

Advanced Clean Cars II & Advanced Clean Trucks

*EC4 Council Meeting
May 11, 2023*



Rhode Island
Department of
Environmental
Management

OFFICE OF AIR RESOURCES



Background

- In response to the threat of climate change, Rhode Island enacted the **2021 Act on Climate**, which sets mandatory, enforceable climate emissions reduction goals.

Reduction targets are as followed:

- 10% below the 1990 levels by 2020
- 45% below the 1990 levels by 2030
- 80% below the 1990 levels by 2040
- **Net-zero emissions by 2050**



*Governor Dan McKee signs into law the 2021 Act on Climate
Credit: Climate Change Rhode Island*



Background

We need to adopt these rules to meet the 2021 RI Act on Climate goal.

Quick Facts



1990-2019

Rhode Island Greenhouse Gas (GHG) Emissions Inventory

Gross GHG Emissions by Economic Sector in 2019



2019 Net GHG Emissions

10.04
million metric tons of CO₂e

2019 Greenhouse Gas Removals

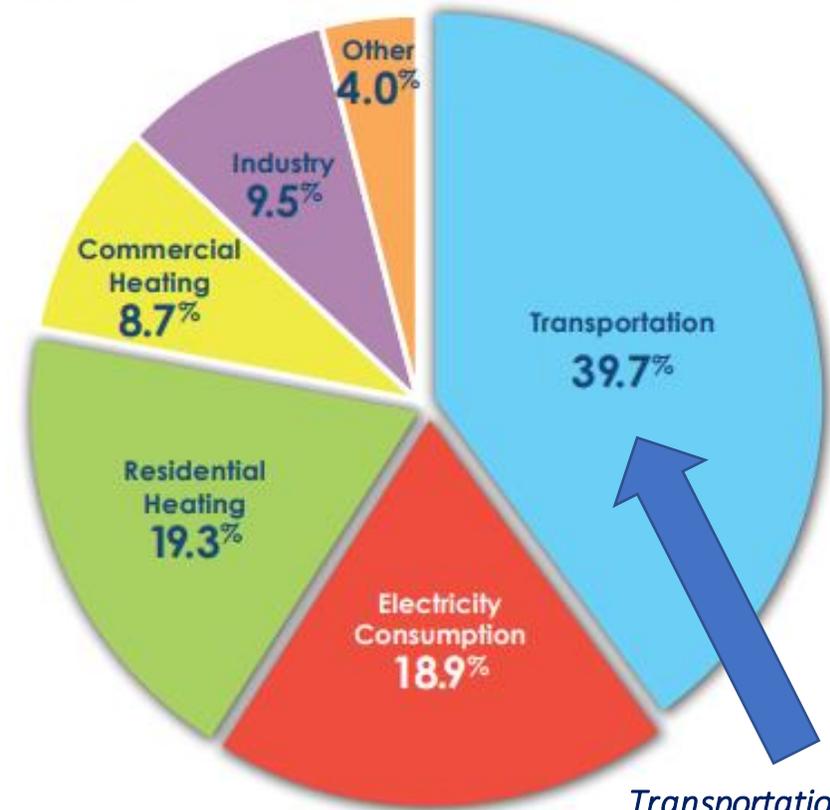
Land Use, Land Use Change & Forestry (LULUCF)
-0.78 MMTCO₂e
-7.2%
of gross GHG emissions offset by LULUCF

1990 - 2019 Change

Statewide Net GHG Reductions (1990-2019)
-19.6%

Lincoln Woods State Park

Figure 2: 2019 Greenhouse Gas Emissions by Economic Sector



Transportation is the largest source of greenhouse gas emissions in the state



Background – statutory authority



- The RI Air Pollution Control Act gives the Department basic authority to adopt regulations as needed to effectuate the purposes of RI and Federal Law.
- Under Clean Air Act, Section 177, states that choose to adopt vehicle emission standards that are more stringent than the federal standards for new vehicles may adopt standards that are identical to any standards adopted by California.
- RI has previously adopted California’s emissions standards for passenger cars and trucks and, with this rulemaking, would further opt-in to California’s standards to include new standards for medium- and heavy-duty vehicles.
- In March 2021, California adopted Advanced Clean Trucks. In August 2022, California adopted Advanced Clean Cars II (Effective date of November 30, 2022).



Draft Regulation Overview

Advanced Clean Cars II (ACCI)

Requirements for Manufacturers

- Sales requirement – not a purchase requirement
- Emission standards, testing procedures, improved warranty reporting

Advanced Clean Trucks (ACT)

Guarantees even cleaner vehicles delivered to Rhode Island

Low NOx Heavy-Duty Omnibus

Guarantees a minimum supply of ZEVs in Rhode Island

Credit/deficit system for compliance flexibilities

Phase 2 GHG

The rules allow for continued use of fossil fueled vehicles beyond 2035



Why adopt these rules



Pollution from gas and diesel vehicles can worsen asthma and other respiratory illnesses – especially in kids and older adults

Disadvantaged/environmental justice communities often feel these impacts the hardest

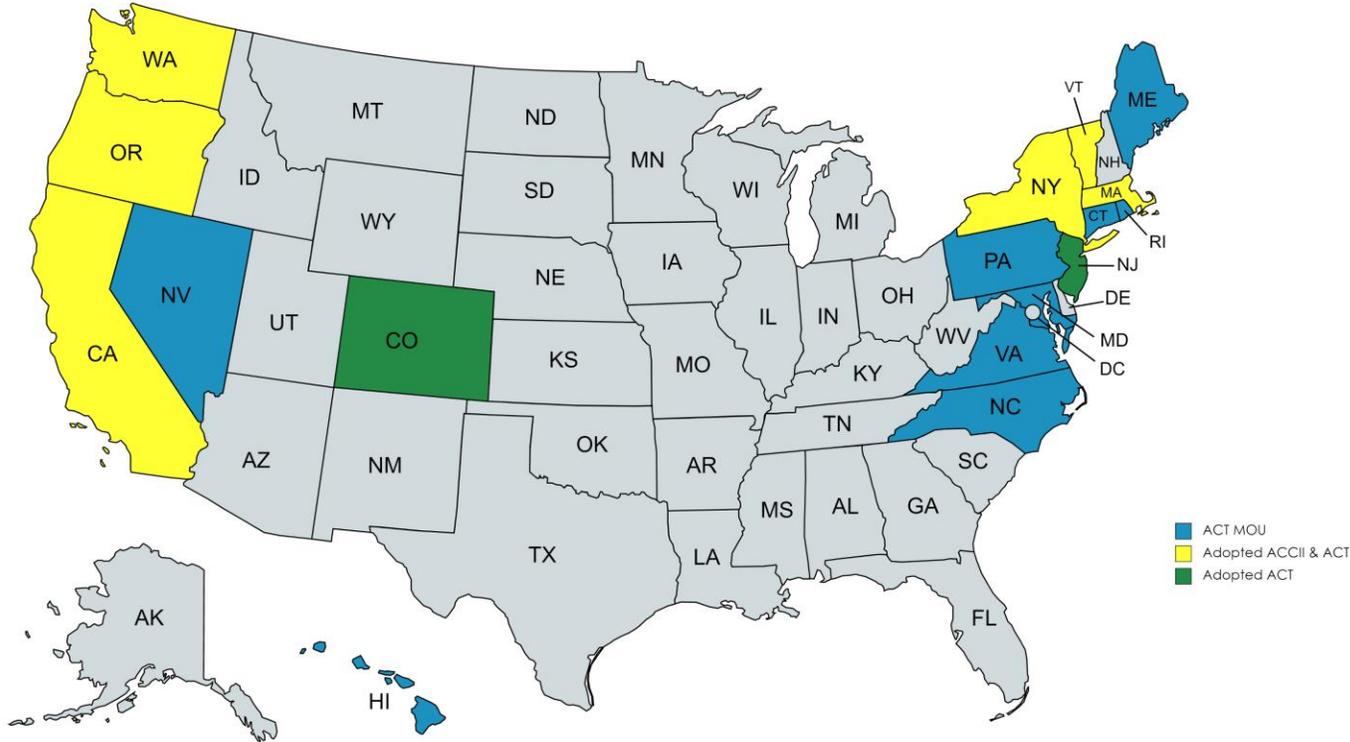
ACCII alone will provide a total cost savings of **\$60.7** million dollars from avoided hospitalizations & ER visits etc.



CREDIT: Minnesota Pollution Control Agency



Adoption benefits – joining surrounding states



Map created with mapcart.net

- As more states adopt one or more of these standards, it sends a strong signal to vehicle, truck and bus manufacturers and helps to build a more sustainable and affordable market.
- These states make up 43% of the national population.

STATES	ACC II	ACT
California	✓	✓
Colorado	In progress (modified)	✓
Connecticut	In progress	MOU
Delaware	In progress	
Massachusetts	✓	✓
Maryland	In progress	MOU
Maine		MOU
New Jersey	In progress	✓
New York	✓	✓
North Carolina		MOU
Oregon	✓	✓
Pennsylvania		MOU
Rhode Island	*2023	*2023
Vermont	✓	✓
Virginia	✓	MOU
Washington	✓	✓

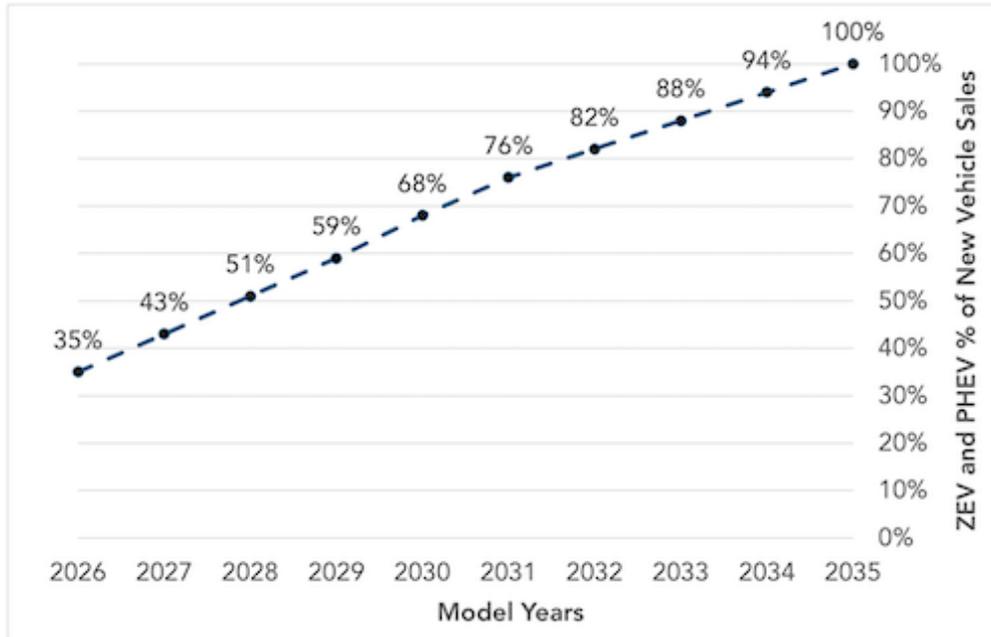


Advanced Clean Cars II (ACCCII)



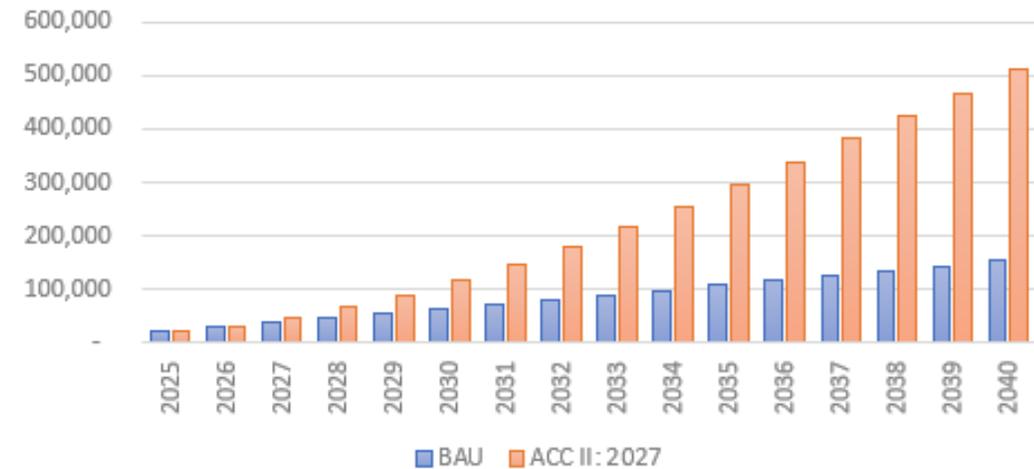
ACCII Details

- ACCII requires vehicle manufacturers to incrementally increase electric vehicle sales in Rhode Island.
- Ultimately reaching 100% of all NEW car sales to be electric by 2035.



SOURCE: California Air Resources Board

Light-Duty Zero Emission Vehicle Population 2025-2040 (RI Projection)



SOURCE: Northeast States for Coordinated Air Use Management (NESCAUM)



Additional ACCII Guidance

- EVs must have minimum electric range:
 - BEVs – 150 miles
 - PHEVs – 50 miles
- Durability – 80% of certified range value for 10 yr/150,000 mi.
- Warranties – for parts and battery state of health (maintain 70-80% of battery range for life of vehicle)
- Charging cord capability (Level 1 and 2 capable)
- Increase charger size capability (to allow for faster charging)
- Battery labeling – Address battery recycling



Credit: Forbes Magazine

Big Takeaways



- These are rules for the manufacturers, not the consumers.
- Inevitably the new products available to the consumer will be impacted incrementally over the coming years (beginning with model year 2027).
- Gas cars can and will still be on the roads beyond 2035 and be bought/sold as used cars beyond 2035.
- That being said, many car manufacturers are already moving towards fully electric products in the coming years.

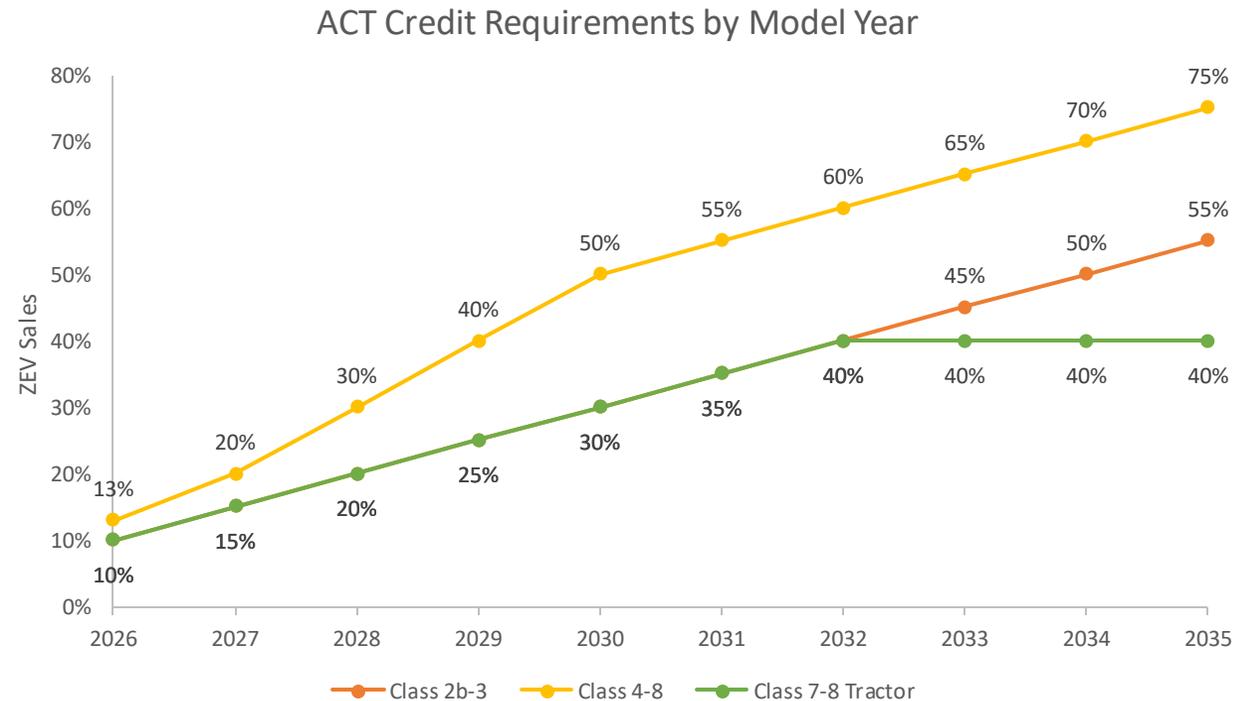


Advanced Clean Trucks (ACT)



ACT Details

- This is a manufacturer sales requirement – not a purchase requirement
- Guarantees a minimum supply of ZEVs in Rhode Island
- Credit/deficit system for compliance flexibility
- Unlike ACCII with an ultimate 100% EV goal, ACT is more of a gradual phase in to more zero-emission medium- & heavy-duty vehicles on the roads in the coming years:



ACT Details



- 19 jurisdictions in the US and Canada have committed, through the multi-state Medium- and Heavy-Duty Zero Emission Vehicle Action Memorandum of Understanding (MOU) and Multi-Jurisdiction Action Plan to work to slash GHG emissions and air pollution by accelerating the market for zero-emission trucks, vans, and buses.
- ACT rule applies to vehicle manufacturers of medium- and heavy-duty vehicles over 8,500 lbs. to sell ZEVs as an increasing percentage of their annual sales beginning with Model Year (MY) 2027.
- Starts MY2027, manufacturers can earn credits earlier
- Applies to vehicles greater than 8,500lbs gross vehicle weight rating (classes 2b-8)
- Manufacturers (OEMs) with less than 500 annual sales are exempt, but may opt-in to earn credits for selling ZEVs

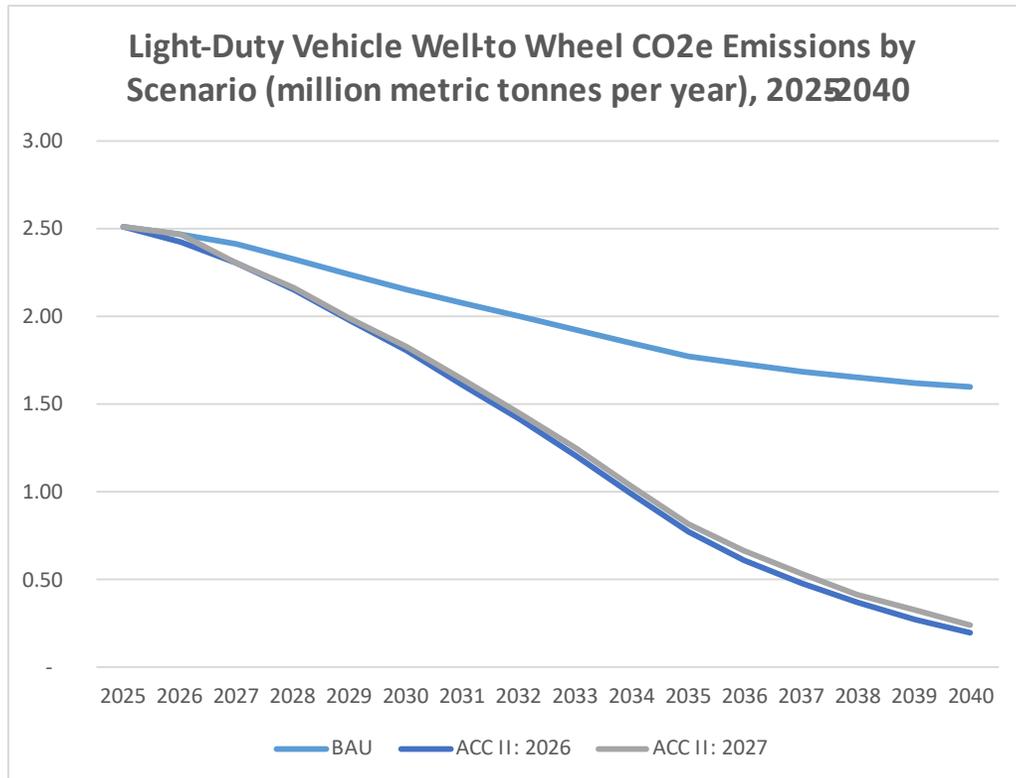


Class	Weight Range	Vehicle Types
Class 1	6,000 lbs & Less	Minivan, Cargo Van, SUV, Pickup Truck
Class 2	6,001 to 10,000 lbs	Minivan, Cargo Van, Full-Size Pickup, Step Van
Class 3	10,001 to 14,000 lbs	Walk-in, Box Truck, City Delivery, Heavy-Duty Pickup
Class 4	14,001 to 16,000 lbs	Large Walk-in, Box Truck, City Delivery
Class 5	16,001 to 19,500 lbs	Bucket Truck, Large Walk-in, City Delivery
Class 6	19,501 to 26,000 lbs	Beverage Truck, Single-Axle, School Bus, Rack Truck
Class 7	26,001 to 33,000 lbs	Refuse, Furniture, City Transit Bus, Truck Tractor
Class 8	33,001 lbs & Over	Cement Truck, Truck Tractor, Dump Truck, Sleeper

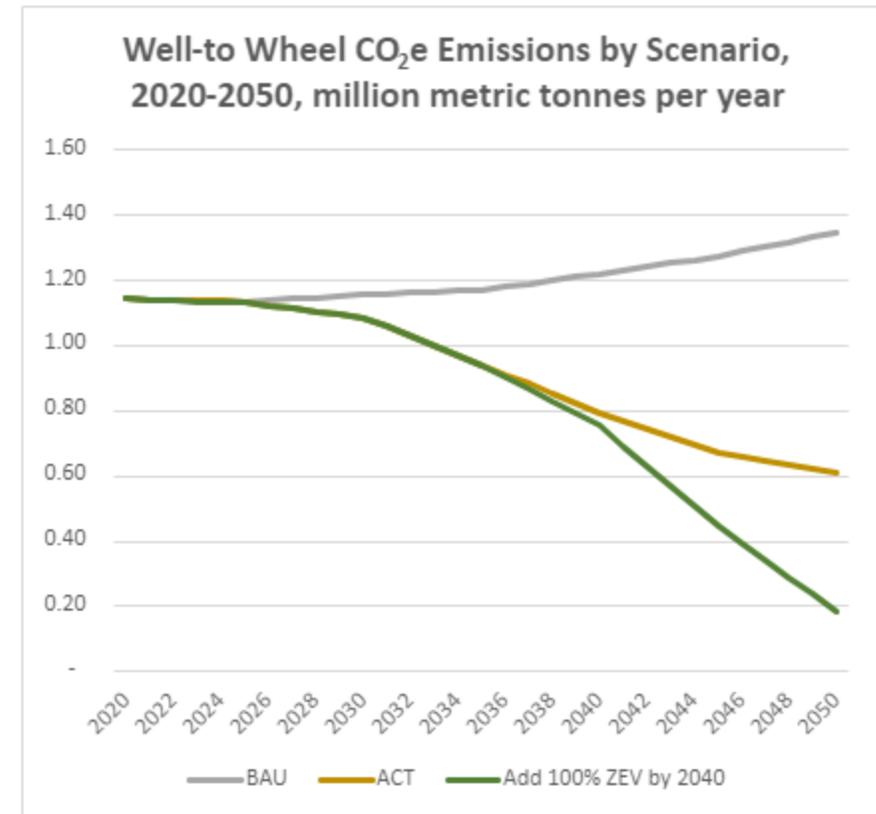


Combined benefits for CO₂ reductions

Advanced Clean Cars II:



Advanced Clean Trucks:



*2019 GHG Inventory 4.29 MMT total (transportation)

*With ACCII/ACT 2.92 MMT total by 2030

Projected timeline



- Section 177 of the Clean Air Act requires at least two-model years of lead time when a state adopts California's emission standards. To adopt California standards for model year 2027, a state must adopt those standards two years before January 2, 2026; in other words, before January 2, 2024 (i.e., by the end of 2023).

What happens next:

- *Announcement: May 10, 2023*
- Public Listening Session: May 18, 2023
- Public Feedback Period: May 10 - May 24, 2023
- Formal Rulemaking Process
- Formal Public Comment Period (30-days)
- Final Rule by January 2, 2024



Thank you!

- Please submit all comments by May 24, 2023 via the SmartComment Portal

<https://ri.commentinput.com/?id=PTBJi>

- Draft regulation and additional supporting information can also be found on our website: <https://dem.ri.gov/clean-cars-trucks>



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ACCII Support Slides



EV Market Availability



- **VOLVO** plans to go fully electric by 2030



- **NISSAN** targets 40% of U.S. sales to be electric by 2030.



- **GM** can 'absolutely' catch Tesla in EV sales by 2025, says CEO Mary Barra.



- **HONDA** targets 100% EV sales in North America by 2040.



- **FORD**: ups EV investments, targets 40% electric car sales by 2030



- **MERCEDES-BENZ** aiming to achieve up to 50% share of plug-in hybrid and BEVs by 2025 on the way towards all-electric by 2030.



- **VW** expects EVs to represent half of its vehicle sales by 2030.

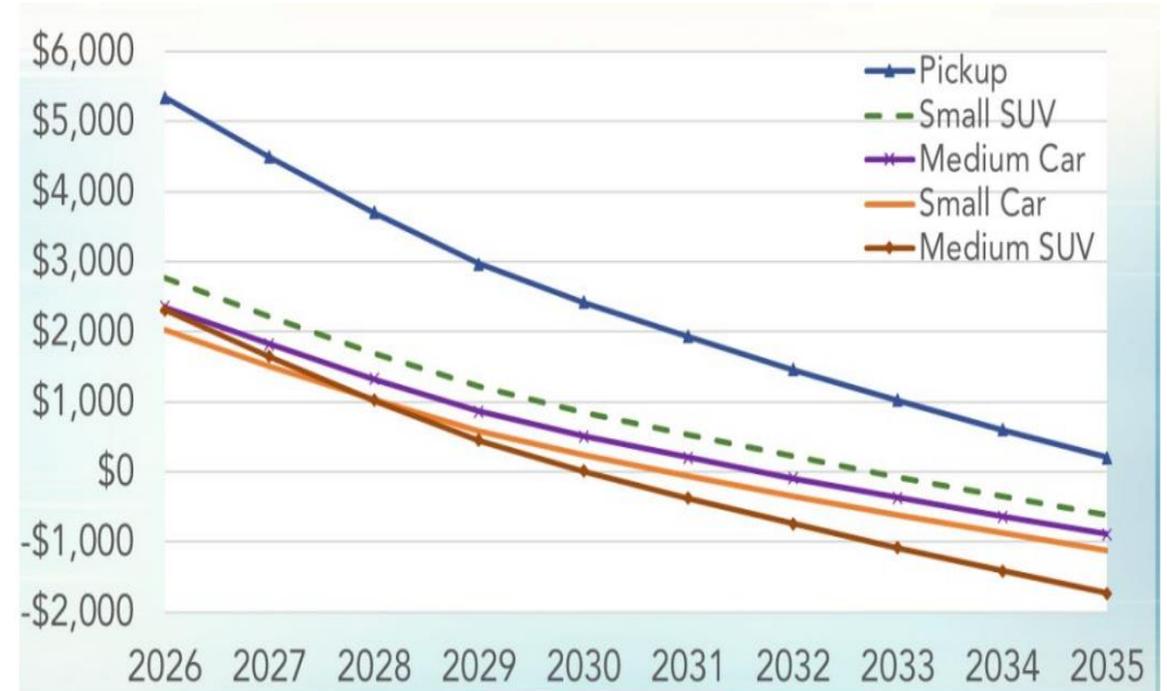


- Many more manufacturers have plans/are working on plans.



Cost Parity

- As of March 2023, EVs do typically cost more up front than gas counterparts
- Less moving parts = less maintenance!
- As the market grows and with passing ACCII – manufacturers will continue to provide more and more EVs in the coming years which will drop up-front costs.
- Additionally, more used EVs will come to the market
- There are incentives available – next slide



*If you'd like to see more specific information on cost-parity, you can reference CARB's Initial Statement of Reason and background materials.

California Air Resources Board



Incentives are available

- Rhode Island incentives:



NEW VEHICLES	DRIVE ^{EV} Rebate	DRIVE ⁺ Rebate	Total Rebate Amount
Fuel Cell Electric Vehicle (FCEV)	\$2,500.00	\$2,000.00	\$4,500.00
Battery Electric Vehicle (BEV)	\$2,500.00	\$2,000.00	\$4,500.00
Plug-In Hybrid Electric Vehicle (PHEV)	\$1,500.00	\$1,000.00	\$2,500.00

USED VEHICLES	DRIVE ^{EV} Rebate	DRIVE ⁺ Rebate	Total Rebate Amount
Fuel Cell Electric Vehicle (FCEV)	\$1,500.00	\$1,500.00	\$3,000.00
Battery Electric Vehicle (BEV)	\$1,500.00	\$1,500.00	\$3,000.00
Plug-In Hybrid Electric Vehicle (PHEV)	\$750.00	\$750.00	\$1,500.00

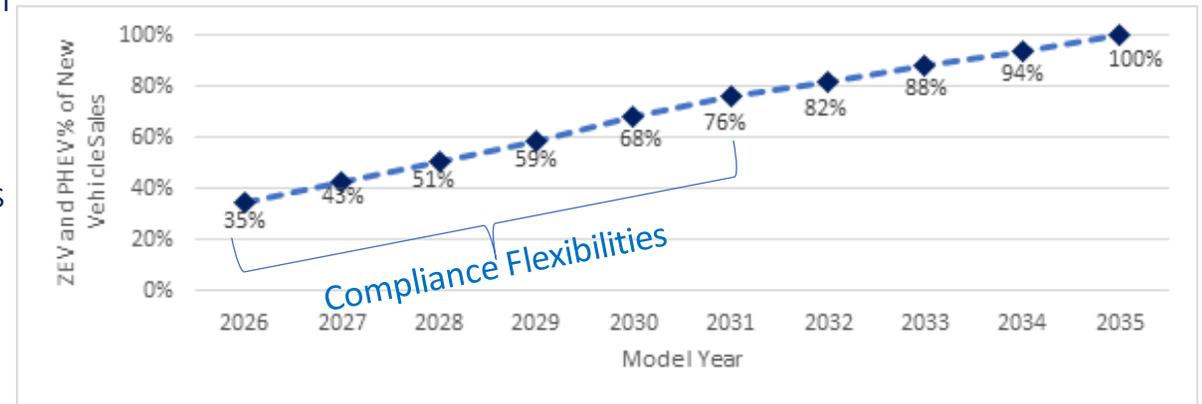
- Federal incentives are also available:

- You may qualify for a credit up to \$7,500 if you buy a new, qualified plug-in EV or fuel cell electric vehicle (FCV).
- The Inflation Reduction Act of 2022 changed the rules for this credit for vehicles purchased from 2023 to 2032.
- There are some qualifications like battery capacity, vehicle weight, purchase from a qualified manufacturer, and final assembly in North America.
- Resource: <https://afdc.energy.gov/laws/409>



ACCII Compliance flexibilities

- Early Action Credits—which allow manufactures to start earning credits on vehicles sold in the state two years prior to the start of their Clean Cars II program;
- Historical Credits—which allow manufacturers to use a certain percentage of banked credits earned in the Advanced Clean Cars I program (which goes through 2025) to be used to meet the requirements in ACC II;
- Credit “Pooling”— which allows manufacturers to transfer credits earned by ZEVs sold in a state with high ZEV sales towards another state that has lower sales;
- Fuel Cell Allowance — which allows manufacturers that sell fuel cell vehicles in one state are awarded additional credits that can be used in another state.
- Environmental Justice Values—which allow manufacturers to earn additional credits for lower cost vehicles, ZEVs placed in community car share programs or related incentives and community-based clean mobility programs to encourage sales to low-income community members (5% cap on use).



EJ Values & Qualifying Community-Based Mobility Programs



Manufacturers may earn EJ vehicle values by:



RI's draft rule: "Qualifying Community-based Clean Mobility Program" - the Department will issue guidance on qualifying programs.

What is a "Community-Based Clean Mobility Program"?

A Community-based clean mobility program must meet each of the following three elements:

1. Provide access to clean mobility solutions other than vehicle ownership including ZEV car sharing, ride-sharing, vanpools, ride-hailing, or on-demand first-mile/last mile services;
2. Serve a community in which at least 75% of the census tracts in the project area are a disadvantaged community, a low-income community, or a tribal community; and
3. Is implemented by a community-based organization, tribal government, or a public agency or nonprofit organization with support from a project-related community-based organization.

ACT Support Slides



ACT Support Slides



- OEMs (Original Equipment Manufacturers) generate *deficits* for ICE vehicles sold
 - OEMs generate *credits* for ZEVs or NZEVs sold
 - OEMs may bank and trade credits.
-
- The Department does not plan to adopt the annual reporting requirement for large entities and fleets because it lacks the staff capacity and resources to facilitate data collection and then process the volume of data and information this requirement will generate. The Department intends to adopt at a later date as resources allow.



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Projected MHD Truck & Bus Population

- These projections include all zero-emission vehicles (ZEVs), regardless of whether they are produced to meet the requirements of the ACT program or the GHG Phase II program and assume 100% MHD ZEV sales beginning in MY2040.

MHD Vehicle Population			
Year	Internal combustion engine vehicles	Zero emission vehicles	Total
2025	49,148	262	49,410
2030	46,631	3,029	49,660
2035	43,511	9,419	52,930
2040	37,587	18,603	56,190
2045	27,293	32,377	59,670
2050	18,152	45,008	63,160

Note: The M/HD vehicle category includes all vehicles with a Gross Vehicle Weight Rating of 8500 pounds or higher. Estimates for 2040 and later include 100% ZEV sales beginning with the model year 2040.



Incentives are available

NEW Electric Vehicle	USED Electric Vehicle
\$2,500 rebate for new Battery Electric Vehicles (BEVS) or new Fuel-Cell Electric Vehicles (FCEVs)	\$1,500 for used Battery Electric Vehicles (BEVs) or used Fuel-Cell Electric Vehicles (FCEVs)
Purchase or lease a new eligible EV with a final sales and purchase price agreement at or below \$60,000	Purchase or lease a used eligible EV with a final sales and purchase price agreement at or below \$40,000
Leased vehicles (new) are required to have a lease term of at least twenty-four (24) months to qualify for the program	Leased vehicles (used) are required to have a lease term of at least twenty-four (24) months to qualify for the program
Purchase or lease date must be on or after 7/7/2022	Purchase or lease date must be on or after 7/7/2022
One application up to 5 vehicles (per 24-month period)	One application up to 5 vehicles (per 24-month period)
Eligible vehicles must be purchased/leased by a qualified Rhode Island entity at a licensed Rhode Island automotive dealership and registered in Rhode Island	Eligible vehicles must be purchased/leased by a qualified Rhode Island entity at a licensed Rhode Island automotive dealership and registered in Rhode Island
From the date of purchase/lease: Applicants will have one hundred and twenty (120) days to provide OER with all required supporting documentation	From the date of purchase/lease: Applicants will have one hundred and twenty (120) days to provide OER with all required supporting documentation



Heavy-Duty Omnibus & Phase II GHG

- Requirement on vehicle manufacturers
- These are performance requirements
- Ensure emission reductions from new on-road heavy-duty engines and vehicles
- Ensure emission reductions are maintained as the engines and vehicles are operated
- Sets new more stringent GHG standards for medium- and heavy-duty engines, vocational vehicles, heavy-duty pick-up trucks and vans, and applicable tractors and trailers.
- Reduce adverse health impacts and improve air quality, especially in our communities that are disproportionately impacted by truck emissions

Electric Grid Capacity



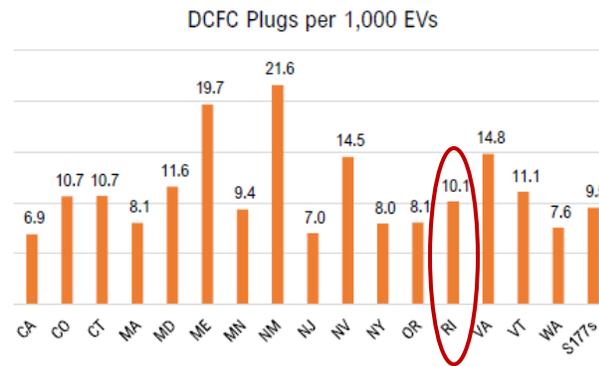
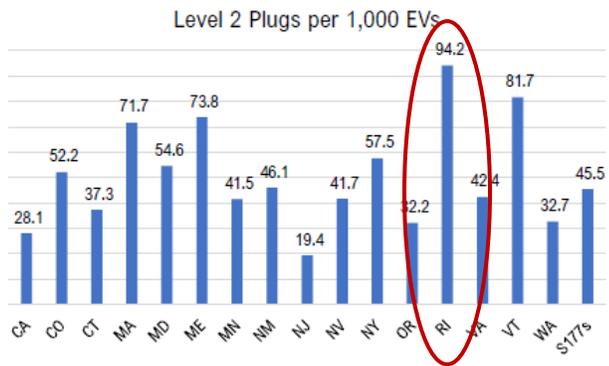
Can the grid handle the increased need?

- Over the next decade, zero emission vehicles are expected to add only a small amount of electricity demand to Rhode Island's grid.
- Our utilities are already planning for the transition to electric vehicle charging. Right now, the electrical grid can handle the current electric vehicle charging demand and can continue to support it for at least the next five years.
- In addition, Rhode Island is committed to sourcing 100% of our energy from renewable sources by 2033, and these facilities, along with the greater power system in New England, are expected to generate the electricity that will need to be delivered on the grid.
- State agencies are looking into policies that encourage grid-friendly load growth. For example, management strategies like time-of-use rates, will shift charging to non-peak system hours to ease grid impacts and prevent potential system overloads and wasteful construction of both the electric grid and power generators.
- Rhode Island Energy recently conducted a pilot off-peak charging rebate program, and currently has proposals before the Public Utilities Commission that could enable wider and more advanced off-peak charging program to help Rhode Islanders manage the costs of charging their EVs.

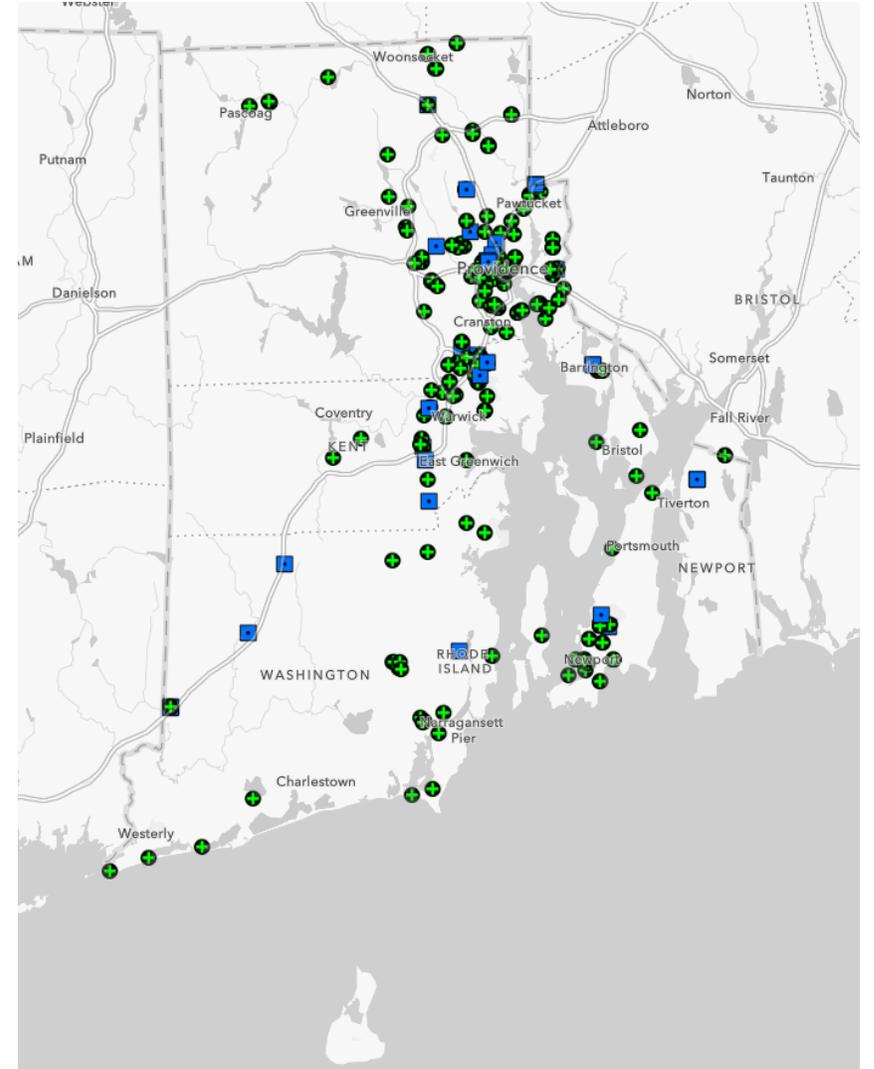


Charging Plugs in RI

- Current public charging infrastructure: As of February 2023, there are 288 public charging locations across Rhode Island.
- The National Renewable Energy Laboratory (NREL) recommends ratios of:
 - 40 Level 2 plugs per 1,000 EVs.
 - 3.4 DCFC plugs per 1,000 EVs.



Sources: US DOE, Alternative Fuels Data Center; and Alliance for Automotive Innovation, The Electric Vehicle Sales Dashboard
EVSE plug figures include Level 2 and DCFC stations that were active as of 1/19/23; and EV sales through 2022 Q3





More & more charging opportunities!

- RI has more than \$20 million dollars to invest in expanding public charging in the coming years!
- Statewide studies are being done to look into the best charging sites possible
- Electric vehicles are often charged at home!
 - A basic 120V plug is all you need
 - Installing a Level 2 charger can provide even faster charging capabilities at home
- Plus – with the Advanced Clean Cars II proposal, starting with model year 2027, electric vehicles will be required to come with a convenience cord that can charge at both Level 1 and 2 and will reduce the cost for home charging.