Letter From State Agency Leadership

To our fellow Coloradans –

Medium- and heavy-duty vehicles include semi trucks, school buses, snow plows, delivery vans, large pick-up trucks, and many different vehicles in between. These vehicles bring our kids to school, deliver food to grocery stores, plow our streets, help repair power lines and roads, transport construction materials, and do hundreds of other critical jobs that power our lives and economy. These vehicles, and the professionals who operate them, are critical to the movement of goods and services across our state, which are brought into sharp view by the current global supply chain crisis. We also know these vehicles have produced much more air pollution and greenhouse gas emissions than their share of vehicles on the road, because they are larger, often drive farther each day, and in some cases are lacking the most current pollution controls. In addition, communities living nearby Colorado’s busiest freight routes like I-70, I-25, I-76, and I-270 are exposed to significant air pollution from trucks and buses.

When we developed this draft Colorado Clean Truck Strategy, the primary objective was to transition Colorado’s medium- and heavy-duty trucks to low- and zero-pollution alternatives as quickly as possible, especially for those most impacted by the status quo. The opportunities immediately available for Colorado to get older trucks and buses off the roads – including over $5BN in funding for clean trucks and buses nationally in the federal Infrastructure Investment and Jobs Act, Governor Polis’ nearly half-billion-dollar clean air package, and beginning to invest new state funding created by 2021 legislation to support charging infrastructure and incentives for zero emission trucks and buses will have the biggest, fastest impact on air quality and public health in the next 12-24 months.

We believe that this actionable and comprehensive strategic plan for Colorado can help jumpstart the market for zero emission trucks and buses by leveraging new opportunities and funding sources, and ensuring our early efforts are focused where they can make the greatest difference. This plan focuses our efforts in the near future on investing in charging infrastructure, creating incentives for truck fleets to start switching to zero emissions vehicles, helping school districts and transit agencies switch to electric buses, and helping replace some of the oldest, dirtiest trucks with cleaner alternatives. Following the development of these foundational programs, this draft plan includes the administration submitting a request to set a rulemaking hearing to the Air Quality Control Commission later in 2022 to consider regulatory standards to both reduce pollution from diesel vehicles and support the transition to zero emission trucks and buses.

We’re grateful to the many stakeholders of diverse opinions who have shared their time and ideas with us to inform the development of this plan. Ultimately, a successful transition will require ongoing collaboration and efforts from a wide variety of stakeholders who comprise and are impacted by the medium- and heavy-duty vehicle sector, and we look forward to a continuing partnership.

Many thanks,

Will Toor, Executive Director of the Colorado Energy Office
Shoshana Lew, Executive Director of the Colorado Department of Transportation
Shaun McGrath, Director of Environmental Health and Protection, Colorado Department of Public Health and Environment
Executive Summary

Transportation is now the largest source of air pollution and greenhouse gas (GHG) emissions in Colorado. At the same time, our economy is increasingly reliant on freight, as demonstrated during the COVID-19 crisis, so it is critical that the state develop a thoughtful and balanced approach that provides a pathway for emissions reductions from this key sector. Medium- and heavy-duty (M/HD) vehicles are the second-largest source of GHG emissions in the transportation sector, contributing 22% of on-road GHG emissions, despite comprising less than 10% of Colorado vehicles. They are also a significant contributor to ozone precursor emissions like Nitrogen Oxides and Particulate Matter (NOx and PM) that have serious impacts on air quality and human health. M/HD vehicles are estimated to contribute about 30% of on-road NOx emissions and 40% of on-road PM emissions.

In July 2020, Governor Polis signed a multi-state Memorandum of Understanding to work collaboratively to advance the market for zero emission trucks and buses. The Colorado Department of Transportation (CDOT), Colorado Department of Public Health and Environment (CDPHE), and Colorado Energy Office (CEO) also announced a public process to work with industry and community stakeholders to develop a broad set of strategies to reduce emissions from M/HD vehicles. Following public meetings in Fall 2020, the state initiated a study to better understand the existing M/HD fleet in Colorado as well as the opportunities and challenges associated with a transition to a zero emission vehicle (ZEV) fleet. M.J. Bradley & Associates conducted the study on behalf of the state. The Colorado Medium- and Heavy-Duty Vehicle Study was released in October 2021, and additional public meetings and engagements were held thereafter to present the results and gather input.

The M/HD Study found that if the state of Colorado pursues strategies that support an accelerated transition to M/HD ZEVs— a component of the state’s larger goal of achieving a 100 percent ZEV transportation sector by 2050—it could reduce the state’s M/HD emissions of GHGs 45% to 59%, NOx emissions 54% to 93%, and PM emissions 53% to 68% annually by 2050 from a baseline scenario, depending on the level of ZEV adoption. Not only would this have a meaningful impact on the state’s contribution to climate change but it would also improve air quality and help address the impacts of the transportation sector on disproportionately impacted communities. The M/HD Study also found significant potential cost savings, an estimated $5.8B (2020$) in cumulative savings by 2050 for Colorado M/HD ZEV owners from reduced vehicle maintenance costs and fuel cost savings.

However, achieving the transition to M/HD ZEVs is not without its challenges. While some M/HD vehicle applications are ready to embrace ZEV technology and have product offerings either on the market or poised to enter the market in the next five years, other sectors may not see viable vehicle alternatives until the end of the decade or longer. In the near term, upfront incremental purchase costs are still significant in most sectors, and support will be needed to afford these higher initial costs. In addition, fueling and charging patterns for M/HD ZEV vehicles will be different than those for the light-duty vehicle sector requiring significant near-term investment in infrastructure along with complementary utility programs that support fleet-friendly rates. There is also a need for workforce development to ensure there are trained technicians for the service and maintenance needs of both vehicles and infrastructure.

Accelerating this transition and achieving the associated benefits will require leveraging a wide range of policy levers and support from a diverse set of stakeholders. Well-designed, complementary programs that provide vehicle purchase incentives, encourage the retirement of older polluting vehicles, provide technical assistance to fleets, support workforce development, and build out a robust charging and fueling network statewide are essential to reduce uncertainty and maximize the benefits of the transition to ZEVs. Both the technical study and the public engagement process have provided input that has refined this Colorado Clean Truck strategy, which seeks to provide a comprehensive roadmap for state agencies and partners to support a successful transition to
zero emission medium- and heavy-duty vehicles. The following vision statement, goals and objectives, and priority actions are intended to guide this work, and are described in more detail in the remainder of the report.

**Summary of vision, goals, and actions**

**Vision Statement**
Recognizing the critical nature of freight, delivery, passenger transport, and other important functions of the medium- and heavy-duty vehicle sector, the vision for this strategy is to support an efficient, affordable, and equitable large-scale transition of Colorado’s medium- and heavy-duty vehicle sector to zero emission technologies to achieve the state’s greenhouse gas and air pollution emission reduction goals and complementary benefits such as fuel and maintenance cost savings, in a way that prioritizes communities that have historically been most impacted by medium- and heavy-duty vehicle emissions.

**Goals and Objectives**

<table>
<thead>
<tr>
<th>Category</th>
<th>Goals and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clean truck adoption</strong></td>
<td>• <strong>Zero Emission Vehicle Sales:</strong> Increase adoption of medium- and heavy-duty ZEVs to at least 30% of new sales by 2030, and 100% of sales by 2050.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Zero Emission Vehicles on the road:</strong> Increase adoption of ZEV M/HD vehicles to 35,000 vehicles on the road by 2030, with a long-term goal of 100% of medium- and heavy-duty vehicles being zero emissions.</td>
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<td></td>
<td>• <strong>Accelerate Fleet Turnover:</strong> For M/HD vehicles that do not have viable near-term ZEV product offerings, state agencies will work with partners to facilitate disposal of the oldest and most polluting vehicles and purchase of replacement vehicles with 2017 or newer emissions technology. This includes starting with a plan to retire at least 500 of the oldest vehicles on the road by 2027, and aiming for new trucks sold in the state to produce 90% less NOx emissions than current standards starting in 2027.</td>
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| **Public fleets**              | • **State fleet:** Building on Executive Order D 2019 016 Amending and Replacing Executive Order D 2018 026 Concerning the Greening of State Government, which set a goal to reduce GHG emissions from state fleet vehicles by at least 15% by the end of FY 2022–2023 from a FY 2014–2015 baseline, establish a goal and accompanying transition plan for state owned fleets to achieve 100% zero-emission MHD fleet vehicle purchases where technically feasible and able to meet safety and mission critical operations needs by no later than 2040. Interim targets will be set based on the analysis state agencies will complete on the state M/HD fleet needs detailed in the actions below. |
|                                | • **Transit fleet:** Convert the public transit fleets across the state to 100% zero emission vehicles no later than 2050, with an interim target of at least 1,000 ZEV transit vehicles by 2030, through implementation of the Transit Zero Emission Vehicle Roadmap.                                                                 |
|                                | • **School buses:** Support the adoption of 2,000 electric school buses by 2027, and a longer term goal to achieve 100% zero emission buses on the road by 2035, with a focus on adoption in school districts in disproportionately impacted communities                                                                 |

| **Charging and fueling infrastructure** | State agencies will plan for and support public, utility, public-private partnership and private sector funding for sufficient M/HD charging and hydrogen fueling infrastructure to serve the identified clean truck and bus adoption goals. Additional planning is needed to identify the right quantity and mix of technologies, charging speeds, use cases, and locations for this infrastructure. |

| **Equity**                      | The state will work with its partners and will leverage CDPHE, CEO, CDOT, and CDLE equity resources to prioritize clean truck and bus deployment in ways that provide direct benefits to disproportionately impacted communities and support a just transition for workers in the medium- and heavy-duty vehicle sector. |

| **Support**                     | State agencies and partners will strive to identify sufficient funding, financing, and other forms of |
support to achieve the ZEV adoption goals established, as well as additional anticipated benefits for fleets, workers, disproportionately impacted communities, and all Colorado residents such as fuel and maintenance cost savings, job creation and economic development, cleaner air and quieter operations, and lower utility rates.

Actions
The M/HD Study along with stakeholder and working group feedback identified many potential actions that Colorado could pursue to support the ZEV transition. Actions have been prioritized to identify the highest impact and most feasible near-term actions agencies will pursue in each category in the next two years (2022-2023), as well as medium term actions that agencies will pursue as capacity allows or after necessary planning has been completed. A full description of each action is included in the main strategy document, including the lead agencies for each.

<table>
<thead>
<tr>
<th>Category</th>
<th>Actions</th>
<th>Timing</th>
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<tbody>
<tr>
<td>Procurement policies and programs</td>
<td>Analyze the M/HD state fleet to identify the best opportunities for conversion to ZEVs.</td>
<td>Near term</td>
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<td></td>
<td>Develop plans for outreach, education, and technical assistance to support public and private fleet transitions to ZEVs.</td>
<td>Near term</td>
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<td></td>
<td>Implementation of outreach, education, and technical assistance strategies to support public and private fleet transitions to ZEVs.</td>
<td>Medium term</td>
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<td></td>
<td>Propose updates to the Greening of State Government Executive Order that incorporate state fleet goals informed by the analysis of the state M/HD fleet.</td>
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<td></td>
<td>Evaluate options to streamline procurement and lower costs for public and private fleets.</td>
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<td></td>
<td>Develop a one-stop-shop clean truck website for Colorado fleets.</td>
<td>Medium term</td>
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<td>Vehicle incentives and financing</td>
<td>Implement an electric school bus grant program and support districts in leveraging federal funds.</td>
<td>Near term</td>
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<td></td>
<td>Implement a clean truck replacement program, and develop longer-term disposal programs focused on the oldest vehicles on the road.</td>
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<td></td>
<td>Develop a comprehensive set of program designs for rebates, vouchers, and/or grants for zero emission trucks and infrastructure.</td>
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<td></td>
<td>Explore options to update and extend tax credits for zero emission trucks, and to consider modifications to the specific ownership tax.</td>
<td>Medium term</td>
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<td></td>
<td>Evaluate options to reduce diesel idling, including incentives for vehicles with high-idling profiles, idle-free zones, and other measures.</td>
<td>Medium term</td>
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<td></td>
<td>Investigate and recommend financing options for zero emission medium- and heavy-duty vehicles and fueling infrastructure.</td>
<td>Medium term</td>
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<tr>
<td>Infrastructure planning and investments</td>
<td>Conduct a planning study for M/HD charging that identifies the quantity, type, and locations of charging infrastructure needed to support ZEV truck adoption goals.</td>
<td>Near term</td>
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<td></td>
<td>Develop a comprehensive set of incentive offerings for depot and public truck charging, leveraging funding from the federal government and new state enterprises.</td>
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<td></td>
<td>Pursue actions in the &quot;Opportunities for Low-Carbon Hydrogen in Colorado: A Roadmap&quot; related to the medium and heavy duty transportation sector.</td>
<td>Near term</td>
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<td>Coordinate with neighboring states to share best practices and encourage investments</td>
<td>Medium term</td>
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<td>Utility strategies</td>
<td>Near term</td>
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<td>Engage in development of the next transportation electrification plans (TEPs) to support inclusion of a significant focus on M/HD fleet investments.</td>
<td>Near term</td>
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<td>Convene utilities for statewide collaboration on charging planning and implementation for medium- and heavy-duty vehicles, including in conjunction with roadway projects.</td>
<td>Medium term</td>
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<tr>
<td>Convene a commercial EV rates workshop with utilities and fleets to strive to enable consistent and affordable rates to charge statewide.</td>
<td>Medium term</td>
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<tr>
<th>Workforce development programs</th>
<th>Near term</th>
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<tbody>
<tr>
<td>Conduct a workforce needs analysis to identify gaps, plan programs, and strive to ensure supply of workers matches demand as the ZEV market grows.</td>
<td>Near term</td>
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<tr>
<td>Develop and implement funding partnerships to support ZEV mechanic training programs.</td>
<td>Medium term</td>
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<tr>
<td>Support apprenticeships, internships, scholarships, and other strategies to educate and recruit students for future careers in the medium- and heavy-duty ZEV sector.</td>
<td>Medium term</td>
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<tr>
<td>Develop programming alongside existing light-duty dealership efforts to engage and educate medium- and heavy-duty vehicle dealers in the state.</td>
<td>Medium term</td>
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<tr>
<th>Regulatory actions</th>
<th>Near term</th>
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<tbody>
<tr>
<td>Propose adoption of the Advanced Clean Truck and Low NOx Omnibus rules to the Colorado Air Quality Control Commission (AQCC).</td>
<td>Near term</td>
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<tr>
<td>Establish a working group to collaborate with statewide transit stakeholders regarding potential future adoption of a clean transit rule.</td>
<td>Near term</td>
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<tr>
<td>Investigate options to ensure clean truck adoption by public fleets and large private fleets, in alignment with the Advanced Clean Truck rule where technically feasible.</td>
<td>Near term</td>
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<thead>
<tr>
<th>Additional opportunities</th>
<th>Medium term</th>
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<tr>
<td>Explore potential indirect source standards that would reduce localized air pollution from facilities that generate significant medium and heavy-duty vehicle traffic.</td>
<td>Near term</td>
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<tr>
<td>Update the state freight plan including investigation of truck travel strategies that enhance operations, reduce congestion and reduce subsequent greenhouse gas emissions.</td>
<td>Near term</td>
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<tr>
<td>Investigate the potential benefits and feasibility of innovative local programs that reduce emissions from deliveries.</td>
<td>Medium term</td>
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<tr>
<td>Work with CSU to track and report the carbon intensity of transportation fuels used in Colorado.</td>
<td>Medium term</td>
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<tr>
<td>Analyze the relative costs and benefits of different approaches to battery reuse, remanufacturing, recycling, and disposal.</td>
<td>Medium term</td>
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Introduction

Medium- and heavy-duty (M/HD) vehicles are the second-largest source of GHG emissions in the transportation sector, despite comprising a small portion of vehicles on the road, and are also a significant contributor to ozone precursor emissions (NOx and PM) that have serious impacts on air quality and human health. Transportation is now the largest source of air pollution and greenhouse gas emissions in Colorado. Increasingly our economy relies on freight and deliveries, so it is critical that the state develop a thoughtful approach that provides a pathway for emissions reductions from this key sector.

A public process, initiated in July 2020 with Governor Polis signing the multi-state Memorandum of Understanding to work collaboratively to advance the market for zero emission trucks and buses, and which included several public meetings and the development of the Colorado Medium- and Heavy-Duty Vehicle Study, has informed the development of this Clean Truck Strategy. Recognizing the need for a holistic approach to support this transition, the Colorado Clean Truck Strategy is a document that includes a comprehensive set of goals and strategies for state agencies and partners to implement, such as incentives, infrastructure investments, workforce development, and regulatory actions, that will be updated over time as the market evolves.

Why the medium- and heavy-duty vehicle sector is critical to Colorado

Medium- and heavy-duty vehicles—including everything from large pick-up trucks and vans to school buses and semi trailers—are critical to our economy and livelihoods in Colorado. Those who operate these vehicles ensure goods are delivered to stores and businesses, transport our kids to school, plow our roads in winter, repair our critical infrastructure and much more. These vehicles are also very diverse, ranging in size, distance traveled per day, variability of daily routes, ownership models, and operational requirements. Due to this variability, ZEV models are in various stages of readiness and affordability by weight class and application.

Freight is critical to Colorado’s economy, and thus a zero-emission transition must be planned for and managed carefully to ensure continued technological and financial feasibility. As the zero emission vehicle industry and technology evolve rapidly, several major national fleets have made commitments to transition their vehicles, demonstrating a demand for cleaner trucks and buses; however, most truck fleets are very small and will require technical and financial assistance in order to successfully participate in this transition. Meticulous technical analysis and ongoing, robust stakeholder engagement will be necessary to ensure Colorado can design programs that meet the needs of diverse operators of M/HD vehicles and fleets.

Why clean trucks are important for Colorado’s future

M/HD vehicles contribute nearly a quarter of on-road GHG emissions, despite comprising less than 10% of Colorado on-road vehicles, due to their lower fuel economy and higher vehicle miles traveled. They are also a significant contributor to ozone precursor emissions (NOx and PM) that have serious impacts on air quality and human health.

Figure 1: M/HD vehicles as a percent of total on-road vehicles

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1 [FHWA](https://www.fhwa.dot.gov), CO vehicle registration data, [CO GHG Pollution Reduction Roadmap](https://www.colorado.gov/pacific/air/pollution-reduction-roadmap), and [2017 National Emissions Inventory](https://www.epa.gov/).
In 2019, on-road transportation accounted for 22% of the state’s greenhouse gas emissions. The Greenhouse Gas Pollution Reduction Roadmap established a goal of reducing GHG pollution by 12.7 million metric tons (MMT) from the transportation sector by 2030. The state’s current LEV/ZEV rules, in addition to utility and public investments in fleet turnover and infrastructure for light-duty zero emission vehicles, are anticipated to result in an 8 MMT reduction in GHG emissions by 2030. In addition, the state’s recently adopted greenhouse gas transportation planning standard is anticipated to result in 1.5 MMT reduction by 2030. This leaves a 3.2 MMT gap. Accelerating adoption of clean trucks has been identified as one of several strategies to fill this remaining gap.

Figure 2: Clean trucks’ role in reaching the state’s transportation and GHG goals

![Figure 2: Clean trucks’ role in reaching the state’s transportation and GHG goals](image)

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**Reduce GHG pollution ~12.7 million tons by 2030**

- 6 MMT reduction
- 2 MMT reduction
- 1.5 MMT reduction

Collectively, the other strategies will target remaining 3.2 million tons

- Incentivize land use to increase housing near jobs and reduce VMT and pollution (HB 21-1271, HB 21-1117; CDOT stakeholder process; interim affordable housing committee)
- Clean trucking strategy - infrastructure, fleet incentives, consider regulatory tools such as Advanced Clean Trucks and fleet rules (Study released October 2021; Stakeholder Engagement - Fall 2021/Winter 2022; fleet investments from SB21-260)
- Participate in developing post 2025 vehicle standards (state and federal; Federal and CARB processes)
- AQCC evaluation of indirect source rules (RAQC has convened committee to start developing proposals)
- Expansion of public transit, including setting the stage for Front Range Rail (In progress - SB21-238, SB 21-260, Main Streets investments, on-going multimodal emphasis)

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2 [GHG Pollution Reduction Roadmap | Colorado Energy Office](#)
Additionally, disproportionately impacted (DI) communities are more likely to live in close proximity to major freight routes, such as I-70, I-270, I-76, and I-25, where they experience greater exposure to NOx and PM emissions that have significant impacts on human health. Researchers have found that living in areas with high exposure to air pollution has increased risks for morbidity across a range of cardiopulmonary diseases, and there is growing evidence that prolonged exposure to air pollution may also contribute to COVID-19 severity.³

**Figure 3: Daily truck traffic and disproportionately impacted communities**

Medium- and Heavy-Duty Vehicle Sector Overview
This section provides a high-level summary of some of the key findings of the [Colorado Medium- and Heavy-Duty Vehicle Study](#), completed by M.J. Bradley & Associates on behalf of the state in October 2021.

Definitions

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**What types of vehicles are medium- and heavy-duty (M/HD)?**

<table>
<thead>
<tr>
<th>Class</th>
<th>Weight Range</th>
<th>Vehicles</th>
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<tr>
<td>2h</td>
<td>8,501 to 10,000 lbs</td>
<td>Crew Size Pickup, Full Size Pickup, Mini Bus, Minivan, Step Van, Utility Van</td>
</tr>
<tr>
<td>Three</td>
<td>10,001 to 14,000 lbs</td>
<td>City Delivery, Mini Bus, Walk In</td>
</tr>
<tr>
<td>Four</td>
<td>14,001 to 16,000 lbs</td>
<td>City Delivery, Conventional Van, Landscape Utility, Large Walk In</td>
</tr>
<tr>
<td>Five</td>
<td>16,001 to 19,500 lbs</td>
<td>Bucket, City Delivery, Large Walk In</td>
</tr>
<tr>
<td>Six</td>
<td>19,501 to 26,000 lbs</td>
<td>Beverage, Rack, School Bus, Single Axle Van, Stake Body</td>
</tr>
<tr>
<td>Seven</td>
<td>26,001 to 33,000 lbs</td>
<td>City Transit Bus, Furniture, High Profile Semi, Home Fuel, Medium Semi Tractor, Refuse, Tow</td>
</tr>
<tr>
<td>Eight</td>
<td>33,001 lbs &amp; over</td>
<td>Cement Mixer, Dump, Fire Truck, Fuel, Heavy Semi Tractor, Refrigerated Van, Semi Sleeper, Tour Bus</td>
</tr>
</tbody>
</table>

*https://afdc.energy.gov/data/10381*
What are zero emission vehicles (ZEVs)?

**Zero Emission Vehicle:** Means a battery electric motor vehicle or a hydrogen fuel cell motor vehicle.

**Battery-Electric Vehicles (BEVs):** Means a motor vehicle that is powered exclusively by a rechargeable battery pack that can be recharged by being plugged into an external source of electricity and that has no secondary source of propulsion.

**Plug-In Hybrid Electric Vehicles (PHEVs):** Means a motor vehicle that is powered by both a rechargeable battery pack that can be recharged by being plugged into an external source of electricity and a secondary source of propulsion such as an internal combustion engine. Also sometimes referred to as near zero emission vehicles (NZEVs).

**Hydrogen Fuel Cell Electric Vehicles (FCEVs):** Means a motor vehicle that is powered by electricity produced from a fuel cell that uses hydrogen gas as fuel.

Other emissions reduction solutions: Other fuels and technologies that can reduce emissions from M/HD vehicles include but are not limited to vehicles that utilize recovered methane or biofuels, and hybrid refrigeration units. SB21-260 defines recovered methane as any of the following if the Air Pollution Control Division determines them to provide a net reduction in greenhouse gas emissions: biomethane; methane derived from municipal solid waste, biomass pyrolysis or enzymatic biomass or wastewater treatment; and coal mine methane. Because there is limited supply and need for recovered methane in hard to decarbonize industrial operations, it likely has only a limited and temporary role in transportation, in sectors where EV and hydrogen vehicles are not yet available. SB 21-260 allows the Clean Fleet Enterprise to invest in incentives for vehicles powered by recovered methane in sectors where other ZEV vehicles are not yet available.

National summary of the Medium- and Heavy-Duty Vehicle Sector

Some of the key takeaways about the national M/HD fleet and industry from the M/HD Vehicle Study include:

- **Vehicle diversity:** Some M/HD vehicles have very specific use cases (e.g. garbage trucks) while others are used for more varied, general purposes.
- **Vehicle lifetime:** M/HD vehicles often remain on the road longer than light-duty vehicles (LDV); average M/HD vehicle life is 30 years, while most vehicles’ “effective life” (90% of total lifetime mileage) is less than 20 years. This suggests the importance of supporting significant uptake of ZEV purchases by 2030 to achieve the state’s long-term transportation emission reduction goals.
- **Ownership models:** Very few fleets own new trucks, and most are the secondary or tertiary owners of M/HD vehicles. Many other fleets lease their vehicles.
- **Fleet size:** Over 80% of truck fleets have six or fewer trucks. Very small fleets like these may have fewer “spare” vehicles, which may affect their risk tolerance to try new technologies.
- **Consolidated industry:** A few major manufacturers make 95% of Class 4-8 vehicles, while Ford, GM, and Stellantis (Dodge and Ram) sell the majority of Class 2b and 3 vehicles.
- **Secondary manufacturers:** Many trucks are sold as “incomplete vehicles” and a secondary manufacturer then adds a vocational body.

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*Definitions included are primarily from [SB21-260](#), Sustainability of the Transportation System.*
State of the Medium and Heavy Duty Zero Emission Vehicle Market

Some of the key takeaways about the M/HD ZEV market from the M/HD Vehicle Study include:

- **Vehicle readiness:** Some vehicle types are more ready to transition to zero emission vehicles in the near term (such as transit and school buses, delivery vehicles, and local and regional haul freight), while others are more challenging and will require more time and support (such as Class 8 tractor trailers).

- **Range and model availability:** Today, few models have more than 150 miles of range, though manufacturers have announced many new ZEV models in the coming years with growing ranges.

- **Costs:** Incremental upfront costs are currently higher, but expected to decline in the coming years across a variety of vehicle types, as battery costs continue to decline. Fuel and maintenance cost savings are expected to be substantially lower than conventional vehicles.

- **Charging considerations:** While some vehicles return to the same depot overnight, others travel long distances across the country, and in other cases drivers park their vehicles at home. Each day, some vehicles travel predictable routes and distances (such as buses), while others’ routes are much more variable. Because of these differing duty cycles and parking situations, M/HD vehicles will need a mix of depot and public charging stations, at varying charging speeds.

- **Fleet commitments:** Several large national fleets have made high profile commitments to transition to zero emission vehicles, such as Amazon, Ikea Group, FedEx, Sysco, and more.

*Figure 4. Anticipated phase-in of M/HD ZEV technologies (modified from CALSTART)*

Colorado summary of the Medium- and Heavy-Duty Vehicle Sector

Some of the key takeaways about the Colorado M/HD market from the M/HD Vehicle Study include:

- **Fleet size:** Colorado has nearly half a million M/HD vehicles registered in the state. Over half of these are Class 2b light-trucks (61%), with Class 3 contributing the second largest portion (19%).

- **Fleet ownership:** A very large portion of the Class 2b vehicles are likely either personal vehicles or are owned by very small commercial fleets.

- **Vehicle distribution:** Registrations of Class 2b and 3 vehicles are distributed across the state, while registrations of class 4-8 vehicles are more concentrated along the front range and the I-25 corridor.
- **Vehicle miles traveled**: Class 2b and 3 vehicles, buses, and single-unit trucks in Colorado travel on average 30-50 miles per day, while long haul trucks travel on average 235 miles per day.

- **Fleet age**: M/HD vehicles are capital assets and are kept longer than light-duty vehicles. Nearly half of the Colorado M/HD fleet is older than 14 years, and 16% percent of vehicles were built before 2000. 34% of Class 7-8 are older than 20 years.

- **Leading by example**: State, county, and city governments, including transit authorities and school districts, own nearly half the vehicles in the 100 largest M/HD fleets in Colorado. Fleets of utilities, truck rentals, delivery services, and construction also have sizable fleets. Collectively the vehicles in these 100 largest fleets comprise ~6% of all M/HD vehicles.

*Figure 5: Colorado M/HD Vehicles by Weight Class*

**Overview of M/HD Study scenario modeling**

*Figure 6: Three Scenarios: Comparison by Projected Percent In-Use M/HD Vehicles in Colorado*

M.J. Bradley & Associates modeled three scenarios to understand the cost, emissions, and societal impacts of different M/HD ZEV adoption trajectories. Some of the key findings include:

- **ACT Scenario**
  - Models if CO adopts Advanced Clean Trucks (ACT) rule
  - Majority of sales assumed to be BEV post 2035

- **ACT + Low NOx scenario**
  - Models if CO adopts Low NOx rule in addition to ACT

- **100 X 40 Aspirational**
  - Increases ZEV sales to 90-100% by 2040
  - ZEV and Low NOx vehicles make up 98% of M/HDs by 2050
Greenhouse gas emissions: GHG emissions from M/HD vehicles would decline 6% by 2030 and 45% by 2050 under both the ACT and Low NOx scenarios.

Air pollution emissions: NOx emissions are expected to fall 54% under the ACT scenario, and 90% in the Low NOx scenario, while PM emissions would decrease by 53% in both the ACT scenario and Low NOx scenario by 2050.

Costs: Net financial savings grow for all scenarios over time as upfront costs are projected to decline, resulting in an estimated $5.8B (2020$) in cumulative savings by 2050 for Colorado M/HD ZEV owners in the ACT + Low NOx scenario. Over the long term, vehicle maintenance and fuel cost savings outweigh upfront incremental costs, though in the early years, support will likely be needed to overcome higher upfront costs.

Total societal benefits: Projected net societal benefits for the ACT + Low NOx scenario are $20.4 billion (2020$) by 2050, which takes into account the net financial savings to Colorado M/HD ZEV owners, GHG monetized savings and air quality benefits, and utility net revenue from increased M/HD electrification.

Overview of available and potential funding to support clean trucks

SB21-260: In June 2021, Governor Polis signed SB21-260 into law, which substantially increases funding for Colorado’s transportation system, and sets up three new state enterprises that will establish programs to support the transition to medium- and heavy-duty ZEVs through vehicle incentives and investments in charging and fueling infrastructure. The enterprises and their focus areas include:

- Community Access Enterprise (projected $310M over the first 10 years): Build EV charging and hydrogen fueling infrastructure in communities across the State, and support electric vehicle and eBike adoption in low and moderate income communities.
- Clean Fleet Enterprise (projected $289M over the first 10 years): Support fleet replacement (delivery trucks, TNCs, school buses, and other light/medium/heavy duty vehicles) with incentives to meet climate and air quality goals.
- Clean Transit Enterprise (projected $134M over the first 10 years): Support electrification of public transit through electrification planning efforts, fleet replacement, facility upgrades, and associated charging infrastructure.
- In addition, SB21-260 builds in an inflation factor for the existing EV registration fee which supports the Colorado Electric Vehicle Infrastructure Fund, administered by the Energy Office. This fund is projected to generate $115 million over 10 years.

Utility Transportation Electrification Plans (TEPs): SB19-077 allowed rate-basing of EV infrastructure and required every investor owned utility to file TEPs supporting widespread electrification every 3 years. The first TEP was approved by the Public Utilities Commission in January 2021, which included $105 million in planned investments over 3 years by Xcel in charging infrastructure, vehicle incentives, fleet advisory services, pilot programs, and more. The cost cap in the legislation requiring TEPs grows over time as revenue from electricity sales for EV charging grows, potentially allowing larger investments in future TEPs.

Governor’s FY 2022-23 budget: Governor Polis’ FY 2022-23 budget includes requests for over $424M in investments to improve air quality, including:

- Low emission trucks (requested $15M): This funding will be used for incentives to retire and replace over 500 of the most polluting trucks on the road.
- Electric school bus investment (requested $150M): The proposal will create a grant fund to support school districts’ purchase of electric school buses, associated infrastructure, and accelerated retirement
or conversion of diesel buses. The program will also help districts leverage federal and private financing options for the remaining cost of buses, allowing districts to utilize future fuel and maintenance savings as they are realized.

**Infrastructure Investment and Jobs Act (IIJA):** The IIJA was signed into law in November 2021, and includes several competitive and formula grant programs relevant to supporting the adoption of clean trucks:

- **Clean school buses:** $5B in competitive grants for clean school buses, including $2.5B specifically for zero emission school buses.
- **National Electric Vehicle Infrastructure (NEVI) Formula Program:** $5B formula program (including an estimated $57M for Colorado) which provides funding to states to “strategically” deploy EV charging, maintenance for the infrastructure and “establish an interconnected network to facilitate data collection, access and reliability”. The primary focus is on charging along designated national alternative fuel corridors.

![Figure 7: Current Alternative Fuel Corridors in Colorado](image)

- **Grants for charging and fueling infrastructure:** $2.5B competitive grant program for charging and fueling infrastructure, with grants of up to $15M each.
- **Regional hydrogen hubs:** $8B for competitive grants to create clean hydrogen regional hubs.

**Process and Implementation**

**Process for developing the Clean Truck Strategy:** The 2022 Colorado Clean Truck Strategy was developed through a collaboration of state partners including CEO, CDPHE and CDOT with input from stakeholders through public meetings and a stakeholder working group. The figure below outlines the key steps in developing the first iteration of this strategy.
**Updates and Reporting:** CEO, CDOT, and CDPHE, with input from stakeholders, will review and update recommendations from the Colorado Clean Truck Strategy every two years as part of the regular Colorado EV Plan updates, or as needed in response to changing market dynamics and planning requirements. State agencies will report on progress towards the Clean Truck Strategy goals in the annual progress reports to the legislature on the Colorado EV Plan and GHG Pollution Reduction Roadmap required by SB21-260 starting in FY 2022-2023.

**Ongoing engagement:** State agencies will continue to engage key stakeholders on implementation of the Clean Truck Strategy through regular updates and opportunities for input at the Freight Advisory Council, Colorado Electric Vehicle Coalition, and other interested stakeholder groups.

**Vision, Goals, and Objectives**

**2022 Clean Truck Strategy Vision**

Recognizing the critical nature of freight, delivery, passenger transport, and other important functions of the medium- and heavy-duty vehicle sector, the vision for this strategy is to support an efficient, affordable, and equitable large-scale transition of Colorado’s medium- and heavy-duty vehicle sector to zero emission technologies to achieve the state’s greenhouse gas and air pollution emission reduction goals and complementary benefits such as fuel and maintenance cost savings, in a way that prioritizes communities that have historically been most impacted by medium- and heavy-duty vehicle emissions.
Goals and Objectives

Clean Truck Adoption: State agencies will work with partners to achieve the following clean truck and ZEV adoption goals for the M/HD vehicle sector:

- **Zero Emission Vehicle Sales:** Increase adoption of medium- and heavy-duty ZEVs to at least 30% of new sales by 2030, and 100% of sales by 2050.

- **Zero Emission Vehicles on the road:** Increase adoption of ZEV M/HD vehicles to 35,000 vehicles on the road by 2030, with a long-term goal of 100% of medium- and heavy-duty vehicles being zero emissions.

- **Accelerate Fleet Turnover:** For M/HD vehicles that do not have viable near-term ZEV product offerings, state agencies will work with partners to facilitate disposal of the oldest and most polluting vehicles and purchase of replacement vehicles with 2017 or newer emissions technology. This includes starting with a plan to retire at least 500 of the oldest vehicles on the road by 2027, and aiming for new trucks sold in the state to produce 90% less NOx emissions than current standards starting in 2027.

Public fleets: The state and other public fleets, which collectively represent nearly half of the vehicles in the state’s 100 largest fleets, will lead by example in deploying zero emission M/HD vehicles in appropriate use cases:

- **State fleet:** Building on Executive Order D 2019 016 Amending and Replacing Executive Order D 2018 026 Concerning the Greening of State Government, which set a goal to reduce GHG emissions from state fleet vehicles by at least 15% by the end of FY 2022–2023 from a FY 2014–2015 baseline, establish a goal and accompanying transition plan for state owned fleets to achieve 100% zero-emission MHD fleet vehicle purchases where technically feasible and able to meet safety and mission critical operations needs by no later than 2040. Interim targets will be set based on the analysis state agencies will complete on the state M/HD fleet needs detailed in the actions below.

- **Transit fleet:** Convert the public transit fleets across the state to 100% zero emission vehicles no later than 2050, with an interim target of at least 1,000 ZEV transit vehicles by 2030, through implementation of the Transit Zero Emission Vehicle Roadmap.

- **School buses:** Support the adoption of 2,000 electric school buses by 2027, and a longer term goal to achieve 100% zero emission buses on the road by 2035, with a focus on adoption in school districts in disproportionately impacted communities

Charging and fueling infrastructure: State agencies will plan for and support public, utility, public-private partnership and private sector funding for sufficient M/HD charging and hydrogen fueling infrastructure to serve the identified clean truck and bus adoption goals. Additional planning is needed to identify the right quantity and mix of technologies, charging speeds, use cases, and locations for this infrastructure.

Equity: The state will work with its partners and will leverage CDPHE, CEO, CDOT, and CDLE equity resources to prioritize clean truck and bus deployment in ways that provide direct benefits to disproportionately impacted communities and support a just transition for workers in the medium- and heavy-duty vehicle sector.6

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6 Relevant equity and disproportionately impacted community resources include [CDPHE’s Climate Equity Framework and Data Viewer](#), CEO’s EV Equity Plan (forthcoming), and CDOT’s newly created Environmental Justice and Equity Branch.
Support success: State agencies and partners will strive to identify sufficient funding, financing, and other forms of support to achieve the ZEV adoption goals established, as well as additional anticipated benefits for fleets, workers, disproportionately impacted communities, and all Colorado residents such as fuel and maintenance cost savings, job creation and economic development, cleaner air and quieter operations, and lower utility rates.

Actions
The M/HD Study along with stakeholder and working group feedback identified many potential actions that Colorado could pursue to support the ZEV transition. The actions detailed in this section of the strategy are designed to support achieving the vision, goals, and targets, and include the lead implementers and timing where possible. Lead agencies for specific actions are highlighted in bold. Actions have been prioritized to identify the highest impact and most feasible near-term actions agencies will pursue in each category in the next two years (2022-2023), as well as medium term, lower priority actions that agencies will pursue as capacity allows or after necessary planning has been completed. A brief summary of past and ongoing efforts the state will continue is also included in each section for reference.

Procurement policies and programs

Past and ongoing efforts in Colorado
- Executive Order D 2019 016 Amending and Replacing Executive Order D 2018 026 Concerning the Greening of State Government, which contains goals for reducing emissions from the state fleet.
- CDOT’s Transit Zero Emission Vehicle Roadmap has been developed to support planning to reach the state’s transit electrification goals.

Near term high priority actions (2022-2023)

1. As the largest state agency operator of M/HD vehicles, CDOT will conduct an analysis of the best opportunities for conversion to ZEVs in their M/HD fleet. CEO, CDPHE and DPA will coordinate to conduct an analysis of the best opportunities for conversion to ZEVs with other state agencies who operate M/HD vehicles.

2. CDPHE, CEO, and CDOT will engage with the Community Access and Clean Fleet Enterprises, utilities, public and private fleets, disproportionately impacted communities, and other key stakeholders to explore different fleets’ needs and develop plans for outreach, education, and technical assistance for public and private M/HD fleets to transition to ZEVs, with a focus on fleets located in disproportionately impacted communities.

Medium term strategies

3. CDPHE, CDOT, and CEO will collaborate on implementing the outreach, education, and technical assistance plans for fleets, including exploring partnerships or potential additional capacity needs to provide technical assistance to public and private fleets to support ZEV transition planning, as well as potentially creating working groups of fleets with similar duty cycles and operating requirements.

4. CEO, CDOT, and CDPHE will propose updates to the Greening of State Government Executive Order that incorporate state fleet goals informed by the analysis of the state M/HD fleet.
5. **CEO, CDOT, and CDPHE** will work with DPA to seek ways to leverage cooperative procurement and price agreements to lower costs and streamline procurement of M/HD ZEVs and EVSE for public and private fleets, and will explore additional procurement strategies.

6. **CEO, CDOT, and CDPHE** will work together to develop a one-stop-shop website for state-level information on Colorado clean truck policies, programs, technical assistance, and educational resources offered across agencies, enterprises, and by other key stakeholders. This will include information on available vehicle models, research on in-use operation, total cost of ownership, innovative charging and financing solutions, and best practices for vehicle to grid integration.

**Vehicle incentives and financing**

**Past and ongoing efforts in Colorado**

- **ALT Fuels Colorado**, administered by the Regional Air Quality Council (RAQC), is a grant program for the replacement and retirement of pre-2009 vehicles with battery-electric and recovered methane fleet vehicles.
- The **Diesel Retrofit program**, administered by the RAQC, is an incentive program designed to help on- and off-road diesel operators voluntarily reduce diesel emissions while saving money.
- **The Volkswagen Settlement** funds several programs in Colorado with the $68.7M the state received from Volkswagen Group of America, including CDOT’s Transit Bus Replacement Program that gives grants to transit agencies to retire and replace older diesel and gasoline buses with battery-electric, hydrogen fuel cell, or recovered methane vehicles.
- The **Colorado Clean Diesel Program** makes grants to businesses to help offset the cost of replacing certain diesel equipment with all-electric or hybrid-electric equivalents.
- The **Clean Fleet Enterprise** was created by SB21-260 for the business purpose of incentivizing and supporting the use of electric motor vehicles and other clean fleet technologies by fleet owners and operators.
- The **Clean Transit Enterprise** was created by SB21-260 to support Colorado’s transit electrification through planning efforts, transit site upgrades, procurement of electric transit buses, and deployment of associated charging infrastructure.
- **Xcel’s Electric School Bus Rebate** provides public school district customers a rebate for electric school bus projects - up to $275,000 - depending on project costs.

**Near term high priority actions (2022-2023)**

1. **CDPHE** and CEO will support implementation of the Governor’s proposed 2022 budget that includes $150 million for a grant program for school districts to purchase electric school buses and associated infrastructure, and will support school districts in applying for federal funding for zero emission school buses and leveraging other financing approaches.

2. State agencies will support the Governor’s proposed 2022 budget that includes $15 million for incentives to retire and replace 300-500 of the oldest diesel trucks on the road. **CDPHE**, with support from the other agencies, will also work to develop longer-term disposal programs focused on the oldest vehicles on the road. In designing the programs, agencies will consider allowing fleets to keep old vehicles for a time as they get used to new technology, and will review innovative programs from across the country.
3. **CDPHE, CEO, and CDOT** will work with the Clean Fleet Enterprise and Community Access Enterprise to recommend a comprehensive set of program designs for rebates, vouchers, and/or grants for zero emission vehicles that consider the following components and principles:

- Provides a stable and consistent program fleets can plan around.
- Focuses on bridging the incremental cost gap.
- Includes electric vehicles, hydrogen vehicles, and vehicles that run on recovered methane where there are no other available ZEVs.\(^7\)
- Maximizes the use of new federal formula funds and competitive grant programs, financing, and other sources.
- Prioritizes the most market-ready electric truck segments in the early years.
- Prioritizes deployment in disproportionately impacted communities, disadvantaged business enterprises, and smaller fleets, such as through increased funding amounts or carve-outs.
- Includes QVM/QSR and OEM-approved vehicle repowers installed by trained and certified technicians utilizing appropriate quality assurance measures.
- Enables fleets the flexibility to sell vehicles when they need to.
- Reduces incentive amounts over time based on an evaluation of need.
- Has sufficient flexibility to accommodate delays in permitting, delivery of vehicles, or installation of charging/fueling infrastructure that are beyond the fleet’s control.
- Includes a list and information about current vehicle and equipment eligibility on state websites.

**Medium term strategies**

4. **CEO** will work with the Department of Revenue and the legislature to explore options to update and extend tax credits for zero emission truck purchases and leases beyond when they are set to expire in 2025, and to consider modifications to specific ownership tax to ensure that ZEV trucks do not have to pay significantly higher specific ownership tax than equivalent diesel trucks.\(^8\)

5. **CDPHE** will work with partners to evaluate options to reduce diesel idling, including incentives for vehicles with high-idling profiles, idle-free zones, and other measures.

6. **CEO, CDOT, and CDPHE** will work with OEMs, utilities, and the Colorado Clean Energy Fund to investigate and recommend financing options for zero emission medium- and heavy-duty vehicles and fueling infrastructure.

**Infrastructure planning and investments**

**Past and ongoing efforts in Colorado**

*Note: Several of the efforts described below have been focused on supporting light-duty electric vehicle charging to date.*

- **CEO’s EV Fast-Charging Plazas Program** is designed to increase access to high-speed charging across the state through large banks of fast chargers.
- **CEO’s EV Fast-Charging Corridors** project comprises high-speed charging stations at 34 locations across the state developed in partnership with ChargePoint and site hosts.
- **Charge Ahead Colorado** is a grant program administered by CEO and the RAQC for EVs and community-based Level 2 and DC fast charging stations.
- **REV West** Governors from eight western states – Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming – signed an MOU to provide a framework for creating an Intermountain West EV Corridor that will

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\(^7\) Recovered methane is only eligible through the Clean Fleet Enterprise, not the Community Access Enterprise.

make it possible to drive an EV across major transportation corridors in the west.

- The Community Access Enterprise was created by SB21-260 to support the widespread adoption of electric motor vehicles, equitably invest in transportation infrastructure, and incentivize the acquisition and use of electric motor vehicles and electric alternatives to motor vehicles.

- Support for recovered methane development for transportation and other end uses through Governor’s budget request for $50M for industrial clean air grants for which recovered methane is an eligible use, and the development of Clean Heat Plans by gas utilities required by SB21-264.

Near term high priority actions (2022-2023)

1. **CEO, CDOT, and CDPHE** will work with fleets, utilities, drivers, and other key stakeholders to conduct a regional and local corridor planning study for M/HD charging that identifies the quantity, type, and public locations of charging infrastructure needed to support the state’s clean truck adoption goals.

2. **CEO, CDOT, and CDPHE** will coordinate with the Community Access Enterprise and other key stakeholders to develop a comprehensive set of grant offerings for depot and public truck charging, and other investments that can support the quantity and range of charging needs for different fleets, leveraging funding from the federal government and new state enterprises. Program designs should consider prioritizing or setting aside funding for deployment in disproportionately impacted communities and to disadvantaged business enterprises, and including funds for facility retrofits. Programs will also need to consider how to best serve fleets who lease their facilities.

3. **CEO** will work with multiple entities to pursue actions in the "Opportunities for Low-Carbon Hydrogen in Colorado: A Roadmap" related to the medium and heavy duty transportation sector, including pursuing the development of a regional hydrogen hub as part of the Western Inter-State Hydrogen Hub MOU signed with Wyoming, Utah and New Mexico in February of 2022.

Medium term strategies

4. **CDOT** and CEO will coordinate with neighboring states to share best practices and encourage investments in M/HD charging and hydrogen fueling that support a seamless trucking experience across the west.

5. **CEO, CDOT, and CDPHE** will work with charging providers, utilities, fleets, and local permitting authorities to understand and address real and perceived barriers to permitting for infrastructure.

6. **CDOT** will research best practices and costs and benefits of developing a program to support truck stop electrification, including the integration of charging infrastructure at newly developed truck parking locations, with a focus on electrifying facilities in disproportionately impacted communities.

7. **CDPHE** and CEO will research best practices and costs and benefits of developing a program to support loading dock electrification, with a focus on electrifying facilities in disproportionately impacted communities.

Complementary utility strategies

Past and ongoing efforts in Colorado

- Xcel fleet advisory services, commercial EV rates, and charging infrastructure investments in its 3-year
Transportation Electrification Plan approved in 2021.

Near term high priority actions (2022-2023)

1. **CEO** will work with regulated utilities and market stakeholders to advocate that the next set of transportation electrification plans (TEPs) in 2023 include a significant focus on providing make-ready and other support to develop depot and public charging infrastructure for medium- and heavy-duty vehicles, charging management services, vehicle incentives and financing, and fleet advisory services.

Medium term strategies

2. **CEO** and CDOT will work with the CEVC Beneficial Electrification subgroup or convene a similar working group for statewide collaboration on charging planning and implementation for medium- and heavy-duty vehicles between fleets, utilities, and other key stakeholders. CDOT will also work with this group to explore opportunities for integrated corridor planning that includes consideration of utility upgrades that would support M/HD charging in conjunction with roadway projects.

3. **CEO** will convene a commercial EV rates workshop with investor-owned, municipal and rural electric cooperative utilities, and fleets, to discuss and develop best practices, and strive to enable consistent and affordable rates to charge statewide.

Workforce development programs

Past and ongoing efforts in Colorado

- The ZEV Workforce Development Working Group, led by CDOT and CDLE, is working with workforce partners to support the development of a standardized curriculum and training offerings for ZEV careers.

Near term high priority actions (2022-2023)

1. **CDLE** will work with CDOT, OEMs, community colleges, independent repair shops, trade unions, dealerships, disproportionately impacted communities, rural communities, and other key stakeholders to conduct a workforce needs analysis to identify gaps, plan programs, and strive to ensure supply of workers matches demand as the ZEV market grows.

Medium term strategies

2. **CDLE**, in partnership with the Colorado Community College System and workforce stakeholders, and with support from CDOT, CEO, and CDPHE, will develop and implement funding partnerships to support ZEV mechanic training programs, with a focus on recruiting and supporting participants from disproportionately impacted and Just Transition communities, diesel mechanics, and others whose work may shift along with the transition to zero emission vehicles.

3. **CDLE**, in partnership with the public workforce system and with support from CDOT, CEO, and CDPHE, will support apprenticeships, internships, scholarships, and other strategies to educate and recruit students in high schools, community colleges, etc. for future careers in the medium- and heavy-duty ZEV sector.
4. **CEO** will develop additional programming alongside its light-duty dealership efforts to engage and educate medium- and heavy-duty vehicle dealers in the state.

**Regulatory actions**

**Near term high priority actions (2022-2023)**

1. **CDPHE** will propose adoption of the Advanced Clean Truck and Low NOx Omnibus rules to the Colorado Air Quality Control Commission (AQCC) in order to ensure greenhouse gas and air quality emissions reductions and related benefits, including benefits to disproportionately impacted communities. The notice of proposed rulemaking will be filed by the end of 2022, with a rulemaking hearing in 2023, with the intent that the rules, if adopted by the AQCC, would go into effect for Model Year (MY) 2027 vehicles. Prior to the initiation of the rulemaking, state agencies will work with the Clean Fleet Enterprise, Community Access Enterprise, manufacturers, motor carriers, and other key stakeholders to ensure that sufficient complementary policies, programs, and investments are in place to support fleets, manufacturers, and dealers so they are able to transition successfully, as detailed earlier in this Clean Truck Strategy.

2. By the end of December 2022, **CDOT** will establish a working group of the Transit and Rail Advisory Committee to collaborate with statewide transit stakeholders regarding potential future adoption of a clean transit rule that would require a long-term transition to zero emission transit buses.

3. By the end of 2023, **CDPHE**, **CEO**, and **CDOT** will investigate options to ensure clean truck adoption by state, county, municipal and other public fleets and large private fleets, in alignment with the Advanced Clean Truck rule where technically feasible, and will report findings. This may include fleet rules, MOUs with fleets, or other approaches.

**Additional opportunities**

**Past and ongoing efforts in Colorado**

- **CDPHE** will continue supporting community air monitoring to track progress over time in disproportionately impacted communities.
- **CDPHE** will continue to evaluate potential improvements to its [diesel inspection and maintenance program](#) to help mitigate air pollution from older on-road vehicles.

**Near term high priority actions (2022-2023)**

1. **CDPHE**, **CEO**, and the RAQC will collaborate to explore potential indirect source standards that seek to reduce localized air pollution emissions from facilities that generate significant medium and heavy-duty vehicle traffic.

2. **CDOT** will update the state freight plan, including investigation of truck travel strategies that enhance operations, reduce congestion and reduce subsequent greenhouse gas emissions on Colorado’s transportation network.
Medium term strategies

3. **CDOT**, CEO, and CDPHE will collaborate with interested local governments to investigate the potential benefits and feasibility of innovative local programs that reduce emissions from deliveries, and support the use of ZEV vehicles and e-cargo bikes for last mile delivery.

4. **CEO** and CDPHE will work with CSU to track and report the carbon intensity of transportation fuels used in Colorado.

5. **CEO**, CDOT, and CDPHE will work with research partners and OEMs to analyze the relative costs and benefits of different approaches to battery reuse, remanufacturing, recycling, and disposal to support consideration of state policies that could accelerate the most promising market opportunities.