Zero-Emission Vehicle Plan

Motor Fleet Management
Haley Pfeiffer Haynes, Deputy Secretary of Service Operations
October 28, 2021
What is DOA’s role in EO-80?

- Develop a North Carolina Motor Fleet ZEV Plan, that identifies the types of trips for which a ZEV is feasible
- Recommend infrastructure necessary to support ZEV use
- Develop procurement options and strategies to increase the purchase and utilization of ZEVs
- Provide annual reporting to the Governor’s Office on the number of ZEVs in fleet and showing the miles driven by vehicle type
ZEV Suitability Assessment

- MFM has ensured telematics is on every MFM issued vehicle, allowing data-informed decisions and mileage tracking to determine vehicles best suitable for ZEV replacement.
- **3,049** vehicles suitable for ZEV replacement according to ZEV Suitability Assessment by Sawatch Labs.
- The Sawatch Labs scoring analysis was shared with agency fleet coordinators and is used as a basis to recommend ZEV replacement.
- Motor Fleet is continuing to analyze the data for parking locations to make recommendations for ZEV charging infrastructure.

<table>
<thead>
<tr>
<th>Category</th>
<th>Stats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicles</td>
<td>5901</td>
</tr>
<tr>
<td>Telematics Provider</td>
<td>Geotab</td>
</tr>
<tr>
<td>Period of Analysis</td>
<td>2/23/2018 – 1/16/2020</td>
</tr>
<tr>
<td>Miles Analyzed</td>
<td>64,000,000</td>
</tr>
<tr>
<td>Total Trips Analyzed</td>
<td>2,990,000+</td>
</tr>
</tbody>
</table>
Fleet Mix

Inventory by Asset Type

Table 3. EV Suitability Assessment Results Summary

<table>
<thead>
<tr>
<th>Vehicle Class</th>
<th># of Vehicles Analyzed</th>
<th>EV Candidates (in class)</th>
<th>EV Candidates (Allowing SUVs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cargo-van</td>
<td>25</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Minivan</td>
<td>687</td>
<td>235</td>
<td>411</td>
</tr>
<tr>
<td>Pickup</td>
<td>170</td>
<td>30</td>
<td>90</td>
</tr>
<tr>
<td>Sedan</td>
<td>3968</td>
<td>2020</td>
<td>2020</td>
</tr>
<tr>
<td>SUV</td>
<td>1051</td>
<td>514</td>
<td>514</td>
</tr>
<tr>
<td>TCO Savings</td>
<td></td>
<td>$13,000,000</td>
<td>$14,000,000</td>
</tr>
<tr>
<td>GHG Emissions</td>
<td></td>
<td>66,000 metric tonnes</td>
<td>66,000 metric tonnes</td>
</tr>
</tbody>
</table>
Transitioning to ZEVs

- At the beginning of each fiscal year MFM sends a recommended Vehicle Replacement List to our Agency partners.
- Recommended vehicles are due for replacement that year based on age, mileage, and cost of ownership.
- This year, Motor Fleet Recommended **141** ZEVs to replace Internal Combustion Engine (ICE) vehicles.
- Work with State Parking and State Construction offices on ZEV charging infrastructure.

### FY21-22 Replacement List

**EO-80 - First choice is a ZEV, next Hybrid, then right-sized ICE, AWD before 4x4**

<table>
<thead>
<tr>
<th>VehicleNumber</th>
<th>VehicleModel</th>
<th>Suggested Vehicle</th>
<th>Vehicle Needed</th>
<th>VehicleYear</th>
<th>LastLogMileage</th>
<th>AgencyName</th>
</tr>
</thead>
<tbody>
<tr>
<td>250277</td>
<td>Impala Limited FWD</td>
<td>Chevy Bolt or Camry Hybrid</td>
<td>2015</td>
<td>98628</td>
<td>DHHS Cherry Hospital</td>
<td></td>
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<tr>
<td>262254</td>
<td>Fusion FWD</td>
<td>Chevy Bolt or Camry Hybrid</td>
<td>2017</td>
<td>83326</td>
<td>Board Of Cosmetic Arts</td>
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<tr>
<td>250055</td>
<td>Fusion FWD</td>
<td>Chevy Bolt or Camry Hybrid</td>
<td>2015</td>
<td>91959</td>
<td>Dept Of Administration</td>
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<tr>
<td>240272</td>
<td>Impala Limited FWD</td>
<td>Chevy Bolt or Camry Hybrid</td>
<td>2014</td>
<td>88254</td>
<td>Dept Of Environmental Quality</td>
<td></td>
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<tr>
<td>262719</td>
<td>Fusion</td>
<td>Chevy Bolt or Camry Hybrid</td>
<td>2018</td>
<td>93163</td>
<td>Dept Of Insurance</td>
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<tr>
<td>241537</td>
<td>Impala Limited FWD</td>
<td>Chevy Bolt or Camry Hybrid</td>
<td>2014</td>
<td>90098</td>
<td>DHHS Public Health</td>
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<tr>
<td>241199</td>
<td>Impala Limited FWD</td>
<td>Camry Hybrid</td>
<td>2014</td>
<td>98678</td>
<td>DHHS Cherry Hospital</td>
<td></td>
</tr>
<tr>
<td>250253</td>
<td>Impala Limited FWD</td>
<td>Camry Hybrid</td>
<td>2015</td>
<td>91455</td>
<td>DHHS Health Service Regulation</td>
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<tr>
<td>250194</td>
<td>Impala Limited FWD</td>
<td>Camry Hybrid</td>
<td>2015</td>
<td>91061</td>
<td>UNV UNC-Chapel Hill</td>
<td></td>
</tr>
</tbody>
</table>
Charging infrastructure needs for MFM vehicles
Identifying Charging Infrastructure Needs
Status of sedans

Past
27 MPG

Present/Future
52 MPG

Recommended
120 MPGe(equivalent)

Ford Fusion
Toyota Camry Hybrid
Chevrolet Bolt or Nissan Leaf
Projected Savings with ZEVs

Maintenance savings

• If we're able to switch all recommended 3049 vehicles over to ZEVs we would save $12,477,971.50, in maintenance costs, every 8 years

**Table 2. Custom Settings**

<table>
<thead>
<tr>
<th>Input Category</th>
<th>Custom Setting</th>
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<tbody>
<tr>
<td>Gas Price</td>
<td>$2.00/gallon</td>
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<tr>
<td>Electricity Rate</td>
<td>$0.11/kWh</td>
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<tr>
<td>GHG Emissions Factor for</td>
<td>360 g/kWh</td>
</tr>
<tr>
<td>Electricity Generation</td>
<td></td>
</tr>
<tr>
<td>Social Cost of Carbon</td>
<td>$36/ton</td>
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<tr>
<td>ICE Maintenance Cost</td>
<td>$969 /15,000 miles</td>
</tr>
<tr>
<td>EV Maintenance Cost</td>
<td>$360/15,000 miles</td>
</tr>
<tr>
<td>Vehicle Life Cycle</td>
<td>8 years</td>
</tr>
</tbody>
</table>
State of North Carolina’s Fleet Strategy

- 1st Zero-Emission vehicle
- 2nd Hybrid vehicle
- 3rd Right-sized ICE vehicle
- 4th Two-Wheel Drive ICE vehicle
- 5th All-Wheel Drive ICE vehicle
- 6th Four-Wheel Drive ICE vehicle

Executive Order NO. 80: North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy
Motor Fleet Management’s Transition to Electric

- Motor Fleet Management has 41 EVs in its fleet
- Motor Fleet has ordered 540 hybrids in FY21-22
- We will offer hybrid vehicles in four different size classes
- To date, over 70% of vehicle purchases this FY have been hybrid vehicles
- The gas mileage difference will amount to half the amount of carbon emissions when ICE sedan is replaced with Toyota Camry Hybrid
DOA’S ELECTRIC VEHICLE FLEET

ZEV & Hybrids in Fleet

- 2014: 5
- 2015: 10
- 2019: 15
- 2020: 35
- 2021: 40
- 2022: 581
CHARGEPOINT

• All ZEVs are assigned a ChargePoint card
• Provides remote charging opportunities for ZEV drivers
• 720 charging locations in North Carolina
• Utilizes existing WEX billing structure
• Hyperlink to ChargePoint locations on MFM website
Distance traveling - Removing the Barriers to ZEV Refueling
DOA updated the State Term Contract for vehicles to a “bid your portfolio” style contract

Rather than a winner take all, it opened the State of NC up to all makes/models

It resulted in dramatic price decreases from the last contract

Allows Motor Fleet to purchase *a la carte* on the vehicles that have the best total cost of ownership value
Who’s on contract?

• EVSE LLC, Mark Ziorlli (860) 745-2433
• National Car Charging LLC, Jim Burness (303) 437-4947
• Pine Shore Energy LLC, Dave Thompson (828) 553-6257

What does the contract cover?

• 1. Electric Vehicle Charging Stations
   • A. Level II
   • B. DC Fast Charge
• 2. Networking
• 3. Asset Management
• 4. Outdated Equipment Trade-In
• 5. Fleet Charging Network
• 6. Additional Equipment, Accessories & Services
• 7. Future EVSE Technology
• 8. Installation
• 9. Infrastructure

Contract Administrator: Myra Welch
Next Steps for the State

• Identify funding opportunities for charging infrastructure
• Prioritize installation of charging infrastructure in locations of most need for EV fleet deployment
• Incorporate EV chargers in new state construction projects
• Add EV charging infrastructure in lease agreements and renewals where feasible
• Develop/leverage educational materials for drivers to raise comfort levels and reduce apprehension when transitioning to EVs
Questions?

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