

NORTH CAROLINA'S ZEV GOALS UNDER THE INFLATION REDUCTION ACT OF 2022

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I. INTRODUCTION

With an increasing need for sustainable transportation innovations, the production and sale of zero emissions vehicles (ZEVs) is endorsed and supplemented through various forms of legislation at the state and federal levels. In the past two years alone, businesses have invested upwards of \$85 billion into the manufacturing of electric vehicles, chargers, and batteries.¹ The White House noted that such investments are rapidly increasing, with an estimated \$13 billion invested into domestic electric vehicle manufacturing in 2022.² However, the electric vehicle industry must adapt to such a growing demand, facing several practical challenges in the processes of vehicle manufacturing, materials sourcing, and chemical compliance. Given the breadth of challenges in the electric vehicle manufacturing industry, the Inflation Reduction Act's Energy and Infrastructure Provisions pose unnecessary threats to the timely and efficient realization of North Carolina's Zero Emission Vehicle goals.³ This paper assesses the implications of incentivizing a paradigmatic shift towards broad electric vehicle use through the Inflation Reduction Act of 2022, how the act's provisions might negatively affect emissions reduction goals, and how challenges to these goals may be circumvented.

¹ See WHITE HOUSE, *FACT SHEET: President Biden's Economic Plan Drives America's Electric Vehicle Manufacturing Boom*, (Sep. 14, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/14/fact-sheet-president-bidens-economic-plan-drives-americas-electric-vehicle-manufacturing-boom/>.

² *Id.*

³ North Carolina Executive Order No. 80 adopts the goals addressed in the 2015 Paris agreement and aims to reach 80,000 state registered ZEVs by 2025. North Carolina Executive Order No. 246 seeks to surpass 1.25 million state registered ZEVs by 2030 and reach net-zero carbon emissions statewide by 2050.

II. BACKGROUND OF ZEV POLICY IN NORTH CAROLINA

Executive Order No. 80 addresses North Carolina's commitment to embracing environmental considerations in a statewide transition towards a clean energy economy. The 2018 Order adopts the climate goals outlined in the 2015 Paris Agreement, seeking to reduce statewide carbon emissions to 40% below 2005 levels, increase the number of registered ZEVs, and limit energy consumption in state buildings.⁴ The North Carolina Department of Transportation states that approximately 36% of the state's total greenhouse gas emissions are derived from transportation.⁵ Given that the transportation sector accounts for more emissions than all state agriculture, waste management, commercial emissions, and industrial fuel combustion combined, it is imperative that emissions be reduced by moving towards environmentally conscious transportation.⁶ In order to advance this shift in transportation, Executive order No. 80 aims to register 80,000 zero emission vehicles in North Carolina by 2025.⁷

In January 2022 Governor Cooper signed Executive Order No. 246, adding to the proposals addressed in Executive Order No. 80.⁸ This Order announces that North Carolina's overarching environmental goal is to reach net-zero emissions by 2050.⁹ Additionally, the Order aims to surpass 1,250,000 ZEVs registered within the state, and have such vehicles comprise at least 50% of state-wide new vehicle sales by 2030.¹⁰

⁴ N.C. Exec. Order No. 80 (Oct. 29, 2018), <https://governor.nc.gov/media/967/open>.

⁵ N.C. DEP'T OF TRANSP., *Transportation Emission Reduction Projects*, (Jun. 16, 2022), <https://www.ncdot.gov/initiatives-policies/environmental/climate-change/Pages/electric-vehicles.aspx#:~:text=On%20Jan.,in%20the%20state%20by%202030>.

⁶ *Id.*

⁷ N.C. DEP'T OF TRANSP., *N.C. Zero Emission Vehicle (ZEV) Plan*, (Oct. 20, 2022), <https://www.ncdot.gov/initiatives-policies/environmental/climate-change/Pages/plan.aspx>.

⁸ N.C. Exec. Order No. 246 (Jan. 7, 2022), <https://governor.nc.gov/media/2907/open>.

⁹ *Id.*

¹⁰ *Id.*

Such developments in North Carolina occurred shortly before multiple key participants in the electric automotive industry announced plans to construct facilities within the state. In 2021, Toyota announced a \$1.29 billion investment in their Toyota Battery Manufacturing North Carolina (TBMNC) plant.¹¹ The manufacturing plant is currently being erected in Greensboro, North Carolina and will be the “first car manufacturing plant and . . . largest economic development announcement in the state’s history.”¹² Aligning its business model with North Carolina’s goal to attain carbon neutrality within the next twenty-seven years, Toyota has also promised to produce its batteries using only renewable energies on this site.¹³

VinFast, a Vietnamese electric vehicle manufacturer, will also be creating 7,500 jobs in North Carolina, as it chose the state as the location for its North American assembly and battery manufacturing plant.¹⁴ The company announced that it would invest up to \$2 billion into facilities where it will manufacture electric cars, busses, and vehicle batteries.¹⁵ VinFast’s vehicle production is set to start as early as July, 2024, and is expected to have a vehicle manufacturing capacity of 150,000 electric vehicles per year.¹⁶ Likewise, Arrival, a British electric vehicle manufacturer known primarily for its production of electric delivery vehicles, announced that it would establish its U.S. headquarters and a battery assembly facility in

¹¹ TOYOTA NEWSROOM, *Selects North Carolina Greensboro-Randolph Site for New U.S. Automotive Battery Plant*, (Dec. 6, 2021), <https://pressroom.toyota.com/toyota-selects-north-carolina-greensboro-randolph-site-for-new-u-s-automotive-battery-plant/>.

¹² *Id.*

¹³ *Id.*

¹⁴ NC GOVERNOR ROY COOPER, *Toyota Governor Cooper Announces VinFast Automotive Selects North Carolina for Electric Vehicle Assembly Plant*, (Mar. 29, 2022), <https://governor.nc.gov/news/press-releases/2022/03/29/governor-cooper-announces-vinfast-automotive-selects-north-carolina-electric-vehicle-assembly-plant>.

¹⁵ VINFAST AUTO., *VinFast North Carolina Manufacturing Plant*, (Jan. 4, 2023), <https://vinfastauto.us/newsroom/press-kit/vinfast-north-carolina-manufacturing-plant>.

¹⁶ *Id.*

Charlotte, North Carolina.¹⁷ Arrival's \$41 million investment into the production center will allow it to produce 10,000 electric delivery vans per year, while creating over 650 jobs in the greater Charlotte area.¹⁸ These statewide investments in emerging eco-innovations signify North Carolina's commitment to emissions reduction and its leading position in the national adoption of sustainable transportation.

III. ZEVs UNDER THE INFLATION REDUCTION ACT OF 2022

The federal Inflation Reduction Act of 2022 alters existing tax law and provides tax credits for the manufacture, sale, purchase, and use of environmentally sustainable vehicles.¹⁹ The Act seeks to promote clean energy in a way that creates jobs, reduces consumer energy costs, promotes sustainability, and advances environmentalism.²⁰ Purchasers of new electric vehicles can receive up to a \$7,500 discount, while purchasers of used electric vehicles are eligible to receive up to \$4,000.²¹ Qualifying vehicles include a consumer income cap and must be sold at a retail price below a specified amount in order to allow a wider range of manufacturers to gain market share, and to dispel the common belief that electric vehicles are only affordable to wealthier customers.²²

The White House noted that millions of North Carolinians might qualify for such discounts, and the state has already taken measures to account for an increase in registered ZEV

¹⁷ Cory Burkarth, *Global Electric Vehicle Company Arrival Establishes Battery Module Microfactory In Charlotte*, CITY OF CHARLOTTE (Dec. 6, 2021), <https://charlottenc.gov/newsroom/cityhighlights/Pages/ARRIVAL-Microfactory-12-6-2021.aspx>.

¹⁸ Cory Burkarth, *Arrival Announces New Microfactory Producing Electric Delivery Vans*, CITY OF CHARLOTTE (Mar. 17, 2021), <https://charlottenc.gov/newsroom/cityhighlights/Pages/Arrival-Microfactory.aspx>.

¹⁹ *See generally* Inflation Reduction Act of 2022, H.R.5376, 117th Cong. § 13401 (2022), <https://www.congress.gov/bill/117th-congress/house-bill/5376/text>.

²⁰ Implementation of the Energy and Infrastructure Provisions of the Inflation Reduction Act of 2022, 87 Fed. Reg. 56861, 56861 (Sept. 16, 2022).

²¹ Inflation Reduction Act of 2022, H.R.5376, 117th Cong. § 13403(a) (2022), <https://www.congress.gov/bill/117th-congress/house-bill/5376/text>.

²² *Id.*

registrations.²³ Using funds from the Infrastructure Investment and Jobs Act, the state has also submitted plans to develop a breadth of electric vehicle charging stations along many of the state's major highways.²⁴ The Inflation Reduction Act, and its subsequent tax credits, stands to "significantly benefit Toyota's EV battery plant at the Greensboro-Randolph Megasite, as well as VinFast's planned NC EV production plant."²⁵

While the Inflation Reduction Act promotes clean energy, electric vehicle production, and environmentally conscious transportation, critics note that it is overly restrictive, poses numerous difficulties for major electric vehicle manufacturers, and places an undue burden on the supply chain. The Alliance for Automotive Innovation voiced its concern that although the "manufacturing and consumer purchase incentives [are] designed to spur more widespread adoption of EVs, these may ultimately set back industry momentum by handcuffing automakers and suppliers to rigid rules."²⁶ As a result, The Inflation Reduction Act's Energy and Infrastructure Provisions exacerbate supply chain, manufacturing, and compliance challenges to vehicle production, subsequently threatening the achievement of North Carolina's Zero Emission Vehicle goals.

IV. IMPLICATIONS OF THE INFLATION REDUCTION ACT'S POLICIES

When the Inflation Reduction Act was signed into law, certain electric vehicle tax credit provisions became effective immediately.²⁷ Before the law was signed, the \$7,500 credit applied

²³ WHITE HOUSE, *The inflation Reduction Act Delivers Affordable Clean Energy for North Carolina*, <https://www.whitehouse.gov/wp-content/uploads/2022/08/North-Carolina.pdf> (last visited Jan. 4, 2023).

²⁴ *Id.*

²⁵ Steve Doyle, *Here's what the Inflation Reduction Act means for North Carolina*, WNCT9, (Aug. 12, 2022), <https://www.wnct.com/news/north-carolina/heres-what-the-inflation-reduction-act-means-for-north-carolina/>.

²⁶ Linda Chiem, *Automakers Say Retooled EV Credits Spell New Troubles*, LEXIS (August 8, 2022, 7:20 PM EDT), <https://plus.lexis.com/newsstand#/law360/article/1519107>.

²⁷ Kat Lucero, *Auto Industry May Need More Time To Meet EV Credit Rules*, LEXIS (Nov. 4, 2022, 6:26 PM EDT), <https://plus.lexis.com/newsstand#/law360-tax-authority/article/1546591?crid=c9991287-c7b3-423a-b915-9c01fb7d90de>

to sixty models of electric vehicles. However, after the act went into effect, that selection was reduced by nearly 70%, limiting credit eligible electric vehicles to only eighteen models and severely reducing consumer choice.²⁸ Given that electric vehicles make up a relatively new market that is still facing supply chain complications as a result of the COVID-19 pandemic, the automotive industry will likely suffer from this drastic market change.²⁹ Unforeseen consequences of these restrictive policies are likely to manifest in the battery and vehicle manufacturing process, significantly slowing the sourcing of required materials, and causing chemical compliance issues.

A. Potential Complications

Starting in 2024, the Inflation Reduction Act's tax credit provision will exclude electric vehicles with battery components sourced from "foreign entit[ies] of concern."³⁰ Beginning in 2025, the tax credit will exclude vehicles that contain any "critical minerals from such foreign entities."³¹ As of December, 2022, both Russia and the People's Republic of China were designated by the U.S. Department of State as Countries of Particular Concern.³² Ever since 1999, the U.S Department of State has used this designation to alienate nations for their violations of religious tolerance and subsequently impose economic sanctions.³³ While Russia was designated as a Country of Particular Concern in 2021, China has been designated as such since 1999.³⁴

²⁸ *Id.*

²⁹ *Id.*

³⁰ Inflation Reduction Act of 2022, H.R.5376, 117th Cong. § 13401(e)(2) (2022), <https://www.congress.gov/bill/117th-congress/house-bill/5376/text>.

³¹ *Id.*

³² *Countries of Particular Concern, Special Watch List Countries, Entities of Particular Concern*, <https://www.state.gov/countries-of-particular-concern-special-watch-list-countries-entities-of-particular-concern/>.

³³ Arielle Del Turco, *Countries of Particular Concern: Why This U.S. Foreign Policy Tool Is Often Ineffective and How to Make It Better*, FAMILY RSCH. COUNCIL (Dec. 29, 2022), <https://downloads.frc.org/EF/EF22L14.pdf>.

³⁴ *Id.*

However, a substantial amount of lithium, cobalt, and nickel, all of which are required for electric vehicle battery manufacturing, are currently sourced from China.³⁵ According to the International Energy Agency, the United States currently controls a mere 7% of the battery production capacity, compared to China, which has 70% of global production capacity.³⁶ Additionally, roughly 20% of nickel is sourced from Russia, and the Russo-Ukrainian conflict has further complicated supply chain issues in the sourcing of lithium, cobalt, and nickel, while the costs of such materials have skyrocketed as a result.³⁷

Another requirement is that qualifying vehicles must be assembled in North America.³⁸ However, some electric vehicle manufacturers have noted that, due to ongoing supply chain issues, some customers ordered cars before this was a requirement and still have not yet received their vehicles.³⁹ In *Podraza v. Commissioner of Internal Revenue*, the petitioner claimed that they were eligible for a federal income tax credit for their purchase of a new electric vehicle, under the Internal Revenue Code's Section 30D Plug-in Electric Vehicle Tax Credit.⁴⁰ However, it was held that an electric vehicle was not eligible for a tax incentive until the vehicle was delivered to the consumer.⁴¹ The court reasoned that "[e]ven if . . . the vehicle was fully manufactured and operational while awaiting shipment to petitioners . . . the vehicle could not be considered placed in service unless and until the vehicle was readily available to serve its assigned function for petitioners' personal use on a regular basis."⁴² This has the potential to

³⁵ Chiem, *supra* note 24.

³⁶ INT'L ENERGY AGENCY, *Global Supply Chains of EV Batteries*, 2, <https://iea.blob.core.windows.net/assets/961cfc6c-6a8c-42bb-a3ef-57f3657b7aca/GlobalSupplyChainsOfEVBatteries.pdf> (last visited Jan. 4, 2023).

³⁷ *Id.*

³⁸ Lucero, *supra* note 25.

³⁹ Asha Glover, *Automakers Ask For Transition Period for EV Credit Rules*, LEXIS (Nov. 8, 2022, 6:55 PM EST), <https://plus.lexis.com/newsstand#/law360-tax-authority/article/1547904>.

⁴⁰ *Podraza v. Comm'r*, T.C. Summ. Op. 2015-67, 6 (Nov. 19, 2015).

⁴¹ *Id.*

⁴² *Id.*

disqualify certain electric vehicles from tax credit eligibility if they remained outside of the consumer's possession following the Inflation Reduction Act, depending on where the materials were sourced or where the vehicle underwent final assembly.

The Inflation Reduction Act extends eligibility for the Plug-in Electric Vehicle Tax Credit past 2022, but adds that vehicles purchased after August 16, 2022, must be assembled in North America.⁴³ The IRS states that consumers that purchased electric vehicles before August 16, 2022 may disregard this assembly requirement if their vehicle was delivered between August 16, 2022 and January 1, 2023.⁴⁴ However, Subaru has expressed its frustration with the potential tax credit ineligibility of their undelivered cars, which predominately remain on backorder due to a microchip shortage, stating that “[d]isqualifying those electronic vehicles unfairly penalizes consumers who made an early decision to purchase an EV.”⁴⁵ Additionally, the European Union has voiced its concerns that the North America final assembly requirement will discriminate against beneficial international trade⁴⁶ The sourcing and assembly requirements have been noted as potentially harmful to trade relations and international commerce, which might further any growing frustration, related to the disrupted supply chains, and drive up prices due to a lack of competition.

Moreover, battery manufacturing is subject to a range of administrative requirements that will likely be further complicated by the Inflation Reduction Act. In producing batteries for electric vehicles, manufacturers must utilize chemicals that are subject to approval by the

⁴³ IRS, *Credits for New Electric Vehicles Purchased in 2022 or Before*, (Dec. 29, 2022), [https://www.irs.gov/credits-deductions/credits-for-new-electric-vehicles-purchased-in-2022-or-before#:~:text=If%20you%20bought%20a%20new,least%205%20kilowatt%20hours%20\(kWh\).](https://www.irs.gov/credits-deductions/credits-for-new-electric-vehicles-purchased-in-2022-or-before#:~:text=If%20you%20bought%20a%20new,least%205%20kilowatt%20hours%20(kWh).)

⁴⁴ Id.

⁴⁵ Asha Glover, *Automakers Ask For Transition Period for EV Credit Rules* LEXIS (Nov. 8, 2022, 6:55 PM EST), <https://plus.lexis.com/newsstand#/law360-tax-authority/article/1547904>.

⁴⁶ Theresa Schliep, *IRS Releases Procedures For EV Tax Credit Documentation*, LEXIS, (Dec. 12, 2022, 6:07 PM EST), <https://plus.lexis.com/newsstand#/law360-tax-authority/article/1557496>.

Environmental Protection agency (EPA).⁴⁷ Under the Toxic Substances Control Act (TSCA), the EPA can fine manufacturers up to \$50,000 per day for failing to adhere to chemical compliance standards.⁴⁸ Thus, an entity that imports or manufactures chemical substances not listed in the TSCA Chemical Substance Inventory must file a permit application, called a “premanufacture notice,” to be approved by the EPA.⁴⁹ These applications are intended to be completed quickly, ensuring that commercial chemicals do not raise environmental concerns without unnecessarily stalling commerce.⁵⁰ However, rather than the ninety-day approval window suggested by the TSCA, the EPA has taken over a year to return most premanufacture notices.⁵¹ The Inflation Reduction Act is likely to increase the administrative gridlock, since there will likely be an influx of premanufacture notices filed as a result of increased battery manufacture within the United States.

Given North Carolina’s ambitious goals to register 80,000 zero emission vehicles by 2025, and 1.25 million by 2030, the electric vehicle industry needs adequate economic incentives for consumers, and more attainable requirements for vehicle manufacturers. Before Executive Order No. 80 was signed in 2018, there were fewer than 13,000 ZEVs registered in North Carolina, and as of March 2022, there were around 40,000 registered.⁵² While there was a 220% increase in zero emission vehicle registrations in those four years, the 2025 goal requires roughly a 200% increase in two years alone.⁵³ The aforementioned challenges, posed by the Inflation Reduction

⁴⁷ Marshall Morales et al., *Chemical Compliance Challenges For US Battery Makers*, LEXIS, (Oct. 18, 5:59 PM EDT), <https://plus.lexis.com/newsstand#/law360/article/1540778?crd=a72e3d91-ef01-46a9-82df-dc71a6d6cf5d>.

⁴⁸ Toxic Substances Control 15 U.S.C. § 2615(b)(1).

⁴⁹ *Id.* at 15 U.S.C. §2607(b)(7)(B).

⁵⁰ Morales et al., *supra* note 45.

⁵¹ *Id.*

⁵² N.C. DEP’T OF TRANSP., *ZEV Plan Progress Update*, (Aug. 1, 2022), <https://www.ncdot.gov/initiatives-policies/environmental/climate-change/Documents/zev-plan-progress-update-2022.pdf>.

⁵³ *Id.*

Act's restrictive provisions, appear to pose a threat to the viability of adding nearly 40,000 more registered zero emission vehicles within the state over the next twenty-four months.

B. Proposed Solutions

The IRS invited comments to be submitted as guidance for developing and amending provisions to the Inflation Reduction Act.⁵⁴ Over 600 comments have been submitted, many of which include requests from electric vehicle manufacturers and stakeholders, requesting that there be a more lenient transition period for adopting the sourcing requirements.⁵⁵ An obvious solution is to extend the transition period to allow vehicle manufacturers to strengthen their supply chains and meet the Act's more stringent sourcing requirements. Additionally, the sourcing requirements could be less restrictive. For example, President Biden has noted that the sourcing requirement could be changed to allow for minerals to be sourced from countries with U.S. Fair Trade Agreements to avoid a substantial loss of commercial trade with other countries.⁵⁶

The Inflation Reduction Act's tax credit provision will require batteries to be manufactured within the United States, with domestically-sourced materials.⁵⁷ With an increased need for EV battery production, and a relatively short battery life of ten to twenty years, North Carolina should adopt a battery recycling program to mitigate supply chain, materials sourcing, and chemical compliance issues.⁵⁸ California, which currently has over 400,000 registered ZEVs, has

⁵⁴Lucero, *supra* note 25.

⁵⁵ *Id.*

⁵⁶ Todd Buell, *EU Wants Simplified Aid Rules To Counter US Tax Law*, LEXIS (Dec. 14, 2022, 11:42 AM EST), <https://plus.lexis.com/newsstand#/law360-tax-authority/article/1558149?crd=a40781bc-5266-4322-af1e-f3a23dc471ff>.

⁵⁷ Thomas Manakides & Mark Tomaier, *Calif. EV Battery Recycling Plans Could Set National Trend*, LEXIS (Dec. 8, 2022, 3:58 PM EST), <https://plus.lexis.com/newsstand#/law360/article/1555330?crd=0f12c84b-5b47-4f27-9cf2-85123d300436>.

⁵⁸ *Id.*

developed a battery recycling plan to address such concerns.⁵⁹ The state recommended that the vehicle manufacturer be “responsible for ensuring proper repurposing, reuse, or recycling of its EV traction batteries by a licensed facility at no cost to the consumer if and when they are no longer wanted by the owner.”⁶⁰ Additionally, an advisory board endorsed the creation of collection and sorting facilities to promote widespread recycling efforts and prevent the mistreatment of hazardous waste.⁶¹

Critics of the Inflation Reduction Act have posited that North Carolina could implement any one of these proposed solutions to reduce the detrimental effects posed by environmentally harmful chemicals found in retired batteries, while also promoting the reuse of salvageable materials by EV manufacturers. With Albemarle Corporation’s recent \$200 million investment in a lithium battery advanced materials research and development facility, located in Charlotte, North Carolina, the state is likely well disposed to promote a sustainable battery plan involving the reuse and recycling of critical materials.⁶² Such policies might allow manufacturers to reduce the burden of sourcing new materials while meeting the requirements of the Inflation Reduction Act’s sourcing and manufacturing provisions. However, such programs are inherently costly and could prove burdensome to battery manufacturers, who would be likely to offset costs to customers. Thus, the most mutually agreeable solution would be to amend the existing provisions of the Act.

V. CONCLUSION

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² MECKLENBURG CNTY. N.C., *Albemarle Corporation Selects Mecklenburg County for Advanced Lithium Technology Park Company to invest \$200 million in University City*, (Dec. 13, 2022), <https://www.mecknc.gov/news/Pages/Albemarle%20Corporation%20Selects%20Mecklenburg%20County%20for%20Advanced%20Lithium%20Technology%20Park.aspx>.

Overall, the Inflation Reduction Act of 2022 is a beneficial step towards environmental justice and reduction of carbon emissions. With a rapidly growing electric vehicle industry, and federal tax incentives to sell and purchase zero emission vehicles, auto manufacturers are faced with challenges catalyzed by Act's restrictive provisions. Manufacturers and sellers must overcome extensive supply chain issues, materials shortages, and increased production costs due to the Inflation Reduction Act. This poses a threat to the timely and efficient achievement of North Carolina's emissions reduction and zero emissions vehicle registration goals. However, the automotive industry can benefit from a longer transition period, less restrictive sourcing requirements, and state adoption of advanced battery recycling infrastructure.