Leading by Example Council Agenda
January 25, 2022

- Welcome
- EV and EVSE Policies and Trends
- Fleet ‘Greenification’ Tools and Resources
- Panel and Round-Robin Discussion
- LBE Updates and Clean Energy News

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Secretary Granholm Visits MA

Source: https://twitter.com/SecGranholm/status/1478750793171828737

Please join us in welcoming **Michelle Broussard!**

As LBE's new Clean Transportation Coordinator, Michelle will be working on the MOR-EV and MOR-EV Trucks Programs and related efforts

Feel free to reach out at → michelle.broussard@mass.gov

Massachusetts Department of Energy Resources

Meeting Spotlight: Smoothing the Rocky Road to Clean Transportation

What are your biggest challenges to fleet electrification (1-3 words)?

Mentimeter

19

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Pump the Brakes: Supply Chain Impacts on Vehicles & Charging

- Supply chain disruptions affecting the vehicle manufacturing process are affecting many vehicles and charging station vendors
- Delays affecting all technologies (both EV & ICE)
- Impacts include:
  - Manufacturers scaling back production of new vehicles
  - Dealerships under stress due to product shortages & price increases
  - Significantly extended order times or closed order banks
- Disruptions affecting manufacturers, models & vendors differently

Key supply chain shortages affecting vehicles

- Microchip
- Vehicle chassis
- ABS components
- Seats
- Foam
- Rubber

Link to OSD Buy the Way article

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Pump the Brakes: Supply Chain Impacts on Vehicles

Change to lead time

Year	Make	Model	Early Info	Outreach Info	Order Banks Open	Early Info Production	Outreach Production	Early Info Lead Time	Outreach Lead Time	November Updates
2022	Chevrolet	Bolt EV	July	September	2/25/2021	4/19/2021	4/19/2021	14-16 weeks	16-18 weeks	18-20 weeks
2022	Chevrolet	Equinox	July	October	4/8/2021	8/2/2021	6/22/2021	15-17 weeks	33-38 weeks	36-38 weeks
2022	Ford	E-Transit	September	October	6/21/2021	11/15/2021	11/15/2021	22-24 weeks	26-28 weeks	22-24 weeks

Change to production start and lead time

Year	Make	Model	Early Info	Outreach Info	Order Banks Open	Early Info Production	Outreach Production	Early Info Lead Time	Outreach Lead Time	November Updates
2022	Chevrolet	Malibu	July	October	4/22/2021	10/14/2021	12/10/2021	20-22 weeks	34-36 weeks	12/20 start, still 34-36 weeks

Change to order bank open date and lead time

Year	Make	Model	Early Info	Outreach Info	Early Info Order Banks Open	Outreach Order Banks Open	Outreach Production	Early Info Lead Time	Outreach Lead Time	November Updates
2022	Nissan	Rogue	April	June	6/15/2021	TBD	11/1/2021	16-20 weeks	TBD	Brief order window, now closed

NEW: Early Closure of Order Banks

Year	Make	Model	Early Info	Outreach Info	Early Info Order Banks Open	Outreach Order Banks Open	Outreach Production	Early Info Lead Time	Outreach Lead Time	November Updates
2022	Ford	Transit	August	N/A	9/10/2021	N/A	11/8/2021	14-16 weeks	N/A	Ordering ***closed*** 10/29

Plan ahead, shop around, and be flexible!

Source: MA Operational Services Division

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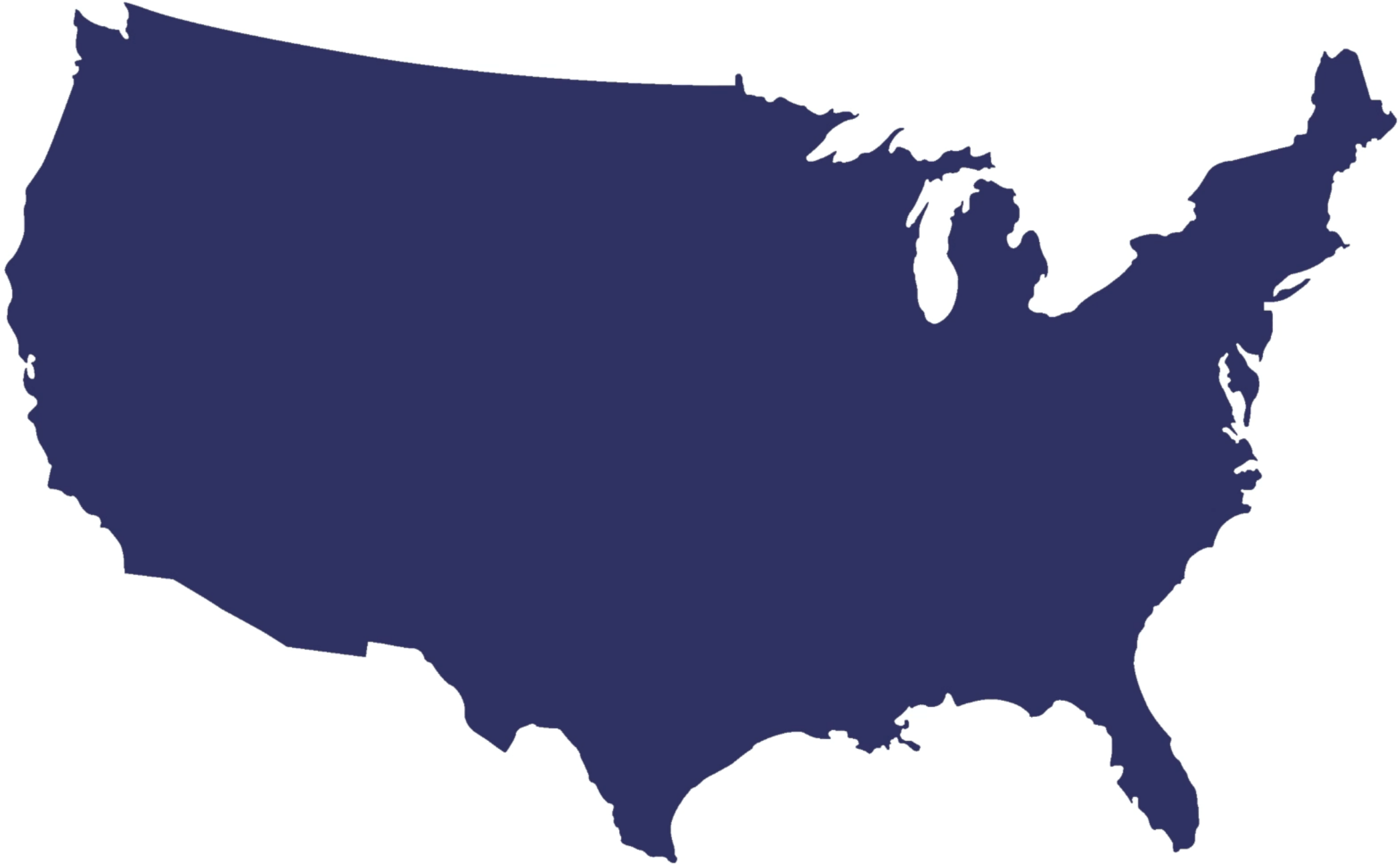
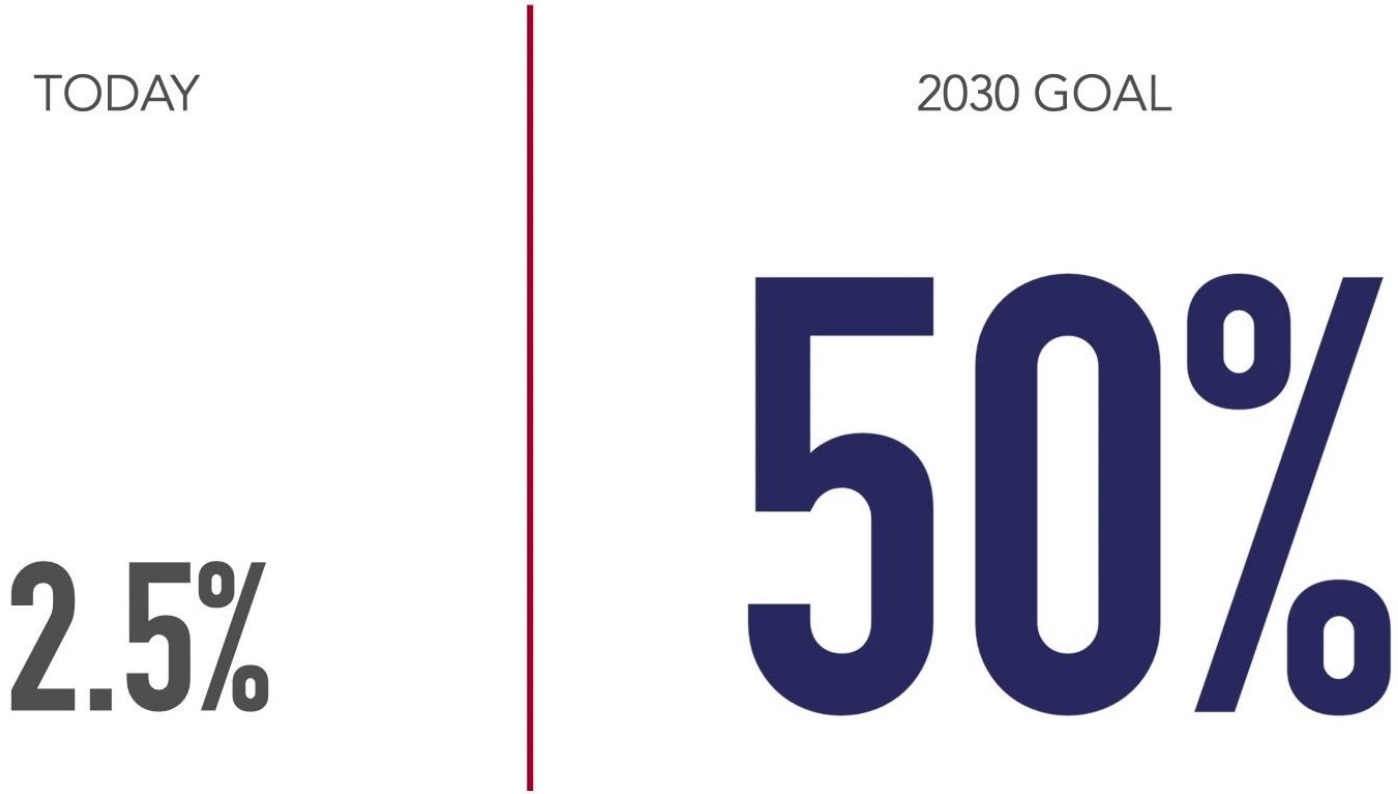
Objects in Mirror Are Closer Than They Appear:

EV/EVSE Trends



U.S. EV Sales

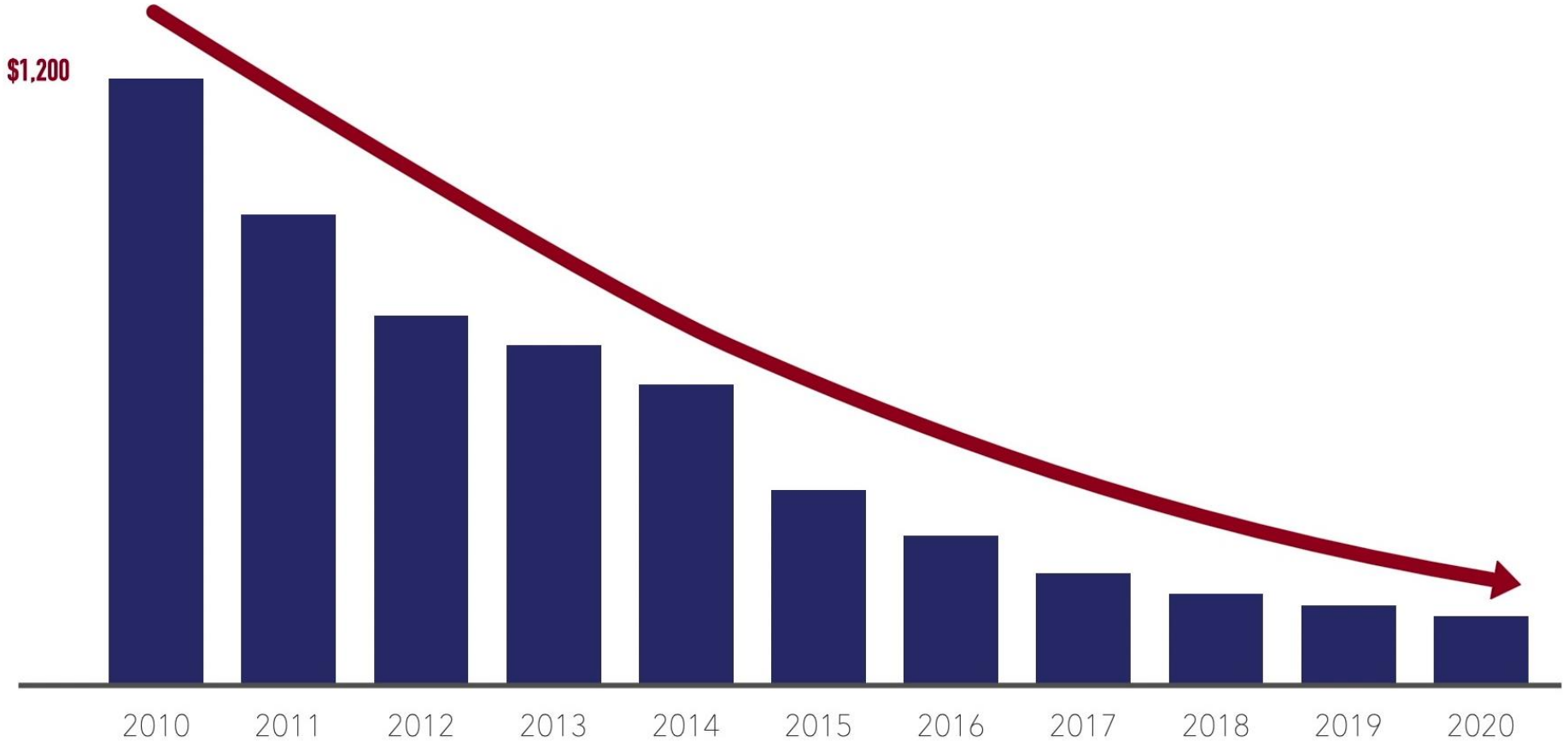


RECHARGE|MA

Auto Manufacturers EV Commitments

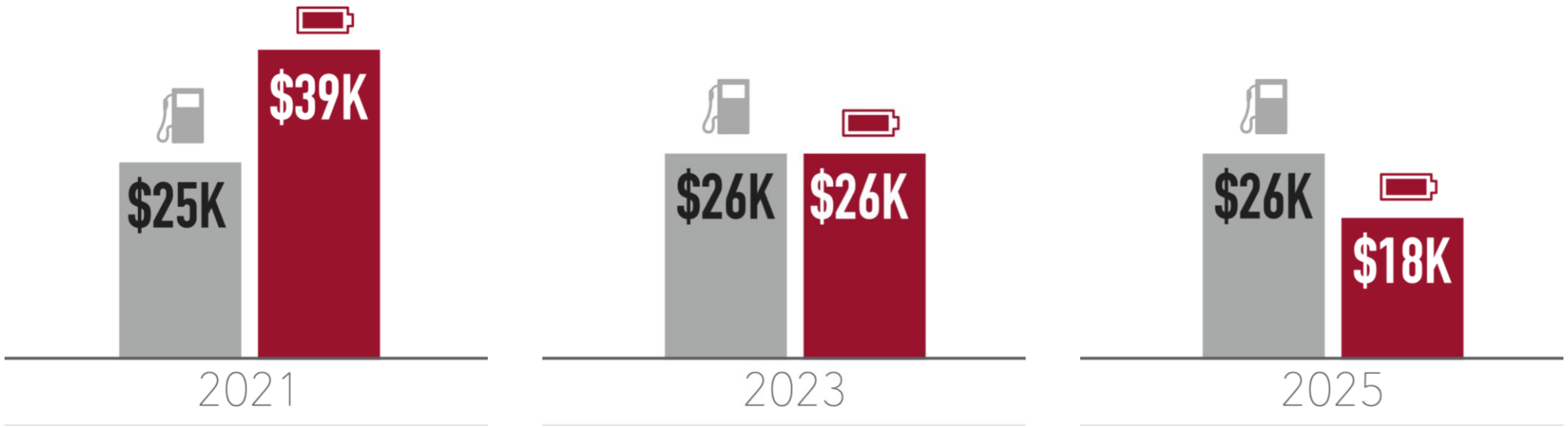
RECHARGE|MA

Price of Batteries



RECHARGE|MA

Up-front Average Cost of EVs



RECHARGE|MA

U.S. Charging Station Goals

RECHARGE|MA

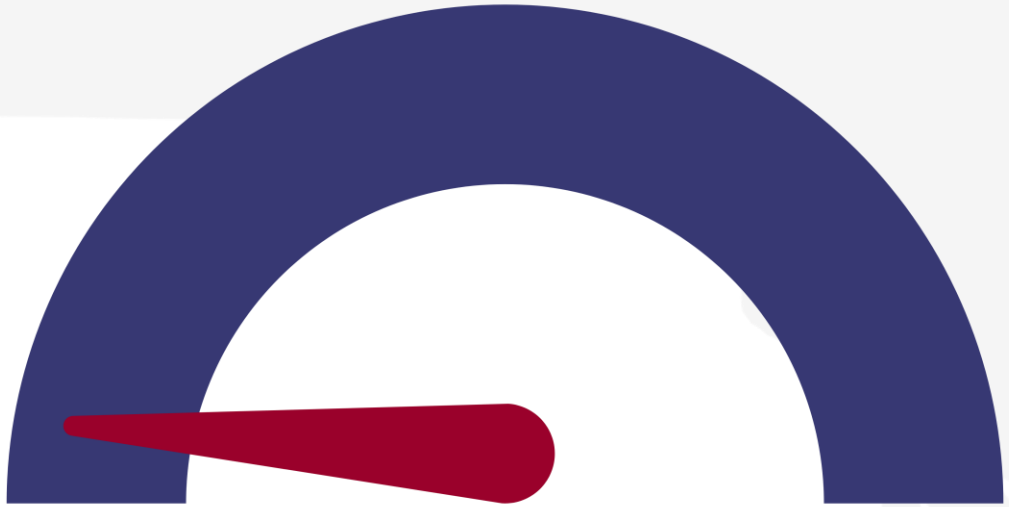
Industry Challenges

- Chip shortage and shipping delays limiting vehicle inventory since 2020
- Today, dealers are reporting an uptick in inventory allotments and hopeful supply will meet demand by the end of 2022/early 2023
- Manufacturers are shoring up battery supply chain and raw material sourcing

EVs on the Road in Massachusetts

Today

40,000 EVs



2030

750,000 EVs

RECHARGE|MA

Charging Infrastructure

- Massachusetts has the 3rd most EV charging stations per registered vehicle in the country
- Federal and State incentives, programs, and technical assistance
- National Grid and Eversource offering expanded, wrap-around services, incentives, and make-ready programs

RECHARGE|MA

Massachusetts Champions Spotlights

Recognition Program

- Current Participants – Tell us about your progress
- Participate at www.recharge-Massachusetts.org

Contact:

Tina Malott

Lead Program Strategist

tinamalott@recharge-America.org

(617) 383-9626

RECHARGE|MA

U.S. Department of Transportation

Kelsey Owens

Infrastructure Permitting Improvement Center (IPIC)

Office of the Secretary

Department of Transportation

Introduction to National Grid & Eversource EVSE Plan Comparisons

As of June 30, 2021, there were approximately 3,504 publicly accessible L2 ports and 360 publicly accessible DCFC ports in Massachusetts.

The Phase III Utility EVSE Program is an expansive program that addresses the diverse needs of different market segments as a means of advancing the Commonwealth's near-term 2025 and 2030 decarbonization goals that will place the Commonwealth on a trajectory to achieve its net-zero emissions target by 2050.

Program	National Grid Proposed	National Grid Approved	Eversource Proposed	Eversource Approved
Phase I	$25 million	$24 million	$45 million	$45 million
Phase II	$166.5 million	$12 million	X	X
Phase III	**$283.3 million**		**$191.9 million**	

Eversource & National Grid
Proposed Public & Workplace Rebates

L2 EVSE Rebate Levels

- EJC: 100% of installed costs for up to 10 ports
- Muni: 50% of installed costs for port 3-10
- Other (Non-EJC / on-Muni Public and Workplace): 50% of installed costs for port 5-10

DCFC EVSE Rebate Levels

- Public, Non-EJC: $40,000/port
  - Ports must be above 50 kW, minimum 100 kW/site, site max EVSE incentive ($400,000).
- Public, EJC: $40,000/port for ports above 50 kW and up to 150 kW. $80,000/port for 150 kW and up
  - Minimum 100 kW/site, site max EVSE incentive ($400,000)

Eversource & National Grid: Proposed Fleet Offerings

Eversource

- **Fleet Assessment Services**: for up to 100 public, private and non-profit fleet customers. The services would be targeted to customer segments, including but not limited to: corporate, delivery, private transport, refuse, and general services
- **Fleet Make Ready Offering:** Eversource is not proposing make ready for MD/HD fleets
- **EVSE Rebate Offering:** Support for 50% of EVSE costs for all passenger vehicle fleet customers, and 100% of EVSE costs for EJC fleet customers

National Grid

- **Fleet Assessment Services:** for up to 150 private & non-profit fleet customers, plus expansion of current public Fleet Assessment Services to include 25 additional assessments in 2025
- **Fleet Make-Ready Offering:** Support for up to approximately 600 EVSE ports (~70% L2, 30% DCFC) to enable approximately 2,000 fleet EVs in territory (approximately 1,150 LDV, 850 MHDV)
- **EVSE Rebate Offering:** Support for 50% of EVSE costs for all fleet customers, and 100% of EVSE costs for EJC-eligible fleet customers
- **On-going Costs:** Proposes to offer a stipend to support 4 years of networking - $480/port for public L2 chargers and any EJC L2 chargers

Proposed Program Comparisons

	Public/ Workplace	Fleet Assessment Services Availability	Fleet Assessment Services Budget	Fleet Make Ready	Fleet EVSE Rebate	Fleet EVSE Rebate in EJCs	TCO Tool Development
National Grid	~97M	150 private and non-profit fleets *(in addition to current 100 public fleets)*	~$3.25M	LD/MD/HD fleets	50%	100%	YES
Eversource	~109M	100 private and non-profit fleets	~$2M	LD fleets	50% (*upon customer purchase of 4 ports*)	100%	YES

SPARK
STATE PLUG-IN ADOPTION RESOURCE KIT

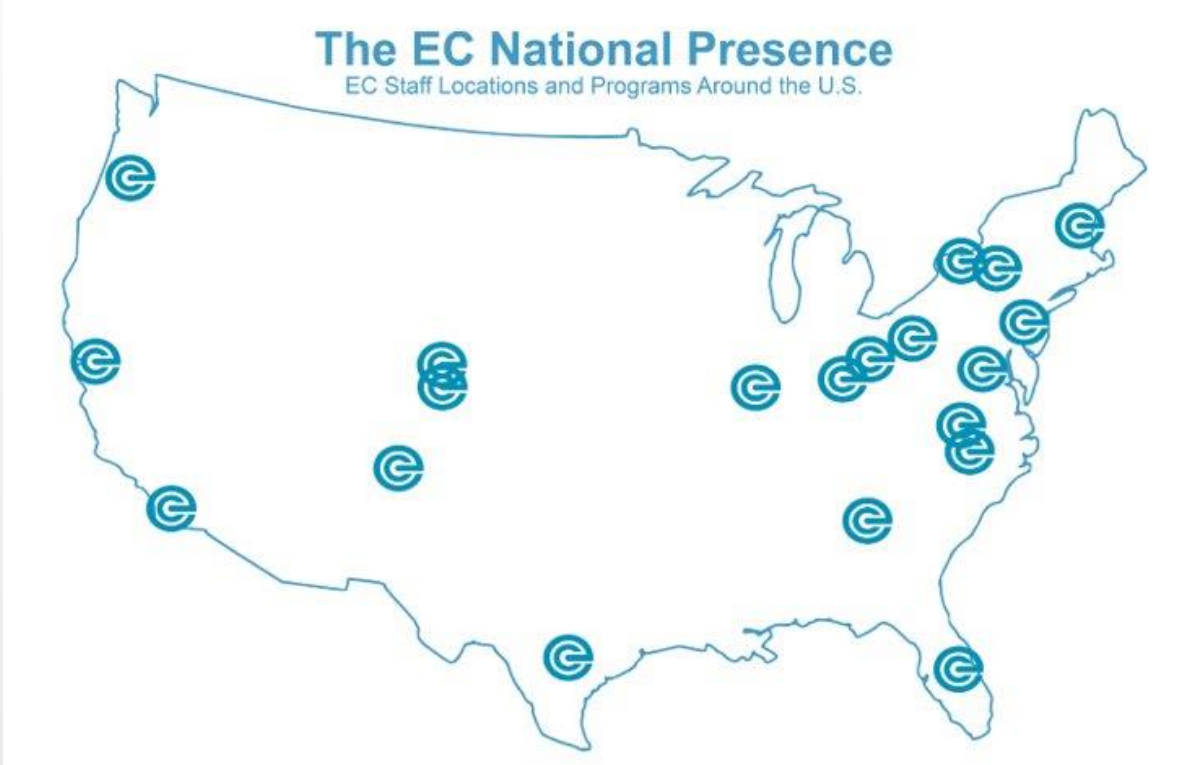
A State Fleet Electrification Resource designed in partnership by the *Electrification Coalition* and *US Climate Alliance*

January 25, 2022

Electrification Coalition

ABOUT THE ELECTRIFICATION COALITION

The Electrification Coalition (EC) is a nonpartisan, not-for profit group of business leaders committed to promoting policies and actions that facilitate the deployment of electric vehicles on a mass scale in order to combat economic, environmental, and national security dangers caused by our dependence on oil.



- State EV Policy Accelerator
- Freight Electrification
- American Climate Cities Challenge
- Climate Mayors EV Purchasing Collaborative

Electrification Coalition

ABOUT SPARK

- SPARK, State Plug in Adoption Resource Kit, is designed to support states' EV adoption by providing hundreds of templates, tools, case studies, example policies, and more in one consolidated online location. It draws from the experiences of leading states and cities and leverages the EC's decade of expertise in fleet electrification.
- https://www.electrificationcoalition.org/spark/

Electrification Coalition

OKAY, BUT WHAT IS IT REALLY?

- An online compendium of useful information and guidance that can be drawn upon in different stages of the fleet electrification process, from goal setting and adoption to implementation.
- A “how to” guide, to help state governments understand how to use the toolkit to meet their fleet goals.
- Policy descriptions, sample regulations, model contracts and documents, case studies and other materials to meet states’ diverse needs.
- But One Destination!

Electrification Coalition

8 STEPS TO STATE FLEET ELECTRIFICATION

STEP 1: ASSESS THE LANDSCAPE

Assess existing progress, goals, priorities, policies, knowledge base, and barriers within all state agencies

STEP 2: SET GOALS

Set targets and timelines in collaboration with key agency staff, and fleet managers.

STEP 3: IDENTIFY KEY DECISION MAKERS AND PARTNERS

Identify the agencies, officials, and partners for buy-in, input, resources, and expertise.

STEP 4: ANALYZE FLEET DATA

Conduct analysis to maximize progress toward fleet electrification goals

STEP 5: IDENTIFY TOP OPPORTUNITIES

Identify opportunities to achieve cost savings and emissions reductions through electrification

STEP 6: ASSESS CHARGING NEEDS

Determine fleet's charging equipment needs and develop cost estimates for purchase and installation

STEP 7: DEVELOP PROCUREMENT & OPERATIONS POLICIES

Develop policies and plans to guide vehicle procurement, operation, maintenance, and charging.

STEP 8: REINVEST SAVINGS

Develop a budget to show savings from EVs and apply to new EV procurements and charging equipment

Electrification Coalition

COHORT ON STATE FLEET ELECTRIFICATION

2021 Monthly Deep Dive Topics

State Participation: MI, NV, PA, NC, VA

- Goals and Clean Fleet Commitments
- Charging Infrastructure Planning and Installation
- Budgeting & Financing
- DRVE Tool Analysis

2022 AND BEYOND...

- ✓ Continue deep dive monthly sessions
- ✓ A willingness to set or revise a goal to electrify the state owned and operated fleet
- ✓ The creation of a Clean Fleet Action Plan (CFAP)
- ✓ A commitment to make public the CFAP or goal

Electrification Coalition

DASHBOARD FOR RAPID VEHICLE ELECTRIFICATION (DRVE TOOL)

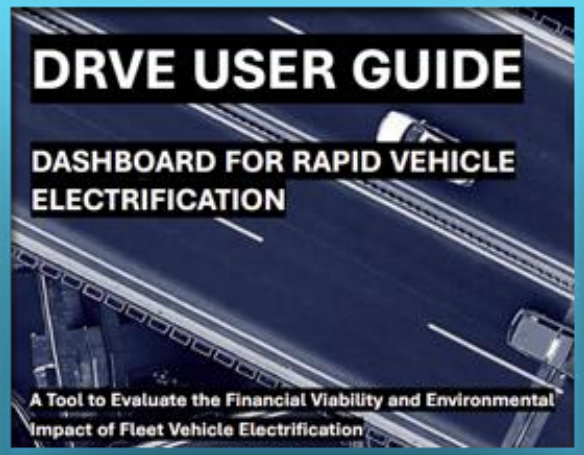
A tool designed in partnership with Electrification Coalition and Atlas Public Policy

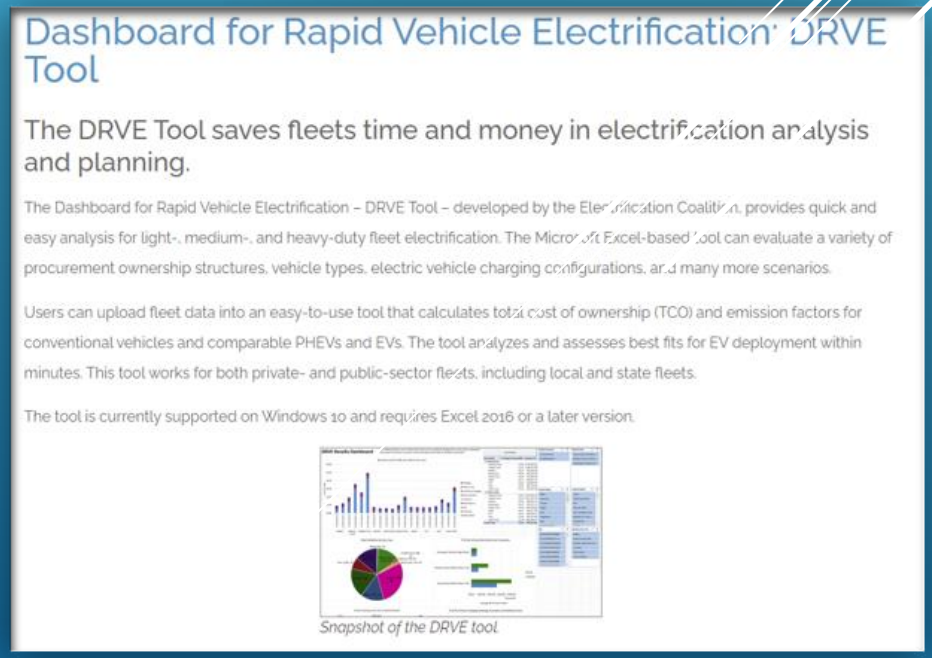
Electrification Coalition

ABOUT THE DRVE TOOL

- The DRVE tool creates an accessible, easy-to-use analysis tool that analyzes fleet data in minutes.
- Focused on bringing light, medium, and heavy-duty fleet analysis under one tool; typically separated for analysis.
- Within the tool, users can view various EV replacement scenarios, near-term procurement opportunities, average lifetime and per-mile cost by model, emissions comparisons, and impacts on savings potential with various settings and financial models.

- https://www.electrificationcoalition.org/resource/drve/




Dashboard for Rapid Vehicle Electrification: DRVE Tool

The DRVE Tool saves fleets time and money in electrification analysis and planning.

The Dashboard for Rapid Vehicle Electrification – DRVE Tool – developed by the Electrification Coalition, provides quick and easy analysis for light-, medium-, and heavy-duty fleet electrification. The Microsoft Excel-based tool can evaluate a variety of procurement ownership structures, vehicle types, electric vehicle charging configurations, and many more scenarios.

Users can upload fleet data into an easy-to-use tool that calculates total cost of ownership (TCO) and emission factors for conventional vehicles and comparable PHEVs and EVs. The tool analyzes and assesses best fits for EV deployment within minutes. This tool works for both private- and public-sector fleets, including local and state fleets.

The tool is currently supported on Windows 10 and requires Excel 2016 or a later version.

Snapshot of the DRVE tool

Electrification Coalition

THANK YOU!

- **Celia Kosinski**
- **Ckosinski@electrificationcoalition.org**
- www.electrificationcoaliton.org

Electrification Coalition

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Creating A Clean, Affordable, Equitable and Resilient Energy Future For the Commonwealth

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Revving Up:
Fleet 'Greenification' Tools & Resources

Statewide Contracts & Current Tech

Statewide Contracts to Green Your Fleet

- **VEH110 – Light and Medium-Duty Vehicles** New!
- **VEH111 – Heavy-Duty Vehicles, Road Maintenance and Construction Equipment** New!

Contract Strategy

★ Drive competition and "Best Value"

★ Vehicle application over brand loyalty (Category Strategy)

★ Exhibit leadership in alternative fuels, particularly to support fleet electrification

- VEH102 – Advanced Vehicle Technology Equipment, Supplies and Services
- FAC116 – Lawn and Grounds Equipment, Parts & Services

VEH110: Light and Medium-Duty Vehicles

- Vehicles up to 26,000 lbs GVWR w/ 4+ wheels
- Wide variety of base vehicle choices & upfitting options
- 12 categories, each offering multiple vendors/OEMs
- VEH110 offers the following vehicle categories:

1. Sedans
2. Minivans
3. Sport Utility Vehicles

ZEV & HEV models ONLY

4. Light-Duty Trucks
5. Medium-Duty Trucks
6. Large Passenger Vans

1. Cutaway Buses and Vans
2. Cargo Vans
3. Police Pursuit Vehicles
4. Special Service Vehicles
5. School Buses and 7D Vehicles
6. Wheelchair Accessible Vehicles

VEH110: Light and Medium-Duty Vehicles

Utilizing VEH110:

- **Buyers may make direct purchases**, provided the base vehicle is featured for that vendor in the VEH110 Master Vehicle List (posted in COMMBUYS).
- If desired vehicle not featured on the List, or if price of all added options, accessories, and upfitting is 25% or more to the total purchase price, **buyers must solicit quotes from all vendors in the applicable category.**
- **Buyers must complete the VEH110 Quote Form** when requesting vehicles, both for direct acquisitions from a selected vendor and for multiple quote situations.

Link to VEH110 Contract User Guide

VEH110: Battery Electric Vehicles (BEVs)

	**CHEVROLET BOLT**	Vehicle Type: Sedan	Range: 259	MPGe: 120	Drivetrain: FWD	Base Price: $27,122
	**HYUNDAI IONIQ**	Vehicle Type: Sedan	Range: 259	MPGe: 133	Drivetrain: FWD	Base Price: $34,202
	**NISSAN LEAF**	Vehicle Type: Sedan	Range: 226	MPGe: 114	Drivetrain: FWD	Base Price: $22,756
	**CHEVROLET BOLT EUV**	Vehicle Type: CUV	Range: 247	MPGe: 115	Drivetrain: FWD	Base Price: $30,512
	**FORD MUSTANG MACH-E**	Vehicle Type: CUV	Range: 230-300	MPGe: 93	Drivetrain: RWD/AWD	Base Price: $40,932
	**HYUNDAI KONA**	Vehicle Type: SUV	Range: 258	MPGe: 120	Drivetrain: FWD	Base Price: $35,102
	**FORD E-TRANSIT**	Vehicle Type: Van	Range: 126	MPGe: TBD	Drivetrain: RWD	Base Price: $45,459
	**MICRO BIRD G5**	Vehicle Type: Minibus	Range: 100	MPGe: 100	Drivetrain: FWD	Base Price: $314,679

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VEH110: Plug-in Hybrid Electric Vehicles (PHEVs)

	**HONDA CLARITY**	Vehicle Type: Sedan	Range: 47/340	MPGe: 67	Drivetrain: FWD	Base Price: $33,044
	**HONDA INSIGHT**	Vehicle Type: Sedan	Range: 89/	MPGe: 52	Drivetrain: FWD	Base Price: $26,584
	**HYUNDAI IONIQ PLUG-IN**	Vehicle Type: Sedan	Range: 29/620	MPGe: 119	Drivetrain: FWD	Base Price: $27,792
	**TOYOTA PRIUS PRIME**	Vehicle Type: Sedan	Range: 25/640	MPGe: 54	Drivetrain: FWD	Base Price: $25,422
	**FORD ESCAPE PHEV**	Vehicle Type: CUV/SUV	Range: 37/520	MPGe: 40	Drivetrain: FWD	Base Price: $29,785
	**HONDA CR-V PHEV**	Vehicle Type: CUV/SUV	Range: 53/	MPGe: 38	Drivetrain: FWD/AWD	Base Price: $31,560
	**HYUNDAI SANTE FE**	Vehicle Type: CUV/SUV	Range: 31/440	MPGe: 33	Drivetrain: FWD/AWD	Base Price: $40,432
	**HYUNDAI TUCSON**	Vehicle Type: CUV/SUV	Range: 33/420	MPGe: 35	Drivetrain: FWD/AWD	Base Price: $35,992
	**TOYOTA RAV-4 PRIME**	Vehicle Type: CUV/SUV	Range: 42/600	MPGe: 38	Drivetrain: FWD	Base Price: $38,562
	**CHRYSLER PACIFICA**	Vehicle Type: Minivan	Range: 32/520	MPGe: 30	Drivetrain: FWD	Base Price: $42,052

VEH111: Heavy-Duty Vehicles, Road Maintenance & Construction Equipment

- Vehicles 26,001+ lbs GVW + Parts & Service
- 7 categories, provides additional vendors and breadth of offerings compared to previous contract
- VEH111 offers the following vehicle categories:

1. Trucks (cab/chassis with upfitting options for dumps, tows, box trucks)
2. Heavy Equipment (backhoes, wheel loaders, dozers, articulated trucks)
3. Paving/Road Equipment (pavers, rollers)
4. Utility Service Equipment (auger trucks, bucket trucks, forestry trucks)
5. Buses (school and transit)
6. Snow Removal (plow trucks, sand/salt trucks, snow melters, deicers)
7. Trailers (lowbeds, flatbeds, and goosenecks)

Link to VEH111 Contract User Guide

VEH111: Heavy-Duty Vehicles, Road Maintenance & Construction Equipment

Utilizing VEH111:

- **Buyers may make direct purchases**, provided the base vehicle is featured for that vendor in their OSD-approved catalog (posted in COMMBUYS).
- If desired vehicle not featured in the catalog, or if price of all added options, accessories, and upfitting exceeds a 25% variation from the catalog price, **buyers must solicit quotes from 3+ vendors* in the applicable category.**
- **Buyers must complete the VEH111 Quote Form** when requesting vehicles, both for direct acquisitions from a selected vendor and for multiple quote situations.

Link to VEH111 Contract User Guide

VEH111 Alternative Fuel Offering Examples

FREIGHTLINER	Models: **M2106, 108SD, 114SD, Cascadia**	Fuel Type: **CNG**	Vendor: **TriState Truck Center**
FREIGHTLINER	Models: **M2106, Cascadia**	Fuel Type: **Electric**	Vendor: **TriState Truck Center**
DENNIS-EAGLE	Models: **ProView**	Fuel Type: **CNG, Electric**	Vendor: **Minuteman/Allegiance Trucks**
INTERNATIONAL	Models: **eMV Series**	Fuel Type: **Electric**	Vendor: **Minuteman/Allegiance Trucks**
MACK	Models: **LRE64**	Fuel Type: **Electric**	Vendor: **Ballard Mack**
MACK	Models: **LR64, TE64**	Fuel Type: **CNG**	Vendor: **Ballard Mack**
VOLVO	Models: **VNR**	Fuel Type: **Electric**	Vendor(s): **Ballard Mack; Anderson Motors**
VOLVO	Models: **VNL**	Fuel Type: **CNG**	Vendor: **Anderson Motors**
BLUE BIRD	Models: **BBCV, T3FE**	Fuel Type: **Electric**	Vendor: **Anderson Motors**
BLUE BIRD	Models: **BBCV, T3FE**	Fuel Type: **CNG**	Vendor: **Anderson Motors**

***Reach out to vendors to request catalogs and more information on alternative fuel offerings**

VEH102: Advanced Vehicle Technologies

Category 1: EVSE Equipment & Services

- Level 1, 2 & DCFC
- Ultra-fast chargers, low AMP DC charging
- Vehicle-to-grid technologies
- Mobile charging solutions

Category 2: Emission Reduction Technologies

- Modular idle reduction & clean power systems

Category 3: Electric Conversion Technologies

- Hybrid & plug-in hybrid upfitting
- Full electric models (class 4-6)

Link to VEH102 Contract User Guide

FAC116: Lawns and Grounds Equipment, Parts and Services

- Various categories with a wide range of offerings
- Category 3 offers electric utility vehicles & golf carts, + parts & service

CUSHMAN SHUTTLE 4-6 ELECTRIC
(Vendor: Five Star Golf Cars)

GREENWORKS UTV
(Vendor: Orlando's Garage)

POLARIS GEM
(Vendor: Country Club)

YAMAHA UMAX TWO AC
(Vendor: New England Golf Cars)

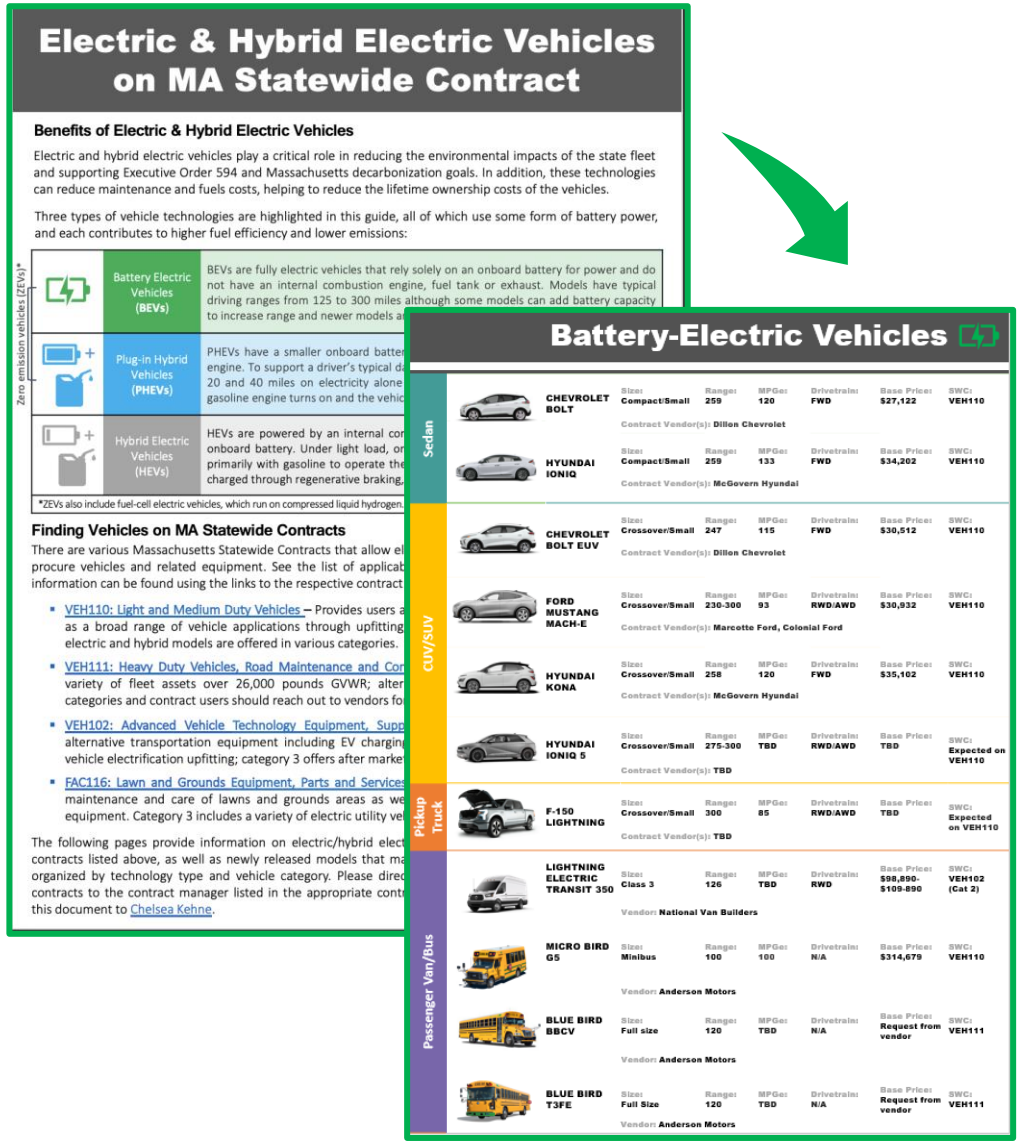
***Reach out to vendors to request catalogs and more information on alternative fuel offerings**

Link to FAC116 Contract User Guide

Guide to Greening Your Fleet with Statewide Contracts

- Organizes electric and hybrid electric assets on various statewide contracts by technology and vehicle type
- Provides high-level specs, pricing, and links to pertinent contract guides and resources

Website Link:
Greening Your Fleet with Statewide Contracts



Electric & Hybrid Electric Vehicles on MA Statewide Contract

Benefits of Electric & Hybrid Electric Vehicles

Electric and hybrid electric vehicles play a critical role in reducing the environmental impacts of the state fleet and supporting Executive Order 594 and Massachusetts decarbonization goals. In addition, these technologies can reduce maintenance and fuels costs, helping to reduce the lifetime ownership costs of the vehicles.

Three types of vehicle technologies are highlighted in this guide, all of which use some form of battery power, and each contributes to higher fuel efficiency and lower emissions:

Zero emission vehicles (ZEVs)*

Battery Electric Vehicles (BEVs)	BEVs are fully electric vehicles that rely solely on an onboard battery for power and do not have an internal combustion engine, fuel tank or exhaust. Models have typical driving ranges from 125 to 300 miles although some models can add battery capacity to increase range and newer models a
Plug-in Hybrid Vehicles (PHEVs)	PHEVs have a smaller onboard batter engine. To support a driver's typical d 20 and 40 miles on electricity alone gasoline engine turns on and the vehic
Hybrid Electric Vehicles (HEVs)	HEVs are powered by an internal cor onboard battery. Under light load, or primarily with gasoline to operate the charged through regenerative braking,

*ZEVs also include fuel-cell electric vehicles, which run on compressed liquid hydrogen.

Finding Vehicles on MA Statewide Contracts

There are various Massachusetts Statewide Contracts that allow el procure vehicles and related equipment. See the list of applicab information can be found using the links to the respective contract

- VEH110: Light and Medium Duty Vehicles – Provides users a as a broad range of vehicle applications through upfitting electric and hybrid models are offered in various categories.
- VEH111: Heavy Duty Vehicles, Road Maintenance and Cor variety of fleet assets over 26,000 pounds GVWR; alter categories and contract users should reach out to vendors fo
- VEH102: Advanced Vehicle Technology Equipment, Supp alternative transportation equipment including EV charging vehicle electrification upfitting; category 3 offers after marke
- FAC116: Lawn and Grounds Equipment, Parts and Services maintenance and care of lawns and grounds areas as we equipment. Category 3 includes a variety of electric utility ve

The following pages provide information on electric/hybrid elect contracts listed above, as well as newly released models that ma organized by technology type and vehicle category. Please direc contracts to the contract manager listed in the appropriate cont this document to Chelsea Kehne.

Battery-Electric Vehicles

			Size	Range	MPGe	Drivetrain	Base Price	SWC
Sedan		CHEVROLET BOLT	Compact/Small	259	120	FWD	$27,122	VEH110
			Contract Vendor(s): Dillon Chevrolet					
		HYUNDAI IONIQ	Compact/Small	259	133	FWD	$34,202	VEH110
			Contract Vendor(s): McGovern Hyundai					
CUV/SUV		CHEVROLET BOLT EUV	Crossover/Small	247	115	FWD	$30,512	VEH110
			Contract Vendor(s): Dillon Chevrolet					
		FORD MUSTANG MACH-E	Crossover/Small	230-300	93	RWD/AWD	$30,932	VEH110
			Contract Vendor(s): Marcotte Ford, Colonial Ford					
		HYUNDAI KONA	Crossover/Small	258	120	FWD	$35,102	VEH110
			Contract Vendor(s): McGovern Hyundai					
		HYUNDAI IONIQ 5	Crossover/Small	275-300	TBD	RWD/AWD	TBD	Expected on VEH110
			Contract Vendor(s): TBD					
Pickup Truck		F-150 LIGHTNING	Crossover/Small	300	85	RWD/AWD	TBD	Expected on VEH110
			Contract Vendor(s): TBD					
Passenger Van/Bus		LIGHTNING ELECTRIC TRANSIT 350	Class 3	126	TBD	RWD	$98,890-$109,890	VEH102 (Cat 2)
			Vendor: National Van Builders					
		MICRO BIRD G5	Minibus	100	100	N/A	$314,679	VEH110
			Vendor: Anderson Motors					
		BLUE BIRD BBCV	Full size	120	TBD	N/A	Request from vendor	VEH111
			Vendor: Anderson Motors					
		BLUE BIRD T3FE	Full Size	120	TBD	N/A	Request from vendor	VEH111
			Vendor: Anderson Motors					

Hot off the Production Line

Ford F-150 Lightning	
Expected Starting MSRP	$40,000
Trim Options	Pro, XLT, Lariat, Platinum
Electric Range (mi.)	230-300
Drivetrain	Dual-motor 4x4
Max. Horsepower/Torque	563 HP/ 775 ft. lbs.
Max. Payload/Towing	2,000/10,000 lbs.

Hyundai Ioniq 5	
Vehicle Type	CUV
Starting MSRP	$38,000
Trim Options	Standard, SE, SEL, LIMITED
Electric Range (mi.)	275-300
Drivetrain	RWD/AWD
Max. Horsepower	225-320 HP

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On the Horizon: Upcoming EV Models Highlights

Sedans & CUVs/SUVs	Pickup Trucks & Vans
• Jeep Wrangler Magneto (2022) • Kia EV6 (2022) • Nissan Ariya (2022) • Sony Vision-S (2022) • Subaru Solterra (2022) • Toyota BZ4X (2022) • VW Space Vizzion (2022) • Volvo C40 Recharge & XC90 (2022) • Chevy Blazer (2023) • Chevy Equinox (2023) • Ford Explorer EV (2023) • VinFast VF9 (2023) • Dodge e-Muscle (2024) • Honda Prologue (2024) • Volvo XC60 (2024)	• Canoo Van (2022) • Chevy Silverado Electric (2023) • GMC Sierra EV (2023) • VW I.D. Buzz (2024) • Ram 1500 EV (2024) • Canoo Pickup (2024)

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On the Horizon: Upcoming EV Model Highlights

2023

Chevy Blazer

2023

Chevy Equinox

2023

Chevy Silverado

2022

Fisker Ocean

2022

Canoo Van

2023

Sony Vision-S

2023

Faraday Future FF91

2023

Polestar 4

Maybe?

Buick Electra

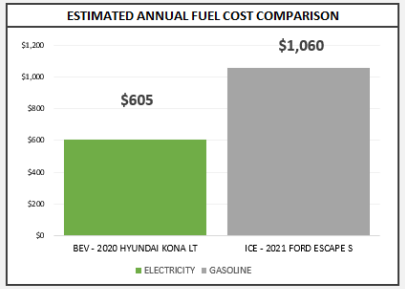
EV/EVSE Tools & Guides

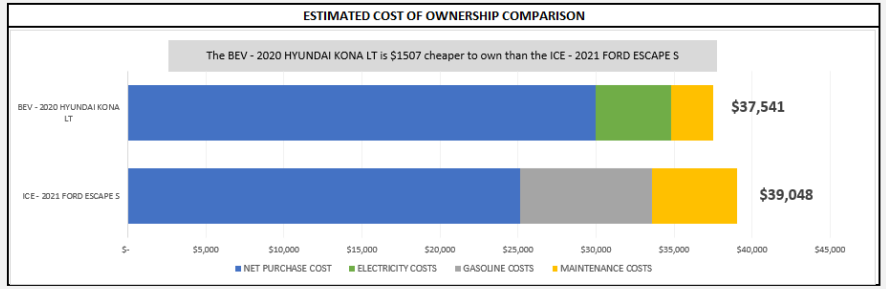
Electric Vehicle TCO Comparison Calculator

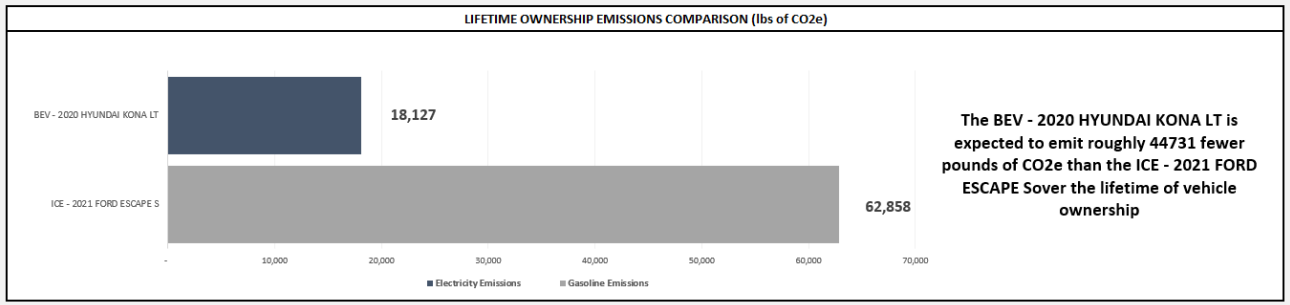
- Vehicle-to-vehicle comparison
- Utilizes current VEH110 offerings
- Annual & TCO analysis
- GHG emissions impacts

BEV - 2020 HYUNDAI KONA LT		ICE - 2021 FORD ESCAPE S	
VEHICLE TYPE	CUV/SUV	VEHICLE TYPE	CUV/SUV
FUEL TYPE	Full battery-electric (BEV)	FUEL TYPE	Gasoline (ICE)
ELECTRIC RANGE	258 miles	ELECTRIC RANGE	-
GAS RANGE	-	GAS RANGE	350 miles
SEATS	5	SEATS	5
DRIVETRAIN	FWD	DRIVETRAIN	FWD/AWD
COMBINED MPG/MPGe	120	COMBINED MPG/MPGe	30
EST. TIME TO FULL CHARGE (LEVEL 2)	~9 hrs	EST. TIME TO FULL CHARGE (LEVEL 2)	N/A
BASE MSRP	$38,365	BASE MSRP	$25,594
EST. MILES PER 30 MIN FAST CHARGE	~93 miles	EST. MILES PER 30 MIN FAST CHARGE	N/A
BASE BID PRICE	$37,495	BID PRICE	$25,115
MASSEVIP INCENTIVE*	$7,500	MASSEVIP INCENTIVE*	$0
EST. TOTAL COST (AFTER INCENTIVE)	$29,995	EST. TOTAL COST (AFTER INCENTIVE)	$25,115
EST. ANNUAL MAINTENANCE COST	$338	EST. ANNUAL MAINTENANCE COST	$682

▼ REVIEW COST & EMISSIONS COMPARISONS FOR THESE MODELS ▼



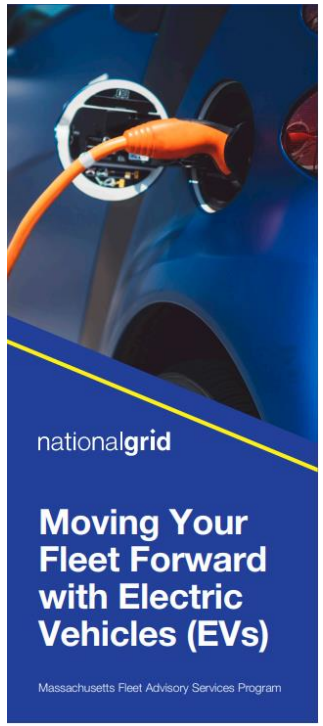




*All TCO and emissions values are estimated and based on assumptions that are detailed in calculator

Fleet Advisory Services

- National Grid FAS program
  - No cost program
  - Assesses vehicle electrification & charging opportunities across all segments of fleet
  - Available to state government, public higher ed, & munis



Current Participants

Department of Conservation & Recreation
Mass Port Authority
Salem State University
UMass Lowell
UMass Chan Medical SChool

- Eversource aiming to release similar program in future

OSD
OPERATIONAL SERVICES DIVISION

Telematics Initiative in the Executive Branch

John Martin

Telematics Overview

- What is Telematics?
  - Telematics is a system that connects information technology with telecommunications. It has evolved over the years and narrowly associates with GPS tracking or fleet telematics.
  - A device is installed inside a vehicle, which then uses cellular networks to transmit data to an end-user. The data stored in the cloud, which makes the information available to access from any device with an internet connection.

- What Fleet Telematics Does?
  - Telematics provides real-time data and empowers users to solve unique State fleet business challenges, which include but are not limited to:
    - Vehicle location
    - Vehicle and equipment utilization
    - Green House Gas (GHG) emission reduction
    - Diagnostic Trouble Codes
    - Reducing operating expenses

Benefits of Telematics

- Data becomes accessible in real time with telematics and allows the Office of Vehicle Management (OVM) and Departmental Fleet Managers to manage fleet activity proactively versus reactively.

Data Capture Elements	Without Telematics	With Telematics
Vehicle Utilization		
Miles driven	*Driver Log	Yes
Trips per day	*Driver Log	Yes
Vehicle/Equipment trip routing	No	Yes
Fleet right-sizing	No	Yes
Fuel Consumption		
Reduction in vehicle idling	No	Yes
Reduction in GHG emissions	No	Yes
*Manual records kept at agency		

Data Capture Elements	Without Telematics	With Telematics
Diagnostic Trouble Codes-DTC		
Predictive engine analytics	No	Yes
Elimination of critical engine failures	No	Yes
Reduction in overall fleet maintenance expenses	Yes	Yes
Vehicle Speed		
Acceleration or deceleration patterns	No	Yes
Increased safety for Commonwealth Employees and Constituents	No	Yes
Operational Efficiency		
Elimination of manual processes associated with driver logs and odometer submissions	No	Yes
Transparency		
Greater insight into the use of a taxpayer funded asset	No	Yes

Transition to Battery Electric Vehicles

OPERATIONAL SERVICES DIVISION

Opportunities for BEV replacement

- Candidates for BEV replacement would demonstrate any of the following criteria:
  - Lower overall mileage
  - High frequency of trips
  - Higher idle time
  - High maintenance spend
  - Potential for charging station

Identifying the Candidates

- Creation of heat map within Qlik (BI Tool)
  - Garage location
  - Frequently traveled roads
- Cross reference with above datapoints

Additional Tools in the Trunk (or Frunk)

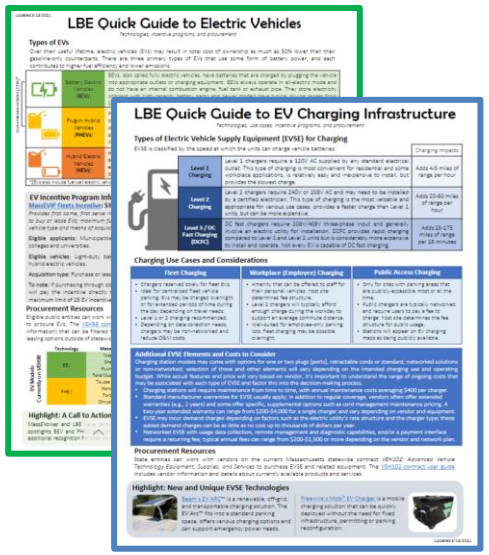
EV/EVSE Quick Guides

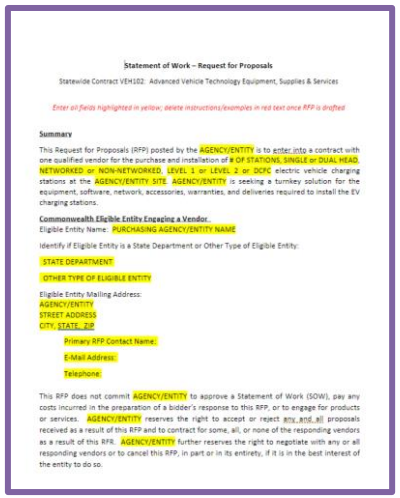
Template Scope of Services

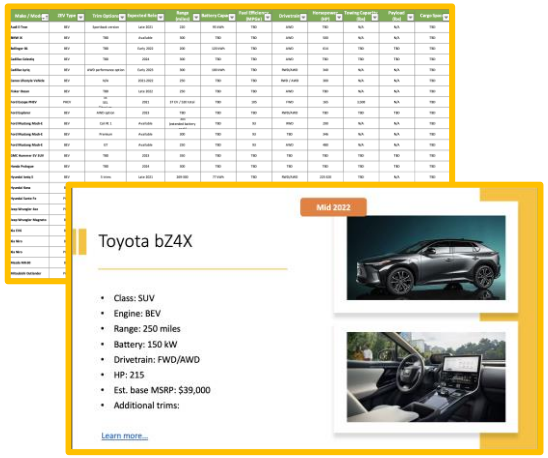
Upcoming EV Models

Public Charging Guidance

COMING SOON







Visit the LBE Clean Transportation Webpage to explore these tools & additional resources!

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Getting There from Here: Panel and Round-Robin Group Discussion

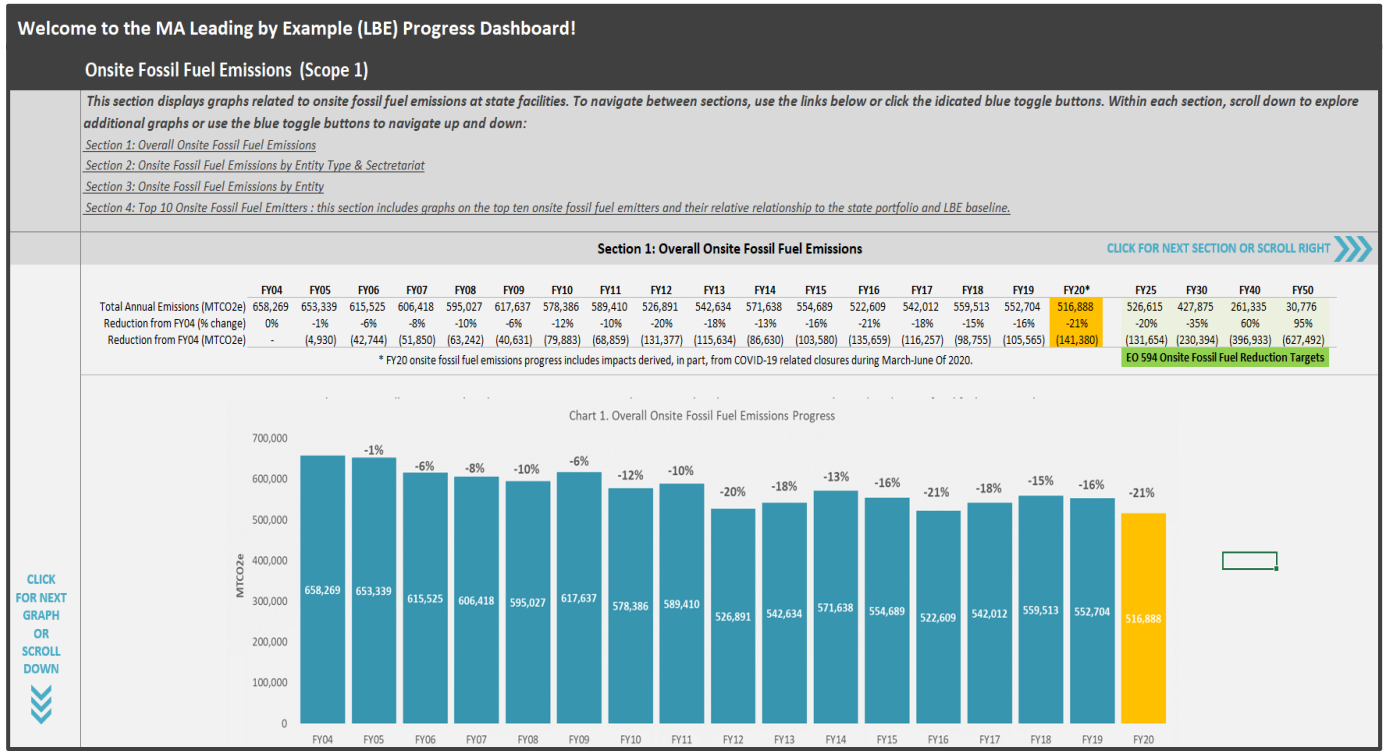
Massachusetts Department of Energy Resources

LBE/MA Updates

New LBE Progress Dashboard

Objectives:

- Create one-stop shop for LBE reporting across various programmatic areas
- Support EO594 directive to increase data transparency
- Increase accessibility to progress information



Welcome to the MA Leading by Example (LBE) Progress Dashboard!

Onsite Fossil Fuel Emissions (Scope 1)

This section displays graphs related to onsite fossil fuel emissions at state facilities. To navigate between sections, use the links below or click the idicated blue toggle buttons. Within each section, scroll down to explore additional graphs or use the blue toggle buttons to navigate up and down:

Section 1: Overall Onsite Fossil Fuel Emissions
Section 2: Onsite Fossil Fuel Emissions by Entity Type & Sectretariat
Section 3: Onsite Fossil Fuel Emissions by Entity
Section 4: Top 10 Onsite Fossil Fuel Emitters : this section includes graphs on the top ten onsite fossil fuel emitters and their relative relationship to the state portfolio and LBE baseline.

Section 1: Overall Onsite Fossil Fuel Emissions — CLICK FOR NEXT SECTION OR SCROLL RIGHT

	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20*	FY25	FY30	FY40	FY50
Total Annual Emissions (MTCO2e)	658,269	653,339	615,525	606,418	595,027	617,637	578,386	589,410	526,891	542,634	571,638	554,689	522,609	542,012	559,513	552,704	516,888	526,615	427,875	261,335	30,776
Reduction from FY04 (% change)	0%	-1%	-6%	-8%	-10%	-6%	-12%	-10%	-20%	-18%	-13%	-16%	-21%	-18%	-15%	-16%	-21%	-20%	-35%	60%	95%
Reduction from FY04 (MTCO2e)	-	(4,930)	(42,744)	(51,850)	(63,242)	(40,631)	(79,883)	(68,859)	(131,377)	(115,634)	(86,630)	(103,580)	(135,659)	(116,257)	(98,755)	(105,565)	(141,380)	(131,654)	(230,394)	(396,933)	(627,492)

* FY20 onsite fossil fuel emissions progress includes impacts derived, in part, from COVID-19 related closures during March-June Of 2020.

EO 594 Onsite Fossil Fuel Reduction Targets

CLICK FOR NEXT GRAPH OR SCROLL DOWN

Chart 1. Overall Onsite Fossil Fuel Emissions Progress

Please reach out to Chelsea if interested in reviewing & providing feedback for final version (to be posted to LBE website soon).

Thank you!

Executive Order 594 Guidelines

NOW AVAILABLE ON THE LBE WEBSITE

NEW CONSTRUCTION AND MAJOR RENOVATIONS

ZEV ACQUISITIONS

BIOFUELS

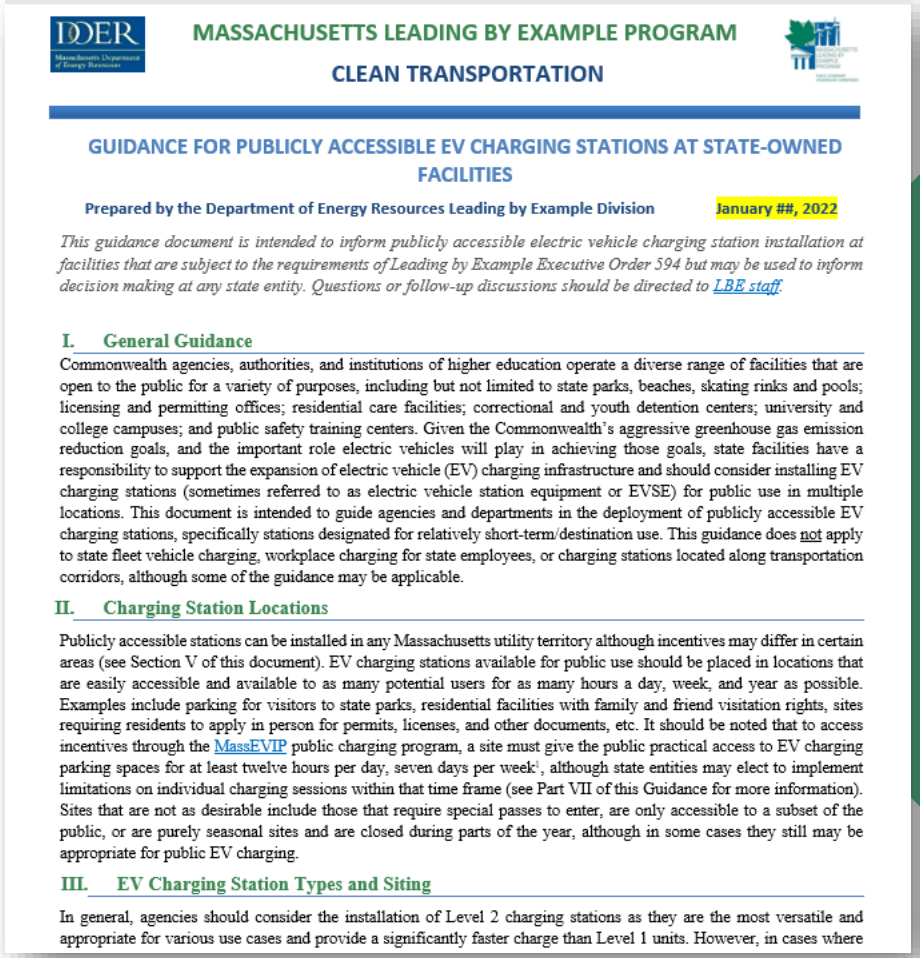
PROGRAM ADMINISTRATION

PUBLISHING SOON: EV CHARGING

OPEN FOR STAKEHOLDER INPUT THROUGH 2/9: EXISTING BUILDINGS AND SUSTAINABILITY PRIORITIES

COMING SOON!

Guidance for Public EV Charging at State Sites



MASSACHUSETTS LEADING BY EXAMPLE PROGRAM

CLEAN TRANSPORTATION

GUIDANCE FOR PUBLICLY ACCESSIBLE EV CHARGING STATIONS AT STATE-OWNED FACILITIES

Prepared by the Department of Energy Resources Leading by Example Division January ##, 2022

This guidance document is intended to inform publicly accessible electric vehicle charging station installation at facilities that are subject to the requirements of Leading by Example Executive Order 594 but may be used to inform decision making at any state entity. Questions or follow-up discussions should be directed to LBE staff.

I. General Guidance

Commonwealth agencies, authorities, and institutions of higher education operate a diverse range of facilities that are open to the public for a variety of purposes, including but not limited to state parks, beaches, skating rinks and pools; licensing and permitting offices; residential care facilities; correctional and youth detention centers; university and college campuses; and public safety training centers. Given the Commonwealth's aggressive greenhouse gas emission reduction goals, and the important role electric vehicles will play in achieving those goals, state facilities have a responsibility to support the expansion of electric vehicle (EV) charging infrastructure and should consider installing EV charging stations (sometimes referred to as electric vehicle station equipment or EVSE) for public use in multiple locations. This document is intended to guide agencies and departments in the deployment of publicly accessible EV charging stations, specifically stations designated for relatively short-term/destination use. This guidance does not apply to state fleet vehicle charging, workplace charging for state employees, or charging stations located along transportation corridors, although some of the guidance may be applicable.

II. Charging Station Locations

Publicly accessible stations can be installed in any Massachusetts utility territory although incentives may differ in certain areas (see Section V of this document). EV charging stations available for public use should be placed in locations that are easily accessible and available to as many potential users for as many hours a day, week, and year as possible. Examples include parking for visitors to state parks, residential facilities with family and friend visitation rights, sites requiring residents to apply in person for permits, licenses, and other documents, etc. It should be noted that to access incentives through the MassEVIP public charging program, a site must give the public practical access to EV charging parking spaces for at least twelve hours per day, seven days per week[1], although state entities may elect to implement limitations on individual charging sessions within that time frame (see Part VII of this Guidance for more information). Sites that are not as desirable include those that require special passes to enter, are only accessible to a subset of the public, or are purely seasonal sites and are closed during parts of the year, although in some cases they still may be appropriate for public EV charging.

III. EV Charging Station Types and Siting

In general, agencies should consider the installation of Level 2 charging stations as they are the most versatile and appropriate for various use cases and provide a significantly faster charge than Level 1 units. However, in cases where

- Charging station locations
- Station types and siting
- Number of designated parking spaces and EV-ready spots
- Funding and procurement
- Upfront and ongoing costs
- Usage fees and public access

If you'd like to provide feedback prior to publication, please reach out to Catie at catie.snyder@mass.gov

State Entity Participants

RECHARGE|MA

Recharge Massachusetts 2021 Recognition

Participants in Mass*EVolves* establish an internal ZEV Action Team that develops and implements a ZEV Action Plan outlining their contributions to the push for zero carbon transportation in Massachusetts.

https://www.massevolves.org/

- Bridgewater State
- DCR
- Holyoke Community College
- MassDEP
- MassDOT
- MassPort

- MWRA
- UMass Amherst
- UMass Boston
- UMass Chan Medical School
- UMass Dartmouth
- UMass Lowell
- Worcester State

Congrats to the 2021 LBE Award Winners!

Higher Education:

Bridgewater State University

Campus Decarbonization Teams: SSU, UMA, UMD, UML

Agencies:

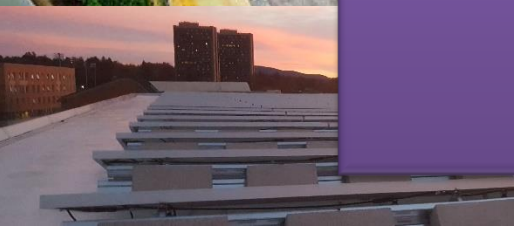
DCR Waquoit Bay National Estuarine Research Reserve

Board of Library Commissioners Public Construction Program

Municipalities:

City of Greenfield

Town of Acton



Individuals:

Sean Donaghy, MBTA

Ed Vitone, Town of Ashburnham

PRF74: Energy, Climate Action, and Facility Advisory Services

- New Statewide Contract released 1/1/2022, active through 2028
- Replaces PRF62: Energy Consulting Services
- Three Categories to help meet your climate action needs:

Cat 1: Energy and Climate Action Research, Analysis, Advisory, and Consulting

- Policy, regs, and program design
- Clean energy tech research
- Electrification planning, siting, and program design, including transportation and building sectors

Cat 2: Energy and Climate Action Project Advisory and Consulting Services

- Research, analysis, development, procurement, construction, and commissioning for energy and climate action projects
- Feasibility studies, planning, forecasting, and advisory services for clean energy, resilience, etc

Category 3: Energy and Climate Action Facilities Management, Operations, and Maintenance Advisory and Consulting Services

- Facility commissioning services
- Facilities management operations and maintenance analysis, planning, and oversight services
- Facility condition assessments

Find the Contract User Guide at:
www.mass.gov/service-details/professional-services

DOER Proposes Changes to APS

- Straw Proposal released summer 2021, stakeholder comments currently being reviewed
- Changes designed with three goals in mind:

GHG Reductions	Market Stability	Complement Policies
• E.g., Phase-down natural gas CHP	• E.g., Increase minimum standard and alternative compliance payment	• E.g., Algin with Mass Save, limit double-dipping

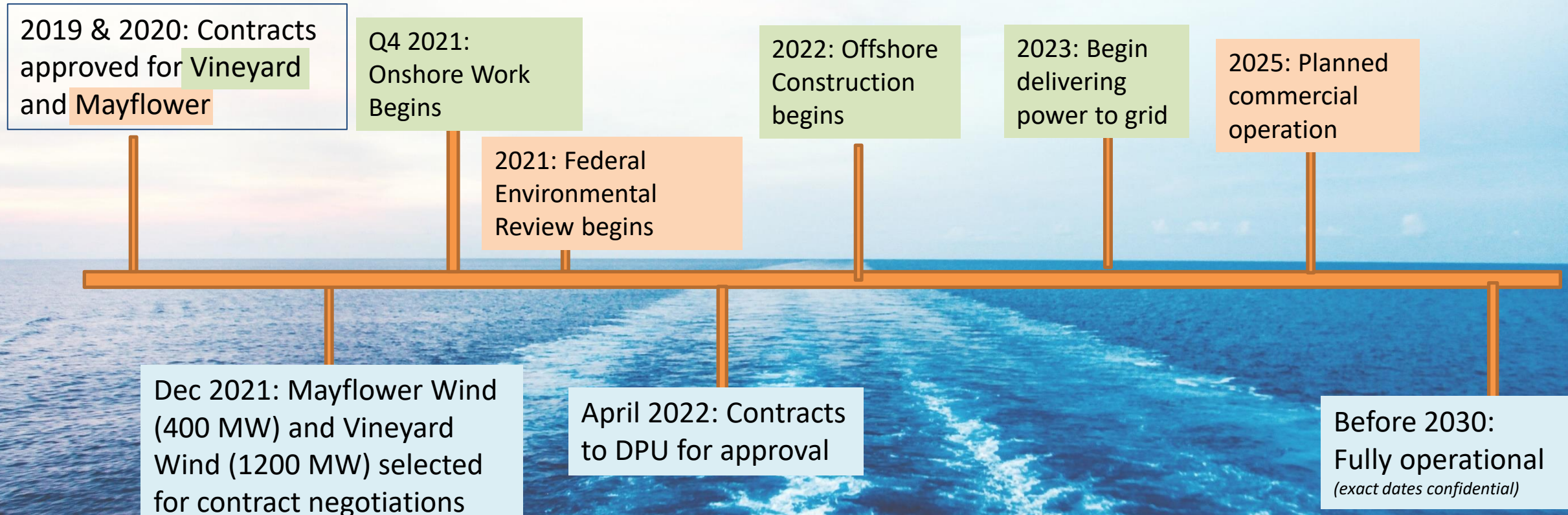
What's Next?

- Straw proposal can be found on the DOER website: www.mass.gov/service-details/aps-straw-proposal
- Comments, either for or against proposed changes, can be submitted to doer.aps@mass.gov
- Formal rulemaking process expected to begin Q2 2022, with additional opportunities to provide comments

Offshore Wind Advances: Planned Timelines

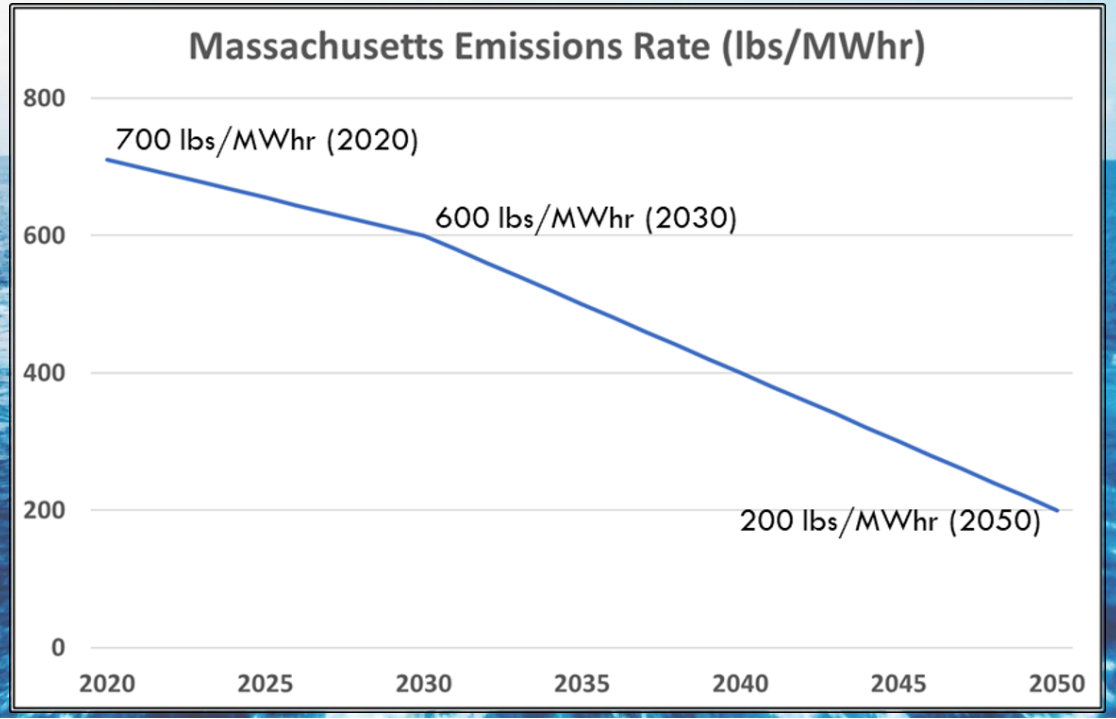
Three solicitation rounds in MA:

- Vineyard 800 MW
- Mayflower 804 MW
- Mayflower 400 MW + Vineyard 1200 MW



Breezing Towards 100% Clean Electricity

- Currently procured OSW will total 3200 MW, delivering 13 million MWh per year – 25% of current electricity consumption
- DOER currently has authorization to procure 5600 MW of OSW
- 2050 Decarbonization Roadmap calls for 80% of electricity consumed in New England to come from renewables, particularly wind and solar (15-20 GW each)



New MA Appliance Standards

- ***An Act Creating a Next-Generation Roadmap for MA Climate Policy***, signed by Governor Baker on 3/26/21, included energy and water efficiency standards for numerous products:

• computers and computer monitors • state-regulated general service lamps • high CRI (color rendering index) fluorescent lamps • plumbing fittings and fixtures • portable electric spas	• water coolers • residential ventilating fans • commercial ovens, dishwashers, fryers, steam cookers, and hot-food holding cabinets • spray sprinkler bodies • electric vehicle supply equipment

- DOER promulgated final updates to regulations on 12/24/21
  - 2022: Non-compliant products cannot be shipped to MA
  - 2023: Retailers cannot sell non-compliant products

Information on these standards is available at:
www.mass.gov/service-details/appliance-energy-efficiency-standards

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Massachusetts Department of Energy Resources

Clean Energy News

New England Warming Faster than Rest of Planet

- New England warmed 3.3F between 1900-2020, while rest of planet rose 2F
  - MA warmed by 3.5F
- New England *winters* have warmed an average 4.86F
  - In MA, winter temperatures increased an average of nearly 7F
- Previous study found New England lost an average of 6.2 days of snow covering the ground between 2001-2017
  - MA lost 12 days of snow cover

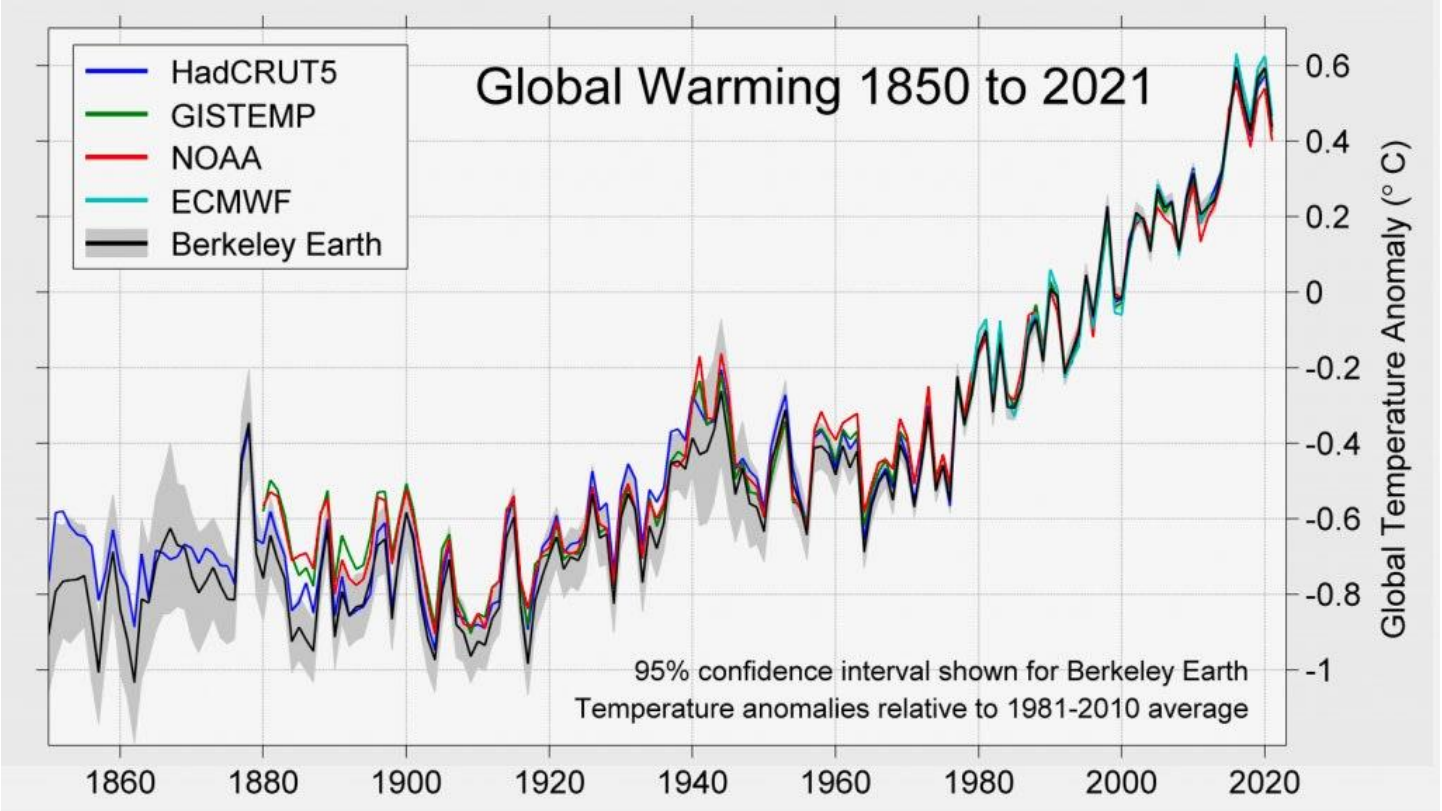
"Based on the data presented here, and the continuing increase of greenhouse gases, it is clear that humanity does not have its hand on the rudder of climate control," the authors wrote. "We are in a climate crisis, and we need to take concerted steps to reduce our production of greenhouse gases as soon as possible."

Source: Boston Globe

The World Was Cooler in 2021 Than 2020!

But that's not good news…

- 2021 was cooled by La Nina
- 2020 was slightly warmed by reduction in reflective aerosols in atmosphere
- Despite slight delay in the overall trend, **2021 was still ranked the sixth hottest year on record**



Source: Wired

COP26 Key Takeaways

- 120 countries pledge to **halt and reverse deforestation by 2030**
- 100 countries pledge to **cut methane emissions by 30% by 2030**
- More than 40 countries **pledge to shift away from coal**
- 500 financial service firms to **align $130 trillion** with Paris Agreement
- U.S. and China pledge to **boost cooperation** on decarbonization
- 100+ governments, companies agree to **end sale of ICE vehicles by 2035**
- 11 nations launch alliance to **set end date for FF exploration, extraction**
- World leaders requested to **"revisit and strengthen" 2030 targets** by end of 2022, instead of current five-year timeline

"We can now say with credibility that we have kept 1.5 degrees alive. But, its pulse is weak and it will only survive if we keep our promises and translate commitments into rapid action."
-Alok Sharma, UK President of COP26

Sources: UN.org, NY Times, UNFCC, Washington Post

New NYC Law Bans Gas Hookups in New Construction

- Gas hookups banned for small construction projects after 2023 (2027 for larger buildings)
  - Hospitals, commercial kitchens, laundromats are exempt
- Buildings in NYC account for 70% of its greenhouse gases
- Bill estimated to cut about 2.1 million tons of carbon by 2040, equivalent to emissions of 450,000 cars

Source: CNBC

Next LBE Council Meeting

Save the Date!

Tentative:

Tuesday, March 8th

10:00 am–12:00 pm

Upcoming Tentative Meeting Dates:
May 10th
July 12th
Sept 13th

Creating a Clean, Affordable and Resilient Energy Future for the Commonwealth

DOER Massachusetts Department of Energy Resources