



SIERRA CLUB

MD Commission on Climate Change Electric Vehicles & Maryland

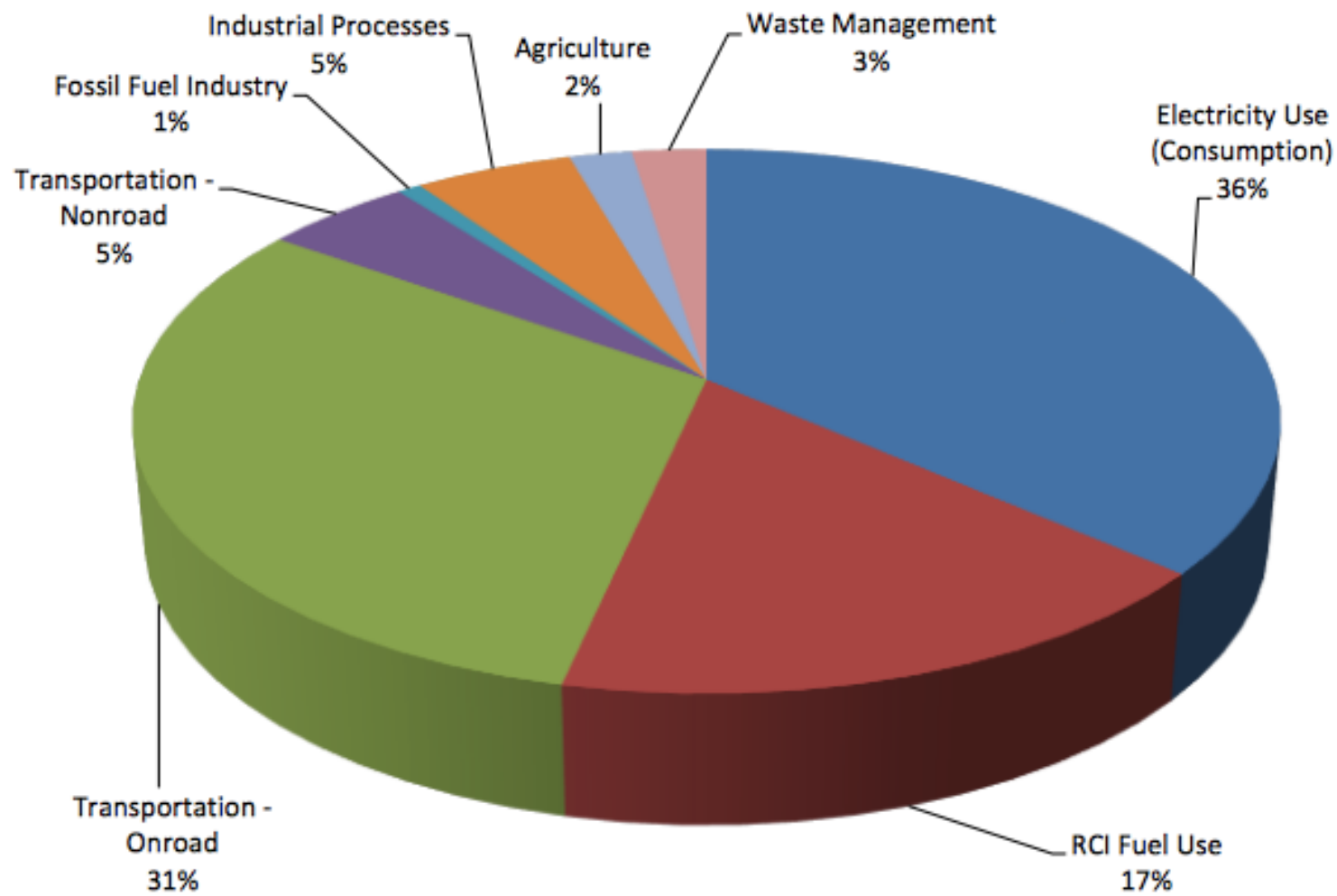
Mark Kresowik & David Smedick
Sierra Club's Beyond Coal Campaign

9/26/16

Success – state adopts 40 x 2030 goal



2014 GHG Emissions by Sector



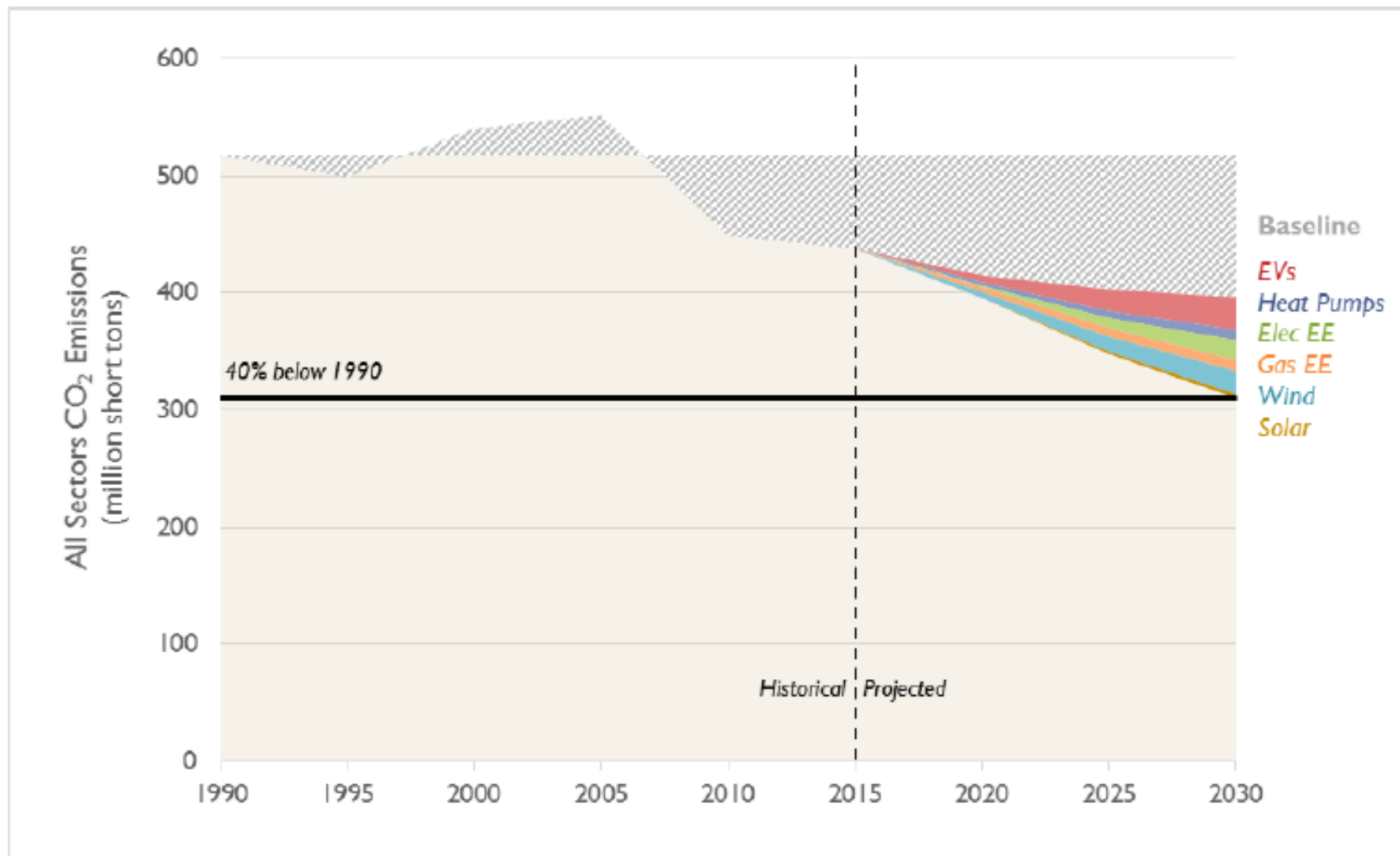
Importance of Transportation Sector



GHG Reductions by Major Program Groups.

Program	Projected 2020 GHG Emission Reductions (MMtCO ₂ e)
EmPOWER Maryland	7.24
The Maryland Renewable Energy Portfolio Standard (RPS)	4.13
The Regional Greenhouse Gas Initiative (RGGI)	3.60
Other Energy Programs	0.14
Transportation Technologies	6.88
Public Transportation	1.85
Pricing Initiatives	1.99
Forestry and Sequestration	4.55
Ecosystems Markets	0.68
Building and Trade Codes in Maryland	3.15
Zero Waste	1.48
Leadership-By-Example	1.78
Maryland's Innovative Initiatives	0.21
Future or Developing Programs	0.02
Land Use Programs	0.64
Outreach and Public Education	0.03
Total Reductions	38.37
GGRA 2020 Emission Reduction Goal	34.66
Meeting the 2020 Goal?	Yes. 3.71 MMtCO₂e above goal reductions.

Figure 4. Additional emission reductions required to meet 40 percent target in RGGI states, by measure



Solution is EVs Powered by Clean Energy



Table 2. Selected emission reduction measures in 2030

	Net cost per ton (2014 \$ / short ton)	2030 emissions reduction potential (million short tons)	2030 actual emissions reduction used in this analysis (million short tons)
Electric vehicles: Convert one-third of all light-duty vehicles from gas to electric ⁷	-\$257	28	28
Heat pumps: Convert 44 percent of oil heating to electric heat pumps	-\$243	9	9
Electric energy efficiency: Achieve Massachusetts' level of efficiency savings in all RGGI states	-\$216	17	17
Gas energy efficiency: Achieve 1 percent annual savings in natural gas used in homes and businesses	-\$73	10	10
Wind: Invest in onshore wind generation up to the economically achievable potential	-\$70	27	22 (+5)
Solar: Limited investments in utility-scale photovoltaic solar installations	\$47	616	0 (+7)

Note: “+” denotes emissions reductions resulting from incremental capacity built to power new electric vehicles and heat pumps. These measures necessitate an increase in electricity consumption requiring additional renewable generation that provides 12 million short tons in emission reductions if compared to supplying this electric demand with the current mix of generators in the region.

Source: Synapse Energy Economics.

CT Analysis: ~ 1/3 of vehicles need to be EVs



	2015	2030	2050
35% below 2001 levels by 2030			
# of ZEVs	2,902	462,149	2,184,529
% of Fleet	.1%	20%	79%
% of Sales	.8%	60%	54%
45% below 2001 levels by 2030			
# of ZEVs	2,902	875,650	2,184,529
% of Fleet	.1%	38%	79%
% of Sales	.8%	87%	32%

“Electric vehicles will help drive Maryland’s environmental and economic progress. Cooperative partnerships such as this can help accelerate the adoption of these vehicles locally and globally, benefiting citizens, consumers, and ecosystems along the way.”

-- Ben Grumbles, Maryland Secretary of the Environment

December 3, 2015 – Paris, France – Thirteen North American and European governments announced today that they will strive to make all new passenger vehicles in their jurisdictions zero emission vehicles (ZEVs) by no later than 2050. Achieving this will accelerate the global transition to ZEVs and could reduce transportation sector climate impacts by more than 1 billion tons of carbon dioxide emissions per year by 2050, lowering global vehicle emissions by about 40 percent.

So...

How Do We Get There?



THE CHEVY BOLT COMPARED TO THE TESLA MODEL 3

CAR	RANGE	TOP SPEED	ACCELERATION	PRICE
<p>Chevy Bolt</p>  A silver Chevrolet Bolt electric car shown from a side profile view.	238 miles	91 mph	0-60 mph in <7 seconds	\$37,500
<p>Tesla Model 3</p>  A silver Tesla Model 3 electric car shown from a front three-quarter view.	215 miles*	TBA	0-60 mph in <6 seconds	\$35,000

SOURCES: Chevrolet, Tesla *not EPA estimated

BUSINESS INSIDER

*MSRP Prior to \$7,500 Federal Tax Credit

#2 Policies are Critical



SELECTED EV POLICIES AND PROGRAMS FOR EACH STATE IN THE NORTHEAST AND MID-ATLANTIC

	LEADERSHIP		FINANCIAL/NON-FINANCIAL INCENTIVES					OUTREACH			INFRASTRUCTURE			
	ZEV STATE	MOUS STATE	HIGH LEVEL TASK FORCE	CONSUMER EV PURCHASES	CONSUMER EVSE PURCHASES	HOV LANE ACCESS	FEE/TOLL WAIVERS	PREFERENTIAL PARKING	ROBUST STATE EV WEBSITE	WORKPLACE CHARGING OUTREACH	DEALER INCENTIVE / RECOGNITION	INVESTMENT IN PUBLIC EVSE: LEVEL 1/2	INVESTMENT IN PUBLIC EVSE: DC FAST	EV FRIENDLY BUILDING CODES
CONNECTICUT	•	•		•	•				•	•	•	•		
DELAWARE												•		
MAINE	•					N/A						•		
MARYLAND	•	•	•	•	•	•			•		•	•	•	
MASSACHUSETTS	•	•	•	•	•				•	•	•	•	•	
NEW HAMPSHIRE						N/A						•	•	
NEW JERSEY	•			•		•	•							
NEW YORK	•	•			•	•			•			•		
PENNSYLVANIA				•								•	•	
RHODE ISLAND	•	•	•			N/A	•		•			•		
VERMONT	•	•	•			N/A	N/A	•		•				In progress
CALIFORNIA	•	•	•	•		•	•	•	•	•	•	•	•	

	UTILITY POLICIES		FLEET MANDATES		GHG REDUCTION POLICIES	
	EXEMPTING CHARGING STATIONS FROM UTILITY REGULATION	TOU / EV RATES	GOVERNMENT FLEETS INCLUDING TRANSIT	GRANTS FOR PRIVATE FLEETS (EVs, EVSE)	NEAR TERM	LONG TERM
CONNECTICUT			•		10% below 1990 levels by 2020	80% below 2001 levels by 2050
DELAWARE			•		None	None
MAINE	•				10% below 1990 levels by 2020	75–85% below 2003 levels
MARYLAND	•	•	•	•	25% below 2006 levels by 2020	None
MASSACHUSETTS	•		•	•	25% below 1990 levels by 2020	80% below 1990 levels by 2050
NEW HAMPSHIRE					10% below 1990 levels by 2020	75–85% below 2001 levels
NEW JERSEY			•		1990 levels by 2020	80% below 2006 levels by 2050
NEW YORK	•	•	•	•	None	80% below 1990 levels by 2050
PENNSYLVANIA			•		None	None
RHODE ISLAND			•		10% below 1990 levels by 2020	75–85% below 2001 levels
VERMONT			•		50% below 1990 levels by 2028	75% below 1990 levels by 2050
CALIFORNIA	•	•	•	•	1990 levels by 2020	80% below 1990 levels by 2050

DEFINITIONS

DC Fast
High current fast charging station

EV
Electric Vehicle

EVSE
Electric Vehicle Service Equipment (e.g., charging station)

HOV
High-Occupancy Vehicle

Level 1
120 volt charging station (standard outlet)

Level 2
240 volt charging station

MOU
Memorandum of Understanding

TOU
Time of Use

ZEV
Zero Emission Vehicle (state signed onto California's ZEV regulations)

The “Travel Provision” of the ZEV rules needs to end as scheduled!

Regulatory certainty is critical for both the automobile manufacturers and the states to effectively plan and manage the transition to wide spread transportation electrification. Due to the structure of the current regulation, there has not yet been a binding ZEV sales requirement in our states.¹ The binding ZEV sales requirements, set to begin in 2018, are critical to maintain the certainty necessary to drive both continued investments and innovations by the automobile manufacturers. Any further delay would undermine the certainty that automobile manufacturers, utilities, charging providers, and others need for effective planning, and would put at risk the millions of dollars our states have invested in ZEV readiness. States, stakeholders, and the automobile industry are working together in an unprecedented manner to build a ZEV market. Regulatory certainty and consistency is a critical element to this collaborative effort.²

- July 20th, 2016 Letter to California Air Resources Board from Environmental Agencies in New York, Connecticut, Massachusetts, Vermont, Oregon



Extend Tax Credit Through 2020

2017 Changes to the Plug-in Electric Vehicle Excise Tax Credit

- Vehicles with a base MSRP of \$60,000 or greater are ineligible for the EV Excise Tax Credit.
- Method of calculating the tax credit changes from being \$125 per kWh of battery capacity to a base amount of \$500 plus \$50 per kWh over 5 kWh.
- This change rewards larger capacity vehicles more so than the previous method and helps incentivize the newer Battery Electric Vehicles with 200 miles of range that are new to the market.
- Excise Tax Credit cap remains at \$3,000.
- Tax Credit extended out to June 2020.
- Explore option for providing a tax credit for used plug-in vehicles.



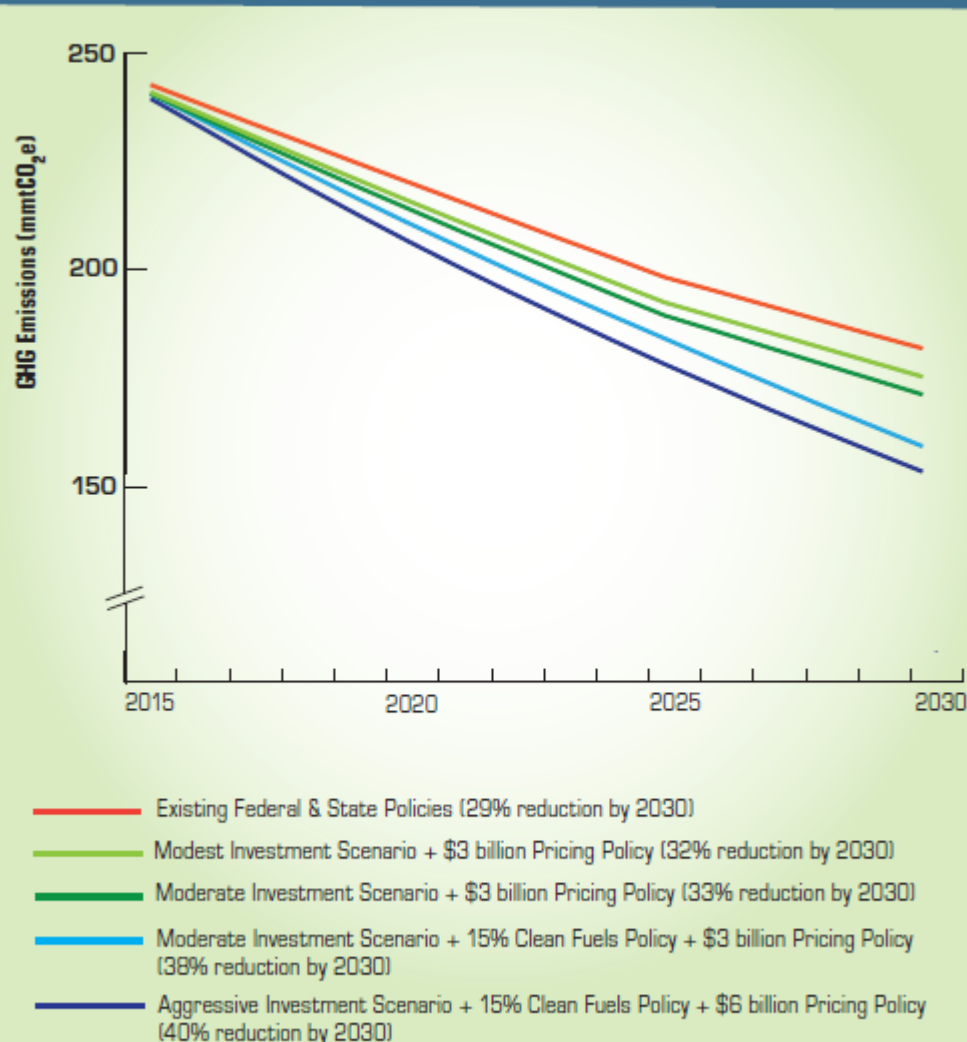
How can the Environmental Mitigation Trust (EMT) be spent?

- **Zero emissions vehicle supply equipment:** States may use up to 15% of their allocation of Trust Funds on acquisition, installation, operation and maintenance of new light duty EV charging stations.
- **School Buses, Shuttle Buses, or Transit Buses:** Eligible Buses may be repowered with new diesel, alternative fuel (CNG, propane, hybrid), or an all-electric engine.
- The EMT funds must be dispersed within **10 years**.



See Appendix D-2 of Consent Decree for complete list of “eligible mitigation expenditures” (<https://www.vwcourtsettlement.com/en/docs/Appendix%20D-2.pdf>).

FIGURE 9: Projected GHG Emission Reductions from Investment Scenarios With Pricing Policies Included



Source: Cambridge Systematics; see Appendix Emission Strategy Analysis

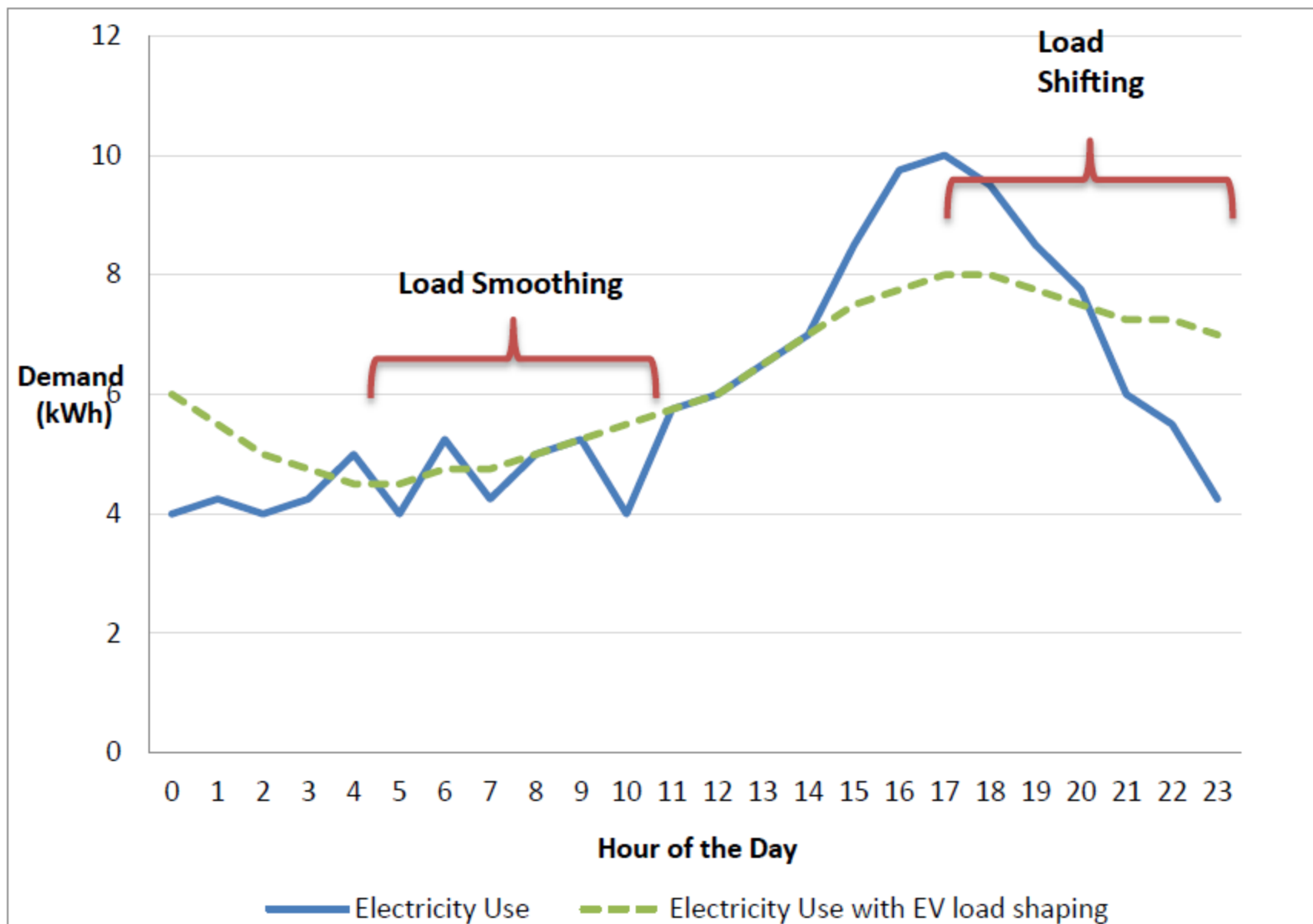
Governor Baker Executive Order No. 569

“work, in consultation with the Secretary of Transportation, with New England and Northeastern state transportation, environment and energy agencies to develop regional policies to reduce greenhouse gas emissions from the transportation sector consistent with meeting the GWSA’s 2050 and interim emissions limits”

“revise the Global Warming Solutions Act requirements for the Massachusetts Department of Transportation set forth in 310 C.M.R. 60.05 to establish declining annual aggregate emissions limits”

Get Electric Companies Involved

Figure 3: Benefits of EV Load Shaping²⁴



#3 Make Electric Vehicles Accessible to All



1. Practical:

- EVs should address specific mobility needs of the underserved community

2. Accessible

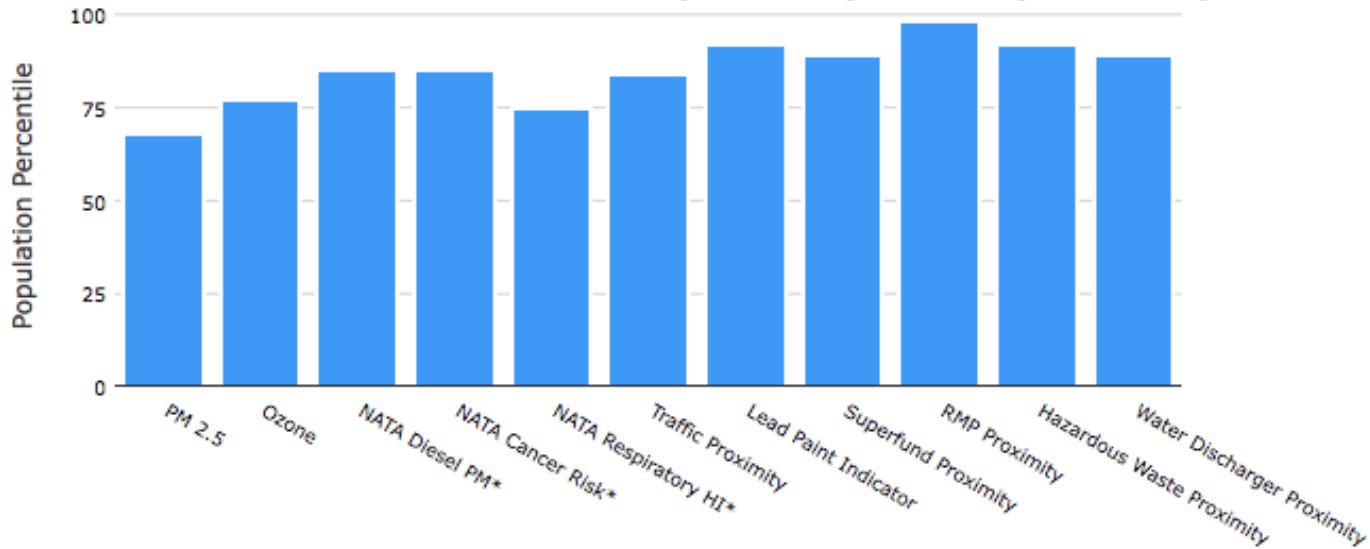
- EV incentive applications should be simple and user-friendly, and technical assistance should be provided where necessary
- Underserved communities should have access to convenient EV charging



Targeted Deployment in Polluted Communities



Environmental Indicators for the Selected Area Compared to All People's Block Groups in the State/Region/US



<https://ejscreen.epa.gov/mapper/>

Electric vehicles are just one piece of the puzzle



- [Sierra Club EV Guide](#)
- [Charging Up: Sierra Club Report on Policies to Support EVs in the Northeast](#)
- [Rev Up EVs: Sierra Club Report on EV Car Buying Experience](#)
- [Fully Charged: Sierra Club Report on Benefits of EVs in the Northeast](#)