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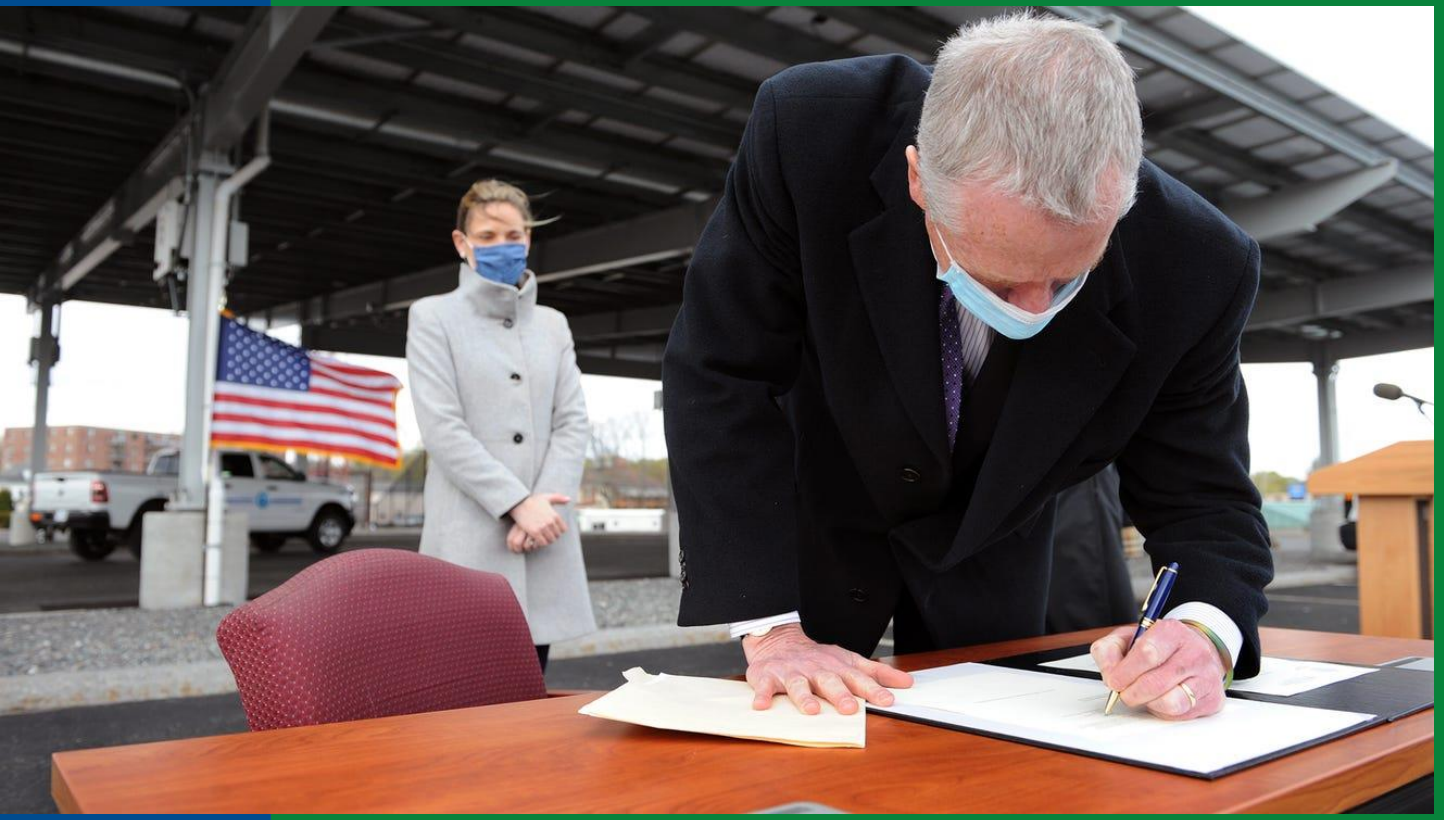
MASSACHUSETTS LEADING BY EXAMPLE PROGRAM
PUBLIC LEADERSHIP, STEWARDSHIP, COMMITMENT

LBE Executive Order 594: What Comes Next? Implementation

June 24, 2021

Leading by Example Executive Order 594

Decarbonizing and Minimizing Environmental Impacts of State Government



- Signed by Governor Baker on April 22, 2021
- Effective date: **July 1, 2021**
- Supersedes LBE EO 484
- Applies to all executive branch agencies and public institutions of higher education
- Fleet targets + requirements also apply to MBTA non-revenue fleet

Targets for State Facilities

Objective	Baseline	Current Progress	2025	2030	2040	2050
Reduce emissions from onsite fossil fuels	2004	-16%	**-20%**	**-35%**	**-60%**	**-95%**
Zero emission vehicles (ZEVs) in state fleet	N/A	<1%	**5% of fleet**	**20% of fleet**	**75% of fleet**	**100% of fleet**
Reduce fuel oil use	2004	-85%	**-90%**	**-95%**	**TBD**	**TBD**
Energy use intensity (EUI) reduction	2004	-13%	**-20%**	**-25%**	**TBD**	**TBD**
EV charging stations at state facilities	N/A	235 stations	**350 stations**	**500 stations**	**TBD**	**TBD**

These targets apply to entire LBE portfolio, recognizing that individual partners may have unique opportunities or challenges in meeting the various targets depending on operational needs

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Key EO 594 Strategies

Prioritize highest emitting sectors: buildings & vehicles

Target onsite fossil fuel combustion

Innovation to address complex facilities & fleets

Accelerate transition to ZEVs

New construction performance

Clean & renewable energy deployment

Incorporate long-range planning

Expand transparency and participation

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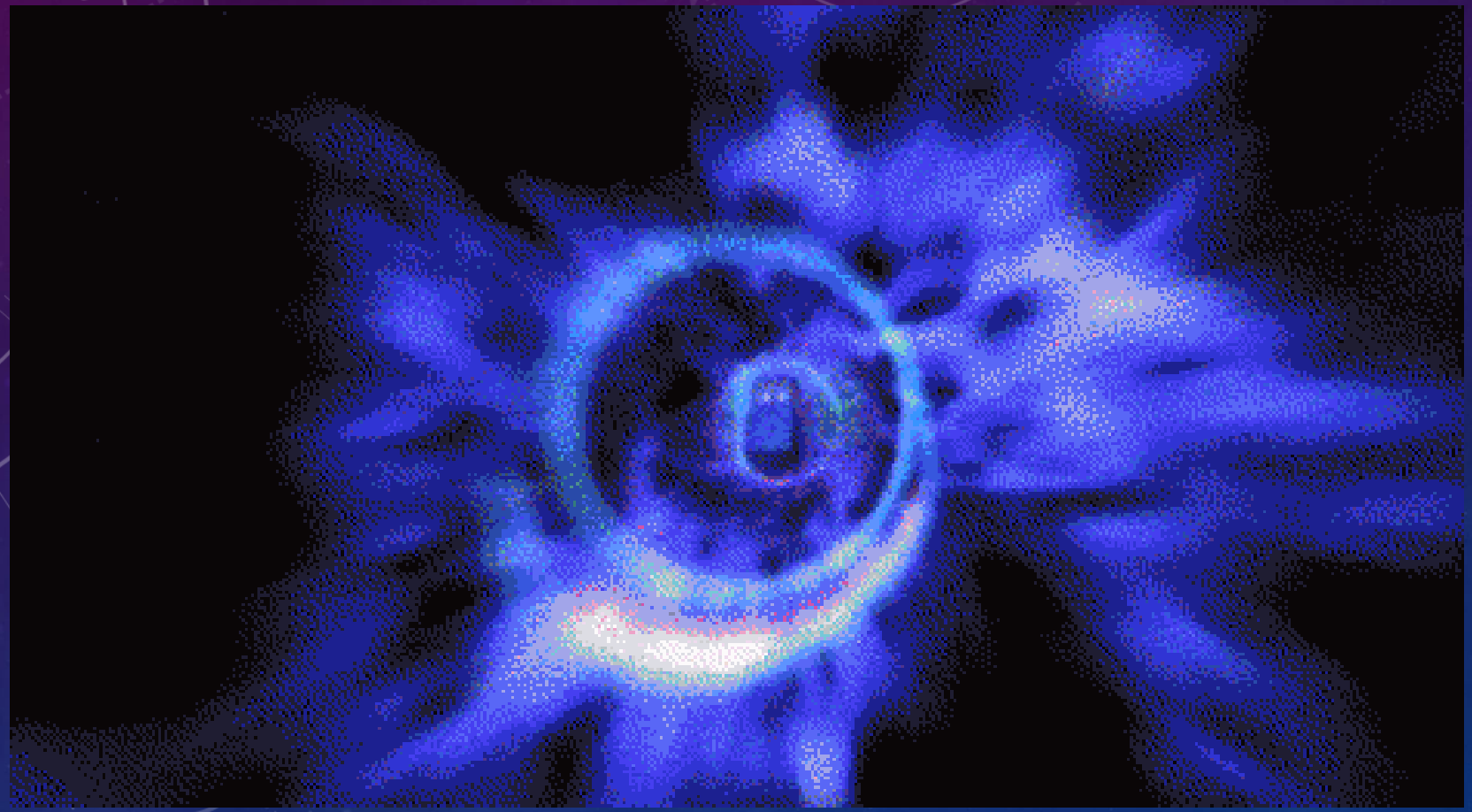
Let’s visit 2051 and see how we did…



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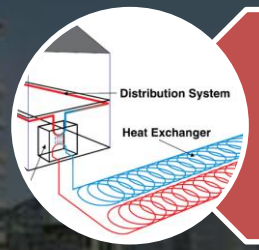
Leading by Example Council Meeting
June 24th, 2051

2021 → 2025 → 2030 → 2040 → 2050

FY 2050 State Portfolio Milestones



All buildings constructed in last 30 years are entirely heated and cooled with efficient electric or renewable thermal technology

All existing buildings have transitioned away from fossil fuels

Entire fleet of state vehicles converted to ZEVs

All capital budgets identify and ensure that no emissions are created by new projects and any remaining emissions are offset

2021 → 2025 → 2030 → 2040 → 2050

How Did We Get Here? 2040

Almost all state buildings and fleet vehicles converted to electric or low/zero carbon fuels

Certain challenging sources of emissions still remain (e.g., specialized vehicles, emergency generators, central power plants installed shortly before 2020, etc.)

Plans underway to address outstanding emissions quandaries with new technologies recently made available

2021 → 2025 → 2030 → 2040 → 2050

How Did We Get Here? 2030

Decarbonized, high-performance new building construction is the norm

Planning efforts have led to successful deployment of decarbonization strategies and have prepared the path forward for decarbonization over the next 20 years

Most passenger cars already replaced with ZEVs; most other light duty vehicles are now acquired as ZEVs

2021 | 2025 | 2030 | 2040 | 2050

How Did We Get Here? 2025

Plans are being developed to identify the opportunities and options to decarbonize campuses and buildings

New buildings are fossil fuel-free, optimize efficiency, and balance building energy use with equivalent onsite generation of electricity from renewable technologies

Virtually all passenger car acquisitions are ZEVs; electric trucks and SUVs now entering fleet
Charging stations installed at dozens of key state facilities

2021 → 2025 → 2030 → 2040 → 2050

How Did We Get Here? 2021

- What did we do?
- Who did it?
- How did we do it?

And we’re back…

WHERE TO START??

New and Existing Facilities

- Decarbonizing buildings brick by brick

Vehicles and EV Charging

- Starting down the road to a fully ZEV fleet

New Construction

New state buildings will have no (or minimal) fossil fuel combustion

- Massachusetts LEED Plus 2.0 Standard for new construction and substantial renovations goes into effect starting July 1, 2021

Biofuels for Heating

- ❑ State entities still using heating oil must purchase B10 or higher blend biofuel
- ❑ Work with LBE Program and vendors to identify opportunities to maximize portion of biofuel
- Requirement goes into effect starting July 1, 2021

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Existing Building Energy Efficiency

- ❑ Work with DCAMM to maximize efficiency in all applicable projects
- ❑ For agency/campus-specific building projects, ensure best-in-class energy efficiency measures are prioritized
- ❑ Target high impact upgrades: HVAC equipment, envelope improvements, appliances, etc.
- ❑ Participate in demand response programs – utilize DCAMM contract

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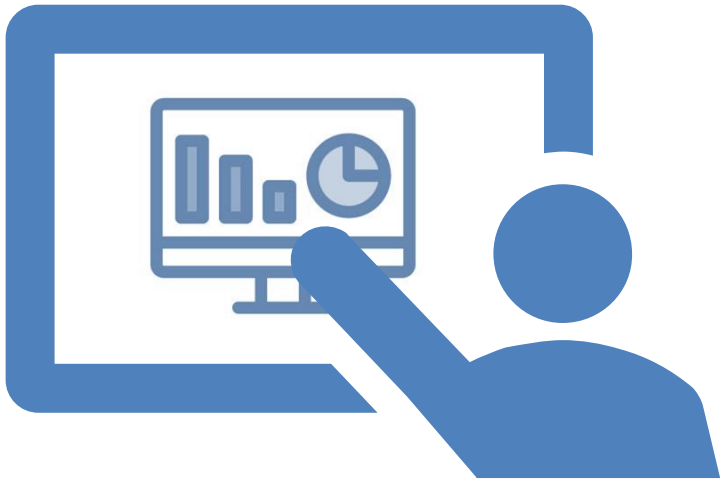
Existing Building Energy Efficiency

- Implement operational efficiencies
  - ❑ Ensure staff are informed on energy-saving operational strategies
    - E.g., HVAC equipment maintenance, building scheduling, monitoring equipment performance, etc.
  - ❑ Use commonly-available checklists and resources as appropriate
- Monitor building energy use
  - ❑ Work closely with DCAMM to utilize real-time metering system
  - ❑ Ensure staff are trained on building management systems



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Decarbonization Planning Efforts

- ❑ Plan for end-of-life replacement of existing fossil fuel equipment
  - Avoid replacing equipment in-kind without prioritizing energy performance
- ❑ Incorporate building decarbonization into budget and facility planning
- ❑ Investigate and be open to adoption of new and innovative technologies

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Biodiesel for Vehicles

- State entities must purchase B5 or higher blend biodiesel for vehicles
- Work with LBE Program and vendors to identify opportunities to maximize the portion of biofuel

Requirement goes into effect starting July 1, 2021, and applies to facilities storing diesel for on-road vehicle use

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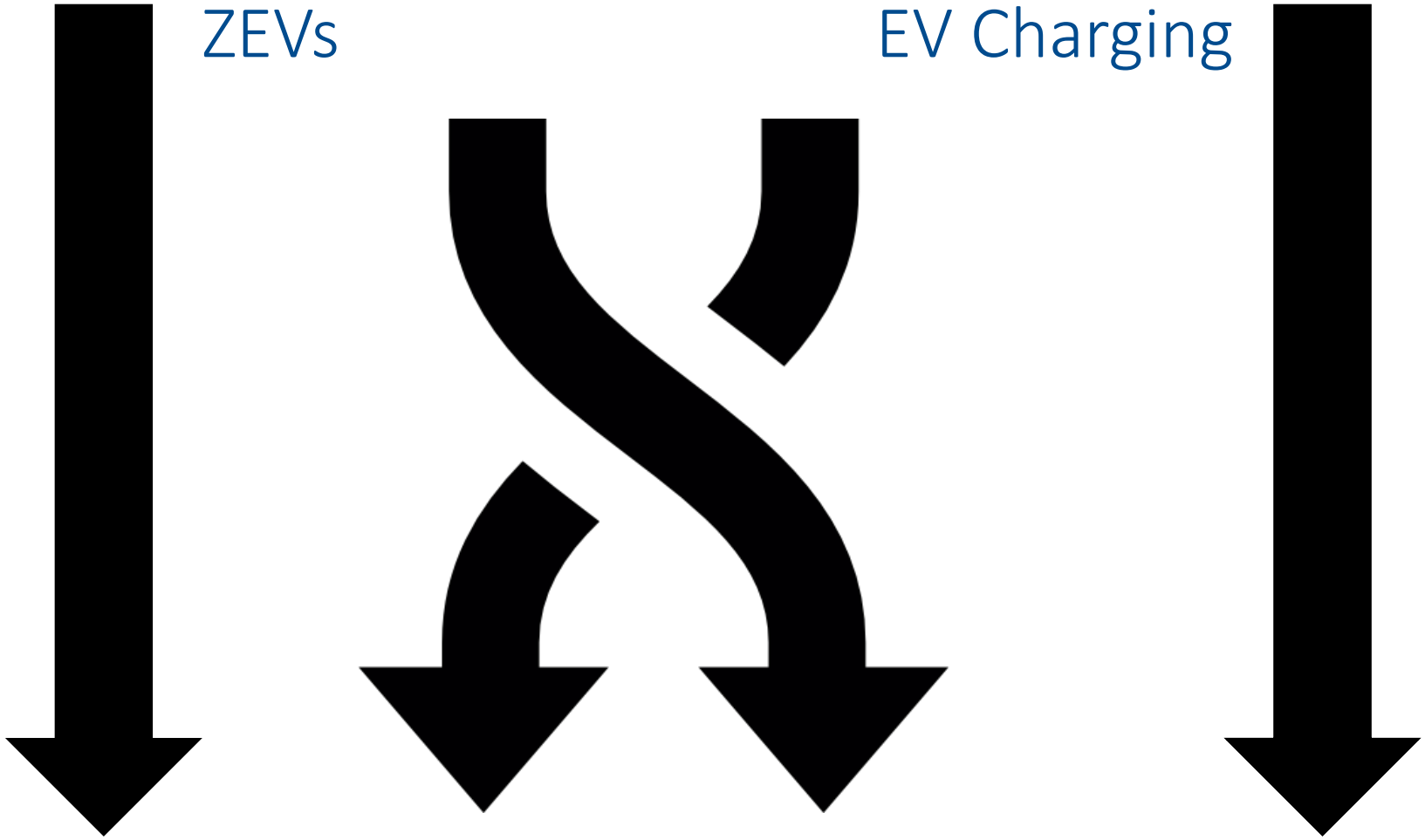
Fleet Decarbonization Considerations



Fleet Decarbonization: Vehicles

Actions to Take Now

- ❑ Watch transportation webinar recording 😉
- ❑ Evaluate fleet assets prior to start of each fiscal year to determine replacement schedule
- ❑ Conduct fleet and TCO analyses to inform fleet decarbonization plan
- ❑ Increase operational efficiencies whenever possible
- ❑ Join the Mass*EVolves* Challenge

Key Questions to be Asking

- What are the categories of vehicle use within the fleet? How (and how often) are vehicles getting used?
- Are there opportunities to right-size the fleet?
- Are there opportunities to down-size vehicles?

For vehicles up for replacement…

- Are BEVs available to order that meet vehicle needs?

Fleet Decarbonization: EV Charging

Actions to Take Now

- ❑ Watch transportation webinar recording 😉
- ❑ Think about where fleet EVs will be parked and make plans to install chargers accordingly
- ❑ Determine appropriate charger types and features
- ❑ Leverage technical assistance and funding
- ❑ Pre-wire for additional stations
- ❑ Foster coordination between fleet management and facilities staff

Key Questions to be Asking

Fleet

- Where are vehicles regularly garaged? Which of those sites are likely to transition to EVs relatively soon?
- What are the site charging needs?

Infrastructure

- What site installation barriers may exist?
- What level of charging is needed? What equipment specs are needed or desired?

Funding

- What incentives are available for the intended types of charging?
- How will funding be coupled with procurement?

Implementing by Example: Role of LBE Team

LBE Program Staff Role

Oversee comprehensive data collection and perform analyses

Track agency progress in multiple energy and sustainability areas

Research and share information about innovative technologies and strategies

Facilitate state entity access to funding and technical assistance programs

Coordinate outreach and communication among and across all partners

Issue guidance documents and resources to support policy implementation

Collaborate closely with key cross-cutting agencies (DCAMM, OSD, DEP, etc.)

LBE Council Meetings

Second Tuesday every other month
Next meeting: Tuesday, July 13th

Topics of Interest	• State policies and programs • Innovative tech and decarbonization strategies • Guidance, funding sources, technical assistance
Guest Speakers and Presenters	• Peer-to-peer exchange • Technology experts • External stakeholders
Feedback and Input	• Solicit feedback on LBE resources • Ensure LBE develops appropriate tools and guidance

Have a topic you would like us to cover? Contact the LBE team!

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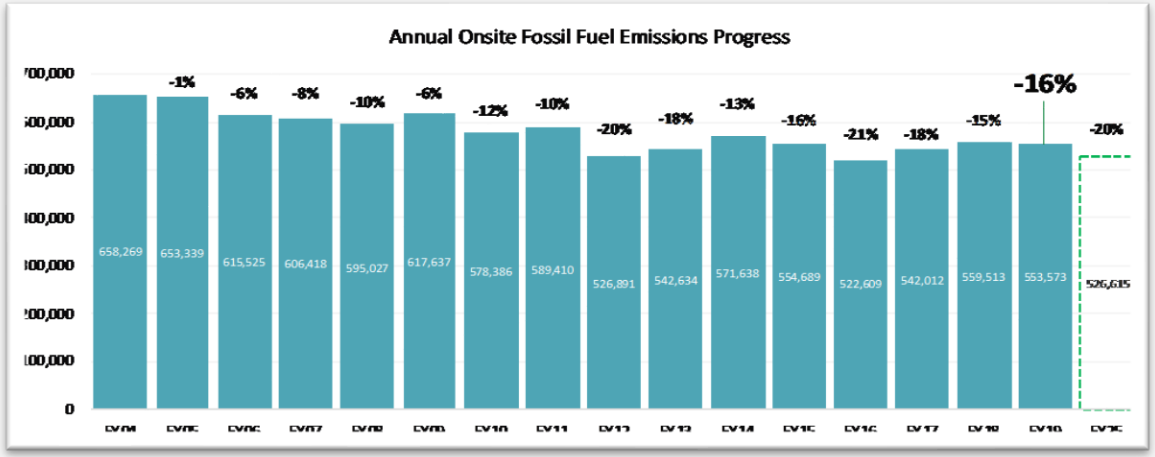
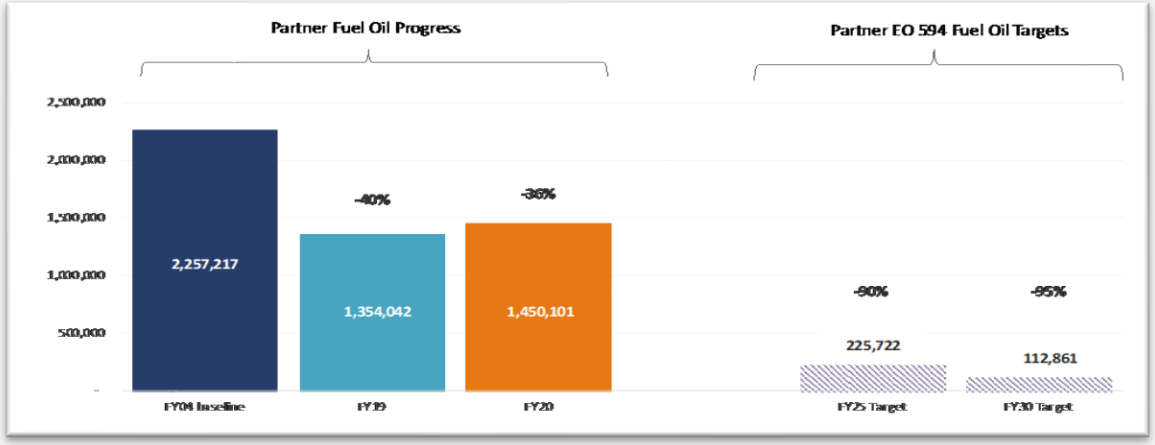
Data Analysis

Leverage the LBE team to inform & support your decarbonization goals!

- Portfolio-level
  - Progress towards EO 594 goals
  - Target areas
- Agency-specific
  - Progress towards EO 594 goals
  - Opportunity areas
- Initiative/project specific
  - Fleet replacement analysis
  - Vehicle model TCO comparison
  - Demand response impacts
  - Building-level performance





	2021 Honda Civic Hatchback	2021 Chevy Bolt	2021 Nissan Leaf Plus
VEH98 Bid Price	$22,901	$28,231 - $32,895	$28,295 - $40,041
Bid Price - MassEVIP incentive*	**$22,901**	(-$7,500) = **$20,731 - $25,395**	(-$7,500) = **$20,795 - $32,541**
Range	392 (gas)	259 (electric)	226 (electric)
Fuel/100 Miles	3.7 gallons	29 kWh	31 kWh
Est. annual energy costs	$1,471	$870	$930
Est. annual maintenance costs**	$915	$465	$465
Est. operating costs after 8 years	$19,086	$10,680	$11,160
Est. total cost of ownership after 8 years	**$41,987**	**$31,411 - $36,075**	**$31,955 - $43,701**

EO 594 Guidelines for State Entities

- LBE collaborating with DCAMM, OSD, and other key agencies
- Partners will have an opportunity to comment prior to finalization
- Updates will be shared via the LBE listserv

Contact Ryan if you are not already receiving LBE email updates

Section of EO 594	Target Publication
3 - New construction	Early Q3 2022
4D, 5D - Biofuels: heating oil + biodiesel	Early Q3 2022
9 - Program administration + agency responsibilities	Early Q3 2022
5 - ZEV acquisitions	Mid Q3 2022
5 - EV charging	Mid Q3 2022
5 - Fleet efficiency (FES/GFC)	Late Q3 2022
4 - Existing buildings	Late Q3 2022
6 - Renewables	Late Q3 2022
2- Targets and calculating progress	Late Q3 2022
7 - Other sustainability initiatives	Late Q3 2022

What Comes Next?

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Agency Next Steps and Ongoing Administration

- Leadership of all state entities received (or will receive this week) letters inviting them to:
  - ❑ Verify key LBE contacts
  - ❑ Appoint LBE Coordinator(s)
  - ❑ Participate in LBE Council
- LBE Coordinators should:
  - ❑ Provide data to LBE on annual basis, and as requested
  - ❑ Identify internal needs to ensure effective EO implementation (eg, create working groups, get key stakeholders on board, embed decarbonization into any ongoing planning efforts, etc)
- Provide comments on upcoming EO Guidelines
- Consider agency green team, and/or establish communication channels to staff
- Attend LBE Council Meetings

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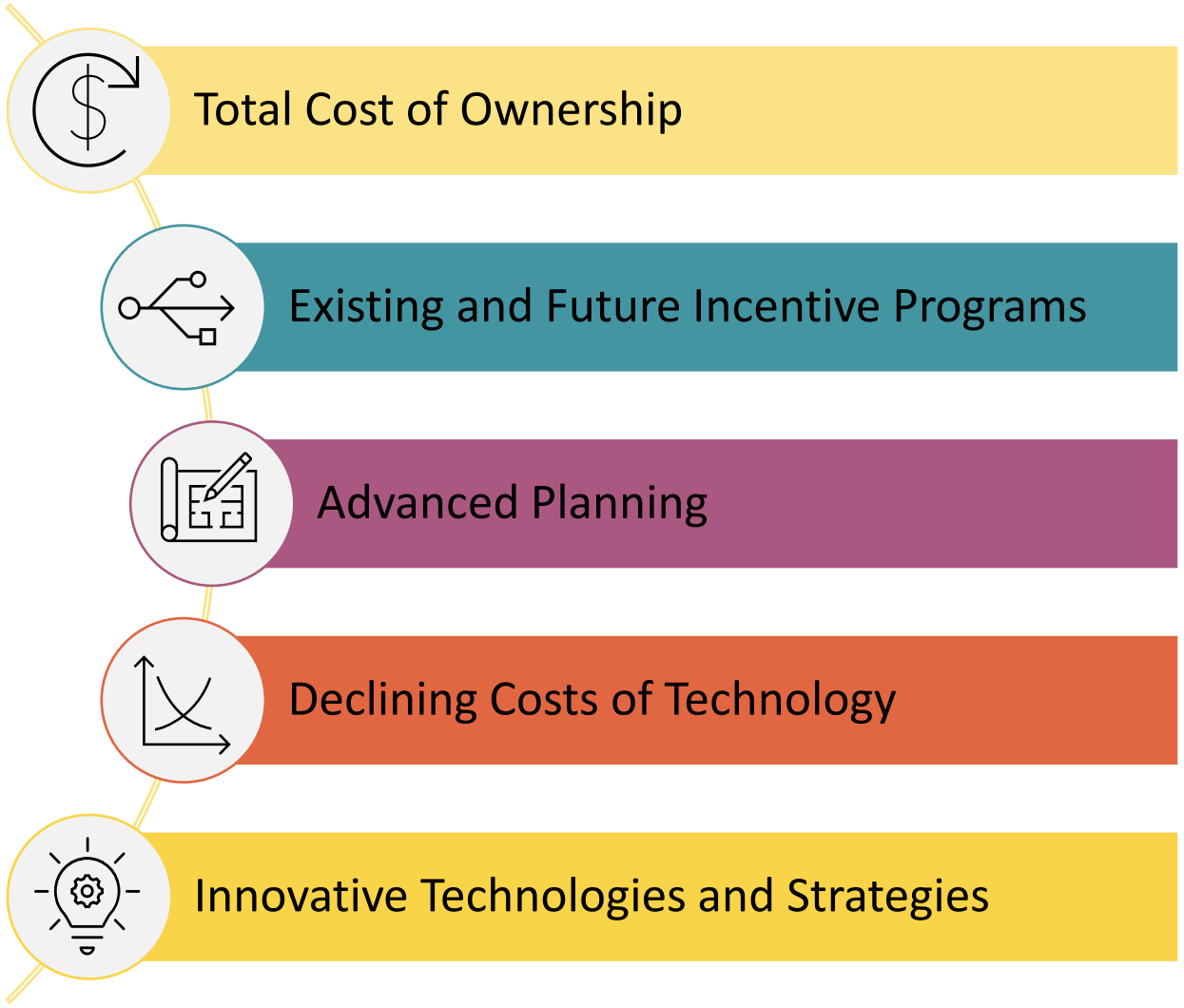
Initial Thoughts on Financing

- Decarbonization will require financial investment
- Creative financing strategies will be investigated
- Solutions will require multiple and combined approaches

Ideas to keep in mind:



Key Takeaways

- Decarbonization will not happen all at once
- Do no harm (e.g., avoid creating new 30-year dependence on fossil fuels)
- Reasonable risks are appropriate
- Think incremental investment, not costs
- Don’t reinvent the wheel – learn from peers
- Take advantage of existing – and keep an eye out for future – incentives and resources

DISCUSSION AND Q&A