October 20, 2023

Via Electronic Submission through https://nmed.commentinput.com/?id=TuMmsArBj

New Mexico Environmental Department
Environmental Improvement Board Administrator Pamela Jones
Harold Runnels Building
1190 St. Francis Dr.
Suite N4050
Santa Fe, NM 87505
(505) 660-4305
pamela.jones@env.nm.gov

Re: Public Comments—New Mexico's Proposed Adoption of Advanced Clean Trucks

To Whom It May Concern:

Please find below the comments from Valero on New Mexico Environment Department's ("NMED's") proposed adoption of California's Advanced Clean Trucks program ("ACT"). Valero appreciates the opportunity to provide feedback on the proposal.

Introduction

Valero Energy Corporation and its subsidiaries (collectively, "Valero") submit these comments as part of NMED's stakeholder engagement regarding ACT. In addition to being the nation's largest independent refiner of petroleum fuels, Valero is one of the top producers of domestic biofuels. Valero was the first traditional petroleum refiner to enter large-scale ethanol production and is now the second largest ethanol producer in the U.S. Through our Diamond Green Diesel joint venture with Darling Ingredients, following a recent expansion project to construct a new plant in Port Arthur, Texas, we are currently the leading renewable diesel producer in the world. Our Board recently approved a project to commission production of sustainable aviation fuel, and we are actively pursuing carbon sequestration opportunities in the United States that will substantially lower the carbon intensity of the ethanol we produce.

Comments

a. Transportation sector decarbonization should embrace all technologies fit for purpose.

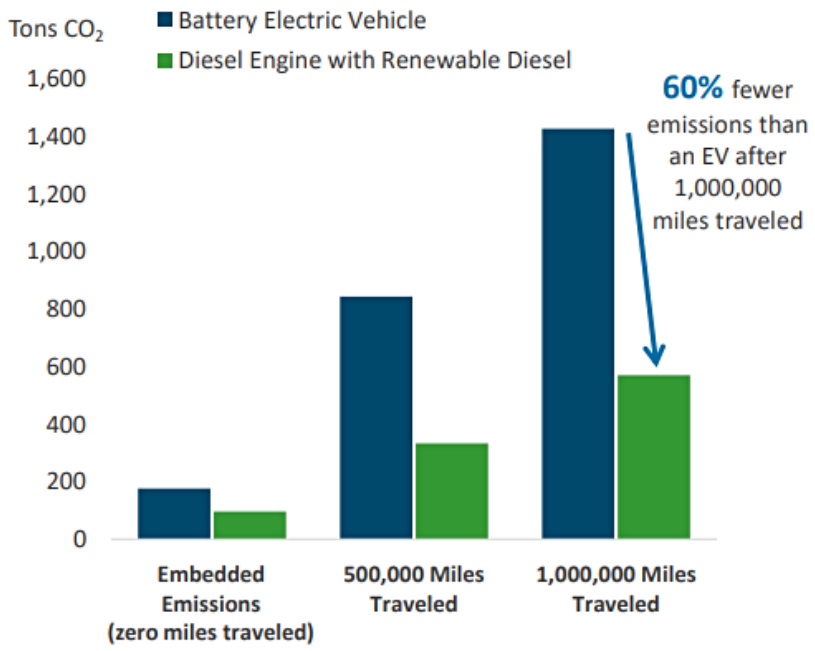
Valero recognizes NMED's desire to expediently lower GHG emissions from the transportation sector. As a proud producer of the low-carbon liquid fuels that have been and will continue to be essential to the decarbonization of the transportation sector, Valero encourages

NMED to not limit its transportation sector planning to zero-emission vehicle ("ZEV") technologies.

An exclusive reliance on ZEV technologies ignores both the full lifecycle GHG emissions of ZEVs and the benefits of low-carbon liquid fuels and other emerging technologies. NMED should evaluate the merits of all fuels and vehicle technologies on a full lifecycle basis. Despite being treated by regulators as zero-emission vehicles, electric vehicles are not emissions free – in fact, when it comes to medium- and heavy-duty vehicles ("MHDV"), they are not even the most effective technology available today to reduce GHG emissions.

A lifecycle analysis conducted by Southwest Research Institute finds that a heavy-duty internal combustion engine vehicle ("ICEV") that runs on renewable diesel with a carbon intensity of 25 g/MJ results in 60% fewer lifecycle GHG emissions when compared to a battery electric vehicle ("BEV") using U.S. average grid electricity, as illustrated in Figure 1. In New Mexico's case, the GHG emission intensity of grid electricity is 33% greater than the U.S. average – 1,134 lbsCO_2e/MWh versus the national average of 857 lbsCO_2e/MWh – resulting in an even greater disparity in GHG emission performance between low-carbon liquid fuels and BEVs.[1]

Figure 1: U.S. Heavy-Duty Long-Haul Vehicle Lifecycle Emissions (Sept. 2023 Valero Investor Relations Presentation)



Regarding "fitness for purpose," while ZEVs may provide options to help reduce GHG emissions, neither BEV nor fuel cell electric vehicle ("FCEV") technology is compatible with the

[1] U.S. EPA, "eGRID2021 Summary Tables," https://www.epa.gov/egrid/summary-data.

full range of use, duty and demand posed by the medium- and heavy-duty ("MHD") transportation sector, and therefore neither one is suitable to replace the ICEV and adequately serve the state's freight and transit needs.

- Current BEV technology is not suitable for long-haul trucks. Considering the present lithium-ion battery technology, to achieve a range of 600 miles, a battery pack on a long-haul truck would need to store 1,200 kilowatt-hours (kWh) of energy, weigh 6,300 kilograms (13,900 pounds), have a volume of 2,700 liters (95 cubic feet), and cost about $180,000.[2]

    - Due to federal weight constraints for tractor trailers, a long-haul BEV truck would lose 20% of payload capacity compared with a diesel truck, reducing the available revenue per mile and increasing the number of trucks needed to avoid delay or interruption of New Mexico's freight services.[3]

    - At a range of 150 miles, a long-haul BEV truck would need to stop three times to recharge over a 600-mile day. Even if a network of 350-kilowatt (kW) fast-chargers was widely available, charging time would reduce a driver's effective work day by over 2 hours, further requiring an increase in the number of trucks to maintain the pace and demand of freight services.[4]

    - ACT will not only require an increase in the number of trucks to accommodate MHD EV charging, but an increase in the number of truck drivers as well in order to comply with federal hours-of-service regulations. The United States Department of Transportation's Federal Motor Carrier Safety Administration ("FMCSA") regulates the number of hours commercial drivers may drive and work per day and week. According to the 11-hour driving limit, a property-carrying driver may drive a maximum of 11 hours after 10 consecutive hours off duty.[5] And per the 14-hour rule, a property-carrying driver may not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty.[6] Given the time intensity of EV charging, additional workers will be needed to ensure MHD fleets charging needs are satisfied while complying with the applicable hours-of-service regulations.

---

[2] Based on a battery pack energy density of 170 Wh/kg. Burke, Andrew, *Assessment of Requirements, Costs, and Benefits of Providing Charging Facilities for Battery-Electric Heavy-Duty Trucks at Safety Roadside Rest Areas: A Research Report from the National Center for Sustainable Transportation*, at page I (Feb. 2022) https://ncst.ucdavis.edu/research-product/assessment-requirements-costs-and-benefits-providing-charging-facilities-battery.

[3] Based on a federal maximum loaded weight of 36,000 kg, on a tractor weighing 8,600 kg and compared to a tractor carrying 965 kilograms (300 gallons) of diesel fuel. *Id*. at 4 and 15.

[4] Based on the Volvo Class 8 Box truck, having a range of 150 miles and an energy capacity of 1.75 kWh/mi. *Id* at 3.

[5] *See* https://www.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations.

[6] *Id.*

- Current FCEV technology facilitates larger and heavier vehicles than BEVs due to its higher energy storage capacity, and it offers drivers a refueling experience much like conventional vehicles, with the fuel tank capable of being refilled in a matter of minutes. However, adoption of the technology and particularly commitment to developing fueling infrastructure has been limited within the U.S.—currently the U.S. has 58 active public and private FCEV hydrogen fueling stations, none of which are located in New Mexico.[7]

    - Major hydrogen production and distribution infrastructure would need to be put in place before FCEV would even be serviceable. "[A]nalysis [also] suggests that the infrastructure for the hydrogen pathway is generally costlier than battery electric," with hydrogen transport facing "the largest cost-penalty in the near-term."[8] It is estimated that the capital cost for a single hydrogen filling station is $1.5 to $2.0 million.[9] Moreover, there are currently no hydrogen fuel cell tractor-trucks commercially available in North America or Europe to confirm their true cost or economic viability.[10]

The transition of a large and complex transportation system to a BEV or FCEV technology is a massive undertaking, requiring the establishment of new manufacturing, assembly and supply chains; build-out of new charging/fueling infrastructure; interface with public utilities; re-conception of fuel distribution logistics; and ultimate design of end-of-life resource recovery strategies. Renewable diesel, on the other hand, can utilize existing infrastructure (*i.e.*, pipelines, terminals, and retail distribution supply chains), requiring far less investment when compared against BEV charging and FCEV hydrogen fueling build-out. Renewable diesel can even be used as a petroleum diesel substitute to address a number of hard to decarbonize market segments where BEV and FCEV technologies are similarly challenged (*i.e.*, rail, marine, construction/mining equipment, etc.).

NMED should remain open to emerging innovative approaches and new technologies for reducing GHG emissions from ICEV, such as on-board carbon dioxide capture and subsequent

---

[7] U.S. DOE Alternative Fuels Data Center, Hydrogen Fueling Station Locations, https://afdc.energy.gov/fuels/hydrogen_locations.html#/analyze?region=US-CA&fuel=HY&country=US, accessed August 7, 2023.

[8] Hall, Dale and Lutsey, Nic, ICCT White Paper, "Estimating the Infrastructure Needs and Costs for the Launch of Zero-Emission Trucks" at 18 (August 2019). https://theicct.org/sites/default/files/publications/ICCT_EV_HDVs_Infrastructure_20190809.pdf

[9] For stations built between 2015 and 2017 for 400-500 kg/day. California Hydrogen Business Council, "Hydrogen FAQs," https://californiahydrogen.org/resources/hydrogen-faq/#:~:text=Capital%20costs%20in%20California%2C%20where,early%20(2013)%20market%20fueling., accessed June 23, 2022.

[10] Sharpe, Ben & Basama, Hussein, ICCT Working Paper 2022-09, "A meta-study of purchase costs for zero-emission trucks" at 12 (February 2022), https://theicct.org/wp-content/uploads/2022/02/purchase-cost-ze-trucks-feb22-1.pdf.

sequestration. Analysis from a Northwestern University research team has shown that cost-effective diesel tractor trucks combined with well-developed on-board carbon capture technologies offer a practical way to make large freight vehicles carbon neutral when running on fossil fuels and even carbon negative when running on biofuels.[11] Given existing liquid fuel infrastructure, "rapid adoption of such vehicles should be possible and CO_2 emissions can be continuously decreased."[12]

There are other complexities associated with a singular transition to MHD ZEVs that NMED should also consider, including:

- Significant environmental impacts arise from other aspects of the ZEV lifecycle, including raw material acquisition and processing, and battery production, transport, disposal, and recycling.[13]

- MHD ZEVs are more expensive than their ICEV counterparts. The International Council on Clean Transportation's ("ICCT's") literature survey of purchase costs for zero-emission trucks found the cost to purchase new battery-electric tractor trucks ranged from $200,000 to $800,000, and similarly, the cost of new hydrogen fuel cell trucks ranged from $200,000 to $600,000.[14,15] Even considering tax credits established under the Inflation Reduction Act for new commercial vehicles (26 U.S.C. 45W), there is a significant cost difference between ICEV and their ZEV counterparts.

[11] Schmauss, Travis A. & Barnett, Scott A, "Viability of Vehicles Utilizing On-Board CO_2 Capture," ACS Energy Letters 2021, 6, 8, 3180-3184 (August 18, 2021) https://doi.org/10.1021/acsenergylett.1c01426.
[12] *Id.*
[13] *See* UC Davis, *Achieving Zero Emissions with More Mobility and Less Mining*, at 10 (January 2023) https://www.climateandcommunity.org/_files/ugd/d6378b_3b79520a747948618034a2b19b9481a0.pdf ("Under prevailing technologies, lithium is an essential ingredient in the batteries that power EVs, as well as other consumer electronics and forms of electric mobility such as e-buses, e-trucks, and e-bikes. Lithium mining—currently concentrated in Australia, Chile, China, and Argentina—is, like all mining, environmentally and socially harmful"). *See also* Perry Gottesfeld, *Electric cars have a dirty little recycling problem–batteries*, CANADA'S NATIONAL OBSERVER, Jan. 22, 2021, https://www.nationalobserver.com/2021/01/21/opinion/electric-cars-have-dirty-little-recycling-problem-their-batteries.
[14] ICCT Working Paper 2022-09, *A Meta-Study of Purchase Costs for Zero-Emission Trucks*, at 4 (February 2022) https://theicct.org/publication/purchase-cost-ze-trucks-feb22/.
[15] Per CARB's own estimate, final capital costs for a hydrogen fuel cell Class 8, day cab tractor used in regional operation were $629,189 in 2018 compared with $134,000 for an analogous diesel vehicle. In 2024, CARB estimates that a hydrogen fuel cell tractor truck will cost $431,480 compared to $144,101 for a new diesel tractor. CARB, Appendix H: Draft Advanced Clean Trucks Total Cost of Ownership Discussion Document at 1 (October 22, 2019) https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/apph.pdf. Consistent with CARB's estimates, the ICCT recently forecast that composition costs for a hydrogen fuel cell tractor-truck in 2025 will exceed $400,000. CARB has also recognized that operating costs for a regional-hydrogen tractor in 2024 will exceed those for tractor trucks powered by diesel or battery electric. Sharpe, Ben & Basama, Hussein, ICCT Working Paper 2022-09, "*A meta-study of purchase costs for zero-emission trucks*" at 12 (February 2022), https://theicct.org/wp-content/uploads/2022/02/purchase-cost-ze-trucks-feb22-1.pdf.

- In addition, vehicle costs are often too high for the MHD payback period (the length of time required for an investment to recover its upfront costs).[16] Battery packs for MHDVs must be specifically suited for high lifetime mileage, deeper discharges per cycle, overall ruggedness, resistance to temperature extremes, and for production at low sales volumes. These characteristics push costs for MHDV battery packs toward the uppermost end of cost-range. The relatively high daily range needed by commercial vehicles results in battery costs that drive vehicle incremental costs as high as 50%–100% of the price of a conventional truck.[17]

b. NMED must consider the availability of charging infrastructure and grid reliability impacts.

As part of its evaluation of potential economic impacts to the welfare of New Mexico residents and in-state businesses, NMED must assess grid reliability impacts stemming from ACT's forced electrification of its MHD transportation sector. Reliance on BEVs for freight transport may have unintended, negative consequences, especially in relation to the electricity generating sector. In addition, NMED needs to accurately predict the number of additional chargers that will be needed to support New Mexico's anticipated MHD BEV population, which will require DC fast chargers ("DCFC"). New Mexico currently has approximately 202 operational public and private DCFCs,[18] of which roughly 57% are exclusive to Tesla vehicles.[19] Additionally, of New Mexico's 87 non-Tesla DCFCs, approximately 51% are not realistically available for servicing commercial MHDVs, being located at car dealerships, restaurants, shopping centers, and/or garages.[20] This leaves approximately 21% of New Mexico's statewide DCFCs (approximately 43 chargers total) potentially available for use by MHDVs.[21] Moreover, most of New Mexico's existing DCFC and prospective installations, such as those planned under New Mexico Department of Transportation ("NMDOT's") New Mexico EV Infrastructure Deployment Plan ("NEVI Plan"), are first and foremost intended to service light-duty passenger vehicles and do not include the commercial depot charging systems necessary to support electric MHDV fleets.[22]

ZEV mandates like ACT also present significant risks to grid reliability and the stability of the transportation sector. Transitioning truck stops into BEV charging hubs will require massive

[16] U.S. DOE, *Medium- and Heavy-Duty Vehicle Electrification: An Assessment of Technology and Knowledge Gaps*, at 35 (December 2019), https://www.osti.gov/biblio/1615213.
[17] *Id.* at 24.
[18] *See* https://afdc.energy.gov/stations/#/analyze (accessed on October 2, 2023).
[19] *See* https://afdc.energy.gov/stations/#/analyze (accessed on October 2, 2023).
[20] *See* https://afdc.energy.gov/stations/#/analyze (accessed on October 2, 2023).
[21] *See* https://afdc.energy.gov/stations/#/analyze (accessed on October 2, 2023).
[22] *See, i.e.,* https://www.nature.com/articles/s41560-021-00855-0. *See also* NMDOT's NEVI Infrastructure Deployment Plan, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.

power, on a scale that has been likened to the power required by a small town[23, 24] or sports arena.[25] A reliance on BEVs for the replacement of damaged electrical poles, emergency assistance, storm recovery and personal mobility for necessities like food and medicine would exponentially increase the magnitude of weather-related disasters and the hardship to local communities.

c. A rapid transition to BEVs and FCEVs risks raw material shortages and supply chain vulnerabilities.

A transition to ZEVs would expose New Mexico to supply chain vulnerabilities largely beyond the control of regulators. For instance, by 2030, Wells Fargo projects a risk of shortages across all of the key components of EV batteries, except manganese,[26] which is underscored by long lead times for the EV battery supply chains,[27] and a reliance on geopolitical rivals who control those supply chains.[28] As such, there is a mismatch between ACT and the availability of critical minerals essential to realizing its target.[29] Results have shown that "mass electrification of the heavy-duty segment on top of the light-duty segment would substantially increase the lithium demand and impose further strain on the global lithium supply."[30] The significant impact is attributed to the large single-vehicle battery capacity required by HDVs and the expected battery replacement needed within the lifetime of HDVs.[31] Specifically, "[t]he results suggest that global lithium resources will not be able to sustain simultaneous mass electrification of both the LDV and HDV segments."[32] Because the electrification in the LDV segment has already imposed significant strains on the global lithium supply, further mass electrification in the HDV segment, which is expected to increase the accumulated net demand by 29% to 53%, would come with risks.[33] Even if electric HDVs gain a technoeconomic advantage over other powertrain technologies and achieve market success in the short term, their long-term development is likely to face resource constraints with a reflected surge in lithium prices.[34] It is therefore "recommended that both the government

[23] *See* https://www.autoblog.com/2022/11/26/electric-vehicle-charging-stations-could-use-as-much-power-as-a-small-town-by-2035-and-the-grid-isn-t-ready/.
[24] *See* https://www.caranddriver.com/news/a41970523/truck-stops-energy-cost-electric-vehicles/.
[25] *See* https://www.bloomberg.com/news/articles/2022-11-14/tesla-s-electric-semis-are-coming-and-trucks-stops-aren-t-ready.
[26] Colin M. Langan, et al., *BEV Teardown Series: The Untold Electric Vehicle Crisis, Part 1: Tesla Model Y–The Pace Car*, WELLS FARGO (May 11, 2022).
[27] IEA 2022 Global EV Outlook, at 179, https://www.iea.org/reports/global-ev-outlook-2022.
[28] *Id.* at 154-58.
[29] IEA, *World Energy Outlook Special Report – The Role of Critical Minerals in Clean Energy Transitions* (Revised March 2022), https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf.
[30] Hao, H., Geng, Y., Tate, J.E. et al., *Impact of transport electrification on critical metal sustainability with a focus on the heavy-duty segment*, NAT COMMUN 10, 5398 (2019) https://www.nature.com/articles/s41467-019-13400-1
[31] *Id.*
[32] *Id.*
[33] *Id.*
[34] *Id.*

and vehicle manufacturers should carefully consider the ambitious promotion of vehicle electrification in the heavy-duty segment."[35]

d. NMED's proposal will impact both intrastate, tribal, and interstate transport.

By imposing restriction on freight vehicles travelling both within and across state lines, ACT would restrict the movement of goods in New Mexico and in the United States. One in nineteen jobs in the state of New Mexico is a trucking industry job,[36] and trucking companies located in New Mexico are also "[p]rimarily small, locally owned businesses" that will be burdened with increased costs and acutely impacted by ACT.[37] NMED should quantify the economic impact of supply-chain disruptions and bottlenecks likely to occur if fleet owners are forced to acquire ZEVs that are not supported by adequate infrastructure outside New Mexico. Given the disproportionate number of jobs related to the trucking industry in New Mexico, NMED should evaluate the risk of New Mexico based trucking companies opting to relocate their base of operations to either Texas or Arizona, neither of which are looking to implement California's ACT rule which mandates that their MHDV fleets transition to ZEV trucks.

In addition to the New Mexico trucking industry, "88.8% of New Mexico communities depend exclusively on trucks to move their goods."[38] NMED should address how consumers will be impacted by higher costs of food and goods as the costs of replacing existing vehicles with ZEVs are passed through to customers.

Road freight also plays a vital role in the economic growth of our country and is an important and ongoing component of the transportation planning processes in the United States as the interstate transport of goods impacts the national economy and quality-of-life standards. For example, the availability of out-of-state charging infrastructure and support for electric and fuel cell MHDVs outside of New Mexico is beyond NMED's control or influence. NMED should assess impacts to its own economy, as well as the national economy, as a result of one state potentially accelerating ZEV freight transport that would cease to be reliable or functional outside its geographically confined network of charging/fueling infrastructure and support systems.

e. NMED lacks the legal and legislative authority to adopt a transportation electrification mandate like California's ACT standard.

The measures contemplated by California's ACT program are extraordinary. In considering their adoption in New Mexico, there is little to no legal analysis to confirm that the novel approaches and requirements mandated under the regulations are within the authority of NMED and do not offend principles of state or federal law. NMED should consider whether the measures called for in the California ACT rule conflict with or are otherwise preempted by the

[35] *Id.*
[36] *See* https://truckingresearch.org/wp-content/uploads/2020/08/New-Mexico-Fast-Facts-2020.pdf.
[37] *Id.*
[38] *Id.*

statutory mandates of federal legislation such as the Energy Policy and Conservation Act ("EPCA"); the federal CAA; the Energy Independence and Security Act ("EISA"), including the Renewable Fuel Standard ("RFS").

ACT will have vast nationwide political and economic significance. Requirements that mandate a shift from ICEV to ZEV sales will significantly impact supply chains, consumer costs, electric power infrastructure, domestic energy security, and interstate commerce.

Additionally, ACT includes measures that may violate other constitutional provisions and principles. These include, but likely are not limited to, the Dormant Commerce Clause, which prohibits state regulations that improperly discriminate against out-of-state commercial interests or that unduly burden interstate commerce; the dormant foreign affairs preemption doctrine under the Supremacy Clause, which preempts state laws that intrude on the exclusive federal power to conduct foreign affairs; the Takings Clause of the Fifth Amendment, which precludes the taking of private property (or the elimination of entire industries) for public use without just compensation; and the equal sovereignty doctrine, which constrains the federal government from treating states disparately.

f. Limitations of CAA § 177.

The early stages of California's ZEV program were mired by low consumer acceptance, slow technological advancement, missed goals, and backtracking. While California's goals remained aspirational, it always maintained (and several times applied) the ability to re-write the rules when the program proved infeasible for automakers.[39, 40, 41] The limitations in § 177 of the CAA do not provide states (other than California) with the flexibilities to adjust ambitious targets to accommodate the realities of record inflation, extraordinary supply chain disruptions, global uncertainty due to the war in Ukraine, and critical concerns about the availability, cost and foreign dependence of minerals needed for ZEV batteries. Rather, states may adopt and enforce standards to control emissions from new motor vehicles only if "such standards are identical to the California standards".[42]

---

[39] California Air Resources Board ("CARB" or "ARB"), *ARB Modified Zero-Emission Vehicle (ZEV) Regulation* (April 24, 2003) https://ww2.arb.ca.gov/news/arb-modifies-zero-emission-vehicle-zev-regulation (providing that ARB voted to modify California's ZEV rule in order to allow automakers to meet part of their ZEV requirement).
[40] CARB, *Notice of Public Hearing to Consider Proposed Amendments to the California Zero-Emission Vehicle Regulations Regarding Treatment of Majority Owned Small or Intermediate Volume Manufacturers and Infrastructure Standardization* (May 1, 2001) https://ww3.arb.ca.gov/regact/charger/notice.htm (stating that "[a]t a January 25, 2001, hearing, the Board approved major changes to the ZEV regulations that will significantly reduce the number of ZEVs required during the near term").
[41] CARB, *Proposed 2014 Amendments to the Zero Emission Vehicle Regulation* (September 2, 2014) https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2014/zev2014/zev14isor.pdf?viewType=Print&viewClass=Print (stating that "California could see about 26,000 fewer ZEVs and TZEVs delivered in the 2018 through 2025 model years than would be delivered under the existing regulation").
[42] *See* 42 U.S.C § 7507.

New Mexico must carefully consider what the implications will be if reality cannot keep pace with its ambitions – e.g., if automakers cannot supply ZEVs in the numbers needed to meet NMED's proposed MHD sales mandates, if trucking companies choose not to or cannot afford to purchase the ZEVs, and if the electrical grid and ZEV charging infrastructure cannot keep pace with the growth in MHD ZEV fleet. Without the option of modifying the rules to accommodate ZEV realities, states adopting California's standards via § 177 risk creating for themselves a quagmire in which manufacturers are unable to sell and consumers unable to purchase the new trucks, causing the state of New Mexico to fail to meet its obligations under an ACT that it cannot modify. Additionally, NMED should consider the potential incremental costs that adoption of the ACT will place on its trucking industry and ultimately the consumer, particularly the low-income disadvantaged and tribal communities, as the ACT forces the New Mexico trucking industry to economically compete for a resource limited supply of MHD ZEV trucks with California, the fourth largest economy in the world, who is utilizing significant state resources and other environmental programs to subsidize the transition of its MHDV trucking fleet to ZEVs.

g. California's struggles present a cautionary tale for New Mexico.

NMED should consider the implications that a strategy focused on a singular technology may have on community decision-making, consumer choice, and the unintended consequences that reliance on electrification may present, including foreign supply chain disruptions and forced labor in the production of the raw materials needed to manufacture batteries.[43]

As California has faced rolling blackouts and historic energy prices, Governor Newsom has pivoted to the use of traditional fuel infrastructure to ensure system reliability to protect against outages.[44] The California Energy Commission (CEC) has projected that an additional 157,000 chargers will be needed to support California's anticipated electric MHD population in 2030—all of these will be DCFC, representing 9,100 additional job-years of dedicated workforce requirements,[45,46] compounding timeline feasibility challenges. CEC further projects that the MHDV charging network will see loads "in excess of 2,000 MW around 5 p.m. on a typical workday," further exacerbating the existing gap between net peak energy demand and existing generation.[47]

---

[43] *See* U.S. Department of Energy, *2022 List of Goods Produced By Child Labor or Forced Labor*, at 50-51, https://www.dol.gov/sites/dolgov/files/ILAB/child_labor_reports/tda2021/2022-TVPRA-List-of-Goods-v3.pdf.
[44] *See* https://www.ebudget.ca.gov/2022-23/pdf/Revised/BudgetSummary/ClimateChange.pdf.
[45] CEC, Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment Analyzing Charging Needs to Support ZEVs in 2030, 19-AB-2127 at 1 and 6 (July 14, 2021), https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127.
[46] Carr, Edward; Winebrake, James; Winebrake, Samuel, *Workforce Projections to Support Battery Electric Vehicle Charging Infrastructure Installation* (June 8, 2021) https://etcommunity.org/assets/files/Workforce-ProjectionstoSupportBatteryElectricVehicleChargingInfrastructureInstallation-Final202106082.pdf.
[47] *Id.*

Moreover, unworkable ZEV sales mandates put New Mexico at risk of missing out on real GHG emission reductions available through incentivizing low-carbon liquid fuels and by encouraging the development of emerging carbon removal technologies.

If buyers of MHDV are unwilling or unable to buy these significantly more expensive vehicles, they are likely to postpone replacement of their fleets, which in turn will keep higher-emitting and inefficient vehicles on the road beyond their normal useful life. Therefore, the rule is likely to forego opportunities for earlier emissions reductions and to incentivize delay of investment.

h. NMED should prepare a transparent and reasoned economic analysis.

NMED has failed to prepare a comprehensive costs model with respect to its ACT proposal. Without doing so, NMED cannot adequately consider alternatives that emphasize affordability alongside emissions reductions. NMED's analysis should transparently convey the consequences and difficulties associated with the major technology transformation required under the proposed rulemaking. For example, NMED has not estimated what New Mexico's total costs of compliance would be under ACT. Neither has NMED provided any discussion quantifying impacts to New Mexico's job market.

Moreover, NMED should not merely rely on and extrapolate from CARB's data and analysis without adequately considering differences in scale, climate, population density, and state economies that will have profound impacts on New Mexico's experience implementing ACT. State specific and regional factors are material and must be considered to ensure the regulations are properly and thoroughly vetted for application in New Mexico.

As discussed above, as California has felt the real-world implications of its climate policy with rolling blackouts and sky-high energy prices, it is now implementing a broader approach to GHG reductions that includes investment in carbon capture and fossil fuel infrastructure to ensure future system reliability. NMED can and should present a transparent, technology-neutral approach that allows for innovation that would better serve New Mexico's most vulnerable communities. For example, NMDOT highlighted known risks and challenges inherent to EV adoption in its NEVI Plan approved September 2022:[48]

- "One set of challenges pertains to the **environmental conditions** in which []EV charging infrastructure will be deployed. . . . Operating an EV in extreme temperatures of any kind can have negative impacts on battery range and additional wear and tear to the vehicle. Charging an EV heats up the battery quickly. This, in addition to external

[48] *See* U.S. Department of Transportation's NM NEVI Approval Letter (September 14, 2022) https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_approval_letter.pdf. *See also* NMDOT's NEVI Infrastructure Deployment Plan, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.

temperatures, may at first improve efficiency but ultimately degrade the battery and result in premature battery replacement."[49]

- "[E]xecution risk may be higher in less-developed areas where there are fewer eligible sites, and in underserved communities where economic conditions may lead to site hosts to be disproportionately impacted by a failure to receive a return on their investment."[50]

- "A third set of challenges consists of the **availability of materials, equipment, and other resources** necessary for a strategic and swift development of EV charging stations. In all likelihood, an increase in the demand of charging infrastructure nationwide with the utilization of NEVI funding will strain the supply chain and will delay the production and delivery of necessary charging station components. Utilities have already felt the strain of a depleted and delayed supply of necessary equipment (e.g., meters, transformers) and these conditions may be enhanced with the increase in national utility-based development in response to the NEVI Program. There is no way around this delay other than ordering critical components promptly and staying in touch with the supplier. . . . EV charging station providers Electrify America and EVgo have identified utility interconnection costs and timelines as a barrier to DC fast charger deployment and noted bottlenecks in interconnections to have delayed projects from six months to a year."[51]

- "Fourth, as EV charging stations are deployed, owners and operators need to ensure that equipment will not become a **stranded asset**, or an asset that is no longer usable. Stranded assets cause customer confusion and frustration and consume the valuable resources needed to build out a statewide EV charging network. There are several reasons a station may become stranded. Poor station maintenance can lead to stations being perpetually broken and unusable, particularly in rural or hard to access locations. If an EV charging station is built in an area without electrical capacity and infrastructure to support its use, it will be unusable until the appropriate upgrades are installed. Additionally, if a site host decides to switch charging networks or the existing network no longer offers services, charging stations may not be equipped with hardware needed to work with or upgrade to a new network and the EV charging stations will no longer be usable."[52]

---

[49] NMDOT's NEVI Infrastructure Deployment Plan at 52, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[50] NMDOT's NEVI Infrastructure Deployment Plan at 52, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[51] NMDOT's NEVI Infrastructure Deployment Plan at 53, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[52] NMDOT's NEVI Infrastructure Deployment Plan at 53, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.

- "The Electric Vehicle Infrastructure Training Program (EVITP) ensures that everyone who installs or maintains an EV charger is properly certified. However, there were concerns from interviewees that not enough electricians are participating in EVITP. Companies are already hearing about a lack of existing certified electricians, even in more populous areas."[53]

- "[L]abor shortages, particularly regarding skilled laborers required to install charging stations, may delay charging infrastructure deployment. NEVI requires that, except for apprentices, all electricians installing, maintaining, and operating EV charging stations be certified through the EVITP [(Electric Vehicle Infrastructure Training Program)]. EVITP is a training and certification program that is currently available online and on-demand with EVITP examinations occurring in person. EVITP publishes a list of contractors that meet certain conditions for EVITP certification of their electricians. As of June 2022, much of the state served by AFC [(Alternative Fuel Corridors)]-designated highways are without local contractors on the EVITP published list."[54] Additionally, EVITP.org identifies only 11 businesses in all of New Mexico who employ the required EVITP certified electricians, however only two (2) of the listed contractors have New Mexico based area codes and can be traced to physical businesses within the state of New Mexico, while the remaining nine (9) reflect businesses based in various states across the U.S., ranging from Florida to Michigan to California.[55]

- "NMDOT engaged with a diverse array of stakeholders with different interests and competing business practices to better understand overall concerns and receive feedback on recommended focus areas for the development of the plan. . . . It is important to note that some stakeholders expressed concerns regarding possible consideration of higher capacity 350kW DC fast chargers. They believe the necessity of 350kW DC fast chargers versus 150kC DC fast chargers requires further assessment because deploying 350kW DC fast chargers could place an undue cost and electricity burden on projects."[56]

- "In discussing existing and future EV charging and grid infrastructure, utility representatives identified several priority areas for NMDOT and other stakeholder to consider in the NEVI planning and EV charging station deployment process. . . . Utilities are predominantly concerned with significant transformer upgrades and the long lead times the industry is experiencing in the supply chain. Utilities may not be

[53] NMDOT's NEVI Infrastructure Deployment Plan at 9, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[54] NMDOT's NEVI Infrastructure Deployment Plan at 53, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[55] *See* https://evitp.org/newmexico
[56] NMDOT's NEVI Infrastructure Deployment Plan at 6, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.

able to obtain the equipment necessary to being upgrades and construction in a timely manner."[57]

- "Utilities will need regulatory approval for all service and capacity upgrades. This will be common in rural areas where infrastructure is likely older or absent."[58]

- "Utilities are unsure what the future of grid management looks like and how peak load will be affected by extensive EV adoption and EV charging station deployment."[59]

- "Interviewees [which included EV charging station manufacturers, owners, and network operators] also noted deployment costs as a concern. Running power to the charging site may be cost-prohibitive in rural areas with low utilization, and therefore, a deterrent to EV charging. Utility demand charges also can make EV charging cost-prohibitive for some users."[60]

- "The EV charger manufacturers, owners, and operators that were interviewed recommended that NMDOT consider how long it can take for the private sector to deploy EV chargers. For example, current order times for DC fast chargers are 9-12 months. Interviewees indicated that pre-construction activities can take up to 12 months".[61]

- "In addition, public survey respondents expressed concerns, [which included those] listed below, over the impact of EV chargers on the environment and their communities[:]"[62]
    - "Environmental concerns (habitat destruction, heavy metals, urban heat island, renewable energy, fossil fuel-based energy production)"
    - "Power grid reliability"
    - "Renewable energy (solar)"
    - "Support local economies"
    - "Flood zones"
    - "Fire hazards from transmission lines"
    - "Funding to maintain cleanliness of charging stations"

[57] NMDOT's NEVI Infrastructure Deployment Plan at 7, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[58] NMDOT's NEVI Infrastructure Deployment Plan at 7, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[59] NMDOT's NEVI Infrastructure Deployment Plan at 8, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[60] NMDOT's NEVI Infrastructure Deployment Plan at 9, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[61] NMDOT's NEVI Infrastructure Deployment Plan at 9, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[62] NMDOT's NEVI Infrastructure Deployment Plan at 22, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.

- "Affordability"

- "Participants in the public meetings and surveys made additional comments, [which include those] listed below[:]"[63]
  - "Electrify America typically charges more than Tesla per kWh"
  - "High kWh rates disincentivize EVs"
  - "Justice + Equity rings a little hollow when the cost of electricity to charge is not that much cheaper than gasoline"
  - "Charging issues when Interstates are closed"
  - "Electricity pricing"
  - "Lack of end-of-life plan for EVs"

- "New Mexico's land use is largely rural with a population density of 17.5 people per square mile – one of the lowest in the nation".[64]

- "Using the [U.S. Department of Transportation's] definition, 166 (33.3%) of New Mexico census tracts are [disadvantaged communities] DACs."[65] "These communities are diverse and largely low-income".[66]

- "The primary short-term concern related to capacity is supply chain delays. Specifically, the staff of electric utilities are reporting long lead times for transformers, meters, and other components necessary for infrastructure builds. These delays may slow or prevent infrastructure construction in some areas."[67]

- "[F]inancing of and regulatory approval for capacity upgrades are concerns for utilities".[68]

- "Rural and disadvantaged communities will likely experience capacity issues before other areas in New Mexico, since infrastructure in these locations has likely not been updated recently or as frequently as other areas."[69]

---

[63] NMDOT's NEVI Infrastructure Deployment Plan at 23, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[64] NMDOT's NEVI Infrastructure Deployment Plan at 26, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[65] NMDOT's NEVI Infrastructure Deployment Plan at 29, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[66] NMDOT's NEVI Infrastructure Deployment Plan at 30, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[67] NMDOT's NEVI Infrastructure Deployment Plan at 37, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[68] NMDOT's NEVI Infrastructure Deployment Plan at 37, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[69] NMDOT's NEVI Infrastructure Deployment Plan at 38, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.

- "Gaps in the grid are also more common in rural and disadvantaged communities."[70]

- "Of the 189 publicly available charging locations in New Mexico, only eight meet all the basic requirements of the NEVI program (i.e., within 1 driving mile of the Interstate and with four or more DC fast charger CCS connections)."[71]

NMED falls short in communicating such challenges and representing the concerns of stakeholders associated with singular reliance on electrified transport in its assessment of ACT. New Mexico stakeholders should be afforded an opportunity to evaluate the data, costs, and assumptions underlying ACT before NMED proceeds with its rulemaking.

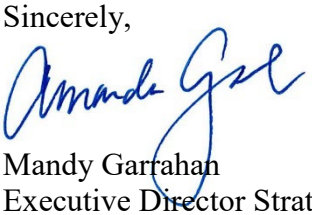
Conclusion

New Mexico should support and foster technological innovations in the transportation sector by embracing technology-neutral approaches to decarbonization. Decarbonizing the transportation sector will require multiple technologies competing in an open market that rewards technologies based on emissions reductions and costs. Valero is prepared to work with NMED to help ensure its GHG reduction goals are achieved.

* * *

Valero appreciates the opportunity to comment and would welcome the opportunity to have additional discussions on these issues. Please do not hesitate to contact me with any questions or if Valero or I can otherwise be of assistance.

Sincerely,



Mandy Garrahan
Executive Director Strategic Planning & Public Policy

[70] NMDOT's NEVI Infrastructure Deployment Plan at 38, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.
[71] NMDOT's NEVI Infrastructure Deployment Plan at 44, https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nm_nevi_plan.pdf.