If the busses went everywhere and went more frequently, you would immediately lower emissions by simply having fewer vehicles on the road. Increase driver pay to end the driver shortage and reduce fares so people can afford them easily and emissions will drop substantially and quickly. This plan will leave traffic as bad as it currently is and emissions and pollution near the same amount. It deeply saddens me to see how short sighted and stupid my leaders are in this.

8 days ago



M As a local Rhode Islander, I'm very disappointed to see minimal funding going to increase infrastructure that will actually benefit the community as well as decrease carbon emissions (e.g., bike lanes, increased public transit options). These options will not only help lower Rhode Island's carbon emissions but will also help to alleviate traffic congestion, which is a major problem in this state. Adding lanes to highways has only been shown to increase traffic congestion in the long term, while investing in solutions that move people away from car-dependency and towards bike and public transit has greater long-term effects on traffic congestion and pollution. Additionally, not only do highways encourage the use of cars, which spew a multitude of pollutants regardless if the vehicle is an EV or not, but highways also decrease the amount of usable space for people to live and enjoy their lives (i.e., takes away green space, space for housing, etc).
RIDOT will also benefit from increasing public awareness and incorporating their feedback into this plan.

8 days ago



Hari Dandapani As a Rhode Islander without a car, who primarily relies on public transit, walking, and cycling to get around this beautiful state, I am appalled at how car-oriented the RIDOT's Carbon Reduction Strategy is. Rhode Island is one of the few places in the whole country that is unique for the ability to get around without using a car. Since cars are the most carbon-intensive form of personal transit, I simply do not understand why this plan focuses so much on enabling driving. We should instead focus on forms of active transit, like walking and cycling, and public transit in order to keep Rhode Island people-friendly and beautiful. Focusing on making cars the primary form of transit in Rhode Island will force us to dedicate more precious space that could be used for housing to parking lots, make noise pollution so much worse, and lead to many traffic-related deaths due to factors like car accidents and drunk drivers. Please focus on making Rhode Island a more people-focused place instead of a car-centered ghost town.

9 days ago



Joseph Poccia Please see the attached document.



[RIDOT CRS Comments - DEM.pdf](#)

9 days ago



Andrew Vitagliano You should consider more modern infrastructure that accounts for climate change and pedestrian needs. The 50s called and they want their ideas back

9 days ago



Dani Stewart As a local Rhode Islander, I would like to see more funding being allocated to non-car related infrastructure. This will reduce emissions and traffic congestion, increase safety, and better our community. RIDOT will also benefit from increasing public awareness and incorporating their feedback into this plan.

9 days ago



Kathryn Richard Our Carbon Reduction Strategy should be heavily prioritizing adequate funding for RIPTA to fully staff and expand bus routes state wide, as well as prioritizing reduced or free fares to encourage frequent use. We should be prioritizing bike lanes in all of our communities to give the public more transportation options to encourage them to divest from using personally owned vehicles as a first means of transport. We need bold investments to address the very real and very serious crisis that is climate change.

9 days ago



Nicholas Hollister As someone who recently moved here, and was excited about living in a walkable, bike-able city, I would like to see more funding allocated to non-car related infrastructure. This will reduce emissions and traffic, as well as public safety. Investing in non-car related infrastructure will also attract a younger population to the city, as the appetite for walkable cities is greatly increasing.

RIDOT also needs to increase public awareness of this plan.

9 days ago



Michael Hennigner RIDOT's Carbon Reduction Strategy does not meet the goals outlined in the Act on Climate, passed in 2021. It ignores what the transit master plan has to say, focusing on highway and automobile infrastructure. If Rhode Island wants to meet its climate goals and make sure that the most vulnerable people have a way to get to and from the places they need to be. RIDOT needs to shift funding from highway and roadway infrastructure (besides maintenance and repairs) to bicycle and bus infrastructure. Adding more lanes will only increase induced demand. Having a bus lane will increase demand for buses. The 'T' in RIDOT stands for transportation: walking, biking, and taking a bus are included in that. However, the people in charge at RIDOT seem to be making excuses about how the state needs car infrastructure based on arguments from the 1960s. The elites in this state should take the bus if they don't want to fund things like bus and bike lanes. If they actually used these types of transportation, instead of giving them lip service, they would see how desperate the need is. Our grandchildren will feel the effects of climate and transit decisions made today. Alternative transport that does not favor cars is the only option, especially in highly dense, industrialized Rhode Island.

9 days ago

Rhode Island DOT - Report Creation



Oge Mora I have lived in Providence for over a decade now. I am continually appalled by this departments continual disregard for bicyclists and pedestrians. That only a quarter of investment would go towards bikes and pedestrians is laughable. As a local Rhode Islander, I would like to see more funding being allocated to non-car related infrastructure. This will reduce emissions and traffic congestion, increase safety, and better our community. RIDOT will also benefit from increasing public awareness and incorporating their feedback into this plan.

9 days ago



Stephanie A As a local Rhode Islander, I would like to see more funding being allocated to non-car related infrastructure. This will reduce emissions and traffic congestion, increase safety, and better our community. RIDOT will also benefit from increasing public awareness and incorporating their feedback into this plan. There was a trial on Hope St to add a bicycle lane at the expense of street parking, but it was extremely impactful. People who use the rideshare scooters and bicycles especially near the school on Hope St had a safe path to commute instead of sharing the road with cars. I think this investment will make our communities safer and greener at the same time.

9 days ago



Justin Jude As a Providence resident, I think that the plan does not sufficiently provision for public transport. The hub based model of the bus network is detrimental. More bus routes going directly from the west of Providence to the east of Providence would be highly beneficial.

9 days ago



James Moses We need better public transit infrastructure!! A rail system in Rhode Island would be legendary!! Imagine how much revenue that would bring in for the state. Cars are NOT the way of the future. Cars may be the most popular form of transport in RI, but that is solely because of a laaaack of options!! I guarantee you'd see less people driving if there was a more robust transportation system than just busses. The only sustainable way forward is public transit!!

9 days ago



STATE OF RHODE ISLAND
OFFICE OF THE ATTORNEY GENERAL

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Peter F. Neronha
Attorney General

November 3, 2023

Peter Alviti, Jr., Director
Rhode Island Department of Transportation
Two Smith Street
Providence, Rhode Island 02903

RE: Rhode Island Department of Transportation's Carbon Reduction Strategy

Dear Director Alviti,

I write to comment on the recently released draft Carbon Reduction Strategy (“CRS” or the “Strategy”), which was posted for public comment on October 3, 2023. At issue with the adoption of this Strategy is the stewardship of \$35.7 million in additional federal transportation funds available to Rhode Island in Federal Fiscal years 2022 through 2025.

The development of the Strategy is required under the U.S. Department of Transportation's Carbon Reduction Program.¹ Its drafting is an opportunity to plan how Rhode Island's transportation sector will meet its Act on Climate mandates.² Unfortunately, Rhode Island Department of Transportation's (RIDOT) draft Strategy falls far short of meaningful carbon reduction, made more alarming by the fact that the transportation sector is responsible for at least 36% of emissions. It proposes using a significant portion of these critical funds on “congestion reduction” (designed to enable more and not fewer personal vehicles) and other projects that do little if anything to move Rhode Island into new transit options, ignoring the priority already given to statewide plans by the Executive Climate Change Coordinating council (EC4), of which RIDOT is a member, which were developed with important public input. Overall, this Office is concerned that the Strategy does not even meet the general aspirations of EC4's 2022 Update, lacks clear strategies for overcoming barriers, and does not show how RIDOT will use the significant federal funding available for a limited time to actually decrease emissions in Rhode Island.

As RIDOT has described it, “transportation is Rhode Island's costliest and most carbon-intense energy sector, accounting for 40 percent of statewide energy expenditures and 36 percent of our greenhouse gas emissions.”³ As such, it is imperative that this sector utilize every available resource strategically, thoughtfully, and with an eye towards decreasing emissions. However, in

¹ 23 U.S.C.A. § 175.

² R.I. Gen. Laws §§ 42-6.2-2(a)(2) and 42-6.2-10(e).

³ *Press Release: RIDOT Kicks Off Pilot Project for Electric Vehicle Charging Stations at Park and Ride Lots in Warwick and Hopkinton*, Sep 2020, <https://www.ri.gov/press/view/39233>.

putting forth this draft CRS, it is clear that a majority of the funding is earmarked for congestion management projects which, in RIDOT’s own words, “will not substantially ‘move the needle’ when it comes to carbon reduction.”⁴ That is, the Carbon Reduction Strategy identifies its carbon-reducing expenditures as efforts mainly to make it easier for cars to travel—not the transformative changes necessary to remake a carbon-heavy sector to achieve Rhode Island’s reduction mandates. With just six years left before the first interim Act on Climate mandate, the State cannot afford to keep up the status quo and fail to identify needed actions to address the largest sector of emissions.

Positively contributing to achieving Rhode Island’s greenhouse gas emissions reduction mandates at every opportunity is not optional; it is RIDOT’s legal obligation. RIDOT, just like all other Rhode Island state agencies and instrumentalities, is required to exercise its existing authority, including drafting strategy documents tied to federal funding, to address “climate change mitigation, adaptation, and resilience” and achieve Rhode Island’s greenhouse gas emissions reduction mandates.⁵ RIDOT therefore cannot on the one hand recognize that Rhode Island’s transportation sector will “fall well short of its proportionate share of GHG reduction goals in 2040 and 2050” if it relies only on adoption of clean vehicles⁶ while simultaneously proposing to spend 44% of available funding on efforts RIDOT recognizes will not “move the needle” on carbon reduction.

Accordingly, as set forth more fully in this comment, the Attorney General urges RIDOT to revise the Strategy to implement the following recommendations:

- Dedicate More Resources Towards Implementing Already-Established Plans Geared Towards Emissions Reductions; and
- Prioritize Fleet Transition and Building Infrastructure for Electric Vehicles.

A. Prioritize Already-Established Plans Geared Towards Emissions Reductions Over “Congestion Reduction.”

Of the total \$35.7 million federal Carbon Reduction Program funding, “around \$23.7 million has been preliminarily assigned to existing projects in the [Statewide Transportation Improvement Program (“STIP”)].”⁷ Of that \$23.7 million, two-thirds is dedicated to projects supporting “congestion reduction,” with the remaining one-third allocated to “projects that encourage mode shift among residents, specifically through improvements to bicycle and pedestrian infrastructure.”⁸ This “bicycle and pedestrian infrastructure” includes \$0.6 million for “Sidewalk Installation”, \$0.7 million for “Greenway Enhancements”, and \$6.6 million for “Bike Path Preservation”.⁹

⁴ *Carbon Reduction Strategy (“CRS”)*, RIDOT, at pg. 4.

⁵ R.I. Gen. Laws § 42-6.2-8.

⁶ *CRS*, at pg. 11.

⁷ *Id.*, at pg. 29.

⁸ *Id.*

⁹ *Id.*, at pg. 30.

While these efforts may seem on their face to support carbon reduction, as discussed below, these projects will not do enough to meet RIDOT's obligations under the Act on Climate mandates. RIDOT should not allocate Carbon Reduction Program funds for projects that do not appear in its prior-adopted, multi-agency (RIDOT is one of these agencies), community-vetted plans for carbon reduction. In addition to the clear benefits to the overall GHG inventory, the other plans and strategies have more measurable benefits to Rhode Island and its underserved communities.¹⁰ In light of both the considerable resources expended to develop these plans and the appreciable emissions reductions anticipated by the implementation of these plans, there is no reason that they should not have the majority of RIDOT's Carbon Reduction Program funding.

Just months ago, EC4 (and thus as a member, RIDOT) identified "Priority Actions for the Transportation Sector" developed with the specific goal of carbon reduction, projects that EC4 recognized as "well-vetted strategies for next steps"¹¹ and with a need for the state "to identify funding" in order to implement the plans.¹² Yet, the roughly \$12.2 million dollars remaining of the total Carbon Reduction Program funding that is not going towards completing current transportation plans (i.e. STIP) projects, is being proposed for uses that are of undetermined GHG reduction and apparently unconnected to vetted plans for climate reduction. These include proposals to "diversify the department's range of carbon reduction strategies" and includes efforts such as \$1 million for "Statewide Striping Contracts: Bike Lane Design and Construction" and \$1.3 million for "Lending Library for Bicycle Infrastructure."¹³ The strategy contains only \$1.5 million allocated for "Bicycle Mobility Plan Implementation," despite the statewide Bicycle Mobility Plan having identified over \$300 million in needed, already EC4 prioritized, investments. There is no explanation for why such a significant funding opportunity is not being funneled into implementing plans that RIDOT, through EC4, has already adopted, with significant community input. More glaring, there is no rationale for allocating over ten times as much money of the Carbon Reduction funds on car-based infrastructure.

It is significant to this Office that Rhode Island's EC4 (and therefore RIDOT's) 2022 Update which focused on climate reduction planning never identified RIDOT's existing STIP plans and construction projects as "Priority Actions for the Transportation Sector". Even more significant, transportation actions that **were** vetted as priorities by EC4 (and therefore RIDOT) just months prior are not included in the RIDOT Strategy other than the \$1.5 million for Bicycle Master Plan implementation—a mere 4% of the total federal funds available. These ignored priorities are: 1) short term increase in electric vehicle uptake; 2) Transit Master Plan and Bicycle Master Plan implementation; 3) Electrifying public transit; 4) adopting Advanced Clean Trucks Rule; 5) incentivize electric mobility; 5) model climate impacts of transportation demand; and 6) develop a statewide "Complete Streets" plan.¹⁴ While not all of these priorities should or could be

¹⁰ See generally, Moving-Forward RI-2040, Rhode Island Transit Master Plan 2040, Rhode Island Bicycle Mobility Plan, Electrifying Transportation, and the State Plan for Electric Vehicle Infrastructure Deployment, as described in the CRS on pages 20-22.

¹¹ *Executive Climate Change Coordinating Council (EC4) 2022 Update*, at pg. 71.

¹² *Id.*, at pg. 6.

¹³ CRS at pg. 30.

¹⁴ *2022 Update*, at pgs. 6-7.

addressed in RIDOT’s Carbon Reduction Strategy, the Strategy fails to relate to these statewide priorities at all, apart from a token project. Here, funding is available—and while the available funding could not fully implement the plans, the funding could implement more than the \$1.5 million of projects identified.

This Office considers RIDOT’s reliance on the older *2021 Clean Transportation and Mobility Innovation Report* (the “Innovation Report”) as fundamentally flawed. The Innovation Report rated strategies “according to cost-effectiveness for reducing GHG emissions”¹⁵ RIDOT’s existing large-scale infrastructure changes that focus on congestion – for which it is now seeking to use carbon reduction funds – were not part of the recommendations.¹⁶ In addition, the Strategy offers a misleading summary of the Innovation Report by implying that the congestion reduction activities RIDOT proposes for a majority of the funds were supported by this cost-effectiveness analysis.¹⁷ While cost must be considered and funding decisions made wisely, GHG emission reductions cannot be displaced in priority.

RIDOT may have chosen to seek funding for the existing congestion reduction projects set forth in the Strategy because they were the only three of the STIP projects that had undergone “project-specific studies and emissions analysis.”¹⁸ Where RIDOT did provide emission reduction estimates, it did not explain how the emissions reduction estimates were arrived at, eliding important questions like what types of assumptions RIDOT used to model these projects’ induced demand, which would be expected to offset any potential reductions.¹⁹ It appears RIDOT abandoned the need for accurate modeling in favor of a result that would allow the bulk of the allocated dollars to go to pre-existing, car-heavy infrastructure projects.

It is critical to note at this point that it appears the rest of RIDOT’s STIP projects did **not** undergo “project-specific studies and emissions analysis” when we as a State cannot afford to forgo such analyses. RIDOT claims that “[q]uantifying emissions reductions associated with every project programmed in the STIP was beyond the scope of this effort and is subject to a great deal of uncertainty given the limited data available for most projects at the programming stage.”²⁰ If precision cannot be accomplished, developers of public policy often use various modeling strategies like ranges and sensitivity analyses in order to properly identify trade-offs. RIDOT must understand that, in all of its projects, carbon impact must be quantified in order to meet its own obligations under Act on Climate and for the State to reach its carbon reduction mandates.

¹⁵ CRS, at pg. 4; see also, generally, *2021 Clean Transportation and Mobility Innovation Report* (“Innovation Report”), Rhode Island Mobility Innovation Working Group, [mwg-clean-trans-innovation-report.pdf \(ri.gov\)](https://www.ri.gov/miwg/clean-trans-innovation-report.pdf).

¹⁶ *Innovation Report*, at pg. IV.

¹⁷ CRS, at pg.4 - Table 1.1 (stating “traffic flow improvements” as “very strong” for GHG reduction by cost-effectiveness).

¹⁸ *Id.*, at pg. 27.

¹⁹ See, e.g. Kent Hymel, *If you build it, they will drive: Measuring induced demand for vehicle travel in urban areas*, ScienceDirect, <https://www.sciencedirect.com/science/article/abs/pii/S0967070X18301720#preview-section-introduction>.

²⁰ CRS, at pg. 27.

With respect to the three STIP projects for which RIDOT is seeking use of the majority of the Federal climate reduction program funds, it is the following specific carbon figures that this Office found significant. These projects are only “projected to reduce emissions by 10,530 tons of carbon dioxide per year”²¹ out of the total estimated 2,971,031 tons of total emissions estimated for the transportation sector in 2025.²² In contrast, already established plans such as the Rhode Island Transit Master Plan 2040, which is geared towards enhancing and developing transit services, has the potential benefit of reducing emissions by of 230,000 metric tons, over 23x more than the three proposed projects. While the entire Transit Master Plan 2040 could not be fully funded with the available dollars from this funding round, the Strategy does not explain why EC4 plans such as those referenced *supra*, which benefited from extensive community input, appear to be cast aside when it comes to once-in-a-decade additional federal funding opportunities.

RIDOT, again, recognizes that the “scale of emission reduction is relatively small compared to total transportation emissions and projects in Rhode Island’s construction program will not substantially ‘move the needle’ when it comes to carbon reduction.” It merely offers the justification that “[n]evertheless, these projects are also providing critical mobility and safety benefits for Rhode Island residents, visitors, and freight industry.” This rationale is inadequate and has nothing whatsoever to do with carbon reduction. Of course, investing in biking infrastructure, to take just one example, could accomplish the same critical mobility and safety benefits, and, additionally, has been shown to be one of 12 community attributes that can positively influence individual well-being.²³ However, existing EC4 (and thus RIDOT) plans are more robust and vetted examples of mobility, safety **and** carbon reduction.

B. Prioritize Fleet Transition and Building Infrastructure for Electric Vehicles

Of the total Carbon Reduction Program funding, only \$0.5 million dollars are dedicated towards electrifying RIDOT assets. As one of the key lead agencies for state fleet decarbonization identified by the EC4 in its 2022 EC4 Update, RIDOT must develop more clear commitments and a comprehensive framework to decarbonize both its vehicles and the Rhode Island state fleet. As ordered by Governor McKee in Executive Order 23-06, “[s]tate agencies as a whole, and to the greatest extent feasible, individually shall meet the following calendar year targets where applicable...[a]cquire vehicles such that the light-duty state fleet consists of 25% zero-emission vehicles by 2030.”²⁴ These efforts are already baked into Rhode Island’s current assessments of its ability to meet the greenhouse gas reduction mandates of the Act on Climate, which are, at this time, inadequate to truly meet the 2050 goals.²⁵ Further, it should also be noted that Governor

²¹ *CRS*, at pg. 27.

²² *Id.*, at pg. 12.

²³ Roy, Brita, et al, *Identifying county characteristics associated with resident well-being: A population-based study*, PLOS ONE, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0196720#sec011>.

²⁴ *Executive Order 23-06*, May 9, 2023.

²⁵ The 2016 Plan advocates for the “state government to serve as an early adopter to demonstrate the benefits of greenhouse gas mitigation and clean energy solutions.” In accordance with this recommendation, the Office of Energy Resources has supported state agencies across government leading by example with reducing energy use and cost,

McKee’s executive order already extended the original deadline set by former Governor Raimondo by five years.

Your administration should prioritize purchasing only zero-emission vehicles as soon as possible, changing purchasing lead times to meet the market, and should not seek any further waivers by the Department of Administration. Every vehicle purchased that is not a zero-emission vehicle adds years of additional carbon emitted by State fleet vehicles. Rhode Island cannot afford to delay any longer.

C. Engage More Effectively with Other Agencies and Stakeholders

Rhode Island must continue to innovate in order to remain at the forefront of our nation’s battle against climate change, and that requires actionable plans formed in close coordination with other state initiatives, as well as a rigorous public input process. While the Strategy states that the development process “included consultation with key stakeholders, including the State’s Metropolitan Planning Organization (MPO), as well as other state agencies, advocacy groups, and the general public,” this is misleading. In reality, a general summary of an incomplete plan was presented to EC4 in June of 2023, a workshop with RIDOT-chosen stakeholder groups and state agencies was held in September of 2023, and the draft plan was only released to the general public on October 3.²⁶ Finally, there was a singular public meeting before the Transportation Advisory Committee on October 26, 2023, just three weeks before the November 15, 2023, deadline.²⁷ Here, general public input is not heard until it is too late to actually consider the feedback, let alone revise the Strategy prior to the deadline.

Meaningful public engagement is especially important here, given the significant portion of emissions the transportation sector contributes to Rhode Island’s overall greenhouse gas inventory and the community participation needed to make many of the transportation sector’s initiatives successful.²⁸ Indeed, the EC4’s 2022 Update to the 2016 Greenhouse Gas Emissions Reduction Plan provides “[t]here are two ways to reduce emissions in the transportation sector: consume less fuel and consume lower-emissions fuel. To consume less fuel, we can discourage high-emissions driving and encourage low-emissions mobility solutions. To consume lower-emissions fuel, we need to encourage electric vehicles and expand electric vehicle charging infrastructure.”²⁹ Individual action and cooperation is required to achieve reductions through either route, and without meaningful public engagement, these plans cannot succeed. As a State, decision-makers need to make informed decisions based on expertise, of course, but also on how the public will respond and participate.

deploying renewable energy systems, transitioning fleets to electric, and installing electric vehicle charging infrastructure, among other accomplishments. These efforts to date will save Rhode Island nearly \$100 million in energy costs over the lifetime of projects implemented. EC4 2022 Update, p. 72.

²⁶ CRS, at pg. 9.

²⁷ *Id.*

²⁸ See, 2022 Update, at pg. 20.

²⁹ *Id.*, at pg. 6.

Further, the Bipartisan Infrastructure Law’s Carbon Reduction Program requires this strategy be created *in consultation* with any metropolitan planning organizations, i.e., the State Planning Council in Rhode Island, under which the Transportation Advisory Committee falls.³⁰ However, the complete Carbon Reduction Strategy did not publicly come before either of these entities prior to October 26, 2023. While RIDOT did give a limited presentation on its plan for the Carbon Reduction Strategy to EC4, it was not a comprehensive enough review of the strategy sufficient for State agencies and stakeholders to weigh in.³¹ A number of members of the TAC and the public publicly called on RIDOT to request the Strategy be presented sooner, demonstrating that many stakeholders believed the time for public consideration to be inadequate.³²

The Act on Climate mandates are fast-approaching and require considerable coordination across many sectors of the State and while we must act swiftly, that cannot be to the detriment of the process needed to make these programs successful. A single 2.5-hour, in-person stakeholder workshop with a total of 21 participants primarily from state agencies is not public participation.³³ Engaging in such a truncated process while abandoning the conclusions of EC4 plans that underwent more extensive community input processes is a recipe for missing important input about transit equity and environmental justice. Future development and implementation of the Carbon Reduction Strategy and its related projects should incorporate a thorough engagement process with community members that provides multiple accessibility options and meeting dates.

I urge you to consider these recommendations in RIDOT’s final submission of the Carbon Reduction Strategy so that we more effectively utilize these funds to bring about better carbon reduction potential.

Sincerely,

PETER F. NERONHA
Attorney General of Rhode Island

By: /s/ Alison B. Hoffman
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³⁰ § 11403; 23 U.S.C. 175(d); R.I. Gen. Laws § § 42-11-10(f)(5)(iii) and (7).

³¹ *June 21, 2023 EC4 Meeting*, <https://opengov.sos.ri.gov/OpenMeetingsPublic/OpenMeetingDashboard?subtopmenuId=201&EntityID=551&MeetingID=1044821>.

³² *Climate and Community Advocates Call for Public Process for the RI Department of Transportation’s Carbon Reduction Plan*, Ecori.org, [RIDOT_CRP_Comment_091923.pdf \(ecori.org\)](https://ecori.org/RIDOT_CRP_Comment_091923.pdf)

³³ *CRS*, at pg. 10.