

Senate Transportation and Senate Natural Resources and Energy Testimony

February 6, 2025

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Agenda

- The History of Vermont's Adoption of the California Emissions Standards
- Climate Action and the LEV/ZEV Rules
- Vermont's Adoption of the Low Emission Vehicle (LEV) and Zero Emission Vehicle (ZEV) Rules
 - Advanced Clean Cars II (amends Advanced Clean Cars I, in effect)
 - Advanced Clean Trucks
 - Low NOx (nitrogen oxides) Heavy-Duty Omnibus
 - Phase 2 Greenhouse Gas Rule
- Progress to date on implementation of the Standards
- Impacts and Benefits to Vermonters, Dealers & Automotive Manufacturers

Vermont's Commitment to Cleaner Vehicles

1996: Vermont first adopts Motor Vehicle Emission Standards for new cars & light-duty trucks

2005: Vermont adopts Greenhouse Gas Emission Standards for Motor Vehicles

2022: Vermont adopts updates to Advanced Clean Cars and Advanced Clean Trucks

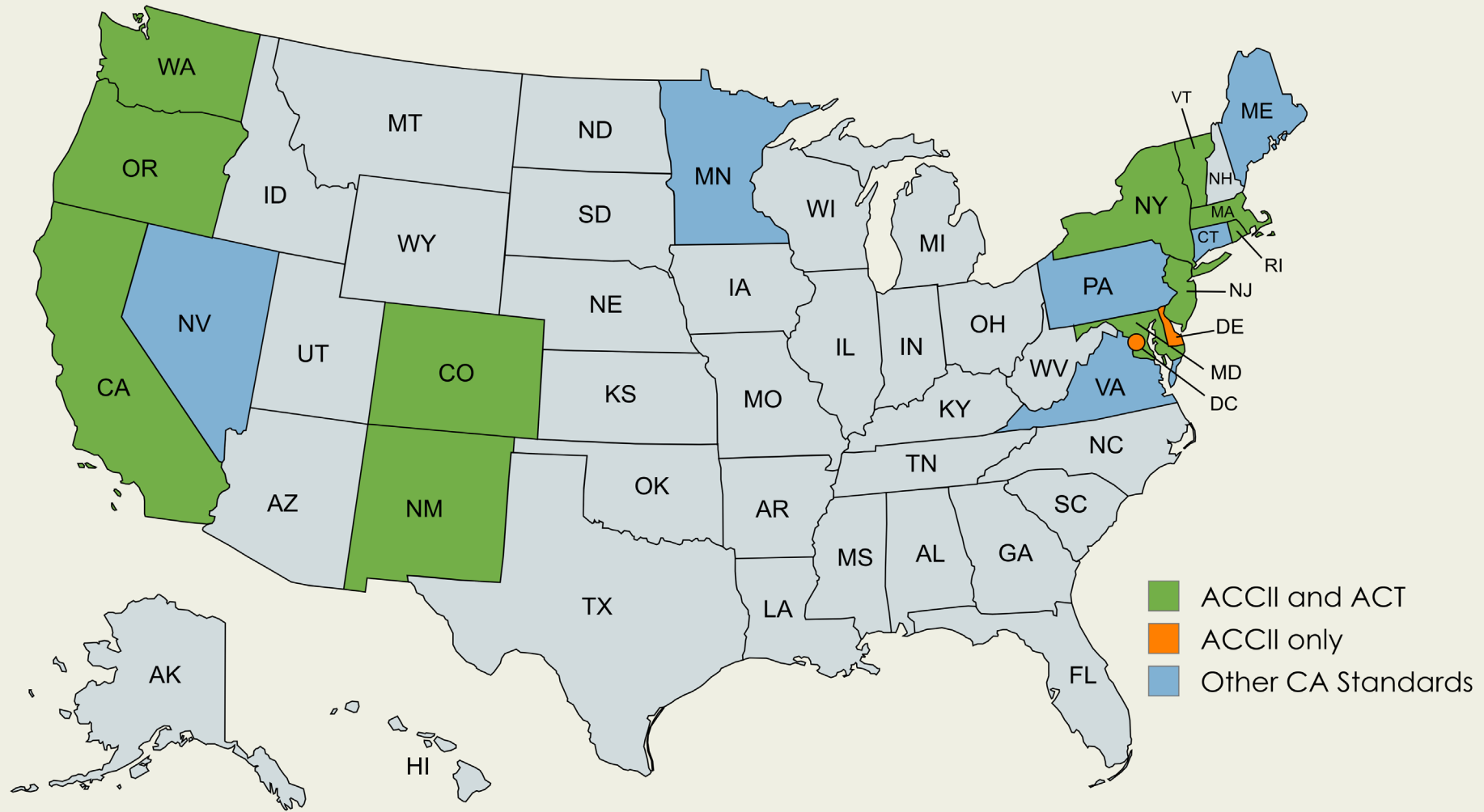
2000: Vermont adopts the Zero-Emission Vehicle Sales Requirement Rules and adds medium-duty vehicles

2012: Vermont adopts Advanced Clean Cars Program

2026: Advanced Clean Cars II and Advanced Clean Trucks go into effect

To date, 17 states have adopted California's stricter motor vehicle emissions rules





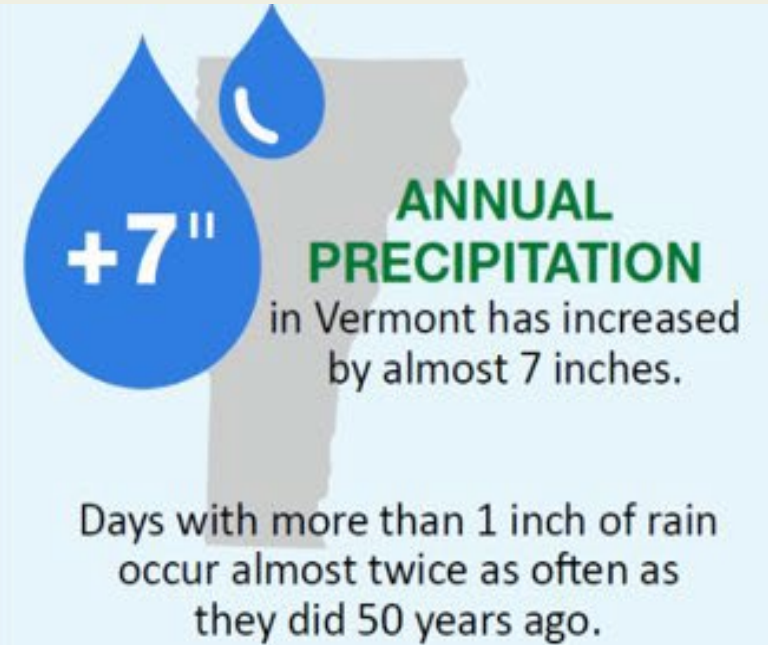
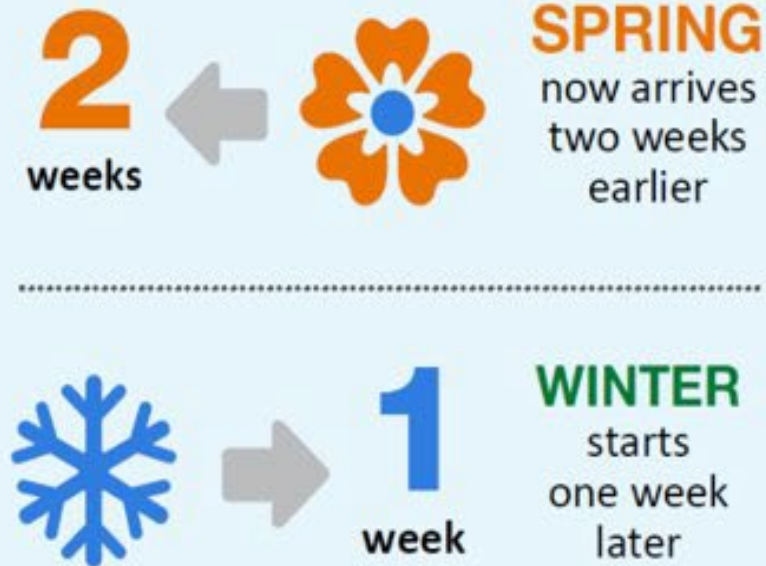
Map created

Vermont is part of a larger effort – and a larger low emission vehicle market



Climate Change in Vermont

More rain and flooding, changes to agriculture, different forests



Not everyone is impacted equally

**Global Warming
Solutions Act
passed**

September 2020

**Vermont Climate
Council
established**

November 2020

**Initial Climate
Action Plan
adopted**

December 2021

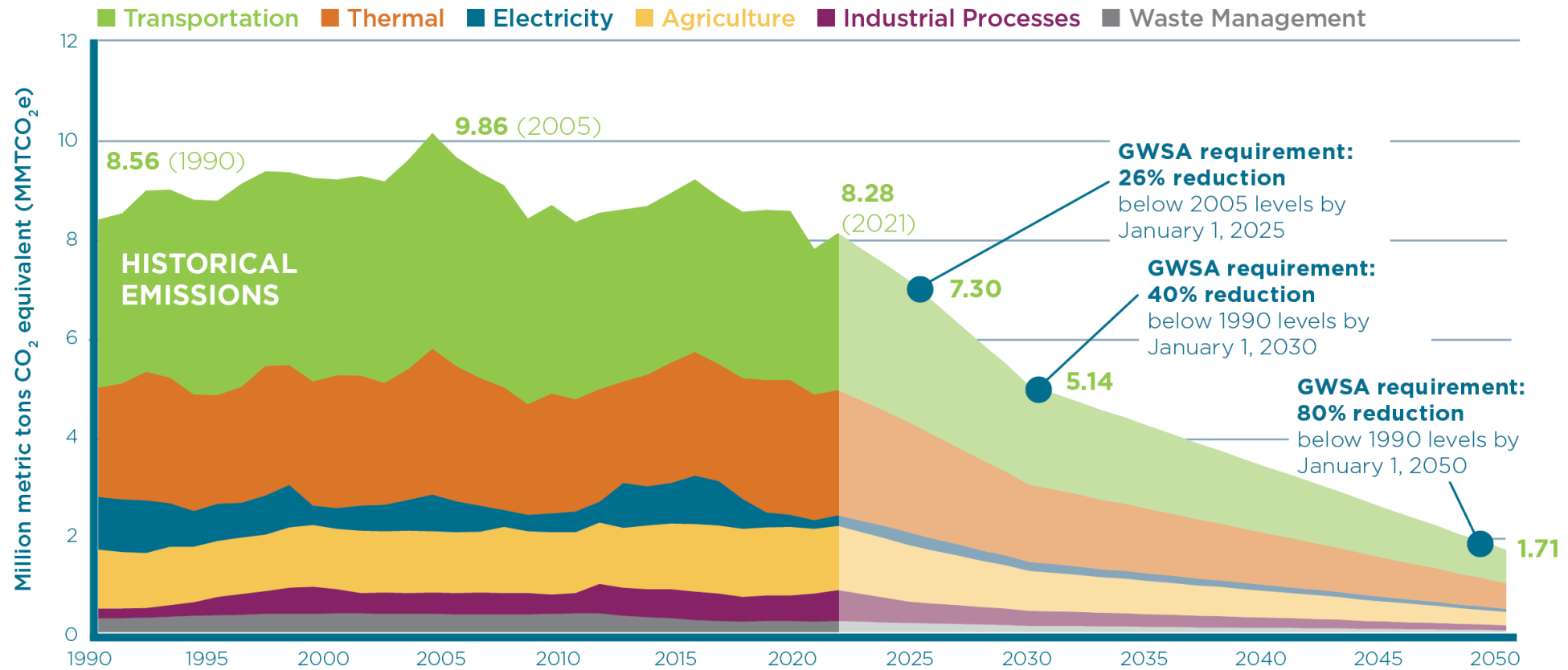
**LEV/ZEV Rules
were advanced as
required by
inclusion in the
CAP**

December 2022

**CAP implementation
and must be updated
every four years**

Next update due July
1, 2025

Vermont's historical GHG emissions and future requirements

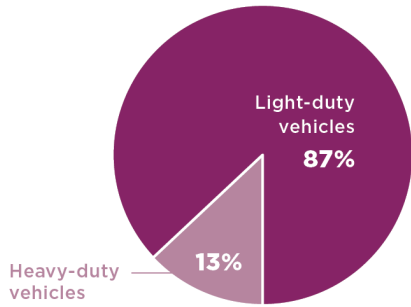


Source: Vermont Agency of Natural Resources, "Vermont Greenhouse Gas Emissions Inventory and Forecast: 1990-2021," 2024. **Note:** A small amount of emissions from the "fossil fuel industry" category (i.e., fugitive emissions from fossil gas pipelines in VT), accounting for 0.4% of Vermont's overall emissions in 2021, does not show up on this graph.



Why are cleaner vehicles important?

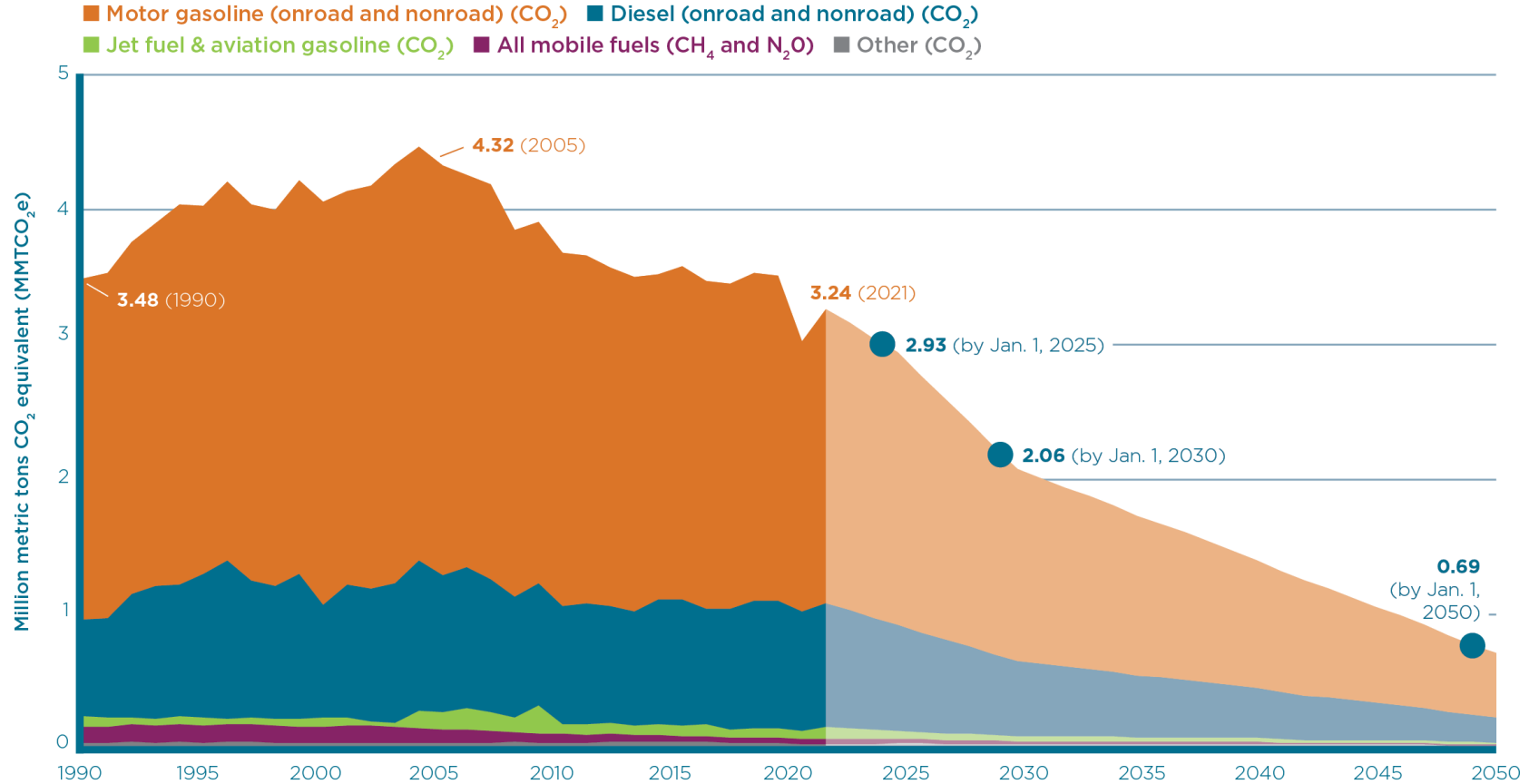
On-road transportation emissions in VT by vehicle weight class



Source: U.S. EPA, National Emissions Inventory, 2020.



Historical VT transportation GHG emissions and future sector targets



Source: Vermont Agency of Natural Resources, "Vermont Greenhouse Gas Emissions Inventory and Forecast: 1990-2021," 2024.
 Note: The VT Climate Council set sectoral emissions targets for GWSA compliance, which are represented by the blue dots on the graph.



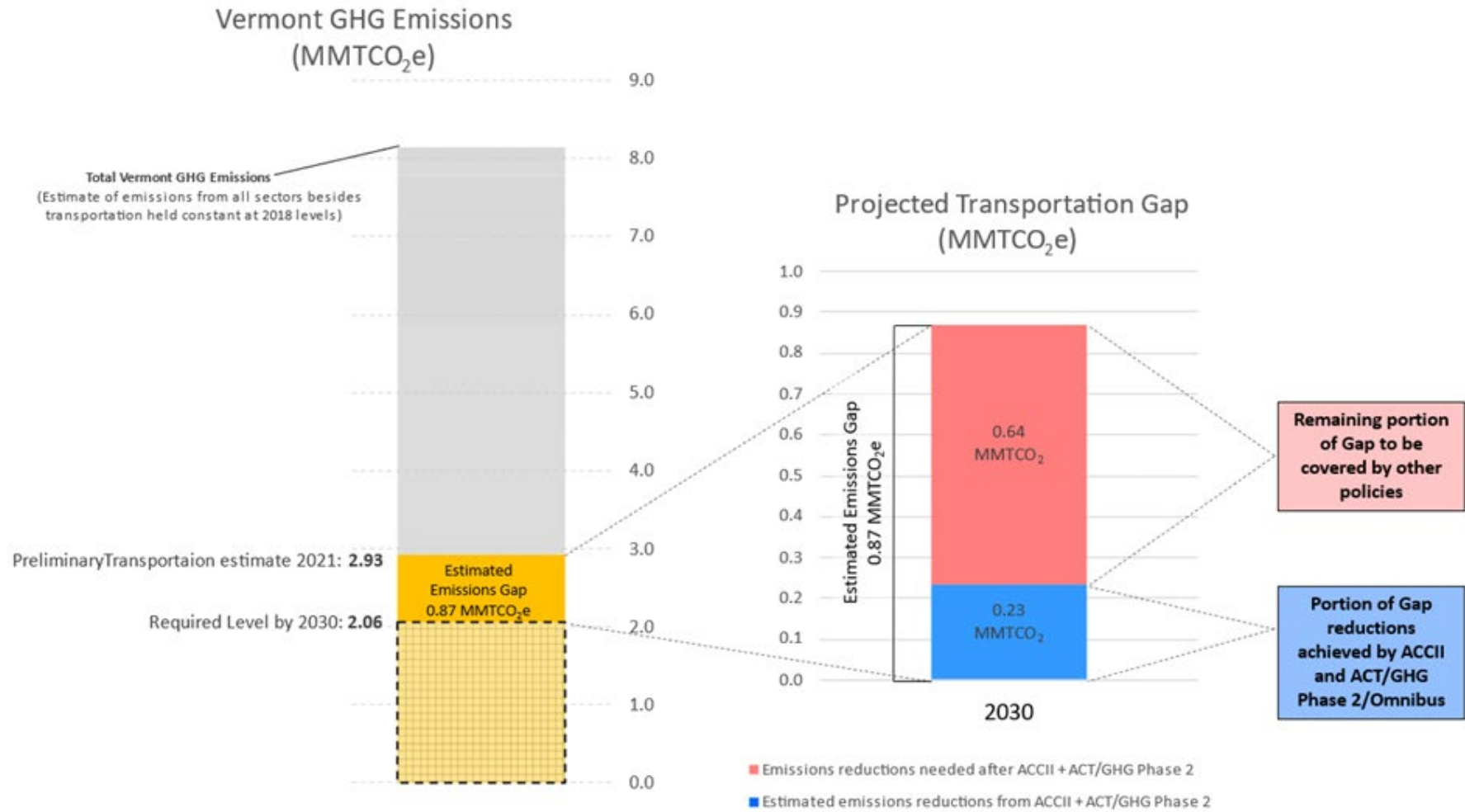


Figure 5: Estimation of ACCII, ACT, and Phase 2 Rules' Impact on Emissions in the Transportation Sector in 2030

Beyond GHG emissions, reducing air pollution

- Volatile organic compounds (VOCs) and nitrogen oxides (NO_x) combine to form ground level ozone (also known as smog) that triggers asthma attacks and damages lung tissue.
- Fine particulate matter (PM_{2.5}) causes respiratory and cardiovascular damage.
- These health impacts tend to have a greater impact on disadvantaged communities and frontline workers in Vermont.

Low Emission Vehicle and Zero Emission Vehicle Rules

Requirements for auto manufacturers to:

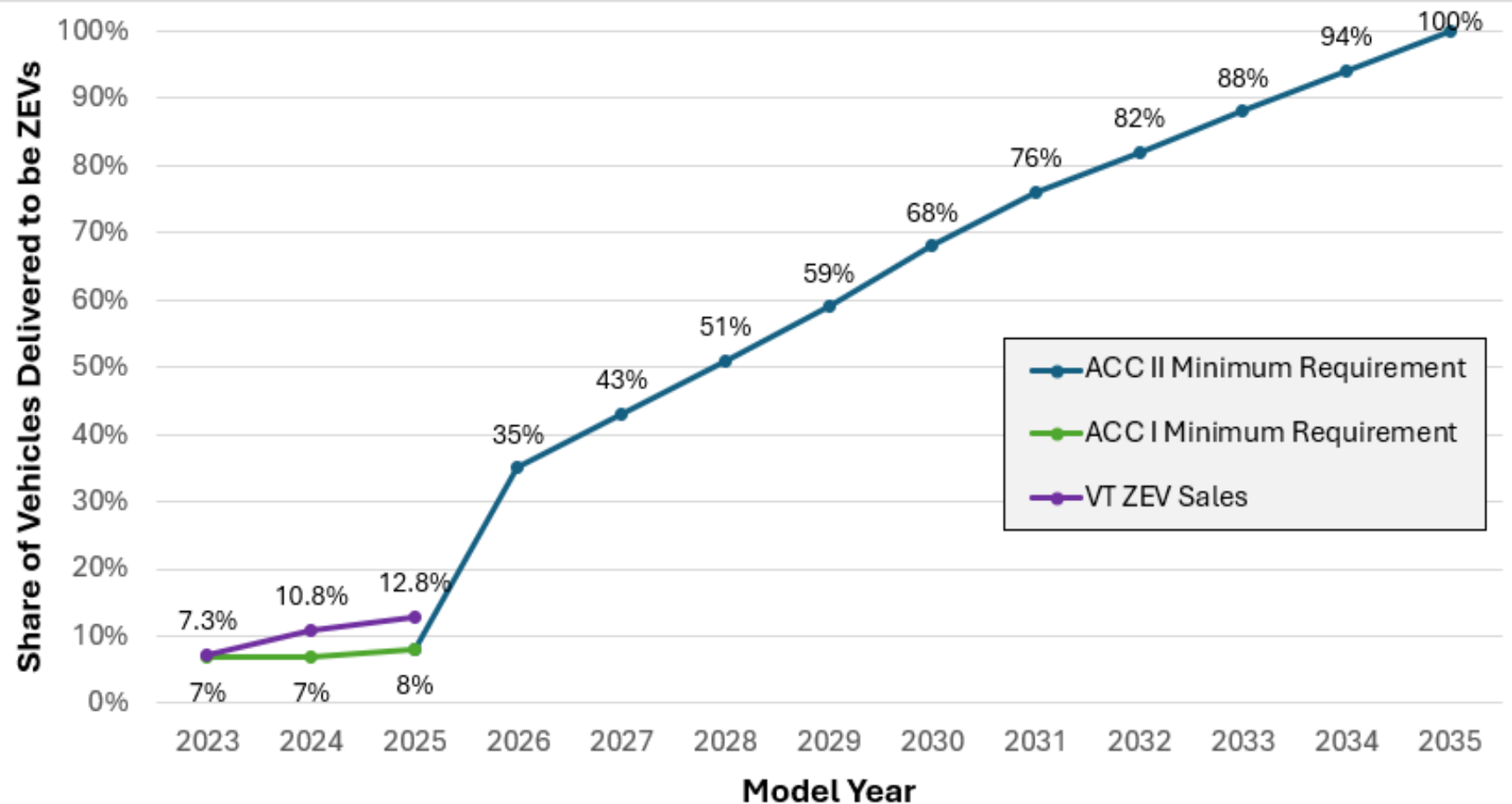
- Deliver more electric vehicles to Vermont
 - All electric cars and *some* electric trucks by 2035
- Deliver cleaner and more durable passenger cars and trucks



NOT an electric vehicle purchase mandate

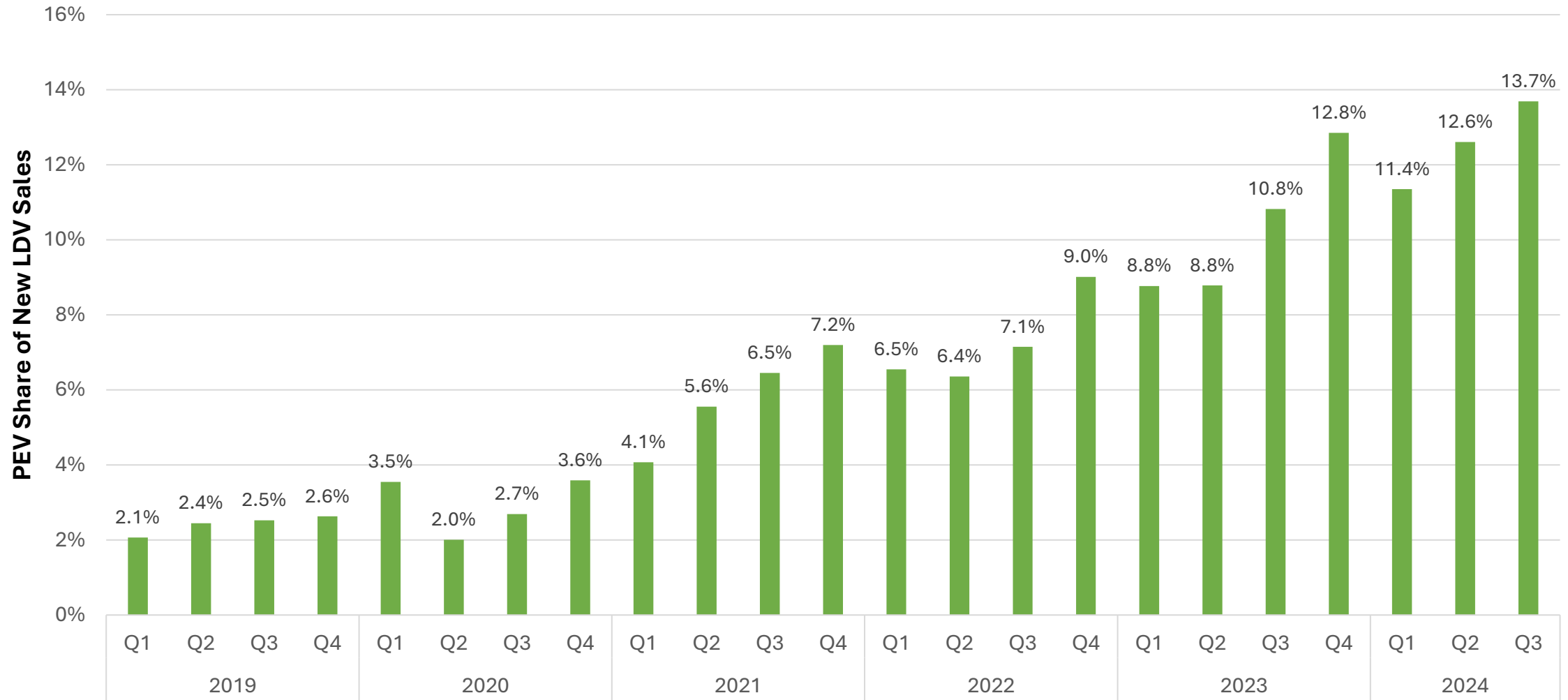


Advanced Clean Cars II: Passenger Cars and Light-duty Trucks



100% Zero-emission vehicles by 2035

Light-Duty PEV Market Share in Vermont 2019 Q1 – 2024 Q3



LDV sales = Class 1-2a vehicles; PEV = battery-electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). Source: Experian via Atlas Public Policy's EV Market Dashboard,



ACCII Compliance Flexibility

- The ACC II rule offers a variety of flexibilities to provide automakers with numerous pathways to meet their sales milestones.
- If stacked together, these flexibilities can reduce a manufacturer's ZEV sales requirement in model year 2026 by as much as 70 percent (i.e., from 35% to 11%).

Advanced Clean Trucks (ACT): Medium- and Heavy-duty Trucks

Class 2b-3

- 55% of new vehicle sales by 2035
- Larger pick-ups, vans, and delivery vehicles



Class 4-8

- 75% of new vehicle sales by 2035
- Box trucks, bucket trucks, buses, dump trucks



Class 7-8

- 40% of new vehicle sales by 2035
- Truck tractors



Allows for continued sale of fossil fuel trucks beyond 2035

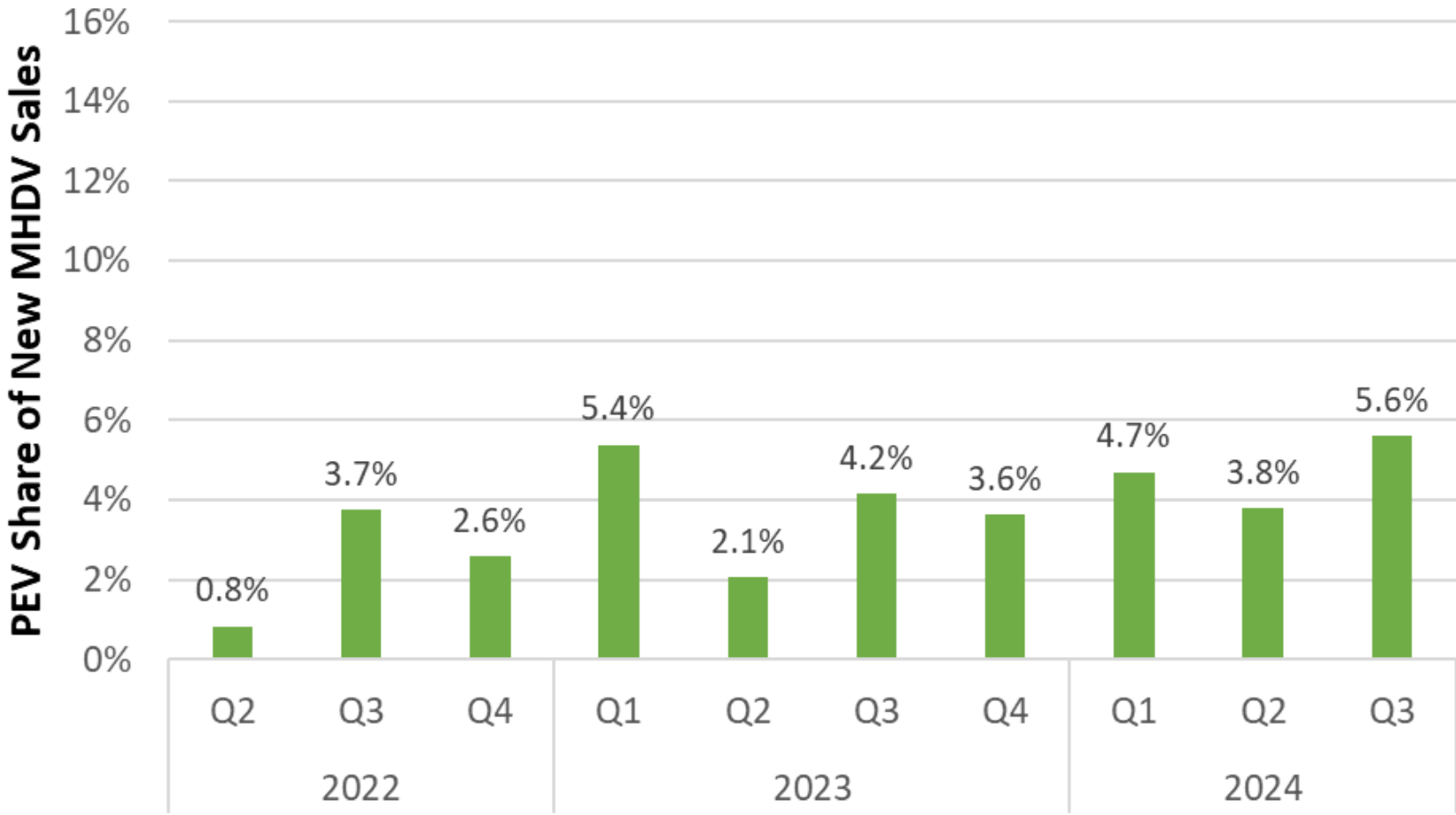
ACT Compliance Flexibility

- Compliance determined with a credit/deficit system, which includes flexibilities that can be used by manufacturers.
 - selling diesel trucks earns deficits
 - selling ZEVs or NZEVs* earns credits.
- Includes flexibility for manufacturers to produce and sell new ZEVs into the market segments they deem to be most suitable for the products they manufacture.

*NZEV (near zero emission vehicles, such as plug-in hybrids)



Medium- and Heavy-Duty PEV Share in Vermont 2022 Q2 - 2024 Q3



Rules also require fossil fuel vehicles to be cleaner and more durable



Automakers will make cars that emit even less harmful air pollutants, greater durability, longer warranties



For the first time in Vermont, starting in 2026 automakers will be required to make medium- and heavy-duty trucks with stricter controls on pollutants

Vermonters have questions!

What will the future vehicle market look like?

Can I afford an EV?

How will I charge my EV?

How will this impact my business?

Can the grid handle this transition?

Are EVs cleaner?

Will all Vermonters benefit equally?

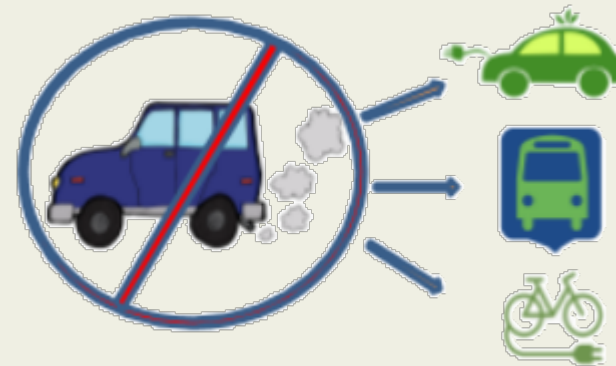
Addressing upfront costs today

The upfront cost of an EV is higher - purchase rebates and tax credits lower the upfront cost:

- ✓ Federal Government – up to \$7,500
- ✓ + additional incentives through your electric utility
- ✓ State of Vermont – up to \$10,000
 - ✓ New PEVs - up to \$5,000
 - ✓ Replace Your Ride - up to \$5,000
 - ✓ MileageSmart – up to \$5,000
 - ✓ Electric bikes – up to \$800

Drive
Electric
Vermont

mileagesmart ●●●●



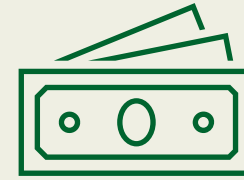
driveelectricvt.com/incentives

 VERMONT

Ownership costs are lower for EVs

The upfront cost of an EV is higher, BUT the overall **cost of EV ownership is lower** than a conventional vehicle

- ✓ Cheaper fuel
- ✓ Less moving parts and maintenance
- ✓ Enhanced warranty and useful life requirements



Save \$6,797 on fuel over 5 years of ownership

Save \$4,600 on maintenance over the life of the EV

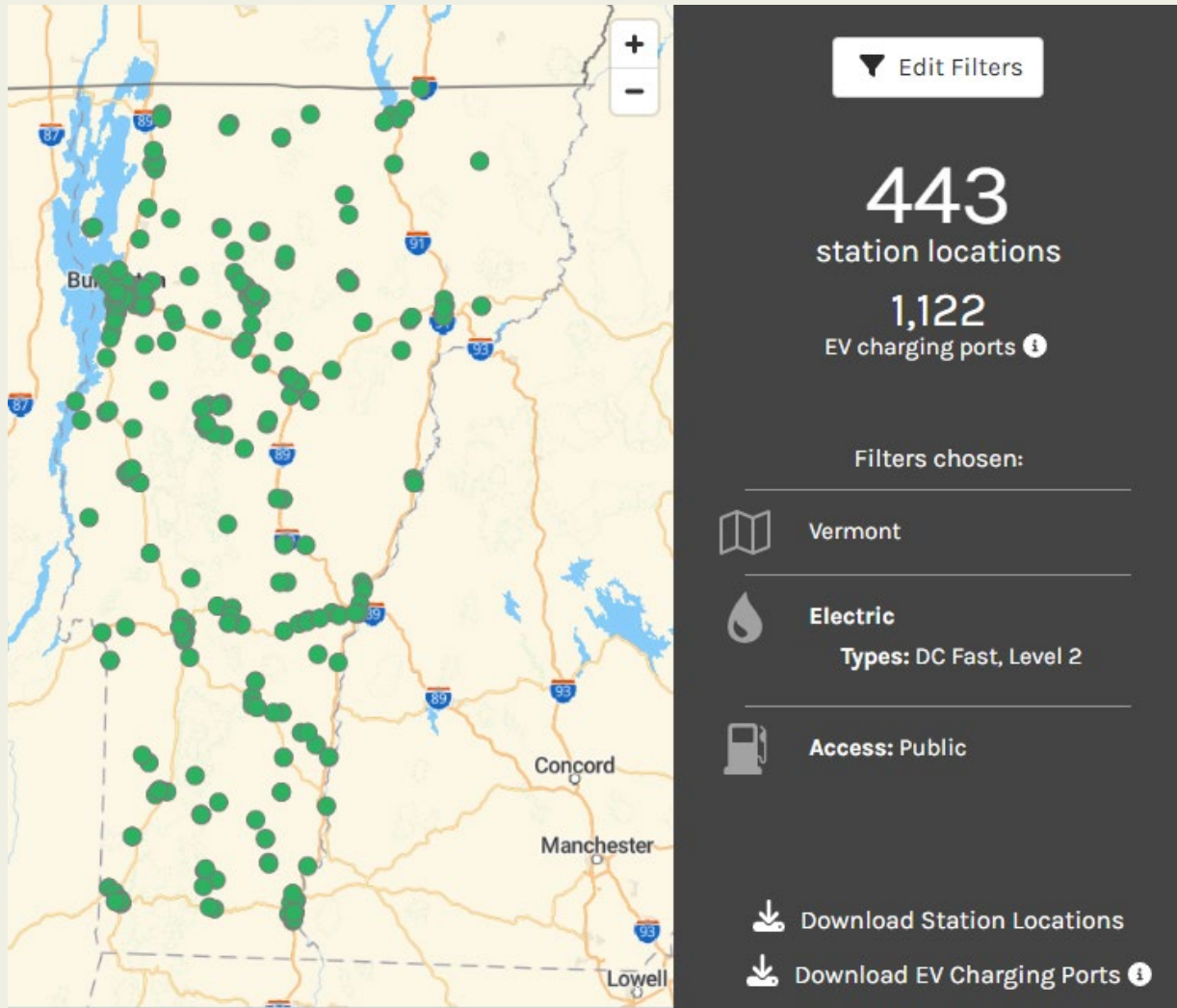
Source: Drive Electric Vermont

Re-fueling your EV at home

- ✓ Typical household travels 50 miles/day – most EVs have more than 200-mile range
- ✓ Most electric utilities offer EV charging equipment rebates and discounted off-peak rates to make fueling even cheaper
- ✓ Live in an apartment or condo? Grants are available now to support EV charging at multi-unit dwellings.



EV charging at Burlington Co-housing East Village Community



For when you aren't close to home: Vermont Public Charging

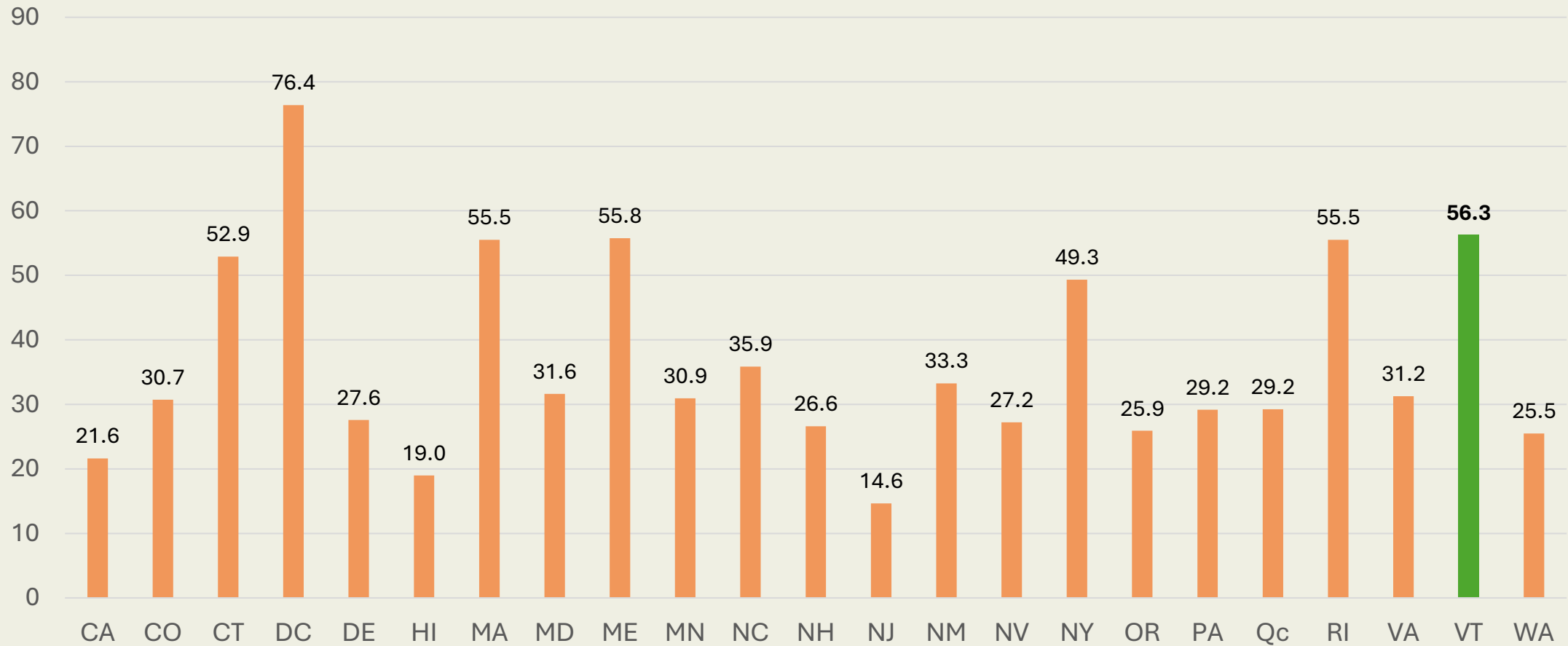
There are more than 400 public charging stations in Vermont alone – the highest number per capita in the U.S.!

Map Source: US DOE, Alternative Fuels Data Center

National Electric Vehicle Infrastructure (NEVI) Program - deploy a fast charging network across the country along interstate and state highway corridors – every 50 miles



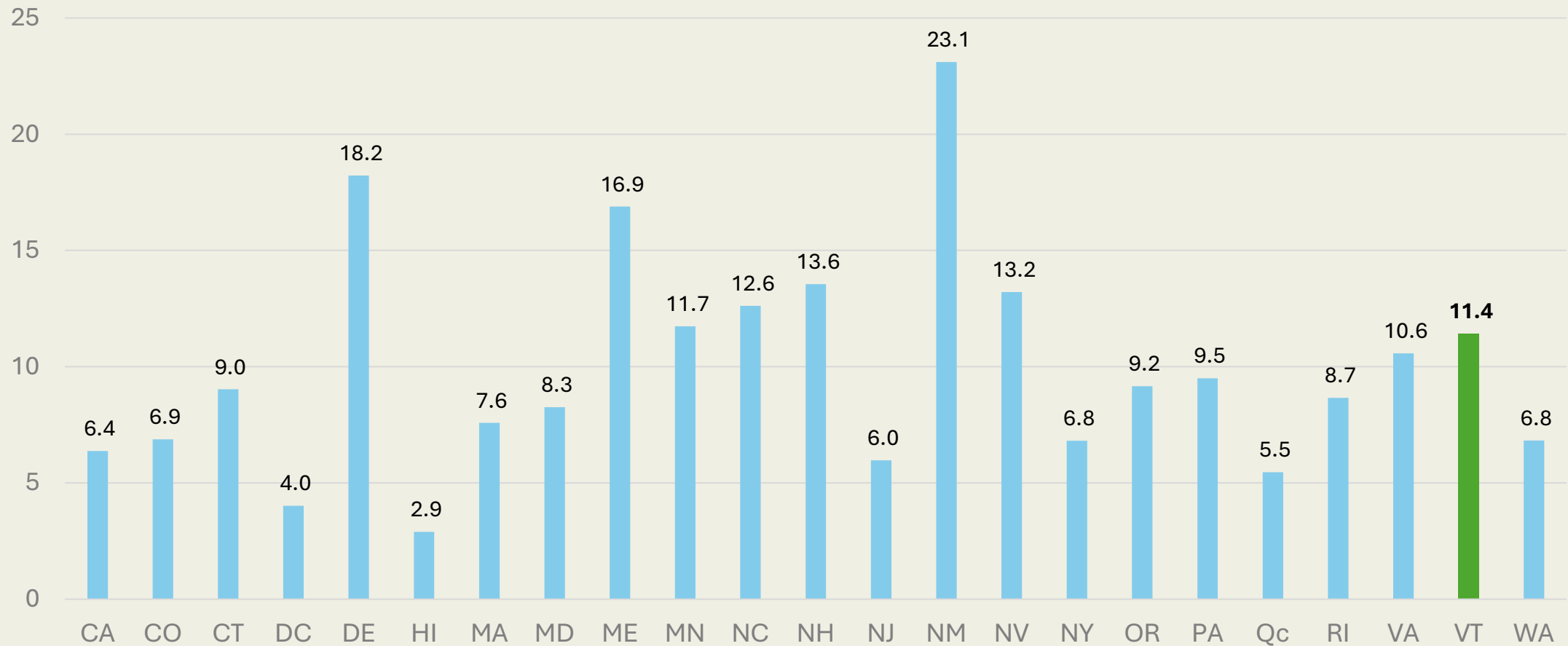
Level 2 Charging Plugs per 1,000 EVs



The National Renewable Energy Laboratory (NREL) recommends a ratio of 40 Level 2 plugs per 1,000 EVs



DC Fast Charging Plug per 1,000 EVs



The National Renewable Energy Laboratory (NREL) recommends a ratio of 3.4 DCFC plugs per 1,000 EVs



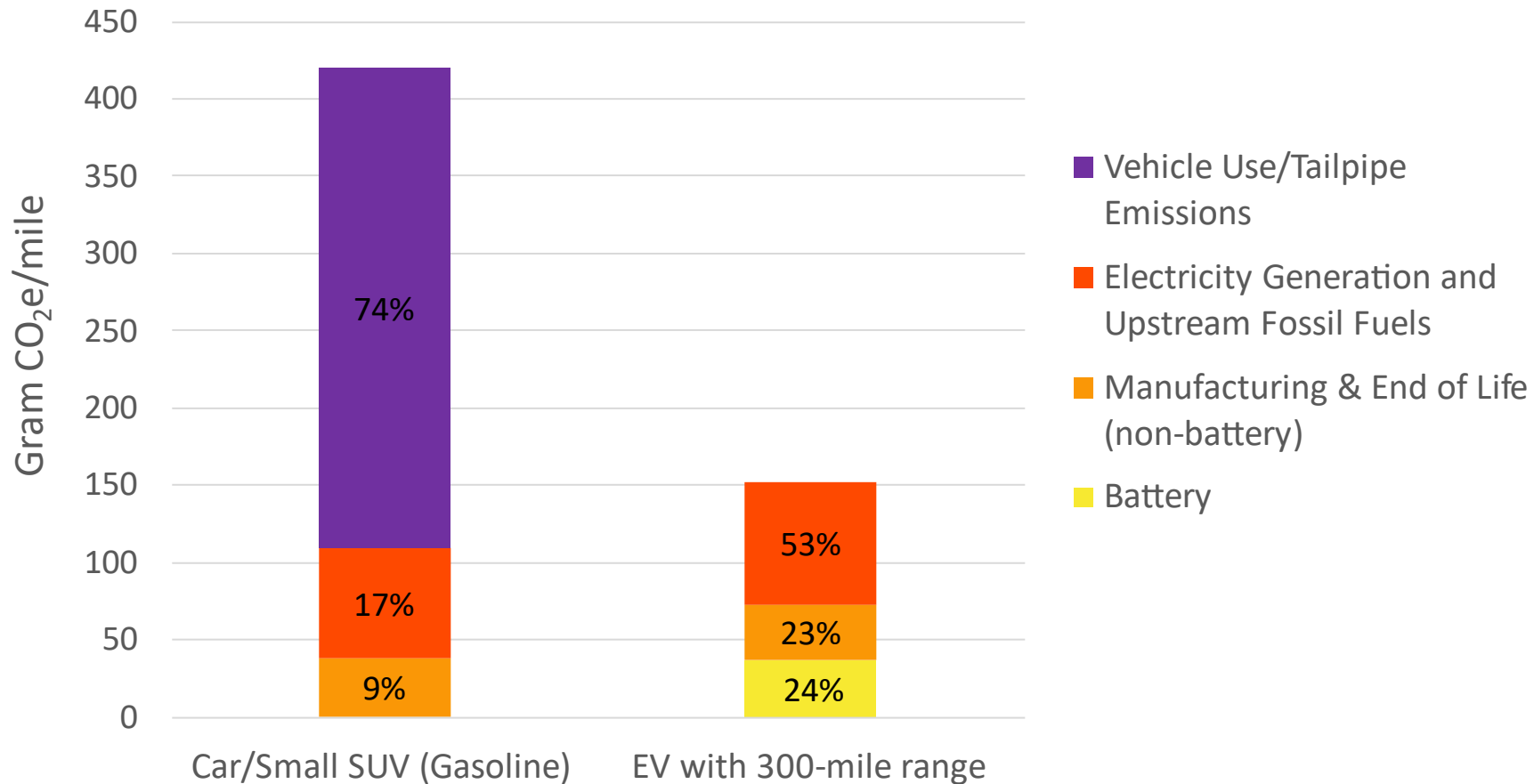
Support for businesses

- ✓ Support for workforce transitions
- ✓ Medium- and Heavy-duty EV purchase incentives are available now – school and transit buses, waste haulers, electric utility bucket and stake bed trucks, others
- ✓ Off-road equipment – Diesel Emission Reduction Act Grants



“Lifecycle” EV emissions are lower

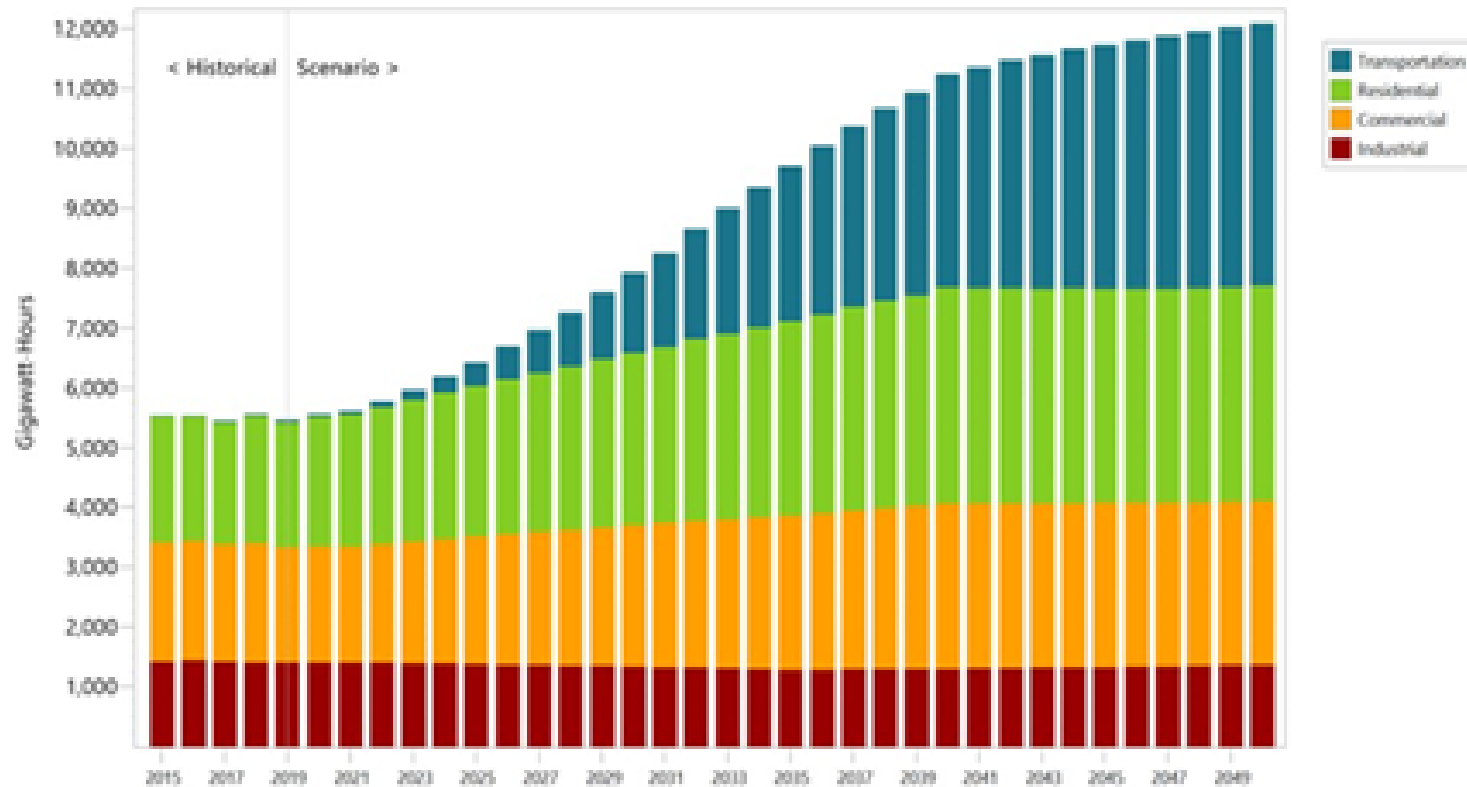
Lifecycle Greenhouse Gas Emissions Comparing an EV to a Gasoline Vehicle



EV has lower “lifecycle” emissions than a gasoline car

We can handle the increased electricity demand

Modeled Electricity Demand in Vermont, thru 2050



- ✓ Analyses show that demand for electricity will increase
- ✓ Integrated resource planning from utilities and grid resiliency efforts show that the demand can be met

Benefits for All Vermonters

Making transportation electrification equitable

- ✓ Greater EV availability
- ✓ Purchase incentives
- ✓ Greater durability
- ✓ Longer warranties
- ✓ Automaker Investments in cleaner mobility
- ✓ Lower fuel and upkeep cost



Contacts

Questions and comments about the
LEV/ZEV rules can be sent to:

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