



North Carolina

Motor Fleet ZEV Plan E080

Department of Administration

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NC★DOA
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Executive Summary

Governor Roy Cooper issued Executive Order No. 80, [North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy](#), on October 29, 2018. The Executive Order calls for the North Carolina Department of Administration (DOA) to develop a North Carolina Motor Fleet ZEV Plan (ZEV Plan) that identifies:

- The types of trips for which a ZEV is feasible;
- Infrastructure recommendations necessary to support ZEV use;
- Procurement options and strategies to increase the purchase and utilization of ZEVs and addresses other key topics; and
- An accounting of each agency's ZEVs and miles driven by vehicle type that will be shared with the Climate Change Interagency Council for submission to the Governor by October 1, 2019, and annually thereafter.

In developing the Motor Fleet ZEV Plan, DOA undertook a thorough analysis of 2,417 vehicles within the state motor fleet that were deemed the best candidates for replacements, of which 572 vehicles have been recommended to be replaced with an EV. Based on this recommendation, DOA's Motor Fleet Management Division will continue its collaboration with agencies across the state to replace proposed vehicles with EVs, in accordance with each agency's respective replacement schedule.

Designees from Motor Fleet Management will convene with agency coordinators to offer guidance and assistance to increasing EVs usage and discuss agency infrastructure needs, as deemed necessary. When the use of ZEVs is not feasible, a low-emission vehicle is recommended as a viable cost-effective alternative.

The Motor Fleet ZEV Plan focuses on agency education, usage analysis, and vehicle infrastructure implementation. 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.

Introduction and Purpose

Governor Roy Cooper issued Executive Order No. 80, North Carolina’s Commitment to Address Climate Change and Transition to a Clean Energy Economy, on October 29, 2018. The Executive Order calls for the State of North Carolina to support the 2015 Paris Agreement goals and honor the State’s commitments to the U.S. Climate Alliance.

Per the Executive Order, North Carolina aims to accomplish the following by 2025:

- Reduce statewide greenhouse gas emission to 40% below 2005 levels;
- Increase the number of registered, zero-emission vehicles (“ZEVs”; individually, “ZEV”) to at least 80,000; and
- Reduce energy consumption per square foot in state-owned buildings by at least 40% below 2002-2003 fiscal year levels.

To meet each goal, the Executive Order mandates all State Cabinet agencies to evaluate the impacts of climate change as well as integrate mitigation and adaptation practices supporting a clean energy economy within their respective programs and daily operations. In addition, State Cabinet Agencies are to prioritize ZEVs in the purchase or lease of new vehicles and to use ZEVs for agency business travel when feasible. When the use of ZEVs is not feasible, a low-emission vehicle is recommended as a viable cost-effective alternative.

To support implementation of this directive, the North Carolina Department of Administration (“DOA”) is instructed to develop a North Carolina Motor Fleet ZEV Plan (Motor Fleet ZEV Plan) that identifies:

- The types of trips for which a ZEV is feasible;
- Infrastructure recommendations necessary to support ZEV use;
- Procurement options and strategies to increase the purchase and utilization of ZEVs and addresses other key topics; and
- An accounting of each agency’s ZEVs and miles driven by vehicle type that will be shared with the Climate Change Interagency Council for submission to the Governor by October 1, 2019 and annually thereafter.

The Motor Fleet ZEV Plan outlines actions to be performed, beginning in 2019, that will ensure directives are met and progress is made to reach target goals. The plan is organized around the following topic areas: agency awareness, stakeholder engagement, ZEV feasibility, infrastructure, procurement options as well as strategies and challenges. The plan will be adjusted over time to address changes in zero-emission vehicle technology, demand for the vehicles, and infrastructure needs.



Overview of ZEV Technologies

Zero-Emission Vehicle technology includes hydrogen fuel cell electric vehicles (FCEVs) and plug-in electric vehicles (PEVs), which include both pure battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs).

- BEVs rely entirely on battery power and must be plugged in to recharge. Depending on the model, most BEVs offer between 60 to just under 300 miles per complete charge. Cars in this category include Tesla, Ford Focus Electric, Chevy Bolt, and the Nissan Leaf.
- PHEVs are compatible with electric charging and conventional gas fueling, generally operating purely on electricity before using gasoline to extend the driving range¹. Most PHEVs have a driving range between 10 and 50 all-electric miles and up to 400 gasoline hybrid miles².
- FCEVs use hydrogen to generate electricity using on-board fuel cells. FCEVs convert hydrogen into electric power within a vehicle through use of a fuel cell rather than storing electricity on-board in batteries. FCEVs have a maximum driving range of about 300 miles and a quick 3-5 minute fueling time.³
- BEVs and FCEVs share two fundamental attributes: they use electric drive motors with zero tailpipe emissions. The emission profile of PEVs improves as the electric grid becomes cleaner through shifts away from fossil generation and toward zero-emitting generation, such as wind, solar, and hydro.

¹ <https://www.fueleconomy.gov/feg/info.shtml>

² https://afdc.energy.gov/vehicles/electric_basics_phev.html

³ https://www.driveclean.ca.gov/Search_and_Explore/Technologies_and_Fuel_Types/Hydrogen_Fuel_Cell.php

State of ZEV Usage

Since 2016, the transportation sector has been the largest contributor to carbon emissions in the U.S. North Carolina's transportation sector emissions in 2017 accounted for 32% of the state's greenhouse gas emissions, second to the electricity sector (35%). The 2019 NC Greenhouse Gas Inventory projects that NC's transportation-sector GHG emissions will surpass those of the power sector by 2025. In order to reduce North Carolina's carbon emissions and aid in transitioning the state to a clean energy economy, Executive Order No. 80 prioritizes the use of zero-emission vehicles (ZEVs).

Utilization of ZEVs result in less air and noise pollution, keeping North Carolina's environment cleaner and healthier. In addition, running costs for zero-emission vehicles are likely to be lower than conventional vehicles due to decreased fuel cost, reduced servicing and insurance costs.

The market for zero-emission vehicles is rapidly expanding. As of November 2018, there were over one million electric vehicle (EV) sales in the U.S. Over 360,000 EV vehicles have been purchased in the U.S. over the last year—an approximate 80% increase in sales from 2017. Nearly all major traditional automakers have announced plans to expand their selection of EV models and have set forth goals to offer more affordable EVs in the next 3-5 years.

Electric vehicle sales now represent approximately 1.7% of all light-duty vehicle sales in the U.S. In 2019, 0.8% of all new vehicles sold in North Carolina were electric vehicles, a 129% increase compared to new EV sales in 2018. As of June 30, 2019, 8,913 plug-in electric cars were registered in the state.

Following national and state market patterns, ZEV usage within North Carolina's state government has continued to expand. Since acquiring its first ZEV in 2016, North Carolina's Motor Fleet Management Division increased its pool to 10 ZEVs and 5 hybrids (*please see table below*). Motor Fleet Management strives to be a leader in the support of Executive Order No. 80 and is in the process of acquiring 20 additional ZEVs that will be assigned by the end of 2019.



Motor Fleet Management ZEV & Hybrid Vehicles – Current

The below table provides an accounting of each State Government entity's current ZEVs, hybrid vehicles, and miles driven by vehicle and type, as directed by the Executive Order.

Make, Model	Style	Mileage	Department	Date of Assignment
2014 Nissan Leaf FWD	Compact Sedan Electric	19982	DHHS Blind Services	6/14/2017
2014 Nissan Leaf FWD	Compact Sedan Electric	32999	DHHS Child Development	1/31/2019
2014 Nissan Leaf FWD	Compact Sedan Electric	23168	UNV UNC-Asheville	8/24/2016
2014 Nissan Leaf FWD	Compact Sedan Electric	19578	UNV NC State University	5/24/2016
2014 Nissan Leaf FWD	Compact Sedan Electric	25841	DHHS Central Administration	8/8/2016
2014 Nissan Leaf FWD	Compact Sedan Electric	25174	UNV UNC-Charlotte	5/27/2016
2014 Nissan Leaf FWD	Compact Sedan Electric	18726	UNV UNC-Charlotte	5/27/2016
2015 Nissan Leaf FWD	Compact Sedan Electric	18163	UNV East Carolina University	5/12/2017
2015 Nissan Leaf FWD	Compact Sedan Electric	17946	DHHS Medical Assistance	5/27/2016
2015 Nissan Leaf FWD	Compact Sedan Electric	8198	UNV UNC-Charlotte	5/12/2017
2012 Toyota Camry Hybrid FWD	Compact Sedan 6 Hybrid	103573	Dept Of Justice	5/26/2016
2012 Toyota Camry Hybrid FWD	Compact Sedan 6 Hybrid	96274	Dept Of Justice	5/26/2016
2012 Toyota Camry Hybrid FWD	Compact Sedan 6 Hybrid	72951	Dept Of Justice	5/26/2016
2019 Chevrolet Volt AWD	Compact Sedan 4 Hybrid	851	Dept Of Environmental Quality	5/15/2019
2019 Chevrolet Volt AWD	Compact Sedan 4 Hybrid	0	UNV Appalachian State U	7/17/2019

DOA EV Suitability Assessment

The State of North Carolina engaged Sawatch Labs (**Appendix A**) in June of 2019 to analyze a portion of the fleet vehicles to identify the best candidates for replacement with electric vehicles (EVs). Sawatch Labs used its proprietary ezEV Analytics to conduct an EV Suitability Assessment (ezEVSA) for 2,417 vehicles using existing telematics data. The detailed ezEVSA results were provided to the Department of Administration September 2019 via Sawatch Labs' online portal. Additionally, provided was a high-level summary of results across the fleet, separated by location, and is intended to accompany the detailed online results. Access to more detailed reports are available via request to Motor Fleet Management. Sawatch Labs complete findings to support DOA's ZEV plan will be available on [DOA's EO 80 web page](#) and [Motor Fleet Management website](#) by October 15, 2019.

FLEET SUMMARY

The vehicles included in the ezEVSA vary in year, make, model, and use. The average age of the vehicles is 5 years old, though the oldest vehicle was manufactured in 2005. The fleet analyzed included:

- 1,561 sedans
- 564 minivans
- 242 sport utility vehicles (SUVs)
- 49 pickup trucks
- 1 heavy duty truck

The maximum estimated annual vehicle miles traveled (VMT) is 107,412 miles, the minimum estimated annual VMT is 2 miles, and the average estimated annual VMT is 12,278 miles.

TELEMATICS DATA

The ezEV analysis relies on telematics data to accurately assess each vehicle based on its observed driving. Telematics is the technology to track location, movement, and behavior of a vehicle. The State of North Carolina uses Geotab telematics on its fleet and this data was made available to Sawatch Labs to conduct this analysis. The period of analysis began on July 1, 2018 and ran through June 30, 2019. The dates for which data was available varied by vehicle, with vehicles averaging 348 days of data.

EZEV ANALYTICS

Sawatch Labs developed the ezEV Analytics Platform to determine how an EV would perform following the same drive cycles and driving patterns of an existing vehicle. This allows you to see how an EV would have performed had it driven the same trips that the existing vehicle drove over the period of observation, providing a clear understanding of whether an EV would be successful in the same use case.

The ezEV assessment scores each vehicle based on its suitability to be replaced with an EV, comparing it against multiple EV models (**Appendix C**).

- The **Overall ezEV Score** is a composite score that is based on more than 170 attributes which are calculated from tens of thousands of data points per vehicle. A vehicle must achieve an Overall Score of 85 or greater to be recommended for replacement with an EV.
- The **Energy Score** assesses the frequency of which all driving completed by the vehicle on each day and analyzed if it could be completed by the recommended EV with a fully charged battery. For example, an energy score of 93 indicates that on 7% of the days analyzed, the vehicle consumed more energy than would be provided with a fully charged battery and the driver would need to charge the vehicle midday.
- The **Economics Score** assesses the financial impact of replacing the vehicle with the recommended EV or with a base model internal combustion engine (ICE) vehicle, including purchase and operational costs and savings.
- The **Confidence Score** is based on the number of days driving occurred during the data collection period and indicates the degree to which an available data set constitutes a representative sample of driving.
- The **Parking Score** indicates the frequency with which the vehicle parks at the same parking location overnight.

Each metric is based on a score of 1–100, except for the Economics Score which can exceed 100 when lifetime savings exceed 10%. The higher the overall ezEV score, the better suited a vehicle is for replacement with an EV. Lower scores do not necessarily indicate that an EV would not work in a particular application or duty cycle. Instead, lower scores suggest that modifying driving habits, reserving conventional vehicles for long distance driving and/or identifying midday charging opportunities may be necessary for an EV to meet the current demands on that vehicle. The costs of electric vehicles considered in the analysis are based on the price available to the State of North Carolina either through the State Bid, Sourcewell, or based on the vehicle’s manufacturer’s suggested retail price (MSRP).

These scores can be used to provide a degree of certainty in a fleet manager’s decision to replace an existing vehicle with an EV. EVs come in two varieties, battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). They differ primarily in the form of fuel or energy they store on board and can access when they are driving and, as a result, differ in the distance they can travel when fully fueled and their cost per mile. BEVs store energy in the form of electricity in a battery. The battery capacity and driving habits determine the distance a vehicle can travel on a single charge. PHEVs have a battery, typically smaller than a BEV’s battery, and a conventional ICE that runs on liquid gasoline fuel. As a result, PHEVs have a much shorter range on electric miles but can rely on the ICE engine when the battery is depleted and can refuel at a gas station or EV charging station.

EV RECOMMENDATIONS IN CONTEXT

Telematics data is just one component of understanding which vehicles have a good use case for EVs. It is imperative to understand additional requirements for each vehicle, including cargo capacity, passenger capacity, towing capability, and other operational requirements. Additionally, the feasibility

for and costs of installing EV chargers to support specific vehicles should be considered in tandem with vehicle procurement planning. The 572 vehicles identified through this analysis are feasible using existing charging infrastructure. It is also valuable to consider scenarios in which vehicles analyzed are part of a motor pool because the availability of ICE vehicles in a pool will determine if longer trips that exceed the range of an EV can be moved to other assets.

INFRASTRUCTURE CONSIDERATIONS

The time needed to charge a fully depleted battery varies by EV. For example, a 2019 Nissan Leaf would require approximately 20 hours of charging with a Level 1 charger to be fully charged. The same depleted battery would be fully charged in 4-8 hours with a Level 2 charger, which could easily be accomplished with overnight charging. The infrastructure recommendations for each vehicle consider the estimated state of charge of the battery after each days' driving and the amount of time needed to completely charge the battery.

It is recommended that EVs are deployed in applications where they will have access to charging daily. For some vehicles, this may simply require access to a standard 120-volt outlet (Level 1) while others will require access to a 240-volt outlet in order to install a Level 2 charging station to charge the vehicle more quickly. The costs associated with the installation and operation of Level 2 chargers are location specific and depend on several factors unique to each building or parking lot. In instances where multiple EVs park at the same location, installing a combination of charging types may be the optimal solution to reduce upfront and ongoing costs while ensuring vehicles have access to the charging needed to recharge the battery overnight. It is recommended that facilities are inspected by an electrician prior to plugging vehicles in or installing chargers.

EZEV Results

If all the vehicles identified in the ezEVSA are replaced with the recommended EVs, the estimated savings would exceed \$3.8 million over the lifetime of the vehicles, gasoline use would be reduced by more than 2.7 million gallons, and GHG emissions would be reduced by over 22,000 metric tons. It is important to remember that vehicles will be replaced as they reach the end of their normal usage cycle, which will initiate the process for transition to EVs. These savings do not include any vehicles identified as a Possible Sedan Fit.

Appendix A includes the full ezEVSA analysis of which agency vehicles can feasibly be converted to an electric vehicle, sorted by agency and by parking location. A detailed report of each vehicle analyzed is available on DOA's website. These reports include the vehicle's Overall evEV score and its score for each of the four factors described above that make up the overall score (this report is available to Motor Fleet Management).

DOA Actions to Increase ZEVs in State Motor Fleet

The following tables detail actions that DOA plans to undertake, or are already in process of implementing, that respond to the directives outlined in Executive Order 80. The plan will be adjusted over time to address changes in EV and infrastructure technologies, vehicle demand, and infrastructure needs.



Achieve Agency Awareness and Interest of ZEV Options and Benefits

Present Findings from Motor Fleet Zev Plan to Agency Leadership

Lead Agency: Motor Fleet Management (MFM)

Timeframe: October 2019 – December 2019

MFM will present high-level findings of the MF ZEV Plan to leadership of the Governor’s cabinet agencies and other interested agencies. This will ensure agency leadership understands the opportunities to convert their vehicles to zero-emission vehicles and the economic and environmental benefits of doing so.

Host Trainings for State Employees

Lead Agency: MFM

Timeframe: October 2019-December 2020

MFM will host training events, such as lunch and learns and ride and drives, for state employees. These events will be designed to educate employees about ZEVs, give them an opportunity to drive and charge ZEVs, and have any questions answered.

Develop Online Training Materials

Lead Agency: MFM, DOA Communications

Timeframe: Quarter 1 (Q1) 2020 – Ongoing

MFM and DOA Communications will develop and implement a series of online training materials and modules. These materials will serve to educate agency vehicle coordinators and other employees.

Develop MFM ZEV Guidance Document**Lead Agency:** DOA Communications**Timeframe:** November 2019 – Q1 2020

DOA Communications will develop MFM ZEV Guidance Document to help agencies' leadership, fleet managers, and employees understand key information for increased usage of ZEVs and charging infrastructure.

DOA/EO 80 Webpage Development and Management**Lead Agency:** DOA Communications**Timeframe:** August 2019 – Ongoing

DOA Communications will develop and maintain DOA's Executive Order No. 80 webpage that covers information about DOA's directives including the Motor Fleet ZEV Plans and other ZEV information.

EO 80 Education and Promotion**Lead Agency:** DOA Communications, MFM**Timeframe:** October 2019 – Ongoing

DOA Communications and MFM will develop and implement a plan for educating and promoting EO 80 benefits via DOA newsletter, digital e-boards, social media campaigns, dynamic website content and informational sessions/roadshows (agency staff and quarterly leadership meetings as well as ZEV demonstration events).

ZEV Trends Tracking**Lead Agency:** Agencies, MFM**Timeframe:** Annually or per replacement cycle, beginning year-end 2020

All agencies and MFM will track ZEV trends and benefits of agencies transitioning to ZEVs, to the extent practicable, and explore methods for recognizing increased ZEV utilization among state agencies, universities, and local governments.



Ensure Agency Engagement Process to Expand Input on Establishing ZEV Priorities

Webinar Meetings

Lead Agency: MFM

Timeframe: October 2019 – Ongoing

MFM will hold monthly webinar meetings with Agency Vehicle Coordinators to assess progress, address challenges and guide priorities.

Meetings, Teleconferences and Surveys

Lead Agency: MFM

Timeframe: October 2019-Ongoing

MFM will host routine meetings, teleconferences and surveys to continue to adapt the NC Motor Fleet ZEV Plan to reflect changing agency needs, technology developments and infrastructure improvements.

Agency Challenges and Opportunities

Lead Agency: MFM

Timeframe: July 2019 – Ongoing

MFM will evaluate stakeholder progress and identify issues, barriers/challenges, and opportunities/support required for successful implementation of this ZEV plan.

Developing Best Practices

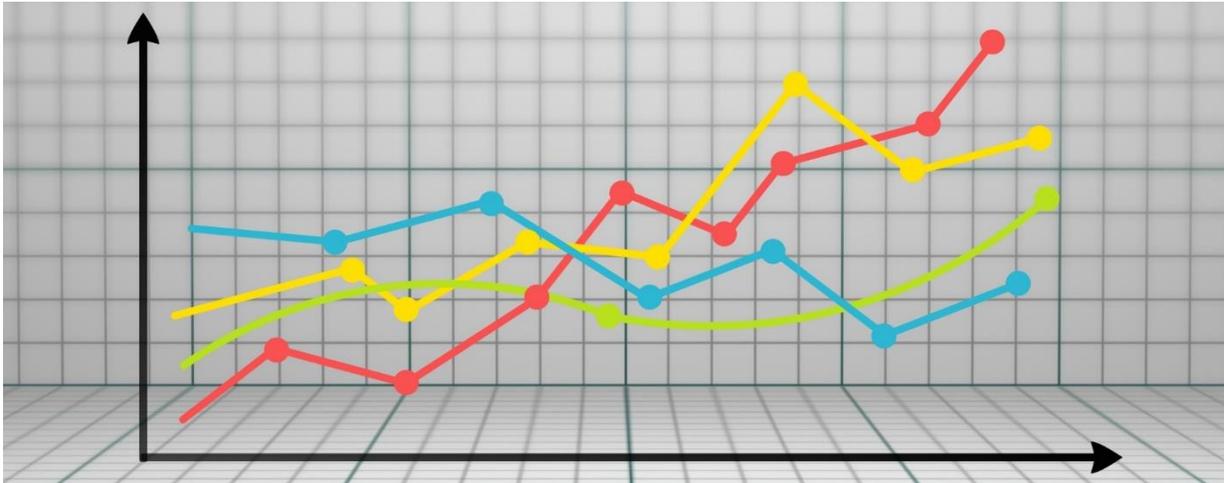
Lead Agency: Agencies, MFM

Timeframe: October 2019 - Ongoing

All agencies and MFM will share learnings, information, experiences and best practices to aid in encouraging agencies to prioritize ZEVs in the purchase or lease of new vehicles, and to increase the use of ZEVs for agency business travel when feasible.

Virtual Engagement Platform**Lead Agency:** MFM, DOA Communications**Timeframe:** October 2019 – Ongoing

MFM and DOA Communications will develop a digital platform for virtual stakeholder engagement, feedback, and opportunities to discuss the status of ZEV usage within their agencies and statewide (i.e., surveys and roundtables).



Identify Trips for ZEV Feasibility

Sawatch Trainings

Lead Agency: Sawatch Labs, Motor Fleet Management (MFM)

Timeframe: October 2019 – February 2020

Sawatch Labs will provide two customized in-person/ webinar trainings and Q&A sessions to assist with agency transition to ZEV vehicles. These trainings will better inform agency ZEV transition plans and will address questions concerning their respective analysis.

ZEV Recommendations Review

Lead Agency: MFM, Agencies

Timeframe: October 2019-Ongoing

MFM and agencies will review ZEV recommendations from Sawatch Lab report with agencies as scheduled replacements of current vehicles are due (see Appendix B & C, Sample report- Individual Vehicle Sustainability Assessment).

ZEV Transition

Lead Agency: Agencies, MFM

Timeframe: October 2019 – Ongoing

Agencies and MFM will begin the process of transitioning more vehicles to ZEVs. As identified vehicles reach the end of replacement cycle, they will be replaced with zero-emission vehicles. Agency Vehicle Coordinators will follow standard procedures in purchasing/ replacing ZEV vehicles as outlined in [Appendix G](#).

Annual ZEV Plan Updates

Lead Agency: MFM

Timeframe: May 2020

MFM will begin the 2020 annual updates of the NC Motor Fleet ZEV Plan.

ZEV Plan and Vehicle Report

Lead Agency: MFM

Timeframe: October 1, 2020

MFM will provide an updated Motor Fleet ZEV Plan and vehicle report to Governor.



Ensure Infrastructure Supports the Expansion of ZEV Usage

Agency Guidance and Support

Lead Agency: Motor Fleet Management (MFM), State Parking, Agencies

Timeframe: Ongoing

MFM, State Parking and agencies will utilize data from Sawatch Labs analysis to issue guidance and support to agencies on infrastructure implementation, including process for acquiring charging stations and cost.

Approaches and Funding

Lead Agency: MFM, State Construction, State Parking, Agencies

Timeframe: October 2019 – January 2020

MFM, State Construction, State Parking and agencies will explore creative approaches to minimize cost and identify funding sources for installation. DOA will work with private vendors to negotiate fleet agreements cost.

Charging Stations in State Parking Facilities

Lead Agency: State Parking

Timeframe: January 2020

State Parking will establish a minimum percentage of electrical charging stations in all future parking development. New parking lots will be developed with a minimum number of charging stations.

EV Charging Infrastructure

Lead Agency: State Construction, State Parking

Timeframe: November 2019 - May 2020

State Construction and State Parking will conduct an analysis to assist with identifying optimal locations to install EV charging infrastructure and explore innovative technology solutions such as solar charging.

Expanding Infrastructure

Lead Agency: State Parking, State Construction, Agencies

Timeframe: January 2020 - Ongoing

State Parking, State Construction and agencies will build on existing infrastructure through collaboration with the NC Department of Transportation (DOT), local municipalities, universities, agencies, and any other identified potential partners.

Alternative Charging Options for State Vehicles

Lead Agency: MFM

Timeframe: October 2019 – May 2020

MFM will work to enable state employees to charge state vehicles at stations not operated by the state or located at state facilities.



Develop Procurement Options and Strategies to Increase the Purchase and Utilization of ZEVs

Incentive Programs

Lead Agency: Purchase and Contract (P&C), Motor Fleet Management (MFM)

Timeframe: January 2020 - Ongoing

P&C and MFM will explore and identify incentive program options to expand current ZEV pool.

State-Sponsored Car Rentals

Lead Agency: Agencies, P&C

Timeframe: October 2019 - Ongoing

Agencies and P&C will work to maximize the use of ZEVs in state sponsored car rentals and ensure any new contracts with rental companies prioritize use of ZEVs.

Leased Space

Lead Agency: State Property

Timeframe: Ongoing

State Property will explore incentive options for leased office space that includes a ZEV charging infrastructure. Future RFPs for leased office space will include a request for details on the availability of charging stations.

Request for Legislative Appropriations

Lead Agency: NC Department of Administration (DOA), Agencies

Timeframe: Ongoing

DOA and agencies will advocate for appropriations from the General Assembly to support purchase of more ZEVs and infrastructure development.

Retention of Savings

Lead Agency: Agencies

Timeframe: Ongoing

Agencies will identify strategies to enable agencies to keep some or all of savings from EV adoption for reinvestment in priorities that support further EV adoption (e.g., purchase more EVs, install charging stations, etc.)

Closing Statements

The NC Department of Administration will continue advocating for the use of Telematics on all motor fleet vehicles and evaluate the feasibility of converting to ZEVs.

Currently there are very limited funds for developing charging infrastructure. This will need to be a focal point of concern as we continue efforts to expand ZEVs within the state's motor fleet.

We recognize that technology in this area is rapidly developing and we therefore anticipate incorporating new technologies as they become available in order to maximize the use of ZEVs.

Appendices

Appendix A: Sustainability Report

- <https://files.nc.gov/ncdoa/Comm/Other/Zero-Emission-Vehicles-Suitability-Assessment-2019.pdf>

Appendix B: Sample Electric Vehicle Suitability Assessment

- <https://files.nc.gov/ncdoa/Comm/Other/Sample-Electric-Vehicle-Suitability-Assessment-EVSA.pdf>

Appendix C: Sample Scoring – Suitability Assessment Electric Vehicles

- <https://files.nc.gov/ncdoa/Comm/Other/Sample-Scoring-Suitability-Assessment-Electric-Vehicles.pdf>

Appendix D: California Governor’s Office ZEV Plan

https://www.ca.gov/archive/gov39/wp-content/uploads/2018/01/2016_ZEV_Action_Plan-1.pdf

Appendix E: 2016 Electric Vehicle Report

- <https://www.vox.com/2016/21/14041112/electric-vehiclesreport-2016>

Appendix F: Plug-in Electric Car Sales Surpass 1 million

- <https://insideevs.com/news/340135/plug-in-electric-cars-sales-in-us-surpass-1-million/>
- <http://www.business.ca.gov/ZEV-Action-Plan>

Appendix G: Information Requests

- https://files.nc.gov/ncdoa/Comm/Other/EO_80_How_To_re_Vehicles_Infrastructure_Charging_Stations-.pdf