

IMPORTANCE OF INFRASTRUCTURE TO NORTH CAROLINA'S TRANSPORTATION ELECTRIFICATION

North Carolina Transportation Electrification Roadmap

Key Takeaways

A comprehensive charging network is critical to support North Carolina's ambitious climate and electric vehicle (EV) goals. North Carolina should start the planning process to build out this network, including: 1) working with key stakeholders like utilities and municipalities; 2) conducting an early planning exercise to identify needs for certain types of chargers (home, depot, or public); and 3) identifying how to fund these infrastructure needs. This planning process will ensure the state is well positioned to take advantage of millions of dollars available in federal funding for transportation electrification and support building the necessary EV infrastructure to support EV adoption.

Transportation Electrification: Enormous Emissions Reductions and Benefits for All Residents Of North Carolina

The Transportation sector is the largest source of greenhouse gas (GHG) emissions in North Carolina, and reducing these emissions is critical to human and environmental health. Executive Order No. 246 (EO 246), *North Carolina's Transformation to a Clean, Equitable Economy*, sets a new GHG emission reduction goal of net-zero emissions by 2050, increases the zero-emission vehicle (ZEV) registration target to 1.25 million vehicles and creates a new ZEV in-state sales target to be at least 50 percent by 2030. Transportation electrification is an important piece of the puzzle in reducing the state's emissions.

This analysis found that North Carolina could see up to \$150 billion in cumulative net benefits from transportation electrification, including air quality, benefits, utility customer savings, and EV owner savings.

This report includes a detailed analysis of four "core policies" to drive transportation electrification: 1) California's Advanced Clean Cars II (ACC II) rulemaking, 2) the Advanced Clean Trucks (ACT) rule, 3) the NOx Omnibus rule, and 4) the Biden Administration's 2030 electric vehicle (EV) sales target. It also explores how complementary policies, such as infrastructure development and vehicle financing, can help ensure that transportation electrification is implemented equitably and with the lowest cost and impact on consumers.

Background

As the North Carolina transportation sector begins to electrify, developing both adequate residential, commercial, as well as DC fast charging (DCFC) networks will be necessary to support this transition. These networks should span the entire State, must be reliable, and service multiple electric vehicle types. The analysis found the policy scenario that adopts the ACC II regulation, ACT rule, and NOx Omnibus rule and increased the ACT program to 100 percent medium- and heavy-duty vehicle (M/HDV) sales by 2040 will **require a little more than 9 million charge ports with investments reaching almost \$1.2 billion per year (\$2020) by 2050.**

Identifying and utilizing funding opportunities, like the *Infrastructure Investment and Jobs Act* (IIJA), will be important to lower the costs of infrastructure development within the state. IIJA authorized \$1.2 trillion in total federal spending that includes funding for a wide variety of projects and programs including over \$10 billion to build out electric vehicle charging infrastructure and invest in electric vehicles.

Findings

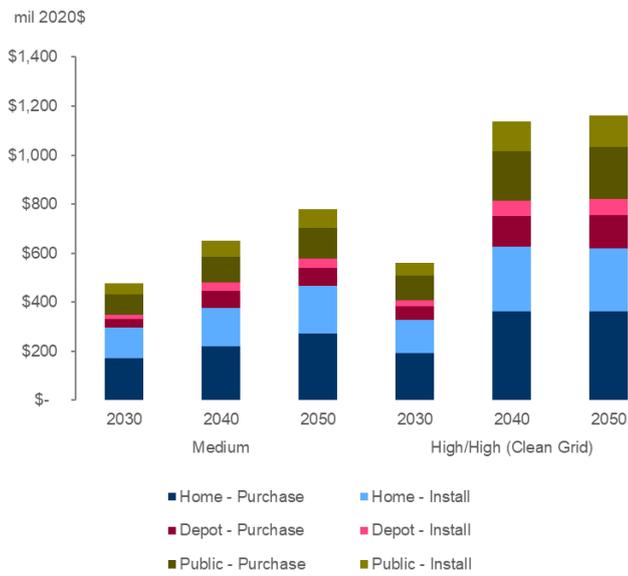
The modeled scenarios found that the "High Scenario" and the "High (Clean Grid) Scenario" would require approximately:

- 8.4 million home charge ports by 2050,
- 660,000 depot-based charge ports by 2050,
- 96,000 public L2 charge ports by 2050,
- 35,000 public 150 kW DCFC charge ports by 2050, and
- 8,000 public 500 kW DCFC charge ports by 2050.

Significant yearly investments will be needed to meet this infrastructure buildout. The "High Scenario" and

the “High (Clean Grid) Scenario” will require almost \$1.2 billion in annual investments, including the cost for charge ports installation and purchase. See the “Cost of EV Charging Infrastructure for Modeled Scenarios Per Year” below.

Cost of EV Charging Infrastructure for Modeled Scenarios Per Year



The infrastructure needs and costs are great, but timely development with robust coordination and planning among key stakeholders, including utilities, municipalities, fleet operators, electric vehicle supply equipment providers, among others can work together to identify what infrastructure will be required for different market segments and locations to electrify.

Equitable infrastructure build-out is necessary and EV infrastructure planning must support all different types of community needs. Ensuring that rural areas and renters, for example, have access to charging infrastructure will be integral to North Carolina’s decarbonization strategy. Strong community engagement at all steps of the planning process should be sustained.

State leadership should work with these stakeholders to develop a transportation electrification roadmap. An electrification roadmap can help support the state in receiving funding as it will demonstrate that North Carolina is ready to implement transportation electrification programs and policies. North Carolina should also consider regional collaboration as a part of the infrastructure planning process, which can also make the state more attractive for federal funding.

Funding opportunities that the state should consider and take advantage from IIJA include:

- **The National Electric Vehicle Formula Grant Program**, which can provide North Carolina up to \$109 million in funding to support EV charging infrastructure;
- **The Carbon Reduction Program**, a \$6.4 billion formula grant program that will be allocated to states and can help states build out alternative charging infrastructure including EV charging ports and others;
- **The Surface Transportation Block Grants** that will provide North Carolina with approximately \$370 million in FY 2022, with additional funding to be released through FY 2026. This funding can help states and localities with transportation needs and includes new eligibility for EV charging infrastructure; and
- **Charging & Fueling Infrastructure Grants** are two competitive grants, with one focused on community charging infrastructure (\$1.25 billion) and another \$1.25 billion is focused on corridor charging infrastructure; with grants of up to \$15 million will be awarded.

Conclusion

Significant infrastructure needs, up to 9 million charge port by 2050, have been identified to meet increasing EV penetration and increasing charging demands. Working with key stakeholders, timely planning, and taking advantage of funding opportunities will help the state of North Carolina meet charging infrastructure needs to support an electrification transition in the transportation sector. With careful consideration, North Carolina will be able to build a robust charging network that will maximize local benefits to citizens and lower costs for customers.

The full report is available at [ERM.com](https://www.erm.com)