Board of Environmental Protection

July 20, 2023

Agenda

- Introduction (Jeff Crawford, DEP)
- Climate and Transportation Planning Overview (Joyce Taylor, Chief Engineer, Maine DOT and Co-Chair, Transportation Working Group, Maine Climate Council)
- Electric Vehicle Initiatives and Incentives (Michael Stoddard, Executive Director, Efficiency Maine Trust)
- State Electric Vehicle Charging Plans (Joyce Taylor)
- Electricity supply, Grid Planning, and Workforce Development (Dan Burgess, Director of the Governor's Energy Office)
- Overview of the Rules (Elaine O'Grady and Jeremy Hunt, NESCAUM)

Vehicle Electrification in Maine (Part I)

Joyce Taylor
Chief Engineer, MaineDOT

Maine's carbon dioxide emissions from fossil fuel combustion

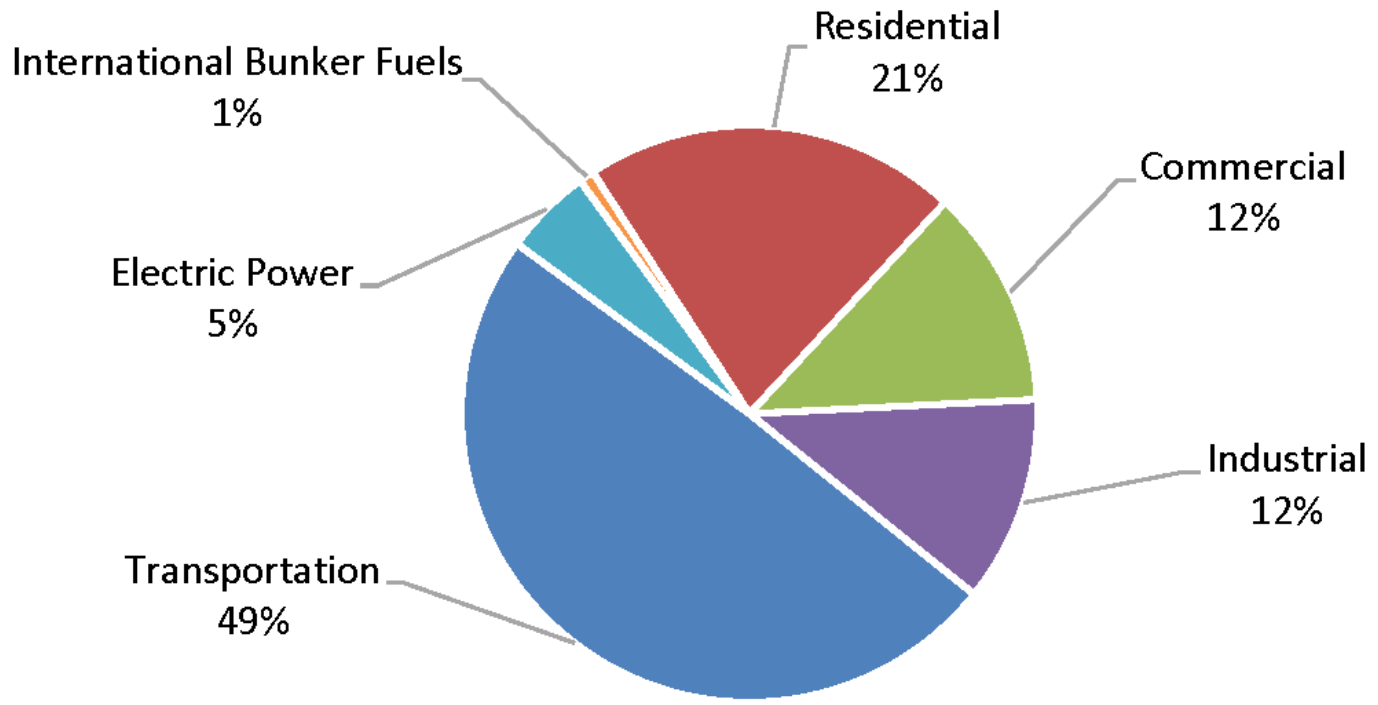


Figure from Maine DEP's Ninth Biennial Report on Progress toward Greenhouse Gas Reduction Goals, July 2022
https://www.maine.gov/climateplan/sites/maine.gov.climateplan/files/inline-files/9th_GHG_Report_FINAL%20%282%29.pdf

Maine Won't Wait

- Maine Climate Council charged with developing 4–year climate action Plan (Maine Won't Wait) with goals:
  - To reduce GHG emissions by 45% by 2030 and 80% by 2050
  - Avoid impacts and costs of inaction
  - Foster economic opportunity and prosperity
  - Advance equity through Maine's climate response
- Transportation working group is 1 of 6 working groups of the Climate Council

https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/MaineWontWait_EXSum.pdf

Transportation Working Group

Embrace the Future of Transportation

1. **Accelerate Maine's Transition to Electric Vehicles**
   - EV targets
   - Statewide EV Roadmap
   - Policies, incentives and pilot programs to encourage adoption
2. **Increase Fuel Efficiency and Alternative Fuels**
3. **Reduce Vehicle Miles Traveled**
   - VMT reduction targets for light-duty and heavy-duty vehicles

Light-Duty Vehicles

LDV in Maine

- Responsible for 55% of GHG emission from transportation sector
- >90% of all statewide VMT
- >90% of statewide Maine's total vehicle population

Goals for LDV in *Maine Won't Wait*

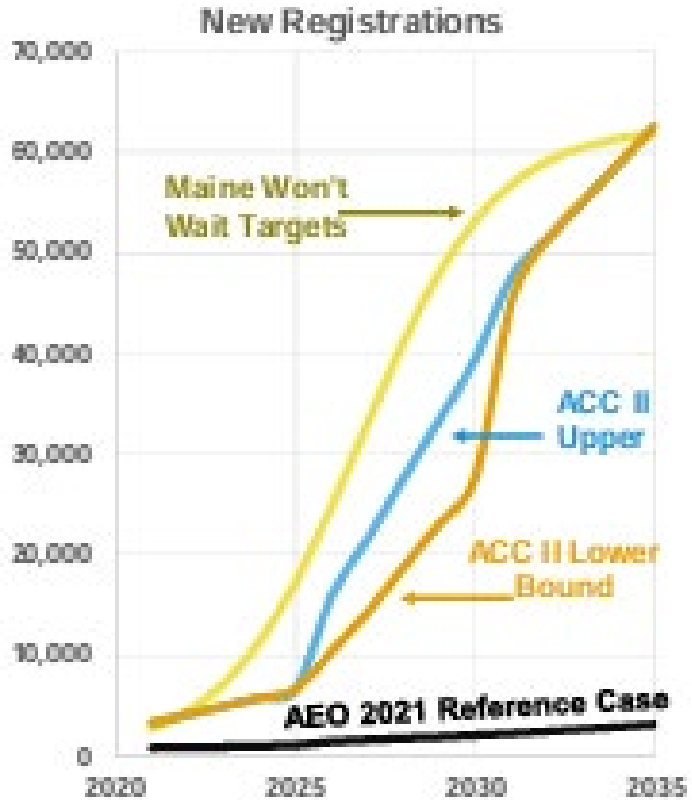
- 41,000 EVs on the road by 2025 and 219,000 by 2030
- 10% reduction in VMT by 2025 and 20% by 2030

Ongoing Work

- Clean Transportation Roadmap - *complete*
- Buildout of the EV charging network (L2 and DC fast chargers) - *in progress*

Clean Transportation Roadmap

- Identifies policies, programs, regulatory changes needed to continue decarbonizing Maine's transportation sector
- Consultant's policy recommendations include:
  - Advanced Clean Cars II
  - Advanced Clean Trucks
  - Public DC fast charger incentive and/or ownership
  - Medium- and heavy-duty EV incentive



Scenarios for light-duty EV deployment in Maine. ACC II pathways help meet EV targets.

https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/Maine%20Clean%20Transportation%20Roadmap.pdf

Medium- and Heavy-Duty Trucks

MHDV in Maine

- Responsible for 40% of GHG emission from transportation sector
- <10% of all statewide VMT
- <10% of statewide Maine's total vehicle population

Goals for MHDV in *Maine Won't Wait*

- Create policies, incentives, and pilot programs to incentivize zero-emission and alternative fuel MHDV
- 4% reduction in VMT by 2030

- Ongoing Work
  - Stakeholder education and engagement effort – *in progress*
  - Clean Transportation Roadmap for Medium and Heavy Duty - *in development*

Electric MHDV Stakeholder Group

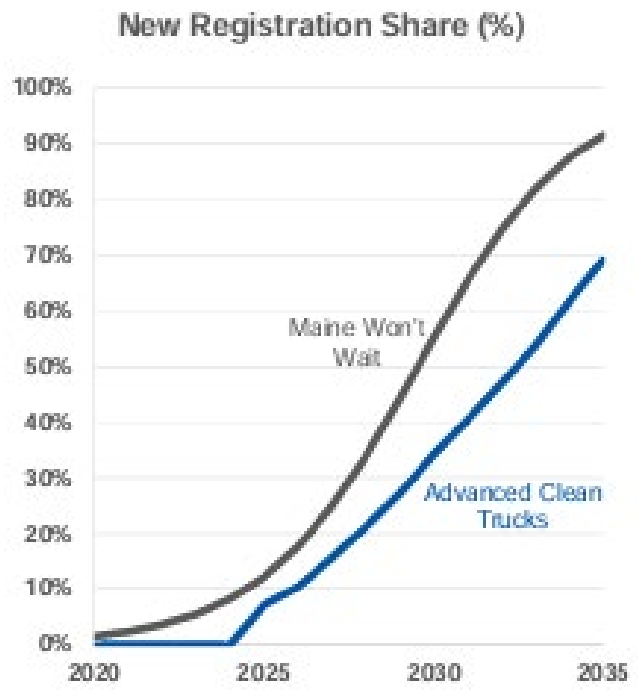
- MaineDOT spent nearly a year learning about the topic
- MaineDOT lead education and engagement session with stakeholders including:

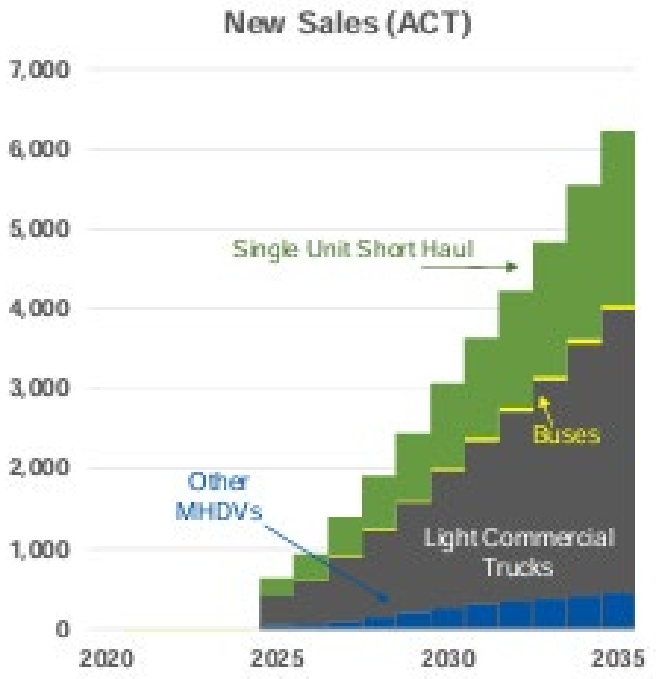
  Maine Better Transportation Association, Associated General Contractors, Maine Motor Transportation Association, Maine Auto Dealers Association, an auto dealer, Hannaford, Pine State Trucking, Efficiency Maine Trust, Governor's Office of Policy Innovation and the Future, The Nature Conservancy, and Strange Trip, Inc.
- Stakeholders heard from:

  North American Council for Freight Efficiency, Governor's Office of Energy, NESCAUM, Natural Resource Defense Council, Calstart, Rivian Fleet, Lion Bus, Quebec Eco Trucking Program, Volvo, Kenworth, and Cummins
- New partnership with utilities as a result of engagement

MHDV Clean Transportation Roadmap

- Scope of work for MHDV Clean Transportation Roadmap in development
- Outcome of roadmap includes policies, programs, regulatory changes needed to decarbonize the MHDV fleet in Maine
- Roadmap will reflect concerns about grid, locations of charging infrastructure, and vehicle availability shared by MHDV stakeholder group





Scenarios for medium- and heavy-duty EV deployment in Maine from (light-duty) Clean Transportation Roadmap. ACT pathways help meet EV targets.

Electric School Buses

- EPA's Clean School Bus Program awarded more than $13M to 13 Maine School Districts to help purchase 34 clean school buses
- Creation of the Maine Clean School Bus program
- New position for bus electrification at Department of Education
- State budget includes an additional $3M in school bus purchase program

Transit Bus Electrification

- MaineDOT hired a consultant to develop best practices summary for transit vehicle electrification and plans for transitioning select transit bus fleets to electric or hybrid vehicles
- 4 electric transit buses in use currently, 2 additional buses ordered through MaineDOT
- Bangor received grant to upgrade transit facility to make-ready for future electrification

Electric Vehicle Initiatives & Incentives in Maine

7-20-2023

Michael D. Stoddard, Executive Director

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Efficiency Maine Trust

- Is an independent quasi-state agency, instrumentality of the State
- Runs statewide energy efficiency programs funded
- Provides rebates, financing, consumer information, contractor support
- Funded by electric and natural gas utilities, Regional Greenhouse Gas Initiative, ISO New England Grid, settlements and grant funds, and other sources
- Board appointed by the governor and confirmed by the legislature

EMT's Legal Authority for EV-related Incentives in Maine

- 2 new funds established at the Efficiency Maine Trust:

  35-A MRS §10125 - Electric Vehicle Charging Infrastructure Fund
  to increase the availability and effectiveness of electric vehicle charging infrastructure

  35-A MRS §10126 - Electric Vehicle Fund
  to transform markets toward the adoption of electric vehicles and to support the purchase of electric vehicles

  (Public Law, Chapter 259 (2019), An Act To Increase Electric Vehicles in Maine)

- EV Goal established:

  35-A MRS §10104 sub-§4: goals of EMTs three-year strategic plan shall advance:

  (8) Promoting the purchase of battery electric vehicles and plug-in hybrid electric vehicles to achieve by 2030 the goal of at least 220,000 such vehicles registered in the State.

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The EV Market

Why Drive Electric?

- Save money on fuel and maintenance
- Enjoy quick acceleration and a quiet drive
- Reduce CO_2 emissions

TYPE	BEV	PHEV	ALL-GAS
EPA MPGe/ MPG*	117 MPGe	97 MPGe electric 38 MPG gasoline	23 MPG
Annual carbon emissions per vehicle (tons)	1.1	3.0	5
Annual fuel cost**	$754	$1,053	$1,975

* Combined MPGe is miles per gallon equivalent. Calculated from the average kWh/100 miles rate of EV models listed on Efficiency Maine's list of eligible vehicles. Values sourced from fueleconomy.gov. Calculations in the table based on the EPA's latest fuel economy data for passenger cars and SUVs, consistent with its regulatory work.

**Based on five-month average New England retail gas price of $3.93/gallon as of June 6, 2022 (Energy Information Administration), Maine state average electricity rates of $.226/kWh as of June 6, 2022 (Maine Public Utilities Commission) and 11,500 miles driven per year.

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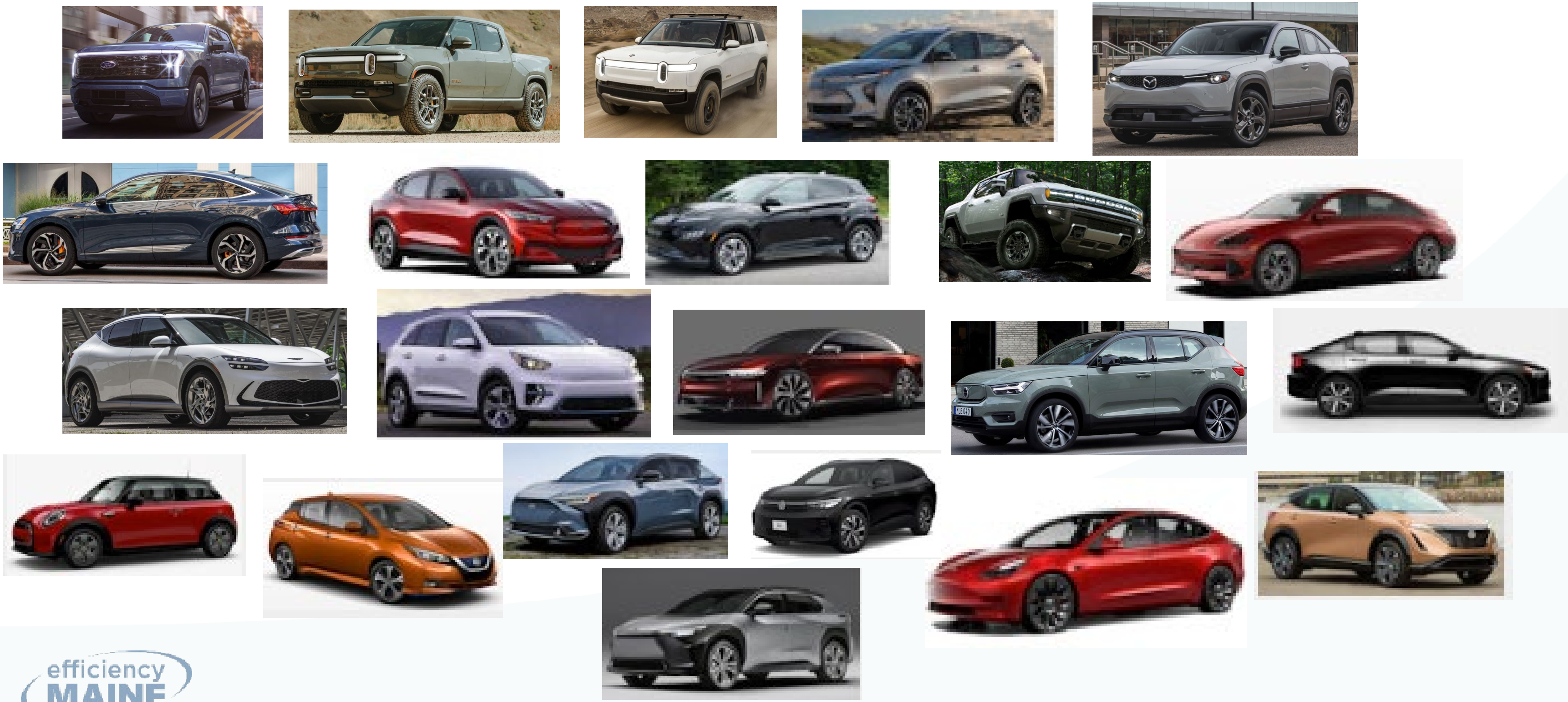
Manufacturers offer a wide range of EV models (68) … but now we need them shipped to Maine



Commercial EV Opportunities

- Pickups: Ford F-150, Rivian R1T
- Ford E-Transit Cargo Van (2021)
  - $45,000
  - 126 mi range
  - Remote monitoring for fleets
- Box Trucks
- Buses – Transit & School Buses
- Street Sweepers
- Sanitation

Increasing MHDV Models Available Now

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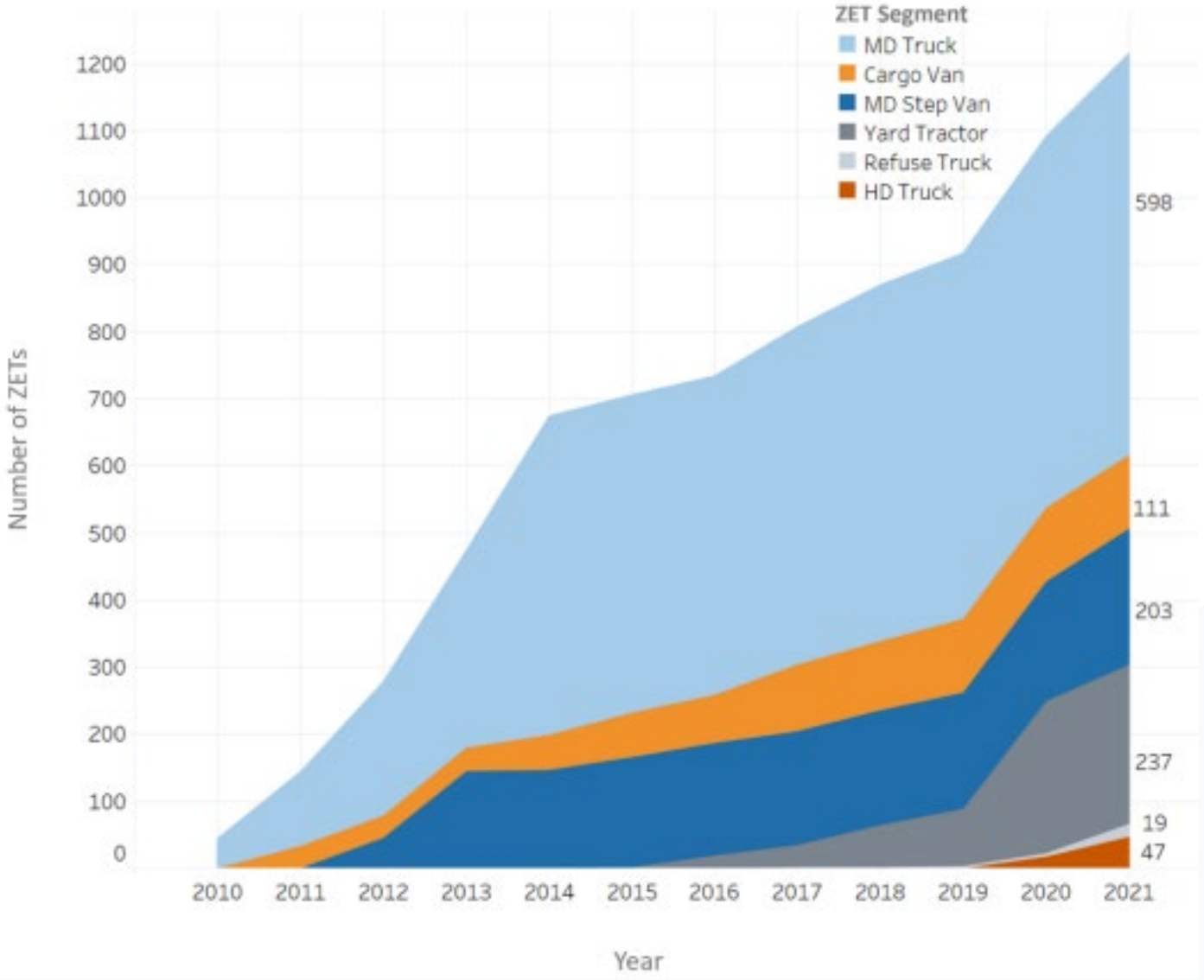
At a single event last fall: 44 models from 31 manufacturers

Cumulative ZET Deployments in the United States (2010-2021)



CALSTART, “Zeroing in on Zero-Emission Trucks”, 1/2022, p. 2

Maine Incentives for EVs

www.efficiencymaine.com/electric-vehicle-rebates/

Eligible Light Duty Vehicles (Current)

- 20 eligible BEV models
- 12 eligible PHEV models
- <$50,000 Total MSRP
  - Except for pickups and commercial vans
  - www.efficiencymaine.com/docs/EV_Rebate_Eligible_Vehicles.pdf

Rebates at Participating Maine Dealerships

	Any Income	Moderate Income	Low Income
New Battery Electric Vehicle (BEV)	$1,000	$3,500	$7,500
New Plug-in Hybrid Electric Vehicle (PHEV)	$500	$2,000	$3,000
Used PHEV or BEV	N/A	N/A	$2,500

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Low-Income & Moderate-Income Eligibility

- Low Income eligibility:
  - participation in Home Energy Assistance Program (HEAP), Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), or MaineCare
- Moderate-Income eligibility
  - AGI up to $70,000 single; up to $100,000 if filing jointly
- Vehicle eligibility:
  - Purchased from a participating dealer
  - Model year 2015 or newer
  - On Efficiency Maine's list of eligible used EVs
- Limits:
  - 1 Low-Income EV rebate (new or used) per ***individual***
  - 2 Low-Income EV rebates (new or used) per ***household***
  - Each vehicle can only receive a used EV rebate once

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Governmental Entities and Tribal Governments

Type of Vehicle	Rebate
NEW BEV	$7,500
NEW PHEV	$2,000
Level 2 Charger	$350 per plug

- Must request pre-approval through Efficiency Maine website prior to purchasing
- Maximum of 5 EV rebates per entity per 12-month period, of which not more than 2 may be for ***leased*** EVs

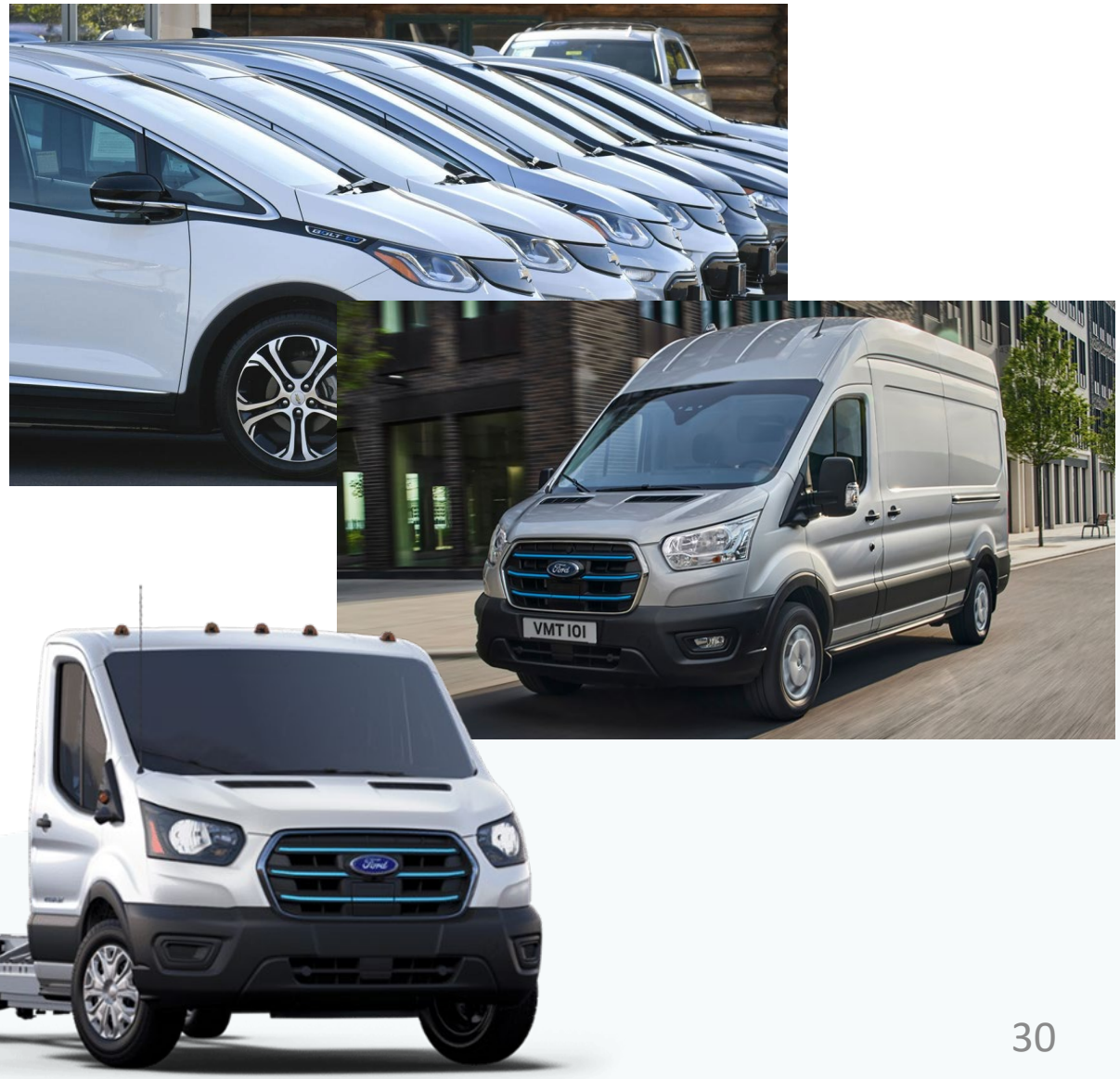
Select Maine Non-Profits

Type of Vehicle	Rebate
NEW BEV	$7,500
NEW PHEV	$2,000
Level 2 Charger	$350 per plug

- Must be listed in the 211 Maine directory and have 501(c)(3) status
- Must request pre-approval through Efficiency Maine website prior to purchasing an EV
- Maximum of 10 EV rebates per organization per 12-month period

Limited-Time EV Incentives for Business Fleets

- Cars and Pickup Trucks*
  - $4,500 / BEV
  - $3,500 / PHEV
- Commercial Vans
  - $8,000 / Cargo Van
  - $5,000 / Chassis Cab or Cutaway



**Must have 5 or more vehicles registered in Maine*

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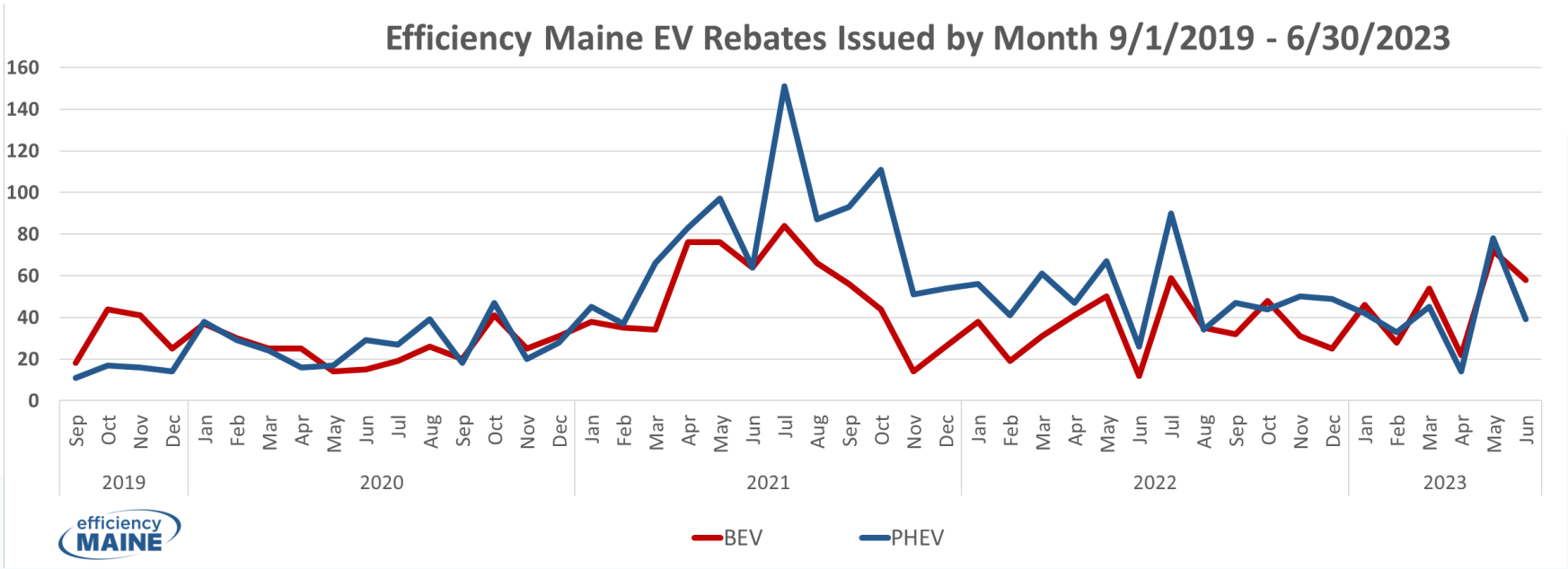
Results of Efficiency Maine "EV Accelerator" Program

Total Rebates By Technology Type (9/1/2019 – 5/31/2023)	Number of Rebates	Dollars Spent
BEV (Battery Electric Vehicle)	1,694	$4,666,000
PHEV (Plug-in Hybrid Electric Vehicle)	2,155	$2,083,000
Total	3,849	$6,749,500



Federal Incentives for EVs

Federal Tax Credits for Eligible Purchases:

- **New EVs:** tax credit of up to **$7,500**
- **Used EVs:** tax credit of 30% of the price of the vehicle up to **$4,000**
- **Commercial EVs:** tax credit of up to
  - **$7,500** for light duty vehicles and
  - **$40,000** for vehicles over 14,000 pounds

- **EV Charging Installation:** tax credit of 30% of the actual equipment and installation cost, not to exceed $100,000 for commercial property and capped at $1,000 for homeowners

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Federal Grant Programs

- **Clean Heavy-Duty Vehicle Program**
  - $1 billion from IRA to:
  - Replace dirty heavy-duty vehicles with clean, zero-emission vehicles
  - Support zero-emission vehicle infrastructure
  - Train and develop workers.
- **Diesel Emissions Reduction Act (DERA)**
  - Grants and rebates that protect human health and improve air quality by reducing harmful emissions from diesel engines
  - **Clean School Bus Program**
    - $5 billion from BIL over 5 years (FY 2022-2026) to:
    - replace existing school buses with zero-emission and low-emission models
- **Low or No Emission Vehicle Program**
  - ~$2 billion/year for 5 years of additional funding from BIL to
  - state and local governmental authorities for the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction, and leasing of required supporting facilities.

EPA United States Environmental Protection Agency

Federal Transit Administration

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Recharge
Maine
State EV Charging Network

EV Charger Types

* Estimated. Actual charge times will vary depending on charger amperage and acceptance rate of vehicle.

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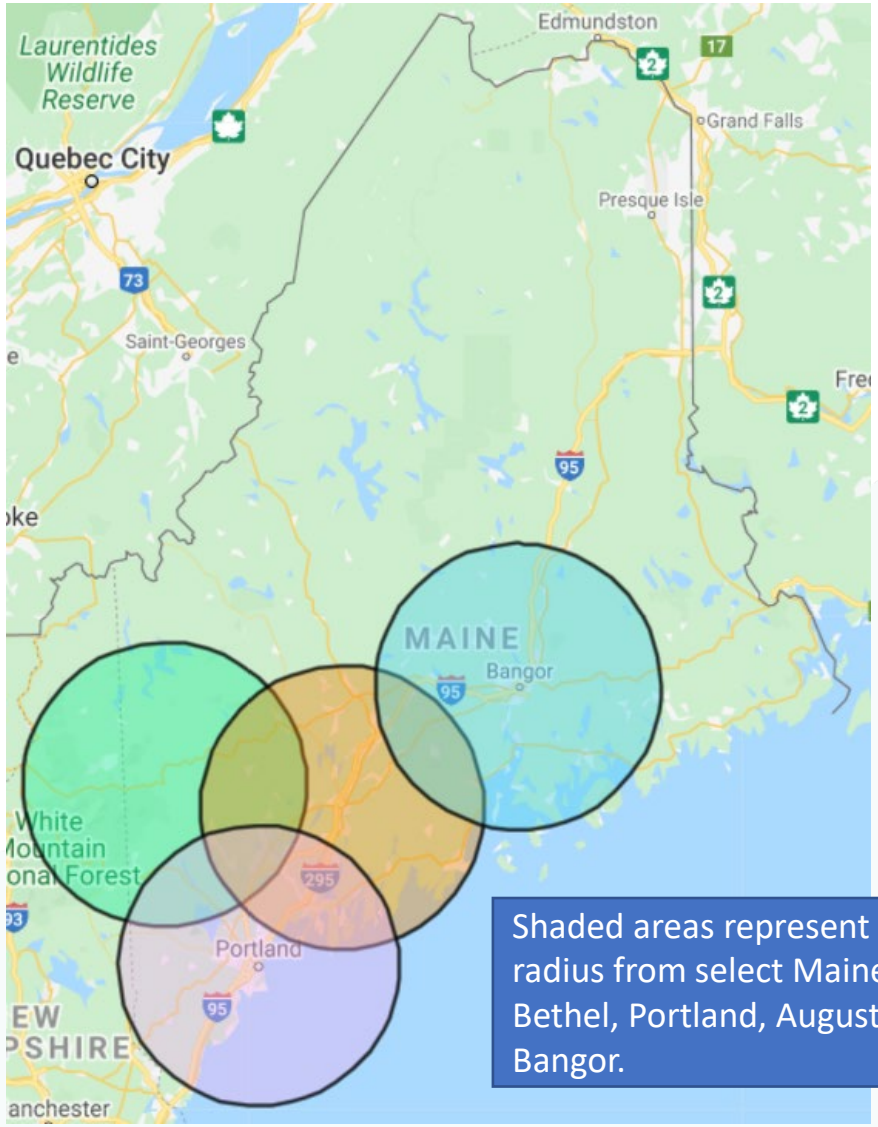
Nearly 90% of driving takes place within 40 miles of a starting point

- Average trip length in Maine is 18.9 miles
- 89% of trips in Maine are under 40 miles round-trip
- 74% of trips are under 20 miles
- 52% of vehicle miles traveled (VMT) in Maine are for trips under 40 miles
- The **average range of battery electric vehicles** (BEVs) on Efficiency Maine's list of eligible EVs is **233 miles**



Extending Lines and Filling Gaps

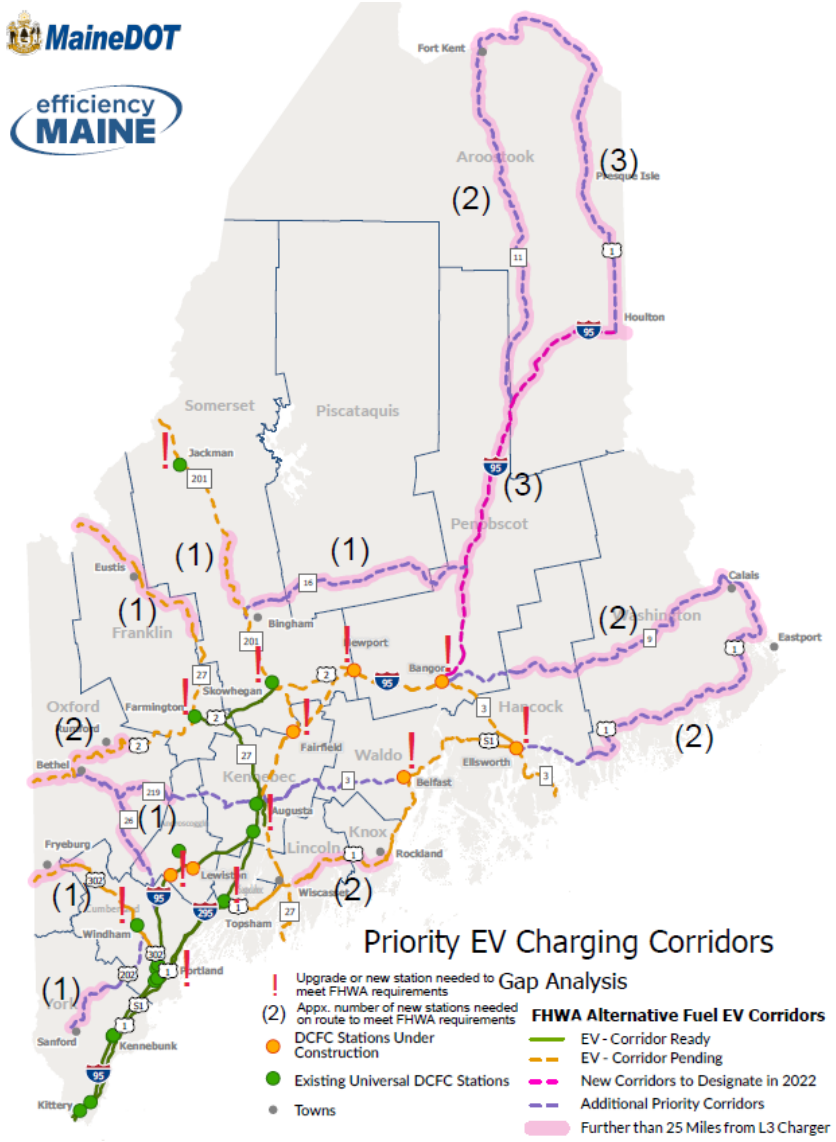


Fig. 4 EV Charging Gap Analysis, existing chargers, and new chargers and upgrades needed to meet FHWA requirements

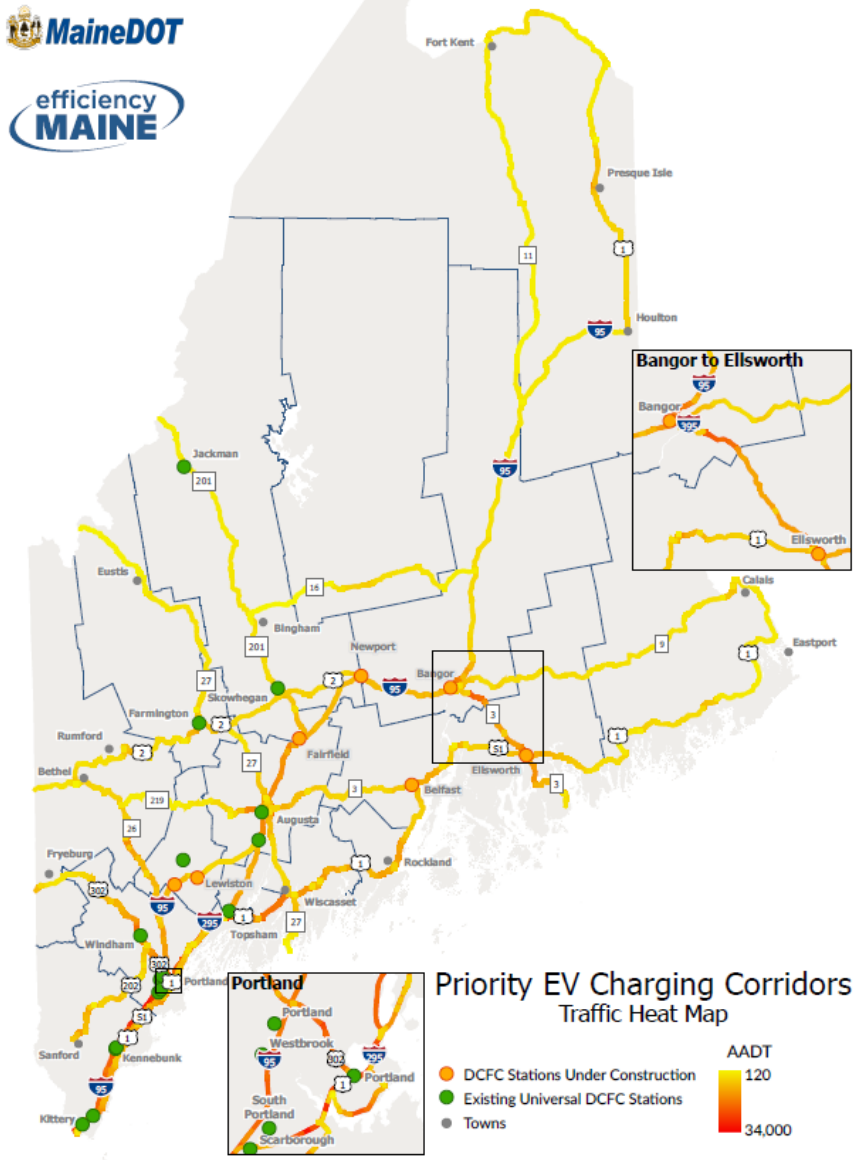


Fig. 5 Average Annual Daily Traffic on Alt. Fuel Corridors and other priority routes

Phase 3 DC Fast Charging Update

- **Newport (Irving) DCFCs commissioned on 1/31/23**
- **Bangor (Irving) DCFCs commissioned on 3/10/23**
- **Lewiston site (Mobil/On the Way) commissioned on 5/1/23**
- **Next sites:**
  - ReVision – Ellsworth, construction to start 5/8/23
  - ReVision – Belfast, construction to start 5/17/23
  - Irving – Fairfield (civil work complete) and Auburn (broke ground)

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Phase 4 DC Fast Charging in Aroostook & Washington Counties

- **Phase 4 RFP closed on January 6, 2023**
  - Four projects awarded
    - Presque Isle (Irving Oil)
    - Fort Kent (Irving Oil)
    - Baileyville (Irving Oil)
    - Town of Van Buren
- **Phase 4-2 RFP closed in June, 2023**
  - Eligible segments:
    - Medway
    - Houlton
    - Ashland
    - Danforth
    - Machias
    - Beddington

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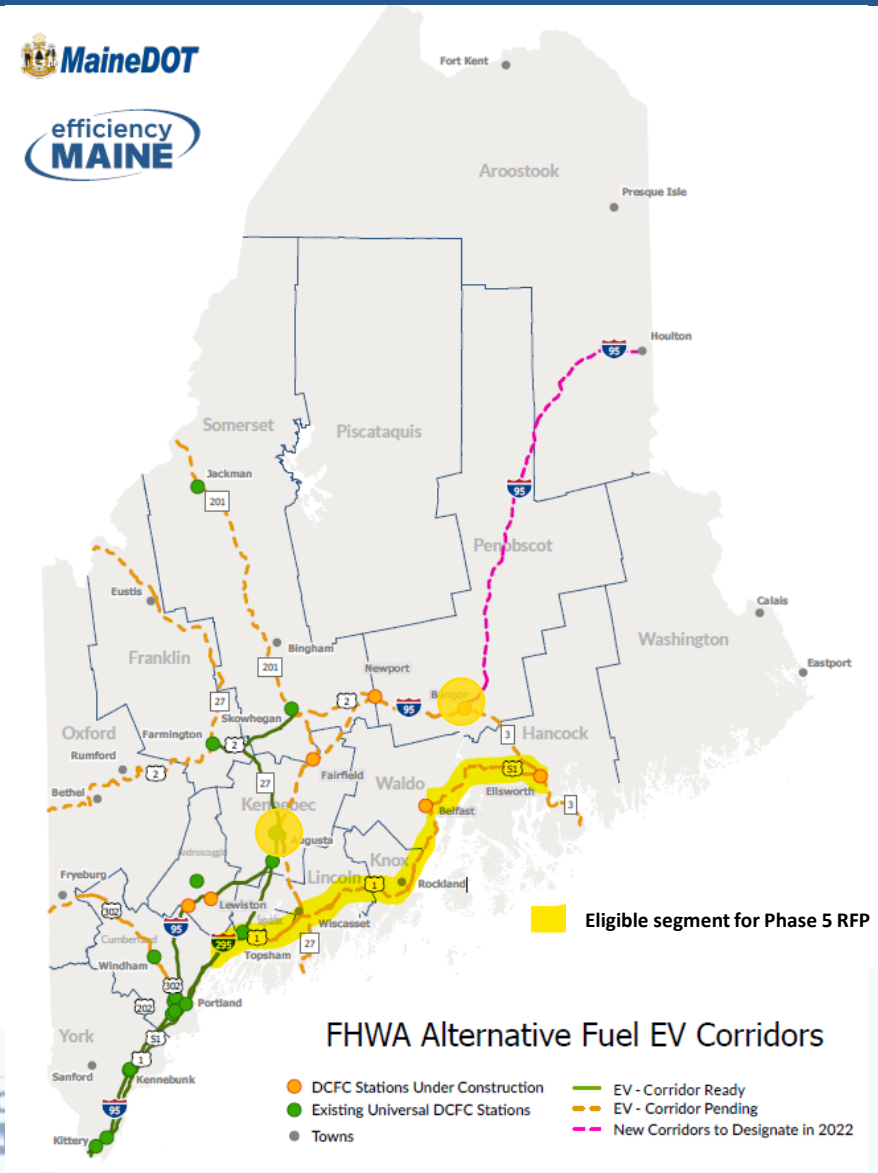
Phase 5 DC Fast Charging (NEVI)



- **Budget: $6,966,200**

RFP Issued	3/23/2023
Bidder's Informational Webinar #1	4/5/2023
Questions Due	4/19/2023
Responses to Questions Posted	4/26/2023
Bidders' Information Webinar #2	5/10/2023
Proposals Due	6/22/2023
Anticipated Award Date	7/27/2023

Example: Level 2 Charger Installation with Incentives

Payson Park, Portland; Courtesy of City of Portland

Northern Maine Medical Center, Fort Kent; Courtesy of Town of Fort Kent

Payson Park, Portland

- Number of Plugs: 2 (networked)
- Total Project Cost: $14,331.90
  - Equipment: $9,981.75
  - Installation: $4,350.15
  - EMT Grant: $5,000

Northern Maine Medical Center, Fort Kent

- Number of Plugs: 2 (non-networked)
- Total Project Cost: $8,495
  - Equipment: $3,000
  - Installation: $5,450
  - EMT Grant: $6,760

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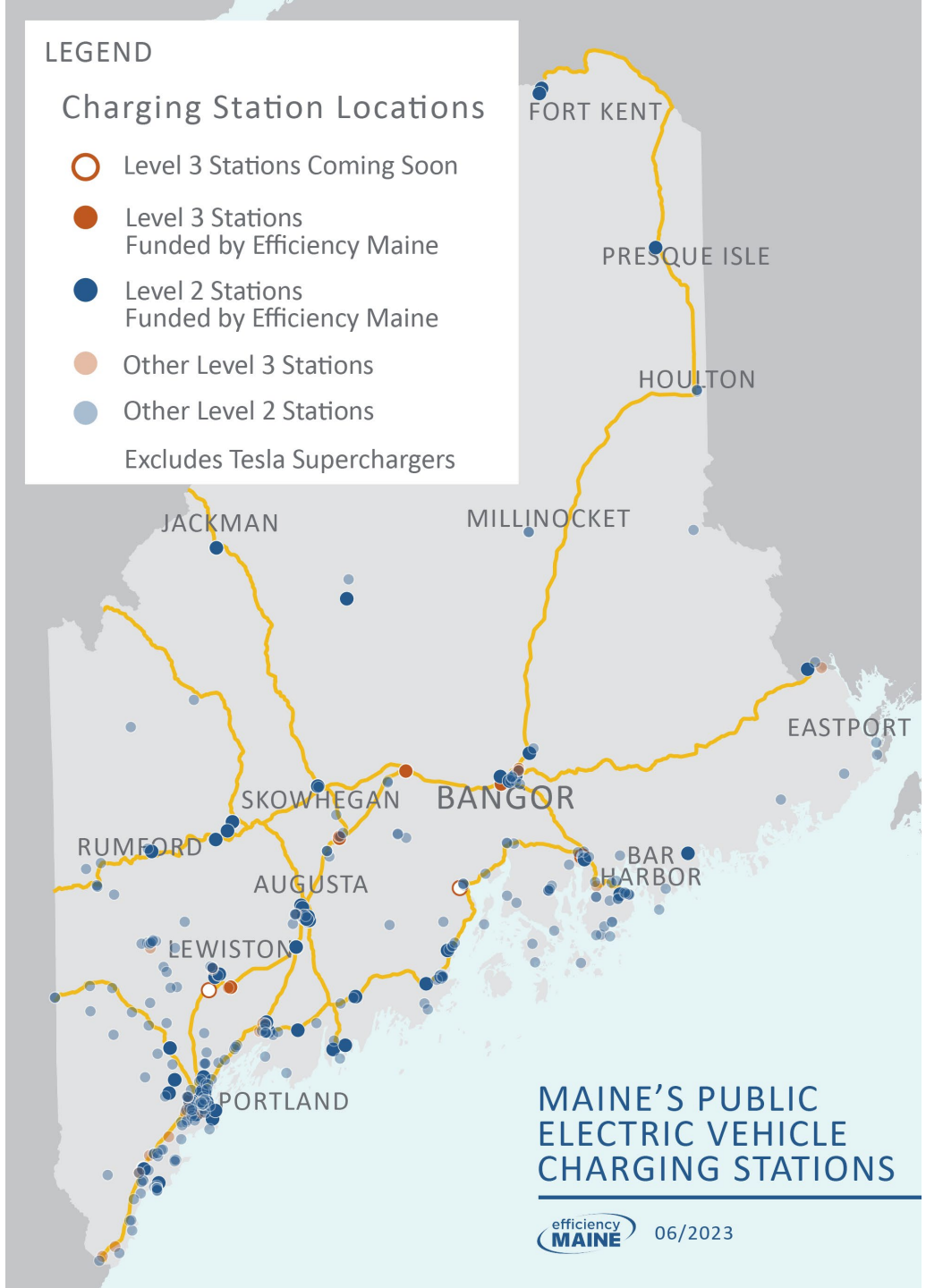
Status of Maine's Existing Public Charging Infrastructure (as of 6/2023)



Education and Marketing

Education and Marketing – FY2022

- **$119,700 spent on marketing in FY22**
- **Events**
  - Community EV Expos
  - Test Drive events
- **PSA Campaign**
  - Public Service Announcements on range anxiety and other common topics
  - Video series featuring Tim Sample
  - Radio ads– Portland & Bangor stations
- **Educational Resources**
  - Guidebooks on EV ownership and charging
  - Videos and web content on public charger installations
- **Digital Marketing**
  - Google search & display ads for EV-interested and general auto audiences
- **Market Research**
  - EV Customer Survey
  - Participating Dealer Survey
  - Low Income Customer Interest Survey
- **Targeted Outreach**
  - Businesses
  - Municipalities
  - Non-profit service providers
- **Press**
  - Release of PSA video series
  - Continue to leverage ribbon cutting of VW-funded public EV stations
  - Completion of Phase 1, more L2 sites coming soon, Phase 3 launch

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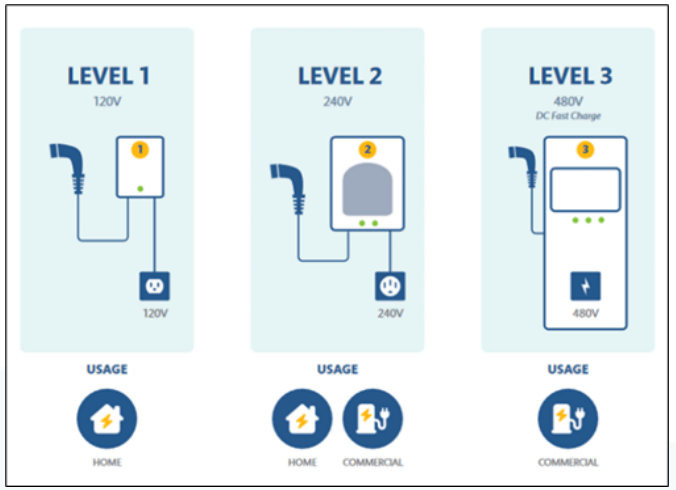
Web Resources

- EV video series
- Vehicle cost calculator
- Residential Registered Vendor Locator
- Charging station locator
- Home charging guide
- Background on EV initiatives
- FAQs

efficiencymaine.com/ev



Go the Distance in an EV

Legendary Maine humorist, Tim Sample, helps Maine drivers understand how EVs work.

▶ Watch Now

How to Find EV Chargers

There are more than 500 public charging plugs in Maine. Learn how to find them with the help of an app.

▶ Watch Now

How to Use Public EV Chargers

Learn how to use a public EV charger while on the go.

▶ Watch Now

Home Charging

This video will show you some handy tips for installing your own home EV charger.

▶ Watch Now

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Participating Dealers

Maine Participating Electric Vehicle Dealers

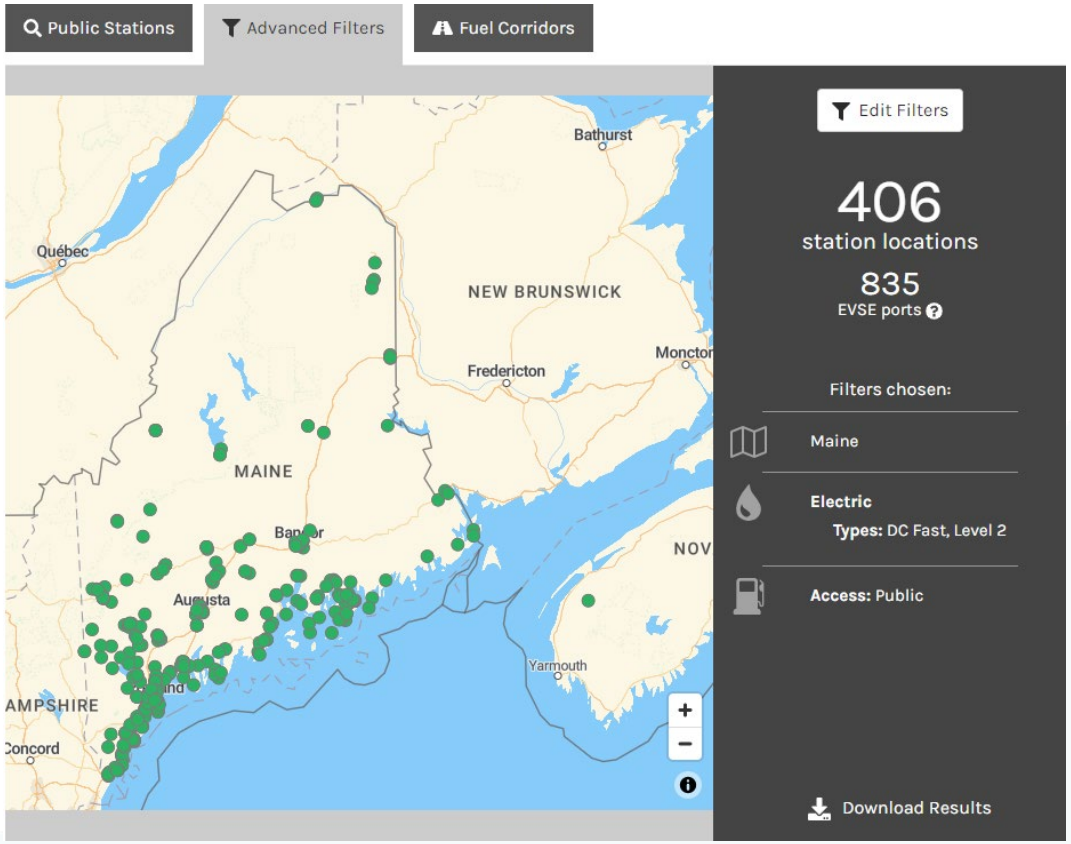
Last updated 12/19/2022

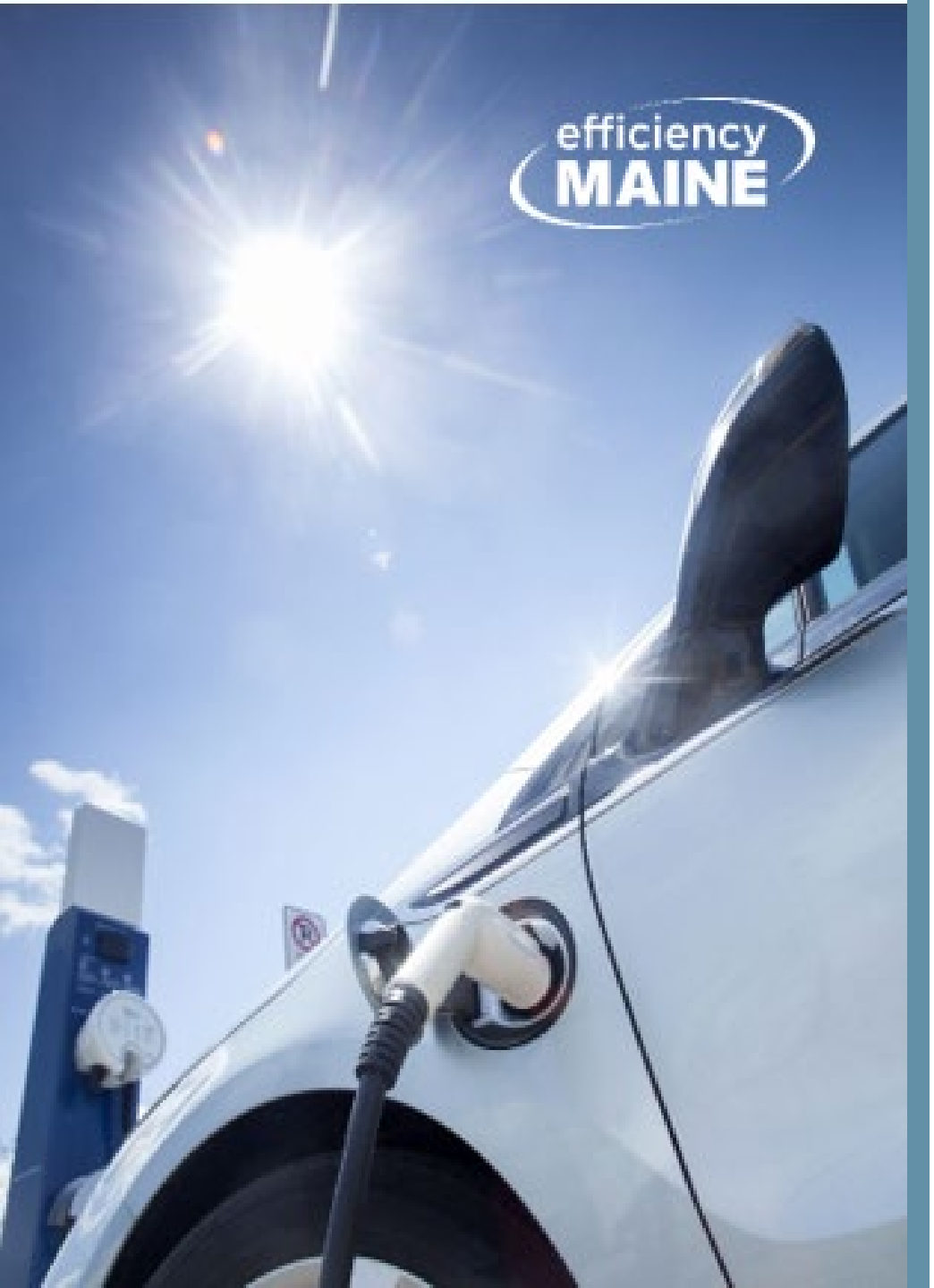
	Dealership	Town	Website
1.	Arundel Ford	Arundel	https://www.arundelfd.com/
2.	Berlin City Honda	South Portland	https://www.berlincityhondame.com/
3.	Berlin City Nissan	South Portland	https://www.berlincitynissanme.com/
4.	Berlin City Toyota	Portland	https://www.berlincitytoyotame.com
5.	Bessey Motors	South Paris	https://www.besseymotor.com/
6.	BMW of Westbrook	Westbrook	https://www.bmwofwestbrook.com/
7.	Bill Dodge Hyundai	Brunswick	https://www.billdodgehyundai.com/
8.	Bill Dodge Kia	Westbrook	https://www.billdodgekia.net/
9.	Bill Dodge Kia	Saco	https://www.billdodgekiaofsaco.com/
10.	Bill Dodge Nissan	Saco	https://www.billdodgenissan.com/
11.	Bodwell Chrysler Jeep Dodge RAM	Brunswick	https://www.bodwellchryslerjeepdodge.com/
12.	Casco Bay Ford	Yarmouth	https://www.cascobayford.com
13.	Central Maine Chrysler Dodge Jeep Ram FIAT	Waterville	https://www.centralmainechryslerdodgejeep.com/
14.	Central Maine Motors Chevy Buick	Waterville	https://www.centralmainechevybuick.com/
15.	Central Maine Toyota	Waterville	https://www.cmtoy.com/
16.	Charlie's Auto Group	Augusta	https://www.charliesmm.com/

See the full list of dealers at efficiencymaine.com/ev

Finding Public Chargers

- Efficiency Maine website
- PlugShare
- Chargepoint
- EVGo
- A Better Route Planner
- ChargeHub
- Open Charge



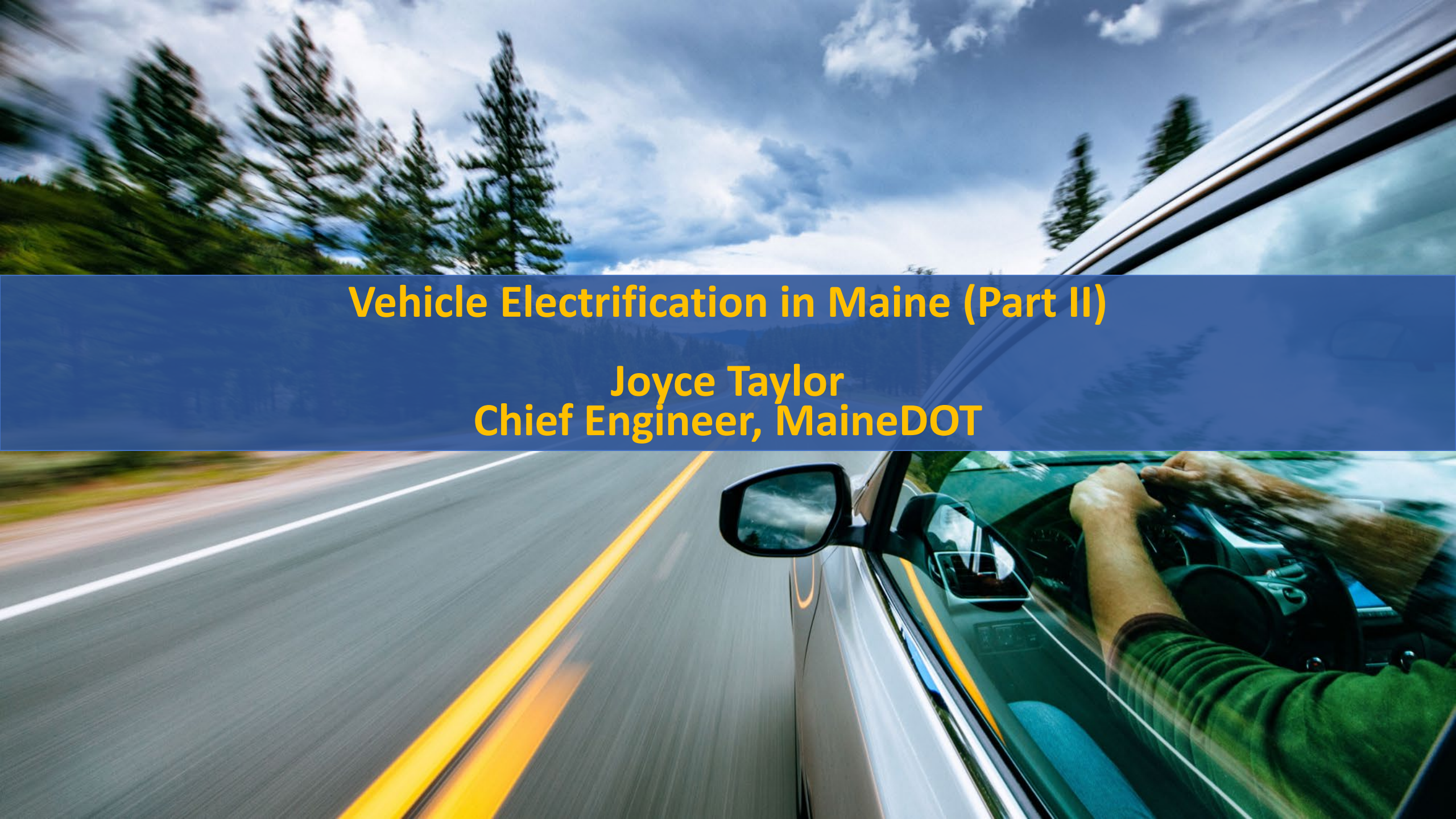


www.efficiencymaine.com/ev

866-376-2463

info@efficiencymaine.com

Thank You!



Vehicle Electrification in Maine (Part II)

Joyce Taylor
Chief Engineer, MaineDOT

Recharge Maine

Recharge Maine
State EV Charging Network

- Developing a brand to represent the state's effort to build a **convenient, reliable, affordable,** and **equitable** charging network statewide
- Will help users recognize sites funded through the state's incentive program lead by MaineDOT and Efficiency Maine that are required to meet 97% uptime

Maine's Plan for EV Charging Infrastructure Deployment (Recharge Maine)

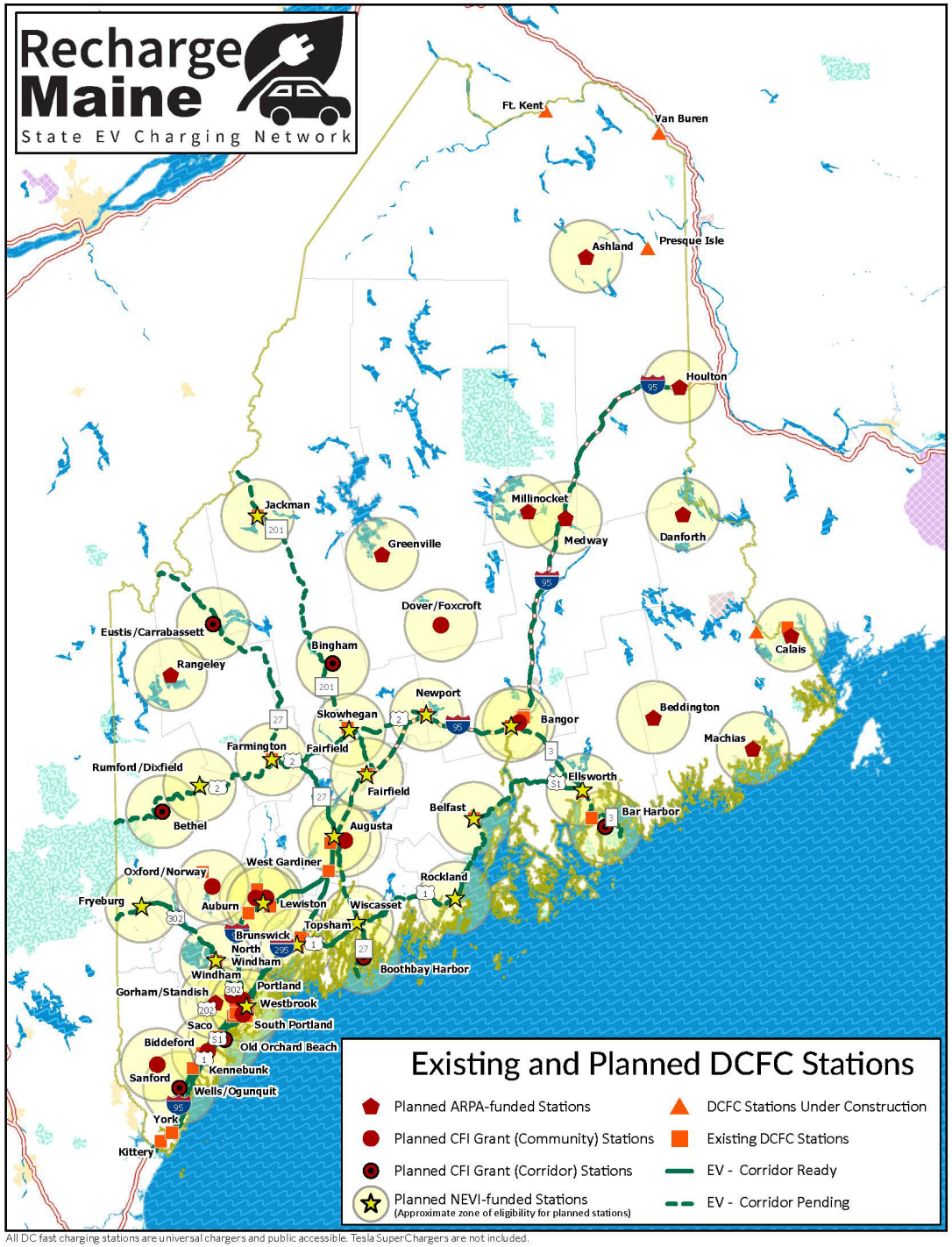
Assumed Revenues

o $1 million	NECEC (Received)
o $8 million	ARPA
o $18 million	NEVI Formula Funds
o $15 million Contingent	CFI discretionary grant – on Successful Grant Request

Recharge Maine
State EV Charging Network

Maine's NEVI Plan

- NEVI formula funds are federal funds dedicated to extending lines and filling gaps with high speed (DC fast chargers) along designated Alternative Fuel Corridors
- One of the sources of funding Maine has; highlighted with stars on map
- NEVI Plans due Aug 1 annually
- Potential MHDV charging funding in years 4 and 5



Charging And Fueling Infrastructure(CFI) Discretionary Grant

- Maine applied for $15M in CFI funding
- Application prioritizes
  - Community program
    - Level 2 at low- and moderate- income and affordable housing multi unit dwellings, workplaces, retail, rural service centers
    - DCFC in top 8 MUD cities and in rural communities
  - Corridor program
    - Rural areas along the alternative fuel corridor
- Funding awards have yet to be announced

GOVERNOR'S
Energy Office

Presentation to Board of Environmental Protection

Dan Burgess, Director
July 20, 2023

The Maine Governor's Energy Office (GEO) is the state's designated energy office charged with carrying out responsibilities of the state relating to energy resources, planning and development.

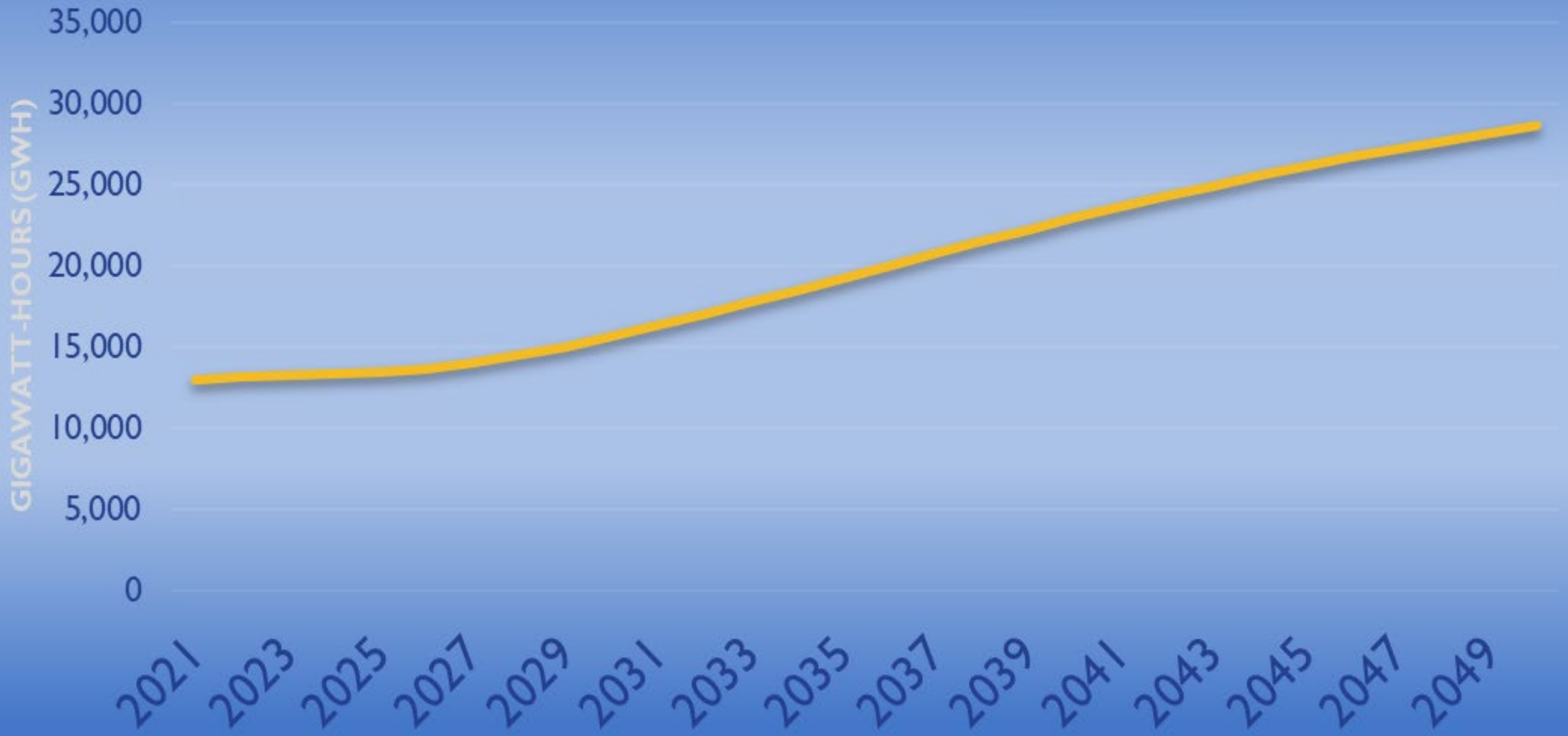
The Director sits on the Board of Efficiency Maine Trust as well as the National Association of State Energy Officials.

GOVERNOR'S
Energy Office

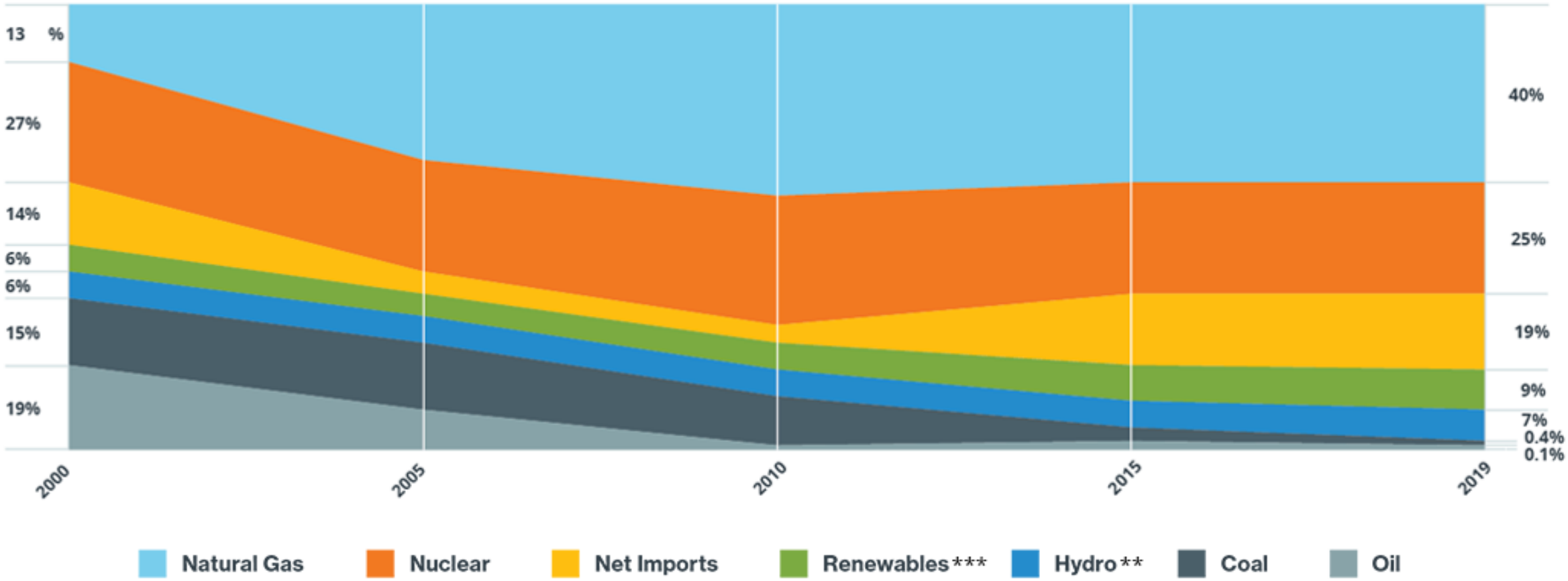
Maine's Climate and Clean Energy Targets:

REDUCE GREENHOUSE GAS EMISSIONS	TRANSITION TO CLEAN ENERGY	ACHIEVE CARBON NEUTRALITY	CREATE CLEAN ENERGY JOBS
45% BELOW 1990 LEVELS **BY 2030**	**80%** **BY 2030**	**2045**	**30,000** **BY 2030**
80% BELOW 1990 LEVELS **BY 2050**	**100%** **BY 2040**		

Electrification of heating and transportation will double Maine's annual electricity use by 2050



Percentage of Total Electric Energy by Resource Type



*Data are subject to adjustments. This chart approximates the amount of generation by individual fuels used by dual-fuel units, such as natural-gas-fired generators that can switch to run on oil and vice versa. Before 2016, generation from such units was attributed only to the primary fuel type registered for the unit.

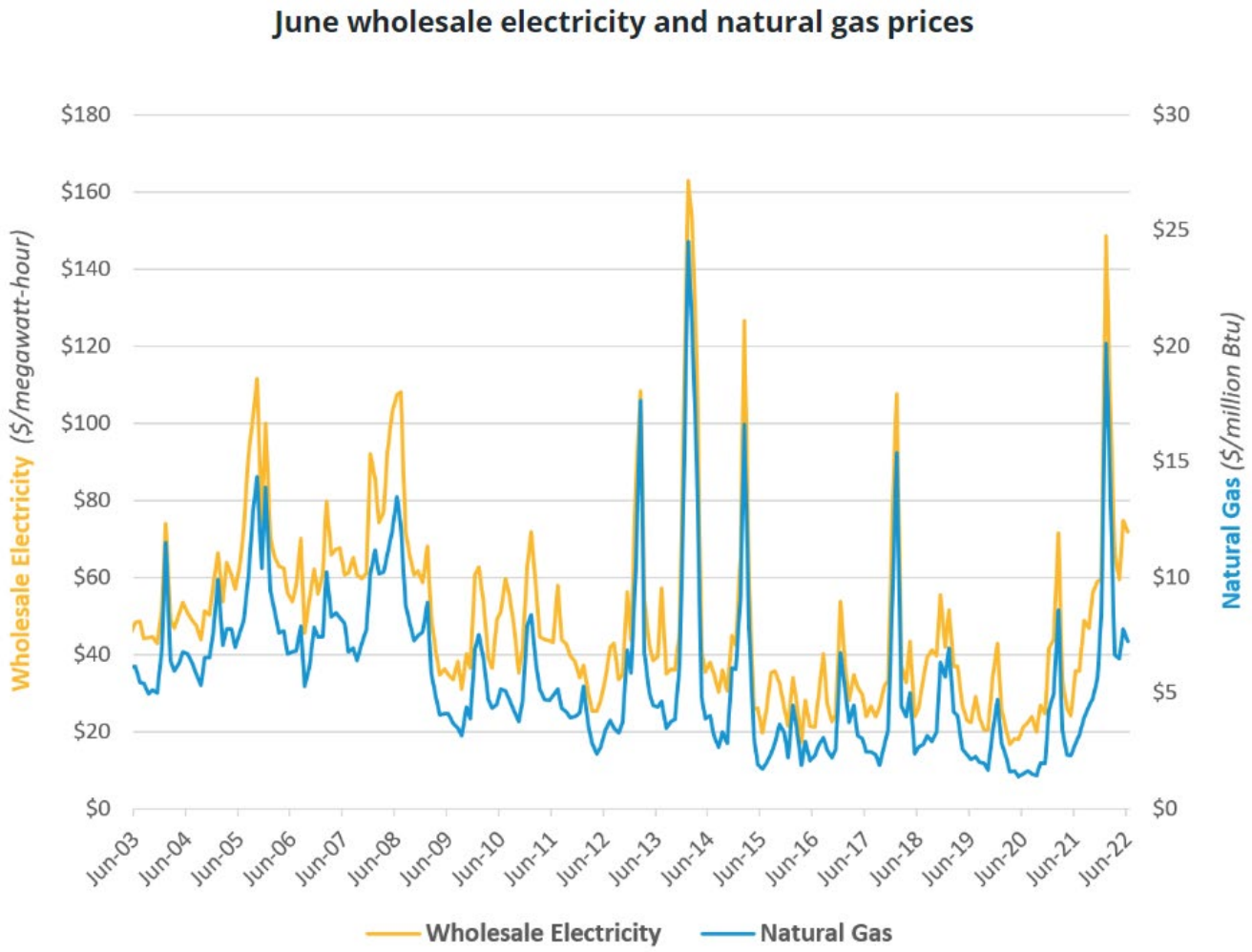
**Includes pondage, run-of-river, and pumped storage.

***Renewables include landfill gas, biomass, other biomass gas, wind, grid-scale solar, municipal solid waste, and miscellaneous fuels. Hydro is not included in this category primarily because the various sources that make up hydroelectric generation (i.e., conventional hydroelectric, run-of-river, pumped storage) are not universally defined as renewable in the six New England states.

Source: ISO New England

Electricity Prices – Regional

Recent fossil fuel volatility attributable to global events has driven electricity price increases across the U.S. and New England



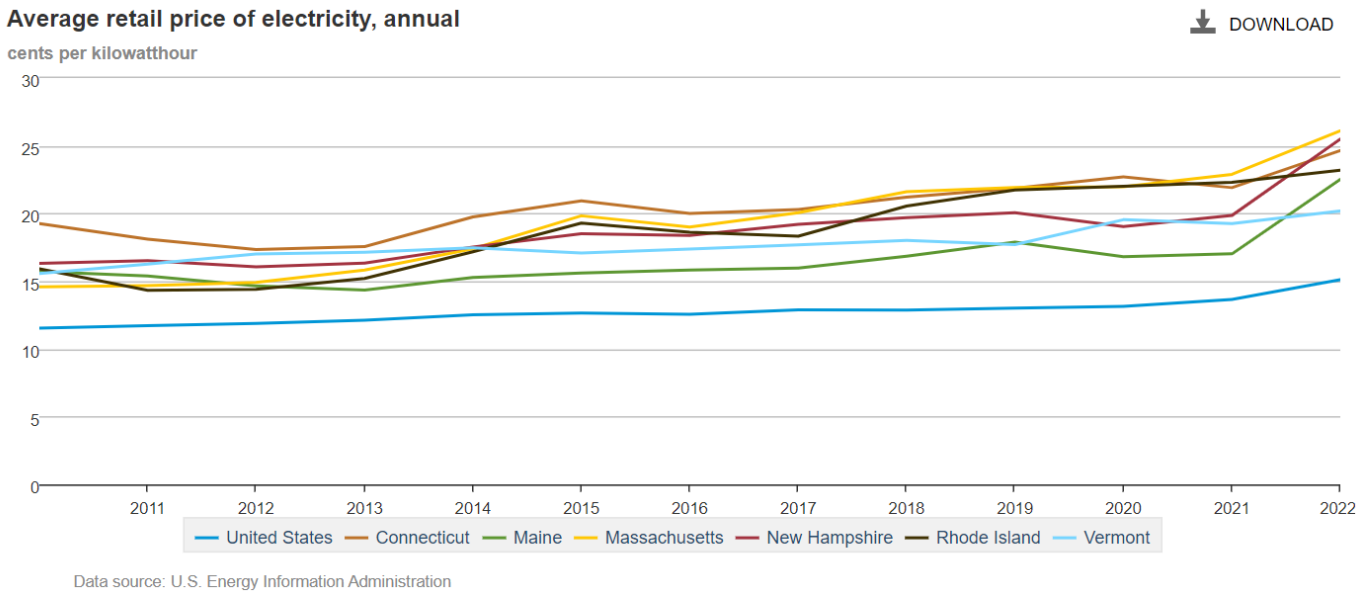
- Standard offer price increases for 2023 are driven by increased natural gas prices
- Natural gas heavily influences wholesale electricity prices across New England region due to over-reliance on natural gas-burning generators

Data source: ISO-NE, Monthly wholesale electricity prices and demand in New England, June 2022

GOVERNOR'S
Energy Office

Electricity Prices – Regional

Recent volatility attributable to global events has driven electricity price increases across the U.S. and New England



Data source: U.S. Energy Information Administration

- Historically electricity prices in Maine have been among the lowest in New England
  - New England as a region has higher prices than U.S. average
- Recent pandemic and invasion-related volatility has driven cost increases
- Renewable energy and electrification drive long-term stability

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Maine Energy Planning: 2040 Analysis

- Increasing Maine's usage of clean energy can help stabilize electricity rates, diversify our sources of energy, fight climate change, and create jobs.

- The GEO will evaluate avenues to set a target of 100% clean energy by 2040, including:
  - Developing a new, comprehensive integrated energy plan
  - Build on past modeling, laws, and policies
  - Ensure the plan works for all Maine people and businesses

Modeling, planning, and engagement work to start this summer – full report by January 2024.

Analysis will include:

- Long-term energy demand
- Multiple scenarios to achieve energy needs
- Modeling actual operation of future energy supply and demand
- Policy Options

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Renewable Portfolio Standard

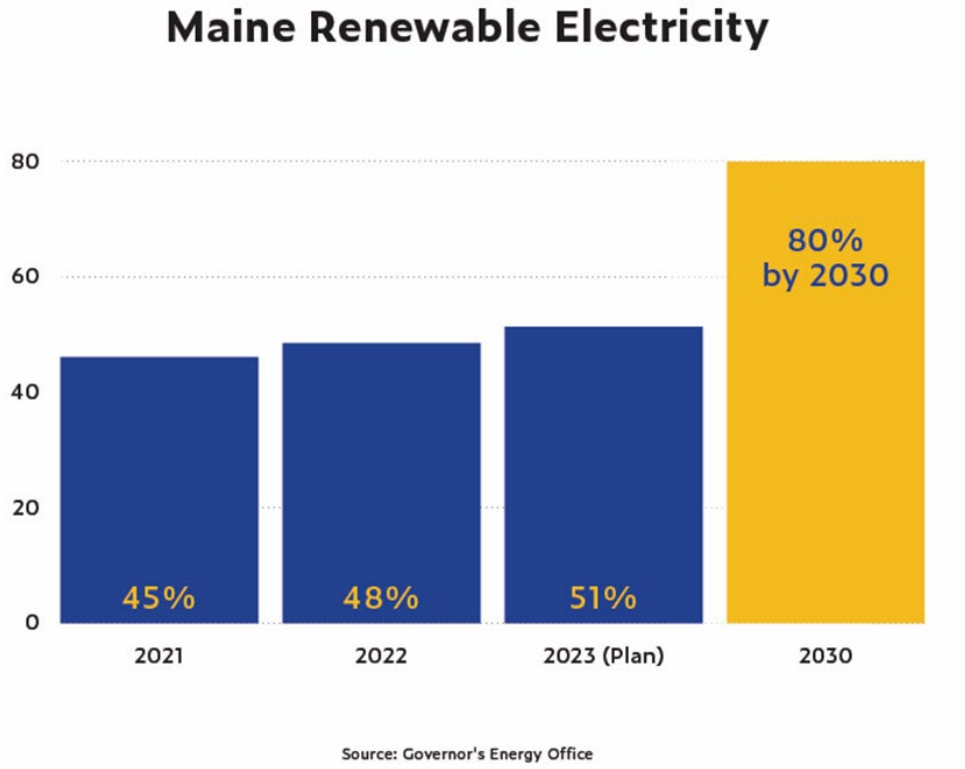
Bipartisan legislation requiring 80% renewable electricity by 2030; Governor announced 100% clean electricity by 2040

Competitive Procurements

- Two tranches totaling 24 projects across the state
- 14% of statewide electric load at competitive prices
- Mix of new and existing renewables – solar, wind, hydro, biomass
- **Creating downward pressure on electricity rates**

Renewable Energy Resources of Northern Maine

- Unlocking Northern Maine resources, economic development
- PUC announced a selection of a transmission project and 1,000 MW wind project



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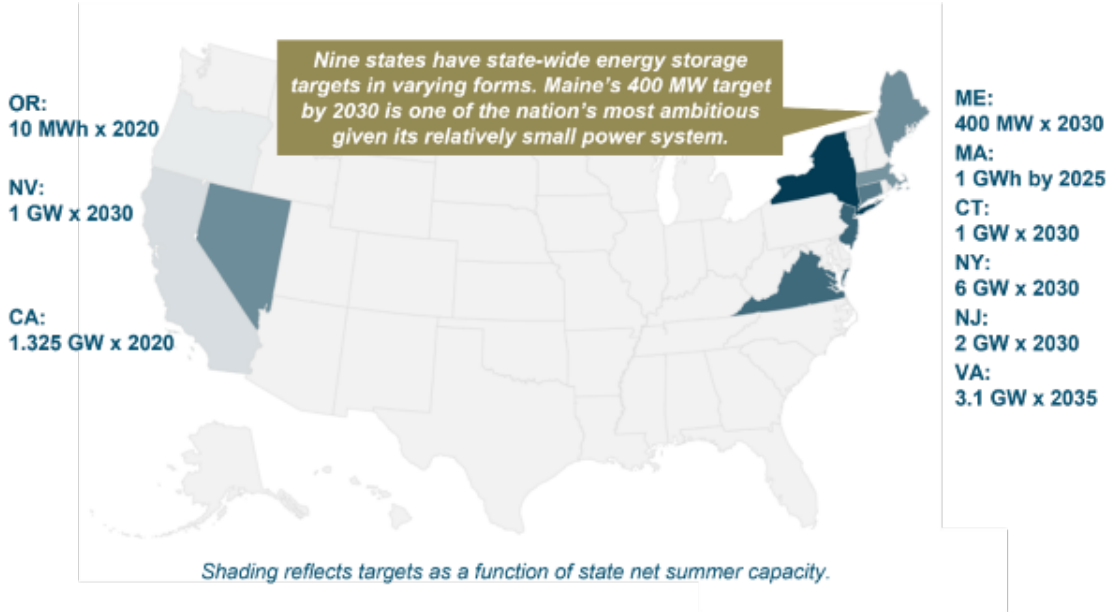
Maine is the ninth state to establish energy storage goals

300 MW by 2025 and 400 megawatts by 2030

- **Energy Storage Market Assessment** released February 2022
  - Storage can benefit customers, ratepayers and support clean energy goals
  - Significant progress toward 2025 goal
  - Continued cost declines and opportunities to stack revenue
- **Quarterly Storage Forum** launched by GEO in October 2022
  - More information at maine.gov/energy
- **P.L. 2023 Ch. 374 (LD 1850)** signed June 30, 2023
  - Allows increases to the State's storage goal every 2 years, starting in 2024
  - Utility-scale storage procurement for up to 200MW, and long duration storage opportunities



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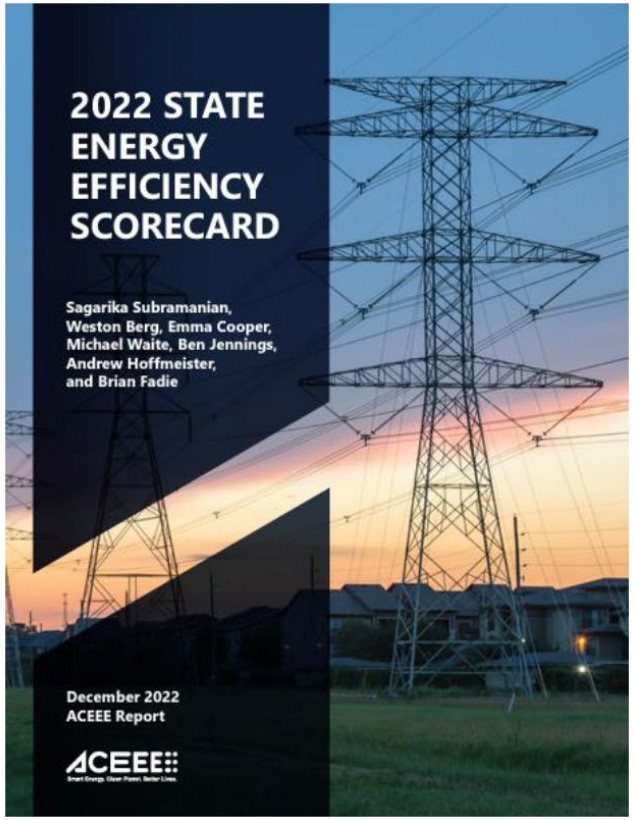
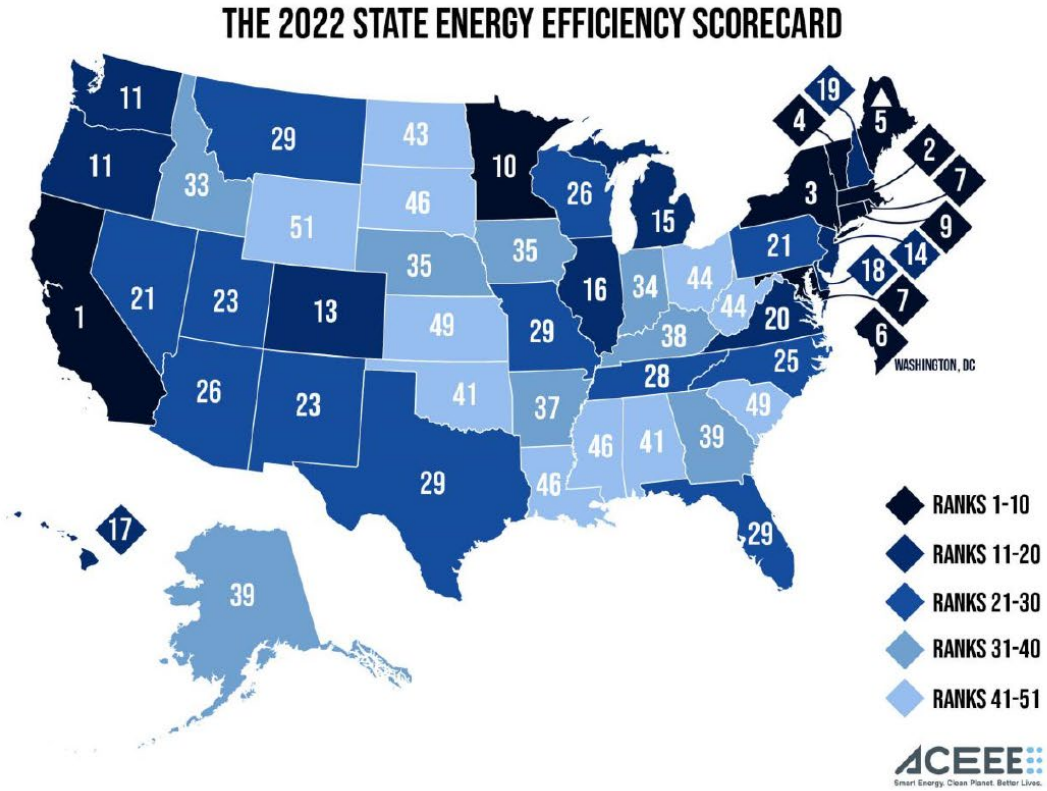
Energy Efficiency

Maine ranks 5th in the country and most improved state on state energy efficiency policies





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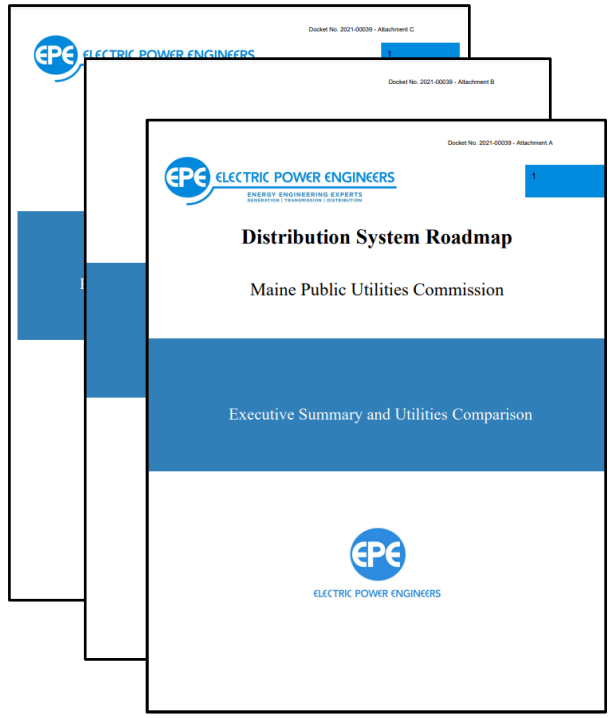
Public Utilities Commission Investigation into Grid Modernization Needs

- In 2021 Governor Mills requested the Public Utilities Commission open an investigation to ensure Maine's electric utilities have the systems and planning in place to accommodate the growth of renewables and distributed energy resources that will allow Maine to reduce our dependence on fossil fuels.
- The Commission retained engineering consultants to conduct a thorough examination of Central Maine Power and Versant Power's electrical distribution systems and a comprehensive gap analysis.
- Three roadmaps were produced detailing improvements and innovations to support grid modernization.



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An Act Regarding Utility Accountability and Grid Planning for Maine's Clean Energy Future

Bipartisan legislation signed May 2, 2022 – P.L. 2021 ch. 702

Integrated grid planning

- To facilitate transition to clean, affordable, reliable electric grid
- Updated every five years
- Incorporate multiple scenarios and forecasts
- Developed with stakeholder input and Commission oversight

Climate resilience planning

- To address the expected effects of climate change on the utility's assets
- Ten-year plans updated every three years
- Stakeholder input through Commission proceeding

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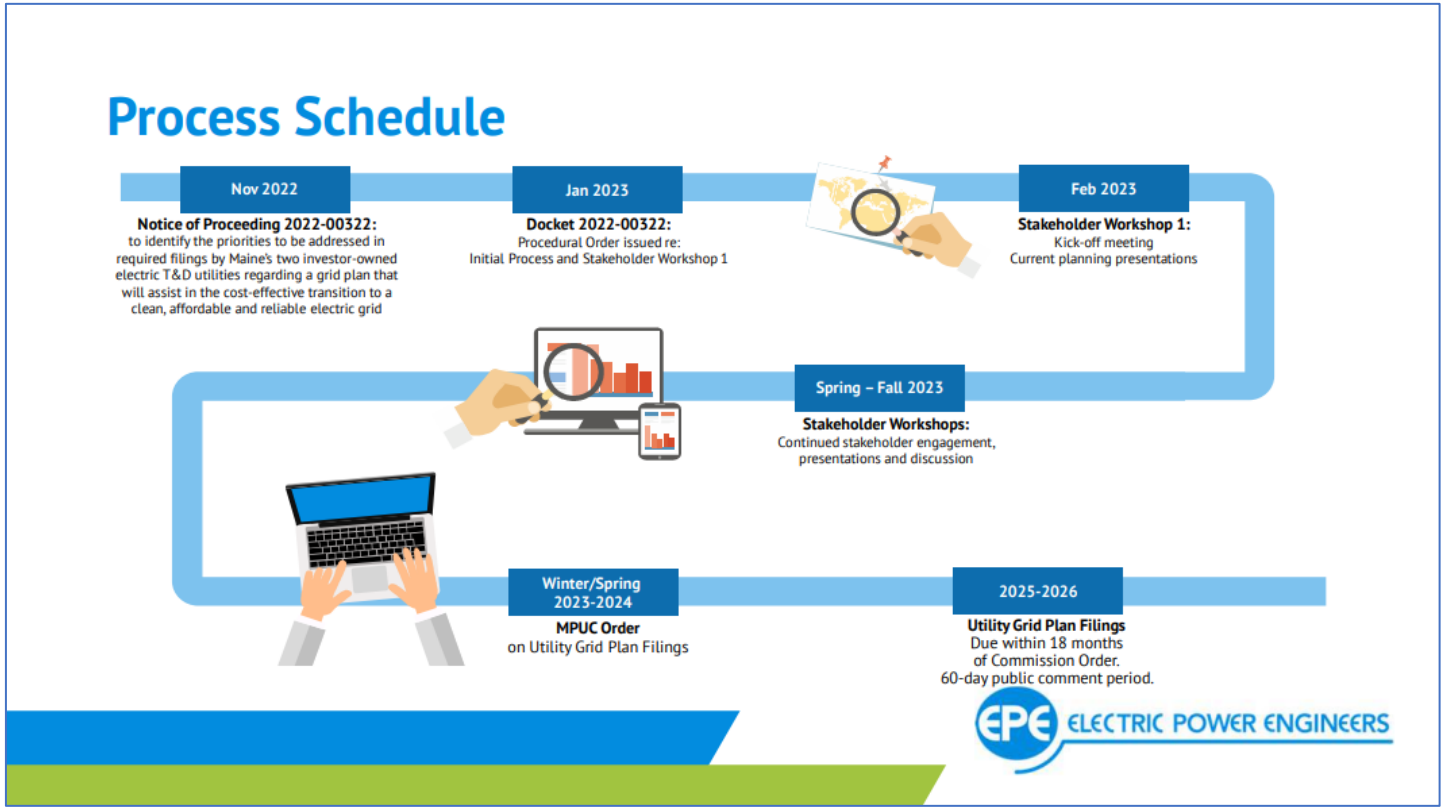
Integrated Grid Planning for Maine's Clean Energy Future

- Plans will address projected load growth and infrastructure needs associated with beneficial electrification.
- Designed to improve system reliability and resiliency and enable the cost-effective achievement of the greenhouse gas reduction and climate policies.
- The PUC is holding stakeholder workshops before the utilities submit their filings in order to identify priorities, assumptions, goals, methods and tools that will assist the utility in developing its grid plan filing.



Stakeholder Workshop #2, March 23, 2023. MPUC Docket 2022-00322.

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Grid Resilience Formula Fund

State Grid Resilience Funds authorized by the Bipartisan Infrastructure Law

- Administered by the GEO, awarded by the U.S. Department of Energy in July 2023
- Provides support for activities that reduce the likelihood and consequence of grid impacts due to extreme weather, wildfire, and natural disaster
- Maine allocation:
  - FY 2022: $2.19 million
  - FY 2023: $2.17 million
- Total funding amount available for Maine: $4.36 million

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Clean Energy Workforce Development

The Governor's Energy Office, via the Clean Energy Partnership, aims to provide funding for workforce development and innovation to entities engaged in Maine's clean energy and energy efficiency industries, so that our workforce is prepared for the diverse and rewarding jobs offered by the growing clean energy economy.

Maine Jobs and Recovery Plan

- $2.9M for clean energy workforce development
- $2.25M for clean energy innovation and business support
- $0.8M to develop a clean energy workforce development clearinghouse

Congressionally-Directed Spending, FY 2023

- $2.75M for clean energy job training, job placement services, stipends, equipment, and curriculum

State-Based Energy Efficiency Contractor Training Grants

- $1.3M in formula funding for Maine to develop and implement a workforce development program to deliver energy efficiency, electrification, and clean energy improvements, including those covered under the Home Energy Performance-Based, Whole House Rebate Program (HOMES) and the Home Electrification and Appliance Rebate Program (HEAR)

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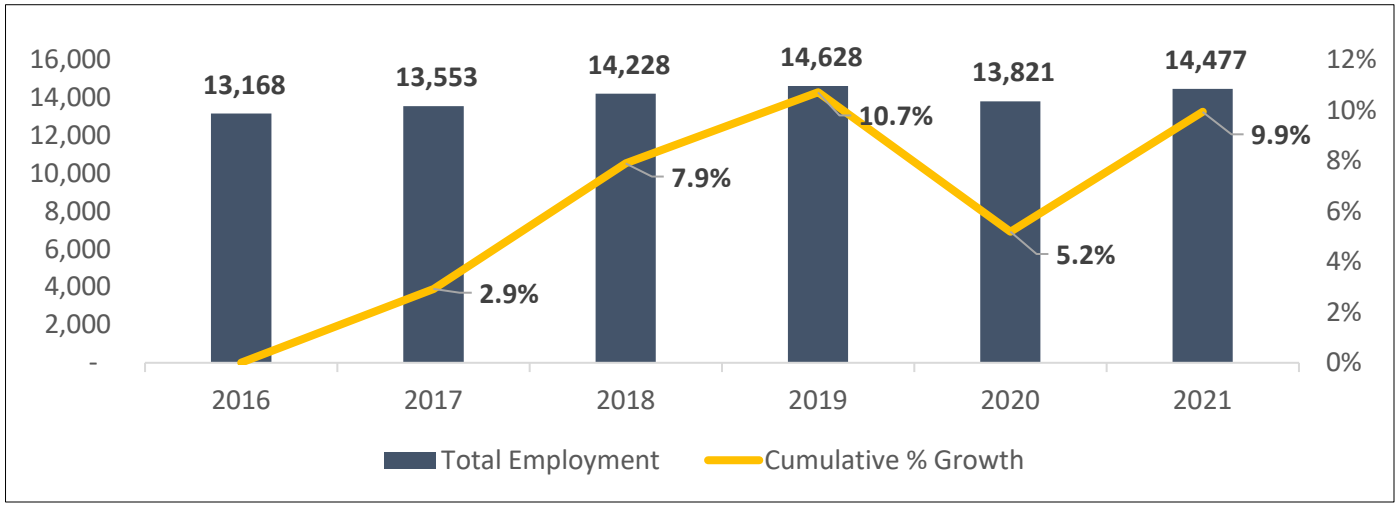
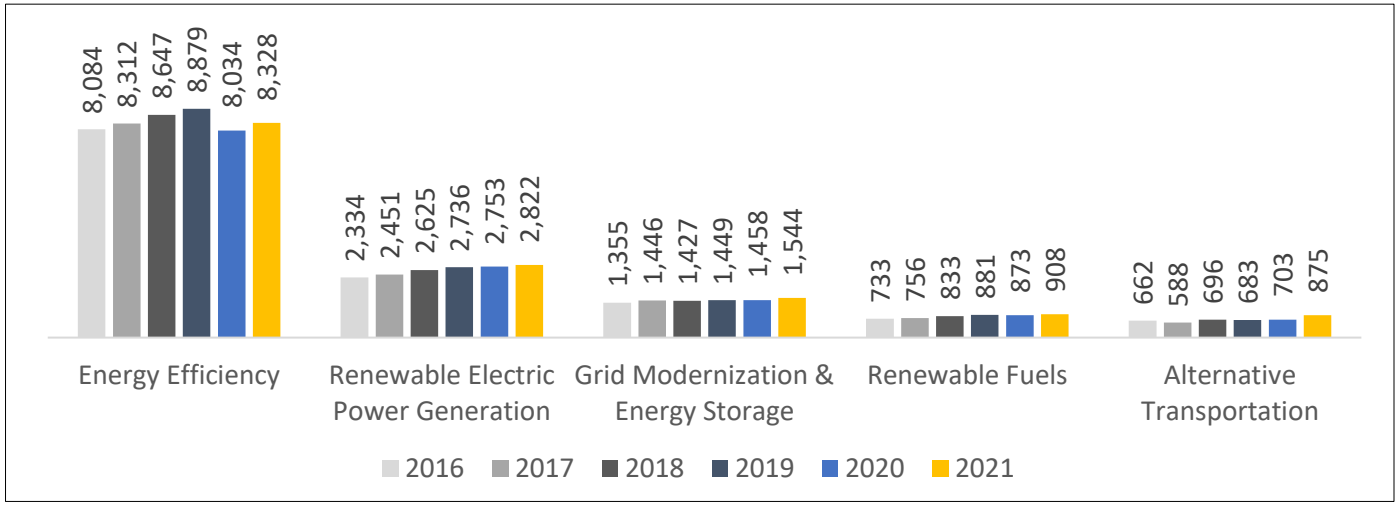
Clean Energy Workforce





14,477

Clean Energy Workers in 2021

5%

+656 jobs

Job Growth from 2020 - 2021

Data source: BW Research, 2021 Maine Clean Energy Industry Report and DOE US Energy and Employment Report 2022

GOVERNOR'S Energy Office

Clean Energy Workforce Development

Supported by funding from the **Maine Jobs & Recovery Plan**, Maine is investing in diverse set of workforce programs supporting the electric vehicle transition:

- **No-cost job training courses** in EV repair at Southern Maine Community College and Kennebec Valley Community College
- **Apprenticeship** opportunities in clean energy and electrician careers through AFL-CIO, Associated General Contractors, Portland Adult Education, ReVision Energy, and community colleges
- **Program and equipment upgrades** to train high school students on EV repair (Bangor)
- **Clean energy internships** for Maine college students and residents (Northeast Energy Efficiency Partnerships)

In April, First Lady Jill Biden visited Southern Maine Community College to highlight the college's workforce training programs and the state's investment in free community college.

Photo credit: SMCC (Top), Portland Press Herald (Bottom)

GOVERNOR'S
Energy Office

Thank You

Dan.Burgess@maine.gov

www.maine.gov/energy

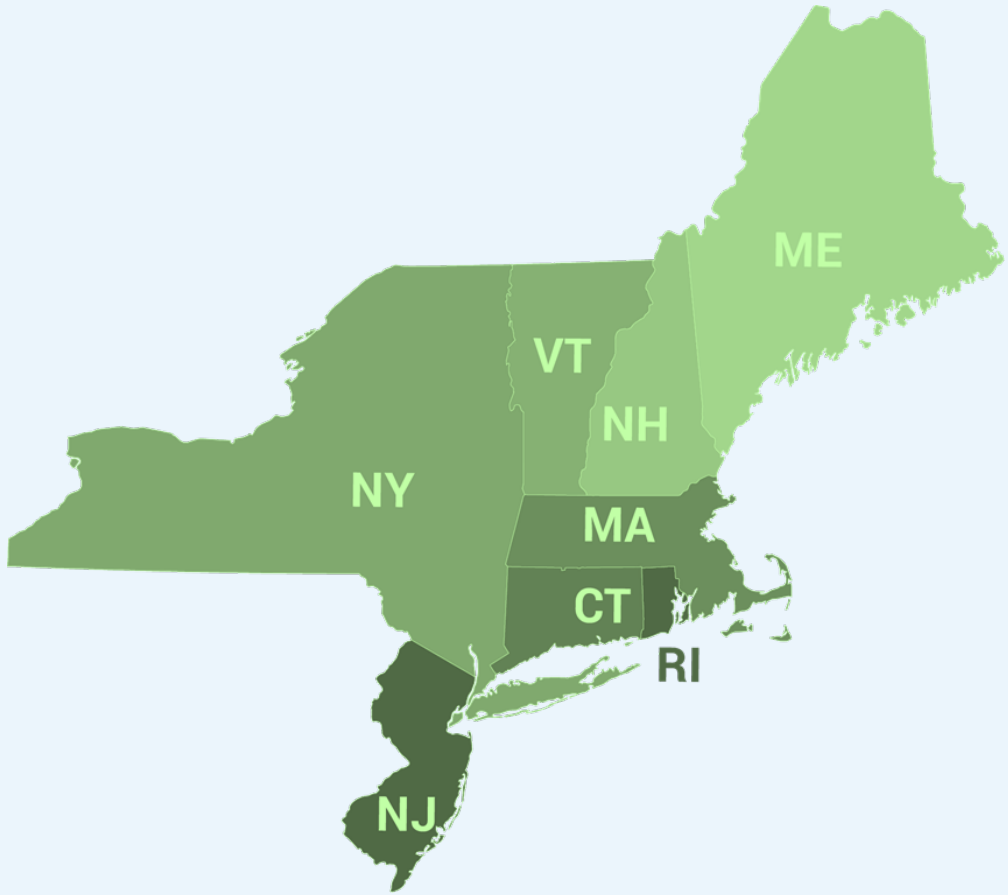
Advanced Clean Cars II & Advanced Clean Trucks Overview

July 20, 2023

NESCAUM

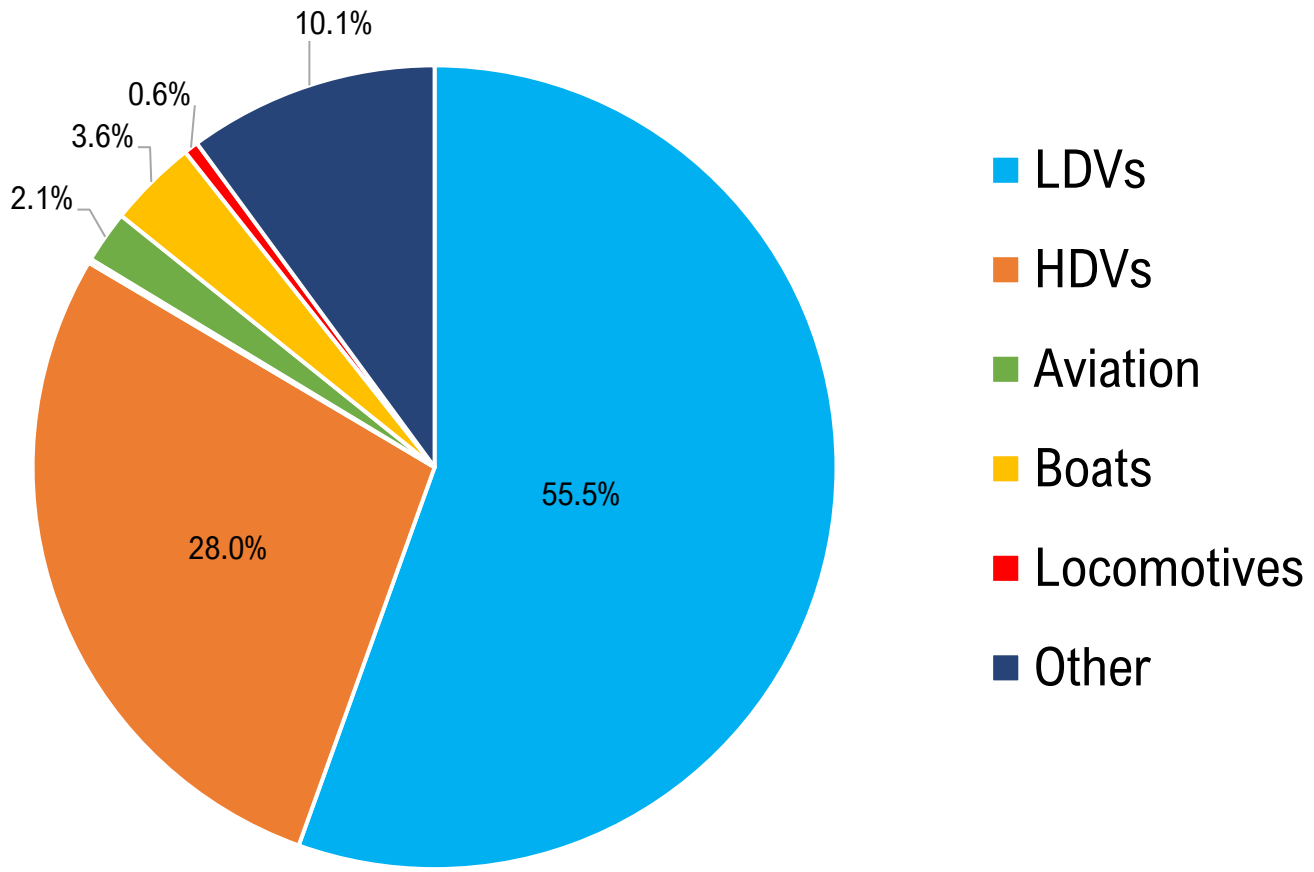
Northeast States for Coordinated Air Use Management (NESCAUM)

- Non-profit association of state air quality agencies in the Northeast U.S. (est. 1967)
- Provides scientific, technical, and policy support on a wide range of air quality and climate issues
- Collaborates with other states, federal agencies, the automobile industry, and other key partners and stakeholders to promote zero-emission vehicles (ZEVs)
- Develops and leads multi-state initiatives, e.g.,
  - "Section 177 States" Mobile Sources Committee
  - Multi-State ZEV Task Force
    - 2013 Multi-State ZEV MOU
    - 2020 Multi-State Medium- and Heavy-Duty ZEV MOU



Transportation is the Largest Source of GHG Emissions in Maine

2020 GHG Emissions from Mobile Sources



Sources: State Inventory and Projection Tool, Mobile Combustion Module version 2023.2, U.S. EPA, https://www.epa.gov/statelocalenergy/download-state-inventory-and-projection-tool.

Federal Support for Transportation Electrification

Federal Goals:

- **Light-Duty:** 50% of new vehicles sales EVs by 2030
- **Medium- and Heavy-Duty:** 100% of new vehicles sales EVs by 2040

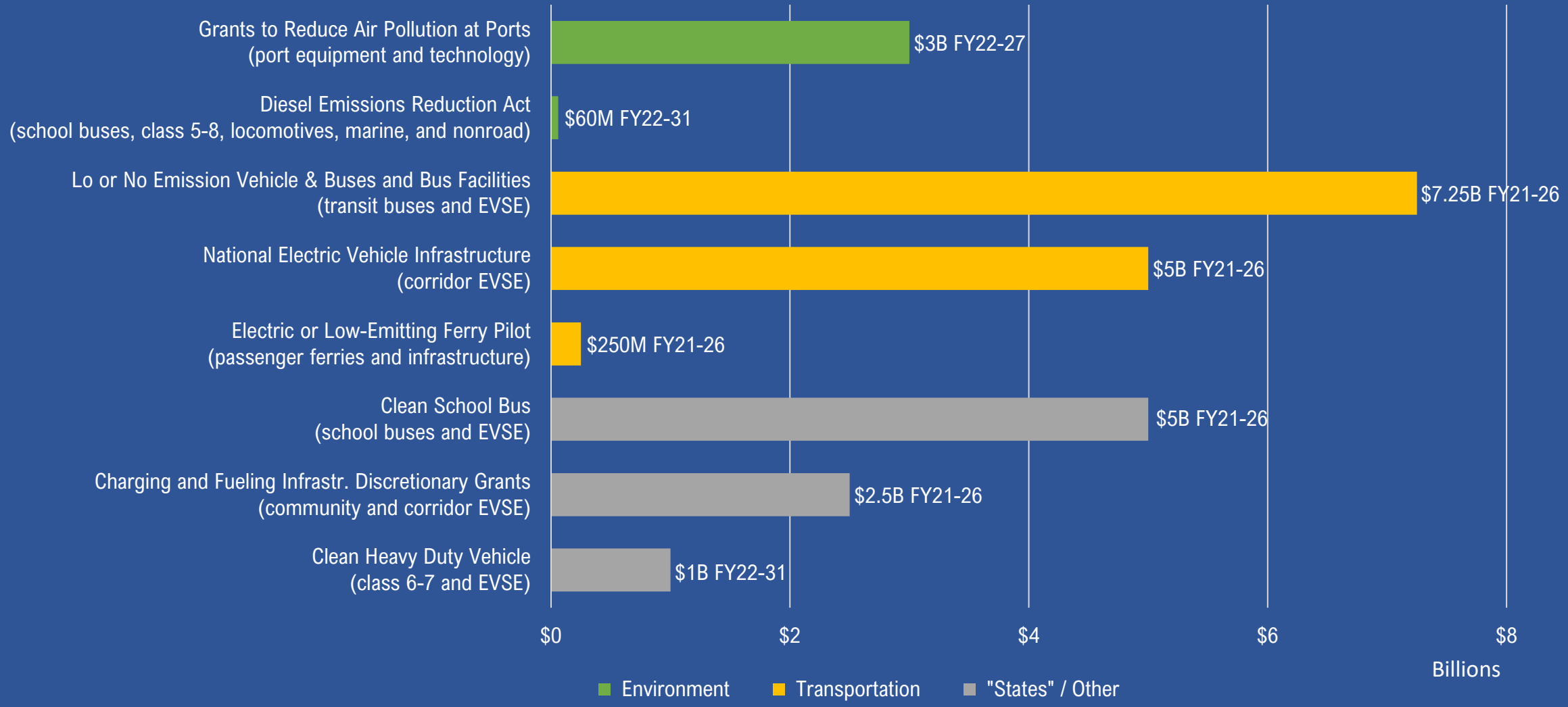
Federal Tax Credits for Eligible Purchases:

- **New EVs:** tax credit of up to **$7,500**
- **Used EVs:** tax credit of 30% of the price of the vehicle up to **$4,000**
- **Commercial EVs:** tax credit of up to **$7,500** for light duty vehicles and up to **$40,000** for vehicles over 14,000 pounds
- **EV Charging Installation:** tax credit of 30% of the actual equipment and installation cost, not to exceed $100,000 for commercial property and capped at $1,000 for homeowners

Federal Grants Available for States

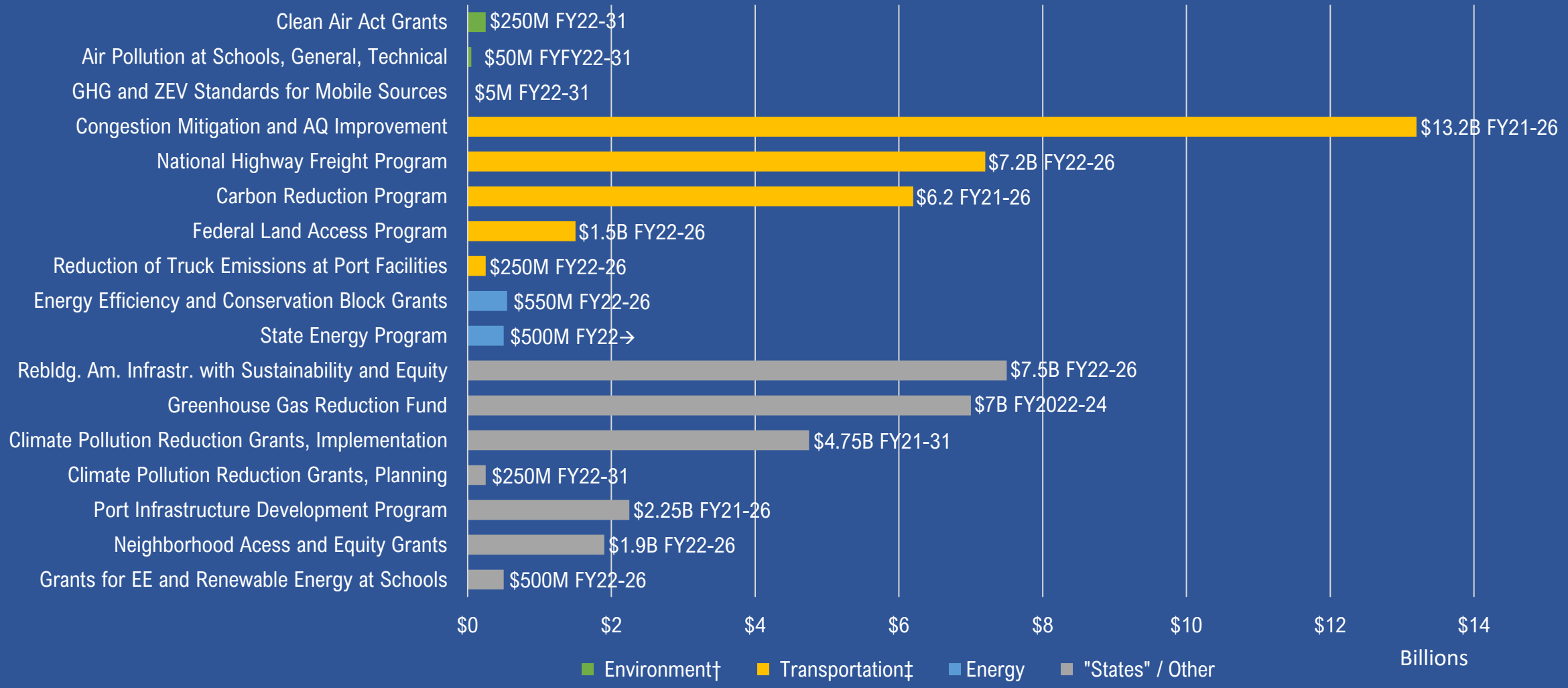
- Inflation Reduction Act
- Infrastructure Investment and Jobs Act

Funding Dedicated to Transportation Electrification FYs 2022-2031



NESCAUM

Eligible Funding for Transportation Electrification FYs 2022-2031



†Does not include, e.g., new air monitoring programs and Environmental Justice Government-to-Government (EJG2G) program.
‡Does not include, e.g., Surface Transportation Block Grants ($72B FY21-26, new eligibility for EVSE and V2G), and Voluntary Airport Low Emissions and Airport ZEV Infrastructure Pilot Programs (airports/sponsors can use a portion of $15B Airport Improvement Program funds).

NESCAUM

Key Clean Air Act Provisions

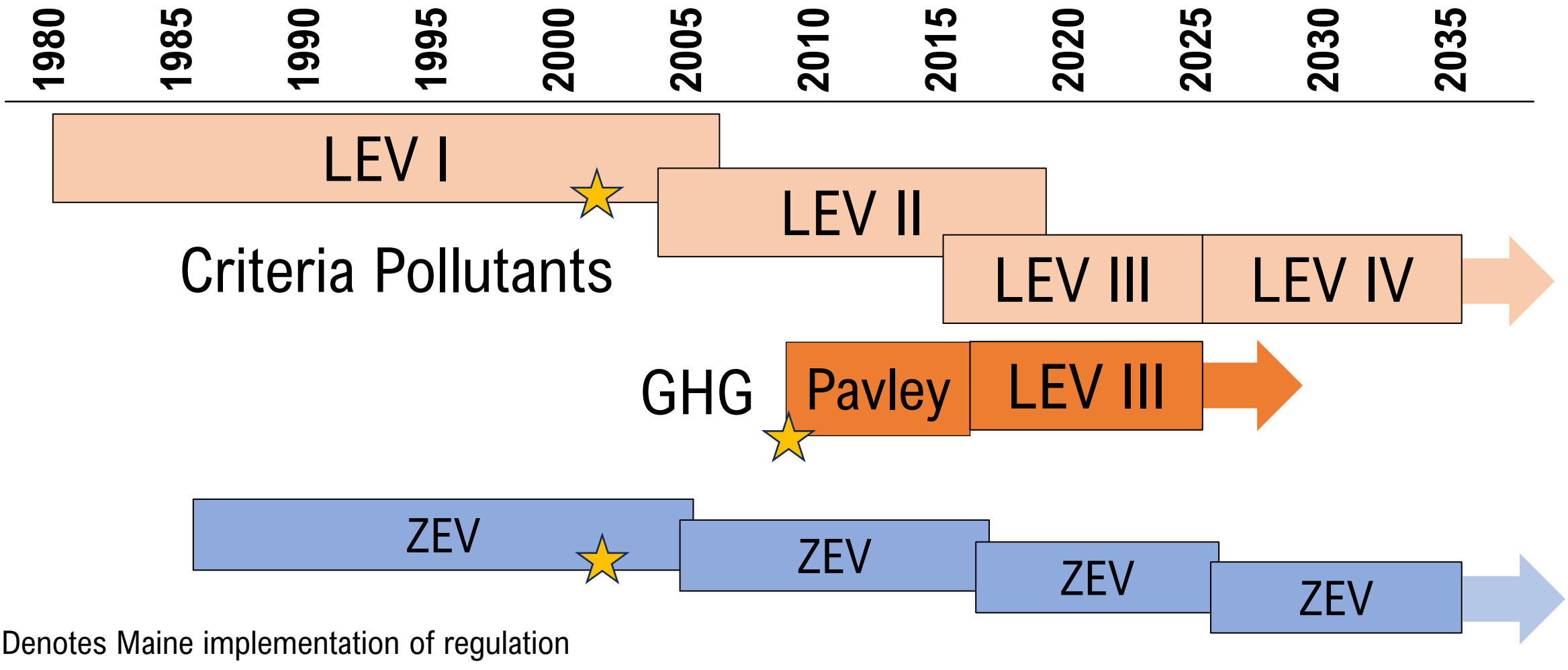
CAA §209(a): Preempts states from setting their own motor vehicle emission standards.

CAA §209(b): Provides California with broad discretion to set more stringent motor vehicle emission standards than EPA; authorizes California to apply for a "waiver of preemption" from EPA.

CAA §177: Authorizes states to adopt California's motor vehicle emission standards provided the standards are identical, do not create a "third-vehicle," and are adopted at least two-model years in advance.

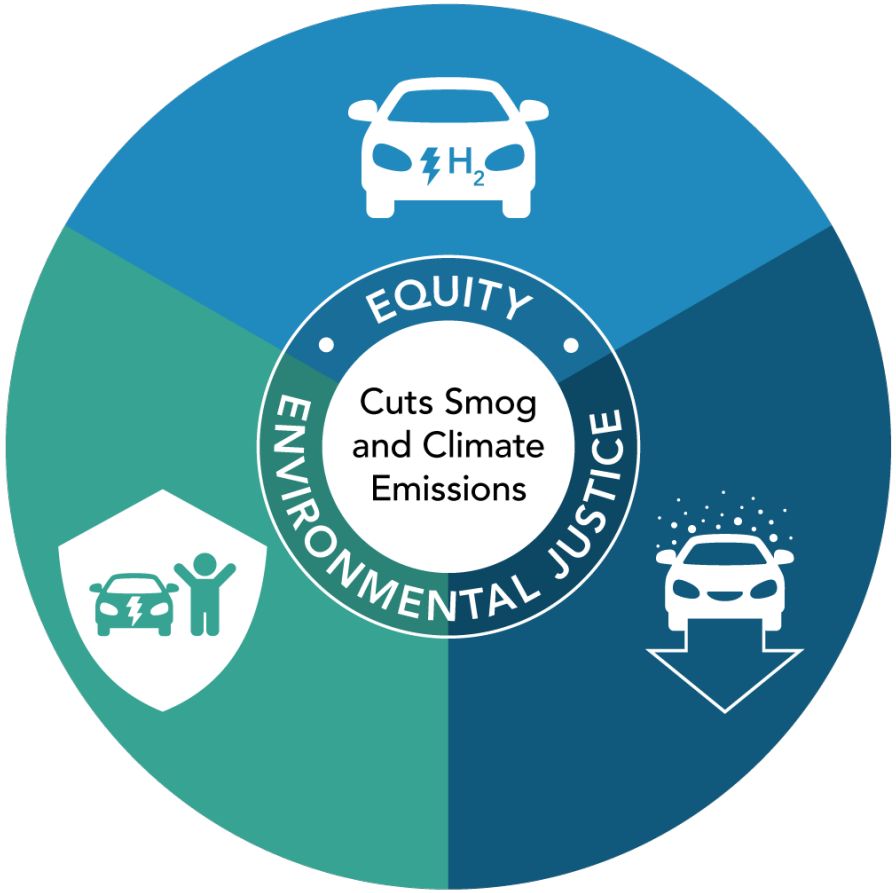
Advanced Clean Cars II (ACC II) Regulation

ACC II Builds on Existing Programs



Advanced Clean Cars II

ZEV Regulation



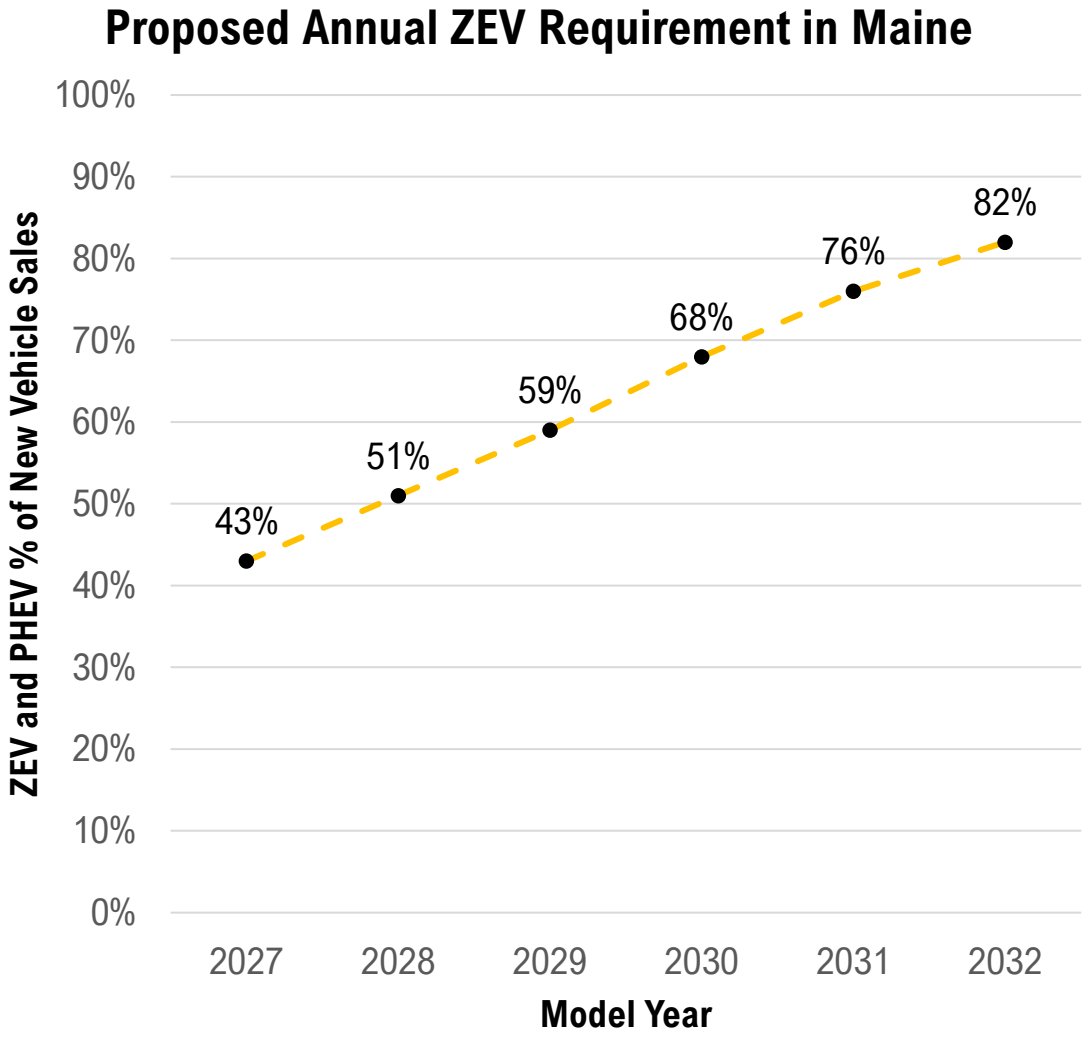
ZEV Assurance Measures

LEV Regulation

ACC II – ZEV Regulation

How do manufacturers meet their ZEV requirement?

1. Produce and deliver for sale ZEVs and PHEVs (one value per vehicle)
2. Take advantage of regulatory flexibilities
3. Smooth out compliance with banking, trading, and averaging



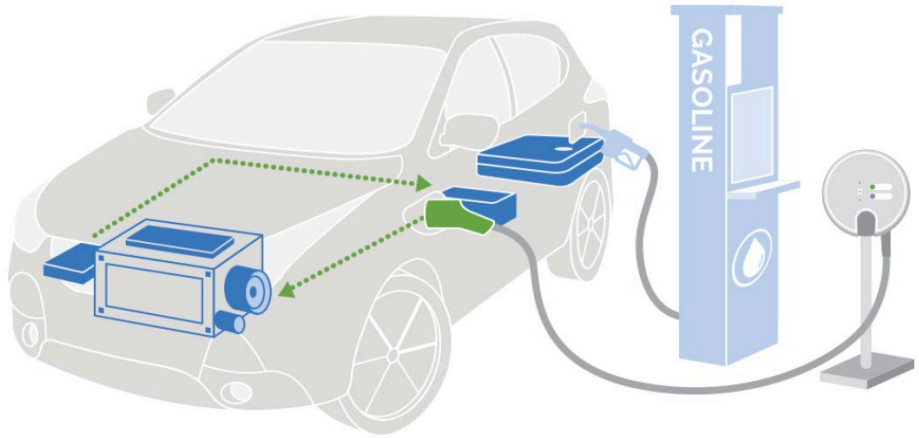
1. Produce and Deliver for Sale ZEVs and PHEVs

Fully zero-emission vehicles (ZEVs)

- Minimum driving range of 150 miles
- Minimum 80% of program compliance with ZEVs

Plug-in hybrid electric vehicles (PHEVs)

- Minimum 50-mile electric range
- Up to 20% of program compliance



2. Take Advantage of Regulatory Flexibilities

- Early Compliance (up to 15%*)
- Environmental Justice Values (up to 5%*) for:
  - Discounted ZEVs/PHEVs placed in community-based clean mobility programs
  - Low MSRP ZEVs/PHEVs
  - Used ZEVs/PHEVs sold at participating dealerships
- Historical credits (up to 15%*)
- Over-compliance from other states (“pooling”) (up to 20%*)
- Proportional values from FCEVs sold in other states (up to 10%*)

*The percentages shown indicate the maximum portion of a manufacturer’s annual ZEV requirement in model year 2027 that can be fulfilled using each flexibility. Applicable model years and rules for use vary depending on the flexibility.

3. Smooth Out Compliance

To help manage year-to-year fluctuations, manufacturers can:

- Bank excess ZEV, PHEV, and EJ values for future use
- Trade (e.g., buy or sell) excess ZEV, PHEV, EJ, and early compliance values and historical credits with other manufacturers
- Average compliance by carrying forward a deficit for up to three years

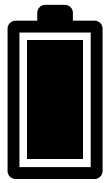
ACC II ZEV Reporting Requirements

On an annual basis, manufacturers are required to submit:

1) ZEV requirement performance reports for the model year and the resulting “shortfall” or “surplus” in vehicle values by May 1;
2) End of the model year reports to verify compliance or deficit status by September 1; and
3) Projected sales of ZEVs and PHEVs for next five model year years by April 1.

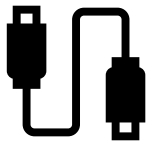
California and Section 177 states are working together to develop a common reporting platform to ease administrative burden on states and manufacturers.

ACC II – ZEV Assurance Measures



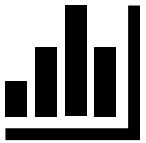
Battery range

Added durability



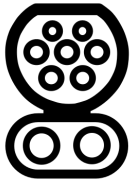
Capable charging cords

Battery labeling requirements



Data standardization

Repair information



Streamline fast charging

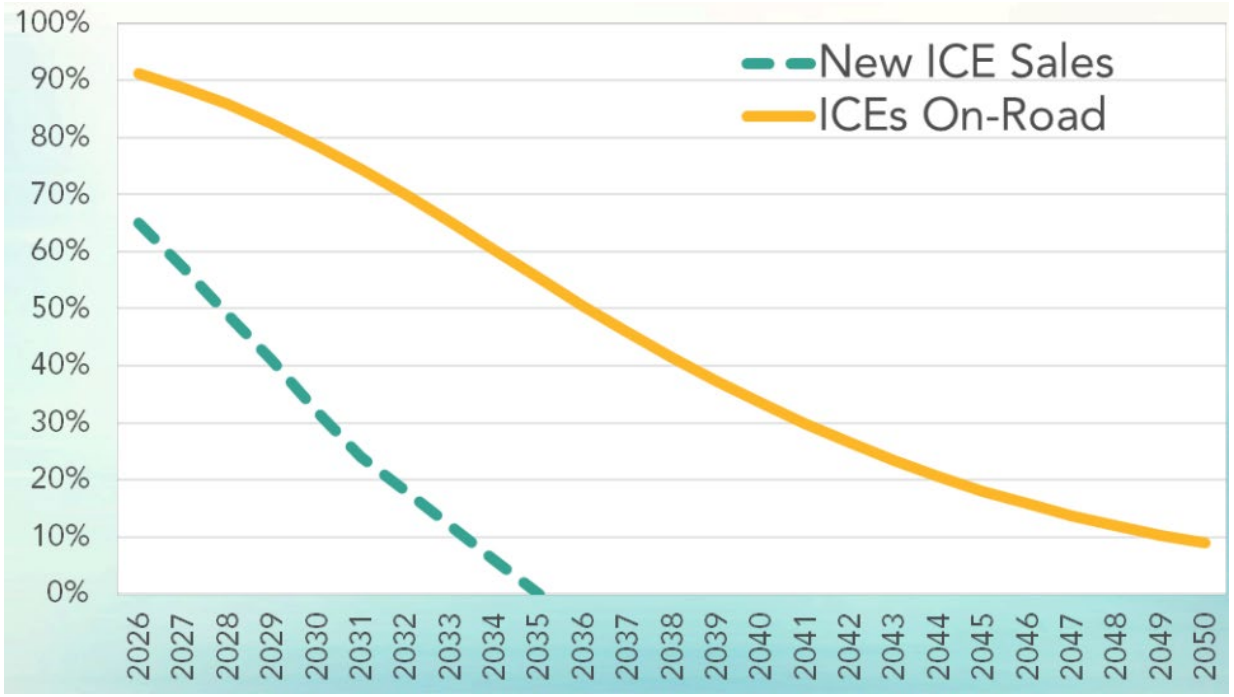
Warranties

ACC II – LEV IV Regulations

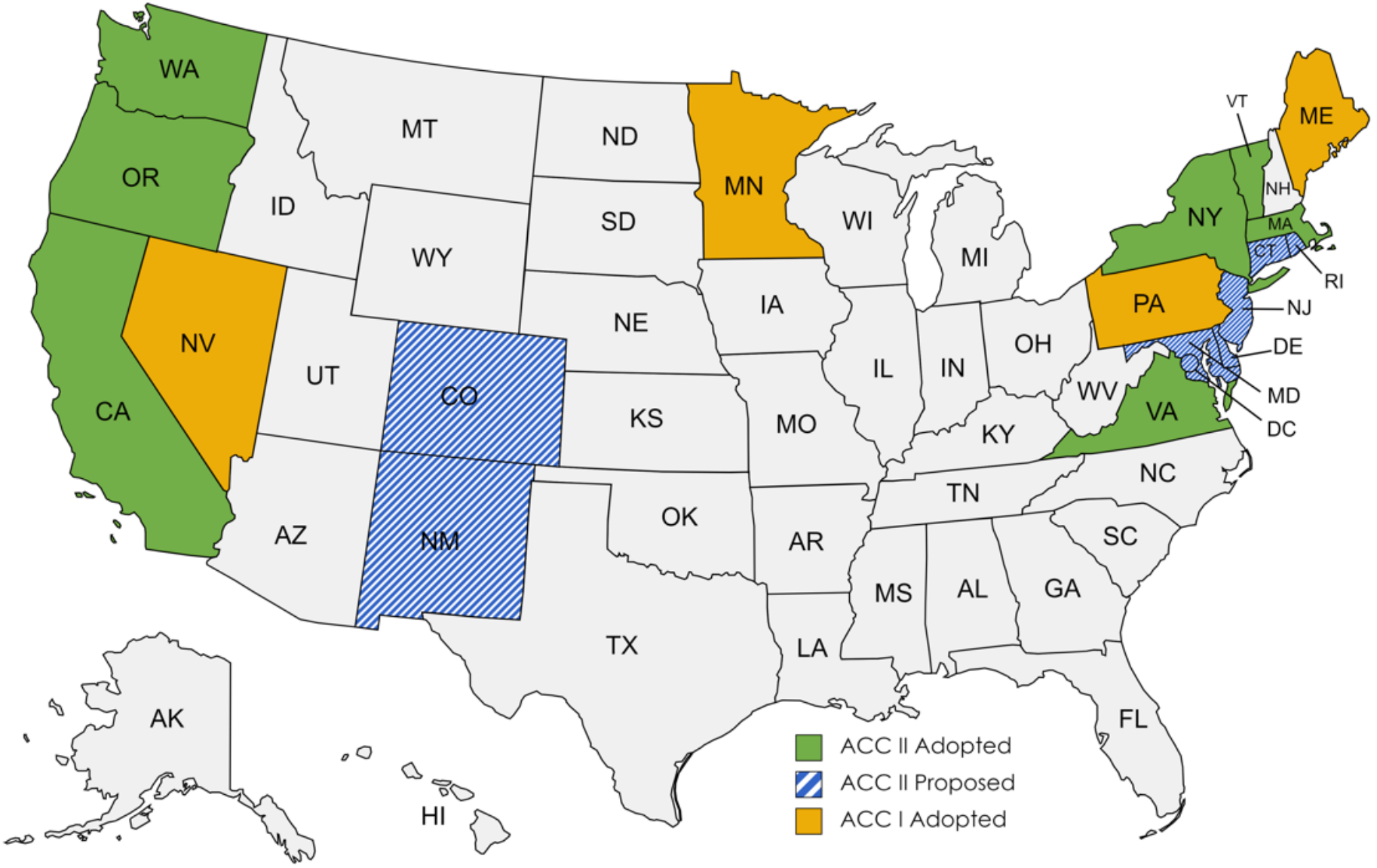
LEV IV continues to reduce emissions from internal combustion engine (ICE) vehicles:

- Requires manufacturers to meet criteria emission fleet average requirements without including ZEVs
- New standards to reduce tailpipe emissions during aggressive driving and cold-starts
- More stringent evaporative standards
- Better emission control for medium-duty vehicles

ICE Vehicles Will Comprise a Significant Portion of the Fleet Even Beyond 2035



Status of ACC II Adoption Across the U.S.



States that have adopted ACC I, ACC II, and/or are proposing to adopt ACC II represent more than 40% of U.S. new light-duty vehicle sales.

Source: NADA Data 2022, National Automobile Dealers Association, https://www.nada.org/media/4695/download?inline.

More Electric Vehicles Are Coming

General Motors plans to exclusively offer electric vehicles by 2035

Nissan Ups Its EV Target, Plans Second U.S. Battery Plant

Tesla Delivers Record-Setting 466,140 Cars In Q2 2023

Ford's goal: Build 2 million EVs globally by 2026

Ford expects to become the No. 2 producer of electric vehicles by the end of 2023, behind only Tesla.

Volvo Cars June sales up 33% as fully electric car sales quadruple

US: Toyota Plug-In Car Sales Increased In Q2 2023 By 27%

Honda And Kia Up EV Production Goals As Segment Growth Booms

Electric Car Battery Investments Skyrocketed In 2022

It was a huge year for EV battery plants in the US, to the tune of $73 billion.

Subaru Says 4 New EVs For U.S. By 2026 In A Rapid Electric Ramp Up

Jeep® Brand Reveals Plan to Become the Leading Electrified SUV Brand on the Market

Advanced Clean Trucks (ACT) Regulation

Vehicle Groupings Used in ACT

Class 2b-3	Class 4-8	Class 7-8 Tractors
   	     	  

Estimated Medium- and Heavy-Duty Vehicles in Maine

MHDV Class	# of Vehicles
Class 2b-3	58,230
Class 4-5	13,300
Class 6-7	16,550
Class 8	17,220
All MHDVs	105,300

Sources: U.S. EPA, 2017 National Emissions Inventory Data, https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data; and U.S EPA, MOVES3.1 (Version 3.1), https://www.epa.gov/moves.

What is the Advanced Clean Trucks (ACT) Rule?

Manufacturer sales requirement – not a purchase requirement

Guarantees a minimum supply of ZEVs in Maine

Credit/deficit system for compliance flexibility

ACT ZEV Sales Requirements for Manufacturers

- Advanced Clean Trucks (ACT) uses a credit and deficit system
  - Manufacturers generate deficits for ICE vehicles sold in Maine
  - Manufacturers generate credits for ZEVs or NZEVs sold in Maine
- Manufacturer sales numbers are based on vehicles sold and delivered to an ultimate purchaser in Maine
- Manufacturers may bank and trade credits
- Manufacturers must report all vehicles delivered for sale/purchased in Maine and credit transfers 90 days after the end of each model year

Model Year	Class 2b-3	Class 4-8	Class 7-8 Tractors
2027	15%	20%	15%
2028	20%	30%	20%
2029	25%	40%	25%
2030	30%	50%	30%
2031	35%	55%	35%
2032	40%	60%	40%
2033	45%	65%	40%
2034	50%	70%	40%
2035+	55%	75%	40%

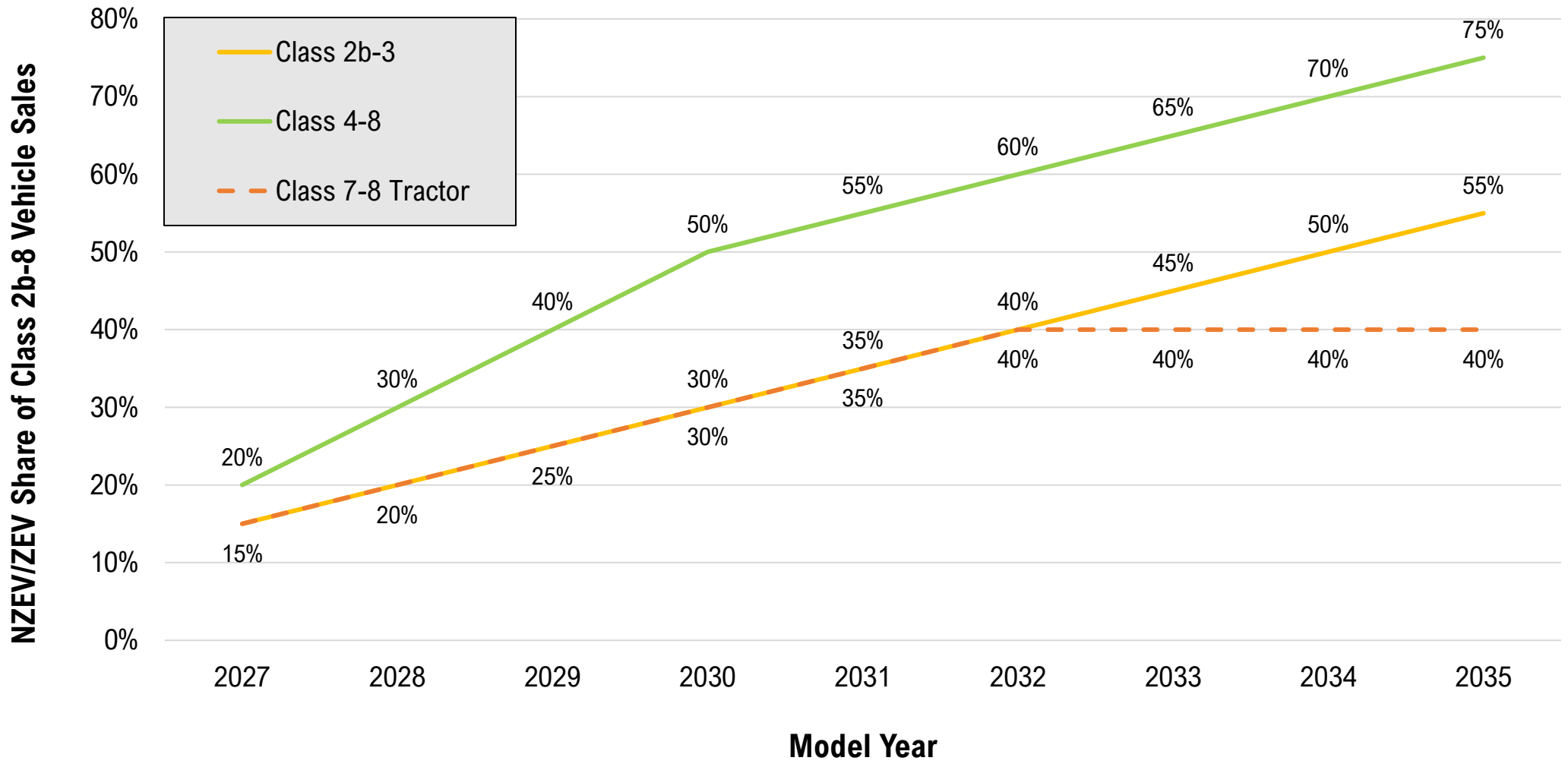
ICE = internal combustion engine, ZEV = zero-emission vehicle, NZEV = near zero emission vehicle

ACT Credit/Deficit System

- Deficits = ZEV sales requirements
- Based on annual sales
- Must sell ZEVs/NZEVs or buy credits
- Rule doesn't care who makes the ZEVs/NZEVs
- Credits earned when ZEV/NZEV is sold to ultimate purchaser
- NZEV crediting through MY 2035

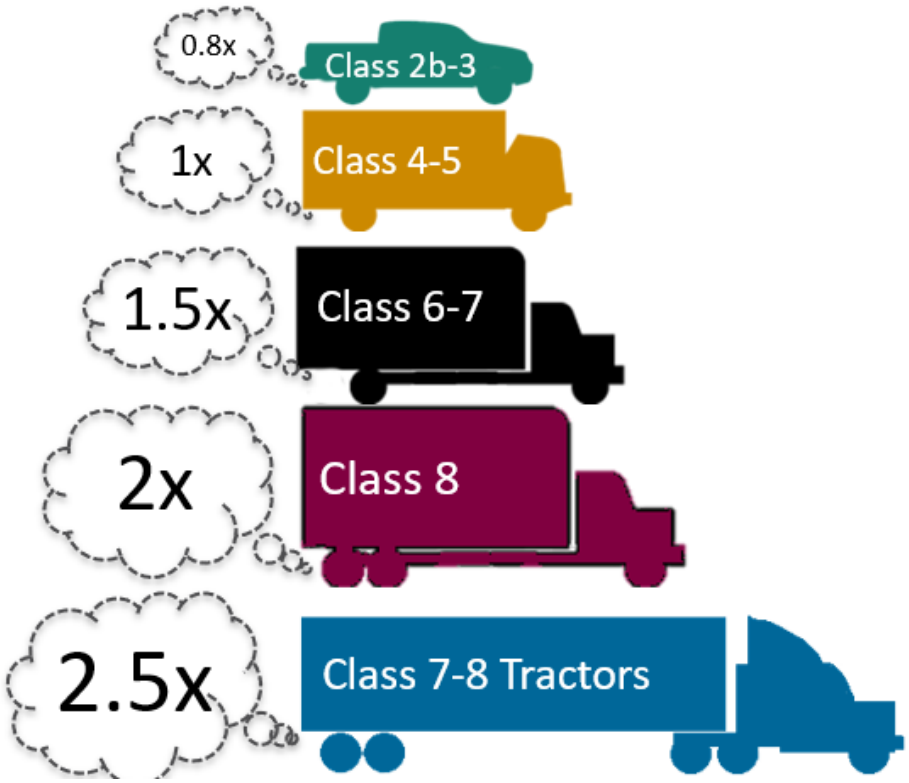
- Credits can be banked and saved for future use
- Class 2b-8 (non-tractor) credits can be used interchangeably to meet deficits
- Class 7-8 tractor deficits can only be met with Class 7-8 tractor credits
- Credits are rounded if they do not equal a whole number

ACT – Annual ZEV Requirements



ACT Weight Class Modifiers

- Heavier vehicles generate more emissions
  - More deficits and credits generated
- Gives manufacturers flexibility and maintains emissions benefits
- Manufacturers can build ZEVs in one weight class or across all weight classes

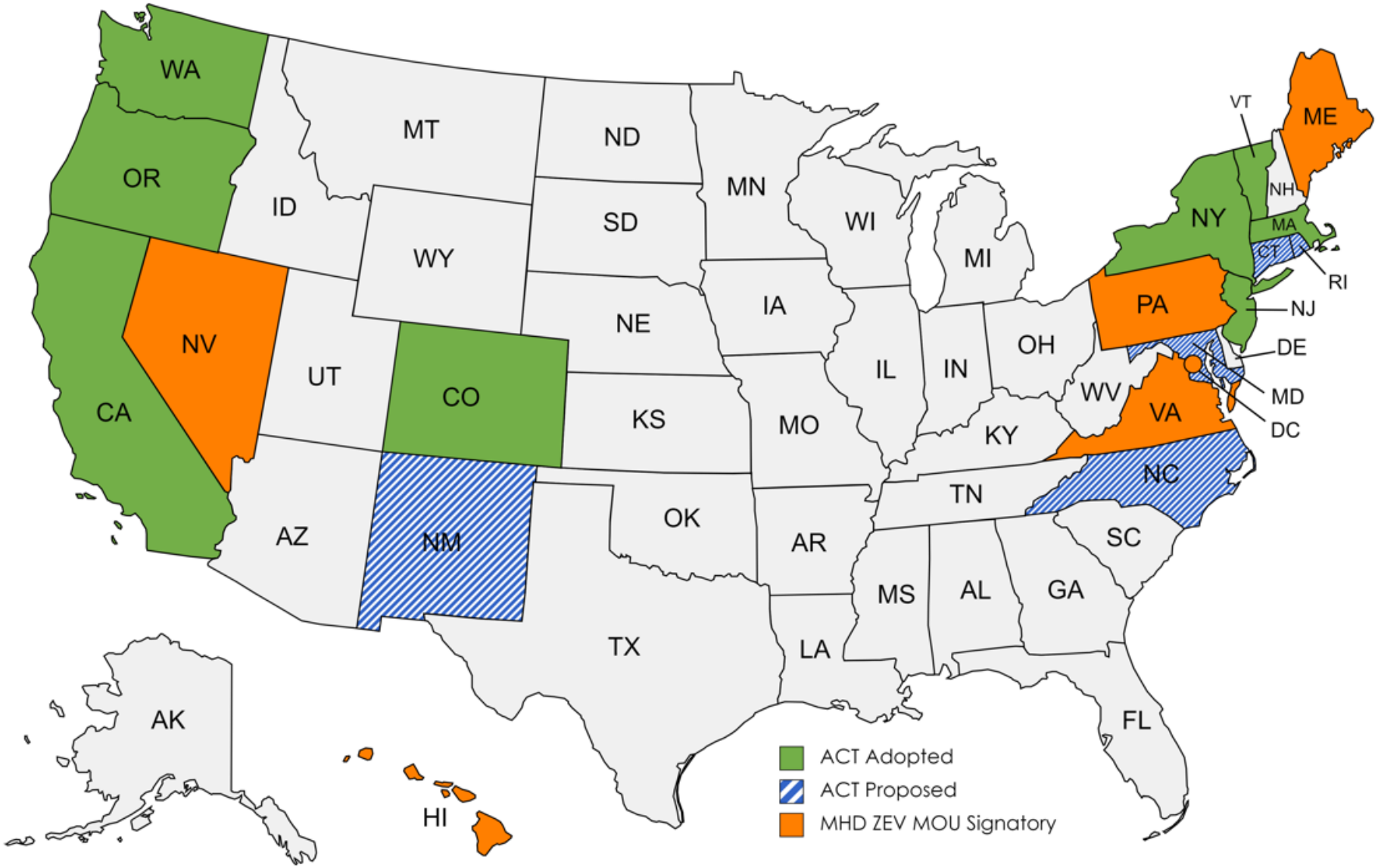


ACT Reporting Requirements

- 90 days after the end of the model year, manufacturers report vehicles produced and delivered for sale in Maine
- Manufacturers must either submit all VINs or make available on request
- Credit transfers must be reported within 90 days of the end of the model year
- Manufacturers selling Class 2b-3 ZEVs must state whether credits will be used for ACT or the light-duty ZEV program, not both

California and Section 177 states are working together to develop an ACT reporting system to ease administrative burden on states and manufacturers.

Status of ACT Adoption Across the U.S.



- States that have adopted ACT and/or are proposing to adopt ACT represent more than 30% of U.S. heavy-duty registrations
- Six other signatory jurisdictions to the MHD ZEV memorandum of understanding committed to 30% MHD ZEV sales by 2030 and 100% MHD ZEV sales no later than 2050

Source: Table MV-1, State Motor-Vehicle Registrations 2020 (February 2020), Federal Highway Administration, https://www.fhwa.dot.gov/policyinformation/statistics/2020/mv1.cfm.

Medium- and Heavy-Duty Electrification is Gaining Momentum

USPS Intends To Deploy Over 66,000 Electric Vehicles by 2028, Making One of the Largest Electric Vehicle Fleets in the Nation

Minnesota's First Electric Fire Truck Is Coming to St. Paul

Merchants Fleet To Buy 12,500 Ram ProMaster EV Electric Vans

Amazon Now Has 1,000+ Rivian Electric Vans Making Deliveries In US

Volvo Trucks delivers heavy-duty electric concrete mixer truck to CEMEX

Terex introduces all-electric bucket truck; 9 initial utility customers

Battery electric could be 63% of refuse truck sales come 2030: report

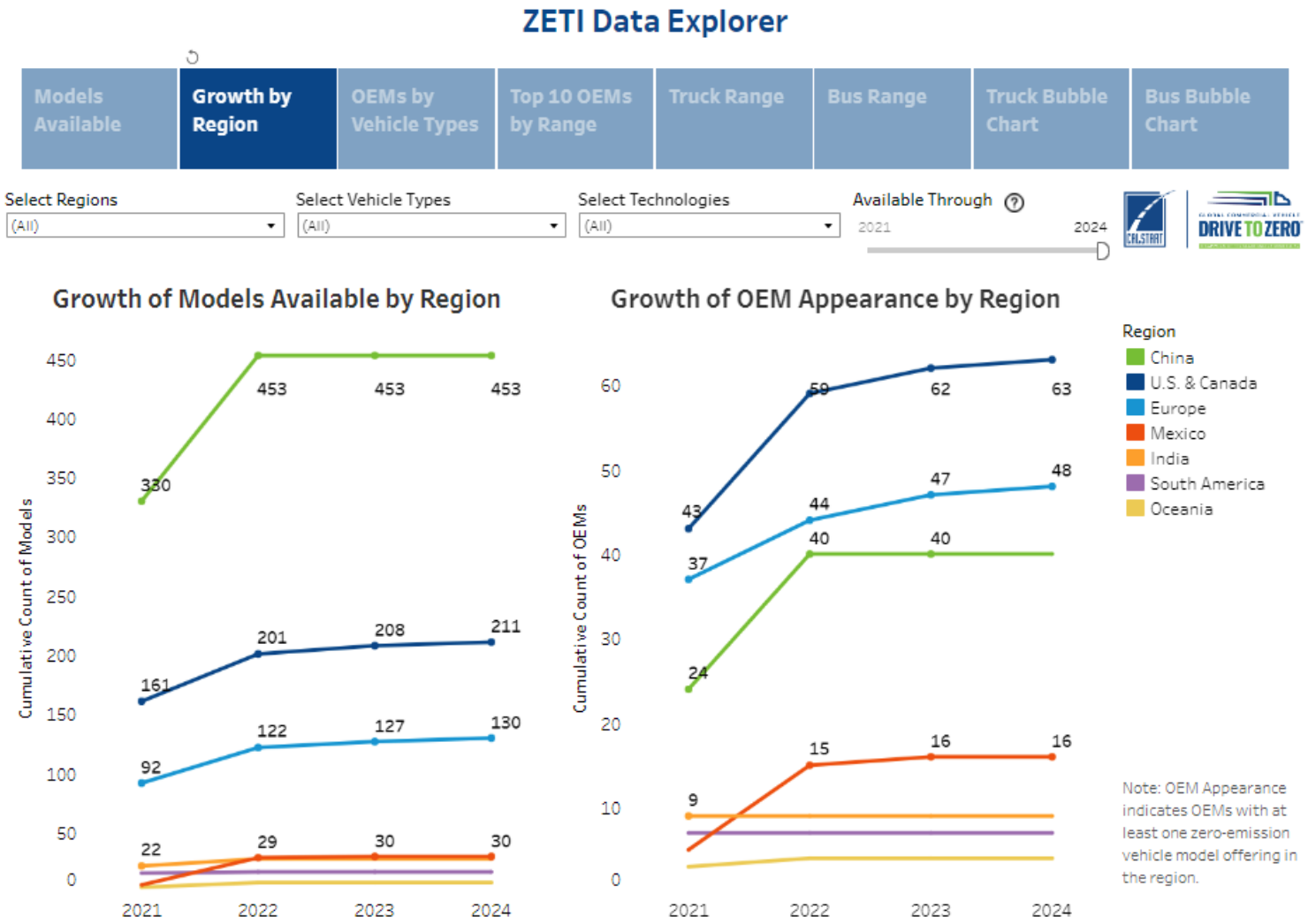
Tesla Semi Completed A 500-Mile Trip With A Loaded Weight Of 81,000 pounds

Schneider to add nearly 100 battery electric trucks to its fleet

MHD ZEV Model Availability is Rapidly Growing

More than 200 ZEV/NZEV models are currently available in North America

- Yard tractors – 9 models
- HD trucks – 28 models
- MD trucks – 62 models
- MD step vans – 19 models
- Cargo vans – 21 models
- Transit buses – 25 models
- Coach buses – 10 models
- Shuttle buses – 16 models
- School buses – 17 models
- Other MHDVs – 11 models



Source: CALSTART (2022): Drive to Zero's Zero-Emission Technology Inventory Data Explorer. Version 1.0. Available online at: https://globaldrivetozero.org/zeti-data-explorer/.

Thank you!

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Appendices

ZEVs and PHEV Models Are Rapidly Increasing

OEM	Brand	Region	EV Sales Target	Segment	Year	Type
Tesla		Global	100%	LDV	N/A	ZEV
GM		Leading Markets	100%	LDV	2035	ZEV
Ford		Leading Markets	100%	LDV	2035	ZEV
Mercedes-Benz		Leading Markets	100%	LDV	2035	ZEV
VW	VW	U.S.	50%	LDV	2030	ZEV
	Audi	Global (exc. China)	100%	LDV	2033	ZEV
	Porsche	Global	80%	LDV	2030	ZEV
	Bentley	Global	100%	LDV	2030	ZEV
Stellantis		U.S.	50%	LDV	2030	ZEV
Honda		Leading Markets	80%	LDV	2035	ZEV
BMW	BMW	Global	50%	LDV	2030	ZEV
	Mini	Global	100%	LDV	2035	ZEV
Geely	Volvo	Global	100%	LDV	2030	ZEV
Nissan		Global	50%	LDV	2030	ZEV, PHEV
Tata	Jaguar	Leading Markets	100%	LDV	2025	ZEV
	Land Rover	Leading Markets	100%	LDV	2035	ZEV
	Tata	Global	30%	LDV	2030	ZEV
Hyundai-Kia	Hyundai, Genesis	Global	36%	LDV	2030	ZEV
	Kia	Global	30%	LDV	2030	ZEV
Toyota		Global	32%	LDV	2030	ZEV
Mazda		Global	25%	LDV	2030	ZEV

Source: The Global Automaker Rating 2022, International Council on Clean Transportation (May 31, 2023), https://theicct.org/publication/the-global-automaker-rating-2022-may23/.