



Work Group recommendations (pages 4-5) are posted for public comment. Comments are most useful if received by November 9, 2023. Submit comments via email to: [zeevic@mdot.maryland.gov](mailto:zeevic@mdot.maryland.gov)

## Medium- and Heavy-Duty Vehicle Working Group Report (Draft 10/30/23)

### Background

The Zero Emission Electric Vehicle Infrastructure Council (ZEEVIC) convened the Medium- and Heavy-Duty Vehicles (MHDV) working group (WG) to explore barriers and opportunities for the trucking and freight sectors to adopt EV technologies. The WG's goal was to identify recommendations for promoting the transition of MHDVs to clean technologies. This WG invited four speakers to address key questions around MHDV electrification and facilitate discussions through a series of meetings and presentations. This report summarizes the WG activities and recommendations.

### Workgroup Format

MDOT identified Tim Shepherd as the Chair for the WG and ZEEVIC members or alternates from the Member's organization were invited to participate. The MHDV WG participants are listed at the end of this report.

The WG met three times over a period of a month. The first two meetings included discussions and presentations on barriers and opportunities directly from industry representatives, as well as group discussion and question and answers. The third meeting focused on reviewing what was discussed in the prior meetings and developing the WG's recommendations to ZEEVIC. A summary of the WG meetings and topics discussed is summarized below:

1. ZEEVIC Meeting # 1 – 9/22/23, 10:00-11:00 AM
  - Topic: What is the industry's largest hurdle to adopt EVs? / What can the State of Maryland do to support MHDV EV adoption?
  - Speaker # 1 – Luis Campion, Maryland Motor Truck Association
  - Speaker # 2 – Tim French, Truck and Engine Manufacturers Association
2. ZEEVIC Meeting # 2 – 9/29/23, 10:00-11:00 AM
  - Topic: What are the infrastructure deployment constraints for MHDV EV?
    - Speaker # 1 – Sam duPont, BGE
    - Speaker # 2 – Jim Nemec, Blink
3. ZEEVIC Meeting # 3 – 10/13/2023, 10:00-11:00 AM
  - Topic: What should ZEEVIC advocate to promote MHDV EV transition? / What policies or strategies can ZEEVIC support to accelerate MHDV EV adoption in Maryland?
  - Review of past meetings
  - Discuss recommendations to ZEEVIC

### Meeting Summaries

#### Workgroup Meeting # 1 – Overview

The WG began with a brief overview of Multi-State Medium- and Heavy-Duty Zero-Emission Vehicle Action Plan, highlighting some of the barriers identified in the report. These included:

- Higher Upfront Cost of MHD ZEVs
- Barriers for Small Fleets
- Need for Fleet Outreach and Education Programs
- Critical Need to Deploy Charging Infrastructure

- Production Issues
- Electricity Rates
- Lack of Financing Options
- Different Charging Standards
- Lithium-ion Battery Production and Recycling
- Other Challenges for Hydrogen Truck and Bus Deployment

#### Workgroup Meeting # 1 – Speaker Perspectives

Louis Campion: Charging Infrastructure is the largest current barrier. Currently, efforts in charging infrastructure should be focused on short/local hauls, particularly in cases where the trucks come back to the same facility every day. Technology is currently not feasible for long-haul charging infrastructure. ZEEVIC should support incentives for on-site charging permitting and efforts to ensure the transmission lines can support charging infrastructure at depots.

He conveyed that California is having some instances of trouble on short-haul routes and Maryland should focus resources here. Maryland should think about additional truck traffic. 2,000 pounds limit is not applicable on local and state routes. Pavement, traffic impacts, and overnight charging parking need to be considered by MDOT. Capacity is already a concern for parking conventionally fueled vehicles (for instance: rest areas on I-95), eventually charging infrastructure will need to be implemented in these parking areas.

Timothy French: Agrees there are more practical things that need to be build-out, and the focus should be on chargers for depots. The practical problem is Maryland is going to opt-in to ACT mandates, which establishes targets of approximately 700 busses and trucks, 8000 short-haul and regional trucks in 2027. Long-Haul infrastructure (hydrogen) are still ways away from being feasible, maybe around 2030. Rough estimates indicate Maryland would need to be installing 195 MHD charging stations per month starting the beginning of next year to meet demand resulting from the ACT requirements and goals. This will be a large effort and coordination between the state, companies, and utilities. We are in a very compressed timeframe.

BEV trucks are currently two to three times more expensive than normal trucks. Current trends show that 2030 will match traditional fossil-fuel trucks, due to economies of scale. Current tax credits needed from the Federal government with BIL help, but state needs to match more of CA's amount of incentives to help close the gaps in the cost of ZEV compared to their fossil-fuel counterparts.

ACT requires 42-60 percent of ZEV sales in MD by 2032. Utilities need to evaluate what is needed in the electricity grid to meet demands if this is implemented. OEM's will comply with ACT in all states, but if they cannot sell the mandated percentage based requirement manufactures will scale back on ZEV's and all other vehicles to meet the percentage requirement. Maryland should think about opt-in a pooled credit program between states, to meet a goal volume of (X) amount. Since each state's industries vary from state to state. Overall, goal is to reduce GHG emissions and other air pollutants in the United States. This would provide flexibility between states in implementing ZEVs.

#### Workgroup Meeting # 1 – Discussion and Questions and Answers

Tim Shepherd asked for clarification when defining "depots," as referred to by the speakers. The speakers clarified they referred to private, not public, depots with ten or more vehicles. Public charging stations are going to be utilized more along highway corridors and less at ports and harbors. Depending

on the operations and dwell times for trucks, ports could be a prime opportunity for electrification. California is a good example for ports too, but Maryland should evaluate if practical for the Port of Baltimore.

Drew McAuliffe explained that the permitting process for utilities to add capacity and substation is lengthy. Rather, utilities should focus on implementing level 2 chargers when applicable and specific needs for depots and ports. Efficiency in the grid and power use will be key to manage demand and reduce costs by overbuilding capacity. Both speakers agreed but explained that educational outreach is necessary through the industry. The speakers described instances where depots are building or expanding for electrification but later fail to obtain permits because of unforeseen requirements or limitations from the utilities.

Virginia Burke asked the speakers if they can help identify pilot projects that Maryland/ ZEEVIC can influence. It would be beneficial to have a local case study to run numbers, investigate the permitting process, identify partnering opportunities, etc. The speakers responded that there are a variety of big players interested in electrification (Amazon, FedEx) interested in accessing depots with EV charging infrastructure.

#### Workgroup Meeting # 2 – Overview

The WG began with a brief overview of Multi-State Medium- and Heavy-Duty Zero-Emission Vehicle Action Plan, highlighting some of the strategies identified for utility companies and in the report. These included:

- Higher Upfront Cost of MHD ZEVs
- Barriers for Small Fleets
- Need for Fleet Outreach and Education Programs
- Critical Need to Deploy Charging Infrastructure
- Production Issues
- Electricity Rates
- Lack of Financing Options
- Different Charging Standards
- Lithium-ion Battery Production and Recycling
- Other Challenges for Hydrogen Truck and Bus Deployment

#### Workgroup Meeting # 2 – Speaker Perspectives

Samuel duPont: The presentation gave an overview of BGE and its service area, as well as service area of sister companies throughout the Mid-Atlantic. The speaker presented BGE Transportation Electrification Roadmap, a tool to help plan out the electrification process from initiation, identify charging needs and use patterns, establish timeline and phasing of installing chargers for electrification, and help identify partners and permitting requirements. The speaker noted the charging requirements vary significantly from MHD vehicles (School Busses vs. Long Haul Trucking).

Sam also explained the eligible activities under the Make-Ready Incentives Program. These included to-the-meter infrastructure (utility distribution network and utility pad-mounted transformer) and behind-the-meter infrastructure (meter and panel). One key consideration from the utility side that can impact schedule and timeline is if the BGE Capacity Planning Group needs to get involved. If a project is over

1MW, additional review and standards will be taken into engineering and design, which could extend timelines. Another key impact to schedule is the lead time for critical switchgear is 52 weeks, supply chain issues still from the pandemic years ago.

Jim Nemeč: The presenter gave an overview of Blink. The range of electrification projects Blink sees can range from \$750,000 – \$4.5 million in capital on the adoption of MHD EVs. Roughly 90% of chargers are expected to be level 2 chargers and 10% DC Fast Chargers, particularly for facilities that would charge vehicles overnight. The costs of 480 Volt chargers are very high and many companies have sticker shock (price a deterrent from adoption). Another cost factor for many companies is the unpredictability in demand charging. Currently, even with grants and government match, timelines are still around 10 years out to obtain payback on charging equipment for MHD vehicle.

#### Discussions

Steve Koerner asked about lead time regarding switchbacks and back logs, and whether there are opportunities to pre-order parts or do some type of early procurement. The speakers explained that the switchbacks are site-specific and could not be ordered until design and location are finalized. BGE's planning team utilizes metrics and data provided to them to better prepare for future demands, but there are limitations without knowing site specific needs. The utilities cannot overbuild capacity, or build proactively, unless an application is submitted first. The speaker explained that other states have this same issue.

The PSC would need to revise their current regulatory structure to allow utilities to build proactively. Drew McAuliffe explained the concern of passing on the capital costs to the utilities, and then to rate payers, when there is risk that the demand does not follow the capital investment. Drew also mentioned the resiliency considerations for upgrades in preparation for solar farms and their plans to upgrade facilities and capacity planning for EVs that might be informative for the MHDV electrification discussion.

A question was also asked about the kind of outreach the utilities are doing for this industry sector and if there are recommendations ZEEVIC should consider proposing to Maryland PSC. The speaker explained there is a robust governmental and public affairs outreach department which is very proactive, but admitted there is always room to improve and do more.

#### Workgroup Meeting # 3 – Overview

The last WG meeting was devoted to discussing strategies and recommendations from the Multi-State Medium- and Heavy-Duty Zero-Emission Vehicle Action Plan and the topics discussed by the WG speakers. After the meeting, the discussions and suggestions were organized as recommendations and shared with the entire ZEEVIC at the October meeting. Based on initial feedback from ZEEVIC, the WG recommendations include:

#### **Recommendations for ZEEVIC/ State of Maryland:**

1. Develop a map of depot locations for the State of Maryland. Based on feedback this should target fleets with at least ten MHD vehicles.
2. Develop a website that identifies the steps a business would have to take to electrify its facilities. This site should act as a clearinghouse of information and contacts. Information to be included would be at least a brief description of the action, the appropriate agency (private or public), the specific agency program and a contact person.

3. Depot Electrification Pilot – Work with MEA in developing their MHD Grant Program that would incorporate the feedback and information received in this working group to fund several MHD electric vehicles programs.
4. Incentives- Based on industry feedback and reviewing programs offered in other states, determine the recommended funding levels for a MHD electrification incentive program. Maryland currently has allocated \$10 million per year through 2027.
5. Ensure that feedback received during these workgroups is included, where appropriate, in the Needs Assessment Study that will be conducted as part of Maryland’s adoption of the Advanced Clean Truck regulation.
6. Data sharing for utility planning – State, or agency with oversight, to gather forecast data and provide to PSC/ utilities to improve planning.

**Recommendations for PSC and Utility companies:**

7. Outreach to industry – Provide directed outreach to fleet operators and depot owners on electrification process and emerging technologies, such as Adaptive Load Management
8. Improve Energization Process – Reduce uncertainty by allowing utilities to engage with developers early in the service request to better plan timelines and costs.
9. Commercial Rates – Identify opportunities for PSC/ Utilities to help evaluate different cost scenarios to better understand potential fluctuations in operational cost.

**Other General Recommendations:**

10. Considerations for Incentive Programs (state or utilities)
  - Incentive programs should encourage off-peak charging and use of load management equipment
  - Incentive programs should be flexible in the features required to lower investment needs while considering the impact to ratepayers and the investment to the utility infrastructure.
  - Utility Make-Ready programs should not hinder the ability of customers to install third-party owned and operated load management equipment.
11. Zoning and Permitting – EVSE projects should receive special attention from a zoning/ permitting perspective, with clear guidance and a single point of contact for applications.
12. Highway Planning – Transitioning the MHDV EV will increase truck traffic, increasing the need of capacity and truck parking, which are challenges today.
13. Weight Restrictions –MHDV EVs will be heavier than current vehicles. Support policies to lift vehicle weight restriction for MHDV EV. MDOT consideration of adjusting infrastructure planning and maintenance projects to accommodate heavier trucks.

**Plans for 2024**

As part of Maryland’s adoption of the ACT Program, MDE is required to oversee a Needs Assessment and Deployment Plan Study that must be completed by December 2024. The WG activities helped educate the WG and ZEEVIC members on the topic to be better positioned to review and provide comments on the Study. The MHVD WG will be positioned to assist as a stakeholder reviewer to assist MDE in 2024 when the plan is being developed.

## WG Participants

<b>Participant</b>	<b>ZEEVIC Membership</b>	<b>Organization/ Affiliation</b>
<b>Alena Martinez-Hart</b>	Member Alternate	BGE
<b>Amanda Hinh</b>	Member Alternate	MEA
<b>Amanda Janaskie</b>	Member Alternate	BGE
<b>Carissa Ralbovsky</b>	Member Alternate	OPC
<b>Deron Lovaas</b>	ZEEVIC Chair	MDOT
<b>Drew McAuliffe</b>	Member Alternate	PSC
<b>Jeff Shaw</b>	Member	SMECO
<b>Jill Lemke</b>	Member Alternate	MDP
<b>Jim Nemec</b>	Invited Speaker	Blink
<b>Kevin Mosier</b>	Member	PSC
<b>Kristy Fleischmann Groncki</b>	Member	BGE
<b>Louis Champion</b>	Invited Speaker	MD Motor Truck Association
<b>Natalie Buscemi</b>	Member Alternate	MEA
<b>Samuel duPont</b>	Invited Speaker	BGE
<b>Sari Amiel</b>	Member	Sierra Club
<b>Steve Koerner</b>	Member	BP Pulse Fleet
<b>Tim Shepherd</b>	Member & WG Chair	MDE
<b>Timothy French</b>	Invited Speaker	Truck and Engine Manufacturers Association
<b>Walt Alfred</b>	Member	Ally Power
<b>Weston Young</b>	Member	Worcester County
<b>Virginia Burke</b>		MDOT
<b>Sophia Cortazzo</b>		MDOT
<b>John Thomas</b>		MDOT
<b>Dan Janousek</b>		MDOT
<b>Leo Sawada</b>		MDOT/ consultant
<b>Scott Halerz</b>		MDOT/ consultant
<b>Andrew Newsome</b>		MDOT/ consultant