

**STATE OF NEW MEXICO
BEFORE THE ENVIRONMENTAL IMPROVEMENT
BOARD AND THE ALBUQUERQUE BERNALILLO
COUNTY AIR QUALITY CONTROL BOARD**

**IN THE MATTER OF PROPOSED AMENDMENTS
TO 20.2.91 NMAC, NEW MOTOR VEHICLE
EMISSION STANDARDS,**

No. EIB 23-56(R)

and

**IN THE MATTER OF PETITION TO AMEND
EXISTING RULE 20.11.104 NMAC, NEW MOTOR
VEHICLE EMISSION STANDARDS,**

AQCB Petition No. 2023-01.

**WRITTEN DIRECT TESTIMONY OF KATHLEEN HARRIS, AARON KRESSIG, AND
GUILLERMO ORTIZ**

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I. Introduction

On behalf of Climate Advocates¹ and our members, thank you for the opportunity to provide testimony in support of the joint proposal of the New Mexico Environment Department (NMED) and the City of Albuquerque Environmental Health Department (EHD) (collectively the “Departments”) to adopt the Advanced Clean Cars II (ACCII) Advanced Clean Truck (ACT), and Heavy-Medium Duty Low NOx Omnibus (Low NOx) regulations (collectively referred to as the “Clean Vehicle Standards” or simply the “Rules”). Our organizations represent thousands of New Mexicans, many of whom suffer from health conditions that are exacerbated by tailpipe pollution, and all of whom stand to suffer from the climate crisis. For that reason, we are acutely interested in the proposed Rules, which, if adopted, would constitute one of the most significant steps the state has ever taken to combat the climate crisis and reduce air pollution.

We want to start off by thanking the Departments for all of their hard work, including the extensive public outreach they have undertaken starting this summer. We also want to thank the members of the Environmental Improvement Board (EIB) and the Albuquerque-Bernalillo County Air Quality Control Board (AQCB) for their willingness to volunteer their time to review the written testimony and participate in the Joint Hearing starting November 13, 2023.

In our testimony, we urge the Boards to approve the Rules before the end of November 2023, so that they can apply to vehicles beginning in Model Year (MY) 2027. In addition, we urge the Boards to strengthen the ACCII proposal by extending this program beyond MY 2032 to ensure that 100% of new cars sold in New Mexico are pollution-free starting in MY 2035.²

As we explain, adopting the Rules in full would constitute one of the most significant steps the state has ever taken to combat the climate crisis and reduce life-threatening air pollution. Analysis performed by the Environmental Resources Management (ERM) demonstrates that the

¹ Natural Resources Defense Council, Southwest Energy Efficiency Project, Coalition for Clean Affordable Energy, 350 New Mexico, Western Resource Advocates, Prosperity Works, Conservation Voters New Mexico, Sierra Club, New Mexico Interfaith Power and Light, Center for Civic Policy, Western Environmental Law Center, CALSTART, and 350 Santa Fe.

² We have proposed revisions to the regulatory text to reflect our proposal. *See* Climate Advocates’ Ex. 2.

Rules will deliver benefits that far exceed the associated costs.³ Reductions in fine particulate matter (PM) alone would prevent 136 premature deaths and more than 76,000 cases of respiratory illnesses by 2050; reductions in ozone concentrations would further benefit public health. The Rules would mitigate the climate crisis by preventing up to 139 million metric tons of carbon dioxide equivalent—*more than the entire state emitted in 2018*. These reductions will play a critical role in achieving the Governor’s GHG reduction goals and avoiding the worst impacts of climate change. Additionally, the Rules will save consumers billions of dollars by reducing fuel and maintenance costs and bringing high paying jobs into the state. In aggregate, the Rules will deliver net societal benefits of about \$44 billion.

The Rules achieve these dramatic benefits not by regulating New Mexico businesses or individuals, but instead by requiring out-of-state manufacturers to produce and deliver an increasing number of zero emission vehicles (ZEVs), including plug-in hybrids and battery electric vehicles, for sale in New Mexico. Manufacturers must also comply with tighter emission limits for gas or diesel-fueled vehicles that are delivered to the state. The Rules build on over three decades of experience implementing ZEV and low emission vehicle programs in California and 16 other states.⁴

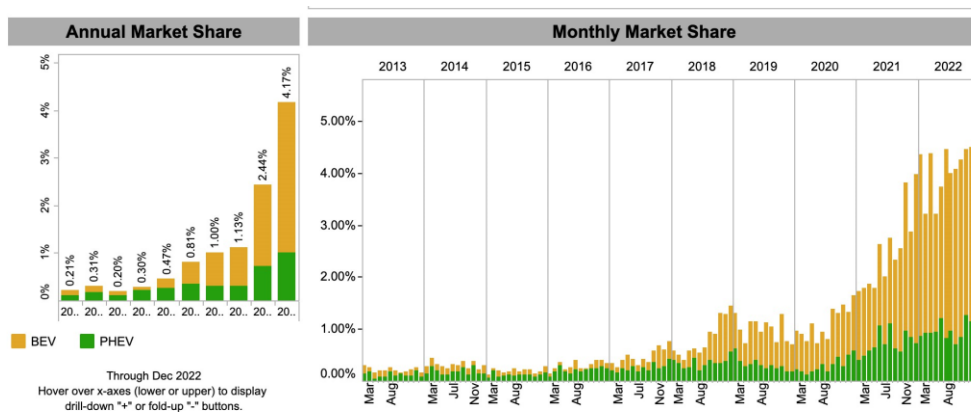
Certain stakeholders are likely to express concerns about the ACCII proposal, including whether there will be sufficient demand for electric vehicles (EVs) in MY 2027, whether New Mexicans will be able to afford EVs, whether EVs have sufficient range for New Mexicans who live in rural areas, and whether New Mexico has sufficient charging infrastructure. In our testimony, we carefully respond to each of these concerns and explain why they are misplaced.

With respect to demand, it should be noted that New Mexico (like the rest of the United States) is already seeing exponential growth in the sale of EVs. In December 2022, New Mexicans purchased more EVs than in any other month on record. ZEVs were a mere 1.13% of new vehicle

³ The ERM Reports provide the most comprehensive analysis of the costs and benefits of the Rules prepared to date. Both reports are included as exhibits to our joint testimony. *See* Climate Advocates’ Ex. 6 (ERM, New Mexico Advanced Clean Cars Program II Report); Climate Advocates’ Ex. 7 (ERM, New Mexico Clean Trucks Program Report)).

⁴ CARB, [States that Have Adopted California’s Vehicle Standards under Section 177 of the Federal Clean Air Act](#) (May 2022). Links are provided solely for the convenience of the other parties. Unless a document is attached as an exhibit, Climate Advocates do not intend for the Boards to review it or rely upon it.

sales in New Mexico in 2020; in 2021, they were 2.44%, and in 2022, they were 4.17%. And EV sales increased steadily throughout 2022, reaching 5.5% of sales by December.



Source: Alliance for Automotive Innovation (2023). Advanced Technology Sales Dashboard.

Demand is increasing, in part, because ZEVs are also becoming increasingly affordable. With the help of federal incentives, a 2023 Chevy Bolt costs less than \$20,000; even a relatively high-end EV like a Tesla Model 3 costs \$31,490. These costs have already fallen dramatically over the past several years and are expected to continue declining as battery technologies continue to improve and production costs decline. With federal incentives, new EVs are expected to be about \$5,400 cheaper than new internal combustion engine vehicles by MY 2027, the first year in which ACCII would apply in New Mexico. And upfront purchase costs are only part of the overall cost of vehicle ownership. The greatest economic benefits of EV ownership come from fuel savings and reduced maintenance costs. According to ERM, the average light-duty EV owner in New Mexico will save between \$12,000 and \$17,000 over the lifetime of the vehicle due to reduced fuel and maintenance costs.

Demand for EVs is also increasing because manufacturers are offering a greater variety of EVs, with more range than ever before. In the first half of 2023, there were 103 EV models available on the market, including cars, sport utility vehicles, pickup trucks, and vans. Newer models have greater range than prior models. The average range of an EV sold in the United States in 2022 was 290.8 miles.⁵ That represents enough range to drive from Carlsbad to Albuquerque

⁵ Tom Randall, [US Electric Cars Set Record with Almost 300-Mile Average Range](#), BLOOMBERG (Mar. 9, 2023).

without having to stop to charge. Individuals who need to travel even greater distances can find EVs with 350, 400, or even 500 miles of range. Plug-in hybrids—which are treated as ZEVs under ACCII—are another option for New Mexicans who take long road trips. These savings are even higher for individuals who drive longer distances than average—for example, people who reside in rural parts of the state. In addition, it is important to remember that this Rule applies only to new vehicle sales; it has no effect on used vehicle sales or vehicles already on the road. While ACCII does not directly regulate the used vehicle market, it will increase the availability of used EVs in New Mexico, another important benefit.

Concerns about charging infrastructure are also quickly becoming a thing of the past. Most EV users charge their vehicles at home unless they are traveling out of town. An EV owner with a short commute (e.g., 40 miles a day) will find it possible to maintain a full charge without purchasing any special charging infrastructure, by simply plugging into an ordinary 120-volt outlet. EV owners who travel longer distances typically purchase a Level 2 charger, which adds about 25 miles of range per hour and can cost as little as \$138. These chargers require a 240-volt outlet, the same type of outlet used by heavy household appliances such as washing machines.

For road trips or for those who don't have access to home charging, New Mexicans can already find ultra-fast Direct Current Fast Charging (or Level 3) stations across the state, from Lordsburg to Socorro to Farmington to Clovis. And many more are coming. According to Jerry Valdez, executive director of the New Mexico Department of Transportation, there are 90 Level 3 EV chargers currently under construction in the state. Construction is occurring at 40 different locations, including in rural areas like Rito, Questa, Ojo Caliente, Pecos, Taos, and Española. These projects are being supported by \$10 million from the American Rescue Plan Act, the 2021 COVID-19 relief legislation. An additional \$38 million has been made available under the 2021 Bipartisan Infrastructure Investment and Jobs Act and the 2022 Inflation Reduction Act to expand EV charging infrastructure in New Mexico. And New Mexico's investor-owned utilities are investing tens of millions of dollars of their own to expand EV charging infrastructure, as part of their Transportation Electrification Plans. By the time ACCII takes effect in MY 2027, it will likely be as easy to find an ultra-fast EV charger in New Mexico as it is to find a gas station.

The question before the Boards is not *whether* there will come a day when every new vehicle offered for sale in New Mexico is zero emission. Just as surely as the smart phone replaced the flip phone, ZEVs will replace gasoline vehicles. The International Council on Clean Transportation predicts that EVs will constitute about 61% of new light-duty vehicles sold in the U.S. by 2030—even in states that do not adopt ACCII. Many manufacturers have already committed to phasing out polluting vehicles entirely. Volvo and Cadillac plan to stop selling polluting vehicles by 2030, while GM plans to be all electric by 2035.

The question before the Boards is whether New Mexico is a leader or a laggard. Adopting ACCII will mean manufacturers deliver more EVs to New Mexico in the early years of the transition away from gasoline vehicles, which means New Mexicans will reap the public health and economic benefits sooner than non-ACCII states. Already, certain EV models are not available outside of ACCII states because demand exceeds supply and manufacturers prefer to deliver EVs to states where they will receive credit for their sales. Recall that EVs are expected to be about \$5,400 cheaper to purchase by the time ACCII would take effect in MY 2027, while providing up to \$17,000 in fuel and maintenance savings over a lifetime of use. Given these facts, it is easy to imagine a scenario where demand for EVs generally exceeds supply in MY 2027. By joining ACCII, New Mexico can ensure that its consumers receive EVs before consumers in other states.

We urge the Boards to embrace this historic opportunity by adopting ACCII in full. We applaud the Departments for seeking to adopt ACCII from MY 2027 through MY 2032, but there is no reason to stop in MY 2032. Analysis from ERM shows that adopting the full ACCII rule—i.e., through MY 2035—creates \$9 billion in additional net societal benefits compared to adopting the rule only through MY 2032. Full adoption will also help the state get closer to the Governor’s greenhouse gas reduction goals, helping avert the worst impacts of climate change, while increasing economic and public health benefits. In the alternative, the Boards should adopt a provision streamlining the process for initiating a future rulemaking to consider extending ACCII through MY 2035.

II. Our Qualifications

Kathleen Harris is a Senior Clean Vehicles and Fuels Advocate at the Natural Resources Defense Council (NRDC). She leads NRDC’s clean cars work at the state and federal level. Earlier

in 2023, she testified before the Senate Environment and Public Works Subcommittee on the benefits of ZEVs in the United States. She holds a Bachelor of Science in Environmental Science with a concentration in marine science and a minor in Political Science and a Master of Marine Policy, both from the University of Delaware. Prior to joining NRDC, Ms. Harris worked for the State of Delaware as a Clean Transportation Planner and the Delaware Clean Cities Coordinator. Her resume is Climate Advocates Exhibit 3. It is accurate and up to date.

Aaron Kressig has worked as an electricity sector analyst advocating for decarbonization policies since 2015. He received a master's degree in environmental policy from American University, focusing on U.S. electricity sector policy and regulation. Before joining Western Resource Advocates (WRA), Mr. Kressig worked for over three years at the World Resources Institute analyzing power sector developments at the domestic and international level. His previous research includes power sector forecasting, reporting on global power sector trends, transmission and distribution planning, and analysis of state-level electricity policy and regulation. Since joining WRA in 2019, he has led WRA's transportation electrification advocacy in Colorado, New Mexico, Arizona, Utah, and Nevada. He has worked with state legislatures, public utility commissions, and air quality control commissions in each of those states to advance policies which accelerate the adoption of electric vehicles and the deployment of electric vehicle chargers. Mr. Kressig's resume is Climate Advocates Exhibit 4. It is accurate and up to date.

Guillermo Ortiz leads NRDC's medium- and heavy-duty vehicle work at the state and federal level. In this role, Mr. Ortiz works to advance clean transportation policies that safeguard public health, with a focus on restorative justice for the communities facing the brunt of tailpipe pollution. Prior to joining NRDC, Mr. Ortiz led efforts at the University of California to integrate climate justice principles into systemwide policy decisions. Mr. Ortiz developed his expertise in policy development and analysis at the Center for American Progress and as a congressional staffer in the U.S. Senate. Mr. Ortiz holds a bachelor's degree in Global Environmental Change & Sustainability from Johns Hopkins University and is an alumnus of the Congressional Hispanic Caucus Institute's Public Policy Fellowship Program. He is based in NRDC's San Francisco office. Mr. Ortiz's resume is Climate Advocates Exhibit 5. It is accurate and up to date.

III. Regulatory Background and Legal Authority for this Rulemaking

A. Regulatory Background

New Mexico’s leaders have repeatedly emphasized that clean vehicle standards will play an essential role in reducing pollution and decarbonizing our economy. In her *Executive Order on Addressing Climate Change and Energy Waste Prevention*, Governor Michelle Lujan Grisham directed state agencies to consider “[a]doption of approaches to reduce greenhouse gas and criteria pollutant emissions from light-duty vehicles sold in state, including Low Emission Vehicle (LEV) and Zero Emission Vehicle (ZEV) performance standards.”⁶ In April 2021, the Governor joined the governors of 11 other states in calling on President Biden to “establish[] a clear regulatory path to ensuring that all vehicles sold in the United States are zero-emission,” including by “[s]etting standards to ensure that all new passenger cars and light-duty trucks are zero-emission no later than 2035” and “[s]etting standards for medium-duty and heavy-duty vehicles and supporting complementary policies . . . that set a path towards 100% zero-emission sales by no later than 2045.”⁷ In July 2022, the Governor reaffirmed her commitment to “using every available tool to ensure that everyone in New Mexico can benefit from electric vehicles” in announcing a plan to invest \$38 million in electric vehicle charging stations.⁸

On May 5, 2022, the Boards unanimously adopted the Advanced Clean Cars I (ACCI) Rule for MY 2026, with the support of Climate Advocates and the Departments. During the ACCI rulemaking, the parties discussed the fact that the California Air Resources Board (CARB) had proposed to adopt the ACCII rule, which was expected to strengthen the then-applicable standards for MY 2026 and beyond. The parties recognized that the Boards would need to take additional action to bring New Mexico into compliance with California’s standards in the event CARB finalized the ACCII proposal. That is true because the Clean Air Act does not allow New Mexico to adopt or enforce vehicle emission standards unless “such standards are identical to the California standards” for such model year. 42 U.S.C. § 7507(b).

⁶ Executive Order on Addressing Climate Change and Energy Waste Prevention, E.O. 2019-003 (Jan. 29, 2019).

⁷ Letter from 12 Governors to President Biden (Apr. 21, 2021).

⁸ Gov. Announces New Mexico Plans to Invest \$38 Million in Electric Vehicle Charging Stations (Jul. 15, 2022).

On August 25, 2022, CARB finalized the ACCII standards, which apply to MY 2026 and subsequent model years. Accordingly, New Mexico must now update its regulations in order to remain part of the Clean Cars program. This Rule would update New Mexico’s regulations by incorporating the ACCII standards, ensuring that New Mexicans enjoy the benefits of the electric vehicle transition, including reduced tailpipe emissions, lower vehicle fuel and maintenance costs, and greater consumer choice. Beginning in MY 2027, the ACC-II program would require an increasing percentage of new vehicles sold in New Mexico to be ZEVs. ACC-II would also tighten emission standards for gas-vehicles sold before MY 2035.

The Proposed Rule would also adopt two related programs designed to slash harmful pollution from newly manufactured Medium- and Heavy-Duty (MHD) vehicles. The Low NOx Rule limits NOx emissions from newly manufactured gasoline or diesel trucks, and would require manufacturers to reduce NOx emissions by 90% from current levels in MY 2027 and beyond. The ACT Rule requires manufacturers of medium and heavy-duty trucks to supply an increasing percentage of zero-emission trucks to New Mexico between MY 2027 and 2035.

B. Statutory Authority

The Board has statutory authority to adopt the Proposed Rule pursuant to the Environmental Improvement Act, Paragraph (4) of Subsection A of Section 74-1-8 NMSA 1978, and the Air Quality Control Act, Sections 74-2-1 through 74-2-17 NMSA 1978.

The Proposed Rule is consistent with federal law. Under Section 177 of the Clean Air Act, “any State” that has adopted state implementation plan (SIP) provisions under Part D of the Clean Air Act “may adopt and enforce for any model year standards relating to control of emissions from new motor vehicles or new motor vehicle engines ... if (1) such standards are identical to the California standards for which a waiver has been granted for such model year, and (2) California and such state adopt such standards at least two years before commencement of such model year” 42 U.S.C. § 7507. Because New Mexico has adopted the requisite SIP provisions⁹ and the

⁹ See Approval and Promulgation of Implementation Plans; New Mexico; Revisions to the New Source Review (NSR) State Implementation Plan (SIP); Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR) Permitting, 78 Fed. Reg. 4339 (Jan. 22, 2013).

Proposed Rule would adopt standards that are identical to those adopted in California, it comports with federal law.

EPA has already granted California’s request for a waiver as to the ACT Rule. *See* 88 Fed. Reg. 20,688 (Apr. 6, 2023). In addition to California, seven states around the country—Colorado, New York, New Jersey, Washington, Oregon, Massachusetts, and Vermont—have adopted the ACT Rule, while several other states are currently engaged in rulemaking to adopt the rule.¹⁰ While EPA has not yet acted on California’s waiver requests for the Low NOx Rule or the ACCII Rule, states are permitted to adopt California’s standards before a waiver is granted as long as they do not attempt to enforce the standards until the waiver is finalized. *See Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. New York State Dep’t of Env’t Conservation*, 17 F.3d 521, 534 (2d Cir. 1994). Many states have already adopted one or both of these regulations, in anticipation of EPA’s waiver.¹¹ Accordingly, New Mexico may adopt the Proposed Rule, consistent with federal law.

IV. These Rules Are Critical to Combatting the Climate Crisis and Reducing Deadly Air Pollution

A. The Rules Would Significantly Reduce GHG, NOx, and PM Pollution

The transportation sector is the second largest source of greenhouse gas (GHG) emissions in New Mexico, behind the oil-and-gas sector and ahead of electricity generation.¹² Within the transportation sector, light-duty vehicles are responsible for 58% of GHG emissions, with medium and heavy-duty trucks responsible for another 23%.¹³ Vehicle emissions also contribute to poor air quality, including elevated levels of ozone and fine particulate matter (PM). These pollutants cause respiratory and cardiovascular problems, increasing the risk of premature death. Motor vehicles are responsible for nearly a quarter of the state’s ozone-forming nitrogen oxides (NOx) emissions

¹⁰ <https://www.electrictrucksnow.com/states>

¹¹ ACC-II has been adopted in Colorado, Washington, Vermont, Oregon, New York, Massachusetts, and Virginia. The Low NOx Rule has been adopted in Washington, Oregon, New York, Colorado, Vermont, New Jersey, and Massachusetts.

¹² New Mexico Climate Strategy (2021) at 8.

¹³ U.S. EPA, Fast Facts on Transportation Greenhouse Gas Emissions.

(over 75,000 tons a year);¹⁴ they also emit hundreds of tons of PM each year. Additional PM is formed when vehicular NOx reacts in the atmosphere to form ammonium nitrate.

Medium and heavy-duty (MHD) trucks are responsible for a disproportionately large amount of the air pollution emitted by the on-road fleet, making it especially important to include these vehicles in New Mexico's emission reduction strategy. These trucks constitute a mere 10% of the on-road fleet in New Mexico, but are responsible for 65% of on-road NOx, 58% of on-road PM, and 35% of on-road GHG emissions.¹⁵ The particles found in diesel exhaust are especially harmful to human health; diesel particulate matter is considered carcinogenic and associated with an increased risk of lung cancer.

Together, these three rules would deliver significant public health and climate benefits. The reductions in PM alone (including both primary emissions and particles formed from reactions of vehicular NOx) would prevent 136 premature deaths and more than 76,000 cases of respiratory illnesses by 2050,¹⁶ with additional health benefits from reduced exposure to ozone and diesel particulate matter. The rules would reduce cumulative GHG emissions by between 111 and 139 million metric tons (MMT) of carbon dioxide equivalent (CO₂e) by 2050.¹⁷ To put this in perspective, the entire state emitted 113.6 MMT CO₂e in 2018.¹⁸ Thus, the Proposed Rule would eliminate approximately the amount of GHG pollution that the state emits in a year, making it one of the most impactful climate policies adopted in New Mexico to date.

¹⁴ New Mexico Ozone Attainment Initiative Photochemical Modeling Study – Draft Final Air Quality Technical Support Document at Figure 4-3.

¹⁵ Climate Advocates' Ex. 7 at 4

¹⁶ Climate Advocates' Ex. 7 at 14, tbl. 2 (Low NOx and ACT rule would prevent 51 premature deaths and 28,065 cases of respiratory illness); Climate Advocates' Ex. 6 (ACC-II would prevent 85 premature deaths and 48,290 cases of respiratory illness).

¹⁷ Climate Advocates' Ex. 7 at 16 (ACT would reduce cumulative GHG emissions by 23 MMT of CO₂e by 2050); Climate Advocates' Ex. 6 at 7 (ACC-II would reduce cumulative GHG emissions by between 88 and 116 MMT CO₂e by 2025).

¹⁸ Energy and Environmental Economics Inc., New Mexico Greenhouse Gas Emissions Inventory and Forecast at 4 (Oct. 27, 2020).

B. The Climate Crisis is Causing Serious Harm in New Mexico

The impacts of climate change are already harming New Mexico, and those impacts are expected to become worse. As the U.S. Environmental Protection Agency (EPA) summarizes, the climate change impacts New Mexico faces now, and will face with increasing ferocity in the future, include decreased snowpack and earlier snow melts, less water availability; lower water quality; increased drought and drier soil; decreased crop yields; smaller herd size, increased impacts on trees and crops from insects, disease and drought; heat-related health risks; health impacts from ozone; increased risk of asthma and other respiratory diseases; increased risk of vector-borne diseases; decline in wildlife population; increases in invasive species; increased risk of wildfires; and increased area burned by wildfires.¹⁹ These are impacts that affect our physical and mental health, ecosystems, agriculture, the recreation industry, and the entire state economy.

Serious impacts of global heating have already reached New Mexico. New Mexico is the sixth-fastest-warming state in the nation, as the average annual temperature has increased about 0.6 degrees Fahrenheit per decade since 1970, or about 2.7 degrees Fahrenheit over 45 years, as of 2015. As a point of comparison, the rest of the southwest has heated up 1.5 degrees Fahrenheit over that time frame.²⁰ July 2023 was officially the hottest month on record for New Mexico.²¹ Average temperatures in the state have increased, and as a result the size and severity of wildfire, drought, and extreme precipitation have already increased as well.²²

Higher temperatures associated with climate change have health implications for New Mexicans. Extreme temperatures can cause heat stress and heat stroke and exacerbate asthma, kidney disease, cardiovascular disease, respiratory illness, and complications of diabetes.²³ As

¹⁹ U.S. EPA, What Climate Change Means for New Mexico (Aug. 2016) [Climate Advocates' Ex. 10].

²⁰ Union of Concerned Scientists, Climate Change in New Mexico at 2 (2016) [Climate Advocates' Ex. 12].

²¹ Stacie Reece, Climate Assessment for the Southwest: August 2023 Southwest Climate Outlook [Climate Advocates' Ex. 11].

²² Climate Advocates' Ex. 12 at 2-4.

²³ *Id.*

climate change worsens, the Southwest region of the U.S is predicted to have the highest increase of risk of heat-associated premature deaths in the country.²⁴

Rising temperatures increase the risk of drought: New Mexico and the American West have been experiencing the worst megadrought in 1200 years,²⁵ leading to impacts on agriculture, recreation, and health, and putting water sources at risk. Almost all of the state is in a state of drought, with the majority of the state being in Severe or Extreme Drought, as of September 2023.²⁶ Climatologists agree the Colorado River is continuing to dry year after year due to climate change, as aridification has reduced runoff from the snowpack by 10.3%; this is likely to worsen with continued global warming.²⁷ The Colorado River is a major source of water in New Mexico, including the cities of Albuquerque²⁸ and Santa Fe. Dust storms are made worse by drought. Increased particulate pollution caused by blowing dust presents a health risk, and at high levels can be fatal.²⁹

Wildfires in New Mexico are increasing in size, severity, and frequency, as evidenced by the fact that the two largest wildfires in state history occurred in 2022.³⁰ New Mexico's increasing wildfires are impacting health directly and indirectly. In addition to the obvious direct impacts of death and injury, they negatively impact water quality and water supply and increase deadly air pollution.³¹ Wildfires create PM emissions that are associated with premature deaths in the general population, and can cause and exacerbate diseases of the lungs, heart, brain, nervous system, skin,

²⁴ Gonzalez, P., et al., *Southwest*, Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II, at 1129 (2018) [Climate Advocates' Ex. 13].

²⁵ A. Park Williams, et al., Rapid Intensification of the Emerging Southwestern North American Megadrought in 2020–2021, 12 NATURE CLIMATE CHANGE 232 (2022).

²⁶ U.S. Drought Monitor: New Mexico.

²⁷ Benjamin Bass et al., Aridification of Colorado River Basin's Snowpack Regions Has Driven Water Losses Despite Ameliorating Effects of Vegetation, 7 WATER RESOURCES RESEARCH 59 (July 2023).

²⁸ Albuquerque-Bernalillo County Water Utility Authority, Where Our Water Comes From.

²⁹ NMED & New Mexico Department of Health, Dust Storms and Health (Mar. 2000).

³⁰ Jessica Onsurez, These Are the Largest Recorded Wildfires in New Mexico History, Las Cruces Sun News (July 5, 2023).

³¹ World Health Organization, Wildfires.

gut, kidney, eyes, nose and liver. It has also shown to lead to cognitive impairment, memory loss, and acute trauma which can lead to long term mental health problems.³² There are 1,287,619 properties in New Mexico that have some risk of being affected by wildfire over the next 30 years; this constitutes 86% of all properties in New Mexico.³³ The dramatic rise in wildfire risk will increase the risk of death, injury, and property loss.

To avert continued and increasing disastrous climate impacts on New Mexico, every effort must be made to reduce New Mexico's GHG emissions at the pace scientists have made clear is necessary to avert the worst impacts of climate change.

C. Air Pollution is a Significant Problem in New Mexico

New Mexico's poor air quality has serious impacts on public health. The American Lung Association gave an "F" grade to four New Mexico counties for their frequent high ozone days, including Bernalillo County, which constitutes over half of New Mexico's population.³⁴ These grades reflect the health risk from breathing unhealthy New Mexico air. Short-term exposure to ozone causes respiratory effects, is likely to cause metabolic effects, and may cause early death, cardiovascular effects, and central nervous system effects according to a 2020 EPA literature review.³⁵ Long-term exposure, also likely to cause these effects, may also affect fertility, reproduction, pregnancy, and birth outcomes.³⁶ A systematic review of 27 epidemiological studies concluded that children may be at higher risk from ozone because of their immature immune systems, increased durations of time spent outside, and increased air exchange relative to body

³² *Id.*

³³ Risk Factor, Does New Mexico Have Wildfire Risk? (2023).

³⁴ American Lung Association, *State of the Air* (2023) [Climate Advocates' Ex. 14].

³⁵ U.S. EPA, *Integrated Science Assessment for Ozone and Related Photochemical Oxidants, Executive Summary* at 6 (2020) [Climate Advocates' Ex. 15].

³⁶ *Id.*

mass, as compared to adults.³⁷ And healthy adults have been shown to suffer a decrease in lung function from ozone exposure at about 70 parts per billion, increasing with ozone concentration.³⁸

Exposure to motor vehicle exhaust, which includes particle pollution, ozone-forming NO_x, cancer-causing benzene,³⁹ and other pollutants, can lead to premature death and other devastating health problems, including asthma and respiratory distress,⁴⁰ pregnancy complications and adverse reproductive outcomes,⁴¹ cardiac and vascular impairments,⁴² and heightened cancer risk.⁴³ In 2022 the Health Effects Institute completed the largest ever review of existing research on long-term exposure to traffic-related air pollution and health outcomes and “found a high or moderate-to-high level of confidence in an association between long-term exposure to [traffic-related air pollution] and the adverse health outcomes all-cause, circulatory, ischemic heart disease . . . , and

³⁷ Xue-yan Zheng et al., Association Between Air Pollutants and Asthma Emergency Room Visits and Hospital Admissions in Time Series Studies: A Systematic Review and Meta-Analysis, PLOS ONE (Sept. 18, 2015) [Climate Advocates’ Ex. 16].

³⁸ E.S. Schelegle, et al., 6.6-hour Inhalation of Ozone Concentrations from 60 to 87 Parts per Billion in Healthy Humans, AM. J. OF RESPIRATORY & CRITICAL CARE MEDICINE (2009) [Climate Advocates’ Ex. 17].

³⁹ U.S. EPA, Benzene (updated Jan. 2012).

⁴⁰ Stephanie Lovinsky-Desir et al., Air Pollution, Urgent Asthma Medical Visits and the Modifying Effect of Neighborhood Asthma Prevalence, 85 PEDIATRIC RESEARCH 36 (Oct. 2018); Gayan Bowatte et al., Traffic Related Air Pollution and Development and Persistence of Asthma and Low Lung Function, 113 ENV’T INT’L 170 (Apr. 2018).

⁴¹ Jun Wu et al., Association Between Local Traffic-Generated Air Pollution and Preeclampsia and Preterm Delivery in the South Coast Air Basin, 117 ENVTL. HEALTH PERSP. 1773 (Nov. 2009); Qi Yan et al., Maternal Serum Metabolome and Traffic-related Air Pollution Exposure in Pregnancy, 130 ENV’T INT’L 104872 (2019); Li Fu et al., The Associations of Air Pollution Exposure During Pregnancy with Fetal Growth and Anthropometric Measurements at Birth, 26 ENVTL. SCI. & POLLUTION RES. 20137 (2019).

⁴² Kimberly Berger et al., Associations of Source-apportioned Fine Particles with Cause-specific Mortality in California, 29 EPIDEMIOLOGY 639 (Sept. 2018); Stacey Alexeef et al., High-resolution Mapping of Traffic Related Air Pollution with Google Street View Cars and Incidence of Cardiovascular Events within Neighborhoods in Oakland, CA, 17 Env’tl. Health (May 2018); J.E. Hart et al., Ischaemic Heart Disease Mortality and Years of Work in Trucking Industry Workers, 70 OCCUPATIONAL & ENVTL. MED. 523 (Aug. 2013).

⁴³ CARB, Supplement to the June 2010 Staff Report on Proposed Actions to Further Reduce Diesel Particulate Matter at High-Priority California Railyards (July 5, 2011); Int’l Agency for Res. on Cancer, Diesel Engine Exhaust Carcinogenic (June 12, 2012); L. Benbrahim-Tallaa et al., Carcinogenicity of Diesel-Engine and Gasoline-Engine Exhausts and Some Nitroarenes, 13 THE LANCET ONCOLOGY 663 (June 2012).

lung cancer mortality; asthma onset in both children and adults; and acute lower respiratory infections (ALRI) in children.”⁴⁴

D. Emissions from On-Road Transportation Disproportionately Impact Lower-Income Communities and Communities of Color

The health impacts of vehicle pollution fall disproportionately on lower-income communities and communities of color, and those harms compound with other health and environmental factors that also disproportionately impact these communities.⁴⁵ People of color across the United State are generally exposed to higher concentrations of PM and NO_x emissions from light-duty gas-burning vehicles than white people.⁴⁶ Low-income neighborhoods and communities of color in general breathe in an average of 28% more NO_x pollution than higher-income and majority white neighborhoods.⁴⁷ This is sobering, but not surprising, as New Mexico’s census tracts with the greatest proximity to traffic pollution often overlap with areas recognized as Environmental Justice communities by the U.S. EPA, particularly in the Albuquerque area.⁴⁸

These same communities suffer from additional harms from the transportation sector: large multi-lane highways and paved areas contribute to urban heat island effects, stormwater issues, and other environmental impacts. Other industrial sources are often clustered near highways, which means that communities impacted by traffic pollution are also affected by other sources of air and water pollution and toxic releases. These communities also face racism and other forms of discrimination that increase their vulnerability to environmental threats. In fact, communities impacted by transportation pollution are even more vulnerable to the impacts pollution because of socio-demographic stressors—including racial segregation, high rates of poverty, lack of access to

⁴⁴ Health Effects Inst., Systematic Review and Meta-analysis of Selected Health Effects of Long-term Exposure to Traffic-Related Pollution (2022).

⁴⁵ Yoo Min Park & Mei-Po Kwan, Understanding Racial Disparities in Exposure to Traffic-Related Air Pollution, 17:3 NAT’L LIBRARY OF MEDICINE 908 (Feb. 2020).

⁴⁶ Christopher W. Tessum et al., PM_{2.5} Polluters Disproportionately and Systemically Affect People of Color in the United States, 7 SCI. ADV. eabf4491 (2021).

⁴⁷ Angelique G. Demetillo et al., Space-Based Observational Constraints on NO₂ Air Pollution Inequality from Diesel Traffic in Major US Cities (Aug. 25, 2021).

⁴⁸ U.S. EPA, EJScreen, available at <https://ejscreen.epa.gov/mapper/>

affordable foods, and lack of access to healthcare— compared to communities that do not face these stressors.⁴⁹ Research on cumulative impacts has found that the same amount of pollution can result in more harm to people facing additional and compounded stressors than to people who do not.⁵⁰ It also recognizes that multiple stressors frequently share interrelated origins. Consequently, people of color and people with low incomes face some of the highest levels of pollution and are least equipped to ward off the consequences.⁵¹

Similarly, climate change impacts people of color and low-income communities disproportionately. The EPA found that low-income people and people of color are more likely to (a) live in areas where they suffer health impacts from air quality associated with climate change (such as asthma onset for children and death for older adults), (b) lose labor hours for extreme weather, and (c) risk death from extreme temperatures.⁵² A 2021 study shows that in U.S. cities, including in Albuquerque and Las Cruces, people of color are more likely to be exposed to heat intensity in urban “heat islands.”⁵³ People with lower incomes and people of color are more likely to lack air conditioning.⁵⁴ Vulnerable populations are more likely to be exposed to climate extremes at work, especially in outdoor jobs, and to lack adequate access to health care.⁵⁵ In these and other ways, climate change exacerbates existing health conditions for disproportionately impacted communities who have fewer resources to deal with them. On-road vehicle emissions impact all people, but special consideration is warranted for lower income individuals and people

⁴⁹ Environmental Justice Health Alliance for Chemical Policy Reform, Life at the Fenceline: Understanding Cumulative Health Hazards in Environmental Justice Communities (Sept. 2018); Rachel Morello-Frosch et al., Understanding the Cumulative Impacts of Inequalities in Environmental Health: Implications for Policy (2011).

⁵⁰ Lam, Y. et al., *Seeing the Whole: Using Cumulative Impacts to Advance Environmental Justice* (Feb. 2022) [Climate Advocates’ Ex. 18].

⁵¹ *Id.*

⁵² U.S. EPA, Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts, EPA 430-R-21-003 (2011).

⁵³ Angel Hsu et al., Disproportionate Exposure to Urban Heat Island Intensity Across Major US Cities, 12 NATURE COMMUNICATION No. 2721 (2021).

⁵⁴ Rebecca Mann and Jenny Schuetz, As Extreme Heat Grips the Globe, Access to Air Conditioning is an Urgent Public Health Issue, BROOKINGS (July 25, 2022).

⁵⁵ Rob Jordan, Stanford Researchers Discuss Extreme Heat’s Impacts on Laborers, STANFORD WOODS INST. FOR THE ENVT. (July 20, 2022).

of color because of the disproportionate impact these emissions have on these populations, and the fact that due to systemic and ongoing policies and practices, these populations are generally less equipped to deal with these impacts than wealthier, white communities.

V. The Advanced Clean Cars II Rule Yields Substantial Benefits for New Mexicans

A. The ACCII Rule is Feasible

There are an increasing number of ZEV models available to drivers. In the first half of 2023, there were over 100 EV models available for sale, including cars, utility vehicles, pickup trucks, and vans.⁵⁶ Regulations like ACCII that provide market certainty will encourage manufacturers to produce more ZEV models to meet diverse needs. The evidence for this is already observed in several European Union countries, where in 2016, EV model availability was low. From 2016 to 2021, stronger ZEV regulations in these jurisdictions helped increase EV model availability and supply, which in turn led to significantly increased sales by 2021. In Germany, for example, ZEV sales went from 3.01% in 2019 to 26% in 2021, an increase of about 23% in two years.⁵⁷ The takeoff in German ZEV sales coincided with the “Euro 6” CO₂ emission performance standards taking effect, under which 95% of MY 2020 vehicles and 100% of MY 2021 vehicles must meet a fleet average of 95 g/km of CO₂ emissions.⁵⁸ Norway has embraced ZEVs even more quickly. In 2022, 80% of new car sales in Norway were electric.⁵⁹ The air is cleaner, the streets are quieter, the electric grid remains resilient, and employment remains strong.⁶⁰ These experiences demonstrates that manufacturers can accelerate ZEV sales quickly given a strong policy push and consumers will respond to increased ZEV supply by purchasing these vehicles.

U.S. ZEV sales and a growing number of decarbonization commitments from automakers further confirm automakers will scale up ZEV sales in response to regulatory signals. In California,

⁵⁶ Alliance for Automotive Innovation, Electric Vehicle Quarterly Report (2023).

⁵⁷ Int’l Energy Agency, Global EV Outlook 2022 at 15 (May 2022), Climate Advocates’ Ex. 35.

⁵⁸ Int’l Council on Clean Transportation, EU CO₂ Emission Standards for Passenger Cars and Light-Commercial Vehicles (Jan. 2014).

⁵⁹ Jack Ewing, In Norway, the Electric Vehicle Future Has Already Arrived, NY TIMES (May 8, 2023).

⁶⁰ *Id.*

ZEV sales doubled from 12.4% in 2021 to 24.3% in the first half of 2023, exceeding the MY 2023 ZEV sales requirement under the Advanced Clean Cars I rule and putting the state on a trajectory to achieve the MY 2026 ZEV sales requirement of 35% under ACCII.⁶¹ And many automakers have announced plans to ramp up ZEV sales, in line with the ACCII standards adopted by California and a growing number of other states.⁶² The regulatory certainty provided by strong ZEV standards helps automakers make and strengthen these decarbonization commitments, mobilize the resources needed to deliver on them, and deliver ZEVs to the states that have adopted ZEV standards. Indeed, 63% of the ZEVs in operation nationwide are in states that have adopted the ACCII program available under Section 177 of the Clean Air Act.⁶³ This is perhaps even better illustrated by the fact that EV market share in the first half of 2023 was 15.27% for states following the ZEV standard, compared to a national average of 9.3%.⁶⁴ ACCII states are greatly outpacing states without these standards, illustrating the effectiveness of this policy.

It is important to remember that California developed the ACCII Rule before the Inflation Reduction Act was adopted. Even before Congress adopted that landmark legislation, the ACCII Rule was found to be achievable and cost-effective. After the Inflation Reduction Act, the targets in ACCII will be even easier to achieve, with market forces, supercharged by federal incentives, pushing EV sales close to the targets required by ACCII.

⁶¹ California Energy Commission, [New ZEV Sales in California](#).

⁶² See, e.g., General Motors, [General Motors, the Largest U.S. Automaker, Plans to be Carbon Neutral by 2040](#) (Jan. 28, 2021) (announcing plans to reach 100% electric vehicle sales in the U.S. by 2035); Volvo Car Group, [Volvo Cars to be Fully Electric By 2030](#) (Mar. 2, 2021) (noting that Volvo’s “decision ... builds on the expectation that legislation as well as a rapid expansion of accessible high quality charging infrastructure will accelerate consumer acceptance of fully electric cars”); Volkswagen Newsroom, [Strategy Update at Volkswagen: The Transformation to Electromobility Was Only the Beginning](#) (Mar. 5, 2021) (describing Volkswagen’s plan to make half of its U.S. vehicle sales electric by 2030, and to “significantly exceed the [ZEV sales requirements of the] planned EU regulation”); Honda News Room, [Summary of Honda Global CEO Inaugural Press Conference](#) (Apr. 23, 2021) (describing Honda’s plans to reach a fully electric vehicle lineup by 2040 and estimates that 40% of North American sales will be electric by 2030); Toyota Motor Corp., [Media Briefing on Battery EV Strategies](#) (Dec. 14, 2021) (announcing plans to introduce 30 new all-electric vehicles by 2030).

⁶³ Alliance for Automotive Innovation, [The Future Is Electric: Lets Drive Together](#) at 10 (Mar. 2023).

⁶⁴ Alliance for Automotive Innovation, [Advanced Technology Sales Dashboard](#) (2023).

A recent report found that incentives in the Inflation Reduction Act were expected to result in a rapid transition to ZEVs over the next decade, with ZEVs constituting about 35% of new vehicles sold nationwide by 2026 and between 48 and 61% of all sales by 2030.

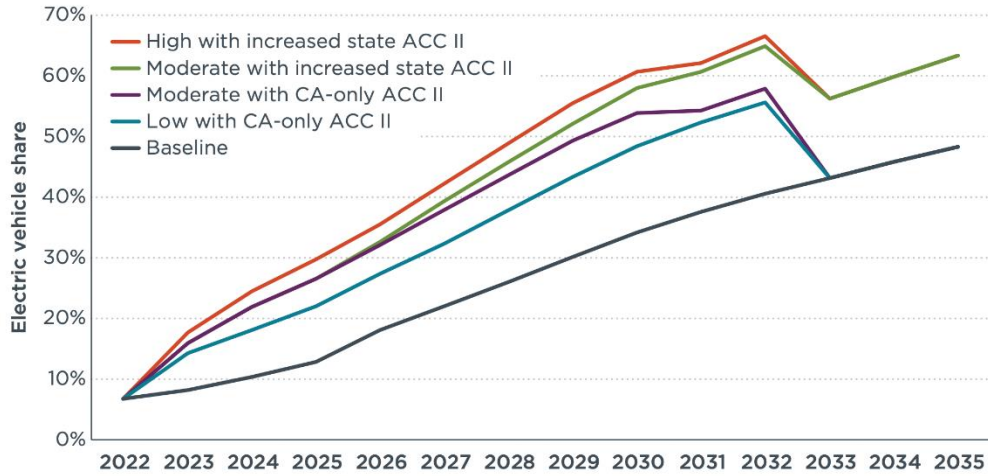
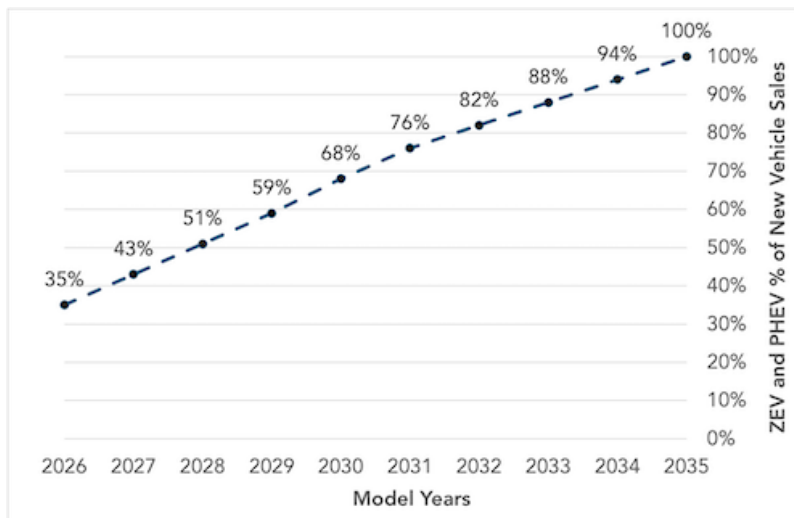


Figure 6. U.S. light-duty electric vehicle sales share for five scenarios, 2022-2035

Source: International Council on Clean Transportation, *Analyzing the Impact of the Inflation Reduction Act on Electric Vehicle Uptake in the United States at 12* (2023) [Climate Advocates’ Ex. 22].

Compare these market trends to the ACCII targets:



Source: California Air Resources Board, ACCII Webpage.

As these graphs show, market forces—supercharged by federal incentives—will do the lion’s share of the work in pushing the market towards ZEVs. The ACCII Rule still has important work to do, however, and is eminently achievable in light of these trends. The availability of a suite of compliance flexibilities—including early compliance credits, environmental justice credits, and historical credits—will make it even easier for manufacturers to comply.

B. ACCII Will Save New Mexico Consumers Money

ZEVs have a lower total cost of ownership than gasoline or diesel vehicles due to their significant fuel and maintenance savings. Electric “fuel” is both less expensive and less volatile in price compared to gasoline, and because ZEVs have fewer moving parts, they are significantly less expensive to maintain compared to internal combustion engine vehicles.⁶⁵ While EVs are already cheaper than internal combustion engine vehicles in terms of lifetime ownership costs, this advantage is expected to increase, as the cost of purchasing an EV continues to decline. Accounting for federal incentives and falling production costs, new EVs are expected to be *cheaper* than new internal combustion engine vehicles by MY 2027, the first year that ACCII would apply in New Mexico.⁶⁶

New Mexicans can already buy EVs today that save them money of the lifetime of the vehicle. ERM’s analysis finds that in MY 2027, the average light-duty ZEV owner in New Mexico will save about \$14,000 in lifetime vehicle costs as compared to a conventional vehicle. While the up-front costs of ZEVs are expected to be \$2,100 more than conventional vehicles in MY 2027, federal tax credits can reduce that up-front cost by up to \$7,500. That means that ZEVs will not only save consumers money in the long run—they will also be *cheaper to purchase* in the first year of the ACCII program.

As the ZEV market scales up, ZEVs will become even cheaper. By MY 2030, buying a ZEV is expected to be \$2,000 cheaper than buying a conventional vehicle—even before purchase incentives.⁶⁷ Thus, by MY 2030, the average light-duty ZEV owner in New Mexico will save up

⁶⁵ Benjamin Preston, Pay Less for Vehicle Maintenance with an EV, CONSUMER REPORTS (Sept. 26, 2020).

⁶⁶ Peter Slowik et al., Assessment of Light-duty Electric Vehicle Costs and Consumer Benefits in the United States in the 2022-2035 Timeframe, INT’L COUNCIL ON CLEAN TRANSPORTATION (Oct. 2022).

⁶⁷ Climate Advocates’ Ex. 6 at 16.

to \$16,600 over the lifetime of the vehicle, with even greater savings for rural drivers and others who drive long distances.⁶⁸

ERM’s findings are corroborated by other studies. A recent study by Environmental Defense Fund and WSP Global, Inc. demonstrates that EV purchasers are already seeing significant benefits. Indeed, despite what is currently a higher purchase price, lower maintenance and fuel costs mean some EV models purchased today are expected to result in total lifetime savings of up to \$18,440.⁶⁹ Even without policy interventions, a Roush Industries report found that by 2030, battery electric vehicles (BEVs) are likely to see an average cumulative net savings of about \$15,000 over the lifetime of the vehicle, across all classes and segments.⁷⁰ The report also found that all BEVs up to a 300-mile range would have purchase price parity with gasoline vehicles by 2030 across all vehicle classes and segments.⁷¹

The availability of purchase incentives significantly advances the date by which price parity is achieved. A May 2023 study by Roush Industries indicates that the tax credits in the Inflation Reduction Act will drastically reduce the cost of purchasing a BEV. By MY 2025, it will be cheaper to purchase an electric car or small or medium SUV than a comparable gasoline vehicle. By MY 2030, BEVs will be affordable across all classes of light-duty vehicles—including large SUVs and pickup trucks.⁷²

Table 1. Purchase Savings of BEV Over an Internal Combustion Vehicle in the 2025 and 2030 Purchase Timeframes⁷³

Subclass	2025		2030	
	Base	Premium	Base	Premium
Small Car	\$7,741	\$4,441	\$13,788	\$12,740

⁶⁸ *Id.*

⁶⁹ Env’t Defense Fund, Electric Vehicle Total Cost of Ownership Analysis: Summary Report (July 2023).

⁷⁰ Himanshu Saxena et al., Electrification Cost Evaluation of Light-Duty Vehicles for MY 2030, ROUSH (2023) [Climate Advocates’ Ex. 20].

⁷¹ *Id.*

⁷² Himanshu Saxena and Sajit Pillai, Impact of the Inflation Reduction Act of 2022 on Light-Duty Vehicle Electrification Costs for MYs 2025 and 2030, ROUSH (2023) [Climate Advocates’ Ex. 21].

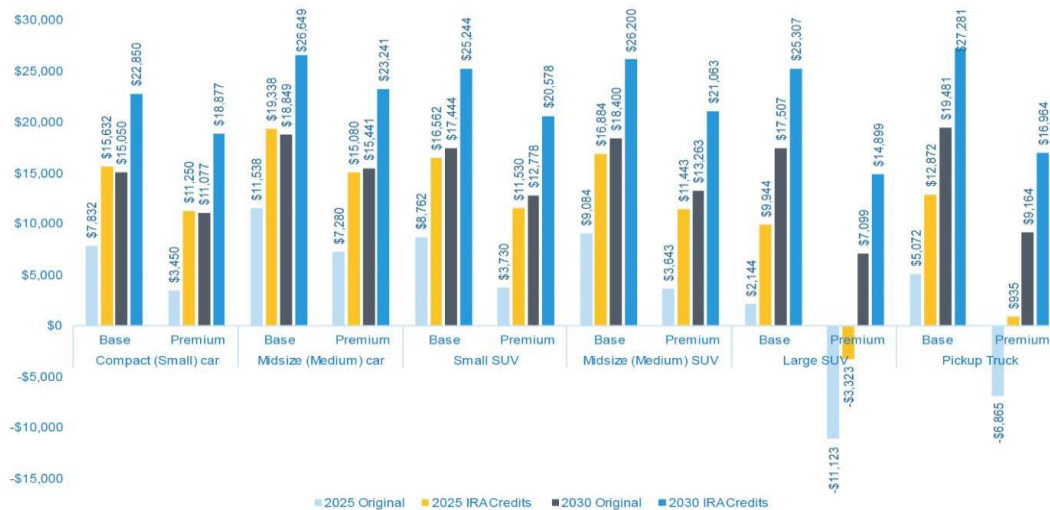
⁷³ Positive numbers represent upfront savings while negative numbers represent that BEVs have a higher upfront cost.

Midsize Car	\$7,333	\$3,783	\$13,586	\$12,426
Small SUV	\$5,535	\$1,373	\$12,760	\$11,368
Midsize SUV	\$6,301	\$1,740	\$13,857	\$12,181
Large SUV	-\$3,778*	-\$13,531	\$9,564	\$5,596
Pickup Truck	-\$1,835	-\$10,061	\$10,443	\$6,911

Source: Roush, *Impact of the Inflation Reduction Act of 2022 on Light-Duty Vehicle Electrification Costs for MYs 2025 and 2030* (Climate Advocates’ Ex. 21).

With respect to total cost of ownership, the story is even more favorable as a result of Inflation Reduction Act programs. In 2025, the BEV savings over an equivalent gasoline vehicle are sizable, ranging from more than \$11,000 to over \$19,000 for compact cars, midsize cars, small SUVs and midsize SUVs, across both base and premium segments. Large SUVs and pickups see fewer savings in 2025, with premium large SUVs still costing more than a comparable gasoline vehicle. However, in the 2030 timeframe, the savings range from more than \$14,000 to over \$27,000 across all vehicle subclasses and segments, including large SUVs and pickup trucks..

Figure 1. Cumulative Lifetime Savings of BEVs over Equivalent Internal Combustion Engine Vehicles.



Source: Roush, *Impact of the Inflation Reduction Act of 2022 on Light-Duty Vehicle Electrification Costs for MYs 2025 and 2030* (Climate Advocates’ Exhibit 21).

A 2022 paper by the International Council on Clean Transportation confirms the ERM and Roush findings, concluding that battery and assembly costs were declining, even without the

Inflation Reduction Act’s tax credits or other incentives.⁷⁴ The Inflation Reduction Act is expected to further reduce the upfront cost of purchasing a BEV by up to \$9,050.⁷⁵ As a result, BEVs are expected to become cheaper on average to purchase than conventional vehicles by 2027–2028.

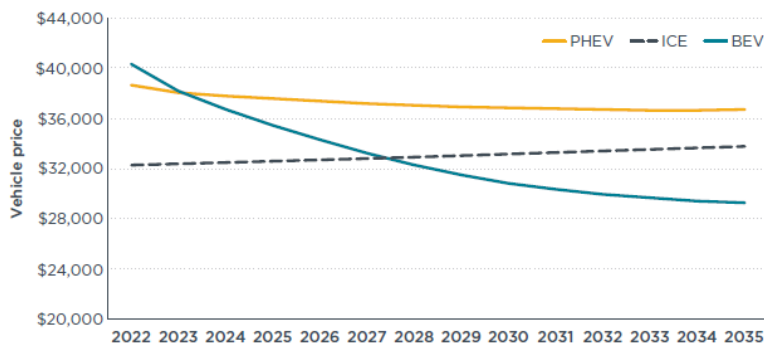


Figure 1. Sales-weighted average conventional and electric vehicle prices applied in this analysis

Source: *Climate Advocates’ Ex. 22 at 4.*

For leased vehicles, ZEVs are already the most cost-effective option; as Energy Innovation states, “falling EV lease prices, new federal tax incentives for leased EVs, and rising interest rates, coupled with the lower operating and maintenance costs of EVs, make leasing a new EV the most affordable way to get into a new car.”⁷⁶ Adopting ACCII will ensure that New Mexicans are first in line to enjoy these cost savings.

C. This Rule will Lead to Economies of Scale, Further Decreasing ZEV Costs

Another significant reason for increasingly favorable ZEV costs is declining battery prices. Battery costs have fallen precipitously, from over \$1,000/kilowatt-hour (kWh) in 2010 to below

⁷⁴ Peter Slowik, et al., Analyzing the Impact of the Inflation Reduction Act on Electric Vehicle Uptake in the United States at 3, INT’L COUNCIL ON CLEAN TRANSPORTATION (Jan. 2023) [Climate Advocates’ Ex. 22].

⁷⁵ *Id.* at 6, Table 1. This \$9,050 reduction reflects the impact of the tax credit available to the purchaser of a new ZEV, as well as the Advanced Manufacturing Production Tax Credit, which applies to manufacturers but is passed on to consumers.

⁷⁶ Rachel Goldstein et al, Electric Vehicle Leasing: The Cheapest Option for New Car Buyers, ENERGY INNOVATION (Aug. 2023).

\$100/kWh earlier this year,⁷⁷ earlier than analysts had predicted. This steep decline is likely to continue. The Inflation Reduction Act, which provides a battery cell credit of up to \$45/kWh and significant incentives for EV manufacturing, will contribute to declining costs. Auto manufacturers are also committing to ambitious targets for battery prices: in 2021, Renault and Ford publicly announced targets for battery packs of \$80/kWh by 2030,⁷⁸ while General Motors now intends to reduce battery cell costs down to approximately \$87/kWh by 2025, a significant reduction from its original projection of \$100/kWh.⁷⁹

Continued advancements in battery technology, as well as near-term investments and manufacturer commitment, will also result in price reductions that will increase market growth and build economies of scale. New technologies such as solid-state batteries and sodium-ion batteries are emerging as opportunities to both reduce battery costs and increase performance. In addition, there is promising research into different lithium-ion battery chemistries that can reduce reliance on critical minerals with constrained supply, such as cobalt.⁸⁰ Further, improvements in battery manufacturing, including the advent of the dry battery electrode process, can eliminate the need for wet slurry coating, drying, and solvent recapture steps that are part of conventional battery manufacturing.⁸¹ The elimination of these steps can reduce energy consumption by 50% and cost by 23% with respect to cell manufacturing.⁸² These changes, along with potential forthcoming battery pack construction improvements mean that future battery costs are likely to be below current projections of \$68/kWh in 2027.⁸³

⁷⁷ Bloomberg New Energy Foundation, Battery Pack Prices Fall to an Average of \$132/kWh, But Rising Commodity Prices Start to Bite, (Nov. 30, 2021); Benchmark Source, Global Cell Prices Fall Below \$100/kWh for First Time in Two Years (Sept. 6, 2023).

⁷⁸ Battery Pack Prices Fall to an Average of \$132/kWh, But Rising Commodity Prices Start to Bite, BLOOMBERG NEW ENERGY FOUNDATION (Nov. 30, 2021).

⁷⁹ Trey Hawkins, GM Expects Battery Cells To Cost \$87 Per kWh By 2025, GM AUTHORITY (May 5, 2023).

⁸⁰ Vishnu Nair et al., Medium and Heavy-Duty Electrification Costs for MY 2027–2030 at 18, ROUSH (Feb. 2022) [Climate Advocates' Ex. 23].

⁸¹ *Id.*

⁸² *Id.*

⁸³ *Id.*

Economies of scale, bolstered by significant increases in model availability, are also expected to occur. A recent report by ERM finds that the number of EV models are expected to dramatically increase in the coming years: by 2025, there will be a projected 197 models, with over 58 of these models launching between MY 2022 and 2025. And as a result of incentives in the Inflation Reduction Act, there will be five light-duty EV models available with an MSRP of under \$30,000 by the end of 2023 and 15 models available for less than \$40,000. The impact on the market is already being seen: more than 800,000 light-duty EVs were purchased last year nationwide, an increase of 65% compared to 2021. And the first quarter of this year saw EV sales reach 258,000 units, almost a 45% increase compared to the previous year.⁸⁴ Further, automakers are announcing a rapidly growing number of electric models that are available now and expected to become available in the coming years.⁸⁵

The anticipated increase in model availability will be bolstered by a significant increase in EV manufacturing in the U.S. By 2026, U.S. manufacturing facilities will be able to produce an estimated 4.3 million new electric passenger vehicles each year (about 33% of all new vehicles sold in 2022); given commitments from manufacturers to transition to EVs, this increase in manufacturing is likely to continue.⁸⁶ By 2026, battery manufacturing facilities will be able to produce more than 1,000 gigawatt hours in battery capacity, capable of supplying up to 11.2 million new passenger EVs each year (approximately 84% of all new vehicles sold in 2022).⁸⁷

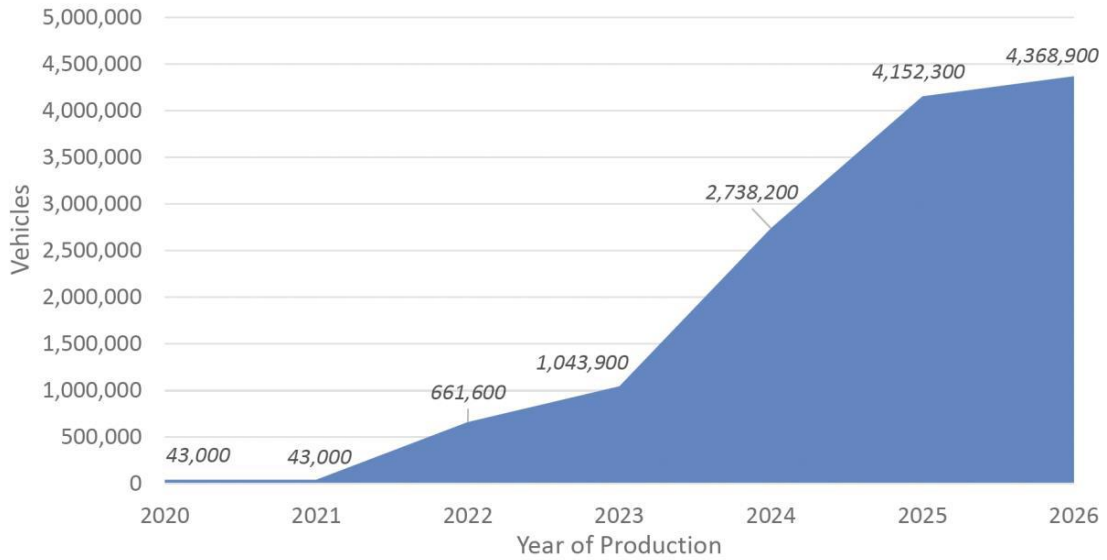
⁸⁴ Env'tl Defense Fund and ERM, Electric Vehicle Market Update: Manufacturer and Commercial Fleet Electrification Commitments Supporting Electric Mobility in the United States (Apr. 2023) [Climate Advocates' Ex. 24].

⁸⁵ See Note 62 *supra*.

⁸⁶ Climate Advocates' Ex. 24.

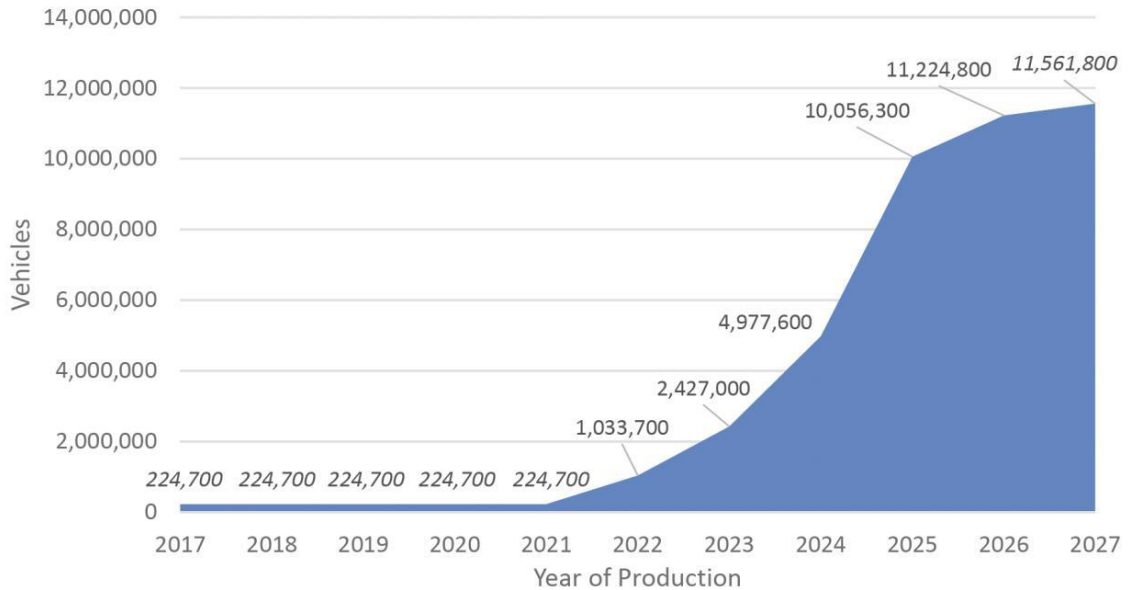
⁸⁷ *Id.*

Figure 2: Total Announced EV Manufacturing Capacity (2020-2026)



Source: WSP, *U.S. Electric Vehicle Manufacturing Investments and Jobs*

Figure 3: Total Announced Battery Manufacturing Capacity (2017-2027)



Source: WSP, *U.S. Electric Vehicle Manufacturing Investments and Jobs*

In total, automakers have announced over \$210 billion dollars of investments to support the transition towards ZEVs in the United States.⁸⁸ The ACCII Rule will help to accelerate the transition towards ZEVs, while increasing customer choice of clean vehicles in New Mexico.

D. Substantial Incentives for ZEVs and Charging Infrastructure Will Assist in The Transition to EVs

There are a wide variety of federal, state, and utility level incentives which support vehicle purchase and installation of charging infrastructure for ZEVs. At the federal level, both the Infrastructure Investment and Jobs Act and the Inflation Reduction Act contain a multitude of measures aimed at decarbonizing transportation, including:

- A \$7,500 tax credit for new EVs which meet requirements concerning battery and critical mineral sourcing;
- A used EV tax credit for 30% of the vehicle sale price, up to a maximum of \$4,000;
- \$7.5 billion in funding for the build-out of public EV charging infrastructure, with \$38 million dedicated to the build-out of charging stations along highways in New Mexico; and
- A tax credit of up to \$100,000 for installing charging infrastructure in eligible census tracts.

At the state level, the government and its electric utilities are taking significant strides to support the transition to ZEVs through programs to accelerate the development of critical charging infrastructure. These include the following:

- **Governor Lujan Grisham Appropriations.** In December 2021, Governor Lujan Grisham and the state legislature appropriated \$10 million from the American Rescue Plan Act to be used for EV charging stations around the state. This will help to build a network of chargers in the more remote part of the states that are critical to cross-state travel. More recently, the Governor announced that the state had received \$38 under the 2021 Bipartisan

⁸⁸ Noah Gabriel, \$210 Billion of Announced Investments in Electric Vehicle Manufacturing Headed for the U.S., ATLAS EV HUB (Jan.12, 2023).

Infrastructure Investment and Jobs Act and the 2022 Inflation Reduction Act to expand EV charging infrastructure in New Mexico.

- **Public Service Company of New Mexico (PNM).** In 2021, PNM received approval for its first Transportation Electrification Plan (TEP). This plan included \$11.4 million to support charging infrastructure in single-family homes, multifamily housing complexes, workplaces, and transit agencies, as well as fast charging along highway corridors. In its second TEP application, PNM has proposed to invest an additional \$37 million to support transportation electrification. This includes new offerings such as rebates for low-income customers to help offset the cost of purchasing a new or used EV, new programs to assist electrification of multi-family housing, and programs aimed at electrifying car-sharing services. PNM's TEPs will be critical to ensuring that there is sufficient charging infrastructure to support rapid electrification of the transportation sector.
- **Southwestern Power Service Company (SPS).** New Mexico's investor-owned utility in the southeastern region of the state received approval for its first TEP in 2021. This plan includes investments of \$3.7 million to increase access to charging at home and to build out public Level 2 and fast charging capabilities. SPS's first TEP has been successful at increasing access to non-proprietary fast chargers in this region of the state. SPS aims to file its second plan by April of 2024.
- **El Paso Electric (EPE).** EPE's first transportation electrification plan totaled \$1.2 million over a two-year period to support development of charging infrastructure in multifamily housing, single family residential, workplace, and fleet charging. Its second TEP, submitted in July 2023, proposes \$14 million of investment over three years. This includes scaling up its existing offerings as well as new programs providing construction rebates for EV ready buildings, customer outreach programs, and other innovative programs aimed at increasing access to new forms of electrification.

- **Rural Cooperative Utilities.** New Mexico’s rural electric cooperatives have worked together to leverage Volkswagen Settlement funds to build a network of fast chargers across the state. Partnering with Francis Energy, they have been working to build EV charging sites, which will facilitate long-distance travel. These efforts will complement more recent federal efforts to create continuous charging corridors across the country.⁸⁹

With the state and utilities already planning to invest more than a hundred million dollars on EV charging infrastructure of the next few years, concerns about where to charge an EV will be a thing of the past by the time ACCII takes effect in New Mexico in MY 2027.

E. ACCII Will Make Affordable ZEVs More Widely Available in New Mexico

The ACCII rule includes a provision for environmental justice vehicle credits that will play a key role in ensuring that all New Mexicans share equitably in the rule’s benefits while providing additional compliance flexibility. Under this provision, automakers may earn more than one credit per ZEV sale (i.e., a higher “vehicle value”) where the vehicle sale is deemed to promote equity objectives as defined by the rule. The rule creates three options for automakers to earn higher vehicle credit values: (1) providing new EVs at a minimum 25% discount for exclusive service in community-based clean mobility programs, (2) placing end-of-lease ZEVs originally sold in New Mexico into participating financial assistance programs, and (3) selling affordable vehicles with a manufacturer’s suggested retail price of less than \$20,000 for sedans and less than \$27,000 for SUVs and trucks.⁹⁰ These credits will help to increase access to ZEVs in communities historically disadvantaged by transportation pollution.

Additionally, it is important to remember that only *new* vehicle sales are regulated under the ACCII program, while the majority of drivers—especially lower- and middle-income drivers—purchase used vehicles.⁹¹ The sooner the new vehicle market transitions to ZEVs, the sooner these vehicles will become available in the used vehicle market, ensuring that used vehicle purchasers

⁸⁹ Clean Technica, An Update on Upcoming Fast Charging Stations In Southeast New Mexico (Oct. 13, 2022).

⁹⁰ Cal. Code Regs. tit. 13, § 1962(e)(2).

⁹¹ Statista.com, U.S. New and Used Car Sales 2010-2021.

can enjoy the substantial lifetime cost savings associated with EVs.⁹² Used vehicle purchasers will be able to take advantage of a used EV tax credit included in the Inflation Reduction Act, which is set at 30% of the vehicle price, up to \$4,000.⁹³

F. ACCII Will Ensure Higher Quality EVs and Consistent Technology Standards

The ACCII Rule includes several requirements that ensure only high-quality ZEVs are sold in New Mexico. For MY 2027 through 2029, manufacturers must ensure that at least 70% of the ZEVs in a test group maintain at least 70% of their certified range after 10 years or 150,000 miles, whichever occurs first.⁹⁴ For MY 2030 and all subsequent model years, manufacturers must ensure that all of the ZEVs in a test group maintain at least 80% of their range for 10 years or 150,000 miles, whichever comes first.⁹⁵ The ACCII Rule also requires manufacturers to provide a warranty for all battery electric and plug-in hybrid vehicles that the vehicle's battery is free from defects in materials and workmanship which cause the battery to deteriorate.⁹⁶ For MY 2027 through 2030, the warranty shall protect against deterioration below 70% of the certified range during the first eight years or 100,000 miles of ownership (whichever comes first). Thereafter, the warranty must protect against deterioration below 75% of the battery's certified range.

In addition, ACCII requires automakers to provide Level 2 charging cords with each ZEV sold in New Mexico.⁹⁷ This can help increase charging availability for drivers, especially if they have access to a charging outlet at home or work.

G. ACCII will Spur Opportunities for New Mexico Workers and Businesses

Greater adoption of clean vehicles allows for an influx of good-paying jobs across multiple areas of the EV industry. Between 2015 and 2023, \$49.2 billion spent on EV manufacturing, as well as over \$115 billion spent on manufacturing of component parts, has led to the creation of

⁹² Climate Advocates' Ex. 6 at 15–17.

⁹³ IRS.gov, Used Clean Vehicle Credit.

⁹⁴ Cal. Code Regs. tit. 13, § 1962.4(d)(2).

⁹⁵ *Id.*

⁹⁶ Cal. Code Regs. tit. 13, § 1962.8(c).

⁹⁷ Cal. Code Regs. tit. 13, § 1962.3(c)(3). Level 2 charging equipment uses 208/240 V to charge the electric vehicle. These chargers can provide approximately 25 miles of range per hour of charging.

nearly 180,000 jobs in the United States, with over 57,000 jobs in the manufacturing of passenger electric vehicles alone.⁹⁸ This growth is buoyed by strong policy: 56% of announced EV investments occurred in the 12 months since passage of the Inflation Reduction Act, and 80% since the passage of the Bipartisan Infrastructure Law in 2021.⁹⁹ A recent report by E2 corroborates that trend; it found that “clean energy and clean transportation jobs grew by more than 5 percent in 2021, with electric vehicle manufacturing jobs leading the way.”¹⁰⁰

ERM’s analysis finds that adoption of the ACCII Rule in New Mexico will further catalyze the growth of good jobs and higher wages by accelerating the ZEV market. Adoption of the ACCII through 2035 will result in the creation of 3,260 new jobs by 2030, with the largest growth of jobs in electrical component manufacturing and in construction of charging infrastructure.¹⁰¹ And because many of the jobs associated with the electrification of transportation are for electricians and electrical engineers, the wages associated with these new jobs are around 50% higher than the jobs replaced. This will result in a net increase to annual GDP of about \$632 million by 2030.¹⁰²

H. Widespread EV Adoption Spurred by ACCII will Help Lower Electricity Rates for All Customers

The ACCII Rule will accelerate transportation electrification which will result in significant benefits for all utility customers, whether or not they own an EV. If EVs are charged during hours of the day when there is lower net demand on the grid, the electric grid is used more efficiently. Because this strategic EV charging results in additional electricity sales but minimal additional costs for electric generating capacity, charging EVs can reduce electricity costs for all utility customers. EV charging effectively puts downward pressure on electricity rates. Based on California’s experience, “EVs hold significant potential to reduce electric rates for all customers

⁹⁸ Env’tl Defense Fund, U.S. Electric Vehicle Manufacturing Investments and Jobs at 5 (Aug. 2023) [Climate Advocates’ Ex. 28].

⁹⁹ *Id.*

¹⁰⁰ E2.org, Clean Jobs America 2022 (Aug. 2022).

¹⁰¹ Climate Advocates’ Ex. 6 at 19.

¹⁰² *Id.*

because they can bring in more revenue than associated costs, largely due to the fact EVs can be charged during hours when the electric grid is underutilized.”¹⁰³

Downward pressure on electricity rates has been demonstrated in a series of studies performed by Synapse Energy Economics, LLC, that rely on real-world data. In its latest review of nationwide numbers, Synapse observed that, from 2011 to 2021, “EV drivers across the United States have contributed approximately \$1.7 billion more than associated costs, driving rates down for all customers.”¹⁰⁴ In addition to maximizing economic benefit for utility ratepayers, effective grid integration of EV charging load can also help ensure that EVs facilitate the integration of renewable energy.

ERM’s analysis of ACCII Rule is consistent with Synapse’s findings. ERM estimates that a full ACCII Rule would lead to an increase of 7.6 million MWh in additional electricity demand by 2050.¹⁰⁵ Because fixed annual distribution system costs will be spread over a larger energy sales base, utility net revenue “could potentially reduce average residential and commercial electricity rates in New Mexico by as much as 1.8 percent by 2050.”¹⁰⁶ Such a decrease could save the average household in the state approximately \$24 a year and could save the average commercial customer \$185 per year.¹⁰⁷ This analysis demonstrates how EVs help promote equitable outcomes by helping to reduce the monthly electric bills of households and small businesses in New Mexico, regardless of whether or not they own an EV.

¹⁰³ Synapse Energy Economics, Inc., EVs Are Driving Electric Rates Down – California Update at 1 (Dec. 2022) [Climate Advocates’ Ex. 25].

¹⁰⁴ Synapse Energy Economics, Inc., Electric Vehicles Are Driving Rates Down: National Update (June 2023) [Climate Advocates’ Ex. 26].

¹⁰⁵ Climate Advocates’ Ex. 6 at 20.

¹⁰⁶ *See id.*

¹⁰⁷ *Id.* ERM’s analysis of the ACT Rule indicates that this rule might increase electric rates by a modest amount. Climate Advocates’ Ex. 7 at 19. ERM’s analysis indicates that ACCII and ACT would effectively cancel each other out, leading to no net change in electric rates.

VI. The Boards Should Adopt the Full ACCII Rule Through MY 2035

In 2019, Governor Lujan Grisham established a goal for New Mexico to reduce GHG emission reductions 45% by 2030 as compared to 2005 levels.¹⁰⁸ That executive order also discusses the work of the Intergovernmental Panel on Climate Change (IPCC) and the finding that globally, average temperature increase must be held to 1.5 degrees Celsius, which is “the level necessary to forestall dramatic climate changes that will further imperil our water supplies.”¹⁰⁹ The IPCC has stated that in order to limit warming to 1.5 degrees Celsius, it will be necessary to bring GHGs emissions to net zero by 2050,¹¹⁰ which necessarily entails eliminating GHGs emissions from the transportation sector by mid-century.

To achieve Governor Lujan Grisham’s emission reduction goal and avoid the worst impacts of climate change, the state must make significant policy strides, including decarbonizing its light-duty vehicle fleet by 2050. To achieve those reductions, it is necessary that 100% of new vehicle sales be zero emitting beginning in MY 2035.¹¹¹ This is because vehicles may stay on the road for 15 years or more, meaning that if new gasoline vehicles are purchased in MY 2035, they may still be on the road, producing pollution, by 2050.

To meet those crucial goals, the most effective policy option available to the EIB and AQCB is full adoption of the ACCII program through 2035. That “full ACCII rule,” which Climate Advocates have set forth in Climate Advocates’ Exhibit 2, would require 100% of new light-duty vehicles sold in MY 2035 and beyond to be ZEVs.¹¹² Analysis done by ERM demonstrates that adoption of the full rule is necessary to achieve emission reductions consistent with the direction

¹⁰⁸ Executive Order on Addressing Climate Change and Energy Waste Prevention, E.O. 2019-003 (Jan. 29, 2019).

¹⁰⁹ *Id.*

¹¹⁰ Intergovernmental Panel on Climate Change, Global Warming of 1.5°C: Headline Statements from the Summary for Policymakers (2019).

¹¹¹ Int’l Energy Agency, Net Zero by 2050: A Roadmap for the Global Energy Sector at 9 (Mar. 2021) (explaining that in the scenario that achieves net zero global emissions by 2050, consistent with limiting global warming to 1.5° C, “[p]olicies that end sales of new internal combustion engine cars by 2035 and boost electrification underpin the massive reduction in transport emissions”) [Climate Advocates’ Ex. 19].

¹¹² Under ACCII, a zero-emission vehicle is defined as a battery electric vehicle (BEV), plug-in hybrid electric vehicle (PHEV), or fuel-cell electric vehicle (FCEV). Throughout this testimony, the expression electric vehicle (EV) or zero emission vehicle (ZEV) is meant to encompass BEVs, PHEVs, and FCEVs.

given by Governor Lujan Grisham and the IPCC.¹¹³ Moreover, a full ACCII rule would deliver enormous net benefits of about \$44 billion for New Mexicans by 2050—\$9 billion more than a partial rule that ends in MY 2032.¹¹⁴ These benefits reflect massive GHG emission reductions, a reduction in public health burdens, new high-paying jobs, utility customer savings, and customer savings from owning and operating ZEVs.

NMED and the EHD have proposed a partial ACCII rule that would apply only through MY 2032, at which point New Mexico would revert back to the weaker federal tailpipe emission standards, which do not guarantee ZEV sales in the state. The prospect that the state would revert back to the federal standards might lead to undercompliance in the years leading up to MY 2032, because automakers could use the multi-year credit banking provision of the Rule as a loophole to deliver fewer ZEVs to New Mexico in earlier model years, taking advantage of the fact that no credits would be needed in MY 2033 or beyond. Thus, adopting a partial rule may actually weaken the rule during the period when it is intended to apply.

Because it does not achieve 100% new ZEV sales and carries a significant risk of flatlining or declining ZEV sales once it concludes, the Departments' proposal will not be sufficient to meet the key GHG reduction targets. ERM's modeling projects that full adoption of ACCII will reduce greenhouse gas emissions from the light duty sector in New Mexico 95% by 2050, whereas partial adoption of the rule will only achieve an 80% reduction.¹¹⁵ Full adoption gets the state within reach of net zero emissions from the light-duty sector by mid-century, whereas partial rule adoption will leave that goal out of reach.

Full adoption of ACCII will yield far greater reductions in conventional air pollution as well. Full rule adoption leads to NOx emission reductions from the light-duty sector approaching 100% by 2050, whereas a partial rule only achieves an 82% reduction by midcentury.¹¹⁶ Similarly,

¹¹³ ERM, Comparison of New Mexico Adoption of ACCII Results: Through 2032–2035 at 8 [Climate Advocates' Ex. 9].

¹¹⁴ *Id.* at 19.

¹¹⁵ *Id.* at 8. This analysis assumes that New Mexico will remain at 82% ZEV sales in the years after 2032. However, in reality, New Mexico would revert to the federal standard which could result in lower ZEV sales. As such, the 80% GHG emissions reductions figure is a best-case scenario.

¹¹⁶ *Id.* at 9.

adoption of the full rule will lead to a reduction of tailpipe PM emissions of 95% by 2050, as compared to only a 71% reduction in PM emissions from the partial rule.¹¹⁷ The added reductions from adopting the full rule result in important improvements to public health. Using the U.S. EPA COBRA model, ERM found that adoption of the full rule will lead to an additional 20 avoided deaths and 11,000 avoided minor health cases as compared to the partial rule.¹¹⁸

Full adoption of ACCII will increase benefits for consumers, including New Mexicans who want to purchase a used EV. Adopting the full ACCII rule would require all new light-duty vehicles sold in New Mexico to be non-emitting by MY 2035, while the partial rule would allow manufacturers to continue selling polluting vehicles in New Mexico indefinitely. Under the full rule, the light-duty fleet in New Mexico will be 94% ZEVs by 2050. In absolute numbers, adopting the full ACCII rule will result in the delivery of about 64,000 additional ZEVs to New Mexico by 2035, and more than 522,000 additional ZEVs by 2050. As explained, ZEVs are expected to be significantly cheaper to purchase by the 2030s, while saving consumers tens of thousands of dollars in operational costs over their lifetimes. Adopting the full ACCII Rule will ensure that New Mexicans are first in line to receive ZEVs—which, by the 2030s, are expected to be significantly cheaper to purchase than polluting vehicles, while also producing tens of thousands of dollars in lifetime savings.

ERM's analysis finds that partial rule adoption through MY 2032 achieves reductions in GHGs, NOx, and PM emissions that are significantly greater than if the state did not adopt any standard. However, the additional emission reductions achieved through adoption of the full rule are critical as they will further protect New Mexican health and get the state within reach of achieving its climate goals. Full adoption of the rule also maximizes benefits for New Mexican consumers. All told, adopting the full rule will increase net societal benefits by \$9 billion compared to adopting the partial rule. The Boards should not walk away from these significant additional benefits; they should adopt ACCII in full, ensuring that 100% of new vehicles sold in the state by MY 2035 are non-polluting.

¹¹⁷ *Id.* at 10.

¹¹⁸ *Id.* at 11.

VII. The Advanced Clean Trucks Rule Will Help Address the Climate Crisis, Improve Air Quality, and Deliver Economic Benefits to the State

A. The ACT Rule Will Significantly Reduce Tailpipe Emissions from MHD Vehicles

Trucks have an outsized impact on air pollution. Despite making up only 10% of the vehicles on the road in New Mexico, MHD vehicles contribute to 64% of NO_x pollution, 58% of PM pollution, and 35% of GHG emissions from the on-road vehicle fleet.¹¹⁹ The ACT Rule will significantly reduce emissions of all of these pollutants by requiring an increasing percentage of new MHD vehicles to be ZEVs starting MY 2027. By 2050, annual NO_x emissions from New Mexico's MHD fleet will decline by 43%, and direct PM emissions will fall by 34%.¹²⁰ The emission reductions will produce important public health benefits, including 28 avoided premature deaths and more than 15,700 avoided respiratory illnesses through 2050.¹²¹

The ACT Rule will also contribute significantly to meeting New Mexico's GHG emission reduction goals. The benefits of this rule grow as the number of zero-emitting trucks on the road increases and New Mexico's electricity grid becomes cleaner. By 2050, the ACT rule will reduce annual GHG emissions from MHD vehicles by 39% as compared to a baseline adoption scenario;¹²² cumulatively, the rule will reduce GHG emissions by 23 million metric tons of CO₂ over that time.¹²³ While other complementary policies must also play a role in accelerating deployment of zero emission MHD vehicles, the ACT Rule is a bedrock policy in this effort, which will ensure a reliable supply of vehicles and send a market signal to key stakeholders that the state is committed to the transition to zero emission MHD vehicles.

The emissions benefits of transitioning to zero emission MHD vehicles will increase as New Mexico's electric grid continues to decarbonize. As every unit of electricity becomes cleaner, so too does the fuel that is powering these vehicles, lowering the lifecycle emissions of these

¹¹⁹ Climate Advocates' Ex. 7 at 4.

¹²⁰ *Id.* at 14. The Rule's NO_x reductions will also lead to reduced secondary PM formation, further improving air quality. See *Id.* at 14, n.14.

¹²¹ *Id.* at 14, Table 2.

¹²² *Id.* at 14, 15.

¹²³ *Id.* at 16.

vehicles. All of New Mexico’s utilities are required to attain at least 50% renewable energy by 2030,¹²⁴ and the investor-owned utilities are required to attain 80% renewable energy by 2040 and 100% zero carbon resources by 2045. Some utilities are planning to achieve 100% clean energy even earlier: New Mexico’s largest utility, PNM, has committed to 100% zero carbon resources by 2040.¹²⁵ These cuts will greatly improve the lifecycle emissions profile of all of the electric vehicles on New Mexico’s roads, including its MHD fleets. Complementary emission reductions in the utility and transportation sectors will also be needed to reach the state’s GHG reduction targets, but without question, the ACT Rule is an essential piece of that effort.

B. The ACT Rule is Technologically Feasible and Consistent with Market Trends

The ACT Rule starts with low sales requirements and gradually increases, leaving time for technologies to continue to improve, supporting infrastructure to mature, and vehicle prices to decline. The ramp-up in sales requirements is modest: in the first year of the program, MY 2027, only 15-20% of sales would need to be ZEVs, depending on vehicle class. Plug-in hybrid vehicles can be used to comply with this sales requirement, as can battery electric and hydrogen fuel cell vehicles.¹²⁶

Zero-emission technologies are market-ready now in many vehicle classes, and quickly becoming available across every vehicle size and duty cycle. In North America, more than 100 zero-emission truck and bus models are already available, ranging from shuttle buses and cargo vans to school buses and tractor-trailers.¹²⁷ There is currently at least one zero emission model commercially available across all bus types and class 2b-8 trucks, and, based on manufacturer announcements, there will be multiple companies selling EV in all MHD vehicle market segments by 2025, including 58% of the major OEMs.¹²⁸ Significant advancements in range and efficiency

¹²⁴ NMSA 1978, §§ 16-18-1 to 16-18-23 (2019).

¹²⁵ PNM Resources, Emissions-Free Generation by 2040.

¹²⁶ See Cal. Code Regs. tit. 13, § 1963.2(b) (providing formula whereby near-zero emission vehicles (plug-in hybrids) generate credits).

¹²⁷ Ben Sharpe, et al., Race to Zero—How Manufacturers Are Positioned for Zero Emission Commercial Trucks and Buses in North America, ENVIRONMENTAL DEFENSE FUND (Oct. 2020) [hereinafter: *Race to Zero Report*].

¹²⁸ *Race to Zero Report* at 11, Table 2; see also Dana Lowell and Jane Culkin, Medium- And Heavy-Duty Vehicles: Market Structure, Environmental Impact & EV Readiness at 22, Figure 10, MJ BRADLEY & ASSOCS. (July 2021).

in the intervening years can be expected, expanding suitability for a wider spectrum of zero-emission vehicle uses and classes.

Further, both the ACT and Low NO_x Rules employ credit mechanism systems that incentivize voluntary early action and permit a high degree of compliance flexibility. For example, the ACT Rule allows zero-emission credit trading between manufacturers and between most truck classes, accounting for vehicle size, enabling manufacturers to use credits from truck segments where ZEV technologies are most mature to comply with the Rule's targets for segments where the technology is still maturing.

Finally, the ACT Rule can accommodate fluctuations in vehicle sales from year-to-year. In response to requests from truck manufacturers, the ACT rule accounts for unforeseen macroeconomic events by basing manufacturers' annual ZEV sales requirements on total sales for that year. For example, if an economic contraction occurs, the ZEV sales requirements will decrease to reflect production challenges.

With these flexibilities, manufacturers are well positioned to comply with the ACT Rule in New Mexico—just as they are already preparing to comply in California, Colorado, New York, New Jersey, Washington, Oregon, Massachusetts, and Vermont.

It is important to remember that California developed the ACT Rule before the Inflation Reduction Act was adopted. Even before Congress adopted that landmark legislation, the ACT Rule was found to be achievable and cost-effective. After the Inflation Reduction Act, market forces alone are expected to bring manufacturers close to achieving ZEV targets in the ACT Rule. A recent ICCT report found that incentives in the Inflation Reduction Act were expected to result in a rapid transition to ZEVs across all MHD classes, reaching 47 to 56% of all new MHD sales by 2035.¹²⁹ In certain classes (like refuse trucks and Class 4-7 rigid trucks), ZEVs are anticipated to constitute as much as three quarters of new vehicle sales by 2035:

¹²⁹ Peter Slowik et al., *Analyzing the Impact of the Inflation Reduction Act on Electric Vehicle Uptake in the United States*, INT'L COUNCIL ON CLEAN TRANSPORTATION at 14 (2023) [Climate Advocates' Ex. 22].

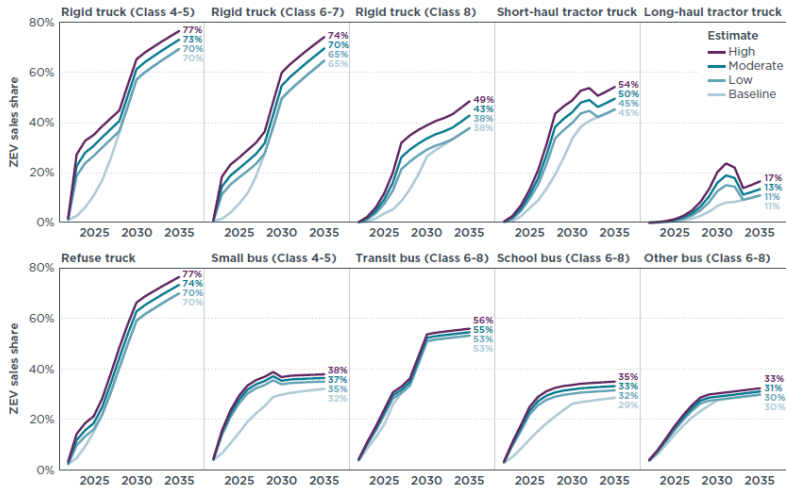
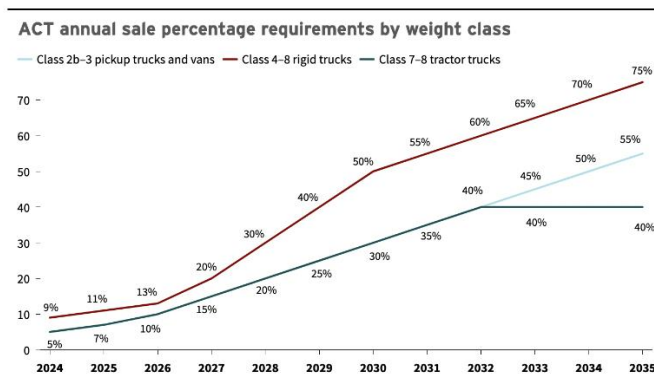


Figure 7. Baseline, IRA Low, IRA Moderate, and IRA High scenarios for U.S. heavy-duty ZEV (BEV + FCEV) sales shares by category, 2022-2035

Source: International Council on Clean Transportation, *Analyzing the Impact of the Inflation Reduction Act on Electric Vehicle Uptake in the United States* (2023).

Compare these market trends to the ZEV targets in the ACT Rule:



Source: Rocky Mountain Institute, *Understanding California's Advanced Clean Truck Regulation*.

As these graphs show, market forces—supercharged by federal incentives—will do the lion’s share of the work in pushing the MHD market towards zero emission options. The ACT Rule still has important work to do, however, and is eminently achievable in light of these trends.

C. Zero Emission MHD Vehicles Offer Cost Savings Compared to Diesel and Gas Fueled Alternatives

There are significant economic benefits that come from a transition to zero-emission trucks and buses. A recent study completed by Roush Industries for Environmental Defense Fund found that, by 2027, medium and heavy-duty ZEVs will have lower lifetime costs of ownership than their diesel counterparts.¹³⁰ This was true for every type of MHD vehicle analyzed—including transit buses, school buses, garbage trucks and shuttle buses and delivery trucks. The study considered all of the costs of vehicle ownership, including purchase price, maintenance, energy/fuel, and infrastructure costs. According to the study, “maintenance costs are still present, but typically lower than [internal combustion vehicles] due to the lower complexity and fewer consumables such as engine oil and filters,” and the fact that “consumables such as brake pads and rotors last longer due to regenerative braking performed by the drive motors.” ZEVs outperformed diesel vehicles by a significant margin across all vehicle types: at the lower end, the total cost of ownership of an electric Class 7 delivery truck is 12.7% lower compared to its diesel equivalent, while the total cost of owning an electric Class 5 delivery truck or a Class 8 delivery truck is about 30% lower than the diesel alternative.

An update to the Roush report additionally found that as a result of the grants and incentives in the Inflation Reduction Act, electric freight trucks and buses will be as or less expensive than their combustion engine counterparts in every category by 2024—i.e., immediately.¹³¹ In addition to reducing the purchase price of medium and heavy-duty zero emission vehicles, the Inflation Reduction Act will also provide savings on charging equipment.

The Roush study found that the *purchase price* of all MHD vehicles, except Class 5 shuttles, would be lower in 2027 than the equivalent diesel vehicle. In the case of the Class 5 shuttle, the incremental purchase cost for an electric model was only 2% higher—an additional cost that pales in comparison to the lifetime fuel and maintenance savings of the electric model. Technological advancements will further improve the economics of electric MHD vehicles.

¹³⁰ Vishnu Nair et al, Technical Review of Medium and Heavy Duty-Electrification Costs for MY 2027-2030 at 39 (Feb. 2, 2022) [Climate Advocates Ex. 23].

¹³¹ Himanshu Saxena, Sajit Pillai, Impact of the Inflation Reduction Act of 2022 on Medium- and Heavy-Duty Electrification Costs for MYs 2024 and 2027, ROUSH (2023).

According to the Roush report, advances in the energy density and efficiency of the battery “will reduce the battery pack cost by greater than 13%.”¹³² Because the battery is the largest cost component of an electric vehicle’s purchase price, reduced battery costs will further reduce the purchase price of these vehicles. Greater adoption of EV technology will also create economies of scale that will further lower the price of charging technologies.

D. Substantial Federal Incentives Will Further Improve the Economics of Zero Emission MHD Vehicles

There are a wide variety of incentives available to help offset the higher upfront cost of electric vehicles and infrastructure. Subsection V.D discusses many programs, such as the electric utilities’ Transportation Electrification Plans, which are applicable to light-duty, as well as medium and heavy-duty vehicles. This section discusses the federal incentives that are relevant to only medium and heavy-duty zero emission vehicles.

At the federal level, both the Infrastructure Investment and Jobs Act and the Inflation Reduction Act contain many programs aimed at facilitating decarbonization of the nation’s most polluting sector, including:

- \$5 billion as part of the Clean School Bus program, with half of that money dedicated specifically for zero-emission school buses, as well as charging infrastructure;
- \$1 billion in competitive grants for purchasers of Class 6 and 7 ZEVs;
- The Commercial Clean Vehicle Tax Credit, which can be used to offset up to \$40,000 of the upfront cost of MHD vehicles;¹³³
- The Alternative Fuel Infrastructure Tax Credit, which can be used to offset up to \$100,000 of the upfront cost of EV charging or hydrogen refueling station;¹³⁴
- Funds for transit buses through expansion of the Low and No-Emission grant program;
- Programs with funds that, while broader in scope, contemplate the use of funds for zero-emission transportation (e.g., the Congestion Mitigation and Air Quality Improvement program, creation of the Greenhouse Gas Reduction Fund, and expansion

¹³² *Id.* at 120.

¹³³ IRS, Commercial Clean Vehicle Tax Credit.

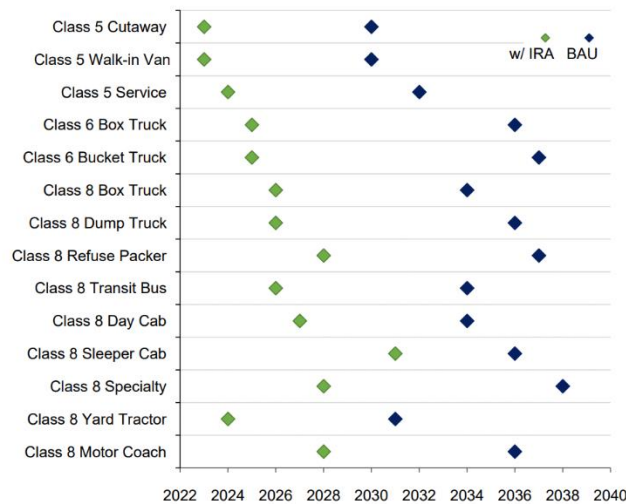
¹³⁴ U.S. Department of Energy, Alternative Fuel Infrastructure Tax Credit.

of the Diesel Emissions Reduction Act, all of which can be leveraged for the purchase of zero-emission vehicles and supporting equipment).

These federal programs will help ensure that emission standards like the ACT rule are successfully implemented.

These incentive programs will have a deep and positive impact on the upfront cost of purchasing these vehicles, furthering the economic feasibility of purchasing zero-emission trucks and buses. For example, ERM found that grants in the Inflation Reduction Act “could increase the number of ZEV sales by over 74,000 vehicles between 2023 and 2031,” and “the purchase price for a wide range of commercial ZEVs will reach parity with comparable diesel or gas vehicles at least 5 years and as much as 12 years earlier than would occur without the credit, and as early as 2023 for many ZEVs.”¹³⁵ The dramatic impact of the Inflation Reduction Act in reducing the purchase price for zero emission MHDs is shown below:

Figure 1. Year purchase price parity is achieved for a range of types of ZEVs compared to internal combustion vehicles for business-as-usual and with the IRA



Source: Technical Memo from Ellen Robo and Dave Seamonds to Environmental Defense Fund (Aug. 19, 2022).

¹³⁵ Env'tl Defense Fund & ERM, Electric Vehicle Market Update at 8 (September 2022).

In a nutshell, price parity was already predicted for many vehicles as early as 2027; with the incentives embedded within federal legislation, ZEVs will become cheaper even earlier.

E. The ACT Rule Will Increase Availability of Zero Emission MHD Vehicles, Creating Economies of Scale that Will Further Reduce Costs

The ACT Rule will increase model availability, improving economies of scale and driving down costs. Manufacturers are already committing to produce more zero emission models. As of 2019, there were only 20 models of Class 2b-8 zero-emission trucks; by the end of 2022, that number was 136 models.¹³⁶ The ACT Rule is expected to increase model availability still further. According to a report by Ceres, a regulation that sets sales targets, like the ACT Rule, will “lead to lower production costs by increasing sales and production volumes, which would further justify increased investment in infrastructure and incentivize the production of battery electric trucks in other classes.”¹³⁷

Emission standards like the ACT and Low NOx Rules will also drive technology advancements to bring down costs. For example, according to Bloomberg New Energy Foundation, “[a]dvancements in solid-state batteries could be revolutionary, and have significant potential to drive additional battery pack cost reductions in the future.” At scale, solid-state cells “could be manufactured at 40 percent of the cost of current lithium-ion batteries.”¹³⁸ Research at top universities in the United States could revolutionize battery chemistries in a way that could significantly reduce the upfront cost of EVs, but the extent of that impact will be determined by the promulgation of policies like the ACT Rule that require additional sales of EVs.

VIII. The Low NOx Rule Is a Feasible, Cost-Effective Way to Reduce Air Pollution in New Mexico

A. The Low NOx Rule Will Produce Public Health Benefits

The Low NOx Rule strengthens NOx emission standards for gas and diesel MHD, establishing an emission limit for MY 2027 that is 90% more stringent than current emission

¹³⁶ *Id.* at 11.

¹³⁷ Ceres, Electrifying Trucking: The Case for Ambitious Federal Emission Standards and Policies at 2 (May 2022) [Climate Advocates’ Ex. 27].

¹³⁸ Env’t Defense Fund & ERM, Electric Vehicle Market Update at 33 (September 2022).

standards.¹³⁹ Together, the ACT and Low NOx Rules are expected to substantially reduce NOx emissions from New Mexico’s MHD fleet. Under a business-as-usual scenario, annual NOx emissions from New Mexico’s MHD fleet would exceed 9,000 tons in 2030. But if both ACT and Low NOx rules are adopted, only about 6,000 tons will be emitted that year.¹⁴⁰ By 2050, fleetwide emissions will be just over 1,000 tons a year if both rules are adopted—about 8,000 tons lower than what they would be under a business-as-usual scenario.¹⁴¹

Because NOx is both an ozone precursor and a PM precursor, cutting NOx emissions will reduce exposure to both of these dangerous air pollutants. Ozone and PM produce severe health impacts including asthma, lung infections, cardiovascular diseases, lung cancer, reproductive harm, and even premature deaths. By reducing PM exposure, the Low NOx rule in New Mexico would prevent 23 premature deaths, 20 hospital visits, and over 12,300 avoided cases of respiratory illnesses, restricted activity days, and lost workdays by 2050.¹⁴² The Low NOx rule would also reduce ozone levels, although ERM did not quantify the health benefits from reduced ozone. The Low NOx rule is an important complement to the ACT Rule that will deliver substantial public health benefits to the people of New Mexico.

B. The Low NOx Rule is Achievable

The Low NOx Rule includes much-needed improvements to emission regulations for MHD vehicles, including a tighter NOx limit, new NOx standard for a low-load certification cycle, extended manufacturer warranties, and improved in-use testing that better aligns with actual operations. Importantly, the rule lowers the NOx emission limit for new fossil-fueled MHD vehicles to 0.020 gram per brake horsepower-hour (g/bhp-hr) by 2027—a 90% reduction compared to the current federal standard. This standard will be readily achievable. Nearly a decade

¹³⁹ Earlier this year, EPA adopted tighter NOx emission limits for MHD vehicles beginning MY 2027. *See* 88 Fed. Reg. 4 (Jan. 24, 2023). While stronger than current standards, EPA’s MY 2027 standards are still not as stringent as the Low NOx Rule. The Low NOx Rule requires MY 2027 MHD vehicles to achieve an emission rate of 0.02 g/bhp-hr, compared to 0.035 g/bhp-hr under the EPA standard. Thus, adopting the Low NOx Rule is about 43% more stringent than even the strengthened federal rules.

¹⁴⁰ Climate Advocates’ Ex. 7 at 13, Fig. 3.

¹⁴¹ *See id.*

¹⁴² *See id.*

of research, testing, and demonstrations convincingly show that this 0.020 g/bhp-hr standard can be achieved by MY 2027.

More than eight years ago, the Southwest Research Institute (SwRI) began work with local, state, and federal regulators and industry to determine what if any technologies could meet a 0.020 g/bhp-hr NOx requirement. The results from this multimillion-dollar demonstration project are conclusive: this standard can be met with considerable margins across a variety of real-world truck routes.¹⁴³ The following chart compares the Low NOx Rule’s NOx emission and vehicle warranty requirements (expressed in miles) across the three emission tests—Federal Test Procedure (FTP), Low Load Cycle (LLC), Ramped Modal Cycle Version of the Supplemental Emission Test (SET)—for different vehicle operations, with emission testing results from the SwRI demonstration project.¹⁴⁴ The SwRI demonstration shows that vehicles can attain the Low NOx Rule requirement across all tests.

		Low NOx Rule Requirement	SwRI Results	Low NOx Rule Requirement	SwRI Results
Test Cycle		NOx g/bhp-hr at 435k miles		NOx g/bhp-hr at 600k miles	
FTP		0.020	0.020	0.035	0.029
LLC		0.050	0.029	0.090	0.027
SET		0.020	0.017	0.035	0.033

While the SwRI demonstration project proves what is possible, the companies building emission control systems are delivering solutions. The Manufacturers of Emission Controls Association states that its members are developing numerous engines and aftertreatment technologies “to simultaneously meet future NOx and GHG emission standards,” including

¹⁴³ CARB, App’x I: Current and Advanced Emission Control Strategies and Key Findings of CARB/SwRI Demonstration Work (June 23, 2020).

¹⁴⁴ CARB, Low NOx Research Update, at Slide 9 (Feb. 22, 2022).

“electrification, advanced turbochargers, EGR systems, cylinder deactivation, advanced catalysts and substrates, novel aftertreatment architectures, and dual urea dosing with optional heating.”¹⁴⁵

Innovation is driving cost-effective solutions. In fact, the technologies to meet the Low NOx Rule’s first stage that runs through MY 2026 are already commercially available at minimal cost; truck manufacturers have more than enough lead time to explore and commercialize existing demonstration projects to meet the second stage beginning in MY 2027. One such project deployed a Class 8 Peterbilt tractor in Walmart’s fleet capable of meeting the MY 2027 NOx emission limit.¹⁴⁶ And it did it while improving fuel economy by 10% and using opposed piston engines, a technology that is expected to cost *less* than current engines. The Low NOx Rule is designed to drive innovation to achieve substantial pollution reduction within a realistic timeframe. Demonstration projects are proving that a suite of technologies is available to meet the Low NOx standards while potentially cutting costs for fleets and manufacturers. Thus, compliance can reasonably be expected by the time the rule takes effect in New Mexico in 2027.

IX. The ACT and Low NOx Rules Produce Net Societal Benefits

Together, the ACT Rule and the Low NOx Rule will produce significant net economic benefits for New Mexico, including public health and climate benefits, and reduced fuel and maintenance costs for fleet owners. According to ERM’s analysis, the net societal benefit of the Low NOx and ACT Rules will exceed \$3.3 billion between 2020 and 2050.¹⁴⁷ That includes about \$600 million in monetized health benefits through 2050, including 51 avoided premature deaths and 28,065 avoided respiratory illnesses.¹⁴⁸ The climate benefits have a monetized value of \$1.8 million—which is likely a significant underestimate, given that ERM used an outdated estimate of

¹⁴⁵ Mfrs. of Emission Controls Ass’n, Statement on the U.S. EPA’s Notice of Proposed Rulemaking, Docket No. EPA-HQ-OAR-2019-0055, at 1 (May 16, 2022).

¹⁴⁶ Achates Power, In-Use Emissions Report for Heavy-Duty Diesel Engine (Apr. 2022).

¹⁴⁷ Climate Advocates’ Ex. 7 at 14, Table 2. It should be noted that ERM’s analysis was performed before EPA finalized new federal emission standards for MHDs produced in MY 2027 and thereafter. *See* 88 Fed. Reg. 4 (Jan. 24, 2023). The Low NOx rule is still more stringent than the federal baseline, but both the costs and benefits of complying with the Rule in New Mexico will be reduced given that manufacturers would need to meet tighter federal standards

¹⁴⁸ Climate Advocates’ Ex. 7 at 20, Table 3.

the social cost of GHGs.¹⁴⁹ Using the updated social cost of GHGs and a 2.5% discount rate, the climate benefits of the Rule more than double.

Reduced fuel and maintenance costs for New Mexico fleet operators are another significant benefit. ERM’s analysis also estimates that adopting the ACT and Low NOx rule could result in net job creation, with 551 additional jobs by 2035 generating an average annual compensation of \$93,768.¹⁵⁰ Jobs created by the rules will include charging infrastructure construction workers, electrical component manufacturers, and engineers. National GDP will rise \$84 million by 2035.¹⁵¹

X. The Boards Should Commit to Keeping New Mexico’s Clean Vehicle Program Up-to-Date

On October 20, 2023, the Colorado Air Quality Control Commission voted unanimously to adopt the ACCII Rule through MY 2032. Although Colorado elected not to adopt the “full” ACCII Rule—which reaches a requirement that 100% of new sales be zero emission by MY 2035 and beyond—it did adopt a provision that requires the Air Pollution Control Division to submit a petition no later than July 31, 2029 to update the ACCII Rule through MY 2033 and subsequent years.¹⁵²

Climate Advocates propose a similar provision here, which is included as Proposed 20.2.91.121 NMAC and 20.11.105.129 in Climate Advocates’ Exhibit 2. While the Colorado provision is limited to extending the ACCII Rule through MY 2033 and beyond, however, Climate Advocates’ proposal would create a streamlined proposal for updating any of the rules included here. For example, it will likely be necessary to extend the Advanced Clean Trucks program or to

¹⁴⁹ Compare EPA, External Review Draft of Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances at 3 (Sept. 2022), with Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990 at 1, 5 (Feb. 2021).

¹⁵⁰ Climate Advocates’ Ex. 7 at 19–20.

¹⁵¹ *Id.*

¹⁵² The provision states: “Future Rulemaking: By no later than July 31, 2029, the Division shall submit a petition for rulemaking to the Air Quality Control Commission proposing to update Parts B and D of Regulation 20 with emission standards for model year 2033 and subsequent model year motor vehicles.” As of the time of this writing, there is no public citation for this rulemaking text, which was adopted only three days ago. Climate Advocates will supplement the record once the final rulemaking text is published.

strengthen the targets in later model years. In addition, while Colorado’s provision requires the state agency to file the petition, Climate Advocates’ proposal would allow any person to file the petition, reducing the burden on the Departments to file a petition in the event the rules need to be updated. Adopting Climate Advocates’ proposal would ensure that New Mexico is able to respond quickly to new regulatory developments, ensuring that New Mexico is able to continue enjoying the benefits of the most advanced technology.

XI. Conclusion

Together, ACCII, ACT, and the Low NOx Rule will put New Mexico on a path towards a healthier, more prosperous, and more equitable future. Adopting ACCII in full—i.e., through MY 2035 and beyond—will maximize benefits to the state. For this reason, we urge the Boards to adopt all three rules in full.

This concludes our testimony, which is accurate to the best of my knowledge.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: October 24, 2023.



Aaron Kressig



Kathy Harris



Guillermo Ortiz