

# Reducing Emissions from Transportation in the Northeast and Mid-Atlantic

## HIGHLIGHTS

*Our transportation system—how we move people and goods around—is outdated, inefficient, costly, and unhealthy. Our gasoline- and diesel-burning vehicles are not only a major source of air pollution but also the largest source of climate pollution in the Northeast and Mid-Atlantic, responsible for almost 40 percent of regional emissions. By investing in three proven technologies—vehicle efficiency, electric vehicles, and clean fuels—the region can reduce spending on petroleum-based fuels by more than \$1 trillion by 2050 while dramatically reducing pollution, improving public health, and saving consumers money. Together with ambitious efforts to provide better transportation options and affordable housing near transit, clean vehicles and clean fuels can help create the clean, equitable, and modern transportation system needed in the Northeast and Mid-Atlantic.*

We can cut oil use, reduce climate and air pollution, lower costs for consumers, and strengthen our regional economy by investing in three proven strategies: increasing vehicle efficiency; transitioning to electric cars, buses, and trucks; and shifting to cleaner fuels. According to a new analysis for the Union of Concerned Scientists (UCS) by M.J. Bradley and Associates,<sup>1</sup> the states in the Northeast and Mid-Atlantic region can:

- Cut climate-damaging carbon dioxide (CO<sub>2</sub>) pollution from on-road transportation by 37 percent in 2030, relative to 1990 levels, and by 78 percent in 2050.
- Reduce consumer spending on gasoline and diesel fuel by more than \$125 billion by 2030 and more than \$1 trillion by 2050.<sup>2</sup>
- Improve air quality, leading to more than \$3 billion in cumulative avoided health impacts by 2030 and more than \$30 billion by 2050.<sup>3</sup>
- Save almost \$25 billion in environmental damages region-wide by 2030 and almost \$195 billion in 2050, by diminishing the risk of property damage from extreme climate events, preserving ecosystems, and avoiding climate-related changes in agricultural productivity, among other benefits.

Together with efforts to provide residents with more transportation options through investments in public transportation, walking and biking infrastructure, and affordable housing near transit, these investments in clean vehicles and fuels can put the region on track to build a clean and modern transportation system. Furthermore, by directing investments toward the communities that need them the most, the region can make its transportation system more equitable (see the box, p. 2).



Massachusetts' Pioneer Valley Transit Authority is just one of a growing number of companies turning to electric vehicles in their fleets. These vehicles not only cost less to operate compared with their conventional counterparts, but also play a major role in reducing carbon emissions and air pollution in the region.

## Three Strategies to Move the Region Forward

Most Northeast and Mid-Atlantic states have committed to economy-wide limits on global warming emissions;<sup>4</sup> however, meeting these goals requires new and sustained efforts to reduce transportation pollution. The region has made progress in reducing pollution from power plants,<sup>5</sup> but pollution from cars, trucks, and buses remains a challenge.

We evaluated three proven technology pathways by which the Northeast and Mid-Atlantic states can accelerate the deployment of clean vehicles and clean fuels at a scale sufficient to meet their climate targets, calculating the investment needed to take these technologies to scale as well as the resulting financial, environmental, and health benefits.

### 1. ACCELERATED IMPROVEMENTS IN FUEL EFFICIENCY

Federal vehicle efficiency and emissions standards have helped improve vehicle fuel efficiency, cutting emissions and reducing consumer spending on gasoline. Northeastern and Mid-Atlantic states can support strong federal and California standards to accelerate emissions reductions and fuel efficiency after 2025. With steady progress on vehicle efficiency, a new passenger car in 2030 can operate on one-third less gasoline than a car sold today.<sup>6</sup> Continuing to strengthen the efficiency of buses and trucks is also important, because, although heavy-duty vehicles make up less than 10 percent of all vehicles on US highways (FHA 2018), they constitute more than 25 percent of the nation's consumption of petroleum-based fuels.

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### 2. ELECTRIC CARS, BUSES, AND TRUCKS FOR EVERYBODY

Electric vehicles (EVs) represent the most promising technology ever developed to help reduce the consumption of petroleum-based fuels. EVs are increasingly available in all vehicle classes and models, from sedans to transit buses and delivery trucks. On today's grid, electric cars produce less than half the emissions of a conventional vehicle (Reichmuth 2017). They are cheaper to fuel and cheaper to maintain, and their up-front

## Improving Transportation Equity

While we move toward cleaner transportation solutions, we should also build a system that reduces social and economic disparities. We must prioritize investments for projects that improve air quality in communities exposed to a disproportionate amount of pollution from highways, ports, and freight distribution centers. In addition, we should expand transportation options for low-income communities and communities of color—as well as rural communities, the elderly, and people with disabilities—who often lack affordable and reliable access to work, school, health care visits, and other services. Finally, transportation investments should provide job training and create good jobs. Engaging communities in a robust stakeholder process at every step of the way is critical to overcoming these inequities.

costs continue to decline, though incentives remain important for moderate- and low-income drivers to share in these consumer benefits.

Our analysis finds that the widespread adoption of electric vehicles by 2050—which assumes the electrification of 95 percent of the fleet of transit buses, 90 percent of passenger cars, 70 percent of small trucks, and 30 percent of large trucks—is cost-effective. Achieving these growth rates will require sustained investments to incentivize switching to EVs and build charging infrastructure; particularly important are incentives for low and moderate-income residents.

The transition to EVs will benefit not only EV drivers, but also all electricity ratepayers. Through policies that encourage EVs to be charged at night or during times of high production of renewable energy, EVs will help create a stronger and more efficient grid. Under such a scenario, the transition to EVs could save ratepayers almost \$22 billion by 2030 and \$138 billion by 2050.

### 3. LOWER-CARBON FUELS

Clean transportation must be powered by cleaner fuels, a shift that can be achieved by switching to clean electricity and blending low-carbon biofuels into gasoline and diesel. In our analysis, we found that clean fuels can achieve a 10 percent reduction in carbon emissions per unit of transportation fuel by 2030, and 30 percent by 2050.

## Reduced Emissions, Improved Health, Lower Costs, and a Stronger Economy

Our analysis quantified the emissions reductions and long-term costs and benefits that a substantial and sustained investment in clean vehicles and clean fuels technology would bring to the Northeast and Mid-Atlantic region.

Our analysis shows how the region can save almost one-third of the volume of petroleum-based fuel in 2030 and more than three-quarters in 2050 relative to business as usual, resulting in almost \$1 trillion in reduced spending on petroleum-based fuels by 2050. And since petroleum-based fuels account for almost all of transportation-related emissions, cutting oil use allows states to greatly reduce CO<sub>2</sub> emissions and achieve the deep cuts consistent with their climate targets (Figure 1).

Short-term investments would lead to a significant long-term return on investment and a stronger economy overall. An investment of almost \$172 billion between 2018 and 2030 in the three strategies discussed above would yield almost \$148 billion in fuel savings and revenue for utilities, as well as \$28 billion in health and environmental benefits, bringing the

net benefit to about \$3 billion by 2030 (Figure 2, p. 4). By 2050, this net benefit will have accumulated to a staggering \$384 billion.

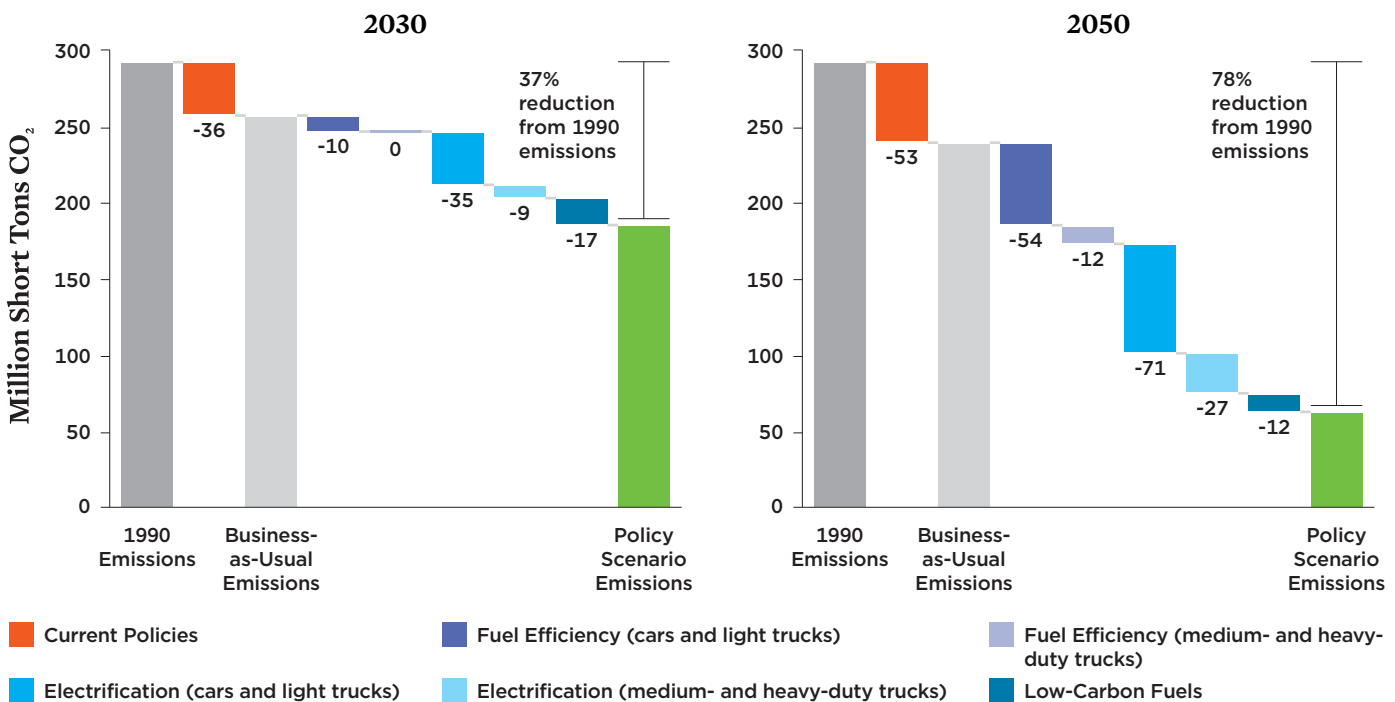
## The Road Ahead

Our analysis demonstrates that a reduction in transportation emissions will bring dramatic financial, environmental, and health benefits. Northeast and Mid-Atlantic states are poised to be leaders in creating this modern, energy-efficient, and low-emissions transportation system.

A critical question for the region is how to apportion the costs through specific policies. While not all costs will necessarily be borne by government, public policy has a major role to play in stimulating the investments necessary to realize this transition. We suggest three policy approaches to help drive innovation and the deployment of these vehicle and fuel technologies:

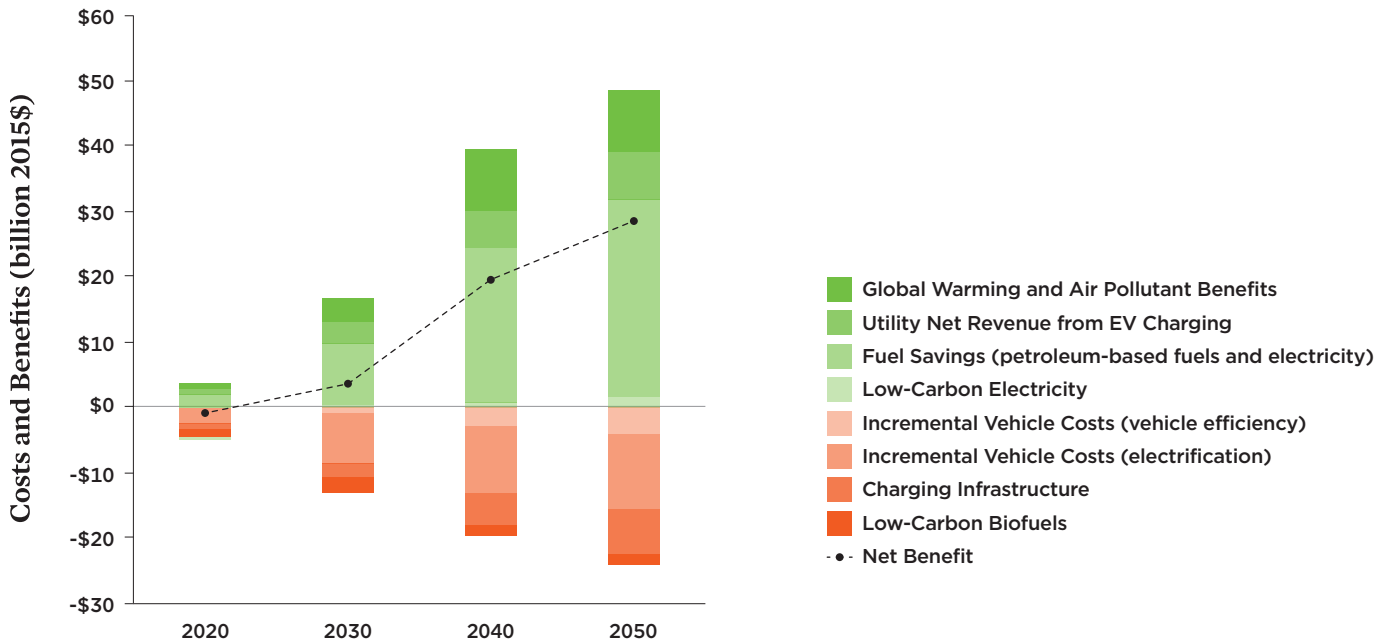
- 1. Accelerate vehicle efficiency and emissions standards post-2025.** While the federal government proposes to freeze progress on vehicle efficiency, California and

FIGURE 1. Regional CO<sub>2</sub> Emissions Reduction from Clean Vehicles and Fuels



Clean vehicles and fuels can achieve a 37 percent emissions reduction in 2030, relative to 1990 levels, and 78 percent in 2050. The largest emissions reductions are due to electrification.

FIGURE 2. Financial and Environmental Annual Costs and Benefits, by Decade



The annual difference between costs and benefits—net benefits—increases radically over the decades, reaching almost \$30 billion just in the year 2050.

Northeast and Mid-Atlantic states should continue to advance vehicle emissions programs, including the zero-emissions vehicle requirement.

- 2. Accelerate utilities' investment in charging infrastructure.** Utilities' investment in charging infrastructure benefits all utility customers, leading to a more reliable and less expensive grid for all end users.
- 3. Implement a Clean Fuel Standard.** Setting a steadily declining standard for the average carbon intensity of transportation fuel, including electricity, biofuels, and petroleum-based fuels, would support the transition to both electric vehicles and low-carbon biofuels.<sup>7</sup>

But requiring performance-based standards for vehicles, infrastructure, and fuels will only get us part of the way. Many of these investments will require new sources of funding, so we urge Northeast and Mid-Atlantic states to establish a regional program that would:

- 1. Create a clean transportation investment fund.** A dedicated funding source would allow states to make strategic investments in clean transportation, including significant investments in communities that stand to benefit the most—those that are overburdened and

*While the federal government proposes to freeze progress, California and Northeast and Mid-Atlantic states should continue to advance vehicle emissions programs.*

underserved—through a set of criteria for reinvestment and a transparent process that allows public input.

- 2. Set limits on emissions and require emitters to pay their fair share.** A cap on emissions would lower pollution and, by requiring contributions based on emissions, generate billions of dollars for a clean transportation investment fund.

Realizing the full benefits of a clean transportation system in the Northeast and Mid-Atlantic will require a comprehensive

and coordinated effort among diverse regional stakeholders. Forward-thinking policy leadership combined with robust community engagement can ensure a truly modern, equitable, and reliable transportation system that works for everyone.

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#### ENDNOTES

- 1 M.J. Bradley and Associates is a leading consulting firm that provides strategic environmental consulting on energy issues and the environment. The full text of the M.J. Bradley analysis can be found on the UCS website at [www.ucsusa.org/CleanTransportationBenefits](http://www.ucsusa.org/CleanTransportationBenefits).
- 2 All dollar values are given in 2015 dollars.
- 3 These values were calculated based on the monetized benefits of avoided nitrogen oxides and particulate matter (PM2.5) pollution.
- 4 Twenty US states have adopted specific climate targets (C2ES 2018).
- 5 Ten states have joined the Regional Greenhouse Gas Initiative (RGGI 2018).

- 6 For cars, we assume an increase from 25.7 miles per gallon in 2018 to 40 miles per gallon in 2030.
- 7 The carbon intensity of a fuel is the amount of carbon by weight emitted per unit of consumed energy.

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