

# Transportation Climate Policy

Benefits in  
Rhode Island  
September 2018

## Rhode Island's Emissions Reduction Opportunity

Rhode Island's transportation system—its network of highways, trains, public transit, airports, ports, and walking and biking corridors—is vital to the state's economy. It facilitates the movement of goods and connects people to jobs, shopping, recreation, and other services. However, the system needs critical improvements to address three major challenges and better serve the state's communities and businesses.

**Reducing Transportation Emissions:** Transportation is the largest source of Rhode Island's greenhouse gas emissions ("GHGs"), which must be reduced for the state to meet its climate commitments.

**Updating and Expanding Infrastructure:** The state's transportation infrastructure and transit options need substantial investment to create a safe, modern, and resilient system.

**Improving Access and Equity:** Transportation options must be expanded and improved in communities that remain underserved and overburdened by the current system, delivering cleaner air and more affordable, accessible options.



Modernizing and decarbonizing the transportation sector will require a suite of complementary policies. Valuing carbon emissions, potentially through a cap-and-invest program, would complement other policies by generating revenue for reinvestment in transportation improvements. These improvements would allow the system to better serve the public while creating new jobs and attracting businesses to the state.



## The Cap-and-Invest Model

Rhode Island has experience with cap-and-invest policy through the Regional Greenhouse Gas Initiative (“RGGI”). Launched in 2009, RGGI puts a price on carbon emissions from power plants and states use the proceeds to invest in renewable energy and energy efficiency. The region has benefitted significantly since the program began:

- CO2 emissions from the region’s power plants have dropped by 51%;<sup>1</sup>
- RGGI has created \$4 billion in economic growth;<sup>2</sup> and
- RGGI-funded investments have created over 44,000 job-years.<sup>3</sup>

Rhode Island was a founding state of this regional cap-and-invest program, and through June of 2018 the state has received \$61.6 million in RGGI proceeds for reinvestment in energy efficiency and clean energy projects.<sup>4</sup> As of 2014, **RGGI expenditures added about \$86 million to Rhode Island’s economy, created 760 job-years, and RGGI-driven reductions in pollution accounted for as much as \$140 million in avoided health costs.**<sup>5</sup>

**A similar regional cap-and-invest program could be applied to transportation emissions<sup>6</sup> to raise revenues, reduce pollution, improve public health, expand transportation access in underserved communities, and stimulate the economy.** A cap-and-invest policy for the transportation sector has already been implemented in California and Quebec, where carbon revenues are helping participating jurisdictions electrify transportation to cut emissions<sup>7</sup> and deliver new means of mobility in transit deserts.<sup>8</sup> To better understand the opportunity for Rhode Island to reduce emissions and improve transportation through a cap-and-invest program, Acadia Center analyzed the revenue that could be generated by applying this type of program to Rhode Island’s transportation sector. To do this, transportation sector emissions were projected through 2030 and a \$15/ton carbon price was considered.<sup>9</sup> Investment options for these funds and the economic benefits they could generate were then estimated using economic data from studies of transportation investments in the Northeast and the country.



## Revenue and Reinvestment Strategies

By capping emissions and auctioning allowances, **the state could generate about \$618 million in revenue between 2019-2030.**<sup>10</sup> To provide an example of how revenue generated by a cap-and-invest program could be expended, Acadia Center examined a portfolio of several GHG reduction measures (Table 1). This portfolio has many benefits. For example, electrifying passenger vehicles, buses, and port equipment will improve air quality and reduce operating costs for vehicle owners and taxpayers. Expanding rail, bus transit, and walking and biking will reduce travel in single-occupancy vehicles and improve mobility.

This portfolio, however, is only provided as a point of reference, not a policy recommendation or an exhaustive list. Development of an equitable reinvestment strategy should include input from all impacted stakeholders and could require that projects benefit low-income or disadvantaged communities. California’s framework<sup>11</sup> (below) could serve as a conceptual model for Rhode Island, and specific investment decisions could be informed by recent analysis conducted for RIPTA that identifies gaps in the state’s transportation options.<sup>12</sup>

### California’s Commitment to Equity<sup>11</sup>

California’s economy-wide cap-and-invest program strives for equitable investment of proceeds in low-income and disadvantaged communities by requiring at minimum that:

- 25% of proceeds be invested in projects within and benefitting disadvantaged communities;
- 5% of proceeds be invested in projects that benefit low income households state-wide; and
- 5% of proceeds benefit low income households that are within ½ mile of disadvantaged communities.

<sup>1</sup> Emissions data from RGGI, Inc.

<sup>2</sup> Analysis Group, “*The Economic Impacts of the Regional Greenhouse Gas Initiative on Nine Northeast and Mid-Atlantic States: Review of RGGI’s Third Three-Year Compliance Period (2015-2017)*”

<sup>3</sup> Ibid.

<sup>4</sup> See: <https://www.rggi.org/auctions/auction-results>.

<sup>5</sup> Analysis Group’s series “*The Economic Impacts of the Regional Greenhouse Gas Initiative on Northeast and Mid-Atlantic States*” and ABT Associates “*Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative*”

<sup>6</sup> Georgetown Climate Center, “*Reducing Transportation Emissions in the Northeast and Mid-Atlantic: Fuel System Considerations*”

<sup>7</sup> Quebec Ministry of Transportation, “*Transportation Electrification 2015-2030 & Carbon Market in Québec*”

<sup>8</sup> California Air Resources Board, “*California Climate Investments: Using Cap-and-Trade Auction Proceeds*”

<sup>9</sup> Emissions through 2030 are based on Acadia Center’s [EnergyVision 2030](#) business-as-usual scenario, which includes existing EPA/DOT fuel efficiency standards for medium and heavy-duty vehicles, as well as the existing Corporate Average Fuel Economy standards through 2025. Modeling details are available in the [Technical Appendix](#). A 4% reduction in transportation emissions by 2030 is applied to this business-as-usual scenario to account for the reductions generated by the cap-and-invest program. This level of reduction is aligned with Georgetown Climate Center’s estimate for market based policies in [Technical Appendix Emission Reduction Strategy Analysis](#) from “*Reducing Greenhouse Gas Emissions from Transportation: Opportunities in the Northeast and Mid-Atlantic*”. Georgetown’s analysis also estimates a carbon price for market-based transportation climate policy between \$5-\$30/ton CO2.

<sup>10</sup> Georgetown Climate Center’s 2017 whitepaper “*Reducing Transportation Emissions in the Northeast and Mid-Atlantic: Fuel System Considerations*” describes implementation options for a cap-and-invest policy.

<sup>11</sup> See: [http://www.caclimateinvestments.ca.gov/disadvantaged-communities/?utm\\_medium=email&utm\\_source=govdelivery](http://www.caclimateinvestments.ca.gov/disadvantaged-communities/?utm_medium=email&utm_source=govdelivery)

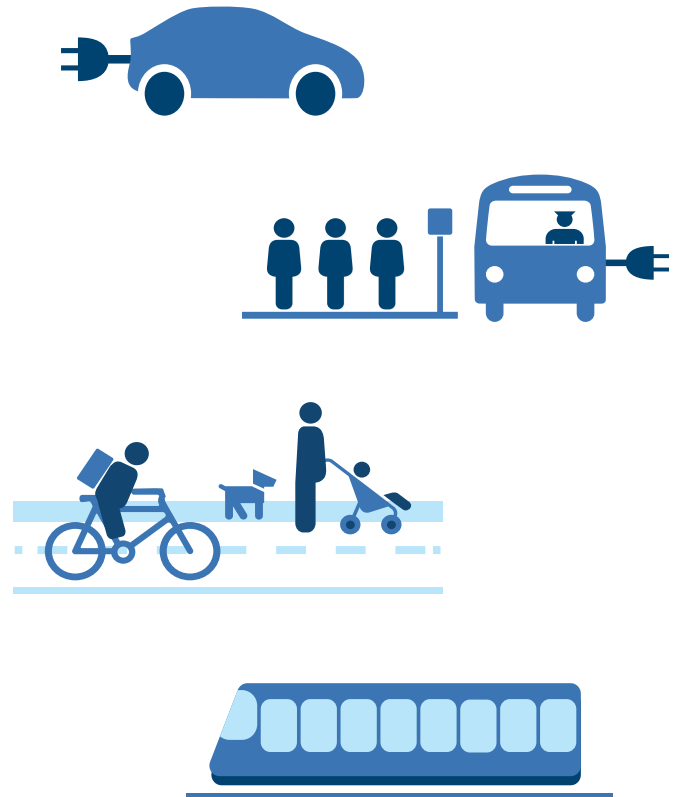
<sup>12</sup> AECOM, prepared for RIPTA, “*Rhode Island Coordinated Transportation Plan*”

**Table 1: Simple Reinvestment Portfolio for Rhode Island's Proceeds from Transportation Climate Policy**

	Possible Investment Portfolio	2019-2030 Total Funding (Millions)	Average Annual Funding (Millions)
EV & Charging Infrastructure Rebates	58%	\$ 358	\$ 30
Bus Transit	21%	\$ 130	\$ 11
Intercity Rail (Trains & Commuter Rails)	10%	\$ 62	\$ 5
Port Electrification	6%	\$ 37	\$ 3
Walking & Biking Infrastructure	5%	\$ 31	\$ 3
<b>Total</b>	<b>100%</b>	<b>\$ 618</b>	<b>\$ 51</b>

By 2030, the funding outlined in Table 1 could help the state invest in:

- About 129,000 EVs—17% of the passenger vehicle fleet—as well as associated charging infrastructure, aligned with Acadia Center’s EnergyVision 2030 recommendation for reducing GHG emissions 45% by 2030.<sup>13</sup> This level of annual support would also align with the state meeting its commitment to electrify about 44,000 passenger vehicles by 2025 under the Multi-State Zero-Emission Vehicle Memorandum of Understanding
- About 150 electric buses and their charging infrastructure to expand RIPTA’s service and replace aging and polluting diesel vehicles<sup>14</sup>
- Over 100 miles of new walking and biking trails throughout the state, more than doubling the existing bike trail system<sup>15</sup>
- Electrification of ports throughout the state, including electric shore power investments and electrification of drayage equipment<sup>16</sup>
- Addition of new commuter rail stations throughout Rhode Island



<sup>13</sup> See <http://2030.acadiacenter.org>. This number of EV rebates considers the former DRIVE program levels of \$2500 for battery EVs and \$1500 for plug-in hybrid EVs. It also considers a \$2000 incentive for L2 EV chargers and \$20,000 for DC fast chargers. The National Renewable Energy Lab estimates that 338,200 workplace and public L2 and L1 chargers will be needed per million EVs; this analysis considers 80% of these charges will be L2. NREL also estimates the need for 470 DCFCs per million EVs. See: <https://www.nrel.gov/docs/fy17osti/66980.pdf>.

<sup>14</sup> Considering a cost of \$750,000 per bus, \$350,000 per 6-port fast-charger, and \$250,000 per charger installation. See: <http://fortune.com/2017/09/19/electric-cars-buses-proterra/> and [https://cafc.org/sites/default/files/5\\_CARB-ACT-Cost-Model-Discussions\\_CaFCP-Bus-Team-Meeting-Aug2016.pdf](https://cafc.org/sites/default/files/5_CARB-ACT-Cost-Model-Discussions_CaFCP-Bus-Team-Meeting-Aug2016.pdf)

<sup>15</sup> Considering a cost of \$280,000 per mile based on: <https://www.ncdot.gov/bikeped/walkbikenc/pictures/EconomyImpact-Analysis.pdf>. Rhode Island currently has about 75 miles of completed bike paths: [http://www.dot.ri.gov/documents/bikeri/RI\\_Statewide\\_Bicycle\\_System.pdf](http://www.dot.ri.gov/documents/bikeri/RI_Statewide_Bicycle_System.pdf)

<sup>16</sup> See <http://www.cleanairactionplan.org/documents/preliminary-cost-estimates-select-caap-strategies.pdf/> and <http://www.dem.ri.gov/mobile/pdf/story6.pdf> for cost estimates for electric port technologies.



# Economic Benefits from Reinvestment

By examining the benefits of similar transportation expenditures in the Northeast and the U.S.,<sup>17</sup> Acadia Center has estimated some of the economic activity and other monetary benefits the investment portfolio in Table 1 could generate (Figure 1). These economy-wide benefits are directly and indirectly supported by the transportation improvements described above and include:

- Creation of over 3,400 long-term jobs (i.e. not project-related construction jobs)
- Over \$375 million of new wages,<sup>18</sup> primarily as a result of newly created jobs
- \$1.3 billion of new business sales, resulting from project-related spending, spending of new wages in the local economy, and spending of cost-savings generated by lowered transportation expenses
- Nearly \$700 million in other benefits, including fewer hours spent in traffic and improved health outcomes, as well as \$19 million in savings from avoided costs of GHG emissions.<sup>19</sup>

These benefits will vary based on the final investment portfolio developed with stakeholder input; however, this analysis shows the scale of the opportunity for Rhode Island. The state should act now to put a price on transportation emissions to reap these benefits and accelerate progress to a more modern, equitable, low-carbon system.

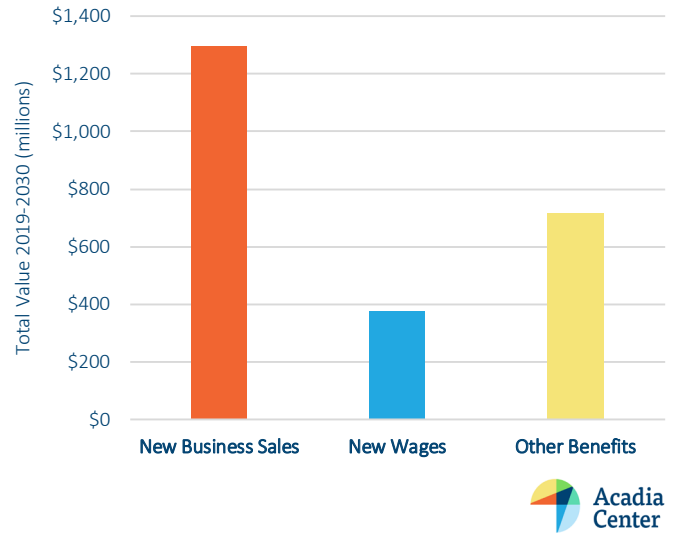
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**Figure 1: Increased Economic Activity and Other Benefits from Reinvesting Transportation Climate Policy Revenues<sup>20</sup>**



<sup>17</sup> See Economic Analysis Reports for: the New Haven Rail Line Expansion in CT; the MA South Station High Speed Intercity Rail Expansion; the NH Capital Corridor Rail Expansion; the RI South County Commuter Rail Expansion; Bus Rapid Transit in Madison, WI; Rural and Small Urban Transit Systems in ND; Bus Expansion for Greenville Transit Authority in SC; Biking and Pedestrian Trails in VT and NC; and NREL's National Economic Value Assessment of Plug-In Electric Vehicles.

<sup>18</sup> Note that new wages are a subset of new business sales and these two categories are not able to be added.

<sup>19</sup> See: EPA's [Social Cost of Carbon methodology](#)

<sup>20</sup> Other benefits calculated as present value. Output and income are cumulative totals over the studied project timeline/lifespan.



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