

NATIONWIDE IMPACTS OF CALIFORNIA'S ADVANCED CLEAN CARS II RULE

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EXECUTIVE SUMMARY

California's new Advanced Clean Cars II rule (ACC II) was adopted in August 2022 by the California Air Resources Board (CARB), establishing a zero-emission vehicle (ZEV) standard that will transition the state toward 100 percent electric vehicle (EV) sales by 2035.¹ Under Section 177 of the U.S. Clean Air Act, California is authorized to set its own vehicle standards that exceed national standards to address its unique transportation sector emissions. Section 177 also allows other states to adopt California's standards.

Seventeen states have adopted the state's previous low- and zero-emission vehicle regulation criteria. These "177 States" can easily adopt and implement new CARB pollution standards, meaning ACC II could accelerate ZEV adoption and associated cost and emissions savings outside of California. While some states design legislation to automatically adopt new CARB rules, other 177 States require additional processes before adoption.

Energy Innovation Policy & Technology LLC[®] modeled the ACC II rule and its interaction with the Inflation Reduction Act (IRA) to estimate the combined impact on the U.S. auto market and associated emissions and cost savings.

In this paper, we analyze the results, comparing a pre-IRA business-as-usual scenario (BAU), a scenario including the effects of IRA EV tax credits, and two ACC II adoption scenarios: one to determine the effects of its passage in

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California, and another to elucidate the impacts of other states' adoption of the rule. Lastly, we analyze state-level IRA-ACC II interactions in four state-specific case studies. IRA tax credit modeling reflects guidance from the U.S. Treasury Department as of March 31, 2023.

Our analysis finds that if all the modeled 177 States adopted ACC II, U.S. emissions could fall by a cumulative 1,310 million metric tons (MMT) of carbon dioxide-equivalent pollutants (CO₂e) by 2050. This is equivalent to the greenhouse gas emissions of 13 coal plants operating through 2050, or more than 282 million gasoline-powered vehicles driven for one year.² For context, 278 million personal and commercial vehicles were registered across the U.S. in 2021.

Under this scenario, three-quarters of cars in the U.S. could be EVs in 2050—more than 239 million vehicles. Meanwhile, we project more than \$230 in annual savings per household and almost 300,000 additional jobs created in 2050 in the 177 States adoption scenario. The rule could also prevent 160,000 asthma attacks and 5,000 deaths by 2050 if widely adopted.

This report highlights four Section 177 states that could significantly benefit from adopting ACC II:

- Augmenting Maryland's EV tax credit with ACC II could save residents an average of \$642 per household annually while cutting pollution in the state's highest-emitting sector.
- Households in New Jersey stand to save upwards of \$682 per year and breathe easier due to substantial reductions in ground-level ozone pollution prevalent in much of the state.
- Car sales in New York are about twice that of the average state, so its emissions standards have a sizeable impact on the national share of vehicles. The state could reduce greenhouse gas (GHG) emissions by 108 MMT by 2050 through adopting ACC II.
- Renewable energy makes up a relatively high proportion of New Mexico's electricity grid, and its legislature has introduced a bill for a robust EV tax credit. Adopting the ACC II under these conditions could be an economic boon and significantly lower GHG emissions.

Each state that adopts ACC II rules can secure public health and economic benefits while helping the U.S. meet its national emissions targets. Adopting California's clean car standards will also benefit individual states in myriad ways. Localized health benefits of vehicle electrification are significant, with reduced transportation pollutants particularly benefiting respiratory health.³ Economic benefits will accrue to states through consumer savings, increased tax revenue, and reductions in health-induced lost workdays.

ACC II's adoption in California comes on the heels of Congress' passing the IRA. The federal bill creates opportunities to make EVs more accessible to consumers through tax benefits that will help grow EV affordability over the coming decade. Meanwhile, though the total cost of ownership is already lower for EVs on average, the technology continues to evolve, and upfront prices are anticipated to decline below those of all types of comparable gasoline vehicles by 2028.⁴ The IRA sets the stage for near-term high EV adoption, while increased state adoption of ACC II rules can create longer-lasting cleaner and healthier communities than the IRA alone.

While increased state adoption of ACC II will put the U.S. on a path toward vehicle electrification, successful implementation is contingent on supporting policies. Policymakers should develop plans to deploy charging infrastructure using Infrastructure Investment and Jobs Act (IIJA) funds and consider attracting EV parts manufacturers to their state. State-based financial incentives will make EVs more cost competitive with gas-powered cars in the coming years, and prioritizing incentives for low- and middle-income consumers will make access to pollution-free vehicles more equitable.

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INTRODUCTION

Clean vehicle policy in California will unlock EV potential across 17 states

CARB approved the new ACC II rule in August 2022. This rule establishes a ZEV standard requiring an increasing share of newly sold light-duty cars and trucks to be ZEVs up to 100 percent in 2035. Both EVs and fuel-cell vehicles qualify as ZEVs under the rule, but we focus only on the former, as our modeling



Credit: Ivan Radic

did not result in any significant uptake of fuel-cell cars within a ZEV framework. The ACC II rule aims to increase uptake of battery electric vehicles (BEVs) and plug-in hybrids (PHEVs); the latter qualify for up to 20 percent of the required ZEV sales in each year.

As California is one of the world's largest car markets, its adoption of ACC II has significant GHG reduction benefits. Electrifying the light-duty vehicle sector is critical for the U.S. to meet its nationally determined contribution (NDC) under the Paris Agreement. EVs also generate significant local public health benefits, and grid-supplied electricity charging provides more cost certainty to consumers than does gasoline, which is subject to volatile price swings. In fact, many EVs today are already cheaper to own than their gas-powered equivalents and will become even more economic as cost declines continue in the future.⁵

ACC II is an opportunity for the 17 states that have adopted California's earlier low-emission vehicle (LEV) and ZEV criteria under Section 177 of the Clean Air Act to benefit from the emissions and cost savings from California's greater ambition. These 177 States can piggyback off California's new regulations, establishing stricter and safer state-led initiatives to augment the U.S. Environmental Protection Agency's (EPA) tailpipe standards.

Though the 177 States have all adopted California's criteria for tailpipe emissions, not all have adopted the ZEV standards. Further, not every state automatically implements new California rules. For example, "trigger" laws in Virginia and Massachusetts automatically bind the states to new vehicle standards adopted by CARB, while other states require additional agency action or legislator approval for rules to take effect. At the time of this writing, seven out of sixteen of the 177 States have adopted or announced plans to adopt ACC II rules.

The ACC II rule also indirectly impacts the growing EV market through "learning curves"—the innovation and cost benefits that grow as production increases.⁶ The maturing market for EVs in these 177 States will drive down costs for battery technology, spur more efficient manufacturing practices, and make EVs more accessible everywhere.



Credit: Sophie Jonas

States that adopt California's clean vehicle standards secure more benefits from IRA incentives

CARB's decision comes on the heels of the IRA, which extends the personal income tax credit for passenger vehicles through 2032 for up to \$7,500, removes the prior manufacturer cap on the number of vehicles eligible, and applies new eligibility requirements for vehicles, buyers, and the EV supply chain. The IRA also creates a new credit of up to \$4,000 for used

EVs, while eliminating the restriction that only automakers that have sold fewer than 200,000 EVs can qualify for incentives. Though these benefits will accelerate EV market growth through 2032, state-level ZEV standards are needed to overcome adoption and market challenges in the following years and to help provide certainty given questions around applicability of the federal tax credits.⁷

To ensure we are on track to meet national EV sales targets and for states to obtain IRA incentive benefits, Section 177 states must join California and set strong standards. The ACC II rule sets a new schedule and stronger tailpipe emissions standards for light-duty cars and trucks,⁸ but states also need to enact complementary policies to quickly scale ZEV adoption. Overcoming market challenges will also require addressing limiting factors of the EV industry, including manufacturing capacity and charging infrastructure. IRA investments can spur domestic battery and EV manufacturing while expanding charging infrastructure.

Analysis of ACC II adoption reveals nationwide emissions reduction potential

The transportation sector is the largest source of GHG emissions in most 177 States, including the three highest emitting states: California, New York, and Virginia (Figure 1). To achieve U.S. NDC targets, policymakers must prioritize cleaning up the transportation sector. As the 177 States decarbonize their electricity grids, EVs provide even more pronounced emissions benefits.

In this research note, we detail how ACC II could impact the transportation sector in adopting states. The analyses demonstrate that the IRA's incentive-driven high EV adoption persists through mid-century only when coupled with ACC II's ZEV mandate. National-level analysis illustrates how ACC II adoption can save consumers money and create jobs across the U.S. Lastly, it shows how emissions, public health, and economic benefits track with increased EV sales in each 177 State.

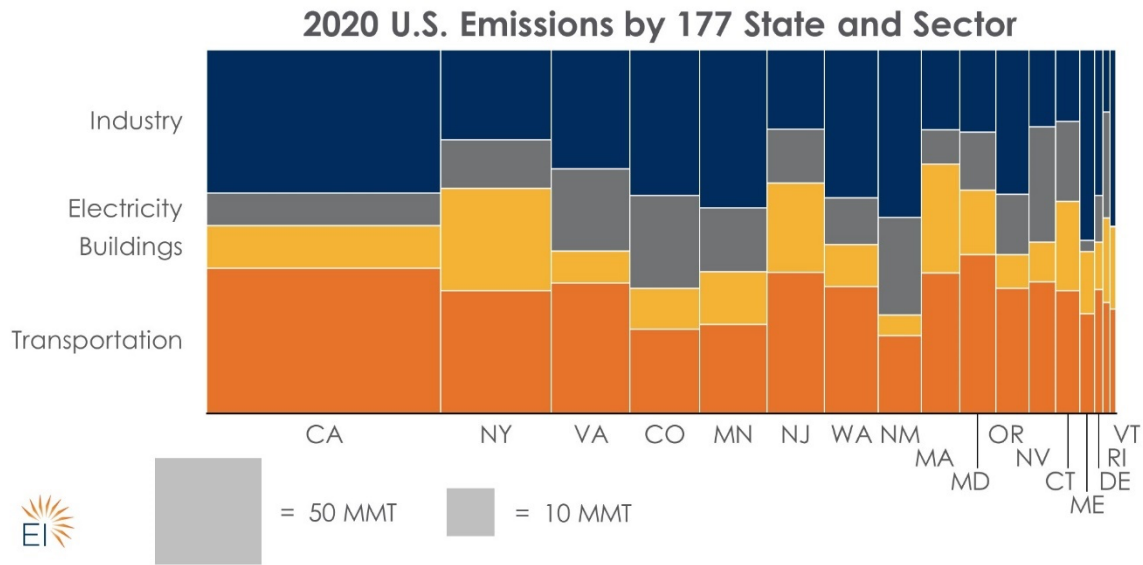


Figure 1. Mekko chart showing the pollution emitted (in CO₂e) by each 177 State in 2020, broken down by sector.

NATIONAL IMPLICATIONS OF ACC II ADOPTION

This section details the effects of the 177 States' ACC II adoption in four modeled scenarios:

- **BAU:** A pre-IRA business-as-usual scenario
- **IRA:** A scenario including the effects of the 2022 Inflation Reduction Act
- **ACC II: CA Only:** A scenario representing California's adoption of Advanced Clean Cars II
- **ACC II: All 177 States:** A scenario in which all the modeled 177 States adopt the rule

These scenarios align with a previous Energy Innovation® and International Council for Clean Transportation report and extend its results through 2050. They also incorporate the latest guidance from the Treasury Department, released on March 31, 2023.⁹ The Methodology section can be referenced for further details on these four scenarios.

ACC II adoption will extend the IRA's electrification impacts

California's ACC II rules will significantly impact the U.S. car fleet's composition for three main reasons. First, the Golden State alone comprises around 13 percent of the U.S. car market, meaning its sales are a significant share of the national total.¹⁰ Second, because several states have already announced they will adopt ACC II, the rule will impact an even greater share of U.S. car sales. Third, as more EVs are produced and sold in the 177 States, they will reduce ZEV production costs, making EVs cheaper across state borders.

Figure 2 shows that even without ACC II, the previous Advanced Clean Cars I standard (ACC I), U.S. EPA tailpipe emissions rules,ⁱⁱ and falling battery prices could push ZEVs to make up more than half of the U.S. car fleet in 2050. The IRA will boost shares in the next decade, but if its tax credits expire in 2032, the U.S. fleet could trend back to BAU vehicle shares in the following decade.ⁱⁱⁱ However, California’s ACC II can help the U.S. hit its long-term electric-fleet goals. If all the 177 States adopt the rule, three-quarters of cars in the U.S. could be EVs in 2050—more than 239 million cars.

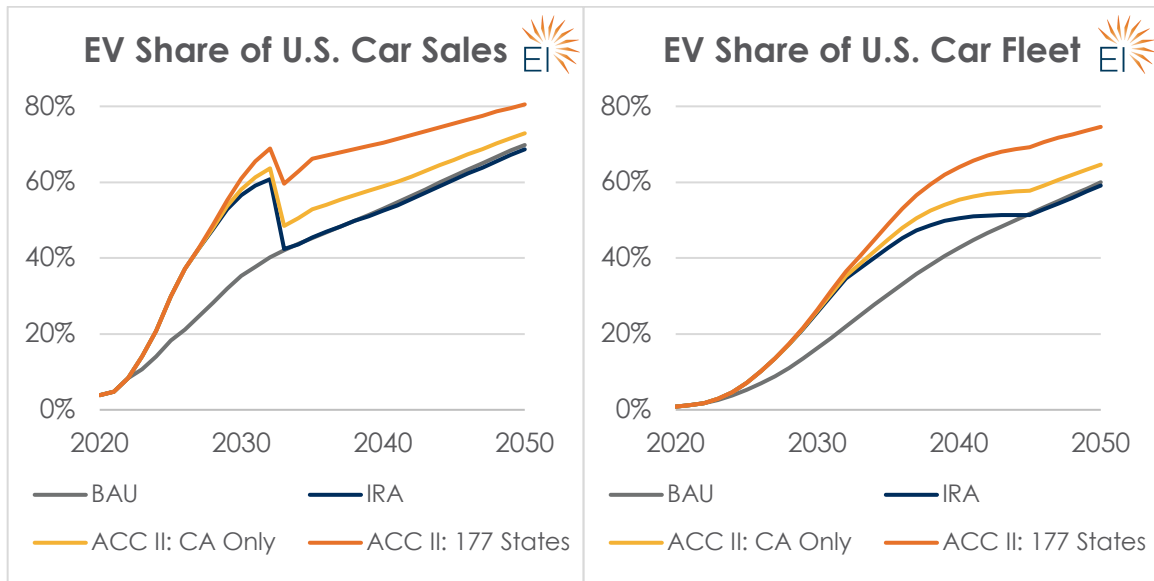


Figure 2. Share of U.S. car sales and fleet from 2020 to 2050 that is electric (BEVs + PHEVs)

Increased ACC II adoption will reduce emissions in the long term

While the IRA’s passage was a landmark climate investment, the U.S. must take additional action to achieve its NDC under the Paris Agreement.^{11,12} Increasing the share of zero-emission cars on the road is a critical step to reach carbon neutrality, and the International Energy Agency cites ZEV sales as the key transportation metric for reaching net zero by 2050.¹³

By adopting ACC II, policymakers can help align their own states and the U.S. with our Paris Agreement commitments. Figure 3 demonstrates the steady reduction in transportation emissions from broad adoption of ACC II compared to reductions from the IRA. While the IRA’s EV tax credits

ⁱⁱ The effects of EPA emissions rules through 2026 and further vehicle efficiency improvements are sourced from: “Assessment of Light-Duty Electric Vehicle Costs and Consumer Benefits in the United States in the 2022–2035 Time Frame,” Slowik *et al.*, 2022.

ⁱⁱⁱ These results do not include the “entities of concern” EV credit requirement given uncertainty about how the provision will be implemented. As a result, IRA EV sales shares likely trend higher than other projections and the effects of ACC II presented here could be conservative.

will generate significant emissions reductions through the mid-2040s, binding ZEV sales standards are needed to steadily increase long-term climate benefits. By instituting ACC II, California will reduce U.S. transportation emissions by a cumulative 470 MMT CO₂e between 2026 and 2050. More significantly, by adopting ACC II, the 177 States can boost the cumulative national savings to more than 1.3 Gt CO₂e, or emissions equal to 13 coal plants operating through 2050.¹⁴ These come atop an additional 1.2 Gt of transportation emissions savings from the IRA's provisions.

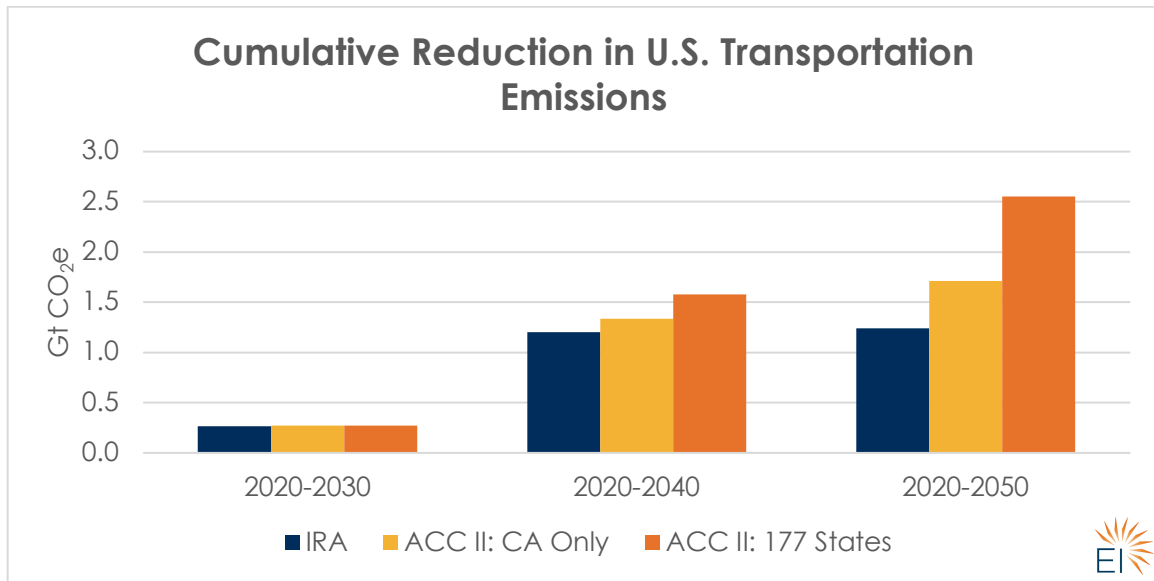


Figure 3. Projected GHG emissions by scenario as compared to the BAU scenario

ACC II adoption will generate notable health and economic benefits

Cars and trucks that burn gas emit compounds that harm human health, including particulate matter (PM) and nitrogen oxides (NOx). These health impacts are most pronounced in low-income communities and communities of color.¹⁵ Switching to ZEVs will cut pollution from cars, particularly benefiting economically marginalized and overburdened communities.

ACC II adoption by the 177 States could prevent more than 160,000 asthma attacks and 240,000 bronchitis and respiratory symptom incidences in the coming decades, in addition to reductions from the IRA. Table 1 includes all modeled reductions in health impacts.

ACC II adoption could also generate significant economic benefits. Many BEVs are already cheaper than their gas counterparts off the lot.¹⁶ Annual maintenance costs are approximately 40 percent lower for EVs compared to ICE vehicles.¹⁷ Additionally, EVs are about three times as efficient as gas- and diesel-burning cars,¹⁸ making fuel costs 60 percent cheaper for EV owners.¹⁹

Table 1. Public health effects of ACC II adoption by California and 177 States

ACC II Adopter	Avoided Asthma Attacks by 2050	Avoided Lost Workdays by 2050	Avoided Premature Mortality by 2050	Avoided Respiratory Symptoms and Bronchitis by 2050	Avoided Nonfatal Heart Attacks by 2050	Avoided Hospital Admissions by 2050	Avoided Respiratory ER Visits by 2050	Avoided Minor Restricted Activity Days by 2050
CA Only	61,900	220,000	1,940	92,900	2,610	1,160	1,020	1,350,000
All 177 States	161,000	574,000	5,040	242,000	6,770	3,020	2,660	3,560,000

These cost differences mean the 177 States’ ACC II adoption will save U.S. households an annual average of \$238 (in 2022 dollars), with most savings going to households in states adopting the rule (Figure 4).

Investments in EVs will also create nearly 300,000 jobs by 2050. These jobs are likely to be bolstered by the IRA’s domestic sourcing and production requirements.

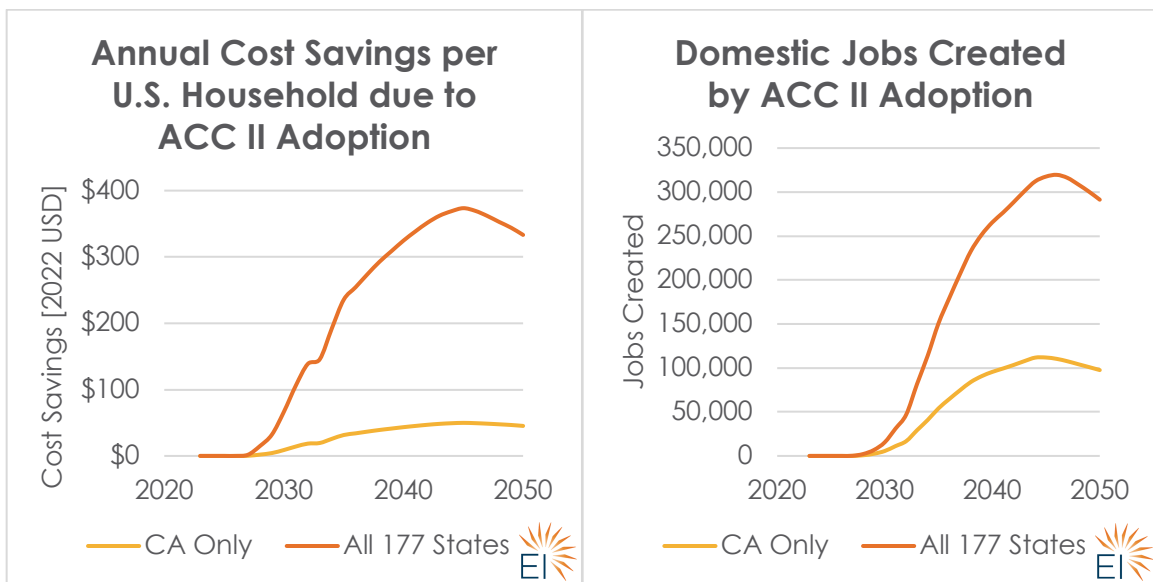


Figure 4. National economic changes due to ACC II as compared to an IRA baseline

Lastly, by reducing dependence on foreign oil imports, EVs also increase national security and protect consumers from volatile gasoline prices due to changes in supply. In the past year, most parts of the country experienced gas prices over \$4 per gallon. From August 2021 to August 2022, gasoline prices increased more than 25 percent, largely due to the Russian invasion of Ukraine

and subsequent impacts.²⁰ Further, oil and gas prices are expected to increase by 10 percent this year.²¹

In contrast, electricity prices are relatively stable, and costs are expected to decline even in a highly decarbonized scenario.²² ACC II adoption by the 177 States can reduce the transportation sector's reliance on gasoline by 27 percent in 2050 as compared to the IRA scenario.

CASE STUDIES: STATE-BY-STATE EFFECTS OF ACC II ADOPTION

Every state can benefit from ACC II adoption, as EVs reduce emissions even in states with electricity grids that are more reliant on fossil fuels.²³ However, states with cleaner electricity will see the largest reductions in economy-wide emissions from vehicle electrification. For example, as the nation's leader in hydroelectric generation, nearly all of Washington's electricity is emissions free. Therefore, EVs that replace gas cars in the state will be powered almost entirely by clean electricity, greatly reducing the state's economy-wide emissions. Other states like Minnesota and New Jersey recently announced 100 percent clean electricity targets, so their overall emissions trends will scale down sharply in the next decade with the adoption of ACC II. But even with today's U.S. average electricity mix, EVs generate fewer emissions than gasoline cars in every part of the country.²⁴ And EVs deliver significant household savings in all states.

We focus on the potential benefits of ACC II adoption in four states: Maryland, New Jersey, New Mexico, and New York.

State spotlights

Maryland: Governor Wes Moore announced in March 2023 that the state could adopt ACC II.²⁵ This is particularly welcome news for Maryland because transportation makes up almost 45 percent of its GHG emissions, by far its highest polluting sector.²⁶ The state's excise tax credit of up to \$3,000 for qualifying EVs will last from 2023 to 2027.

ACC II adoption could push EV sale shares to 68 percent by 2030 and 100 percent by 2035, compared to 56 percent and 45 percent by those same years (and 70 percent by 2050) under the IRA-only scenario.

Finally, ACC II adoption in Maryland could prevent 48 MMT CO₂e emissions by 2050, while simultaneously preventing 3,150 asthma attacks and nearly 200 premature deaths. Additionally, paired with the hefty state tax credit, the rule could save Marylanders an average of \$642 per household annually.

New Jersey: On February 15, New Jersey Governor Phil Murphy announced the state's plan to adopt ACC II, simultaneously signing an executive order committing the state to 100 percent clean electricity by 2035. These new policies are crucial to cleaning the state's air; six of 15 New Jersey

New Jersey's Clean Spark

Indirect transportation emissions in the electricity sector can be simultaneously addressed when implementing ACC II. For example, when announcing a clean car standard, New Jersey's governor also stated plans to accelerate the state's clean electricity standard. By requiring 100 percent generation from emissions-free sources by 2035, the state could make EVs even cleaner. If New Jersey follows through on this plan, its emissions could fall by an additional 270 MMT CO₂e through 2050 and the public health benefits of ACC II could multiply three-and-a-half times over.

counties studied by the American Lung Association earned an "F" for ground-level ozone pollution (smog) in the organization's *State of the Air 2022* report card.²⁷ The state has prepared itself well for adoption and boasts one of the country's best EV purchase incentives (up to \$4,000 per vehicle), as well as clean fleet and EV charger incentives.

Like in Maryland, ACC II adoption in New Jersey could push EV sale shares to 68 percent by 2030 and 100 percent by 2035, compared to 55 percent and 45 percent (and 69 percent by 2050) by those same years under the IRA-only scenario.

Further, the state could reap significant economic benefits from the rule, including more than \$682 in annual household cost savings and almost

31,000 avoided lost workdays due to reduced local pollution. Lastly, New Jersey could see the highest levels of avoided deaths per year of the four modeled case-study states, with health improvements particularly centered in communities of color in the state.

New Mexico: On February 14, a group of state representatives introduced a bill that could institute an EV tax credit of up to \$4,000, making clean vehicles more affordable, especially for low-income purchasers. New Mexico Governor Michelle Lujan Grisham is a stalwart supporter of EV adoption; her administration was the first to file plans for using federal IIJA funds to build out a charging network. Renewables already produce about 40 percent of the state's electricity, and it could see substantial emissions reductions from EV sales in the coming years as the grid grows cleaner.

ACC II adoption could push New Mexico's EV sale shares to 68 percent by 2030, and 100 percent by 2035, compared to 59 percent and 47 percent by those same years (and 73 percent by 2050) under the IRA-only scenario.

We found that ACC II adoption could save New Mexicans \$591 per household annually through 2050. The rule could prevent nearly 1,000 lost workdays by 2050 and reduce the average resident's dependence on gas by 50 percent, promoting more stability in monthly bills.

New York: With two days left in 2022, New York's Department of Environmental Conservation announced plans for the state to adopt ACC II. This policy is particularly important for meeting New York's climate goals, as transportation is the largest source of GHG emissions in the state. Further, New York accounted for four percent of national car sales in 2020, so its emissions standards have twice the average state's impact on the national share of vehicles. Thanks to the IIJA, the Empire

State will receive \$175 million to build a charging network for long-distance travel, making travel easier for EV owners.

Our analysis found that the Empire State could reduce its emissions by 108 MMT CO₂e by 2050 through adopting ACC II. By reducing local pollution, the rule could simultaneously prevent more than 10,800 asthma attacks, 220 nonfatal heart attacks, and 600 premature deaths.

Finally, ACC II adoption could push EV sale shares to 68 percent by 2030, and 100 percent by 2035, compared to 56 percent and 45 percent by those same years (and 70 percent by 2050) under the IRA-only scenario.

Results

In a pre-IRA BAU scenario, we project that falling battery costs could result in EVs making up 36 to 38 percent of car sales in the studied states in 2030. The IRA’s tax credits could boost this share to 55 to 59 percent in 2030, and increased state adoption of ACC II could further raise it to 68 percent. While IRA tax credits will boost EV sales in the near term, when they expire in 2032, sales could gradually return to BAU levels.

By adopting ACC II, states will ensure that all cars sold within their borders will be electric by 2035. As a result, the EV fleet in ACC II-adopting states will continue to rise to 99 percent mid-century—despite the expiration of IRA tax credits (Figure 5).

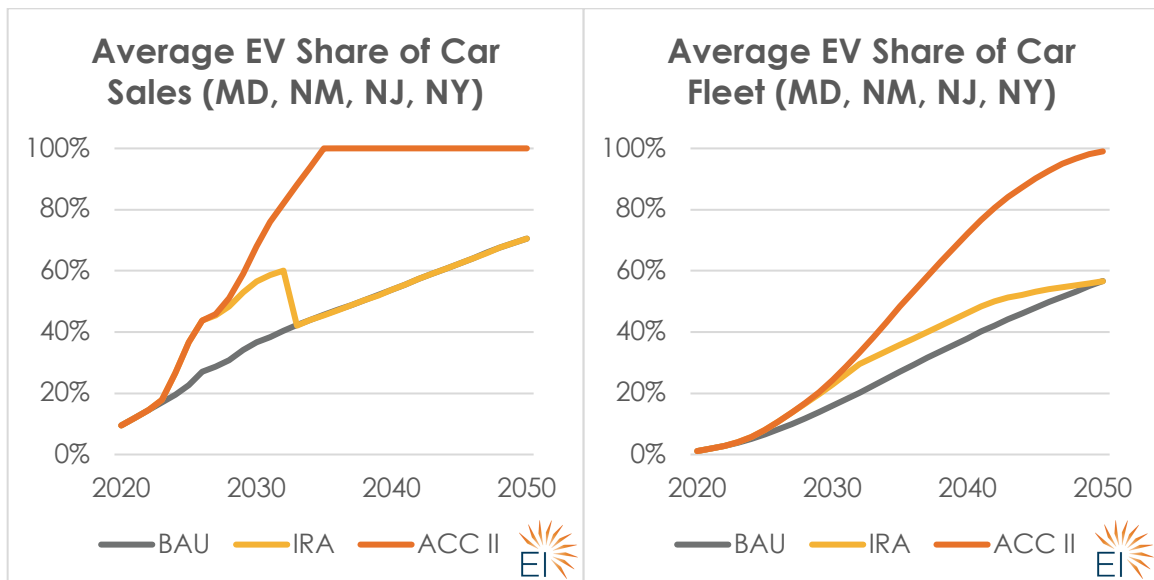


Figure 5. Shares of new vehicle sales and state fleets that are EVs, averaged across four case-study states

Adopting ACC II could reduce GHG emissions in the four modeled case-study states by between 15 (NM) and 108 (NY) MMT CO₂e by 2050. Simultaneously, by electrifying vehicle fleets, ACC II can

reduce local pollution in states that adopt the rule, especially vehicle-produced airborne toxins like NO_x and PM. Table 2 shows how reduced local pollution could prevent negative health impacts within adopting states.

Table 2. Public health effects of ACC II adoption by four case-study states

Region	Avoided Asthma Attacks By 2050	Avoided Lost Workdays by 2050	Avoided Premature Mortality by 2050	Avoided Respiratory Symptoms and Bronchitis by 2050	Avoided Nonfatal Heart Attacks by 2050	Avoided Hospital Admissions by 2050	Avoided Respiratory ER Visits by 2050	Avoided Minor Restricted Activity Days by 2050
MD	3,150	15,600	195	5,380	60	48	26	91,800
NJ	6,110	30,900	368	10,400	136	95	60	183,000
NM	213	972	13	357	4	3	2	5,730
NY	10,900	57,900	606	18,600	222	163	98	339,000

Figure 6 breaks down avoided premature mortality by race in the four case-study states. As pollution-induced health impacts are more pronounced in communities of color, ACC II adoption can particularly benefit the health of people of color, preventing death and respiratory illnesses at a higher rate than the state average.

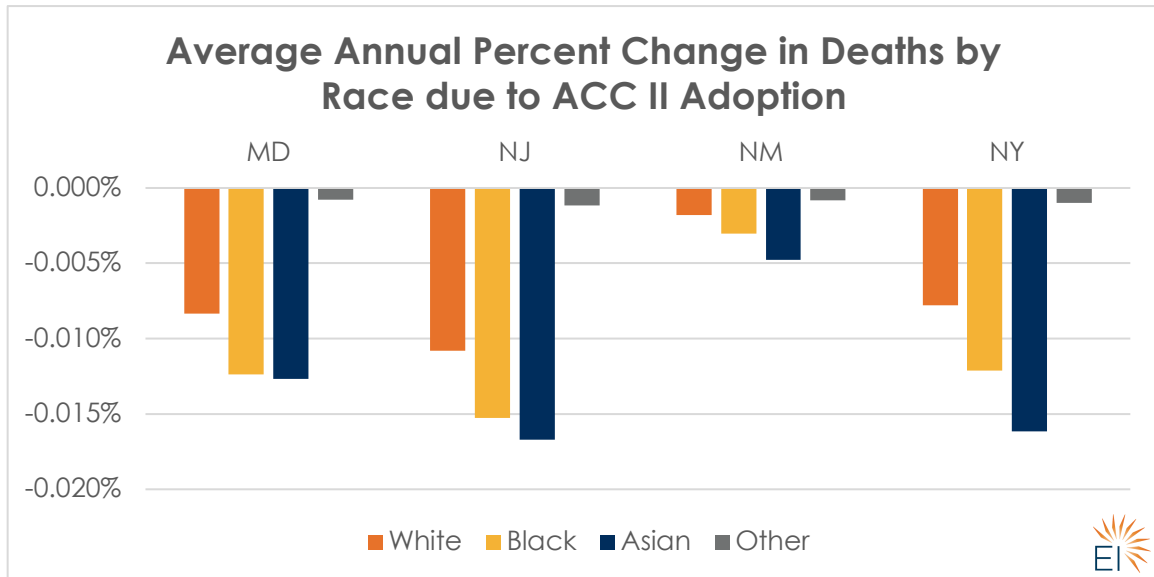


Figure 6. Reduction in premature mortality by race as a result of ACC II adoption in the case-study states

Lastly, ACC II offers significant economic benefits to residents of adopting states. In 2022 dollars, the rule could save households \$642 (MD), \$682 (NJ), \$591 (NM), and \$504 (NY) every year. When compared with the average savings per U.S. household (\$238), these results demonstrate that savings are greatest in the states that adopt ACC II (Figure 7).

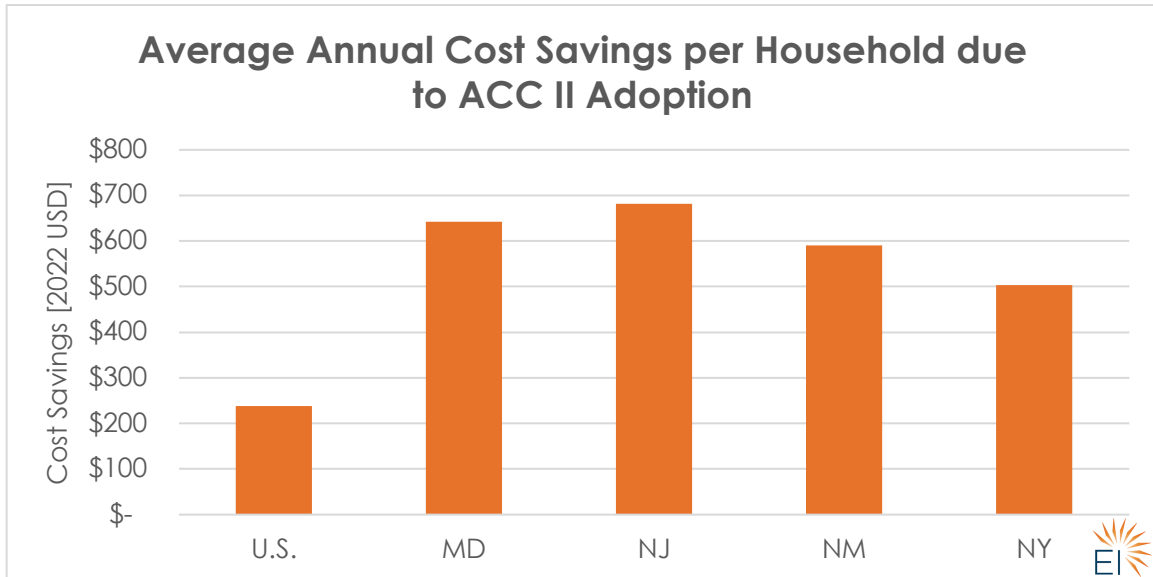


Figure 7. The average annual cost savings per U.S. household as a result of 177 States' adoption of ACC II, as compared with the average annual cost savings per household in adopting states

Electrifying vehicle fleets will significantly reduce state residents' dependence on volatile gasoline prices. Figure 8 shows that New York's transportation-sector gasoline use will drop 80 percent by 2050 because of ACC II.

Meanwhile, states need to consider how the grid will meet electricity demand from a 90-percent electric fleet in 2050. In New York, for example, this could mean an additional 4.0 terawatt-hours (TWh) in added electricity demand from the transportation sector in 2035 and an additional 15 TWh by 2050, or 22 percent and 58 percent increases vs. BAU, respectively. Similarly, in other case-study states, an additional 6.4 TWh (MD), 9.3 TWh (NJ), and 2.6 TWh (NM) of demand could be added in 2050.

POLICY RECOMMENDATIONS

While ACC II will require higher EV sales shares in the coming years, the rule will be more successful and equitable if combined with supporting policies.

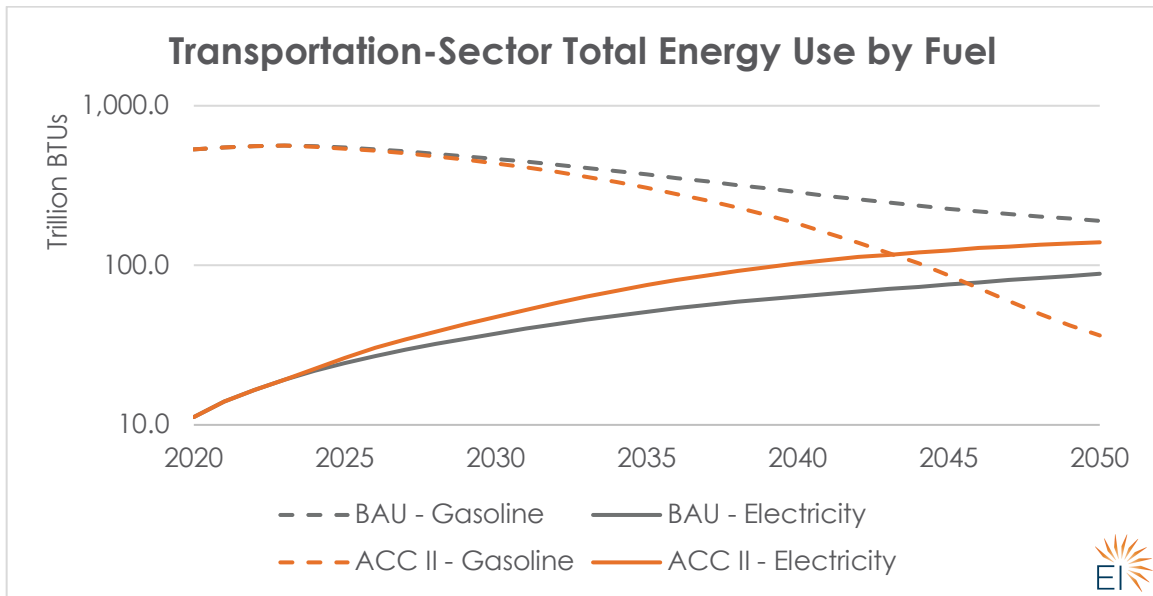


Figure 8. Transportation-sector energy use by fuel in the BAU and all-states ACC II adoption scenarios

Offer state incentives for EVs, charging infrastructure, and supply chain facilities alongside ZEV standards

Income-based incentives for purchasing new and used EVs will be particularly important for promoting equitable access to pollution-free vehicles, especially when ZEV sales are required. **State policymakers should expand access to high-quality EVs by funding means-based rebates or tax credits** that phase out as EVs reach price parity with gas cars in the coming years.

For example, the California governor’s ZEV budget provides state-level incentives to make these vehicles more obtainable for low- and moderate-income Californians.²⁸ In later years when higher ZEV sales shares are required, such incentives can ensure that ACC II does not become regressive, making access to high-quality vehicles difficult for low-income consumers. California’s Clean Cars for All program helps achieve this goal by providing incentives to low-income Californians to replace older, higher-polluting cars with ZEVs.

In addition to incentives for vehicles, **states should consider incentives for EV infrastructure to minimize consumer range anxiety**. States should coordinate with local governments, utilities, and the private sector to build out public charging networks and ensure equitable access for all drivers. States can take advantage of billions of IIJA dollars allocated and IRA incentives to bridge gaps in charging availability along major transportation corridors and in underserved rural and urban communities.

Investments in EVs Pay Dividends

As of March 2023, \$60 billion of private investments in the EV supply chain have been announced since the IRA's passage. In February 2023, Ford announced it would open a \$3.5 billion plant in Marshall, Michigan. This plant will create 2,500 local jobs and significant tax revenue for Michiganders. With manufacturing expected to start in 2026, the plant will capitalize on increased EV demand expected just as ACC II kicks into gear.

Lastly, officials should consider state incentives to attract EV and supply-chain manufacturers in their state. New facilities will bring jobs and significant tax revenue to local economies as the car market evolves in the coming years. Policymakers should simultaneously consider programs to foster equitable job opportunities and mitigate the effects of potential manufacturing pollution on communities.

Plan for increased EV adoption by updating grid planning and streamlining processes

States should adopt more ambitious clean energy standards to accelerate clean energy build-out. As more EV wheels hit the road, this will help ensure their mileage is “truly” carbon-free. New York’s clean electricity standard aims to hit 100 percent clean electricity by 2040. New Jersey and Maryland’s current renewable portfolio standards (RPS) top out at 50 percent by 2030. Similarly, New Mexico’s RPS hits 50 percent by 2030 in line for 100 percent by 2045. Accelerating these targets could boost ACC II emissions reductions.

States and utilities should proactively coordinate and use modern tools to address the intricacies of an extensive distributed charging network. Preparing for ACC II necessitates wider-scale collaboration between state-level transportation planners, utilities, and regulators. Utilities and their regulators should adopt modified planning protocols for utility-grid planning. For example, policymakers can analyze hosting capacity to plan for more modern grids, evaluating the number of EVs that can be integrated into the current distribution system without impacting safety or reliability.^{iv} Overlaying the distribution grid with transportation demand projections might simultaneously identify charging infrastructure gaps and inform utility investment plans.

Lastly, states should facilitate streamlined interconnection and EV charging to support grid reliability. Utilities should address EV charging in their standard interconnection procedures and make the process clear, relatively fast, and inexpensive.^v EV charging to support the grid includes demand management strategies, including, but not limited to, vehicle-to-grid managed charging, smart rate design, and dedicated EV charging tariffs.

^{iv} Innovative resources are available to utilities and regulators to update grid planning. See: Report Guides States to Optimize Modern Electric Grid, IREC: USA (irecusa.org/blog/regulatory-engagement/tools-to-build-the-modern-grid/).

^v See Electric Vehicles, IREC: USA (irecusa.org/our-work/electric-vehicles/).

Update construction codes to support EV integration in new buildings

States should ensure the future building stock is compatible with EV charging by writing building codes that mandate sufficient electrical infrastructure, parking spaces for EVs, and other requirements. States and local governments can adopt stretch codes like Massachusetts’ that go beyond the International Code Council’s base building codes.²⁹ Stretch codes can support EV uptake by improving electric panel capacity and wiring requirements needed for charging, and by requiring more EV-ready parking spaces for multi-unit buildings.

Several prominent cities, including Chicago, New York, San Francisco, and Washington, D.C., have already implemented EV-oriented parking requirements for new construction. To address the existing building stock, states and local governments can provide grants and incentives or low-cost financing programs to support the build out of EV charging.

METHODOLOGY: MODELING STATE ADOPTION OF ACC II

This paper outlines the effects that could follow state adoption of ACC II and national-level implications. We conducted simulations using customized versions of the U.S. and state Energy Policy Simulators. Each simulation corresponds to a scenario in which a particular set of 177 States adopts ACC II.

Not all 177 States follow the ZEV standards adopted by CARB. Currently, Pennsylvania and Washington, D.C. only follow CARB’s LEV and GHG rules and so were not included in modeling. While Delaware similarly follows only the LEV standards, we include it in the modeling.^{vi}

Rule	Scenario	CA	CO	CT	DE	MA	MD	ME	MN	NJ	NM	NV	NY	OR	RI	VT	VA	WA
ACC I	All	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	BAU & IRA																	
ACC II	CA Only	✓																
	177 States	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 3. State adoption of ZEV standards by scenario

Models include all state and federal policy to date.^{vii} In our nationwide modeling, the IRA scenario includes all provisions of the law except the “entities of concern” EV credit requirement, as guidance as not yet been issued by the Treasury Department on this provision.³⁰ In the state-level

^{vi} In March 2022, Delaware governor John Carney announced plans for the state to update its Low Emission Vehicle Program to include ZEV requirements, incorporating the California statute by reference. Delaware’s Department of Natural Resources and Environmental Control has since held workshops on the proposed amendment and plans to finalize a program by mid-2023.

^{vii} For example, modeling includes ACC I and the Advanced Clean Trucks rules in all scenarios.

case studies, only the IRA's EV tax credit changes are included. As the IRA's incentives for clean electricity generation are expected to boost states' clean electricity shares, our state-level emissions and health impacts results are conservative. IRA tax credit modeling reflects guidance from the U.S. Treasury Department as of March 31, 2023.

In the CA Only scenario, we layer on the effects of California's passage of the ACC II rule.

In the All 177 States scenario, we assume that all 177 States that currently follow the ACC I ZEV requirements also adopt ACC II, as well as Delaware, which is on track to do so.

While the Energy Policy Simulator typically calculates electric vehicle costs endogenously, in this report, we use exogenous light-duty passenger vehicle (car and SUV) costs from a recent report.⁴

CONCLUSION



Credit: Christopher Jensen

Transportation electrification is essential to reducing planet-heating GHG emissions and creating cleaner, healthier communities. Transforming the U.S. vehicle fleet is also necessary to meet NDC targets under the Paris Agreement.

Our analysis of the potential nationwide impact of ACC II reveals that it can play a significant role in reducing emissions from light-duty vehicles and is one of the most effective policies for reducing in-state emissions.

New EPA tailpipe standards should further drive the EV transition, though it is unclear how stringent the final rule will be. States that proactively adopt ACC II will be better positioned to meet federal standards and could secure a greater share of IRA revenue ahead of their implementation. Meanwhile, IRA tax credits will increase the share of newly sold ZEVs through 2032, but their effect will wane as the stock of incentivized EVs turns over in the following years and is replaced by a greater share of gas vehicles. States can sustain the momentum for clean vehicle growth past 2032 by adopting ACC II.

Addressing environmental justice and equity issues is a foremost reason for implementing the ACC II rule. Air quality concerns and climate impacts disproportionately harm historically marginalized, low-income, and frontline communities.³¹ Shifting the vehicle fleet from gas vehicles that pollute our air to clean-driving ZEVs reduces local pollution. ACC II will reduce emissions of pollutants such as PM and NO_x, leading to substantial declines in asthma attacks, missed workdays, and numerous

other health harms. These reductions will particularly benefit historically marginalized and low-income communities.

Expanding ZEV deployment will deliver economic benefits, such as new jobs and sources of tax revenue, as well as consumer cost savings. Over time, lower operational costs will bring down expenses for EV-owning households and protect consumers from volatile gasoline prices. By adopting ACC II rules, states can drive cleaner air, healthier communities, and a more stable climate.

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