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Maine Clean Transportation Roadmap

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Introduction

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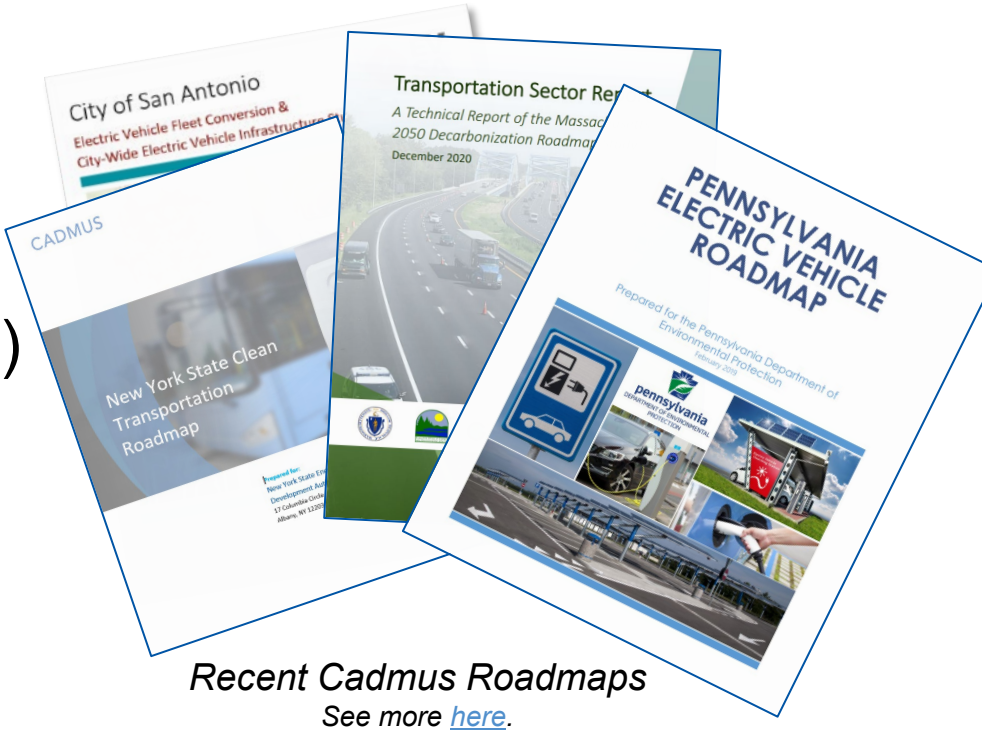


Recent Cadmus Roadmaps
See more here.

Steering Committee: GOPIF, GEO, DPS, DEP, DOT, EMT

Advisory Group: Industry, government, and non-profit

Public Input: Transportation Working Group and Listening Sessions

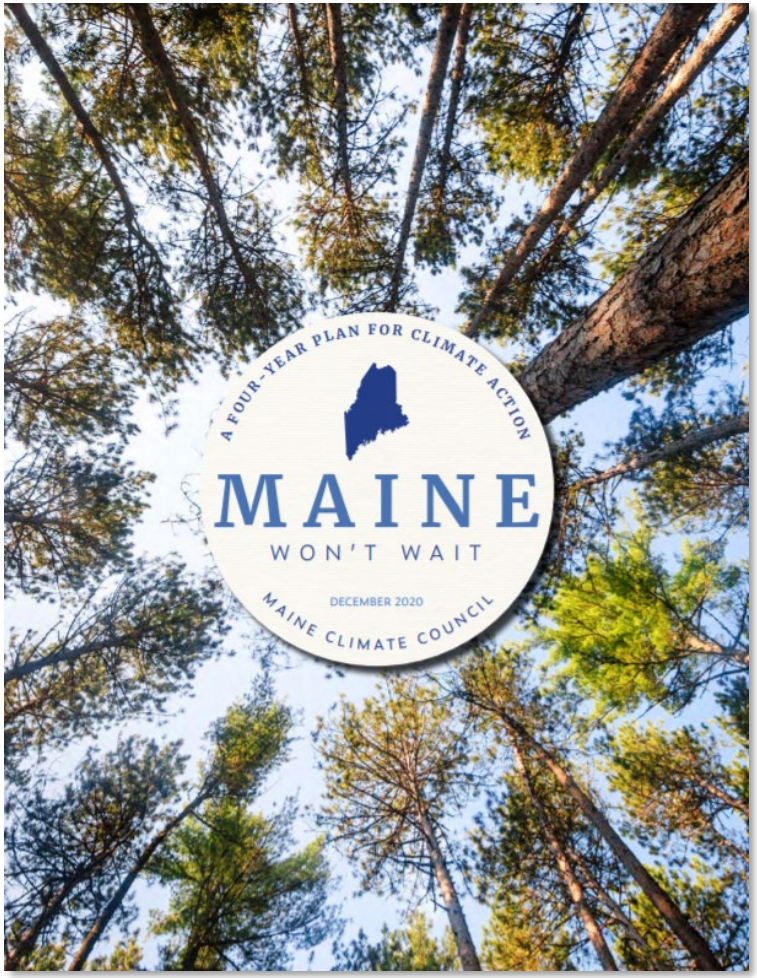
Agenda

- Origins of Roadmap
- Roadmap Overview
- Recommendations
- Funding
- Key Takeaways

Origins of Roadmap

Origins | **Maine Won't Wait**

Climate Action Plan published in December 2020, describes broad strategies for achieving Maine's climate goals.



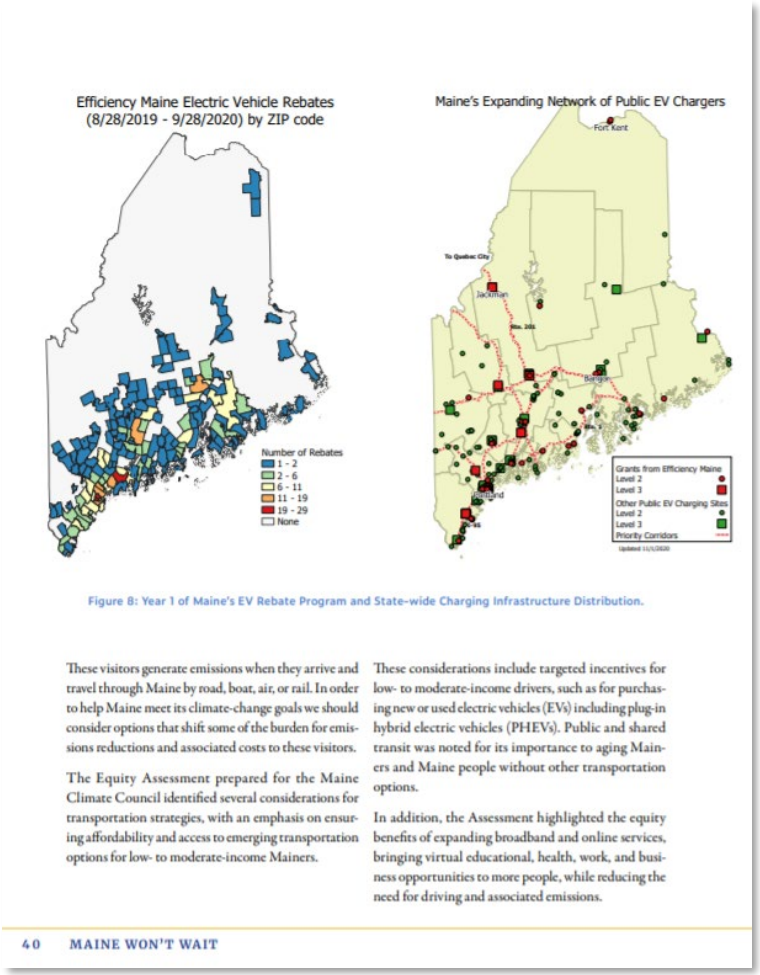


Figure 8: Year 1 of Maine's EV Rebate Program and State-wide Charging Infrastructure Distribution.

These visitors generate emissions when they arrive and travel through Maine by road, boat, air, or rail. In order to help Maine meet its climate-change goals we should consider options that shift some of the burden for emissions reductions and associated costs to these visitors.

The Equity Assessment prepared for the Maine Climate Council identified several considerations for transportation strategies, with an emphasis on ensuring affordability and access to emerging transportation options for low- to moderate-income Mainers.

These considerations include targeted incentives for low- to moderate-income drivers, such as for purchasing new or used electric vehicles (EVs) including plug-in hybrid electric vehicles (PHEVs). Public and shared transit was noted for its importance to aging Mainers and Maine people without other transportation options.

In addition, the Assessment highlighted the equity benefits of expanding broadband and online services, bringing virtual educational, health, work, and business opportunities to more people, while reducing the need for driving and associated emissions.

Link: Maine Won't Wait

Origins | **Climate Action Plan Goals**

Four broad goals in Maine Won't Wait

- Reduce Maine's greenhouse gas emissions
- Increase resilience to climate impacts
- Foster economic opportunity and Prosperity
- Advance equity

Link: Maine Won't Wait

Origins | **Strategies to Achieve Goals**

Eight strategies to reach goals. Strategy A is specific to transportation.

A. Embrace the Future of Transportation in Maine

B. Modernize Maine's Buildings

C. Reduce Carbon Emissions the Energy and Industrial Sectors through Clean Energy Innovation

D. Grow Maine's Clean Energy Economy and Good Jobs

E. Protect Maine's Environment and Working Lands and Waters, Increase Carbon Sequestration

F. Build Healthy and Resilient Communities

G. Invest in Climate-Ready Infrastructure

H. Engage People and Communities in Climate Impacts and Program Opportunities

Link: Maine Won't Wait

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Origins | **Strategy A: Transportation**

Three approaches to embracing the future of transportation.

1. Accelerate Transition to Electric Vehicles

2. Increase Fuel Efficiency and Alternative Fuels

3. Reduce Vehicle Miles Traveled

Link: Maine Won't Wait

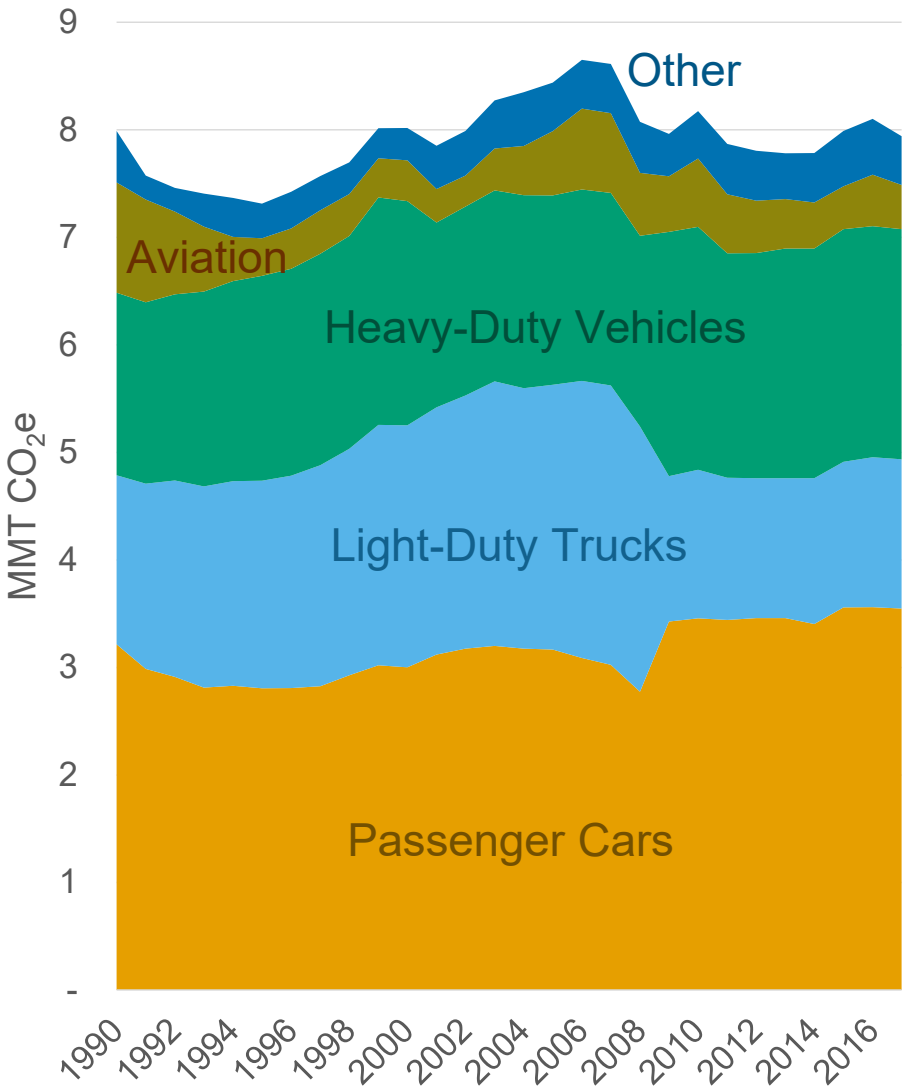
Origins | **Climate-Energy Targets**

Maine's targets are ambitious but aligned with latest climate science.

- **Key Targets:**
  - **GHG emissions targets**: 45% reduction by 2030 and 80% by 2050, relative to 1990 levels. Climate neutrality by 2045.
  - **Renewable Portfolio Standard (RPS):** 80% by 2030, with goal of 100% renewable electricity by 2050.
- **Transportation-Specific Targets:**
  - 219,000 zero emissions light-duty vehicles by 2030.
  - In 2030, 85 percent of new light-duty vehicle sales are electric, and 55 percent of new heavy-duty sales are zero emissions.
  - Reduce light-duty vehicle miles traveled over time, achieving 10% reductions by 2025 and 20% by 2030.
  - Reduce heavy-duty vehicle miles traveled by 4% by 2030.

Link: Maine Won't Wait

Origins | **Transportation Emissions**



- Transportation sector accounts for **54%** of state's GHG emissions.
- Light-duty cars and trucks account for **60%** of sector emissions.
- Emissions relatively stable over time due to dueling forces of increased vehicle efficiency and growing miles traveled.

Source: Eighth Biennial Report on Progress toward Greenhouse Gas Reduction Goals, Maine Department of Environmental Protection, https://www.maine.gov/dep/news/news.html?id=1988154

Roadmap Overview

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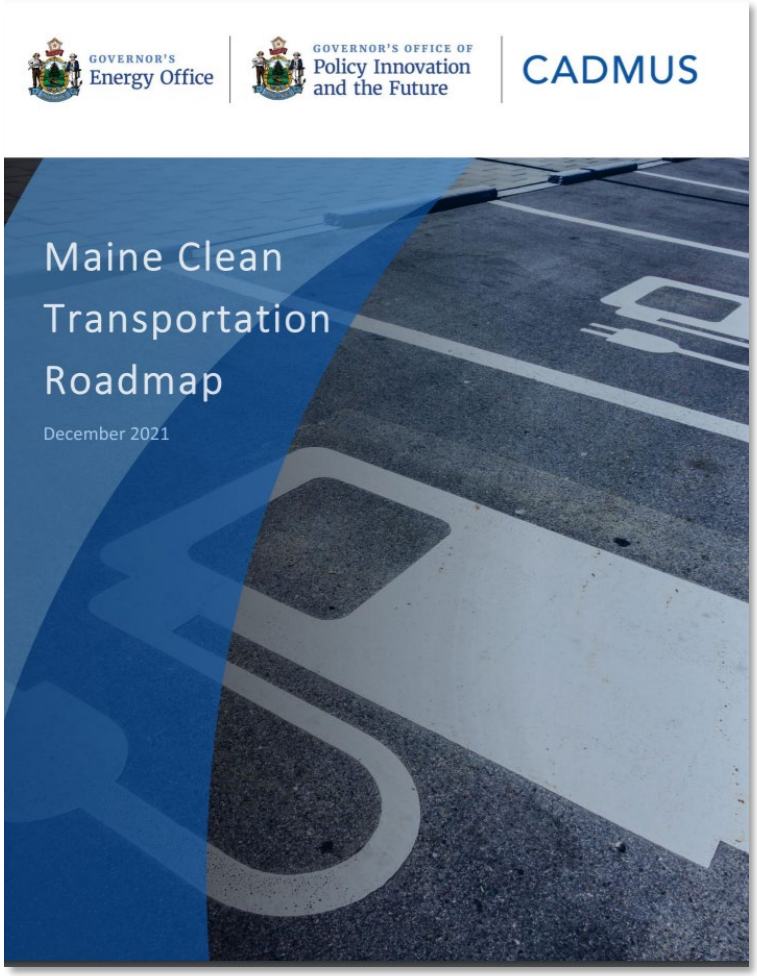
Overview | **Highlights of Roadmap**



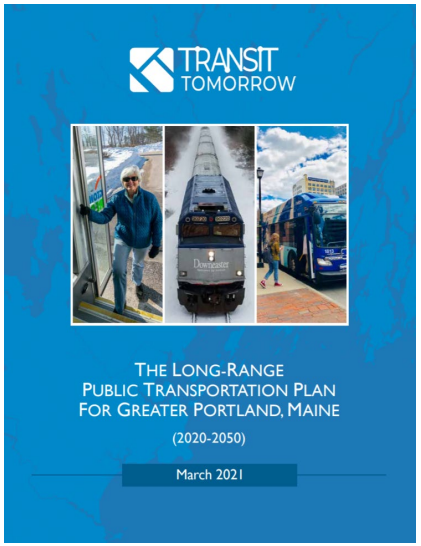
- **Release date:** December 15, 2021
- **Purpose**: Identify policies needed to meet goals in *Maine Won't Wait*
- **Overview:**
  - Describes current activities
  - Proposes 16 new programs for state and local government and electric utilities
  - Estimates future EV populations, charging needs, and costs

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

Overview | **Maine Action on VMT**

- **DOT example programs:**
  - **GO MAINE**. Ride-matching program that encourages non-single occupancy modes.
  - **Statewide Strategic Transit Plan**. 10-year investment plan that will include nontraditional transit models, ridesharing, vanpools, and partnerships with employers.
  - **Active Transportation Plan**. Will lay out vision and goals for active transportation in the state and assess priorities into the future.
- **GPCOG example programs:**
  - **Complete Streets.** Requires multimodal facilities in all road projects.
  - **Transit Tomorrow.** 30-year strategic plan for enhancing public transportation.
  - **Connect 2045**. 25-year transportation investment plan.

GO MAINE Commuter Connections



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Overview | **National Trends in EVs**

- **Declining costs:** EV drivers save money on fuel and maintenance. In mid-2020s, the upfront cost of EVs will be lower than gasoline vehicles. Costs will continue declining.
- **Greater consumer acceptance**: 30% of vehicle buyers say an EV will be their next vehicle. 70% say they are open to buying an EV at some point.
- **Increasing EV manufacturing capacity:** Automakers have made investments that lock in future EV growth.
- **Greater vehicle availability:** EVs coming to market are more complete substitute of gasoline vehicles (vehicle range is higher; more crossovers, trucks, AWDs).
- **Supply chain disruptions**: Vehicle market severely constrained right now due to chip disruptions.

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Overview | **Automaker Commitments**

Nearly all major automakers have committed to increasing EV production in the next decade

Original equipment manufacturer	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
BMW Group			25		15-25%					10
BAIC Group	2				1.3					50%
Changan Automobile (Group)					33					
Daimler		10			25%					50%
Dongfeng Motor Co	1	30%	1		1				1	1
FAW					40%					60%
Ford		40				100%*				
GM Group			22		30	1				1
Honda										40%ᵀ
Hyundai-Kia					1					
					29					
Mazda		1								5%
Renault-Nissan		20								
		20%								
Maruti Suzuki	1									1.5
SAIC					30%					30
Stellantis					38%*					70%*
					31%**					35%**
Toyota Group	1				15					>1
Volkswagen					20%					70%*
			1		3				26	50%**
					75					
Volvo (Geely Group)	1	1	1	1	50%					100%*

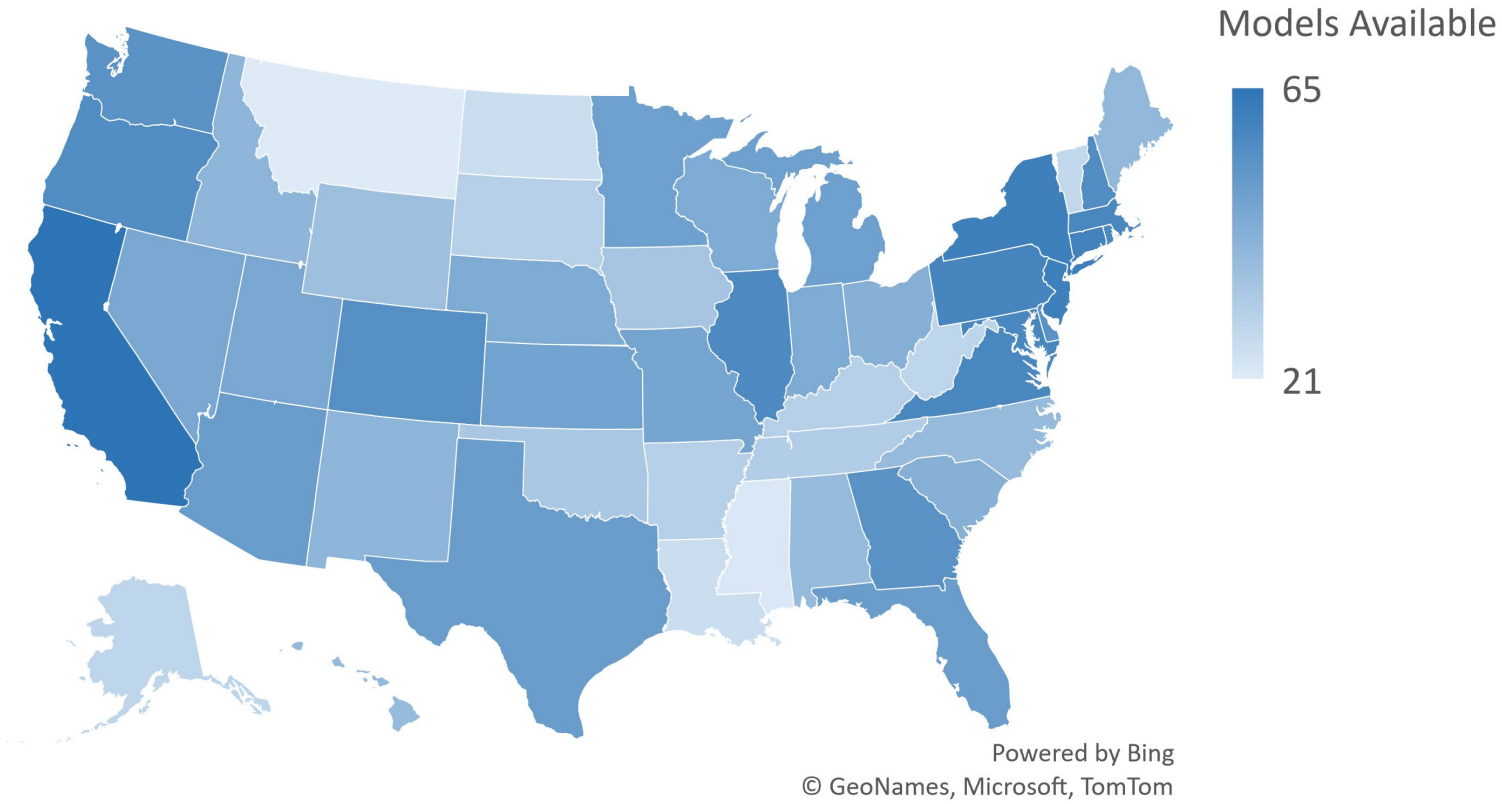
% of sales electric
Annual sales (million)
New EV models (number)
Cumulative sales (million)

* European market only
** Chinese and US markets only
ᵀ Includes both EVs and FCEVs

https://iea.blob.core.windows.net/assets/ed5f4484-f556-4110-8c5c-4ede8bcba637/GlobalEVOutlook2021.pdf

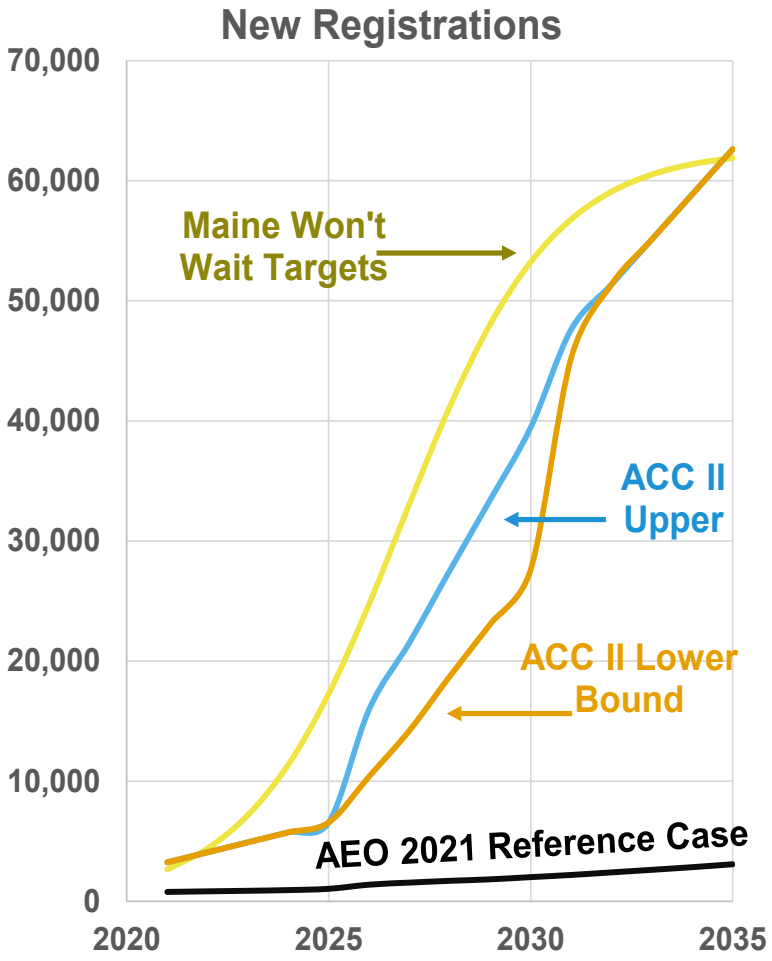
Overview | **EV Vehicle Availability**

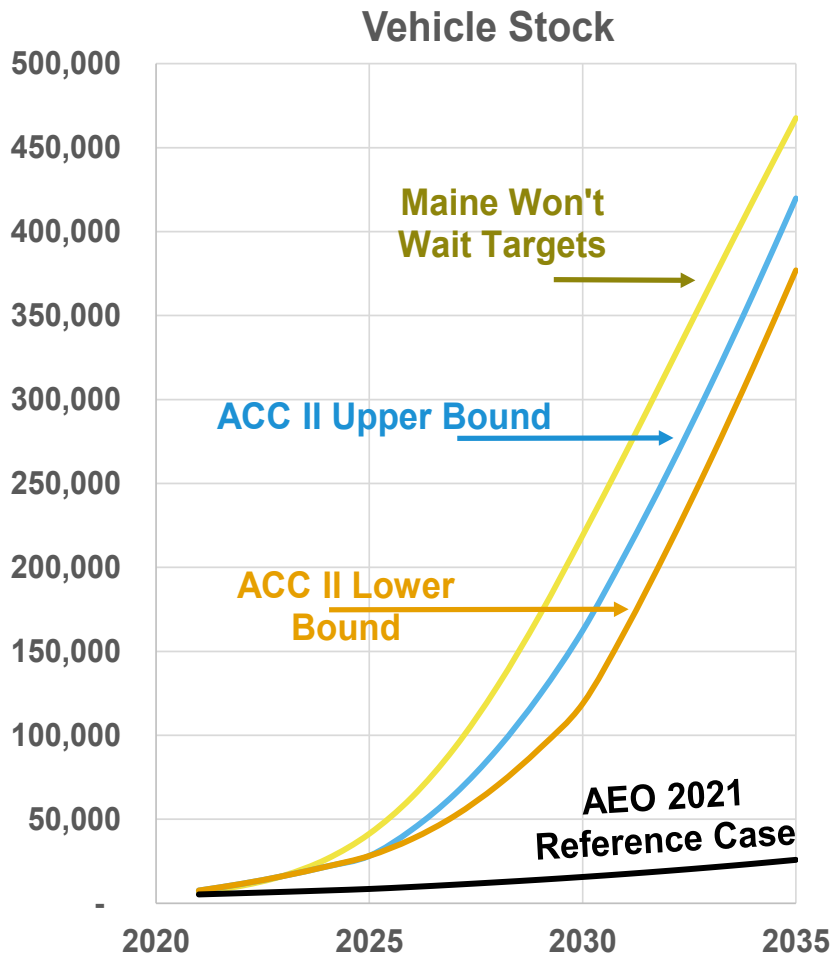
- *Maine has 40 EV models available (CA has 65 models)*
- *Nearly all EVs in Maine are sedans and crossovers. No pickup trucks or full-size SUVs, very few All-Wheel Drive).*



Source: https://www.atlasevhub.com/

Overview | **Maine EV Projections**





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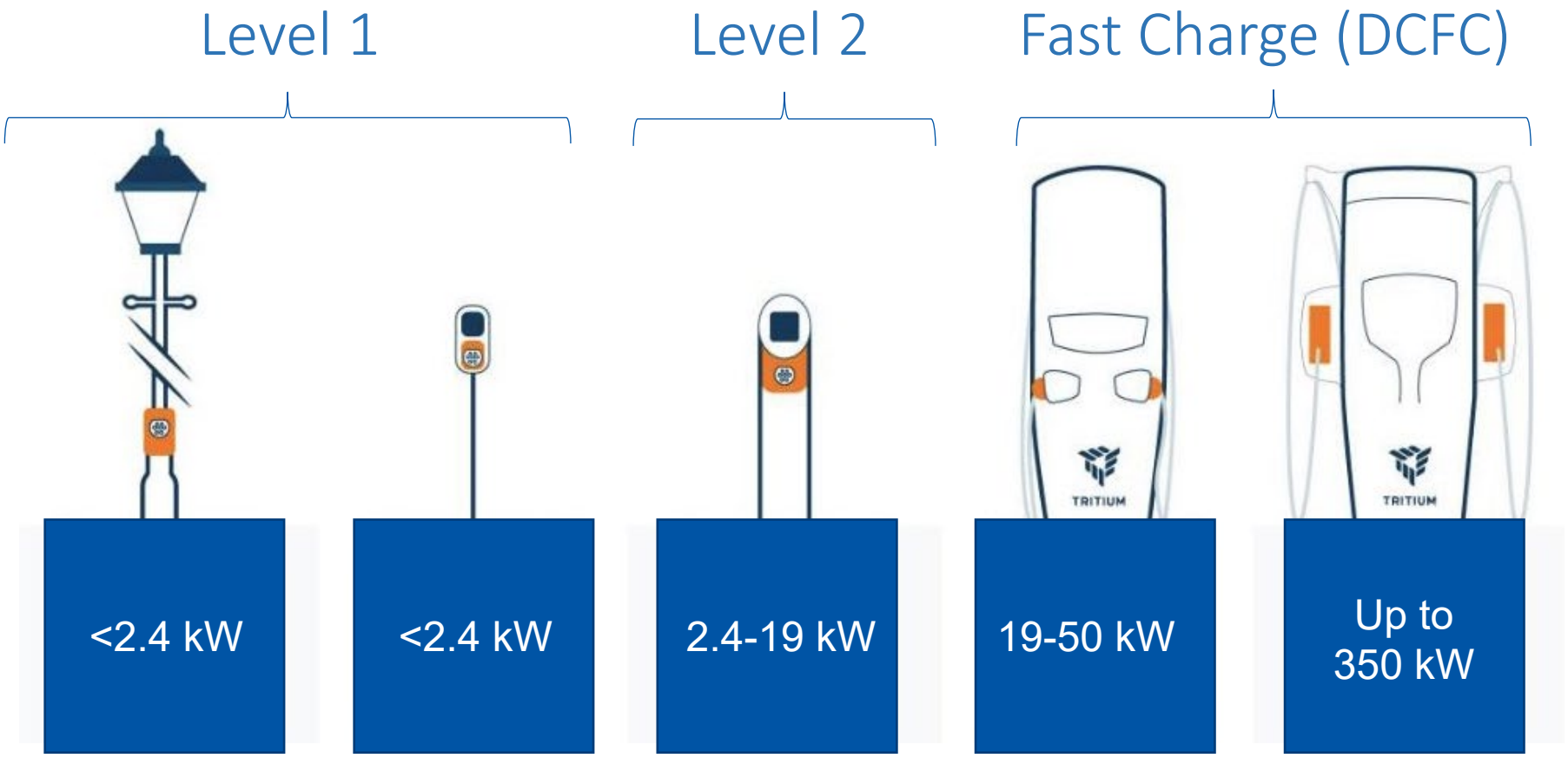
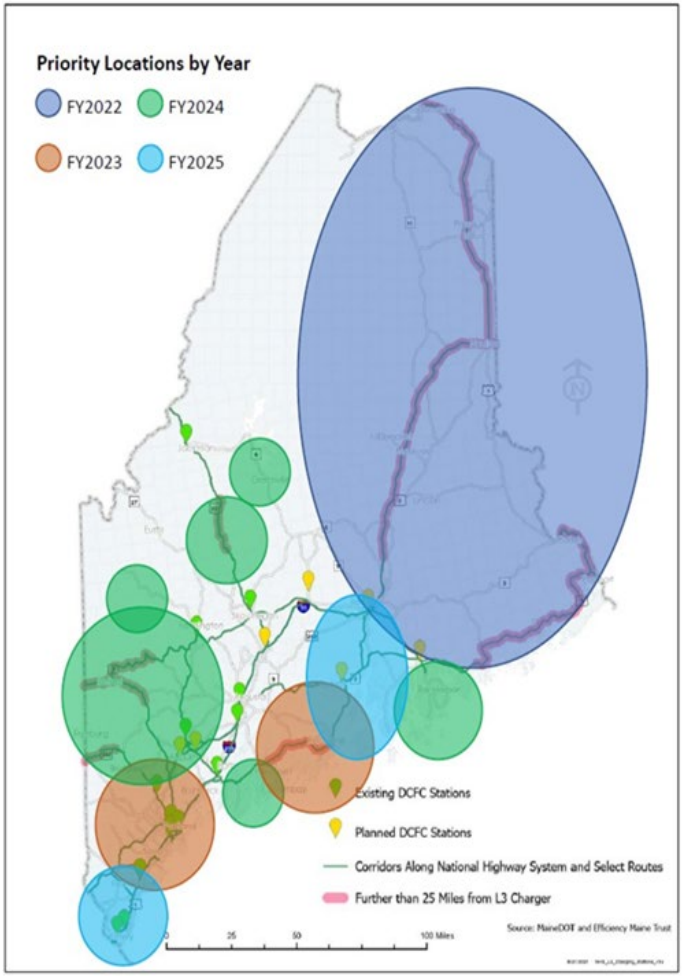
Overview | **Types of Charging**

Three main types of chargers, each with different input power levels and different costs of ownership.



Overview | **Current & Planned Charging**

Chargers per EVs in Maine is higher than national average but still insufficient for 2022 and beyond



Recommendations

Recommendations | **EV Programs**

Program	Goal
Advanced Clean Cars II	Increase EV Supply and Adoption in Maine
Advanced Clean Trucks	
Public Fast Charger Incentive and/or Ownership	Expand Charging Network
Multi-Unit Dwelling (MUD) Level 2 Charger Incentive Program	Expand Charging Network
Expanded Low-Income EV Incentive Program with Level 2 Charger	Incentivize Clean Vehicles
“Cash for Clunkers” Program	Incentivize Clean Vehicles
Medium- and Heavy-Duty EV Incentive	Incentivize Clean Vehicles
Marketing and Awareness Campaign	Education & Awareness
EV-Ready Building Codes	Expand Charging Network

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Recommendations | **Public & Active Transportation**

Program	Goal
Transit Village to Encourage Transit Oriented Development (TOD)	VMT Reduction & Mode Shift
Bicycle & Pedestrian Investment	VMT Reduction & Mode Shift
Marketing and Awareness Campaign	Education & Awareness

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Recommendations | **Utility/EMT Programs**

Program	Goal
Demand Charge Relief	Expand Charging Network
Utility-Side Make-Ready Infrastructure	Expand Charging Network
Time Of Use (TOU) Rates	Incentivize Clean Vehicles
Marketing and Awareness Campaign	Education & Awareness

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Recommendations | **Future Research**

- **Zero-Emissions MHDV Roadmap.** Align stakeholders around barriers and opportunities for zero emission MHDVs.
- **Make-Ready Mapping.** Create publicly available map showing where excess distribution system capacity exists in state. Helps stakeholders identify locations for high power charging.
- **Tourism Study.** Develop study on electrification opportunities for tourism industry.
- **Case Studies on Rural Transit and/or Electrification.** Highlight success stories in rural transit electrification programs in ME and throughout US.
- **Loan Loss Reserve Program for EVs.** Develop program to assist low-income households overcome upfront cost barriers associated with new and used EVs.
- **Government Fleet Electrification.** Create plan for electrifying gov't fleets in ME.
- **School Bus Electrification Study.** Identify barriers and opportunities for e-school bus programs in ME.
- **Emergency Management Plans.** Update emergency management plans to ensure they account for expected increases in EV population.

Funding

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Funding | **Current State Funding for Charging**

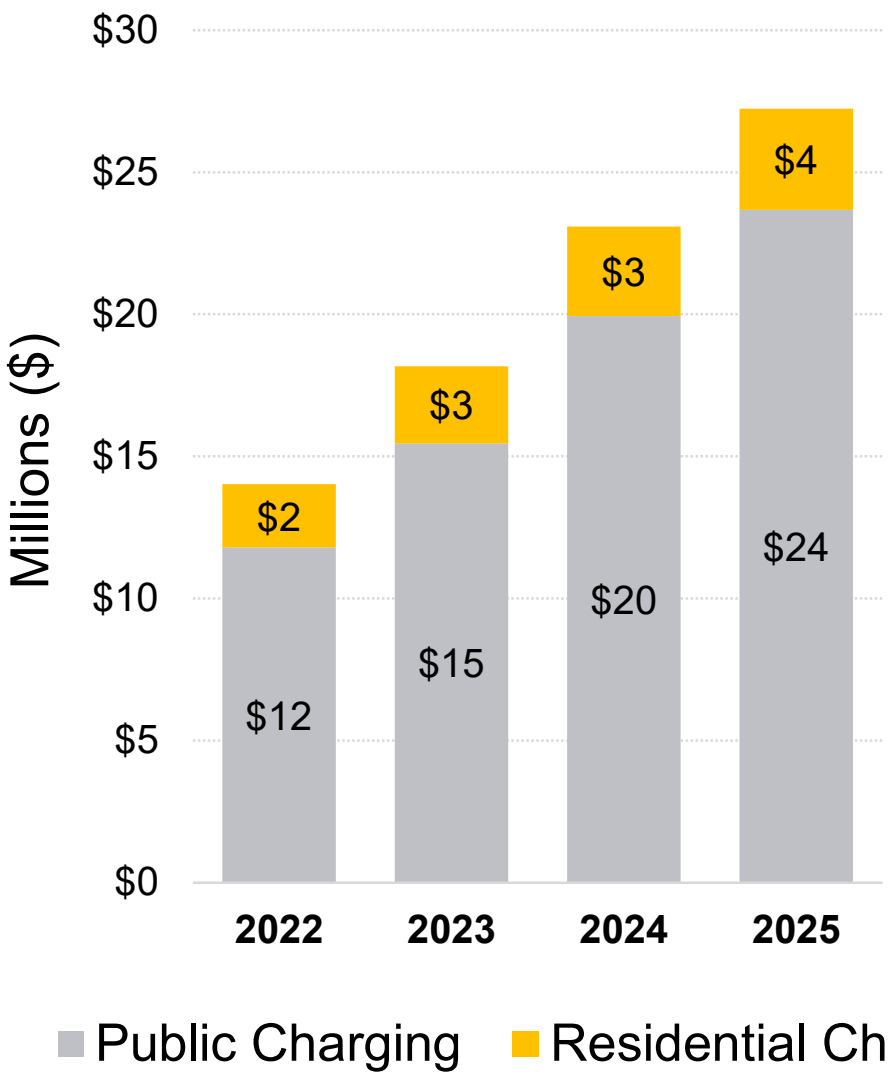
- **$8 million** for charging infrastructure through Fiscal Year 2026 from *Maine Jobs & Recovery Plan*.

- **$19 million** designated to Maine for charging infrastructure through 2026 from federal bipartisan infrastructure formula funding.

- Additional federal competitive funds possible through:
  - **$2.5B** - competitive EV charging grant
  - **$250M** - electric and low-emitting ferries (sec 71102)
  - **$4B** - electric buses, 15% dedicated to rural areas (sec 30018)
  - **$500M** - state energy program (sec 40109)
  - **$300M** - Technical assistance via joint program office

- **$2 million** received from the *New England Clean Energy Connect* stipulation. Potential for an additional **$8 million** (currently suspended).

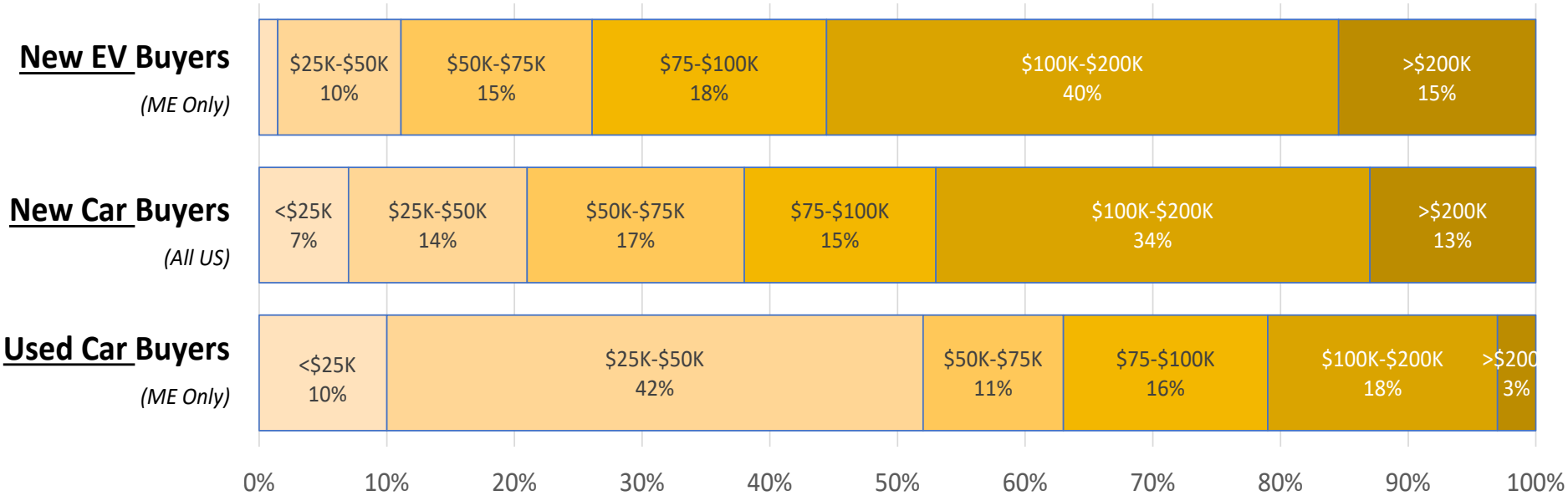
Funding | **Annual *Investment* Need for Charging**



- Figure shows total investment dollars needed by public *and* private sector to achieve sufficient charging coverage for Maine's EVs
- Public charging critical to getting more EVs on the road.
- Key barrier (of many) is high cost of fast charging plugs.
- Residential charging may not need public sector support.
- Figure does not show medium- and heavy-duty charging investment, which will expand quickly in mid-decade.

Funding | **Extended Low-Income EV Incentive Program**

***Takeaway**: Extend the income-tiered EV incentive program to ensure Maine's EV adoption aligns with new and used car market segments.*



- Early adopters of EVs are primarily high income (e.g., >$100K).
- Figure shows income distribution of new EV buyers, all new car buyers, and all used car buyers.
- Current low-income incentive program funded by VW and NECEC funds, but funds are expected to expire as early as summer 2022.
- Extended low-income EV incentive program would require additional funding.

Key Takeaways

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Key Takeaways

ACC II and ACT Regulations

- Transformative policies
- Create long-term market certainty
- Place burden for electrification on the automakers, not the state (i.e., revenue neutral) although close coordination needed, particularly with fleet operators

Demand charge mitigation

- Economics of fast charging are still challenging. Public sector intervention is necessary to compel private sector investment.

Policies to reduce miles traveled

- Longer implementation time than vehicle / fuel policies
- Provide many non-GHG benefits

Funding

- Achieving transportation goals in *Maine Won't Wait* will require on-going investment from state and federal sources.
- Maine should look for opportunities to aggressively compete for federal competitive grant funds.

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