Long-Range
Transportation Plan
Limited Update

Moving Forward
Rhode Island 2050

State Supplement: **Reducing Emissions in Compliance with State Act on Climate Law**

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1. Transportation Emissions – Existing Conditions

The Rhode Island Act on Climate Law was signed in 2021, requiring our state to reduce greenhouse gas emissions (GHG) down to zero by 2050, with interim targets in the decades prior. In Rhode Island, the transportation sector makes up nearly 40% of climate warming emissions, making it the largest contributor of any sector.

This section will analyze major contributing factors to our transportation sector's greenhouse gas emissions. These include:

- Vehicle Miles Travelled
- Vehicle Trips
- Commute
- Vehicle Fleet
- Legislation, Plans, and Policies

Following this analysis of current conditions of transportation emissions, section 2 includes an analysis of baseline transportation emissions and of projected reduction in emissions due to recent zero emission vehicle policies and the strategies included in the FY26-35 STIP and the Long-Range Transportation Plan (LRTP) (including the Bike Mobility Plan (BMP) and Transit Master Plan (TMP), out to the year 2050.

For more information on climate resiliency, see Appendix P of the LRTP, RIDOT's Resilience Improvement Plan.

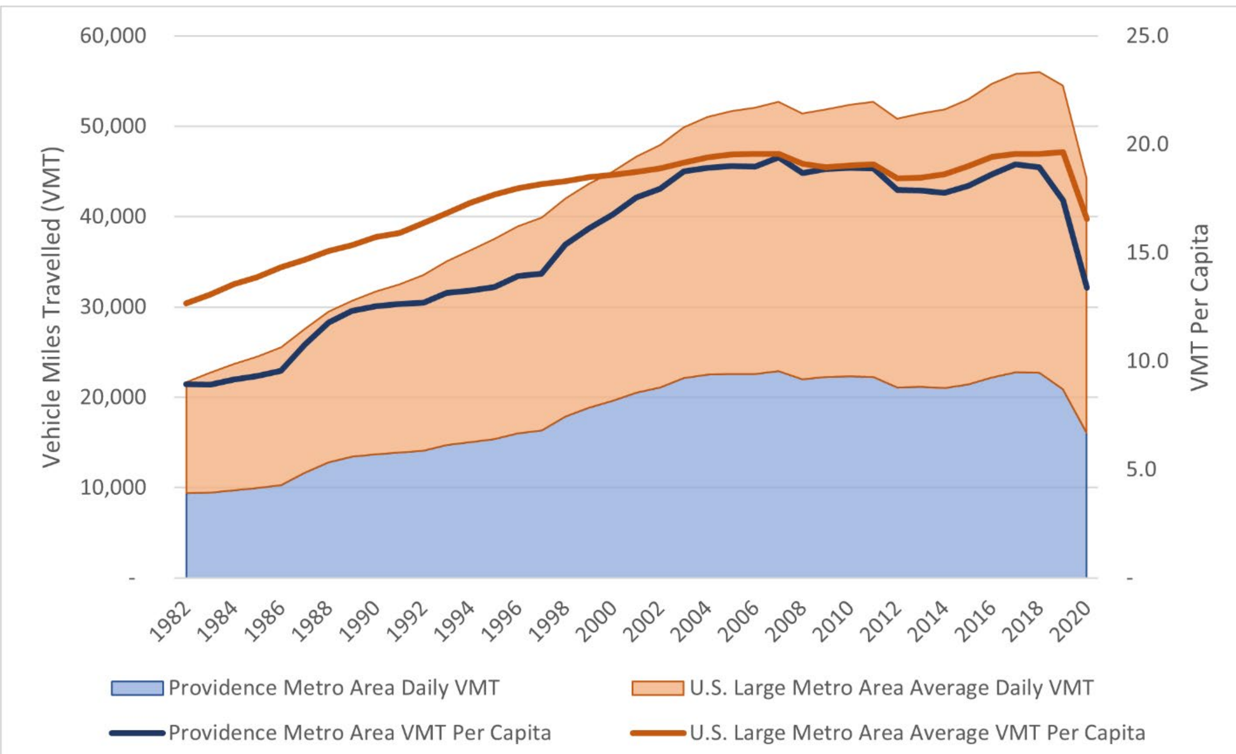
1.1 Vehicle Miles Travelled

Vehicle Miles Travelled (VMT) directly impacts carbon dioxide emissions because our fleet is made up predominantly of gas-powered vehicles. VMT per capita is also an important metric to track because it allows us to compare progress toward reducing driving over time and compared to other states, where the population might be different.

VMT in Rhode Island for 2021 rose to 7.526 billion, up from 6.86 billion in 2020.[1] VMT had been increasing year over year since 2015, then dropped in 2019 and dived further in 2020, likely due to the COVID-19 pandemic. As of 2021, it had since risen back up to just under the 2019 VMT of 7.58 billion.[2]

About 87% of VMT in 2021 took place in the urban parts of the state. About 42% VMT was driven on Interstates and Freeways & Expressways, which in contrast, make up under 3% of public road length. Just under 75% of vehicle miles travelled on the interstate system are driven on passenger cars (rather than trucks or buses), the highest share out of all 50 states. Rhode Island ranks 5th in the nation for passenger vehicle share of miles on arterials as well. This indicates that passenger vehicles traveling in urban parts of the state are the main culprit for vehicle miles travelled and transportation emissions.

Figure 1-1 Total and Per Capita Daily Vehicle Miles Travelled for Providence Metro Area and U.S. Large Metro Areas, 1982 – 2020



Source: University of Texas A&M, 2023. *Urban Mobility Report – Data and Trends*. https://mobility.tamu.edu/umr/data-and-trends/. Accessed December 4, 2023.
Note: VMT includes those travelled on freeways and arterial streets.

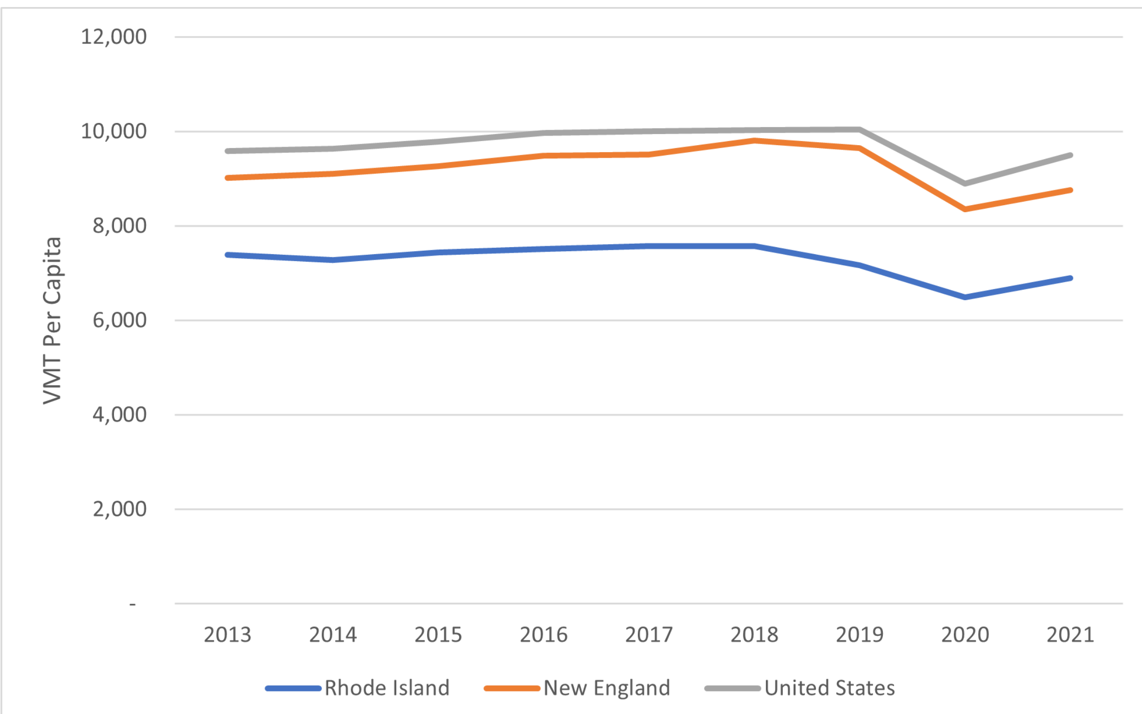
[1] "Highway Statistics 2021." U.S. Department of Transportation/Federal Highway Administration, Accessed 8 January 2024, https://www.fhwa.dot.gov/policyinformation/statistics/2021/index.cfm#sec4

[2] "Highway Statistics Series: State Statistical Abstracts." U.S. Department of Transportation/Federal Highway Administration, Accessed 8 January 2024. https://explore.dot.gov/views/StateStatisticalAbstracts_16699101653250/DashboardALT?%3Aembed=y&%3Aiid=1&%3AisGuestRedirectFromVizportal=y

Over time, VMT has risen both in the Providence metro area (which includes most of Rhode Island) and nationally for metro areas of similar size. However, the Providence metro area had significantly lower than average vehicle miles travelled per capita in the 1980s, and the gap has narrowed over time to only slightly less than average by the early 2000s. After a peak in 2017, national average metro area VMT per capita plateaued, while VMT and VMT per capita both started dropping in the Providence metro area. All Metro Areas show a steep drop in 2020, but the drop in Providence metro area was even steeper than the national average.

In comparing Rhode Island VMT per capita to surrounding New England states and the national average, a similar trend holds. Rhode Island has significantly lower VMT per capita than the national average, and lower than the average for the other New England states. Both Rhode Island and New England VMT per capita peaked in 2018, but Rhode Island experienced a steeper decline in 2019, whereas New England dropped steeply from 2019 to 2020. The national average VMT per capita peaked in 2019 and dropped steeply in 2020. All three regions have increased since 2020 at fairly similar rates but are still below levels seen in the last ten years.

Figure 1-2 Per Capita Annual Vehicle Miles Travelled for Rhode Island, New England, and the United States, 2013 - 2021



Source: "Highway Statistics Series: State Statistical Abstracts." U.S. Department of Transportation/Federal Highway Administration, Accessed 8 January 2024. https://explore.dot.gov/views/StateStatisticalAbstracts_16699101653250/DashboardALT?%3Aembed=y&%3Aiid=1&%3AisGuestRedirectFromVizportal=y

Table 1-1 Per Capita Annual Vehicle Miles Travelled for Rhode Island, New England, and the United States, 2013 - 2022

	Rhode Island	New England	United States
2013	7,393	9,018	9,592
2014	7,279	9,100	9,633
2015	7,434	9,271	9,780
2016	7,517	9,490	9,965
2017	7,576	9,510	10,007
2018	7,579	9,803	10,035
2019	7,171	9,650	10,046
2020	6,489	8,357	8,891
2021	6,892	8,764	9,500
2022	6,885	8,982	9,590

Source: Highway Statistics Series: State Statistical Abstracts." U.S. Department of Transportation/Federal Highway Administration, Accessed 8 January 2024. https://explore.dot.gov/views/StateStatisticalAbstracts_16699101653250/DashboardALT?%3Aembed=y&%3Aiid=1&%3AisGuestRedirectFromVizportal=y

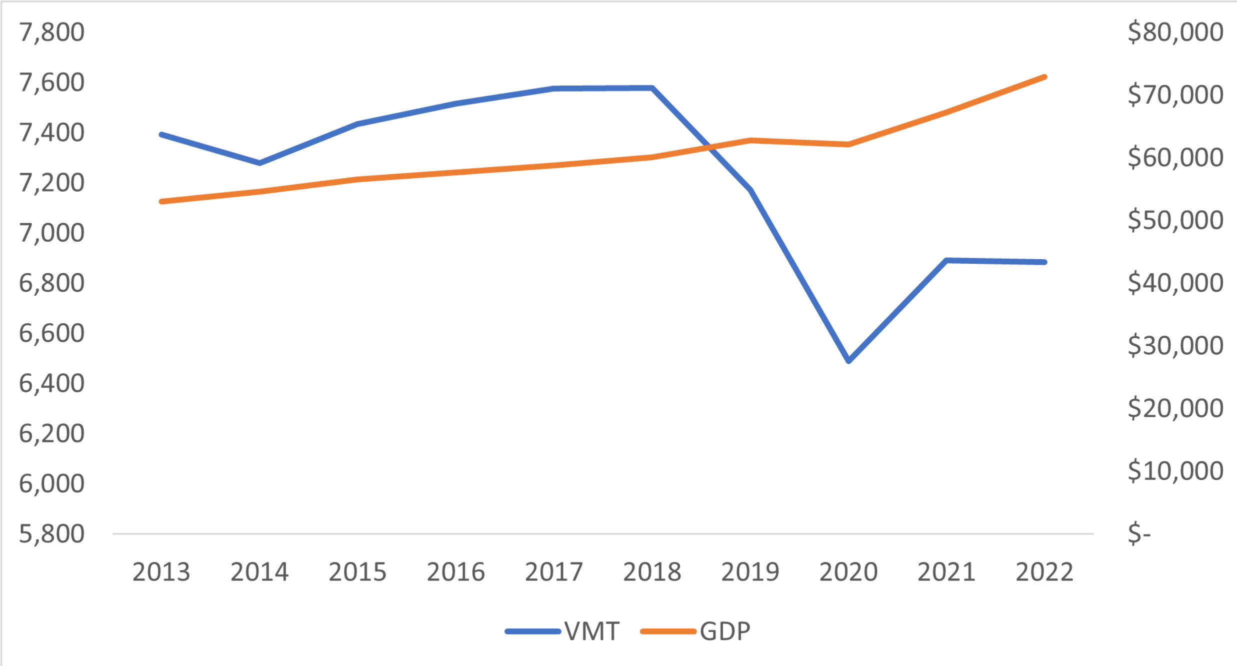
Table 1-2 Roadway Miles and Vehicle Miles Travelled for Rhode Island by Roadway Classification, 2022

	Urban / Rural	Total Roadway Miles	*% of Total*	VMT (Millions)	*% of Total*
Interstate / Other Highways	Urban	133	*2%*	2,932	*39%*
	Rural	29	*0.4%*	346	*5%*
Arterial / Major Collector	Urban	1,226	*19%*	3,291	*43%*
	Rural	340	*5%*	476	*6%*
Minor Collector / Local	Urban	3,595	*55%*	422	*6%*
	Rural	1,208	*18.5%*	63	*1%*
Totals	Urban	4,954	*76%*	7,531	*88%*
	Rural	1,576	*24%*	886	*12%*
	Combined	6,531	*100%*	7,531	*100%*

Source: Highway Statistics 2022." U.S. Department of Transportation/Federal Highway Administration, Accessed 30 January 2025, https://www.fhwa.dot.gov/policyinformation/statistics/2022/index.cfm#sec4

VMT occurs mostly on urban roadways, making up 88% of the state's VMT. Interstates and other highways are where nearly 45% of VMT occurs, despite them making up only 2.4% of roadway miles, making them the most disproportionate location of travel compared to their length. Additionally, urban arterials and major collectors make up the largest singular share of VMT, with nearly half of all VMT occurring on these roadway types, compared to their nearly 25% of roadway miles. On the other hand, minor collector and local roads make up nearly 75% of roadways in the state but are home to only 7% of VMT.

Figure 1-3 Total VMT and Total GDP (millions) for Rhode Island, 2013 - 2022



Source: Highway Statistics 2022." U.S. Department of Transportation/Federal Highway Administration, Accessed 30 January 2025, https://www.fhwa.dot.gov/policyinformation/statistics/2022/index.cfm#sec4
Federal Reserve Bank of St. Louis. Gross Domestic Product: All Industry Total in Rhode Island. 1997 - 2023. https://fred.stlouisfed.org/series/RINGSP

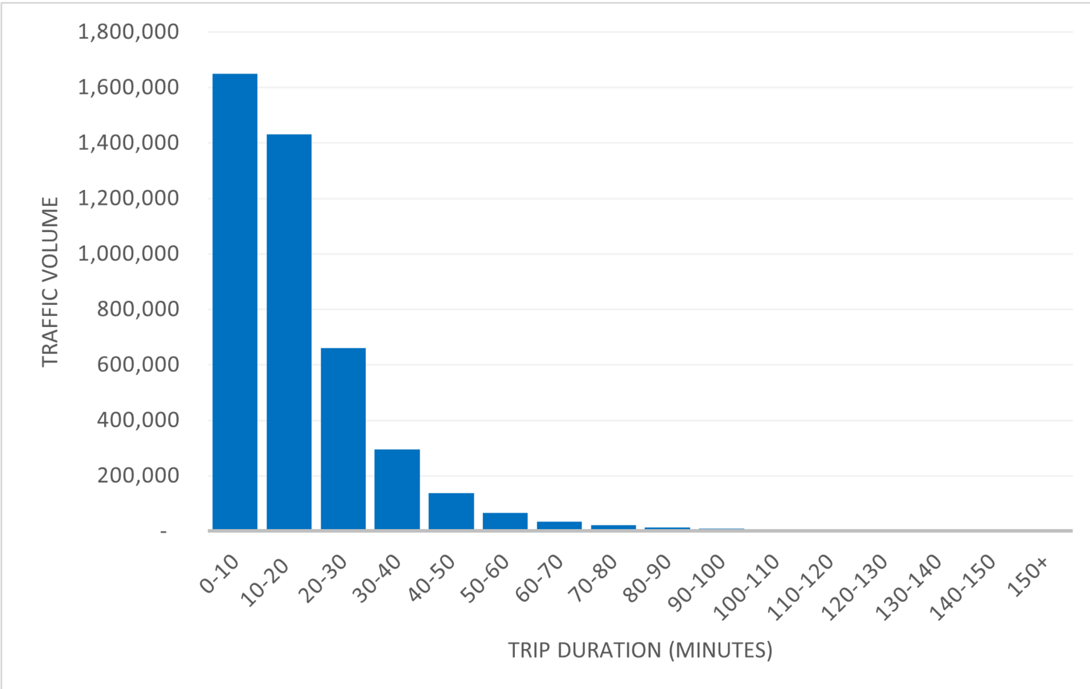
There can be an association between vehicle miles travelled and the health of the economy – when employment and wages are low, people aren't moving around as much and may not be able to afford to drive as much. However, comparing VMT to Rhode Island's gross domestic product (GDP) over the past decade reveals no clear correlation between the two. In fact, GDP has continued to increase steadily, after a slight drop in 2020, as VMT rose during the mid-2010s, and also during the decline in VMT at the end of the 2010s and the current plateauing. This also may indicate that the recent reduction in VMT is not entirely due to economic challenges. Instead, the 2020 pandemic excluded, VMT may be dropping due to people finding other means of travel, or not needing to travel as much due to increasing remote, digital options.

1.2 Vehicle Trips

To better understand travel behavior on a smaller scale, it is helpful to understand the characteristics of vehicle trips taken by people in Rhode Island.

Based on data from Streetlight in 2022 that estimates all vehicle trips in Rhode Island, many vehicle trips are short enough to be replaced by a non-car mode if the infrastructure were available and safe to use.

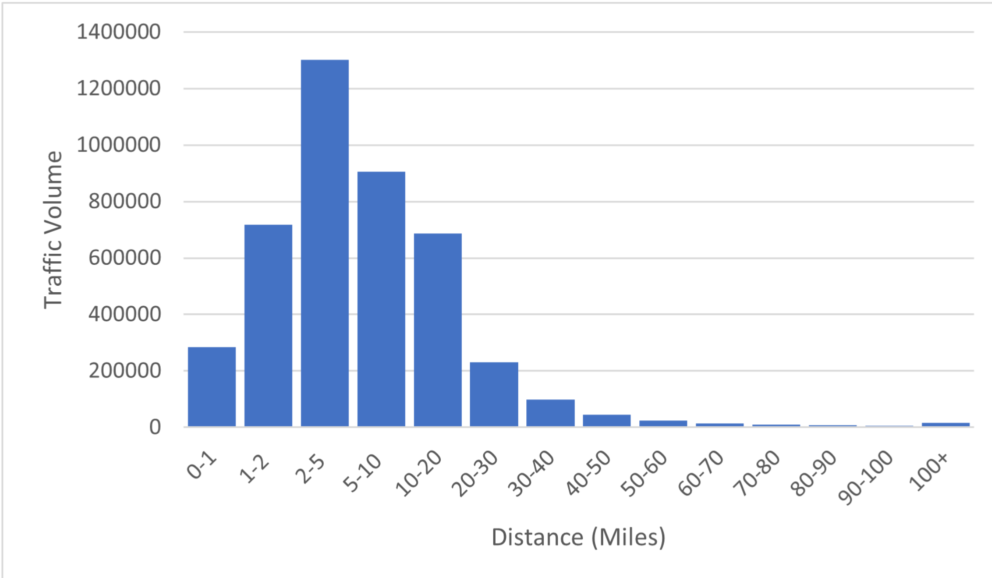
Figure 1-4 Traffic Volume by Trip Duration for All Car Trips in Rhode Island, 2022



Source: Streetlight Zone Activity Analysis, All car trips in Rhode Island, Connected Vehicles Dataset, 2022. Analysis run on February 9, 2024.

The vast majority of trips took under 20 minutes, over 70%. Nearly 40% of trips took less than 10 minutes. This indicates that most driving trips in the state are relatively short. Shorter trips can be more feasible to do using non-car modes like transit, walking, and biking, if the infrastructure is there to support those modes.

Figure 1-5 Traffic Volume by Trip Distance for All Car Trips in Rhode Island, 2022



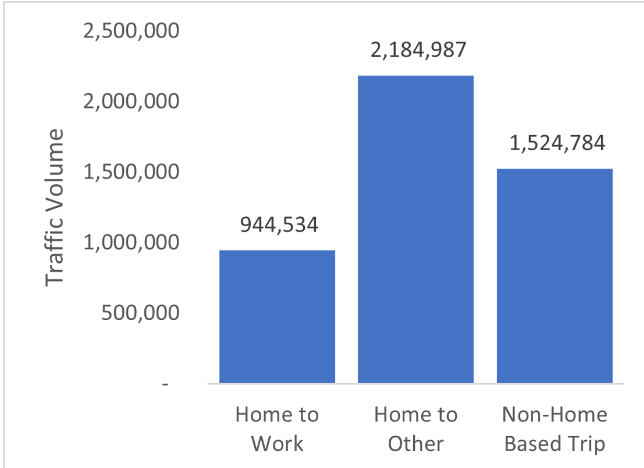
Source: Streetlight Zone Activity Analysis, All car trips in Rhode Island, Connected Vehicles Dataset, 2022. Analysis run on February 9, 2024.

Nearly a quarter of all trips less than 2 miles long, which is equivalent to a 10 – 20 minute bike ride. Over half of trips were under 5 miles long, which is equivalent to a 20 – 30 minute bike ride.

These trip attributes indicate that a large portion of car trips taken in Rhode Island have the potential to be taken on non-car modes if changes were made to those systems.

Based on data from May 2021 to April 2022, only 20% of trips taken in Rhode Island were home to work trips. Nearly 50% were home to non-work destinations, and a third were non-home-based trips.

Figure 1-6 Traffic Volume by Trip Type for All Car Trips in Rhode Island, 2022



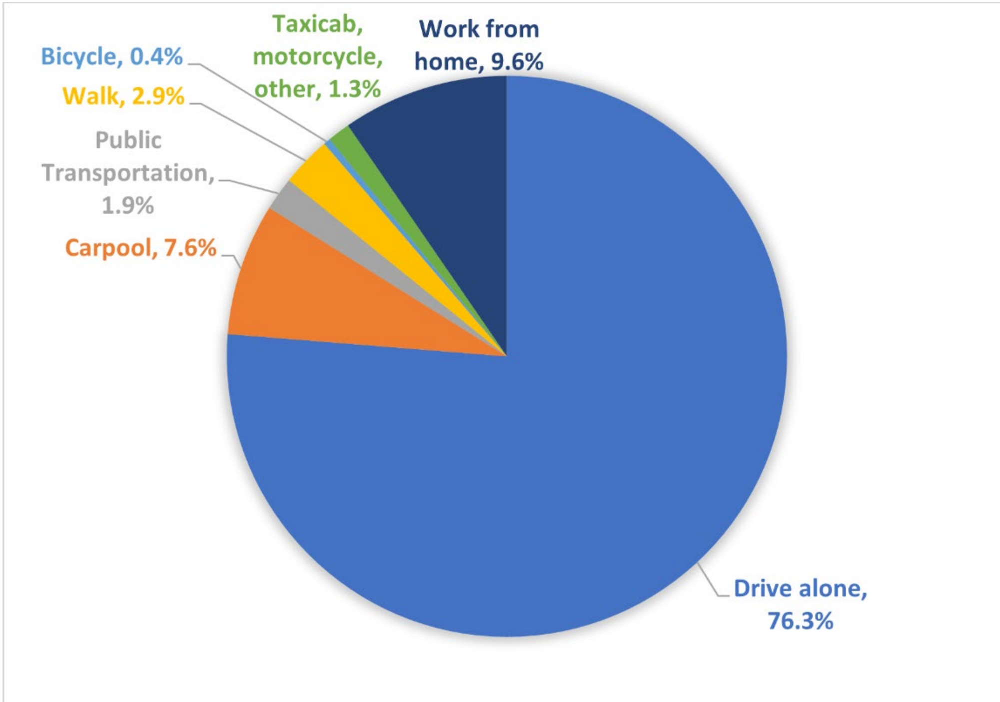
Source: Streetlight Zone Activity Analysis, All car trips in Rhode Island, Location Based Services Dataset, May 2021 through April 2022. Analysis run on February 9, 2024.

Many policy and planning efforts focus on the commute trip in part because of its impact on traffic congestion during peak times. This data shows that it is vital to consider the 80% of non-commute trips that make up most of the trips people take when drafting plans and policies aimed at reducing vehicle miles travelled.

1.3 Commute

Figure 1-7 shows the mode share for the journey to work trip in Rhode Island as estimated in 2022. It shows that about 72.4% of Rhode Island workers drove alone to work. A little under 8% carpooled in Rhode Island, putting the total drive-to-work mode share at 80% of work commuters. This represents a drop of about 5.5% from 2021, when 85.5% of workers drove to work, and 77.5% drove alone.

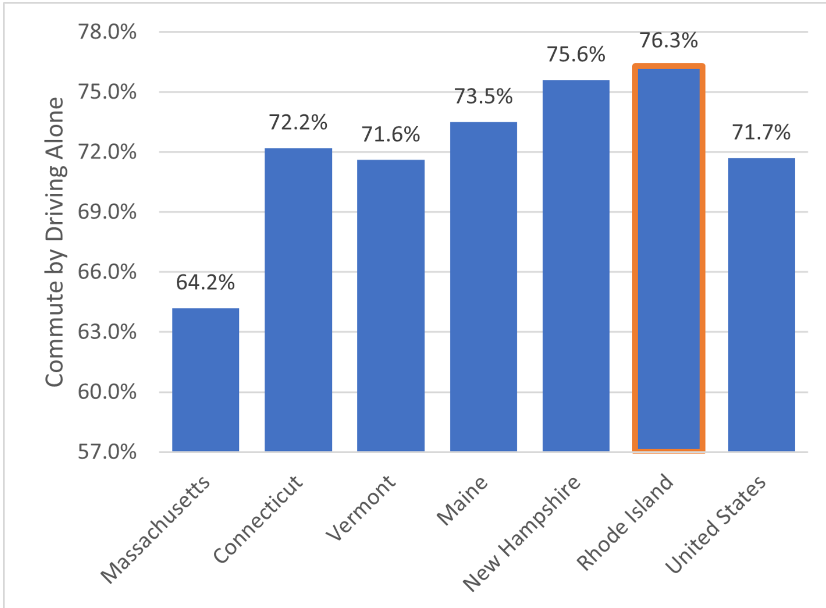
Figure 1-7 Rhode Island Journey to Work Mode Share, 2022



Source: U.S. Census Bureau, 2022 American Community Survey 5-Year Estimates, "S0801 Commuting Characteristics by Sex."

Working from home has risen significantly, more than tripled in mode share since 2019. The year 2022 saw fewer impacts from COVID-19 than in 2020 and 2021, and yet the work from home mode has continued to increase in 2022, indicating this trend that was brought on by the COVID-19 pandemic may sustain moving forward. Public transportation mode share is down by nearly half a percent from 2021, and walking is down slightly. Biking rose 0.1% from 2021 and using other means to get to work rose 0.6%. That category could be capturing in increase in the use of e-scooters or other small, electric, motorized devices.

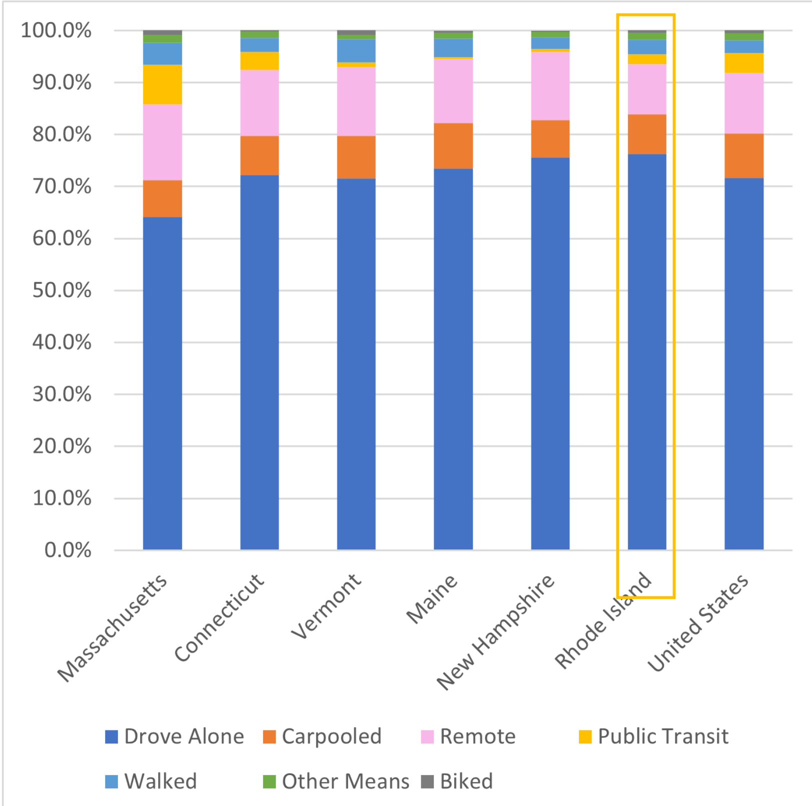
Figure 1-8 New England States Journey to Work Drive Alone Mode Share, 2022



Source: U.S. Census Bureau, 2022 American Community Survey 5-Year Estimates, "S0801 Commuting Characteristics by Sex."

Rhode Island has the highest proportion of commuters who drove alone out of the New England states. Rhode Island is one of the densest states in the country, and denser than all other New England states. Density tends to make it easier to get around without a car, since more people and destinations are in close proximity to each other and more easily served by public transit, walking, and biking. Since Rhode Island tops the list for driving alone despite being the densest state in New England, this indicates that alternate modes of transportation are not considered to be viable or attractive options. Most of these states have higher mode shares in alternative modes like biking, walking, and taking transit, but all of them also have higher work from home rates as well.

Figure 1-9 New England States Journey to Work Mode Share, 2022



Source: U.S. Census Bureau, 2022 American Community Survey 5-Year Estimates, "S0801 Commuting Characteristics by Sex."

Table 1-3 New England States Journey to Work Mode Share, 2022

	Rhode Island	Connecticut	Maine	Massachusetts	New Hampshire	Vermont	United States
Drove Alone	**76.3%**	72.2%	73.5%	64.2%	75.6%	71.6%	71.7%
Carpooled	**7.6%**	7.6%	8.7%	7.0%	7.2%	8.2%	8.5%
Remote	**9.6%**	12.6%	12.3%	14.6%	13.1%	13.2%	11.7%
Public Transit	**1.9%**	3.5%	0.4%	7.6%	0.6%	0.9%	3.8%
Walked	**2.9%**	2.7%	3.6%	4.3%	2.2%	4.5%	2.4%
Other Means	**1.3%**	1.2%	1.1%	1.5%	1.0%	0.8%	1.4%
Biked	**0.4%**	0.2%	0.3%	0.8%	0.2%	0.8%	0.5%

Source: U.S. Census Bureau, 2022 American Community Survey 5-Year Estimates, "S0801 Commuting Characteristics by Sex."

1.3.1 Why does Rhode Island have less remote work than New England states?

Of the 637,804 non-farm jobs in Rhode Island in 2022, only 6.5% were in manufacturing while major service-oriented businesses in health care, government, retail, professional services, administrative services, finance and insurance, education, and other services combined to support over 66% of statewide employment (Figure 1-9).

A key step in identifying the potential reasons behind the lower share of residents who work remotely within the State of Rhode Island would be to research the employment by industry to observe if the type of employment within the state falls into an industry where there is a likely chance of remote work. If Rhode Island does not have enough jobs that fall into a sector where remote work is likely, this may explain why the state has lower numbers compared to the other New England states.

Below, Figure 1-10 shows the percentage of nonfarm employment within the State of Rhode Island and also shows the likelihood of each industry to be "remote-able". The industries with the most remote jobs are represented by the highest line on the chart with a "3"[3]. The industries that are somewhat likely to have jobs that are remote-able are given a "2", while the lowest line on the chart ("1") represents jobs that are the least likely to be remote. Table 1-4 shows the comparison with the other New England states.

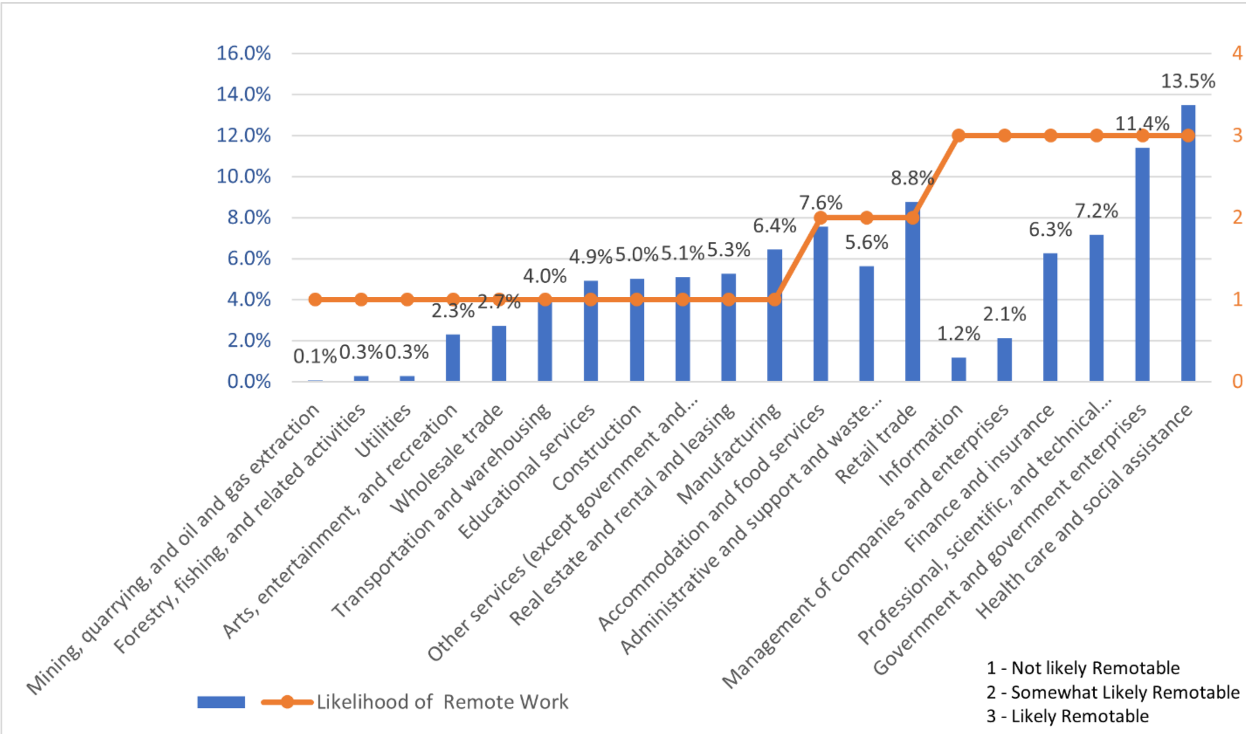
Table 1-4 Proportion of employment that is likely, somewhat likely, or not likely to be able to be conducted remotely for each New England state, 2022

State	Not likely remote-able	Somewhat remote-able	Likely remote-able
Rhode Island	36.2%	22%	41.7%
Connecticut	39.5%	17.1%	43.1%
Massachusetts	38.7%	16.5%	45%
New Hampshire	41.3%	21.1%	37.6%
Maine	41.4%	19.2%	39.5%
Vermont	42.7%	17.9%	39.5%

Source: U.S. Bureau of Economic Analysis, "CAEMP25N Total full-time and part-time employment by NAICS industry." Forbes, "Top Remote Work Statistics and Trends." Original chart by RIDSP staff. Data accessed Tuesday, January 9, 2024.

[3] Remote Work Statistics & Trends In (2024) – Forbes Advisor

Figure 1-10 Profile of Employment by Industry for Rhode Island and Liklihood of Remote Work, 2022



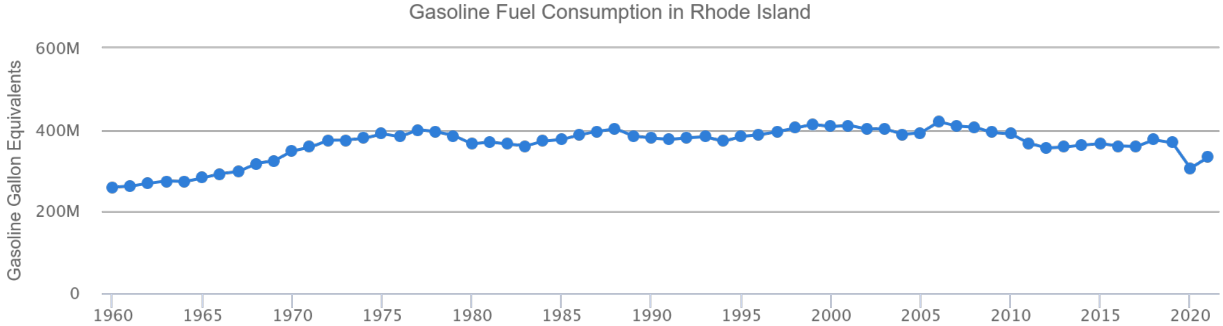
Source: U.S. Bureau of Economic Analysis, "CAEMP25N Total full-time and part-time employment by NAICS industry." Forbes, "Top Remote Work Statistics and Trends." Original chart by RIDSP staff. Data accessed Tuesday, January 9, 2024.

Though Rhode Island has fewer likely remote-able jobs than Connecticut and Massachusetts, they have more than the northern New England States, and the differences either way are small. This indicates that the job mix may not be the dominant for less remote work in Rhode Island. Other potential reasons could be that it is relatively quicker and cheaper to work in person, due to the small size of the state, the lack of tolls, and potentially cheaper parking than in places like the Boston region.

1.4 Vehicle Fleet

Gasoline fuel consumption in Rhode Island peaked in 2018, started to fall in 2019 and dipped dramatically in 2020. As of 2021, consumption is up but still well below 2019 levels.

Figure 1-11 Gasoline Fuel Consumption in Rhode Island (1960 – 2021)



Source: Alternative Fuels Data Center. https://afdc.energy.gov/states/ri. Accessed January 9 2024. State Energy Data System based on beta data converted to gasoline gallon equivalents of petroleum (GGEs) for the transportation sector (which includes more than highway vehicles) from the U.S. Energy Information Administration

Electrification of Rhode Island's vehicle fleet is taking place, but the vast majority of registered vehicles are still gasoline powered at nearly 90%. More than half a percent are EVs, and about 4% are at least partially electric powered.

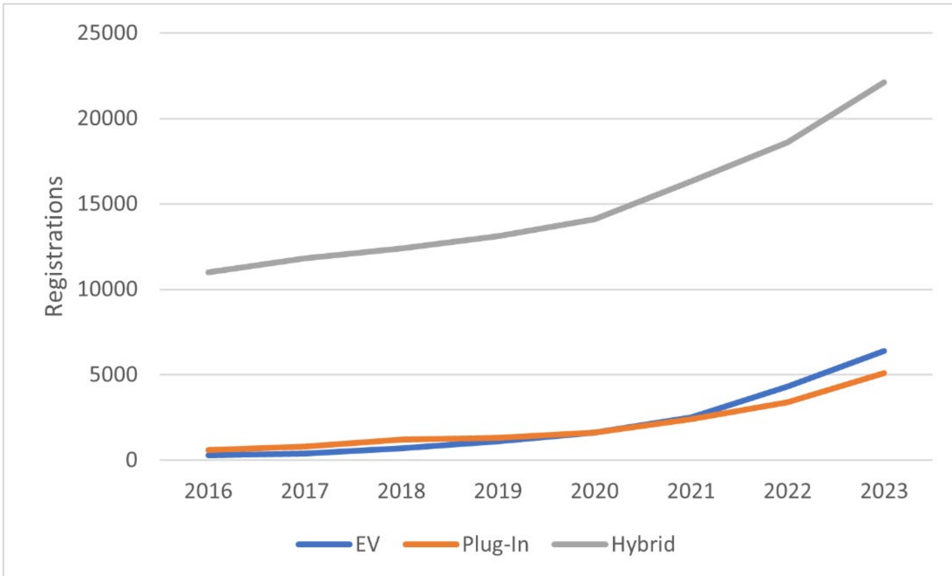
Table 1-5 Vehicle Count Data

Fuel Type	Count	Percent
Electric (EV)	8,545	0.91%
Plug-In Hybrid Electric (PHEV)	6,212	0.66%
Hybrid Electric (HEV)	24,603	2.63%
Biodiesel	20	0.00%
Ethanol/Flex (E85)	34,330	3.67%
Gasoline	832,390	89.09%
Diesel	28,241	3.02%
Unknown Fuel	4	0.00%
Total	*934,345*	100.00%

Source: Rhode Island DMV, and Rhode Island DEM. *Updated ZEV Totals and LRTP Vehicle Fleet Section*, 2 May 2025.

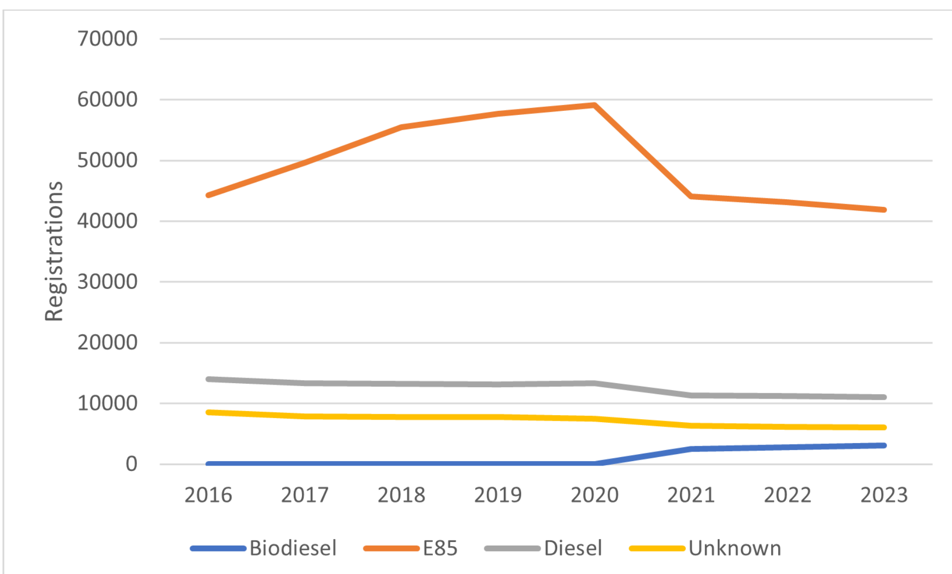
Figures 1-12, 1-13, and 1-14 below show the number of vehicle registrations by fuel type from the years 2016-2023. The highest number of registrations is still overwhelmingly for gasoline type vehicles, however those registrations trending back down close to 2016 levels. EV, hybrid, and plug-in hybrid registrations continue to all see the largest increases as more demand continues for alternatives to fully gasoline powered vehicles. Unknown, biodiesel, and diesel fueled vehicles appear to be holding steady, while E85 registrations are showing a decreasing trend from 2020 to 2023.

Figure 1-12 Registrations for Electric Vehicles (EV), Plug-in Hybrid Vehicles, and Hybrid Vehicles in Rhode Island, 2016 - 2023



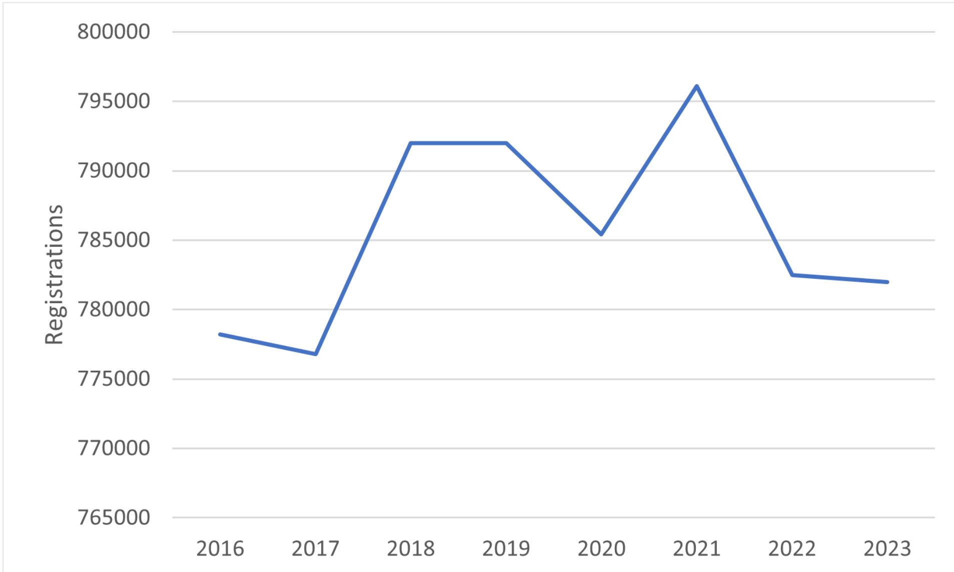
Source: AFDC. "Alternative Fuels Data Center: TransAtlas". URL: https://afdc.energy.gov/transatlas#/?state=RI. Date accessed: 3/27/2025.

Figure 1-13 Registrations for Vehicles Powered by Diesel, Biodiesel, E85 and Unknown Fuels, 2016 - 2023



Source: AFDC. "Alternative Fuels Data Center: TransAtlas". URL: https://afdc.energy.gov/transatlas#/?state=RI. Date accessed: 3/27/2025.

Figure 1-14 Registrations for Vehicles Powered by Gasoline, 2016 - 2023



Source: AFDC. "Alternative Fuels Data Center: TransAtlas". Original graph authored by Roberto Echevarria https://afdc.energy.gov/transatlas#/?state=RI. Date accessed: 3/27/2025.

1.4.1 Electric Vehicle Charging Network

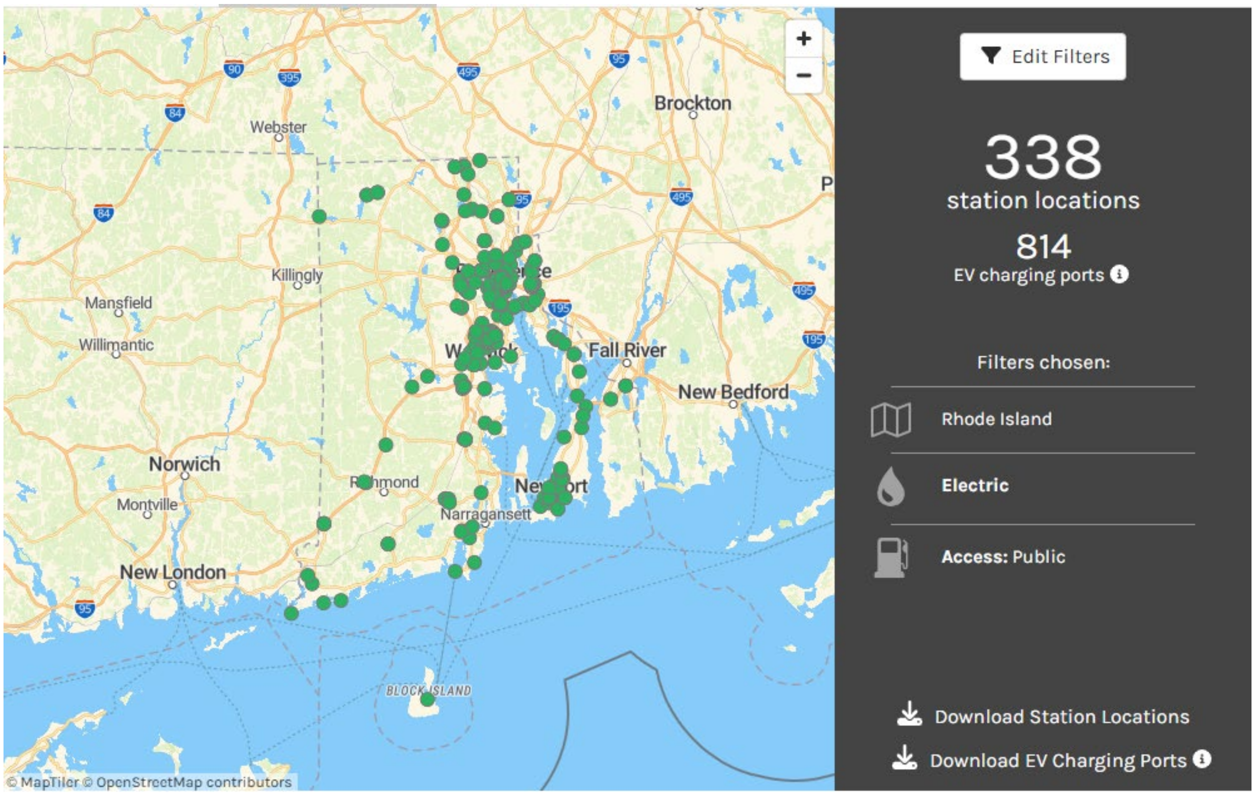
Charging ports for electric vehicles do not have a "one size fits all" approach. There are several different types of charging ports available within the State of Rhode Island. The charging options for EV's consist of a level 1 charger, level 2 charger, and DC fast charging. Level 1 charging is used when there is only the option for a 120 V outlet (commonly found at a personal residence). The level of charge for level one is approximately 5 miles of range per 1 hour of charging. This level of charging is the slowest charging of the 3 levels. Level 2 charging uses the same connector that level 1 uses, however it has a 240 V or 208 V application (found at personal residence and/or work). The level of charge for level two is approximately 25 miles of range per 30 minutes of charging. This level of charging comprises nearly 80% of public EV charging ports. DC fast charging offers the fastest available charging with approximately 100 – 200 miles of range per 30 minutes of charging. 20% of public EV charging stations have DC fast charging.[4]

In Rhode Island, there are 338 station locations with 814 charging ports with 20 of them being level 1, while 676 are level 2, and 118 being DC fast charging ports (Figure 1-15).[5]

[4] EV Charging Stations. https://afdc.energy.gov/fuels/electricity-stations#:~:text=Level%201%20charging%20is%20typically,for%20a%20mid%2Dsize%20EV. Accessed December 2, 2024.

[5] "Alternative Fueling Station Locator" https://afdc.energy.gov/stations#/analyze?country=US&region=US-RI&tab=fuel&fuel=ELEC&ev_levels=2." Date accessed: March 5th, 2025.

Figure 1-15 Public Electric Charging Locations



Source: AFDC. "Alternative Fuels Data Center: Alternative Fueling Station locator". https://afdc.energy.gov/stations#/analyze?country=US&region=US-RI&tab=fuel&fuel=ELEC&ev_levels=all&show_map=true. Date accessed: 3/27/2025.

Further information on electric vehicle registration comes from the Rhode Island Electric Vehicle Infrastructure Deployment State plan[6]: According to data from the DEM, as of January 2025, there are 14,200 registered EVs in Rhode Island. Based on data from the Rhode Island Electric Vehicle Infrastructure Deployment State Plan in 2022, June 2022's total number of EV registrations statewide was 5,627. That is a 252.4% increase just over 2.5 years.

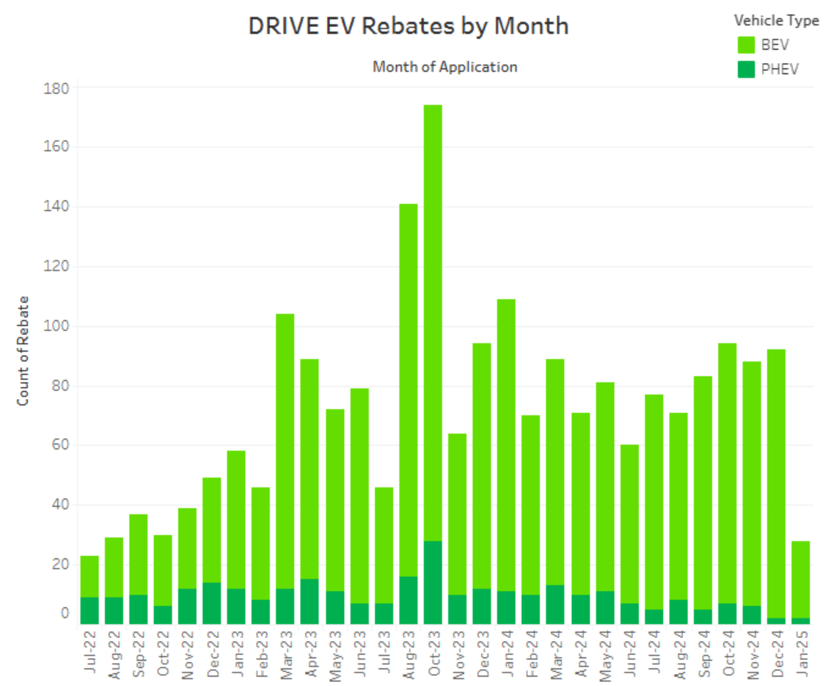
1.4.2 Electric Vehicle Incentives

Figure 1-16 below shows the number of rebates per month in Rhode Island from July 2022 to January 2025. The graph is broken down into two vehicle types, BEV and PHEV. BEV stands for battery electric vehicle and PHEV stands for plugin hybrid electric vehicle. The graph shows that BEV's make up the larger share of rebates compared to PHEV's every month of record. The graph also is showing that there is a upward trajectory in rebates from July of 2022 through

[6] Rhode Island Department of Transportation. "State Plan for Electric Vehicle Infrastructure Deployment." July 29, 2022. https://energy.ri.gov/sites/g/files/xkgbur741/files/2023-02/Rhode%20Island%20Electric%20Vehicle%20Infrastructure%20Deployment%20State%20Plan_FINAL091422.pdf. Accessed January 9, 2024.

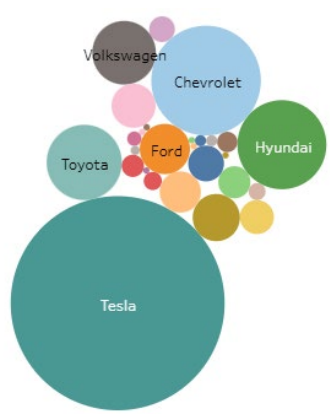
January of 2025. It should be noted that while there are generally rebates associated with EV registration, there should not be an assumption that there is a direct 1-to-1 correlation between rebates and EV registrations.[7]

Figure 1-16 DRIVE EV Rebates by Month, July 2022 – January 2025



Source: *State of Rhode Island*. "*DRIVE EV Project Statistics/Drive*". https://drive.ri.gov/statistics/drive-ev-project-statistics. Date accessed: 3/27/2025

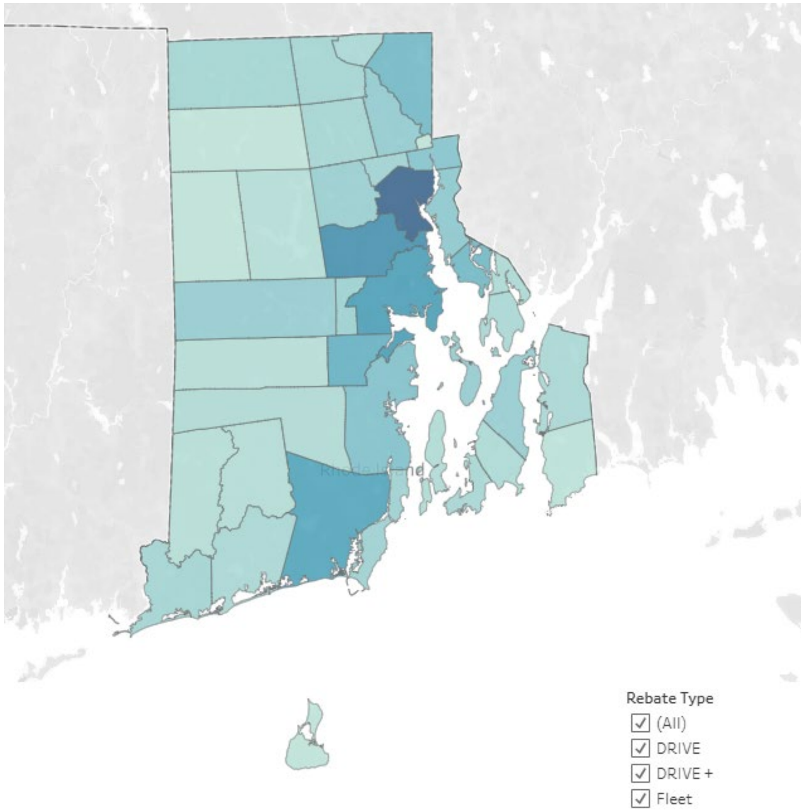
Figure 1-17 DRIVE EV Rebates by Vehicle Manufacturer, July 2022 – January 2025



Source: *State of Rhode Island*. "*DRIVE EV Project Statistics/Drive*". https://drive.ri.gov/statistics/drive-ev-project-statistics. Date accessed: 3/27/2025

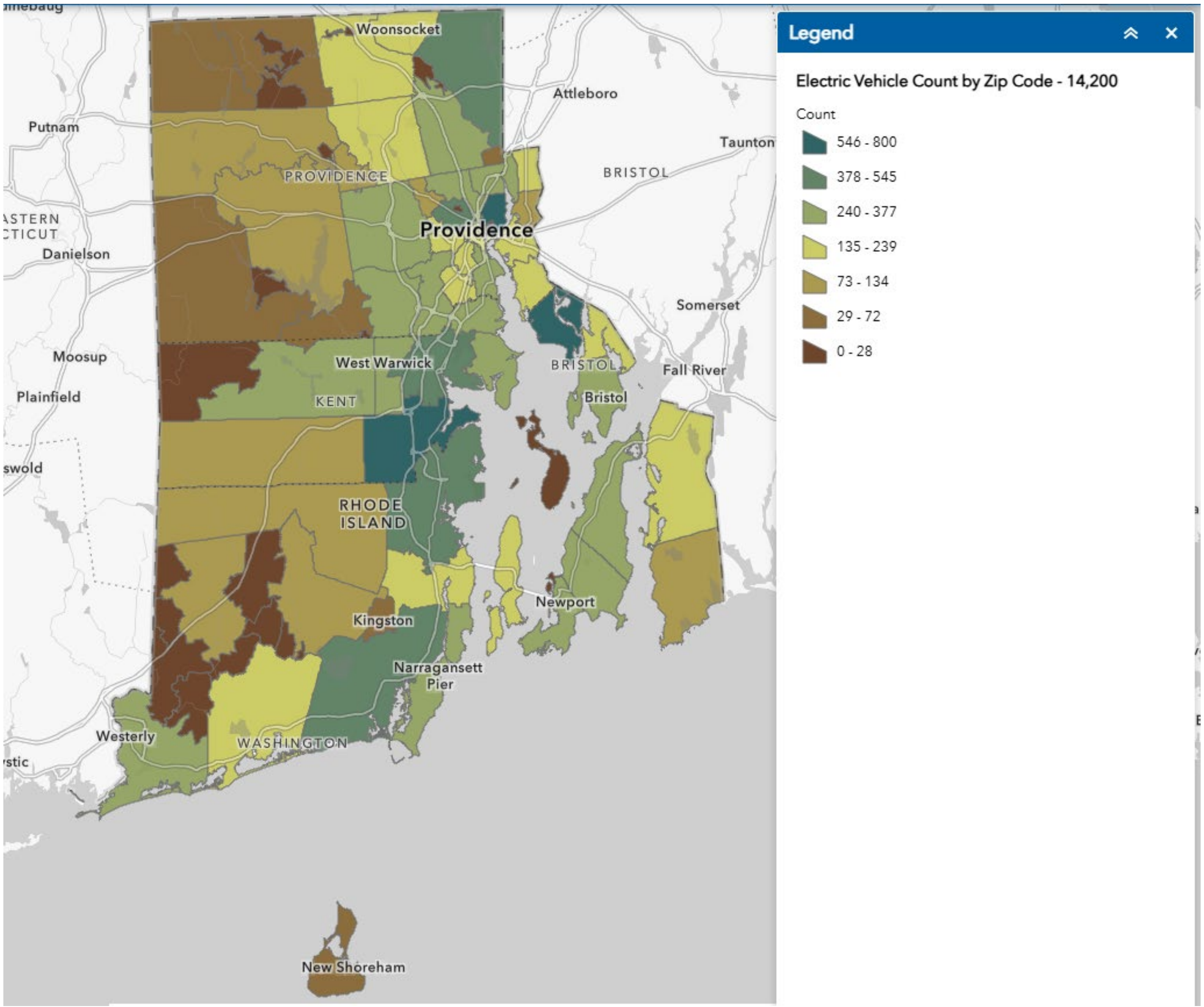
[7] RI Office of Energy Resources, DRIVE Electric Vehicle Rebate Project Statistics Data last updated: [insert date last updated from data dashboard]. Retrieved 1/28/25 from: https://drive.ri.gov/program-statistics

Figure 1-18 DRIVE EV Rebates by Town, July 2022 – January 2025



Source: *State of Rhode Island*. "*DRIVE EV Project Statistics/Drive*". https://drive.ri.gov/statistics/drive-ev-project-statistics. Date accessed: 3/27/2025

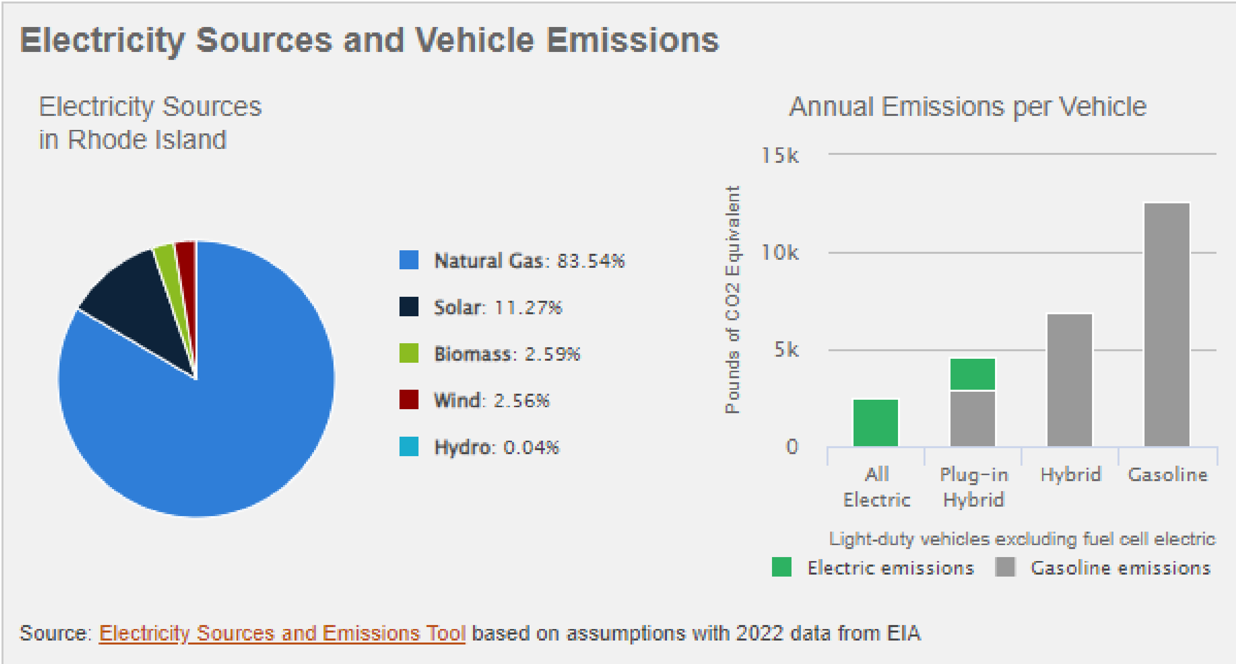
Figure 1-19 Electric Vehicle Count by Zip Code, March 27, 2025



Source: Rhode Island Department of Environmental Management. "Electric Vehicles Map." https://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=f164da525c77463b98cf55b72950beb7. Date accessed 3/27/2025.

Based on the electricity sources in Rhode Island, electric vehicles still produce far less emissions than gasoline powered vehicles. As the state's share of renewable energy sources increase, this gap in emissions will widen further.

Figure 1-20 Electricity Sources and Annual Emissions per Vehicle Type, 2022



Source: Alternative Fuels Data Center. "Rhode Island Transportation Data for Alternative Fuels and Vehicles." https://afdc.energy.gov/states/ri. Accessed January 9 2024.

1.5 Legislation, Plans, and Policy

Several pieces of legislation and agency policies direct our governments to take actions to reduce our impacts to our climate. These are summarized below.

1.5.1 Energy 2035 Plan

In 2015, the State adopted Energy 2035: Rhode Island State Energy Plan, a revision of the energy plan adopted in 2002. This revision outlines the existing energy system and sets goals and policies to improve energy security, cost-effectiveness, and sustainability in all sectors of energy production and consumption. The plan proposes that to decrease transportation emissions, Rhode Island must find ways to scale up the use of lower- or no-carbon transportation fuels and reduce the total number of vehicle miles traveled. This will include the need to develop a viable market for alternative fuel and electric vehicles.

More fuel-efficient cars alone would not be enough to meet the 2035 and 2050 targets. The number of vehicle miles traveled (VMT) continues to increase.

1.5.2 Act on Climate

In 2021, the Governor signed the 2021 Act on climate into law, which is an update of the 2014 Resilient Rhode Island Act. This act calls upon the State to:

- Assess, integrate, and coordinate climate change efforts throughout state agencies to reduce emissions, strengthen the resilience of communities and infrastructure, and prepare for the effects on climate change.
- Set mandatory, enforceable climate emissions reduction goals culminating in net-zero emissions by 2050. The mandates are:
    - 10% below 1990 levels by 2020
    - 45% below 1990 levels by 2030
    - 80% below 1990 levels by 2040
    - Net-zero emissions by 2050
        - 'Net-Zero' refers to the requirement that the summary measure of greenhouse gas emissions emitted over the course of a calendar year less the summary measure of greenhouse gas emissions absorbed or otherwise broken down over the course of a calendar year equals zero.[8]
- This Act also required an update to the 2016 Greenhouse Gas Emissions Reduction Plan, which was finalized and published in December of 2022, known as the 2022 Climate Update. This update serves as a foundation for the next climate plan, known as 2025 Climate Action Strategy. [9]

1.5.3 2022 Climate Update

This update serves as the next iteration of the 2016 Greenhouse Gas Emissions Reduction Plan. Engagement for this plan involved coordination with various stakeholders throughout the state. This latest update provides a foundation for the 2025 Climate Strategy.

As of this latest update, the transportation sector in Rhode Island emits the highest amount of greenhouse gas emissions at 4.39 MMTCO2E, making up 39.7% of all emissions.

The 2025 Climate Action Strategy is currently being drafted by RI Department of Environmental Management. This Strategy is the next step in implementation of the Act on Climate, and will include robust stakeholder engagement, GHG reduction measures modeling and sector-specific GHG target development, Policy, technology and cost analyses, and Macroeconomic, workforce, climate resilience, and benefits analysis.

[8] https://climatechange.ri.gov/ri-executive-climate-change-coordinating-council-ec4/publications-reports

[9] Rhode Island Executive Climate Change Coordinating Council (EC4). "Rhode Island 2022 Climate Update." Date accessed: 1/8/2024.

Table 1-6 Summary of Priority Actions for the Transportation Sector Table

Action	Impact	Lead(s)	Select Considerations
Increase light-duty ZEV penetration to at least 10% by 2030.	*The GHG emission impacts of this action will be modeled as part of the 2025 Climate Strategy*	*Administration (RIDOT, RIDEM, OER, DMV, Commerce, RIIB)*	*Incentive programs, interaction with electric vehicle charging infrastructure. State fleet transportation Lead by Example.*
Implement Transit Forward RI 2040, Rhode Island's Transit Master Plan, to grow transit ridership from 53,000 to 87,000 daily passenger trips. Look to the Transit Master Plan and Bicycle Mobility Plan for next steps and consider committing resources to key projects.	*The GHG emission impacts of this action will be modeled as part of the 2025 Climate Strategy.*	*RIPTA, Division of Statewide Planning, RIDOT*	*This will mitigate 231,000 MTCO2 e.78 Projects in the TMP and BMP are planned on a conceptual level. The next step is to evaluate needs and connections.*
Reduce RIPTA's carbon footprint by decarbonizing Rhode Island's transit fleet.	*The GHG emission impacts of this action will be modeled as part of the 2025 Climate Strategy.*	*RIPTA*	*This will mitigate 14,122 MTCO2 e.79*
Maintain increasing fuel economy and low-and zeroemission vehicle standards.	*The GHG emission impacts of this action will be modeled as part of the 2025 Climate Strategy.*	*RIDEM*	*Maintain adherence to Corporate Average Fuel Economy and GHG emission standards Maintain adherence to California low-emission and zero-emission vehicle requirements. Includes amending existing rules to incorporate Advanced Clean Cars II. Adopt New Rules: California's Advanced Clean Trucks (ACT), the Low NOx HeavyDuty Omnibus (HD Omnibus), and Phase 2 Greenhouse Gas (Phase 2 GHG) emission standards for trucks and trailers*
Incentivize electric mobility	*Enables switch to electric vehicles*	*Office of Energy Resources*	*New and used, personal and fleet, BEV, PHEV and MHD, future expansion of incentives to e-bikes. Utilize Diesel Emissions Reduction Act (DERA) funds to provide incentives to RI entities to replace older diesel engines and vehicles with cleaner and zero-emission alternatives.*
Model climate impacts of transportation demand (in Unified Planning Work Program)	*Allows weighing climate impacts of transportation investment decisions among policy objectives*	*Division of Statewide Planning, RIDOT and RIDEM*	*This is not an issue only at the state level, but nationally and regionally. RIDOT and RIDSP will work together with other federal, state and regional partners to improve the GHG modeling capacities as this is a FHWA requirement for transportation capital projects and establish a model for decision-making*
Develop 'complete streets' state plan leveraging federal funding	*Reduces fuel consumed through decrease in vehicle miles traveled and encourages lower-emissions mobility*	*Division of Statewide Planning, RIDOT and RIPTA*	*The IIJA resulted in specific formula funding set-asides for developing a Complete Streets plan and implementation strategy: RIDSP will be the lead but work closely with a robust group of partners and stakeholders. Anticipated completion in 2025.*

Source: RI EC4. "Rhode Island 2022 Climate Update." https://rhodeislandcurrent.com/wp-content/uploads/2024/06/aoc-update-22-F-031723-2.pdf. Accessed 12/18/2024.

1.5.4 Advanced Clean Cars II & Advanced Clean Trucks

Spurred by the passing of the Act on Climate law, setting a mandate for net zero emissions by 2050, in December 2023 Rhode Island adopted a regulation aimed at reining in carbon pollution by slashing tailpipe emissions from cars, trucks, and SUVs. This adopts California vehicle emission standards in Rhode Island under section 177 of the federal Clean Air Act. The details of the two rules are as follows:

- Advanced Clean Cars Act II (ACCII)
  - Addresses zero-emission vehicle sales from 2027-2035 (both ACCII and ACT refer to **new** vehicle manufacturer sales being zero-emission as this act does not mandate that all vehicles on the road within the state must be zero-emission by any date).
  - Requires all manufacturers to deliver for sale all new cars and passenger trucks with an ultimate plan that requires zero-emissions by 2035
- Advanced Clean Trucks (ACT)
  - Goal is to develop a self-sustaining zero-emission medium-heavy duty truck market by 2035
  - Requires all manufacturers to sell zero-emission medium-heavy duty trucks as an increasing share of the market by 2035.
  - Range from 40-75% of sales depending on vehicle class

This regulation is currently still in place, but the legality of this regulation is currently being reviewed by the national court system and could be changed in the future.

2. Transportation Emissions – Modeling

This section includes an analysis of the projected impact of the LRTP on future emissions. This analysis will help to understand the LRTP's potential impact on the State's compliance with the Act on Climate law.

2.1 Modeling Approach

2.1.1 Baseline Forecast

The baseline forecast leverages VMT forecasts developed through Pathways.[2] This baseline assumes improved fuel efficiency and modest levels of electrification as modeled in the Annual Energy Outlook Reference Case.

2.1.2 Baseline + ZEV Policy

This scenario also assumes adoption of Advanced Clean Cars II (ACCII) and Advanced Clean Trucks (ACT), which would result in much higher market shares of zero-emission vehicles in the future. Note: this results in dramatically lower baseline emissions in future years, and therefore diminishes the "effectiveness" of VMT-reducing measures, since the avoided car trip has a lower emission rate. Additionally, this baseline forecast only includes on-road vehicle trips, and excludes electricity emissions from EVs.

2.1.3 LRTP Modeling

The emissions reductions that are modelled to take place in 2030 only consider projects within the FY26 – 35 State Transportation Improvement Program, approved [date TBD]. No LRTP projects are modeled for this timeframe.

The LRTP projects (and associated projects in the Bike Mobility Plan) are modelled to take effect by 2040, serving as an average of the timeframe between 2025 and 2050. Not all projects could be modelled. Those projects that do not substantially and directly impact vehicle miles travelled (VMT) were not included in the model, nor were projects with project descriptions that do not include a specific design or treatment. The specifics of what was included in the different strategy areas are outlined in Table 2-1.

[2] Energy + Environmental Economics. 2025. "Pathways." URL: https://www.ethree.com/tools/pathways-model/ [ethree.com].

Table 2-1 Strategy Area Details

Strategy Area	Modeled Strategy
Baseline Technology Improvements	Fuel economy improvements and baseline levels of electrification as modeled through the Annual Energy Outlook
STIP & LRTP - Bicycle and Pedestrian	• Bicycle and Pedestrian infrastructure included in the STIP • Bicycle Mobility Plan candidate facility network
STIP & LRTP - Transit Service	Various transit service improvements, including: • Statewide service enhancements (including Frequent Transit Network) • Bus Rapid Transit/Light Rail Improvements on two corridors: Providence-CCRI Warwick via TF Green, Central Falls-CCRI Warwick • Upgrading 7 RIPTA routes to Rapid Bus service: 1 Hope, 17 Pocasset, 20 Elmwood, 27 Manton, 31 Cranston, 56 Chalkstone, 78 Beverage Hill • T.F. Green / Warwick Platform Expansion • MBTA Commuter Rail all day frequent service • Flex On Demand
Transit Electrification	100% electric RIPTA vehicles by 2050
STIP - Traffic Operations	New roundabouts and retimed signals projects included STIP
ACCII	100% EV sales by manufacturers for new light-duty vehicles by 2035
ACT	Between 40 and 75 percent of new truck sales by manufacturers (depending on vehicle class) are electric by 2035
Gap	Gap in projected emissions reductions to meet Act on Climate targets

These strategies are broken down by timeframe below.

Table 2-2 Strategy Area by Timeframe

Strategy Area	Short Term (STIP) - 2030	Long Term (LRTP, Other) - 2040
Bicycle and Pedestrian	Funded bicycle and pedestrian projects	Bicycle Mobility Plan Candidate Layer
Transit Service	Service increases as modeled through TFRI spreadsheet	LTRP transit projects, and ridership increases modeled through TFRI spreadsheet
Transit Electrification		100% electrified fleet RIPTA bus fleet by 2050
Traffic Operations	Signal re-timing and roundabouts	

2.2 Modeling Results

Though the state is projected to meet its greenhouse gas emissions targets for the transportation sector for 2030, there is still a gap in reduction needed to meet the 2040 and 2050 targets.

Much of the reductions in GHG emissions are projected to come from baseline technology improvements and Advanced Clean Cars II electrification of the vehicle fleet. The LRTP strategies are only projected to produce small reductions. As mentioned, as the fleet electrifies, the impact of projects that reduce vehicle miles travelled on emissions reduction, like many of the LRTP strategies, will diminish. It is also important to note that there are limitations in modeling GHG emissions for LRTP projects, since many projects do not have enough detail and/or are too small to be able to be included in this model with current analytical capabilities. Future work should continue to refine the GHG modeling capabilities to improve accuracy on smaller and less detailed projects.

Figure 2-1 Projected CO2 Reduction by Strategy Compared to Act On Climate Targets

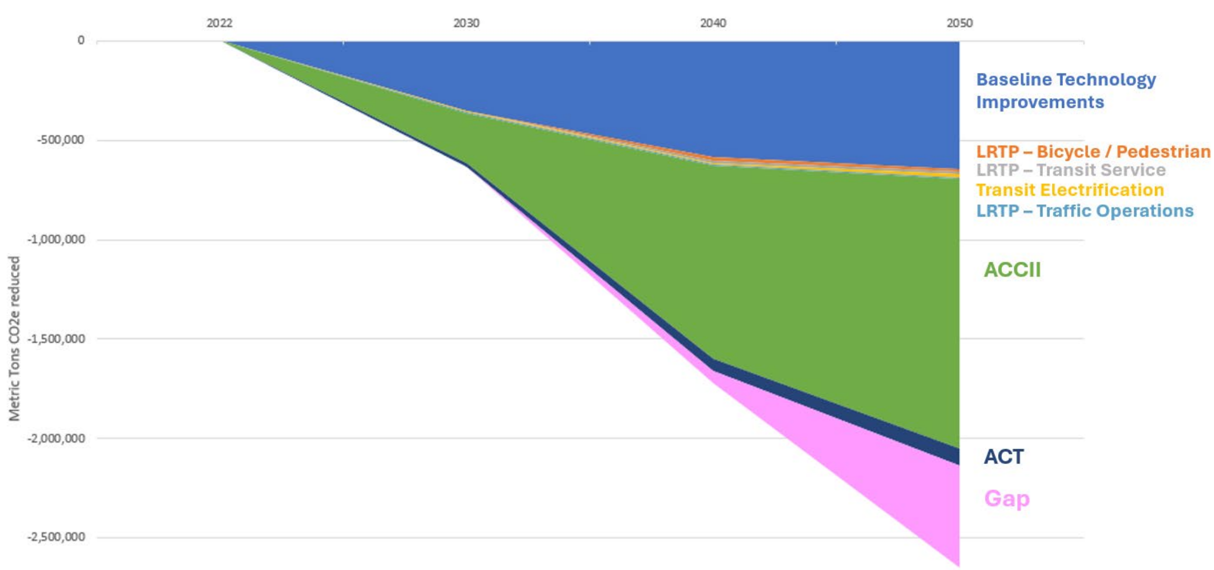


Table 2-3 Projected GHG Emissions (Metric Tons CO2 equivalent)

	2022	2030	2040	2050
Emissions (MT CO2e): Baseline	**2,631,099**	**2,280,798**	**2,044,380**	**1,985,391**
Includes Baseline Technology Improvements (compared to 2022)		*-350,301*	*-586,719*	*-645,709*
ZEV Policy Reduction (#, %)		**-267,770, -12%**	**-1,031,867, -50%**	**-1,443,135, -73%**
Policy - Advanced Clean Cars II		*-251,908*	*-974,021*	*-1,357,197*
Policy - Advanced Clean Trucks		*-15,862*	*-57,846*	*-85,938*
Total Strategy Reduction (#, %)		**-10,018, -0.5%**	**-18,237, *-1.8%***	**-22,370, *-4.1%***
Strategies - Transit Service		*-2,115*	*-19,125*	*-5,604*
Strategies - Transit Electrification		*-4,442*	*-8,885*	*-17,770*
Strategies - Traffic Operations		*-2,911*	*-2,744*	*-2,665*
Strategies - Bicycle / Pedestrian		*-550*	*-1,323*	*-388*
Emissions (MT CO2e): Baseline + ZEV + Strategy Reduction	**2,631,099**	**2,003,010**	**994,276**	**519,886**
Act on Climate Targets		2,557,500	930,000	0
Gap from Act on Climate Targets		**-554,490**	**64,276**	**519,886**

This State Supplement is intended to feed into work across several agencies conducting additional analyses of strategies that could fill identified gaps in Act on Climate targets across sectors, including work by EC4 on the 2025 Climate Action Strategy and by R.I. Department of Transportation on additional transportation-specific strategies. Our expectation is that these projections will continue to evolve as additional analyses become available and as we better understand the availability of federal resources in the future for these priority projects and initiatives. Staff will continue to coordinate with RIDOT, RIDEM, EC4 and other partners on this upcoming work and on complying with the Act on Climate.

Table 2-4 Annual Vehicle Miles Traveled (millions)

	2022	2030	2040	2050
Baseline	**7,290**	**7,348**	**7,422**	**7,496**
Total Strategy Reduction (#)		**-11**	**-72**	**-72**
Total Strategy Reduction (%)		**-0.1%**	**-1.0%**	**-1.0%**
Bicycle / Pedestrian		*-2*	*-15*	*-15*
Transit Service		*-9*	*-59*	*-59*
Transit Electrification		*0*	*0*	*0*
Traffic Operations		*1*	*1*	*1*

Vehicle miles travelled reduction is shown in Table 2-4. Transit service implemented from the Transit Master Plan is projected to reduce 59 million miles of car travel per year. Similar to the findings on greenhouse gas emissions reductions in Table 2-3, the VMT reductions projected from implementation of the strategies in the STIP and LRTP are not large. Once again, it's important to note that not all projects were able to modeled with this analysis, and models are not perfect at predicting the impact of projects, especially when considering longer-term behavior change.

Table 2-5 clarifies that about two-thirds of emissions under baseline conditions come from light-duty cars and trucks, mostly passenger vehicles, though that percentage may drop by 2050 to just 60%. The rest, about a third, comes from medium- and heavy-duty vehicles, which are often commercial vehicles. This points to the importance of implementing strategies that will electrify and reduce vehicle miles travelled from both passenger and commercial vehicles.

Table 2-5 On-Road Private Mobile Sources Baseline Inventory Forecast (Percentage)

Units: MT CO2e	2021	2025	2030	2035	2040	2045	2050
Light-Duty Cars and Trucks	63%	64%	64%	63%	61%	61%	60%
Medium and Heavy-Duty Vehicles	37%	36%	36%	37%	39%	39%	40%

Source: Rhode Island Department of Transportation. "Carbon Reduction Strategy." Chart developed by RIDSP staff. https://www.dot.ri.gov/projects/CarbonReduction/docs/Carbon_Reduction_Strategy.pdf. Accessed 6/23/2025

Considering the findings from this analysis that there is still a significant gap in projected emissions reduction and the 2050 target of zero emissions, more work is needed. Future work should focus on identifying and implementing additional strategies that can close the gap between Act on Climate reduction targets and the projected GHG emissions from the transportation sector.