



The foundation for Michigan's advanced mobility future:
**Administrative Actions to Electrify
Transportation in Michigan**

December 2019



The **Institute for Energy Innovation (IEI)** is a Michigan-based non-profit that works to promote greater public understanding of advanced energy and its economic potential for Michigan, and to inform the policy and public discussion on Michigan’s energy challenges and opportunities.



This report was developed with funding and support from the **Porter Family Foundation.**

Table of Contents

Executive Summary.....	1
Recommendations.....	1
Introduction: Michigan’s Advanced Mobility Opportunity	3
Potential Administrative Actions	5
1. Leveraging VW Settlement Funds To Increase Vehicle Electrification	4
– Summary.....	4
– Specific Actions	4
– Aligning The VW Settlement Funds With Governor Whitmer’s Priorities.....	4
– General Background On The Volkswagen Settlement	5
– Michigan’s Beneficiary Mitigation Plan	6
– Recommendations.....	7
– Case Studies	9
2. Establish State Goals For EV Fleet Procurement	12
– Summary.....	12
– Specific Actions	12
– Electrifying The State Of Michigan’s Fleet	12
– Michigan’s Fleet And The State Fleet Plan	13
– Fleet Management And Procurement Process In Michigan	14
– State Fleet Management.....	14
– Third-Party Fleet Management.....	15
– EV Fleet Procurement Considerations	15
– Recommendations.....	16
– Case Studies	17
Citations.....	20

Executive Summary

The automotive industry is undergoing a fundamental shift toward an advanced mobility future characterized by automated, connected, and shared vehicles – a future that will be made possible by the electrification of transportation. Today the auto sector is a \$3 trillion industry; the future advanced mobility industry has the potential to be more than three times larger. Michigan is home to 96 of the top 100 automotive suppliers in North America, 76% of investments in U.S. auto research and development, 18 original equipment manufacturers, and 11% of North American vehicle production. As a result, the transition to an advanced mobility future provides significant new economic opportunities for Michigan while simultaneously threatening Michigan's position as the country's mobility leader. To unlock the economic potential of the advanced mobility industry and to maintain Michigan's mobility leadership, Michigan must lead not only on automated, connected, and shared vehicles, but also on vehicle electrification.

In 2018, 2 million electric vehicles were sold globally; sales of electric vehicles are projected to grow to 10 million by 2025, 18 million by 2030, and 56 million by 2040. Michigan's leading automakers have announced plans for scores of new electric vehicle models over the next five years, and tens of billions of dollars in investments. Such a transformation of the mobility landscape will reduce harmful emissions from fossil-fuels and fundamentally transform Michigan's economy, our electric and transportation systems, and the way people live and move. Michigan has an undeniable opportunity to harness this transition and position the state as the global leader in the advanced mobility future. The Whitmer Administration should seize this opportunity and take executive actions to support electric vehicles. This document provides specific recommended actions to lay the foundation for an advanced mobility future in Michigan.

Recommendations

1. Leverage the VW Settlement Funds for Vehicle Electrification

Michigan, through the Volkswagen settlement funds, has an unprecedented opportunity to reduce NOx and carbon emissions, and position the state for a broadscale transition to electric vehicles and advanced mobility technologies. Leveraged correctly, such funds can serve as the foundation and catalyst for broader adoption of electrified transportation and advanced mobility solutions, leading to increased long-term emissions reductions and economic development.

The Governor should direct the Department of Environment, Great Lakes, and Energy to revise Michigan's Beneficiary Mitigation Plan to do the following:

- Require that all (100%) future Volkswagen settlement fund disbursements be directed to electric vehicles or electric vehicle charging infrastructure.
- Include vehicle electrification and Governor Whitmer's Directive 12 as an explicit priority.
- Prioritize near-term allocations for classes of vehicles with available electric models, such as local freight vehicles, shuttle buses, transit buses, and school buses.
- Maintain the maximum investment of 15% in electric vehicle charging infrastructure.
- Evaluate the Beneficiary Mitigation Plan funding priorities no less than annually to account for increased electric vehicle model availability and price declines.

2. Electrifying the State of Michigan's Fleet

The Whitmer Administration should use its purchasing power to lead by example and catalyze investments and uptake of electric vehicles and related infrastructure – creating the foundation for other advanced mobility solutions – by setting an electric vehicle procurement target for the state fleet and investing in other related infrastructure upgrades at state facilities. The State has slightly more than 13,500 vehicles on the road across

its various agencies. Comparatively, there were only 18,000 electric vehicles on Michigan's roads as of 2018. In this context, a commitment from the State could have significant implications for advancing the electric vehicle and automated/connected/shared vehicle market in Michigan.

The Governor should direct the appropriate departments to promote the use of electric vehicles in the state's fleet, including the following:

- Procure electric vehicles for at least 50% of all newly purchased or leased light-duty vehicles in state fleets by 2023 as reasonable and practicable.
- Procure electric vehicles for 100% of all newly purchased or leased light-duty vehicles in state fleets by 2025 as reasonable and practicable.
- Install electric vehicle charging infrastructure at all state-owned buildings and parking lots by 2023.
- Direct the Department of Technology, Management, and Budget, with guidance from the Department of Environment, Great Lakes, and Energy and Department of Transportation, to develop an EV fleet plan for transitioning to 100% electric vehicles in the state fleet by a specific date. The plan should be updated annually based on vehicle availability, price declines, and lessons learned.

Introduction: Michigan's Advanced Mobility Opportunity

The automated, connected, and shared future for mobility – in Michigan and across the globe – will be built on an electrified platform. Today the transportation sector is a \$3 trillion industry, but the advanced mobility industry of the future will be potentially three times as large. This future growth can only be unlocked through widescale vehicle electrification.¹ As a prerequisite to an advanced mobility future, the vehicle electrification market represents an exciting economic opportunity in its own right. In 2018, 2 million electric vehicles (EVs) were sold globally, with that number projected to grow to 10 million by 2025, 18 million by 2030, and 56 million by 2040.² A recent poll indicates that 44% of voters plan to choose an electric car when they replace their current car in the next five years.³ Based on total cost of ownership, many EVs are cost competitive with internal combustion engine (ICE) vehicles today and as battery pack prices continue to fall, EVs are anticipated to reach upfront price parity with ICE vehicles by the mid-2020s.⁴

The expected growth in EV market penetration creates an immense market opportunity for Michigan's economy. According to a 2018 report, there are already more than 25,000 jobs in the advanced transportation sector, with nearly 6,800 jobs working on EVs, more than 11,000 in hybrid EVs, and more than 5,000 in plug-in hybrid EVs.⁵ According to the National Renewable Energy Lab, growth in EVs could lead to 100,000 new jobs across the country.⁶

Michigan is well positioned to capture the economic benefits of the transition to EVs. Not only is the state the center of the U.S. automotive industry and a hub for energy storage research and manufacturing, but Michigan is also home to a robust and growing advanced energy industry, which complements and is integrated with advanced mobility. Michigan is home to 96 of the top 100 automotive suppliers in North America, 76% of investments in U.S. auto research and development, 21 original equipment manufacturers (OEMs), and 11% of North American vehicle production.⁷ Recent initiatives like the American Center for Mobility and Planet M, which support the mobility industry through collaboration, research, and marketing, are being coupled with the state's inherent research and development assets and engineering expertise to meet the mobility needs of the 21st century.

The transition to EVs is also critical to accomplishing Governor Whitmer's stated goals around climate change. The Whitmer Administration signed onto the U.S. Climate Alliance in 2019, which includes as one of its priorities, deploying clean transportation and facilitating collaboration between states "to accelerate the deployment of zero-emission vehicles as fast as possible."⁸ On average over a vehicle's life cycle, an EV (plug-in electric or fully electric) emits far fewer greenhouse gas emissions than the average ICE.⁹ Today, in Michigan, the annual carbon emissions from an average ICE are more than double the emissions from an EV.¹⁰ In addition, as Michigan's electricity grid transitions away from fossil fuel generation and toward renewable energy, the environmental benefits of vehicle electrification will also increase.

Potential Administrative Actions

Over the last two years, the Michigan Energy Innovation Business Council (Michigan EIBC) and the Institute for Energy Innovation (IEI) have hosted nine stakeholder convenings on EVs. Each convening focused on a specific aspect of EV deployment including: (1) utility pilot programs and the Volkswagen (VW) settlement; (2) customer education and awareness; (3) long-dwell and DC fast charging infrastructure; (4) fleet electrification; (5) rate design; (6) electric school buses and multi-unit dwellings; (7) potential state administrative actions; (8) low-moderate income issues; and (9) private sector solutions to DCFC deployment and vehicle availability. Each meeting included presentations from experts and in-depth discussion among participants, which enabled a greater understanding of the challenges, opportunities, potential solutions, and areas for future focus.

In May 2019, at the seventh convening, Michigan EIBC and IEI gathered input from stakeholders to identify opportunities for the state administration to increase transportation electrification in Michigan, recognizing the Whitmer Administration's priorities to support advanced mobility and achieve environmental goals. The convening yielded the following areas for potential actions:

- 1. Leveraging the VW settlement funds for vehicle electrification;**
- 2. Increasing coordination across the administration;**
- 3. Setting state fleet procurement goals for EVs; and**
- 4. Developing resources to support Michigan's communities to become "EV ready."**

Based on initial meetings and phone conversations with officials in the Governor's Office and at the Department of Environment, Great Lakes, and Energy (EGLE), it is our understanding that the Whitmer Administration is already developing a plan to increase coordination across the administration (#2) and is developing resources to provide additional education for interested communities (#4). This report details recommendations and supporting documentation to enable the administration to leverage the VW settlement funds toward vehicle electrification (#1) and to set ambitious, achievable state fleet procurement goals for EVs (#3).

For the purposes of this document, "electric vehicles" will include all-electric models as well as plug-in hybrid electric models, though any official definition should reference existing Michigan statute.¹

1. Leveraging VW Settlement Funds To Increase Vehicle Electrification

Summary

The Administration should leverage Michigan's allocation of VW settlement funds to lay the foundation for Michigan's leadership in the advanced mobility future and achieve Governor Whitmer's climate, energy, and transportation goals by revising Michigan's Beneficiary Mitigation Plan (BMP) to invest exclusively in EVs.

General Recommendations

The Governor should direct EGLE to revise Michigan's BMP to include the following:

- Require that all (100%) future VW settlement fund disbursements be directed to EVs or EV charging infrastructure.
- Include vehicle electrification and Governor Whitmer's Directive 12 as an explicit priority.
- Prioritize near-term allocations for classes of vehicles with available electric models, such as local freight vehicles, shuttle buses, transit buses, and school buses.
- Maintain the maximum investment of 15% in EV charging infrastructure.
- Evaluate the BMP funding priorities no less than annually to account for increased EV model availability and price declines.

Aligning The VW Settlement Funds With Governor Whitmer's Priorities

Michigan, through the VW settlement funds, has an unprecedented opportunity to reduce NOx and carbon emissions, and position the state for a broadscale transition to EVs and other advanced mobility solutions. Leveraged correctly, such funds can serve as the foundation and catalyst for broader adoption of electrified transportation and advanced mobility solutions, leading to increased long-term emissions reductions and economic development.

In October 2018, under the Snyder Administration, Michigan filed a BMP for spending its allocated VW settlement funds. In August 2019, the BMP was updated with minor changes.¹¹ As currently written, the plan provides modest support for EV options, but is likely to focus investment in new diesel vehicles. This strategy, which may be driven by upfront cost and short-term emissions considerations, could keep internal combustion vehicles on the road longer, continuing emissions of NOx and other greenhouse gases. On average over a vehicle's life cycle, an EV (plug-in electric or fully electric) emits far fewer greenhouse gas

¹ Electric vehicles are defined in Public Act 300 of 1949. Available: <http://www.legislature.mi.gov/documents/mcl/pdf/mcl-act-300-of-1949.pdf>.

emissions than the average ICE.¹² As such, the current plan fails to position Michigan as an advanced mobility leader. As the world moves toward an advanced mobility future that will be based on electrified transportation, any investment in lagging technologies like diesel are short-sighted in achieving emissions reductions and remaining competitive. In addition, the VW settlement funds should be reevaluated in light of the Governor's commitments made in February 2019 under Executive Directive 12 and the U.S. Climate Alliance priorities.

With this context, the Governor should redirect the funds to support vehicle electrification more robustly by directing EGLE to update the BMP. The BMP should invest more heavily in EVs and related infrastructure as a part of a holistic approach from the Governor's administration to catalyze Michigan's advanced mobility industry.

Luckily, Michigan is not alone. Other states provide useful examples for how to best leverage the VW settlement funding toward vehicle electrification (see Case Studies below). For example, Colorado recently updated its plan to align with a new gubernatorial administration's priorities, resulting in a transition to support only for all-EV technologies. New Jersey and Washington, in addition to evaluating based on NOx emission reductions, explicitly included reducing greenhouse gas emissions as a part of the justification for spending decisions. Hawaii and other states limited the fund allocations to classes of vehicles that are most easily replaced by all-electric alternatives.

General Background On The Volkswagen Settlement

In 2015, VW admitted that it had installed devices designed to deceive federal and state regulators by cheating emissions tests. As a result of the ensuing settlement, there are three major categories of action taking place: 1) the direct purchasing or retrofitting of vehicles from customers; 2) the allocation of \$2 billion for a national zero emission vehicle plan to develop EV charging infrastructure; and 3) the distribution of an Environmental Mitigation Trust to states proportionately based on involved vehicles registered in each state.¹³ Through the Trust, more than \$2.8 billion will be disbursed to states to reduce emissions, including approximately \$65 million to Michigan.

To receive the funds, states were required to submit BMPs to the trustee, outlining their intended uses of the funds. **There is broad flexibility in how states can use the funds and BMPs can be changed at any time by simply submitting a revised plan to the trustee.** The primary goal of the funds is to reduce NOx emissions, but other environmental, economic, or societal goals can be considered.

There are 10 eligible mitigation actions that can be the focus of funding under the program including categories of vehicles (1-4 and 6-8), power to ships while in berth or port (5), EV charging infrastructure (9), and leveraging of other funding through the Diesel Emission Reduction Act (10):

1. Class 8 Local Freight Trucks and Port Drayage Trucks (Eligible Large Trucks)
2. Class 4-8 School Bus, Shuttle Bus, or Transit Bus
3. Freight Switchers
4. Ferries and Tugs
5. Ocean Going Vessels (OGV) Shorepower
6. Class 4-7 Local Freight Trucks (Medium Trucks)
7. Airport Ground Support Equipment
8. Forklifts and Port Cargo Handling Equipment
9. Light Duty Zero Emission Vehicle Supply Equipment
10. Diesel Emission Reduction Act (DERA) Option

In most eligible mitigation action categories, vehicles can be replaced with the following technologies:

- diesel, including biodiesel and renewable diesel;
- natural gas, including compressed natural gas (CNG), liquefied natural gas (LNG), and renewable natural gas (RNG);
- propane;
- hybrid (a vehicle that combines an internal combustion engine with a battery and electric motor); or
- all-electric (powered exclusively by electricity provided by a battery, fuel cell, or the grid).

A vehicle can be replaced with a new vehicle that employs one of the above technologies or can be “repowered” with one of the above technologies. A repowered vehicle is one where the diesel engine is replaced with an engine using one of the technologies above. A retrofit of an existing diesel engine, through an emissions control device or another method, is not allowed under the eligible mitigation actions, except under the DERA option. Notably, funds cannot be used for light-duty cars or trucks.

In addition to these requirements, across all of the categories, up to 100% of the cost of an eligible mitigation action may be covered for government-owned vehicles or equipment and up to 75% of the cost of an eligible mitigation action may be covered for non-government-owned vehicles. States may set other percentages within these guideposts. Finally, beneficiaries may use up to 15% of their allocated Trust funds for administrative expenditures associated with implementing the eligible mitigation actions and up to 15% for the acquisition, installation, operation, and maintenance of EV charging infrastructure.

Michigan’s Beneficiary Mitigation Plan

In October 2018, the Michigan Department of Environmental Quality (DEQ) released a BMP outlining how Michigan’s VW funds will be administered.¹⁴ In August 2019, the BMP was updated with minor changes. Each state or territory seeking to claim funds under the settlement must file a BMP, but that plan may be adjusted over time by submitting the changes to the Environmental Mitigation Trust. In the plan, Michigan was required to provide overall goals for the use of the settlement funds, the categories of eligible mitigation actions the state anticipates will be appropriate to achieve the stated goals and the preliminary assessment of the percentages of funds anticipated to be used for each type of eligible mitigation action, a description of how the plan will consider air quality impacts on disproportionately polluted areas, evaluation of emission benefits to be realized under the program, and a process for gathering stakeholder input.

The stated goal of Michigan’s BMP is “to reduce NOx emissions and maximize air quality benefits statewide with an emphasis on priority areas..., reduce diesel emissions from school buses statewide, [and] increase adoption of zero emission vehicles (ZEV) and alternate fuel vehicles and equipment.”¹⁵ The DERA Option is not included in Michigan’s current BMP, which means that diesel vehicle retrofits are not eligible. Michigan’s current BMP provides an overview of areas with a disproportionate burden from NOx emissions, but does not include details on how to address emissions in such areas. In addition, the plan does not consider other greenhouse gas emissions.

The current BMP proposes the following actions and anticipated allocations (with 8.5% set aside for administrative costs):

- 30% of allocation: Local freight vehicles, shuttle buses, and transit buses (Class 4-8) receive 30% of the allocation or approximately \$19 million. Vehicles in this category can be replaced with new diesel, alternative fuel, or all-electric vehicles. Repowering is not funded. A higher percentage of all-electric project costs are eligible for funding relative to new diesel vehicles and new alternative fuel vehicles. This is true for government-owned and non-government-owned vehicles.
- 21.5% of allocation: School buses (Class 4-8) receive approximately 21.5% of the allocation or approximately \$13 million. Diesel school buses in this category can be replaced with new diesel buses, new alternative fuel buses, or new all-electric vehicles. Repowering is not funded. A higher percentage of all-electric project costs are eligible for funding relative to new diesel buses and new alternative fuel buses. This is true for government-owned and non-government-owned vehicles.
- 25% of allocation: Freight switchers, ferries and tugs, shore power, port cargo handling equipment, and airport ground support equipment receive 25% of the allocation or approximately \$16 million. Freight switchers, ferries and tugs, shore power, port cargo handling equipment, and airport ground support equipment in this category can be replaced or repowered with new diesel, alternative fuel, or all-electric vehicles. A higher percentage of all-electric project costs are eligible for funding relative to new or repowered diesel vehicles and new or repowered alternative fuel vehicles. This is true for government-owned and non-government-owned vehicles.

- 15% of allocation: Light-duty EV supply equipment, including EV charging and fueling infrastructure, receives 15% of the allocation or approximately \$10 million. In certain cases, charging infrastructure costs associated with a specific vehicle receiving funding in another category may qualify for funding. Such infrastructure costs would not be included under the 15% EV supply equipment allocation.

The current BMP proposes a phased implementation as outlined below:

- 2018-2021
 - School buses
 - Light-duty ZEV supply equipment
- 2019 – 2022
 - Class 4-8: Local freight vehicles
 - Class 4-8: Shuttle buses, transit buses
 - Freight switchers, ferries and tugs, shore power, port cargo handling equipment, and airport ground support equipment
 - Light-duty ZEV supply equipment
- 2023-2025
 - Class 4-8: Local freight vehicles
 - Class 4-8: Shuttle Buses, Transit Buses,
 - Freight switchers, ferries and tugs, shore power, port cargo handling equipment, and airport ground support equipment
 - Light-duty ZEV supply equipment
- 2025-2027
 - Remaining funds spent based on best use factoring in previous rounds of funding

In September 2019, Michigan announced its first round of funding, supporting 17 new electric school buses with \$4.2 million.¹⁶ A total of \$13 million is expected for electric school buses under the current BMP. This phased implementation provides significant opportunity for additional changes to Michigan's BMP to better align it with Governor Whitmer's policy goals without risking ongoing or near-term investments.

All states, Puerto Rico, and the District of Columbia had the ability to file a BMP to claim funds from the Environmental Mitigation Trust. Within the parameters outlined above, states were afforded significant flexibility, and decided to provide varying degrees of support for EVs.

Some states plan to offer funding for all 10 eligible mitigation action categories, while others are limiting the scope to one or two categories. Some states are leveraging the DERA Option to support retrofits for existing diesel vehicles, while others – like Michigan – are not using that option. Some states are only funding government-owned vehicles, while others are supporting a mix of government-owned and non-government-owned vehicles.

Similarly, some states are spending significant resources on new diesel or new alternative fuel technologies at the expense of all-electric options and other states are more robustly supporting EVs. Certain states, like Hawaii and Washington, plan to spend all of their allocation on EV investments. Others, like New Jersey, are including significant incentives to choose EVs relative to new diesel or new alternative fuel vehicles. Approximately 26 percent of all funding in the BMPs are directed toward EVs or EV charging infrastructure and 35 states, including Michigan, committed to using the maximum funding possible for EV charging infrastructure (15%).¹⁷

As states deploy their first rounds of funding, Michigan has the opportunity to learn from those experiences. Such lessons can help identify ways to leverage the VW settlement funds to maximize emissions reductions and position Michigan as an advanced mobility leader. Examples from other states are included below.

Specific Recommendations

Revising Michigan's BMP offers important opportunities to send a signal to the EV market in Michigan, while contributing to a holistic approach to reduce harmful emissions.

A decision to transition to a greater focus on EVs will require an evaluation of the overall goals of Michigan's BMP, how to evaluate environmental and cost considerations, and vehicle model availability. Revising the BMP to meet such goals will require a reconsideration of the eligible mitigation categories to fund, the fuel or vehicle types that will be eligible, the structure of the incentives provided, the spending timeline, and the overall emissions and cost implications of each of these categories.

With these considerations in mind, the state should consider the following recommendations:

Direct EGLE to reevaluate the VW settlement with vehicle electrification and Governor Whitmer's Directive 12 as an explicit priority.

In addition to prioritizing the reduction of NOx emissions, the VW settlement dollars should be evaluated based on reducing greenhouse gas emissions and vehicle electrification as part of the advanced mobility future. With each of these factors in mind, the BMP should consider the economy-wide and long-term impact of the VW settlement funds on the Governor's priorities, rather than looking at short-term emissions impacts of the VW settlement funds in isolation of other public and private efforts. For example, while new diesel or alternative fuel vehicles could result in cost-effective emissions reductions in the short term, such measures actually encourage the continued use of technologies that pollute over the course of the vehicle's lifetime and are counter to the automated, connected, shared, and electrified mobility future. With the impending ubiquity of EVs, an investment in diesel technology today is likely to become a stranded investment. Similarly, funding should evaluate a vehicle on its total cost of ownership, not simply based on upfront costs.

Require that all future Volkswagen settlement fund disbursements be directed to EVs or EV charging infrastructure.

Michigan should prioritize use of 100% of future VW settlement funds to EVs and related infrastructure as a way to send the appropriate signal to the broader market that Michigan is prepared to lead on advanced mobility. Rather than including "alternative fuel" vehicles or new diesel vehicles, the BMP should focus exclusively on electric models. Since the vehicle incentives are based on the upfront cost of a vehicle and not the total cost of ownership, EVs may be overlooked in a BMP that includes other fuel options.

Prioritize allocation for classes of vehicles with available electric models, such as local freight vehicles, shuttle buses, transit buses, and school buses.

The revision of the BMP should consider limiting eligible mitigation action categories based on vehicle availability and practicality. Conversations with industry representatives and experiences from other states indicate that trucks, shuttle buses, transit buses, and school buses have sufficient vehicles available in the short term. The plan can be revised at any time when vehicle models become available in other categories.

Maintain the maximum investment of 15% in EV charging infrastructure.

Investing in EV charging equipment leverages the funds to support the broader deployment of EVs beyond those directly funded by Michigan through the VW settlement funds. This feature of the original BMP should be retained as it is aligned with a revised BMP focused on the long-term, economy-wide impact of the funds on reducing NOx and greenhouse gases as well as driving the EV market forward and laying the foundation for an advanced mobility future.

Evaluate the BMP funding priorities no less than annually.

The EV industry is changing rapidly with precipitous cost declines and increased vehicle model availability. EGLE should evaluate the spending plan regularly to be sure that it accurately reflects the best information available in the vehicle electrification market.

CASE STUDY – Colorado

Key Takeaways:

- Revised original BMP to focus funding on EVs via executive action
- Limited eligible mitigation actions based on what classes of vehicles are most suited for vehicle electrification

In January 2019, Colorado Governor Polis issued an executive order to “focus all remaining eligible investments on supporting electrification of transportation, including transit buses, school buses, and trucks.”¹⁸ As a result, Colorado’s BMP has been revised¹⁹ and in April 2019 — in the first round of grants since the executive order — \$14 million was granted to regional transit agencies in the state for electric public transit options. It is notable that as part of the new BMP, for certain mitigation actions, incentives will be provided to cover 110% of the incremental cost of purchasing a new EV compared to the cost of purchasing a new diesel vehicle.

Original Beneficiary Mitigation Plan:²⁰

- Allocation: \$68.7 million
- Overall goal: Achieve the maximum air quality benefit for the state of Colorado
- Eligible mitigation action allocations:
 - 15% allocated to EV charging infrastructure
 - 26% (\$18 million) allocated to replace medium- and heavy-duty trucks, school and shuttle buses, and railroad freight switchers with alternative fuels or EVs; older medium-duty diesel vehicles could be replaced with new diesel vehicles
 - 26% (\$18 million) to replace school and shuttle buses with diesel, alternative fuel, or all-EVs
 - 7% (\$5 million) for DERA option including emission control retrofits
 - 17% (\$11.7 million) retained for future use to be disbursed based on best practices

Revised Beneficiary Mitigation Plan (released 2019)²¹

- Allocation: \$68.7 million
- Overall goal: To achieve the maximum long-term air quality benefit for the state of Colorado by stimulating demand for new classes and types of zero emission vehicles where consistent with the mitigation actions outlined in the consent decree
- Additional goal: Incentivize transformational projects that promote a broader shift in fleet technology and operations, thereby yielding longer-term emissions benefits beyond the projects directly funded by the expenditure of the \$68.7 million state allocation
- Eligible mitigation action allocations:
 - \$21.5 million to replace medium- and heavy-duty vehicles with zero emission vehicles
 - \$30 million to replace transit buses with new all-electric buses
 - \$10.3 million to install zero emission vehicle supply equipment
 - \$1.5 million to reduce emissions from diesel engines eligible for funding through the DERA option to support the replacement of diesel-powered equipment with new zero emission vehicles and other all-electric non-road engines
 - \$5.4 for administrative costs

CASE STUDY – Hawaii

Key Takeaways:

- 100% of funds are dedicated to EVs
- Only funded certain eligible mitigation actions based on feasibility and practicality of electrification
- Used DERA Option to support vehicle electrification

Beneficiary Mitigation Plan²²

Hawaii chose to invest 100% of the state's funds in supporting vehicle electrification through EV charging infrastructure or replacement with EVs.

- Allocation: \$8,125,000
- Goal: "In addition to fully mitigating the excess lifetime NOx emissions of the VW vehicles subject to the Settlement, the State of Hawaii's overall goal for the funds is to support projects which will aid the State in achieving many of its clean energy goals including supporting the ultimate elimination of Hawaii's dependence on imported fuels in ground transportation."
- Eligible mitigation action allocations:
 - 51% (\$4.15 million) to projects which electrify school buses, shuttle buses, or transit buses
 - 34% (\$2.75 million) to projects eligible under the DERA option
 - 15% (\$1.22 million) to support projects which facilitate the deployment of EV charging infrastructure

CASE STUDY – North Carolina

Key Takeaways:

- Prioritized the early retirement of vehicles, as opposed to vehicles at the end of their useful life to maximize emissions impact
- Prioritized funding based on a geographic breakdown

North Carolina did not prioritize EVs in its BMP.²³ The state did include distinct design choices worth noting, including creating a geographic breakdown of funding, with 68% of the funding going to urban/suburban areas and 32% going to rural areas. The state also established a requirement that any vehicle to be replaced needed to have a remaining useful life of 3 to 5 years to ensure that the vehicle was truly being replaced early.

Beneficiary Mitigation Plan

- Allocation: \$92 million
- Goal: Maximize air quality benefits in North Carolina on a dollar per NOx ton basis
- Eligible mitigation action allocations:
 - 40% school bus replacements (diesel: 25%, propane and natural gas: 10%, all-electric: 5%)
 - 20% transit bus replacements (all technologies)
 - 10% class local freight 4-8 replacements (all technologies)
 - 10% switchers (all technologies)

CASE STUDY – New Jersey

Key Takeaways:

- Cited greenhouse gas reductions in its BMP
- Included a significant incentive for EVs relative to other potential vehicle types

The rationale for the New Jersey BMP²⁴ cited the Governor’s goal of 100% clean energy by 2050 and state commitment to wide-scale EV deployment as well as the impending market transformation and the ability to catalyze the market for clean vehicles. New Jersey’s BMP also evaluated impacts based on greenhouse gas emissions.

While the BMP allows for diesel and alternative fuel vehicle replacements across all categories in addition to EVs, it provides a significant differential between the incentive for all-electric repowering and replacement and other technologies, providing for the maximum incentive for all-electric options.

Beneficiary Mitigation Plan

- Allocation: \$72.2 million
- Goal: Improve ambient air quality by using the Trust allocation to implement projects that reduce NO_x, benefit disproportionately affected communities, and expedite deployment and widespread adoption of zero emission vehicles
- Eligible mitigation action allocations: New Jersey’s plan “anticipates spending its Trust allocation in three, \$24.1 million phases. For each phase, NJDEP anticipates primarily funding pilot electrification projects, including the replacement of heavy-duty vehicles/engines such as buses, trucks, and non-road equipment in urban areas disproportionately impacted by diesel emissions, as well as EV charging/fueling infrastructure installation in strategic locations across the state.”²⁵
- Notable features:
 - Governmental projects can receive up to 100% of costs
 - Non-government-owned projects can receive:
 - Up to 40% of the cost to repower an engine with a new diesel or alternate fueled engine;
 - Up to 25% of the cost to purchase a new diesel or alternate fueled vehicle (except in the case of port drayage trucks, which is up to 50%);
 - Up to 75% of the cost to repower an engine with an all-electric engine; or
 - Up to 75% of the cost to purchase a new EV

CASE STUDY – Washington

Key takeaways:

- Prioritized 100% spending on EVs
- Provided “up to” percentages, allowing for flexibility in ultimate allocations

Washington state has already spent \$13.3 million for zero emission electric school buses and has committed to 100% spending on EVs, in part due to the state’s greenhouse gas reduction commitments. The BMP included evaluation of greenhouse gas emissions and black carbon. The plan also prioritized the accelerated adoption of EVs and electrification broadly as well as the transition of the state’s fleet to the “cleanest engines.”

Beneficiary Mitigation Plan²⁶

- Allocation: \$112.7 million
- Goal: “to reduce nitrogen oxides (NOx) emissions in areas where the 2.0 and 3.0 liter diesel Volkswagen vehicles were, are, or will be operated. Washington’s mitigation plan is designed to fully mitigate the total, lifetime excess emissions from the affected vehicles.”²⁷
- Eligible mitigation action allocation:
 - ≤45% for on-road heavy duty vehicles. Priority: electrification of public fleets, especially transit buses
 - ≤5% for Non-road equipment. Priority: electrification
 - ≤5% for Locomotives. Priority: publicly owned locomotives
 - ≤45% for Marine vessels. Priority: electrification of public vessels, especially ferry vessels
 - Up to 15% for EV charging infrastructure
 - ≤5% for DERA option

2. Establish State Goals For EV Fleet Procurement

Summary

The State of Michigan should establish EV procurement goals for state-owned and state-leased fleet vehicles including a broad, long-term plan as well as short-term targets to electrify a practical subset of the state fleet.

General Recommendations

The Governor should direct the appropriate departments to promote the use of EVs in the state’s fleet, including the following:

- Procure EVs for at least 50% of all newly purchased or leased light-duty vehicles in state fleets by 2023 as reasonable and practicable.
- Procure EVs for 100% of all newly purchased or leased light-duty vehicles in state fleets by 2025 as reasonable and practicable.
- Install EV charging infrastructure at all state-owned buildings and parking lots by 2023.
- Direct the Department of Technology, Management and Budget (DTMB), with guidance from EGLE and the Department of Transportation (MDOT), to develop an EV fleet plan for transitioning to 100% EVs in the state fleet by a specific date. The plan should be updated annually based on vehicle availability, price declines, and lessons learned.

Electrifying the State of Michigan’s Fleet

The Whitmer Administration should use its purchasing power to catalyze investments in and uptake of EVs and related infrastructure by setting an EV fleet procurement target for the state fleet and investing in other related infrastructure upgrades at state facilities. The State of Michigan has slightly more than 13,500 vehicles on the road across its various agencies.²⁸ Comparatively, there were only 18,000 EVs on Michigan’s roads as of 2018.²⁹ In this context, a commitment from the state could have a significant impact on the advancement of the EV market in Michigan.

A transition to EVs built by Michigan OEMs for the state fleet, particularly as costs for EVs decline, can be cost-effective today. If the state evaluates these costs based on a total cost of ownership framework – which evaluates a vehicle based on upfront cost as well as fuel and maintenance costs — transitioning to EVs could be budget neutral and – in some cases – save money. In instances where it is possible to capture the existing federal tax credit or other incentives for EVs, the case for vehicle electrification is even more compelling. In 2018, operations and maintenance costs were \$4.15 million for Michigan’s fleet and the fleet accounted for 6,811,410 gallons of gas consumption.³⁰ According to a best practices guide, Fleets for the Future, the stability of electricity prices combined with the high efficiency of electric motors, result in “fuel” costs for EVs that are typically 75% less than retail gasoline and diesel.³¹

Michigan’s Fleet and The State Fleet Plan

Michigan’s fleet – excluding MDOT’s vehicles – consists of 13,514 vehicles. Of those, 4,662 are owned by DTMB and 8,852 are leased. From 2018 to 2019 the state fleet increased in size by 254 vehicles as a result of needs from various departments.³² According to the contract between DTMB-Vehicle and Travel Services (DTMB-VTS) and third-party fleet operator Wheels, Inc., state vehicles are operated by 17 agencies along with additional users such as the legislature, judiciary, and higher education institutions.³³

Vehicle Class	Group	Total
ON Road	Automobile	3,797
	Bus	17
	Cycles	25
	Light Vehicles	8
	Pickups	1,655
	Sport Utility	1,423
	Straight Trucks	288
	Truck Tractors	27
	Van	1,283
ON Road Totals		8,523
OFF Road	Grounds	19
	Light Vehicles	206
	Material Handling	28
	Public Works	11
	Tracked	7
	Wheeled	15
OFF Road Total		286
Non-Self Propelled	Truck Tractors	3
	Truck Tractors	40
Non-Self Propelled Total		43
Lease Total		8,852
Agency-Owned Total		4,662
Grand Total		13,514

Table 1. Vehicles in Michigan’s state fleet³⁴

State Fleet Plan

DTMB is required to submit a fleet plan to the legislature each year (typically as a provision in the state budget), reporting on the status of the state fleet including the following:

- the number of vehicles assigned to, or authorized for use by, state departments and agencies;
- efforts to reduce travel expenditures;
- the number of cars in the motor vehicle fleet;
- the number of miles driven by fleet vehicles;
- the number of gallons of fuel consumed by fleet vehicles; and
- fleet garage operations.

The plan is not binding and can be adjusted throughout the year based on “needs and cost savings to achieve the maximum value and efficiency.”³⁵ MDOT also leases some passenger vehicles and trucks through DTMB-VTS, but maintains its own fleet which is not included in the State Fleet Plan.

Fleet Management And Procurement Process In Michigan

Fleet procurement and fleet management is run through DTMB-VTS in the Office of Support Services in DTMB. DTMB-VTS manages the purchase of fleet vehicles and the leasing of fleet vehicles centrally for all state vehicles except those owned or leased through MDOT. DTMB-VTS charges the departments for those vehicles and manages the purchasing of the vehicles. In addition to vehicles permanently assigned to a department, DTMB-VTS also manages the state’s motor pool operations, which is comprised of 328 shared vehicles. Vehicles needed for less than 14 days are maintained at motor pools in Detroit, Lansing, Escanaba, Flint, Grand Rapids, Traverse City, and Dimondale. In addition to fleet service activities, DTMB-VTS makes sure that the fleet complies with certain regulations and rules as well as executive directives.³⁶ A notable and relevant example is the Federal Energy Policy Act, which requires that 75% of the state’s non-law enforcement, light-duty vehicle fleet is comprised of flex fuel vehicles and that alternative fuels are utilized when they are reasonably available and reasonably priced. While the law references alternative fuel vehicles, compliance can also be met via an “alternative compliance” process for EVs as follows:

“Under the Alternative Compliance method, covered state and alternative fuel provider fleets may obtain a waiver from the alternative fuel vehicle (AFV)-acquisition requirements of Standard Compliance by submitting and then implementing a plan to reduce petroleum consumption.

Alternative Compliance may be a good option for fleets that:

- *Have a significant number of medium- or heavy-duty vehicles capable of using biodiesel in excess of the 50% cap associated with Standard Compliance or capable of using other alternative fuels*
- *Wish to combine hybrid electric vehicles and alternative fuel use*
- *Are subject to state or local requirements or policies calling for petroleum reduction, or reductions in carbon footprint or greenhouse gas emissions.*

Fleets opting into Alternative Compliance must provide a sufficient level of data and information to support their compliance claims, particularly information on fuel use.”³⁷

State Fleet Management

Each Department has a “fleet coordinator” who manages and tracks the use of allocated vehicles. The fleet coordinator may not have this official title – it may be simply one of many roles or responsibilities of an individual state employee. Fleet coordinators do not make any procurement decisions. Based on conversations with state employees, usage data is currently gathered manually by fleet coordinators, not through data collection devices. Monthly, the fleet coordinator provides these data to DTMB-VTS. When vehicle needs arise, the fleet coordinator, on behalf of the given department, can file a form to DTMB-VTS to request a vehicle or vehicles. Quarterly, according to the State Fleet Plan, DTMB-VTS meets with fleet coordinators and provides a report on “high and low mileage vehicles, vehicle order status, motor pool usage, accidents, personal mileage reimbursement, and maintenance reports.”³⁸

Third-Party Fleet Management

To fulfill all of the functions associated with procuring and managing the State of Michigan's fleet, DTMB-VTS contracts with a third-party fleet manager, Wheels, Inc. The current contract with Wheels, Inc. expires on September 30, 2021. Along with Wheels, Inc., DTMB-VTS works with departments to evaluate needs for each vehicle and what models and management structures are needed for a vehicle. Such a process may be limited based on user information, vehicle availability, and the knowledge of the fleet manager. For example, the third-party contractor is required by contract to "provide an annual selection process, focusing on matching available vehicle models to specific vehicle functional/application needs provided by the State. The Contractor must also provide written recommendations to the State on which models best meet each functional requirement within 30 days from the date that the State provides the functional requirements."³⁹ However, there is not reference to or contemplation of EVs in the contract.

According to the DTMB's contract with Wheels, Inc., the company "provides open-ended lease financing for vehicles acquired by the State, vehicle specification services, vehicle price negotiation, vehicle remarketing services, access to a network of commercial maintenance, repair, and upfitting service providers, maintenance and repair authorization services, accident management and subrogation services, vendor payment services, and management analysis and reporting services."⁴⁰ Also outlined in the contract are certain parameters around ordering, for example, "the Contractor may select the ordering dealers; however, all new vehicle deliveries must be credited to Michigan dealers."⁴¹

Changes to the contract are allowed mid-contract, but require a submitted request and may require an additional fee. Increasing EV's in the state fleet may require such a request.

EV Fleet Procurement Considerations

The decision to develop and commit to an EV procurement goal is complicated and different goals can be appropriate in different contexts. Below are a few key considerations for establishing a goal based on best practices across states.

Data

It is important to understand what data the state already has and what additional data the state needs. Michigan gathers vehicle travel data, age of vehicles, and a variety of other metrics via the State Fleet Plan and through DTMB-VTS.

New monitoring devices can be installed in vehicles to gather these data more effectively and obtain other data necessary for EV fleet procurement planning purposes. In Colorado and in North Carolina, to gather these data, the relevant departments worked with Sawatch Labs,² a recognized leader in the industry. Both states also conducted an updated fleet assessment.

Dates and timeframes

Michigan should consider the end date for a fleet procurement goal based on a number of factors including vehicle availability, age of the existing fleet, cost, and fleet needs. A majority of states with fleet electrification goals have chosen 2020, 2025, or 2030. Michigan could also set intermediate goals tied to a certain vehicle type or to a smaller percentage of the overall fleet.

Vehicle classes

A specific targeted goal that is achievable based on vehicle class can often be preferred to an overarching goal that cannot be achieved. Goals in other states primarily require the replacement or purchase of light-duty passenger vehicles and light-duty trucks. Only a handful of states include medium and heavy-duty vehicles (i.e., buses) in their goals. Certain vehicles may have more electric models available, have lower costs, or be more applicable to the eventual end use.

² Sawatch Labs provides a hardware solution for collecting fleet data and an analytics platform to support fleet electrification. More information available: <https://sawatchgroup.com/>

Vehicle model availability

Vehicle model availability is a key factor in transitioning to an electric fleet. Availability is determined both by existing models throughout the entire vehicle market as well as actual supply in a given region. Vehicle model availability varies based on vehicle class and location. According to Atlas Public Policy and Plug-in America's PlugStar, there are 41 EV models available in the U.S., with 26 plug-in hybrid EVs and 15 fully-electric models.⁴² In Michigan, there are 24 vehicle models currently available, including 17 plug-in hybrid and 7 fully-electric models.⁴³ These include models from Michigan automakers General Motors, Ford, and Fiat-Chrysler. Outside of the light-duty category, model options are more limited but are growing.

In addition to the currently available vehicles, more EV models are available each year, with major automakers announcing public plans for wide-scale electrification. For example, Ford has committed to 24 new plug-in hybrids and 16 new fully EV models by 2022.⁴⁴ General Motors has committed to 23 new EVs by 2023.⁴⁵ Fiat-Chrysler announced that by 2022 it will launch at least 25 plug-in hybrids and at least 8 fully electric models across its Jeep, Maserati, and Alfa Romeo brands.⁴⁶

Goal types

Many states elect to set quantitative goals based on a percentage of the fleet, which is the most concrete way to move forward. This includes specific percentages ranging from 10% in Iowa to 75% in North Carolina, New Mexico, West Virginia.

Other states choose to set parameters for the procurement process by prioritizing certain technologies or requiring the purchase of EVs when the purchase decision meets certain characteristics. For example, an agency may be required to pursue EVs when the total cost of ownership is less than or comparable to an internal combustion engine.

Qualitative and quantitative goals can also be applied in tandem. It is generally considered a best practice to set a quantitative goal to ensure implementation is effective and measurable, while adding well-defined qualitative parameters to make sure the goal is reasonable and practicable.

Reasonable and Practicable

States across the country have added exceptions to state procurement goals based on reasonability and practicability to help make fleet electrification goals achievable. An exception for "reasonability" is based on whether a vehicle is reasonably available when factoring in sufficient supply of vehicles, delivery systems, and potential limitations of the current procurement process. "Practicability" is focused on the actual conditions and uses of the state fleet itself. Exceptions for practicability could include cost differences between EVs and traditional vehicle options, existence of charging infrastructure, and technical feasibility with consideration for the desired use. Many states will include a requirement around cost that limits the cost differential between an EV and another vehicle option. Some states require budget neutrality and others require that the cost difference be within a specific percentage. Such parameters are wise and help make goals more achievable, but they should be narrowly defined, clear and easily determined.

Fuel Types

The state should consider what vehicle fuels will qualify. Goals may include alternative fuel vehicles, zero-emission vehicles, plug-in hybrid EVs, or other technologies. Michigan already has buying requirements – as do all states – around certain alternative fuels. Parameters could be set based on fuel source, emissions, or technology.

Specific Recommendations

Michigan's state government can lead by example by driving the rapid deployment of EVs in the state fleet in a manner that reduces the environmental impact of the state fleet, decreases long-term maintenance and operations costs, and sends a signal to the broader market that Michigan is a leader advanced mobility.

The transition to an electric fleet requires consideration of current state processes, timelines, vehicle types including cost, vehicle availability, and practicability given the use of a vehicle, education of government staff,

and whether to build in exceptions. It also requires consideration of charging infrastructure availability and how to pay for the necessary investments to accommodate an electrified fleet.

Michigan should set goals that are prescriptive and detailed to avoid loopholes in implementation. However, it would be reasonable to allow for thoughtful and purposeful exceptions. For example, certain vehicles or certain state functions may not be suited to electrification, at least in the short-term. Forcing vehicle electrification in areas where it is not yet appropriate can lead to inefficient processes and may result in unintended hurdles. Some states have dealt with this by creating qualifying metrics around “reasonableness” or “practicability,” others have simply limited the vehicles that will be subject to the rule, and others have set cost thresholds. Any of these approaches could be appropriate, but they should be specific and clearly defined to ensure these exceptions or provisions do not undermine the objective of increasing EVs on the road. With these considerations in mind, below are a set of recommendations for the electrification of Michigan’s fleet:

Procure EVs for at least 50% of all newly purchased or leased light-duty vehicles in state fleets by 2023 as reasonable and practicable.

Establishing a procurement requirement for newly purchased or leased light-duty vehicles sets a clear and achievable commitment. It may be helpful to do this in two stages, with an initial, short-term, specific goal. Light-duty vehicles have the highest number of all-electric models available today with major commitments from Michigan automakers to release new models in the near-term. Based on examples from other states and evaluating vehicle availability, procuring EVs for at least 50% of newly purchased or leased light-duty vehicles by 2023 is reasonable and will be helpful to complement a longer-term, more ambitious set of goals. As the state moves forward and as the EV industry evolves, further short-term, specific targets could be identified using input from departments, the state fleet management contractor, and the State Fleet Plan.

Procure EVs for 100% of all newly purchased or leased light-duty vehicles in state fleets by 2025 as reasonable and practicable.

It is important to set an achievable, yet ambitious longer term goal for EV procurement. The 2025 timeline would allow years for infrastructure and educational preparation as well as increased availability of models and cost declines. The addition of the phrase “reasonable and practicable” helps allow for an evaluation based on the vehicle’s cost relative other options, vehicle availability, and the practical use of each vehicle within the needs of the Michigan fleet.

Install EV charging infrastructure at all state-owned buildings and parking lots by 2023.

Installing EV charging infrastructure at state-owned buildings, starting with buildings associated with the fleet vehicle pool, will help prepare for a broader transition, while also encouraging state employees and the public to invest in EVs. Charging needs will need to be evaluated in tandem with fleet needs. Such an evaluation will help determine what levels of EV charging will be necessary in each location. This will require additional investment that could be funded in at least four ways:

- through state budgets, displacing other vehicle-related investments;
- through the VW settlement funds;
- through utility investment; and/or
- through third-party ownership.

Direct DTMB, with guidance from EGLE and MDOT, to develop an EV fleet plan, updated annually, for transitioning to 100% EVs in the state fleet by a specific year.

Directing DTMB and EGLE to develop a plan for full fleet electrification – not just new vehicle purchases – provides an ambitious vision, while allowing for room to evaluate costs and feasibility. The plan will need to be updated regularly as the industry and technology develop.

In support of the specific actions recommended above and to support the broad effort to develop a long-term plan for full-fleet electrification, additional recommendations are included below:

- **Conduct a comprehensive fleet assessment.** The State Fleet Plan could be revised to include feasibility for installing chargers at fleet pool locations, unique operational requirements that might limit EV applications, fleet travel patterns, and EV vehicle availability based on each class of vehicle. The plan should also collect the following data:
 - average vehicle miles traveled;
 - maximum vehicle miles traveled in a day;
 - duration of trips;
 - origination and destination data;
 - dwell time of vehicles; and
 - greenhouse gas emission reductions from a vehicle replacement.
- **Install data tracking devices in state vehicles.** Data gathering will be aided by the installation of state-of-the-art tracking software that can adequately evaluate the travel patterns of fleet vehicles to determine suitability of electrification. For example, Colorado and North Carolina used a product provided by Sawatch Labs.
- **Explore the flexibility under the current vendor contract to include EVs.** A third-party, Wheels, Inc., has a contract to procure and manage Michigan’s purchasing as well as leasing of fleet vehicles. The contract does not contemplate or provide for EVs, but could be amended to include a focus specifically on EV procurement.
- **If available, capture the federal tax credit through leasing.** Capturing the federal EV tax credit in a procurement can make the economics of purchasing EVs even more favorable, reducing the cost to own an EV relative to an ICE by as much as 30 percent, according to an Atlas Public Policy report.⁴⁷ Lease arrangements allow the state to take advantage of federal tax credits for EVs. For example, Washington was able to capture the federal tax credit in a recent purchase of Chevy Bolts.⁴⁸ According to the Michigan’s vendor contract with Wheels, Inc., this opportunity seems to have been contemplated: “The Contractor must pass through any federal vehicle credits for alternative energy back to the State.”⁴⁹ The combination of cost declines and the ability to capture the tax benefits could help make EV choices easier for state decisionmakers.
- **Evaluate fleet purchases based on total cost of ownership.** EVs, thanks to reduced maintenance and fuel costs, can cost less over the lifetime of the vehicle than comparable ICE vehicles.⁵⁰ This method of evaluating and comparing options should be adopted across all leasing and purchasing decisions.
- **Establish a work group.** Gather stakeholders and decisionmakers such as DTMB, Wheels, Inc., department fleet coordinators, automotive manufacturers, suppliers, and dealers, utilities, EV infrastructure and vehicle manufacturing companies, and EGLE.
- **Educate agency staff.** As a part of any goal, budget holders, procurement offices, maintenance facilities, and drivers will all require education based on the established procurement target and related objectives. Some topics that may require education include the following:
 - charging infrastructure;
 - driver education;
 - maintenance education;
 - bid specifications; and
 - owned vs. leased considerations in EV context.

CASE STUDY – Colorado

Colorado committed to procuring EVs as a part of a broader state commitment to transportation electrification. Some of the notable actions taken in Colorado include the following:

- State agencies will prioritize purchase of EVs for light-duty applications, increasing the number of EVs in operation or on order from 32 in January 2018 to at least 200 by end of 2020.⁵¹
- The state started by integrating EVs in the shared motor pool to get state employees more comfortable with EVs.
- The Colorado Energy Office committed to work with state agencies to identify and address barriers in the state’s vehicle planning and procurement processes that limit increased adoption of EVs.
- Colorado conducted the Colorado State Fleet Opportunity Assessment.⁵²
- The State worked with Sawatch Labs to identify vehicles that could be best be replaced by EVs.

CASE STUDY – North Carolina

As a part of a broader goal to increase the number of zero emission vehicles (ZEVs) in the state to 80,000 by 2025, North Carolina established a goal that at least 75% of new or replacement state government light-duty cars and trucks with a gross vehicle weight rating of 8,500 pounds or less must be alternative fuel vehicles or low emission vehicles.⁵³ An executive order in 2018 directed the appropriate departments to prioritize ZEV purchasing.⁵⁴

The executive order also directed the North Carolina Department of Administration to develop a North Carolina Motor Fleet ZEV plan “that identifies the types of trips for which a ZEV is feasible, recommends infrastructure necessary to support ZEV use, develops procurement options and strategies to increase the purchase and utilization of ZEVs, and addresses other key topics.” The plan was issued September 27, 2019.⁵⁵ According to the plan, “replacing all 572 vehicles identified in this analysis with an EV would save taxpayers an estimated \$3.8 million and reduce emissions by over 22,000 metric tons over the lifetime of the vehicles.”⁵⁶ The plan includes a fleet summary, telematics data gathered over the last year by Sawatch Labs, an analysis of the telematics data, fleet recommendations, and infrastructure considerations. The actionable steps coming out of the plan were focused on gathering data and educating government stakeholders to facilitate further prioritization of ZEVs.⁵⁷

CASE STUDY – Washington

Washington state committed in 2007 to have all fleet vehicles (with exceptions for practicability and reasonableness) be fueled 100 percent by biofuels or electricity by June 2018. State agencies are able to substitute natural gas or propane vehicles if a designated department finds that EVs or biofuel vehicles are not reasonably available.⁵⁸ Unfortunately, as a result of the exceptions for “practicability” and “reasonability,” adoption was low and the 2007 goal has been seen as ineffective.⁵⁹ In 2015, Governor Inslee set a new goal that at least 20 percent of the state’s newly purchased passenger vehicles be electric by 2017. In 2018, Governor Inslee committed to increase the state’s purchases of EVs to at least 50% by 2020.⁶⁰ To help achieve this, the state legislature allocated \$5.5 million of the state’s VW Settlement funds to this purpose. In addition to fleet procurement goals, the state also requires that state agencies demonstrate that they have EV charging infrastructure to meet the needs of EV purchases.⁶¹

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⁶⁰ Washington State Electric Vehicle Fleets Initiative. State of Washington Office of the Governor. 2018. https://www.governor.wa.gov/sites/default/files/WashingtonStateEVFleetsInitiative_Jan2019update.pdf.

⁶¹ *Ibid.*