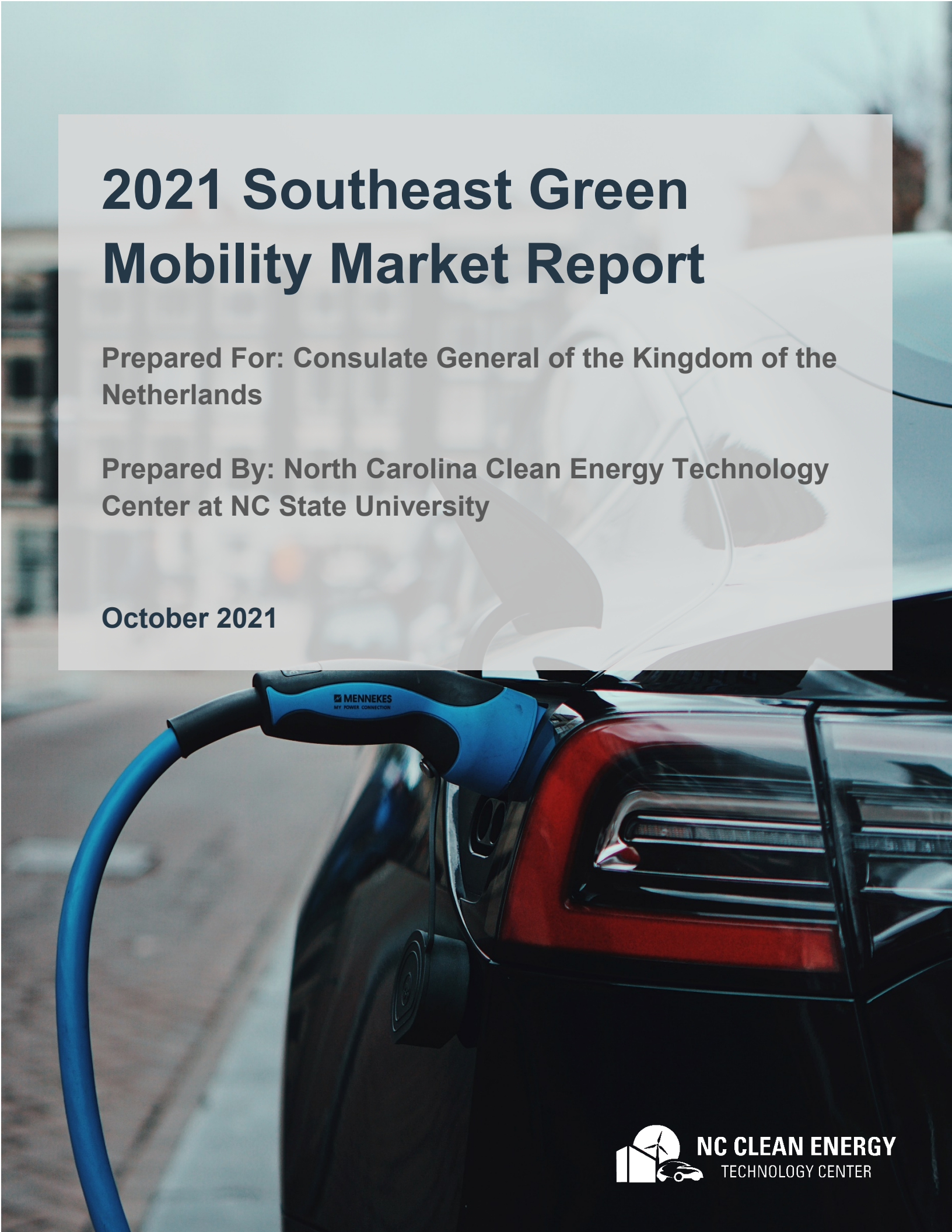
2021 Southeast Green Mobility Market Report

Prepared For: Consulate General of the Kingdom of the Netherlands

Prepared By: North Carolina Clean Energy Technology Center at NC State University

October 2021



NC CLEAN ENERGY TECHNOLOGY CENTER

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The NC Clean Energy Technology Center is a UNC System-chartered Public Service Center administered by the College of Engineering at North Carolina State University. Its mission is to advance a sustainable energy economy by educating, demonstrating and providing support for clean energy technologies, practices, and policies. The Center provides service to the businesses and citizens of North Carolina and beyond relating to the development and adoption of clean energy technologies. Through its programs and activities, the Center envisions and seeks to promote the development and use of clean energy in ways that stimulate a sustainable economy while reducing dependence on foreign sources of energy and mitigating the environmental impacts of fossil fuel use.

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PREFERRED CITATION

North Carolina Clean Energy Technology Center, *The State of the Green Mobility Industry in the Southeastern United States*, October 2021.

DISCLAIMER

SPECIAL THANKS

We would like to provide special thanks to the Clean Cities Coalitions throughout the Southeast for providing input into key stakeholders in their states. We would especially like to thank the

following organizations: Alabama Clean Fuels Coalition, Centralina Clean Fuels Coalition, East Tennessee Clean Fuels Coalition, Louisiana Clean Fuels, Middle-West Tennessee Clean Fuels Coalition, and Palmetto Clean Fuels Coalition.

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GLOSSARY OF ABBREVIATIONS

AL	Alabama
AR	Arkansas
ALJ	Administrative Law Judge
d/b/a	Doing Business As
DC	Direct Current
DCFC	Direct Current Fast Charger
DER	Distributed Energy Resource
DG	Distributed Generation
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
FL	Florida
GA	Georgia
HOV	High Occupancy Vehicle
IOU	Investor-Owned Utility
IRP	Integrated Resource Plan
GW	Gigawatt
kW	Kilowatt
kWh	Kilowatt-hour
LA	Louisiana
MS	Mississippi
MW	Megawatt
NC	North Carolina
PEV	Plug-In Electric Vehicle

PHEV	Plug-In Hybrid Electric Vehicle
PV	Photovoltaics
REC	Renewable Energy Credit or Certificate
RPS	Renewable Portfolio Standard
SC	South Carolina
TN	Tennessee
TOU	Time-of-Use
ZEV	Zero-Emission Vehicle

EXECUTIVE SUMMARY

PURPOSE

This report is designed to be an overview of the green mobility landscape in the southeastern United States (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee). The study was commissioned by the Embassy of the Netherlands in the United States.

For the purposes of this report, green mobility is defined to include the following:

- Electric Vehicles
- Batteries (including second life use)
- Smart Charging
- Charging Infrastructure
- Hydrogen
- Synthetic Fuels

This report provides an overview of recent developments in federal and state policy, utility programs (primarily from investor-owned utilities), and brief descriptions of stakeholders in each state, including private businesses, convening non-profits and industry groups, and relevant research centers.

GREEN MOBILITY INDUSTRY IN THE SOUTHEASTERN U.S.

In 2016 in the United States, greenhouse gas emissions from the transportation sector surpassed electric power sector emissions for the first time since the late 1970s. The transportation sector continued as the largest contributor to carbon emissions in the U.S. in each year since 2017 (in comparison to the electric power, residential, commercial, industrial, agriculture, and manufacturing sectors).[1] Although this shift represents the combined result of many factors, it underscores the need to improve the efficiency and emissions profiles of the transportation sector. There are several technological approaches to this concern. One approach has been to increase the use of electricity for providing transportation sector energy, while simultaneously shifting electricity generation toward cleaner sources. Other approaches include increasing the use of other alternative fuels, such as hydrogen fuel cells and synthetic fuels.

U.S. Electric Vehicle Market

The U.S. reached a new milestone with more than one million electric vehicles on the road as of November 2018. While electric vehicle sales slowed down in 2020 due to the pandemic, they

have picked up pace in 2021.[2] Automakers, like Ford, continue to announce plans to manufacture new, all-electric models, such as an electric F-150 pickup truck. Some automakers are even committing to produce only electric vehicles, including General Motors, which announced that its vehicle lineup would be entirely electric by 2035.[3]

Beyond price, charging infrastructure availability and range anxiety remain barriers to consumer adoption of electric vehicles. As battery technology and associated vehicle designs and technologies improve, vehicle ranges are increasing, but the lack of more widespread charging infrastructure in many parts of the country remains a deterrent to greater market acceptance. While market factors play a large role in this, legal and regulatory barriers are also affecting the pace and location of infrastructure development.

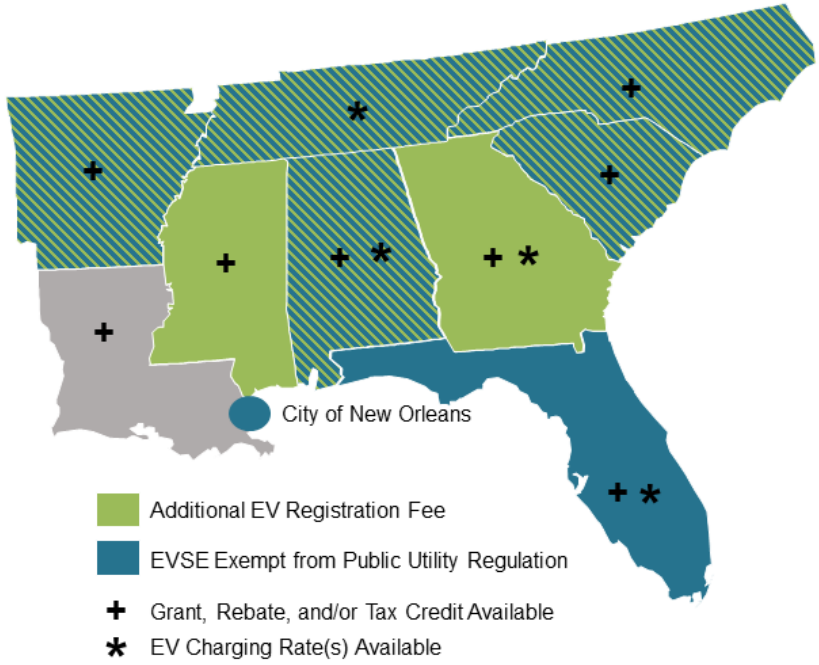
Federal Policy Summary

The Biden Administration has made increasing transportation electrification a cornerstone of its policy to address climate change. The administration has issued two executive orders to increase electric vehicle adoption, both within the federal fleet and within new passenger vehicle purchases. At the same time, the recently passed infrastructure bill from the U.S. Senate provides $12 billion in support for electric vehicles and associated infrastructure. These federal policies will continue to drive demand higher across the nation, including in the southeastern U.S. Additionally, due to the existing automobile manufacturing industry in the southeastern U.S., these federal policies will likely cause an increase in electric vehicle manufacturing in the Southeast. This would likely be a result of both an increase in sales of existing electric vehicle lines manufactured here and of new lines manufactured in the region as automakers shift their lineups to accommodate the increased demand.

Policy Trends Across the Southeastern States

Certain policy trends were evident across the nine states studied. Seven of the nine states have adopted additional registration fees for electric vehicles. Such fees are common methods for states to recoup lost revenue because electric vehicles do not use gasoline and, therefore, do not contribute gas tax revenue for the purpose of funding transportation. Six of the states plus the City of New Orleans specifically exempt EVSE from regulation as a public utility. This allows third party entities other than the public utility to own, operate, and charge for electricity from EVSE. In eight of the nine states, there are grants, tax credits, or rebates available to help with the purchase or installation of EVSE; these could be from the state itself or from utilities within the state. In four of the nine states, there were electric vehicle-specific utility rates that electric vehicle owners can take advantage of when charging their vehicles. Oftentimes these vehicle charging rates are time-of-use (TOU) rates, where the more affordable rate applies during certain times of day to encourage charging during off-peak hours.

Figure 1. State and Utility Policies on Electric Vehicles in the Southeast



Industry Trends Across the Southeastern States

One of the largest cross-cutting trends for the region is the importance of the automotive industry. Most of the states in the Southeast have either vehicle assembly plants or manufacturers for the automotive supply chain. However, some of the states had a higher prevalence of manufacturing that was specifically related to battery electric or fuel cell vehicles. Tennessee had the highest concentration of electric vehicle manufacturing in the Southeast. Georgia and South Carolina also have notable electric vehicle manufacturing facilities.

Another notable trend across the Southeast is the existence of biofuels manufacturing. Some of this dates back to a previous period when biodiesel was more commonly used across the region. Biodiesel has lost popularity, but there are still users and producers of the fuel, including some relatively small producers. Renewable diesel, on the other hand, is gaining in popularity across the U.S. Renewable diesel is more refined than biodiesel and can be used interchangeably with conventional diesel. Due to the refining process for renewable diesel, regions with existing refineries are more likely to have the needed infrastructure and skilled workforce needed for the renewable diesel refineries. This benefits the Gulf Coast states that have an existing refinery industry, especially Louisiana.

There is also a growing hydrogen production industry in the southeastern U.S. There are relatively few hydrogen fuel cell vehicles in the Southeast, but there is growing demand in other parts of the U.S., such as California. Some of the hydrogen produced in the Southeast is for vehicle fuel cells and some of it is used for other industrial purposes.

Regarding Dutch investment in the Southeastern U.S., the states with the greatest opportunity depend on which aspects of the green mobility industry are of greatest interest to Dutch companies. For manufacturing, the electric vehicle, battery, and electric vehicle infrastructure industries are closely related. Georgia, South Carolina, Tennessee and North Carolina are strongest in these areas, with South Carolina and Tennessee leading in vehicle manufacturing. Georgia leads in battery manufacturing, and North Carolina has a strong electronics industry supporting EVSE production. Louisiana is by far the strongest state in terms of the production of synthetic fuels and hydrogen.

Technology deployment, on the other hand, is driven in large part by state policies and utility programs. Florida and North Carolina lead in electric vehicle deployment, with Florida's numerous utility programs and North Carolina's state goal. Georgia has a significant amount of electric vehicle adoption, but adoption rates have slowed due to the expiration of a state tax credit. Florida, Georgia, North Carolina, and South Carolina are leaders in electric vehicle charging infrastructure deployment, with Tennessee also showing strength in fast charger deployment specifically. At this time, none of the southeastern states show significant potential for hydrogen fuel cell vehicle and infrastructure deployment, with the majority of U.S. activity focused on California.

Table 1. Relative Areas of Strength for Green Mobility Industry

Green Mobility Technology	Strongest States
Manufacturing	
Electric Vehicles & Supply Chain	South Carolina, Tennessee
Batteries	Georgia
Electric Vehicle Infrastructure & Smart Charging	Georgia, North Carolina
Hydrogen	Louisiana
Synthetic Fuels	Florida, Louisiana
Technology Deployment	
Electric Vehicles	Florida, North Carolina
Level 2 Electric Vehicle Charging Infrastructure	Florida, Georgia, North Carolina, South Carolina
DC Fast Charging Infrastructure	Florida, Georgia, North Carolina, South Carolina, Tennessee

ANALYSIS

FEDERAL OVERVIEW

Key Takeaways:

- The Biden Administration issued two executive orders aiming to increase electric vehicle adoption; one focuses on the federal vehicle fleet while another sets a goal for new passenger vehicle purchases.
- The infrastructure bill passed by the Senate contains approximately $12 billion in support for electric vehicles, including $7.5 billion for a nationwide charging network, while the forthcoming budget reconciliation measure may contain significantly more funding.
- The income tax credit for new electric vehicle purchases remains available for most manufacturers, but will phase out when each manufacturer has sold 200,000 electric vehicles.

Under the Biden Administration, the U.S. government's executive branch has taken several steps aiming to increase electric vehicle and charging infrastructure deployment, including executive orders aiming to transition the federal vehicle fleet to zero-emission vehicles and setting a non-binding goal for 50% of all new passenger vehicle purchases in 2030 to be zero-emission vehicles. Federal agencies have also opened new electric vehicle funding opportunities and issued guidance on how electric vehicle projects may be funded through existing programs.

The President's infrastructure proposal, the American Jobs Plan, proposed $174 billion in funding for electric vehicle and charging equipment measures; this proposal, however, has no legal effect, and is instead intended to serve as a model for legislation. Congress is considering legislation which could provide substantial l support for electric vehicles and charging equipment; the infrastructure bill that recently passed the U.S. Senate contains some funding for a national electric vehicle charging network and zero-emission public transit, although with a much lower total funding amount (~$12 billion, depending on how much of the public transit funding goes to electric vehicles rather than other alternative fuel vehicles) for electric vehicles than proposed in the President's plan. The forthcoming budget reconciliation measure will likely contain substantial additional funding; some Democrats in the House of Representatives have argued for electric vehicle charging infrastructure funding of $85 billion.[4]

The main federal policy support for electric vehicles has historically been the federal tax credit for new electric vehicle purchases. This policy was adopted in 2008, with an expansion in 2009. The tax credit is scheduled to automatically phase out with increasing electric vehicle deployment levels (Tesla and General Motors have already reached the

phase-out level). As such, policymakers have discussed renewing the tax credit in order to allow for support of larger-scale electric vehicle deployment, although no legislation doing so has yet advanced substantially (although it is a subject of discussion for the forthcoming budget reconciliation proposal).

Table 2. Federal Government Actions

Category	Description	Source
Major Federal Statutes	The federal government offers an individual nonrefundable income tax credit for the purchase of all-electric and plug-in hybrid vehicles. This incentive was established in the 2008 Energy Improvement and Extension Act and substantially modified by the American Recovery and Reinvestment Act of 2009. The tax credit amount ranges from $2,500 to $7,500 depending on vehicle battery capacity. It phases out at different points based on manufacturer; the phase-out is triggered when the manufacturer has sold 200,000 vehicles that have received the credit.	Federal Tax Credits for New All-Electric and Plug-In Hybrid Electric Vehicles
Executive Orders	On January 27, 2021, President Biden issued an executive order directing several agency heads to develop a sustainability plan including a procurement strategy to replace all vehicles in federal (including postal service), state, local, and tribal government fleets with clean or zero-emission vehicles.	Executive Order on Tackling the Climate Crisis at Home and Abroad
	On August 5, 2021, President Biden issued an executive order setting a non-binding goal for 50% of all new passenger cars and light trucks sold in 2030 to be zero-emission vehicles. The order also directs the Administrator of the Environmental Protection Agency and the Secretary of Transportation to consider beginning rulemakings establishing new multi-pollutant vehicle emission standards and fuel economy standards, respectively.	Executive Order on Strengthening American Leadership in Clean Cars and Trucks
Executive Infrastructure & Budget Proposals	President Biden's American Jobs Plan, the President's initial proposal for an infrastructure bill, includes $174 billion in investment in EVs and EV charging, including investments in manufacturing and supply chain components, rebates for EV purchases, and funds to support installation of charging infrastructure by state and local governments, as well as the private sector. The President's 2021 Budget Request did not include most of this proposed EV funding, with the expectation that it will instead be included in infrastructure legislation. The budget does	American Jobs Plan Fact Sheet 2021 Budget Request

	include $600 million for federal fleet electrification.	
Agency Actions and Funding Opportunities	In April 2021, the Biden Administration published a fact sheet explaining actions that several federal agencies are taking in order to accelerate deployment of EV charging infrastructure. *Department of Transportation* - On April 22, 2021, the Federal Highway Administration published a report explaining how its existing funding programs can be used for EV charging infrastructure. On the same date, the Department of Transportation announced the designees for the fifth round of its Alternative Fuel Corridors program. *Department of Energy* - The Department of Energy has announced several funding opportunities to support EV charging research and development, accelerated adoption, and access for underserved communities. *General Services Administration* - The General Services Administration manages the federal vehicle fleet and is in charge of compliance with the January 2021 executive order on the purchase of zero-emission vehicles for the federal fleet.	Fact Sheet FHA Report DOT Alternative Fuel Corridors Announcement
Major Proposed Federal Legislation	**H.R. 3684 (Infrastructure Investment and Jobs Act)** - The bipartisan infrastructure bill passed by the U.S. Senate in August 2021 contains $7.5 billion in funding to create a nationwide EV charging network. This funding will be distributed through a grant program open to state, local, and tribal government entities, which would be allowed to contract with private entities to install the infrastructure; the grant program would also be open to projects using hydrogen, propane, or natural gas fueling infrastructure. The bill requires that charging stations funded through this program use non-proprietary charging technology and not be limited in accessibility based on membership with a particular service provider. The bill also includes another $7.5 billion to shift transit buses and public transportation toward zero-emission and other clean options; this consists of $5 billion for buses (with $2.5 billion of that specifically for zero-emission buses) and $2.5 billion for ferries. The bill also creates an EV working group to make recommendations on the development, adoption, and integration of light, medium, and heavy-duty EVs into the transportation and energy systems of the U.S.; this working group would be led by the Secretaries of Energy and Transportation. The	H.R. 3684 (Infrastructure Investment and Jobs Act)

working group would produce reports every two years for six years (ending after the third report).	
Budget Reconciliation Measure - House Democrats have called for the budget reconciliation measure currently under discussion to include larger funding amounts for EVs and EV charging (reported amounts range from $85-$160 billion, with the higher figure combined with the infrastructure bill spending resulting in a total amount similar to what was proposed in the President's American Jobs Plan proposal) for EV charging infrastructure as well as EV tax credits. The $85 billion figure represents proposed spending for EV charging infrastructure alone; the larger figure represents funding for all EV measures.	House Democrats Letter

ALABAMA

Key Takeaways:

- Alabama ranks low for adoption of green mobility technologies (38th in the country in total sales of electric vehicles, plug-in hybrids, and fuel cell vehicles).
- Alabama ranks very high in terms of automobile manufacturing and battery manufacturing and has the associated workforce and components manufacturing to support its robust automotive industry.
- Alabama Power offers optional rates for residential and business electric vehicle charging.

Alabama has a relatively low adoption rate in terms of alternative fuel vehicles. The state ranks 39th out of the 50 states and the District of Columbia for the number of electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles sold between 2011 and April 2021, with a little over 5,000 vehicles sold in the state.[5]

Alabama does not have many state-level policies in effect related to alternative fuel vehicles. Alabama Governor Kay Ivey has not set any formal goals towards advancing electric vehicles or the green mobility industry other than acknowledging that the industry is changing and Alabama's vehicle manufacturers will reflect that.[6] However, the state legislature has authorized a grant program for electric vehicle infrastructure, which will be funded by the state's additional registration fee for electric and plug-in hybrid vehicles. Further promoting the development of public charging infrastructure is the state's declaration that charging stations are not public utilities and subject to utility regulation, as well as Southern Company's membership in the newly-formed Electric Highway Coalition. Alabama Power (a subsidiary of Southern Company) is the state's only investor-owned utility, serving about 1.5 million customers.[7] Alabama Power offers two option rates for separately-metered electric vehicle charging. The business charging

rate features time-varying rates and does not include a demand charge, while the residential rate offers a discount for overnight charging.

While Alabama's consumers and fleets have been comparatively slow to adopt electric vehicles, the state has an impressive automotive industry. Alabama is ranked fourth among U.S. states for automobile manufacturing, and vehicles are the state's largest export. The following vehicle manufacturers have assembly plants in the state: Mercedes-Benz, Honda, Hyundai, Toyota, Autocar, and New Flyer.[8] Of these, New Flyer and Mercedes-Benz either currently manufacture electric vehicles in the state or have plans to do so in the near future. New Flyer currently makes electric transit buses in the state, and their research center for electric buses is also located in Anniston, AL.[9] Mercedes-Benz has announced that it will start manufacturing electric vehicles in the state in 2022. Part of Mercedes-Benz's investment in the state includes a $1 billion battery factory in Tuscaloosa, near the plant where they will be assembling electric SUVs. As more automakers increase their electric vehicle offerings, it is likely that more of the major automakers in Alabama will start assembling electric vehicles in the state.

Supporting this automotive manufacturing industry is a robust network of suppliers and component manufacturers, as well as a skilled workforce. There are nearly four dozen automotive supplier companies operating in Alabama.[10] EFI Automotive and Daikin are two suppliers that specifically make components or supplies used in electric vehicles. EFI Automotive makes sensors used for engines, transmissions and powertrains in Elkmont, AL. Daikin makes fluoropolymers used in electronics and fluoroelastomers used in batteries in Decatur, AL.[11]

In terms of research, the University of Alabama has a Center for Advanced Vehicle Technologies (CAVT) in Tuscaloosa. CAVT engages in research in the areas of electronics, energy storage and fuel cells, powertrains, and materials and manufacturing.[12] The University of Alabama also houses the Alabama Transportation Institute (ATI), which engages in research on autonomous vehicles, sustainable transportation infrastructure, and electric vehicles.[13] Auburn University recently opened the GPS and Vehicle Dynamics Laboratory, which focuses on research into autonomous vehicles.[14] Auburn University also houses the Center for Bioenergy and Bioproducts, which engages in research into biofuels, including a recent grant to study the potential of biomass to hydrogen.[15] The Alabama Robotics Technology Park focuses on training workers in robotics, which supports modern manufacturing processes and contributes to the skilled workforce in the state.[16]

The primary conveners of different stakeholders and industry representatives in the state are the Alabama Clean Fuels Coalition and the Alabama Department of Economic Affairs, which also manages the Volkswagen settlement funds for the state. These two entities work together on much of the planning for electric vehicles and other alternative fuel technologies for the state of Alabama.

The biggest strength for Alabama in terms of the green mobility industry is the existing ecosystem around vehicle manufacturing, including a robust supply chain, a skilled workforce,

and existing plants. Given the overarching trend in the automobile industry towards electrification, it is likely that manufacturing of electric vehicles in the state will increase. For contacts in the state, we recommend reaching out to the Alabama Clean Fuels Coalition and the Alabama Department of Economic Affairs. Although the state is largely lacking in policies related to green mobility, the state's Electric Transportation Infrastructure Grant Program, Alabama Power's membership in the Electric Highway Coalition, and Alabama Power's optional electric vehicle charging rates provide some bright spots for electric vehicle charging infrastructure.

Table 3. Major Policies and Stakeholders in Alabama

Category	Description	Source
State Legislation & Regulation	**Electric Transportation Infrastructure Grant Program** - Alabama Department of Transportation has the authority to administer the Electric Transportation Infrastructure Grant Program for EVSE infrastructure. No information is available on the DOT website.	Code of Alabama § 40-12-242
	Electric Vehicle Registration Fees - Alabama has an annual registration fee of $200 for electric vehicles and $100 for plug-in hybrid vehicles.	Code of Alabama § 40-12-242
	Fuel-Efficient Vehicle Procurement - State fleet managers must submit annual plans for procurement of fuel-efficient vehicles, including a 4% annual increase in average fleet fuel economy for light-duty vehicles, 3% for medium-duty vehicles, and 2% for heavy-duty vehicles.	Code of Alabama §1-17A-1 through 41-17A-6
	Public Utility Regulation - Alabama exempts EV charging stations from regulation as a public utility by the Public Service Commission.	PSC Order No. 18-0458
State Executive Actions	**Volkswagen Environmental Mitigation Trust** - The Alabama Department of Economic and Community Affairs (ADECA) is responsible for administering the state's Volkswagen Environmental Mitigation Trust funds. The Department has allocated the maximum 15% of funding for light-duty zero-emission vehicle supply equipment.	ADECA Website
Utility Actions	**Major Utilities** – Alabama Power (a subsidiary of Southern Company) is the only investor-owned utility in Alabama and covers the majority of the state. The northern portion of Alabama is part of the Tennessee Valley Authority, with the largest municipal utility being Huntsville Utilities.	U.S. EIA Form-861
	Alabama Power – Business EV Rate - Alabama Power offers an optional rate for business customers' separately-metered EV charging. The rate features a monthly fixed charge plus energy rates that vary by season and time of day. The summer season includes on-peak, intermediate	Rate BEVT

	peak, and off-peak rates, and the winter season includes intermediate peak and off-peak rates. The rate does not include a demand charge.	
	Alabama Power – Residential EV Rate - Alabama Power offers an optional rate rider for residential customers that provides a discount on energy consumed for electric vehicle charging from 9 pm to 5 am.	Rate Rider PEV
	Electric Highway Coalition – Southern Company is a member of the recently formed Electric Highway Coalition, which is a partnership of utilities working to establish a network of DC fast charging stations along major highways.	Press Release
Recent Policy Activity	None	N/A
Industry Groups and Non-Profits	Alabama Clean Fuels Coalition (stakeholder convening organization)	Alabama Clean Fuels Coalition
Private Industry	Vehicle Manufacturers: • Mercedes-Benz • New Flyer	Mercedes-Benz New Flyer
	Auto Industry Suppliers: • EFI • Daikin	EFI Daikin
	Biofuels Producers: • Vertex Energy	Vertex Announcement
Universities and Research Centers	University of Alabama: • Alabama Transportation Institute • Center for Advanced Vehicle Technologies	ATI CAVT
	Auburn University: • GPS and Vehicle Dynamics Laboratory • Center for Bioenergy and Bioproducts	GAVLAB Center for Bioenergy and Bioproducts
	Alabama Robotics Technology Park (conducts workforce training)	Alabama RTP

ARKANSAS

Key Takeaways:

- Arkansas ranks low in terms of adoption of green mobility technologies (37th in the country in total sales of electric vehicles, plug-in hybrids, and fuel cell vehicles).
- Arkansas has a strong Department of Energy Clean Cities organization that provides a stakeholder platform for advancing alternative fuels adoption in the state.
- Arkansas legislators recently approved a new grant program for electric vehicle charging equipment.

Arkansas has a relatively low adoption rate of alternative fuel vehicles. The state ranks 37th out of the 50 states and the District of Columbia for the number of electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles sold between 2011 and April 2021, with a little over 23,000 vehicles sold in the state.[17] The Arkansas Governor Asa Hutchinson has not set any formal goals towards advancing electric vehicles or the green mobility industry, although Arkansas' auto supply industry and research activities continue to contribute to the growth of alternative fuel adoption.

The majority of recent policy activity in Arkansas has revolved around the state's additional registration fees for electric and hybrid vehicles. State lawmakers enacted legislation adjusting the fees this year, as well as a bill authorizing a new grant program for electric vehicle infrastructure. Two of the state's major utilities, Entergy and SWEPCO, are members of the Electric Highway Coalition, which should promote the development of a fast-charging network in the state. Notably, Entergy offers rebates for electric vehicle charging stations in its other service territories, but not in its Arkansas territory.

Arkansas automotive industry supplier Electric Motor Center offers many brands of electric motors including Lincoln, Baldor, Dayton, Leeson, US Motors, WEG, and SEW Eurodrive and provides motor rewinding, repair, rebuilding and other related services to support the automotive manufacturing industry.[18]

The University of Arkansas Maritime Transportation Research and Education Center (MarTREC) is a U.S. Department of Transportation Tier 1 University Transportation Center, funded through the Office of the Assistant Secretary for Research and Technology and engaging in research into sustainable maritime and multimodal logistics and infrastructure.[19] The ability of intermodal carriers to move freight between ports of entry and inland locations is critical to the nation's overall economy and may include new opportunities for green mobility.

While Arkansas consumers and fleets have been comparatively slow to adopt electric vehicles, the state has renewed support for public charging to support further adoption of green mobility technologies from state organizations. In August 2021, the Arkansas Department of Energy and Environment launched a program to support the growth of charging outlets. The program is

using nearly $1 million from Volkswagen's environmental mitigation fund to provide rebates to public and private applicants that install Level 2 charging stations. [20]

The primary conveners of different stakeholders and industry representatives in the state are the Arkansas Clean Fuels Coalition and the Arkansas Department of Energy and Environment, which also manages the Volkswagen mitigation settlement funds for the state. These two entities work together on much of the planning for electric vehicles and other alternative fuel technologies for the state of Arkansas. [21]

The biggest strength for Arkansas' green mobility industry at the moment is the existing electric vehicle ecosystem surrounding the state. Geographically located between several "electric vehicle-forward" states, including Texas and Illinois; Arkansas is likely to benefit from many alternative-fuel scenarios as residents and visitors traverse the state, add to the local economy and demonstrate the regional benefits of alternative fuels. The state's newly approved Electric Vehicle Infrastructure Grant Program, Volkswagen mitigation fund rebate program, and utilities' membership in the Electric Highway Coalition are also some favorable signs for future charging station development. For contacts in the state, we recommend reaching out to the Arkansas Clean Fuels Coalition and the Arkansas Department of Energy and Environment.

Table 4. Major Policies and Stakeholders in Arkansas

Category	Description	Source
State Legislation & Regulation	**Alternative Fuels Excise Tax** - Alternative fuels are also subject to excise taxes on a gasoline gallon equivalent basis. Alternative fuel suppliers must pay the tax.	A.C.A. § 19-6-301, 26-56-502, 26-56-601, and 26-62-201 through 26-62-209
	Alternative Fuel Vehicle Notification – Anyone converting a vehicle to operate on alternative fuels must report this to the Arkansas Department of Finance and Administration, or they may be subject to a penalty.	A.C.A. § 26-56-315 and 26-62-214
	Electric Vehicle Infrastructure Grant Program - S.B. 632, enacted in April 2021, established an EV Infrastructure Grant Program for Level 2 and DC fast charging facilities.	S.B. 632 (2021)
	Electric Vehicle Registration Fees - Arkansas has an annual registration fee of $200 for electric vehicles, $100 for plug-in hybrid vehicles, and $50 for conventional hybrid vehicles.	A.C.A. § 27-14-614
	Public Utility Regulation - Arkansas exempts EV charging stations from regulation as a public utility by the Public Service Commission.	A.C.A. § 23-1-101

State Executive Actions	**Volkswagen Environmental Mitigation Trust** - The Arkansas Department of Environmental Quality is responsible for administering the state's Volkswagen Environmental Mitigation Trust funds. The Department has allocated the maximum 15% of funding for EV charging infrastructure.	ADEQ Website
	Arkansas Public Level 2 EVSE Rebate Program – Through the Volkswagen Environmental Mitigation Trust, the Arkansas Department of Environmental Quality is offering a rebate program for Level 2 EVSE. The rebate for government-owned property available to the public for charging is 90%, up to $6,850 for one charging port and $9,300 for two or more charging ports. The rebate for non-government-owned property available to the public for charging is 70%, up to $5,325 for one charging port and $7,225 for two or more ports.	ADEQ Website
Utility Actions	**Major Utilities** – Arkansas has four major investor-owned utilities (Empire District Electric, Entergy Arkansas, Oklahoma Gas & Electric, SWEPCO), which cover the majority of the state. Arkansas also has 18 electric cooperatives and 15 municipal utilities.	ADEQ Website
	Electric Highway Coalition – Entergy and SWEPCO (a subsidiary of American Electric Power) are members of the recently formed Electric Highway Coalition, which is a partnership of utilities working to establish a network of DC fast charging stations along major highways.	Press Release
Recent Policy Activity	H.B. 1893, enacted in April 2021, exempts electric and hybrid motorcycles, golf cars, and low-speed vehicles from the state's additional EV registration fees.	H.B. 1893
	S.B. 225, enacted in March 2021, reduces the current $100 annual registration fee for hybrid vehicles to $50 and includes a $100 registration fee for plug-in hybrid vehicles.	S.B. 225
	S.B. 246, enacted in March 2021, exempts vehicles registered to military service members and veterans from the state's additional registration fees for hybrid and electric vehicles.	S.B. 246
	S.B. 632, enacted in April 2021, establishes an EV Infrastructure Grant Program for Level 2 and DC fast charging facilities.	S.B. 632
	In April 2016, the Public Service Commission (PSC) opened a general proceeding to explore DERs, including EVs. Multiple workshops have been held, and the proceeding remains open.	Docket No. 16-028-U
Industry Groups and Non-Profits	The Arkansas Clean Fuels Coalition operates through the Department of Energy and Environment and convenes stakeholders for the state.	Arkansas Department of

		Environmental Quality
Private Industry	Auto Industry Suppliers: • Electric Motor Center	Electric Motor Center
Universities and Research Centers	University of Arkansas: Maritime Transportation Research and Education Center (MarTREC)	MarTREC

FLORIDA

Key Takeaways:

- Florida ranks high in terms of adoption of green mobility technologies in the U.S. (2nd in the country in total sales of electric vehicles, plug-in hybrids, and fuel cell vehicles).
- Florida has strong utility electric vehicle infrastructure programs through Duke Energy and Florida Power & Light to support deployment of public charging infrastructure.
- The Department of Energy Clean Cities organizations provide stakeholder platforms for advancing alternative fuels adoption in the state.
- Florida has a strong biofuels manufacturing sector, due to a resource abundance of switch grass and sugarcane.

Florida has a high adoption of alternative fuel vehicles. The state ranks 2nd of the 50 states and the District of Columbia for the number of electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles sold between 2011 and April 2021, with a little over 250,000 vehicles sold in the state.[22] In July 2020, Florida's Governor Ron DeSantis announced an $8.6 million funding project to strengthen Florida's electric vehicle infrastructure. The investment marks another step in the state's efforts to provide accessible electric vehicle infrastructure, while also protecting air quality and expanding the state's charging stations by 50% along most traveled corridors. [23]

Florida is one of the most active states in the southeast for policies related to electric and alternative fuel vehicles. While Florida's administrative agencies have undertaken significant planning efforts related to electric vehicle infrastructure, the state's utilities have led many of the electric vehicle initiatives. Florida Power & Light has deployed charging infrastructure through its EVolution program and recently adopted new rate offerings to encourage charging station development. In addition to participating in the Electric Highway Coalition and committing to electrify the majority of its own fleet, Duke Energy Florida has deployed a significant amount of charging infrastructure through its Park and Plug program. Duke Energy recently received approval for three new electric vehicle programs. Tampa Electric also received recent approval for a new program to deploy charging infrastructure in its service territory.

At the state level, Florida also has several policies encouraging charging infrastructure development. The state has adopted an exemption from public utility regulation for charging

stations and allows charging infrastructure to qualify for property assessed clean energy financing. Florida requires condominium associations to allow residents to install charging stations, removing a barrier to charging infrastructure development at multi-family properties. The state does not have an additional registration fee for electric vehicles, although some state lawmakers have proposed such fees in unsuccessful legislation.

Florida has a robust biofuel manufacturing sector, including many biodiesel and alternative fuel manufacturers, due to an abundance of switch grass and sugar cane needed for production. The companies include Algenol Biotech, Eco World Energy, Daytona Biodiesel, Inc., Green Biofuels, LLC, Blue Bio Fuels, Inc., First Coast Biofuels, Banyan Biofuels Inc., Initio Fuels LLC, Indian River Biodiesel LLC, Genuine Bio-Fuel Inc., and Sun Biodiesel. The industry association, the Florida Biofuel & Bioenergy Association, serves as an industry advocate in the Florida region.

The University of Central Florida Electric Vehicle Transportation Center (EVTC) serves as the focal point for the U.S. Department of Transportation's strategic goal of planning for near-term integration of alternative fuel vehicles as a means to build a sustainable transportation system. The center engages in research to evaluate technologies, standards, and policies that ensure seamless integration of electric vehicles into complex electricity grids and transportation networks. The EVTC strives to bridge the gap between deployment of electric vehicles and the traditional transportation system.[24]

The primary conveners of stakeholders and industry representatives in the state are the Florida Clean Fuels Coalitions and the Florida Department of Energy and Environment. The Department of the Environment also manages the Volkswagen mitigation settlement funds for the state. The Florida electric vehicle stakeholder collaborative "Drive Electric Florida", of which the Florida Clean Fuels Coalitions are members, works to advance the energy, economic, and environmental security of the state of Florida by promoting the growth of electric vehicle ownership and accompanying infrastructure. These entities work together with vehicle fleets, fuel providers, community leaders, and other stakeholders to save energy and promote the use of domestic fuels and advanced transportation technologies in the state of Florida.

The biggest strengths for Florida's green mobility industry are a strong policy focus on electric and alternative fuel vehicle adoption, along with a strong statewide stakeholder collaborative. Additionally, utility investment in building out a robust public charging network drives confidence in electric vehicle technology. Future growth for alternative fuels is expected in the state as Florida businesses begin to focus on growing the economy through tourism related to green mobility. A key area of future consideration in Florida is in ensuring that electric transportation infrastructure is resilient, given the number of hurricanes and severe storms that hit the state. For contacts in the state, we recommend reaching out to the Florida Clean Fuels Coalitions and the Florida Department of Energy and Environment.

Table 5. Major Policies and Stakeholders in Florida

Category	Description	Source
State Legislation & Regulation	**Authorization for Local Government Alternative Fuel Infrastructure Incentives** – Local governments are allowed to use infrastructure surtax funds to provide incentives (loans, grants, rebates) for alternative fuel infrastructure, including EVSE.	Florida Statutes § 212.055
	Condominium EVSE Installation - Condominium associations must allow residents to install EVSE for vehicle charging at their own expense.	Florida Statutes § 718.113
	EVSE Parking Enforcement - Florida law prohibits non-electric vehicles from parking in or occupying a parking space designated for plug-in EVs.	Florida Statutes § 366.94
	PACE Financing – Florida has authorized the use of Property-Assessed Clean Energy (PACE) financing for qualifying energy improvements, including EVSE.	Florida Statutes § 163.08
	Public Utility Regulation - Florida exempts EV charging stations from regulation as a public utility by the Public Service Commission.	Florida Statutes § 366.94
	Rest Area Vehicle Charging - Florida law prohibits the physical connection of a vehicle to an electrical outlet at rest areas.	Florida Rule 14-28.002
State Executive Actions	**Volkswagen Environmental Mitigation Trust** - The Florida Department of Environmental Protection is responsible for administering the state's Volkswagen Environmental Mitigation Trust funds. The Department plans to allocate the maximum 15% of funding for electric vehicle charging infrastructure.	DEMP Website
	Florida Electric Vehicle Roadmap - The Florida Department of Agriculture and Consumer Services' Office of Energy published an EV roadmap for the state in December 2020, which includes site recommendations for EV charging infrastructure, as well as policy recommendations.	Florida EV Roadmap
	Florida Electric Vehicle Master Plan (Draft) - The Florida Department of Transportation released a Draft EV Master Plan in April 2021. The plan examines barriers to EV adoption	Florida EV Master Plan (Draft)
Utility Actions	**Major Utilities** – Florida has five investor-owned utilities (Duke Energy Florida, Florida Power & Light, Florida Public Utilities, Gulf Power, and Tampa Electric), which are regulated by the Public Service Commission. The state also has several large municipal utilities, including JEA, Orlando Utilities Commission, and City of Tallahassee Utilities.	Florida PSC Website

Duke Energy Fleet Electrification - Duke Energy has committed to convert 100% of its light-duty vehicles and 50% of its medium-duty, heavy-duty, and off-road vehicles to electric or zero-carbon vehicles by 2030.	Duke Energy Website
Duke Energy Florida C&I Rebate Program (Forthcoming) - In June 2021, the Florida Public Service Commission approved a new charging station rebate program for commercial and industrial customers. Rebate recipients must take service on GST-1, which is a non-demand TOU rate. The rebate amount varies based on the charger location segment.	PSC Order
Duke Energy Florida Park & Plug Program - Duke Energy Florida has installed over 178 public Level 2 chargers at businesses, 41 public DC fast chargers, 214 Level 2 chargers at multi-unit dwellings, and 157 Level 2 chargers at workplaces.	Duke Energy Website
Duke Energy Florida Residential Non-TOU Credit Program (Forthcoming) - In June 2021, the Florida Public Service Commission approved a new residential EV non-TOU credit program. Customers not on whole-home TOU rates that observe off-peak charging (charge during on-peak hours no more than twice per month) will receive a monthly $10 bill credit as a proxy for being on a TOU rate.	PSC Order
Electric Highway Coalition – Duke Energy is a member of the recently-formed Electric Highway Coalition, which is a partnership of utilities working to establish a network of DC fast charging stations along major highways.	Press Release
Florida Power & Light - EV Infrastructure Rider for General Service Demand - Florida Power & Light offers a pilot rate for separately-metered commercial or industrial public EV charging with measured demand between 20 kW and 500 kW. The rate includes a demand charge adjustment, which limits the monthly billed demand to the value of kWh sales divided by 75 hours per month.	Sheet No. 8.106
Florida Power & Light - EV Infrastructure Rider for Large General Service Demand - Florida Power & Light offers a pilot rate for separately-metered commercial or industrial public EV charging with measured demand between 500 kW and 2,000 kW. The rate includes a demand charge adjustment, which limits the monthly billed demand to the value of kWh sales divided by 75 hours per month.	Sheet No. 8.311
Florida Power & Light (FPL) EVolution Program – Through FPL's EVolution program, the utility has deployed charging infrastructure throughout its service territory. Businesses may partner with FP&L to have charging stations installed on their properties. The utility has also	FPL EVolution

	developed its FPL EVolution App to locate charging stations.	
	Tampa Electric - EV Charging Pilot Program - In April 2021, the Florida Public Service Commission approved Tampa Electric's proposed EV Charging Pilot Program. Under the pilot, the utility will install and own 200 Level 2 EV charging ports at workplaces, public/retail locations, multi-unit dwellings, income-qualified locations, and government locations. The utility will also install four DC fast charging stations. The utility will provide up to $5,000 for installation for charging ports at workplaces, public/retail locations, and multi-unit dwellings. The utility will fund the full installation cost for income-qualified and government site hosts.	PSC Order
Recent Policy Activity	H.B. 839, enacted in June 2021, prohibits municipalities, counties, special districts, and political subdivisions from adopting rules prohibiting the development of transportation fueling infrastructure. These entities may also not require a fuel retailer to install or invest in a particular kind of fueling infrastructure, such as EV charging stations.	H.B. 839
	S.B. 630, enacted in June 2021, specifies that the unit owner installing, maintaining, or removing an EV charging station is responsible for complying with all federal, state, or local laws and regulations applicable to such installation, maintenance, or removal.	S.B. 630
	Other Proposed Legislation – Florida lawmakers introduced 10 additional bills related to EVs that did not pass during the 2021 legislative session. H.B. 817 and S.B. 138 would have established an EV infrastructure grant program, to be funded by additional EV registration fees. H.B. 819 and S.B. 140 would have established additional registration fees for EVs and plug-in hybrid vehicles. S.B. 1276 would also have established additional registration fees for EVs and plug-in hybrids. H.B. 2091 and H.B. 3673 would have allocated funding for specific EV charging infrastructure projects. S.B. 856 would have disallowed municipalities, counties, special districts, and political subdivisions from adopting rules prohibiting the development of transportation fueling infrastructure.	H.B. 817 / S.B. 138 H.B. 819 / S.B. 140 H.B. 2091 H.B. 3673 H.M. 1509 / S.M. 1332 S.B. 856 S.B. 1276
Industry Groups and Non-Profits	Advisory groups for acceleration of EV adoption in the state of Florida:	Clean Cities Coalition Network: North

	• DOE Clean Cities Organizations:
	  ○ North Florida Clean Fuels Coalition
	  ○ Central Florida Clean Cities Coalition
	  ○ Tampa Bay Clean Cities Coalition
	• Drive Electric Florida
	• Florida Biofuel & Bioenergy Association, Inc.
		Florida Clean Fuels Coalition
		
		Drive Electric Florida
		
		Florida Biofuels & Bioenergy Association, Inc.

Private Industry	Biofuels Production: • Algenol Biotech • Eco World Energy • Daytona Biodiesel • Green Biofuels, LLC • Blue Bio Fuels, Inc. • First Coast Biofuels • Banyan Biofuels Inc. • Initio Fuels LLC • Indian River Biodiesel LLC • Genuine Bio-Fuel Inc. • Sun Biodiesel	Biofuels Companies in Florida, United States
Universities and Research Centers	University of Central Florida - Electric Vehicle Transportation Center	UCF EV Transportation Center

GEORGIA

Key Takeaways:

- Georgia has the highest per capita rate of electric vehicle ownership in the Southeast, but that is primarily due to incentives that have been ended.
- There is a growing ecosystem around electric vehicle manufacturing in the state, though it currently has more companies making components or batteries than focused on final assembly of the vehicle.
- There is a strong stakeholder network comprised of NGOs, universities, utilities, and private companies coordinating together to advance electrification and green mobility in the state.

Georgia ranks 7th in the nation in terms of the number of sales of electric vehicles, plug-in hybrid vehicles, and fuel cell vehicles in the state.[25] For electric vehicle ownership per capita, the state ranks 1st in the Southeast.[26] This high adoption rate is primarily due to state tax credits for the purchase of electric vehicles that were available between 2013 and 2015; sales have fallen since the tax credit expired.[27]

Georgia currently supports the electric vehicle market with a state tax credit for the purchase of publicly accessible electric vehicle charging equipment. The tax credit is worth 10% of the costs of the equipment, and is capped at $2,500 per installation. Georgia also allows alternative fuel vehicles, which includes electric vehicles, to travel in high occupancy vehicle lanes and high occupancy toll lanes regardless of the number of passengers. Georgia is also attempting to attract electric vehicle manufacturers to the state with a tax credit based on the number of new full-time jobs they create.

Georgia's Governor Brian Kemp has not put forth specific goals for adoption of electric vehicles, but has called together a group of stakeholders to look into policies that will promote the electronic mobility industry in the state.[28] In July 2021, the Governor announced the creation of the Georgia Electric Mobility and Innovation Alliance, which is a public-private partnership led by the Georgia Department of Economic Development. The Alliance's mission is to help create a business-friendly environment in Georgia to support the growth of the entire electric mobility industry.[29]

While the state tax credit for charging equipment is limited to equipment that is accessible to the public, Georgia Power (a subsidiary of Southern Company) provides a rebate for residential and commercial Level 2 charging stations that serve these customers' private needs. Georgia Power is the state's only investor-owned utility, serving about 2.6 million customers,[30] more than half of the state's total 4.9 million electricity customers. Georgia Power's residential customers can also utilize its time-of-use rates, which feature lower rates for nighttime charging.

Georgia Power has received approval from the Georgia Public Service Commission in recent years to install 50 DC fast chargers statewide, and to invest $18 million in make-ready equipment for charging infrastructure.[31] Georgia Power is also a member of the Electric Highway Coalition, with a commitment to further expand access to DC fast chargers. The private market for electric vehicle charging, however, remains constrained. The Georgia legislature considered, but failed to enact, legislation in 2021 that would have authorized private companies to resell electricity for charging electric vehicles, forcing charging providers to consider alternate business models.

The largest manufacturer operating in the green mobility space in Georgia is by far, SK Innovation, which has opened a battery plant in Commerce, GA and has started construction on a second battery plant there as well.[32] Another manufacturer, Blue Bird, is notable for making electric school buses in Fort Valley, GA.[33] There are multiple other vehicle manufacturers operating in Georgia, but none of the others currently assemble electric vehicles.

There are several suppliers for electric vehicle and battery components as well in Georgia. Duckyang recently announced that it would be opening a plant in Braselton, where the company will make parts for batteries for SK Innovation.[34] Enchem Ltd. makes electrolytes for SK Innovation batteries.[35] GS Yuasa makes lithium-ion batteries primarily for the aerospace industry in Roswell, GA[36], though it is part of the battery manufacturing industrial ecosystem in Georgia. Saft America makes lithium-ion batteries for heavy-duty vehicles in Valdosta, GA.[37]

Exide Technologies makes lead-acid and lithium-ion batteries. It has its corporate headquarters in Milton, GA, though it has shifted its manufacturing away from Georgia.[38] Kiepe Electric makes electrical systems for rail and buses in Alpharetta, Georgia.[39] TI Automotive makes fuel tanks and battery thermal systems for electric vehicles in Lavonia.[40] Hitachi Automotive makes electric powertrain systems in Monroe, GA.[41] Prayon makes cathode materials in Augusta.[42] Teklas makes components for EVs and has announced that it will open a plant in Calhoun.[43] Gedia Automotive Group also recently announced that it would open a manufacturing plant for EV components in Whitfield County.[44] Siemens Energy makes electric charging stations in Norcross, GA.[45] Advanced Control Systems makes transformers for electric vehicle chargers.[46] Heliox, a manufacturer of EVSE, recently announced that it would be opening its North American headquarters in Atlanta.[47] EnviroSpark Energy Solutions is an EVSE installer with their U.S. headquarters in Atlanta; the company operates in multiple states and in Canada (where they have another office).[48] Clipper Creek sells EVSE and has a large presence in the state, though their chargers are made in California.

There is some biofuels industry present in Georgia as well, with World Energy and Clean Energy Biofuels both producing biodiesel. It should be noted that several biodiesel producers who used to operate in the state appear to have shut down operations, a trend we have noticed with biodiesel production across the Southeast. In contrast, a new production facility for renewable jet fuel has been announced by LanzaTech. This facility will be a commercial-sized facility based off an earlier pilot project where the company converted industrial waste into jet fuel.[49]

The hydrogen industry has some presence in the state, with PlugPower announcing plans to build a hydrogen plant that will supply hydrogen for fuel cells in Camden County.[50]

For research, the Strategic Energy Institute at Georgia Tech houses multiple research centers related to green mobility. The Institute for Materials at Georgia Tech researches materials used in electronics, batteries, and fuel cells. The Center for Innovative Fuel Cell and Battery Technologies at Georgia Tech researches fuel cell and battery technologies. The Ray is an 18-mile strip of highway that is used to test different smart mobility technologies. Some of the technologies being tested on the Ray include solar-powered electric vehicle charging and V2x connected vehicle technology.

Clean Cities-Georgia regularly convenes stakeholders for information sharing and planning around green mobility. Like all Clean Cities Coalitions, the organization works on all fuel types, not just electric vehicles. The Southeast Energy Efficiency Alliance also engages in planning efforts around green mobility and transportation electrification.

The Center of Innovation for Energy Technology includes smart mobility and alternative fuels as one of its focus areas. The Center is a project of the Georgia Department of Economic Development and works to connect private industry with business and academic partners in the state to foster innovation and economic development.[51] Both the Georgia Department of

Economic Development and Clean Cities-Georgia would be good choices for companies to connect with who are interested in doing business in Georgia.

There is a strong network fostering partnership between private businesses, non-profits, academia, and utilities in Georgia, which is one reason why the ecosystem of electric vehicle manufacturing and supply chain is growing in the state. A weakness within the state would be inconsistency regarding electric vehicle policy from the state government. Despite this, the state's largest utility, Georgia Power, has taken some steps in the form of incentives, investment, and rate design to advance electric vehicle infrastructure. The state's Public Service Commission, which regulates Georgia Power, have also shown support for transportation electrification.[52]

Table 6. Major Policies and Stakeholders in Georgia

Category	Description	Source
State Legislation & Regulation	**Electric Vehicle Supply Equipment Tax Credit -** Eligible businesses may claim an income tax credit for the purchase and installation of EVSE located in Georgia and accessible to the public. The tax credit is for 10% of the EVSE cost and can cover up to $2,500. More information is available on the Department of Natural Resources website: Clean Vehicle Tax Credits.	O.C.G.A. § 48-7-40.16
	Alternative Fuel and Advanced Vehicle Job Creation Tax Credit - An annual tax credit is available for businesses that manufacture alternative energy products for use in battery, biofuel, and electric vehicle enterprises. The tax credit can be claimed for five years. The credit amount is based on the number of eligible new full-time employee jobs and how the county ranks in unemployment rates and income levels.	O.C.G.A. § 48-7-40
	High Occupancy Vehicle (HOV) and High Occupancy Toll (HOT) Lane Exemption – Georgia considers plug-in electric vehicles and bi-fuel or dual-fuel vehicles powered by natural gas or propane to be "Alternative Fueled Vehicles." Such vehicles can register for a special alternative fueled vehicle license plate, which allows them to use HOV and HOT lanes, regardless of the number of passengers.	O.C.G.A. § 32-9-4 O.C.G.A. § 40-2-86.1 O.C.G.A. § 40-6-54
State Executive Actions	**Volkswagen Environmental Mitigation Trust** - The Georgia Governor's Office of Planning and Budget (OPB) is the lead agency for administering the state's Volkswagen Environmental Mitigation Trust funds. The OPB plans to use the State Trust funds to replace older, higher-polluting diesel transit buses in the Atlanta Metropolitan Area with a combination of new diesel and new all-electric buses.	OPB Website

Utility Actions	**Major Utilities** – Georgia Power (a subsidiary of Southern Company) is the only investor-owned utility in Georgia and serves more than 50% of the state's electricity customers. Georgia also has a number of rural cooperatives and municipal utilities, and TVA operates in the very northern part of the state.	U.S. EIA Form-861
	Georgia Power – EVSE Rebate Program - Georgia Power offers residential customers a $250 rebate and business customers a $500 rebate for installing a Level 2 EVSE between January 1, 2021 and December 31, 2021.	Residential Rebate Business Rebate
	Georgia Power – Plug-in Electric Vehicle Time-of-Use Rates - Georgia Power offers residential customers a time-of-use electricity rate for plug-in electric vehicles to encourage nighttime EV charging. Customers must own a smart charger capable of separately metering charger usage.	Georgia Power Website
	Electric Highway Coalition – Georgia Power and its parent company, Southern Company, are members of the recently formed Electric Highway Coalition, which is a partnership of utilities working to establish a network of DC fast charging stations along major highways.	Press Release
Recent Policy Activity	Georgia lawmakers introduced 1 bill related to EVs that did not pass during the 2021 legislative session. H.B. 776 would have clarified that owners of electric vehicle charging stations that resell electricity to vehicle owners are not considered public utilities are outside the jurisdiction of the Public Service Commission.	H.B. 776
Industry Groups and Non-Profits	Clean Cities - Georgia Southeast Energy Efficiency Alliance (SEEA)	Clean Cities-Georgia SEEA
Private Industry	Battery Manufacturers and Battery Suppliers: ● SK Innovation ● Duckyang ● GS Yuasa ● Saft America ● Exide Technologies ● Enchem Ltd.	SK innovation Duckyang GS Yuasa Saft America Exide Technologies
	Electric Vehicle Assembly: ● Blue Bird (school buses)	Blue Bird
	Electric Vehicle Supply Chain: ● Kiepe Electric ● TI Automotive	Kiepe Electric TI Automotive

	• Hitachi Automotive • Prayon • Teklas • Gedia	Hitachi Automotive Prayon Teklas Gedia
	EVSE Manufacturers and Supply Chain: • Siemens Energy • Advanced Control Systems • Heliox	Siemens Energy Advanced Control Systems Heliox
	Biofuels Production: • World Energy • Clean Energy Biofuels • LanzaTech	World Energy Clean Energy Biofuels LanzaTech
	Hydrogen Industry: • PlugPower	PlugPower
	Installers: • EnviroSpark Energy Solutions	EnviroSpark Energy Solutions
Universities and Research Centers	Georgia Tech: • Strategic Energy Institute • Institute of Materials • Center for Innovative Fuel Cell and Battery Technologies	SEI IMat FCBT
	The Ray	The Ray

LOUISIANA

Key Takeaways:

- Louisiana's large petroleum refining industry gives it an advantage in the refining of certain biofuels, such as renewable diesel.
- The State of Louisiana and the City of New Orleans have distinctly different policy environments due to Entergy New Orleans' regulatory oversight by the New Orleans City Council.
- Louisiana is a major producer of hydrogen, although the majority of current hydrogen production is currently used for industrial purposes.

Louisiana ranks 36 out of the 50 states and District of Columbia in terms of the total number of electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles sold in the state.

Louisiana has a unique regulatory structure for its utilities, with the City Council of New Orleans regulating Entergy New Orleans and the Louisiana Public Service Commission regulating other investor-owned utilities and electric cooperatives in the state. The City of New Orleans has adopted an exemption from public utility regulation for electric vehicle charging stations, although the rest of the state has not. The Public Service Commission recently opened a new proceeding to address this issue. The City of New Orleans also has a renewable portfolio standard, which allows emission-reducing activities including electric vehicle charging infrastructure to count toward compliance.

State and utility incentives are available for charging infrastructure in Louisiana. The state has a 30% tax credit for alternative fueling infrastructure in effect until the end of 2021. Entergy and SWEPCO also offer charging station rebates. Entergy New Orleans also has a program where it effectively leases charging stations to business customers.

Unlike some of the other southeastern states, Louisiana does not currently have an active automobile industry. The state does, however, have a very active petroleum refining industry, which provides the necessary industrial ecosystem for refining certain biofuels. Some of the biofuels produced in Louisiana include biodiesel, renewable diesel, and renewable propane. Diamond Green has a renewable diesel refinery in Norco, LA that is a joint venture with Valero and Darling Ingredients Inc. That facility is the largest renewable diesel refinery in North America.[53] Renewable Energy Group currently runs a refinery in Geismar, LA that refines renewable diesel, renewable propane, and renewable naphtha.[54] Grön Fuels LLC recently announced that it is exploring the possibility of putting in place a renewable fuels production facility near the Port of Greater Baton Rouge.[55] Strategic Biofuels LLC has announced that it plans to open a renewable diesel plant in Caldwell Parrish.[56]

Louisiana is also a major producer of hydrogen, which can be used for fuel cells, but also has other industrial uses, including the production of low-sulfur diesel. Currently, most of the hydrogen produced in Louisiana is used for industrial purposes, but the existing capacity for production of hydrogen in the state does mean that the state is poised for producing hydrogen for fuel cell vehicles also. Praxair recently announced that it would be building a major new hydrogen production facility in Louisiana; the hydrogen from that plant will be used by nearby refineries.[57] CF Industries is constructing an electrolysis plant to produce carbon-neutral hydrogen in Donaldsville; the initial market for this hydrogen is for making fertilizer, but the company has expressed interest in producing hydrogen for transportation as the market supports that.[58]

Because of the chemical production industry in Louisiana, there are also are suppliers of components for batteries. BASF Corporation makes electrolytes for batteries in Zachary, LA.[59] Albemarle does lithium processing in Baton Rouge.[60]

Louisiana State University's (LSU) College of Engineering has several departments and research centers that focus on green mobility. LSU's Department of Biological and Agricultural

Engineering does research into the production of biofuels.[61] The Department of Mechanical and Industrial Engineering and the Chemical Engineering Department are researching fuel cells.[62]

There are two Clean Cities Coalitions in the state: the Louisiana Clean Fuels Coalition and the Southeast Louisiana Clean Fuels Partnership.[63]

The opportunities in Louisiana clearly lie in biofuels and hydrogen production. There are far fewer opportunities in the state related to battery electric vehicles and vehicle manufacturing. It is important to note that the opportunities in the City of New Orleans and the rest of Louisiana may differ, due to the difference in utility regulators. The City of New Orleans has greater opportunity for electric vehicles than the rest of the state, due to the recently adopted renewable portfolio standard and Entergy New Orleans' commercial charging program. However, this difference in regulatory structure can also pose a challenge for electric vehicle charging due to the additional complexity.

Table 7. Major Policies and Stakeholders in Louisiana

Category	Description	Source
State Legislation & Regulation	**Alternative Fueling Infrastructure Tax Credit** - Louisiana offers a 30% state income tax credit for the purchase of alternative fueling infrastructure, including EV charging infrastructure.	LRS 47:6035
	City of New Orleans Renewable Portfolio Standard - On May 20, 2021, the City Council adopted a resolution establishing a Renewable and Clean Portfolio Standard. The standard requires that 100% of retail load be met with Tier 1, 2, or 3 resources by 2040. Tier 3 resources are measures that reduce carbon emissions in Orleans Parish or EV charging infrastructure directly connected to the utility's transmission or distribution system.	Resolution No. R-20-182
	Public Utility Regulation - The New Orleans City Council adopted a resolution exempting EV charging stations from regulation as a public utility in Entergy New Orleans' service territory.	Resolution No. R-18-100
State Executive Actions	**Volkswagen Environmental Mitigation Trust** - The Louisiana Department of Environmental Quality is responsible for administering the state's Volkswagen Environmental Mitigation Trust funds.	LDEQ Website
Utility Actions	**Major Utilities** – Louisiana has four investor-owned utilities (Cleco, Entergy Louisiana, Entergy New Orleans, and SWEPCO). The state also has a number of electric cooperatives. The Louisiana Public Service Commission regulates Cleco, Entergy Louisiana, SWEPCO, and the electric cooperatives, while the New Orleans City Council regulates Entergy New Orleans.	U.S. EIA Form-861

	Electric Highway Coalition – Entergy and SWEPCO are members of the recently-formed Electric Highway Coalition, which is a partnership of utilities working to establish a network of DC fast charging stations along major highways.	Press Release
	Entergy E-Tech Program - Entergy's E-Tech Program offers a $250 rebate to residential customers for a Level 2 charger. Incentives may be available for commercial Level 2 and DC fast charging stations, but customers must inquire individually with Entergy.	Entergy Website
	Entergy New Orleans Commercial EV Charging Program - Entergy New Orleans works with commercial customers to install Level 2 and DC fast chargers, with participants paying a monthly fee for Entergy to install and maintain the equipment. The fee is to be paid for 10 years, at which time Entergy will continue to maintain the equipment for a fee agreed upon by both parties.	Entergy Website
	SWEPCO Home EV Charging Station Rebate Program - SWEPCO offers a $250 rebate for residential Level 2 EV charging stations.	SWEPCO Website
Recent Policy Activity	S.B. 8, enacted in June 2021, removes the tax credit for alternative fuel vehicles and retains the tax credit for alternative fueling infrastructure (including EV charging) until January 1, 2022.	S.B. 8
	In August 2021, the Louisiana Public Service Commission opened a new proceeding to determine Commission jurisdiction over the various methods of providing electricity to EVs and the associated infrastructure.	Docket No. R-36131
Industry Groups and Non-Profits	Louisiana Clean Fuels Coalition	Louisiana Clean Fuels
	Southeast Louisiana Clean Fuels Partnership	Southeast Louisiana Clean Fuel Partnership
Private Industry	Biofuels Industry: ● Renewable Energy Group ● Grön Fuels LLC ● Strategic Biofuels LLC ● Diamond Green	Renewable Energy Group Grön Fuels LLC Strategic Biofuels Diamond Green Diesel
	Hydrogen Industry: ● Praxair ● CF Industries	Praxair CF Industries

Universities and Research Centers	Louisiana State University College of Engineering	LSU College of Engineering

MISSISSIPPI

Key Takeaways:

- Mississippi has low rates of adoption of electric vehicles and few existing networks working on the advancement of the green mobility industry.
- Mississippi does have an existing automotive industry, but it is not focused on the production of electric vehicles.
- Entergy Mississippi is a member of the Electric Highway Coalition and offers charging station rebates through its E-Tech Program.

Mississippi ranks 47th out of 50 states and the District of Columbia for sales of electric vehicles, plug-in hybrid vehicles, and fuel cell vehicles.[64]

Mississippi does not have a lot of established state policy related to electric or alternative fuel vehicles. The governor has not publicly stated any goals for advancing the industry or increasing adoption. Like many states in the region, Mississippi has an additional registration fee for electric and plug-in hybrid vehicles. Of note are the state's rules authorizing energy performance contracting, as these include alternative fuel vehicles and infrastructure as eligible energy improvements. Entergy Mississippi also offers charging station rebates through its E-Tech Program.

There is no Clean Cities Coalition in the state and relatively little industry planning related to green mobility is being done by organizations within the state. There is an existing automotive industry, but there are currently no electric vehicles being made in the state. Nissan, Toyota, and Paccar all have manufacturing plants in the state.[65] It is possible that as these manufacturers shift vehicle production towards electric vehicles, that they will begin producing electric vehicles in the state. In that case, there would be an opportunity for supporting industries. Currently, no plans have been announced to that effect.

In terms of industry groups, there is a Mississippi Automobile Manufacturers Association.[66] The state economic development organization is the Mississippi Development Authority.[67] Mississippi State University is doing research into autonomous vehicles at their Center for Advanced Vehicular Systems.[68]

The only potential opportunity we consider likely is if the automakers currently operating in Mississippi decide to begin manufacturing electric vehicles in the state. The current policy environment is not conducive to the green mobility industry, although utility membership in the

Electric Highway Coalition may lead to some opportunities for fast charger development on thoroughfares.

Table 8. Major Policies and Stakeholders in Mississippi

Category	Description	Source
State Legislation & Regulation	**Electric Vehicle Registration Fees** - Mississippi has an annual registration fee of $150 for all-electric vehicles and $75 for plug-in hybrid vehicles.	Mississippi Code § 27-19-23
	Energy Performance Contracting – Public entities may enter into energy services and performance contracts for energy efficiency improvement, including alternative fuel vehicles and alternative fueling infrastructure. This authorization will expire on July 1, 2025.	Mississippi Code § 31-7-14
State Executive Actions	**Volkswagen Environmental Mitigation Trust** - The Mississippi Department of Environmental Quality is responsible for administering the state's Volkswagen Environmental Mitigation Trust funds.	MDEQ Website
Utility Actions	**Major Utilities** – Mississippi has two major investor-owned utilities, Entergy Mississippi and Mississippi Power (a subsidiary of Southern Company). The Tennessee Valley Authority also covers a portion of northeastern Mississippi.	PSC Website
	Electric Highway Coalition – Entergy and Southern Company are members of the recently formed Electric Highway Coalition, which is a partnership of utilities working to establish a network of DC fast charging stations along major highways.	Press Release
	Entergy E-Tech Program - Entergy's E-Tech Program offers a $250 rebate to residential customers for a Level 2 charger. Incentives may be available for commercial Level 2 and DC fast charging stations, but customers must inquire individually with Entergy.	Entergy Website
Recent Policy Activity	S.B. 2598, enacted in April 2021, establishes an Electric Vehicle Infrastructure Fund, where federal money will be deposited and made available for EV infrastructure development in the state.	S.B. 2598
Industry Groups and Non-Profits	Mississippi Automotive Manufacturers Association	MAMA
Private Industry	Biofuels Production: • World Energy	World Energy

Universities and Research Centers	Mississippi State University Center for Advanced Vehicular Systems	CAVS

NORTH CAROLINA

Key Takeaways:

- North Carolina ranks in the middle in terms of adoption of green mobility technologies in the U.S. (13th in the country in total sales of electric vehicles, plug-in hybrids, and fuel cell vehicles).
- North Carolina has strong utility electric vehicle infrastructure programs through Duke Energy and North Carolina Electric Cooperatives to support adoption and deployment of public charging infrastructure.
- The Department of Energy Clean Cities organizations and statewide stakeholder groups provide stakeholder platforms for advancing alternative fuels adoption in the state.
- The existing base of the electronics industry and manufacturing industry support the existing EVSE manufacturing and electric vehicle manufacturing in the state.
- The Governor of North Carolina has put forward executive orders that are the most ambitious in the region with regards to supporting the adoption of electric vehicles.

North Carolina has a moderate adoption rate for alternative fuel vehicles. The state ranks 13th of the 50 states and the District of Columbia for the number of electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles sold between 2011 and April 2021, with a little under 135,000 vehicles sold in the state.[69]

North Carolina Governor Roy Cooper, the state legislature, and the two largest utilities in the state are making serious efforts to build a strong market for electric vehicles and other forms of green transportation.[70] Executive Order 80, signed in October 2018, established a number of policy priorities for addressing climate change. Zero-emission vehicles were a major focus of the executive order, with the adoption of a goal for 80,000 registered zero-emission vehicles in North Carolina by 2025, a directive for all state cabinet agencies to prioritize zero-emission vehicles in the purchase or lease of new vehicles, and calling on the North Carolina Department of Transportation to develop a comprehensive zero-emission vehicle plan.

Some of North Carolina's lawmakers are also attempting to strengthen the market for electric vehicles; however, none of the 13 currently introduced bills related to electric vehicles have been enacted as of September 2021. Duke Energy Progress (DEP) and Duke Energy Carolinas (DEC), the state's two largest utilities, which collectively serve more than 65% of the state's electric customers, are also demonstrating support for the expansion of electric vehicles. The two utilities proposed a suite of pilot programs to support different segments of the electric vehicle market, and received approval from the North Carolina Utilities Commission for a modified version of their plan in November 2020. The utilities returned to the Commission in May 2021, requesting approval for additional electric vehicle pilot programs.

There are three North Carolina Clean Fuels Coalitions: Centralina, Land of Sky, and Triangle J Council of Governments. The Department of Environmental Quality also manages the VW mitigation settlement funds for the state. The NC Clean Energy Technology Center also engages stakeholders on both planning and educational efforts. These entities work together on much of the planning for electric vehicles and other alternative fuel technologies for the state. Advanced Energy runs Plug-in NC, which has been working since 2011 to establish North Carolina as a leader in electric transportation. They strive to provide a collaborative opportunity for stakeholders to work together to ensure a seamless integration of electric vehicles into NC's local communities.

North Carolina green mobility supporters also include the North Carolina Sustainable Energy Association (NCSEA). NCSEA is a non-profit organization that drives public policy and market development for clean energy initiatives in the state. Their work enables clean energy jobs, economic opportunities, and affordable energy options for North Carolinians. NCSEA convenes an electric vehicle working group, which focuses on legislative and regulatory changes needed to expand electric vehicle infrastructure in the state.[71]

Regional supporters include the Southeast Energy Efficiency Association (SEEA) and the Southern Alliance for Clean Energy (SACE). SEEA's mission is to optimize the use and impact of energy to enhance the quality of life in the Southeast. SEEA's Energy Efficient Transportation portfolio addresses significant opportunities that energy efficient transportation presents for the Southeast. Their areas of focus include alternative fuel vehicle policy, state electric transportation initiatives and progress, utility vehicle electrification programs, and stakeholder advancement. SACE advocates for clean energy and promotes responsible and equitable energy choices to ensure clean, safe, and healthy communities throughout the Southeast.

Several university centers engage in green mobility research, including North Carolina State University and the University of North Carolina. NC State University houses the FREEDM Systems Center that works to build the internet of energy, which is a network of distributed energy resources that intelligently manages power using secure communications and advanced power electronics. The NC State Clean Energy Technology Center promotes awareness and use of alternative fuels and advanced transportation technologies through outreach and education and targeted communications campaigns to highlight the benefits of clean transportation technologies. The University of North Carolina houses the Energy Production & Infrastructure Center (EPIC), which is expanding its energy-related curriculum, research, and laboratory facilities to include industry collaboration projects to meet the growing demands of the clean energy industry.

One area of strength for North Carolina's green mobility industry is the existing manufacturing base in the state. North Carolina has a strong base of companies that work in electronics. In addition to the companies that are operating in the electric vehicle and EVSE supply chain already in the state (Schneider Electric, Eaton, Brightfield, and ABB), the workforce around the electronics and electrical industry in the state prepares North Carolina well for future expansions in the area of EVSE and manufacturing.

In addition to electronics manufacturing in the state, there is also an existing vehicle manufacturing industry. There are currently two manufacturers of electric vehicles in North Carolina: ThomasBuilt and Arrival, which both make electric buses. However, there are other vehicle manufacturers and vehicle supply chain manufacturers in the state that make conventional or natural gas vehicles, and the existence of those manufacturers increases the base of skilled workers who could easily work on electric vehicles or their components. There are two suppliers for electric vehicle and battery components in North Carolina. Saft America makes lithium-ion batteries for heavy-duty vehicles in Valdese, NC.[72] Livent is a lithium technology company in Bessemer City, NC.[73]

Another strength is the state's leadership on zero-emission vehicle goals, as well as the extensive stakeholder engagement and coordination between the state and cities on achieving clean energy and climate initiatives. The development of the state's Clean Energy Plan and Zero-Emission Vehicle Plan led to significant stakeholder engagement efforts, and many stakeholders have also been involved in Utilities Commission proceedings evaluating Duke Energy's proposed electric vehicle programs.

Table 9. Major Policies and Stakeholders in North Carolina

Category	Description	Source
State Legislation & Regulation	**Public Utility Regulation** - North Carolina exempts EV charging stations from regulation as a public utility by the NC Utilities Commission (NCUC).	N.C. Gen. Stat. § 62-3 (23)
State Executive Actions	**State Procurement Requirement -** State cabinet agencies must prioritize ZEVs in the purchase or lease of new vehicles, and must use ZEVs for agency business travel.	Executive Order 80
	General Market Adoption Goal – The Governor established a goal of having 80,000 registered ZEVs in North Carolina by 2025.	Executive Order 80
	North Carolina ZEV Plan - As directed by Executive Order 80, the North Carolina Department of Transportation issued a ZEV Plan in October 2019. The plan outlines strategies to increase EV adoption including a coordinated marketing and outreach program, development of statewide vehicle corridors, and increased installation of charging stations and infrastructure such as workplace programs and charging at interstate rest areas. The plan also includes recommendations to review adoption of a state tax credit for EV purchases or installation of charging infrastructure, create green vehicle loan programs between dealerships and credit unions, and encourage a market for used electric vehicles in North Carolina. The plan also incorporates the NC Motor Fleet ZEV Plan to increase ZEV use in the state motor fleet.	North Carolina ZEV Plan

	Clean Fuel Advanced Technology (CFAT) Grant Program – The CFAT program, administered by the NC Clean Energy Technology Center, provides grants to reduce transportation emissions in nonattainment and maintenance counties for National Ambient Air Quality Standards. Projects located adjacent to eligible areas that result in reduced emissions in the eligible area may be eligible. Specific EVSE projects are eligible in all 100 NC counties.	CFAT Website
	Volkswagen Environmental Mitigation Trust - The North Carolina Department of Environmental Quality (DEQ) is responsible for administering the state's Volkswagen Environmental Mitigation Trust funds. DEQ structured its plan in phases. Phase 1 included five programs: the school bus replacement program, the transit bus replacement program, the clean heavy-duty on-road equipment program, the clean heavy-duty off-road equipment program, and the ZEV infrastructure program. DEQ is currently seeking public input on Phase 2.	DEQ Website
Utility Actions	**Major Utilities** – North Carolina has three major investor-owned utilities, Duke Energy Carolinas (DEC), Duke Energy Progress (DEP), and Dominion Energy North Carolina. North Carolina also has a number of rural cooperatives and municipal utilities, and TVA operates in the far western end of the state.	U.S. EIA Form-861
	Duke Energy Level 2 Public Charging – In November 2020, the NCUC approved a modified version of DEC's and DEP's Electric Transportation Pilot. Through the program DEC and DEP will deploy 100 and 60 Level 2 charging stations, respectively, at key public destination locations. The utilities will collect a charging fee based on the marginal energy component of the applicable Company's currently approved Small General Service schedule, plus $0.02/kWh to cover network platform and transaction fees.	NCUC Order
	Duke Energy DCFC Public Charging – The November 2020 order from the NCUC also approved a modified version of the DCFC program the utilities proposed. The order authorized the deployment of 24 DCFC stations across approximately 12 individual locations in its DEC service territory and up to 16 stations across approximately 8 individual locations in its DEP service territory.	NCUC Order
	Duke Energy Electric School Bus Program - The November 2020 order from the NCUC also approved a modified version of the electric school bus program the utilities proposed. The electric school bus program will provide up to $215,000 per bus to school districts willing to purchase an electric school bus with bi-directional power flow capabilities. The program is capped at 15 buses for	NCUC Order

	each utility, and the customer must allow access to all vehicle charging data, and perform testing of charging load management and bi-directional charging capabilities.	
	Duke Energy Multifamily Charging Program – The November 2020 order from the NCUC also approved a modified version of the multifamily charging program. Through the program, DEC and DEP will deploy 50 and 30 charging stations, respectively, at multi-family dwellings. The utilities will collect a charging fee based on the marginal energy component of the applicable Company's currently approved Small General Service schedule, plus $0.02/kWh to cover network platform and transaction fees.	NCUC Order
	Electric Highway Coalition – Duke Energy is a member of the recently-formed Electric Highway Coalition, which is a partnership of utilities working to establish a network of DC fast charging stations along major highways.	Press Release
Recent Policy Activity	**Duke Energy Phase II ET Pilot Proposal -** Duke Energy filed an application for its Phase II ET Pilot Programs in May 2021. The Customer-Operated EV Supply Equipment Tariff Pilot is modeled after the utilities' outdoor lighting programs and will be available to individual customers for electric vehicle chargers and charging infrastructure at locations on either DEC's or DEP's distribution system. Like the lighting service, customers in this program will receive separate class treatment and unique costs to serve. For Level 2 and DC fast chargers, the customer will be billed for installations of standard equipment installed on the customer's side of the meter. The rates include equipment, maintenance, and annual software networking fees. Customers may then choose any applicable rate schedule for electricity service. The application also includes pilots for utility-operated infrastructure for EV school bus charging, DCFC charging in highway corridors, public Level 2 charging, and multifamily dwelling charging. Each program contains components that are specifically dedicated to expanding equity and access to electric transportation to low- and moderate-income customers and customers in more rural areas. The utilities have proposed two separate budget scenarios for the utility-operated programs based on filling either 10% or 25% of the anticipated 2025 gap in infrastructure need with investments of either $16.6 million each or $28.0 million each.	Application and Program Description
	North Carolina lawmakers have proposed 13 bills related to EVs in 2021 during the 2021 legislative session. While none of the bills have been enacted yet, all are still active. H.B. 296 establishes a $100 fine for vehicles parked in an EV charging station if the vehicle is not connected to the charging equipment. The bill authorizes local governments	H.B. 296

to establish higher penalties. The House passed the bill in March 2021.	H.B. 342
H.B. 342 directs the NC Building Code Council to update the Residential Code to provide that all new one- and two-family dwellings must include at least one EV–ready parking space, except where no parking spaces are provided for the dwelling unit.	H.B. 403 / S.B. 342
H.B. 403 and S.B. 342 establish that it is unlawful for any manufacturer or distributor to require, coerce, or attempt to coerce any of its franchised dealers in the state to either purchase or lease any EV charging stations at the dealer's expense unless the dealer is actually offering for sale to the public EVs manufactured or distributed by that manufacturer or distributor. The House passed H.B. 403 and the Senate passed S.B. 342 in May 2021.	H.B. 466 / S.B. 560
H.B. 466 and S.B. 560 establish a new specialty license plate for EVs.	H.B. 555 / S.B. 622
H.B. 555 and S.B. 622, the Governor's budget bills, create a Low-Income Clean Energy Program within the Department of Environmental Quality's State Energy Office. Funds may be used through equity focused program policies to implement, among other things, EV charging.	H.B. 641
H.B. 641 appropriates $250,000 in non-recurring funds for the 2021-2022 fiscal year to the Division of Parks and Recreation within the Department of Natural and Cultural Resources to provide EV charging stations at units of the State Parks System that do not already have an EV charging station.	S.B. 358
S.B 358 authorizes Commercial Property Assessed Clean Energy Financing in the state, and lists EV charging equipment as an eligible improvement.	S.B. 556
S.B. 556 establishes efficiency standards for a variety of equipment types, including EV supply equipment. The bill provides that the efficiency standard for EV supply equipment must be at least included in the scope of the ENERGY STAR Program Requirements Product Specification for EV Supply Equipment, Version 1.0 (Rev. Apr-2017)	S.B. 592
S.B. 592 establishes a $3,000 tax credit for plug-in EVs.	S.B. 670
S.B. 670 appropriates $240,000 in non-recurring funds for each year of the 2021-2023 fiscal biennium from the General Fund to the North Carolina Automobile Dealers Association Charitable Foundation as a grant-in-aid to be used by the Foundation to establish the Electric Vehicle and Zero Emission Vehicle Consumer Education and	

	Adoption Program. The program is intended to provide educational outreach to expand public awareness, understanding, and comfort with electric vehicle and other zero emission vehicle technology	

Industry Groups and Non-Profits	Green Mobility Advisory Groups in North Carolina:
	• DOE Clean Cities Organizations:
	  ● Centralina
	  ● Land of Sky
	  ● Triangle J Council of Governments
	• Plug-In NC
	• NC Sustainable Energy Association (NCSEA)
	• Southeast Energy Efficiency Association (SEEA)
	• Southern Alliance for Clean Energy
		Centralina
		Land of Sky
		Triangle J
		
		Plug-In NC
		NCSEA
		SEEA
		SACE

Private Industry	Vehicle Manufacturers: ● Thomas Built ● Arrival Power and charging equipment manufacturers: ● ABB ● Eaton ● Schneider Electric ● Brightfield Transportation Systems Battery Manufacturers and Battery Suppliers: ● Saft America ● Livent Corporation	Thomas Built Arrival ABB Eaton Schneider Electric Brightfield Saft Batteries Livent
Universities and Research Centers	NC State University ● FREEDM Systems Center ● NC Clean Energy Technology Center University of North Carolina – Charlotte ● Energy Production & Infrastructure Center (EPIC)	NCSU FREEDM Systems Center NC Clean Energy Technology Center UNCC EPIC

SOUTH CAROLINA

Key Takeaways:

- South Carolina ranks fairly low in terms of adoption of green mobility technologies in the U.S. (27th in the country in total sales of electric vehicles, plug-in hybrids, and fuel cell vehicles).
- South Carolina has a growing electric vehicle manufacturing industry and recently-approved utility electric vehicle infrastructure programs through Duke Energy.

- The Department of Energy Clean Cities organizations and statewide stakeholder groups provide stakeholder platforms for advancing alternative fuels adoption in the state

South Carolina has a relatively low adoption rate in terms of alternative fuel vehicles. The state ranks 27th of the 50 states and the District of Columbia for the number of electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles sold between 2011 and April 2021, with nearly 49,000 vehicles sold in the state.[74] South Carolina Governor Henry McMaster has not put forth specific goals for adoption of electric vehicles for the state; however state agencies continue to support the fast growing manufacturing industry that promotes electric mobility.[75]

Similar to North Carolina, the electric vehicle market in South Carolina enjoys support from different angles within the state. The legislature has committed state agencies to prioritizing electric, hybrid electric, and other alternative fuel vehicles when purchasing new vehicles. The legislature also adopted an incentive program designed to attract battery manufacturers to the state, and authorized public utilities to seek cost recovery when making investments in electric vehicle charging infrastructure. Motivated by that authorization, Duke Energy received approval from the Public Service Commission for an incentive program for residential electric vehicle charging and the deployment of utility-owned and operated DC fast charging sites.

The South Carolina legislature envisions an even larger role for electric vehicles in the future, enacting legislation in 2021 to establish a Joint Committee on the Electrification of Transportation. The Joint Committee will study the challenges and opportunities associated with the electrification of the transportation sector and make policy recommendations to the General Assembly. The bill also directs the Public Service Commission to explore transportation electrification, specifically requiring it to open a docket no earlier than April 1, 2023 for the purpose of identifying the regulatory challenges and opportunities associated with the electrification of the transportation sector.

There is already significant existing electric vehicle manufacturing in the state, including Proterra, Freightliner, and Arrival as manufacturers of electric medium and heavy-duty vehicles. BMW and Volvo have announced that they will be expanding into the state for manufacturing in the passenger vehicle market. There is one supplier for electric vehicle and battery components in South Carolina. Dreamweaver International in Greer, SC, creates flexible separator technology, which focuses on thermally safe materials.

In South Carolina, Clemson University hosts the Center for Connected Multimodal Mobility (C2M2), a Tier 1 University Transportation Center, which is to become a globally recognized multimodal mobility innovation center for moving people and goods, specializing in connectivity and data analytics. To achieve this bold vision, their multidisciplinary research team from five leading higher education and research institutions in the state of South Carolina are working together to create and develop new initiatives and inventions by combining complementary research strengths, education and workforce development activities, a commitment to diversity, and expertise in emerging communication and computing technologies.

The primary conveners of stakeholders and industry representatives in the state are the Palmetto Clean Fuels Coalition and the South Carolina Department of Insurance (DOI). The Department of Insurance manages the Volkswagen settlement funds for the state. The Palmetto Clean Fuels Coalition works with vehicle fleets, fuel providers, community leaders, and other stakeholders to save energy and promote the use of domestic fuels and advanced vehicle technologies in transportation. Together these groups work on planning initiatives for electric vehicles and other alternative fuel technologies in the state. Stakeholder engagement with the South Carolina Clean Cities organization and the South Carolina Office of Regulatory Staff (ORS) is helping communities progress toward new clean energy climate goals.

Regional supporters include the Southeast Energy Efficiency Association (SEEA) and the Southern Alliance for Clean Energy (SACE). SEEA's mission is to optimize the use and impact of energy to enhance the quality of life in the Southeast. SEEA's Energy Efficient Transportation portfolio addresses significant opportunities that energy efficient transportation presents for the Southeast. Their areas of focus include alternative fuel vehicle policy, state electric transportation initiatives and progress, utility vehicle electrification programs, and stakeholder advancement. SACE advocates for clean energy and promotes responsible and equitable energy choices to ensure clean, safe, and healthy communities throughout the Southeast.

The biggest strength for South Carolina in terms of the green mobility industry is its recent move to study transportation electrification at both the state legislature and the Public Service Commission. A number of specific issues related to transportation electrification are to be examined, including regulatory policies, rate design, grid integration, grid investment, and data management. These efforts will provide stakeholders with a formal opportunity for involvement, and it is likely that new policies and programs will be adopted based on the findings of these investigations.

Table 10. Major Policies and Stakeholders in South Carolina

Category	Description	Source
State Legislation & Regulation	**State Procurement Requirement -** Agencies must give preference to hybrid, plug-in hybrid electric, all-electric, biodiesel, hydrogen, fuel cell, or flexible fuel vehicles when the performance, quality, and anticipated life cycle costs are comparable	SC Code 1-11-310
	Public Utility Investment - A public electric utility may seek cost recovery related to load management technologies, including PEV charging, as part of a rate case filing through the South Carolina Public Service Commission.	SC Code 58-39-130(B)(4)
	Battery Manufacturing Property Tax Incentive - South Carolina allows for the taxable fair market value of manufacturing machinery and equipment purchased for use at a renewable energy manufacturing facility to be	SC Code 12-10-30 and 12-37-930

	reduced by 20% of the original cost for tax purposes. The term “renewable energy manufacturing facility” includes facilities manufacturing batteries for hybrid electric, fuel cell, or other motor vehicles certified by the South Carolina Energy Office. Qualified facilities must invest at least $100 million in the project and create at least 200 new full-time jobs with an average compensation level of 150% of the annual per capita income in South Carolina or the county where the facility is located, whichever is less.	
State Executive Actions	**Loan Program -** Loans are available to state agencies, local governments, public colleges and universities, school districts, and private non-profits for energy-efficient improvements that provide long-term cost reductions and energy savings, including the purchase of EVs. The program provides loans from $25,000 to $500,000, covering up to 100% of the project costs.	ConserFund Website
	Loan Program - Loans are available to businesses, utilities, non-profits, and government entities for energy saving measures. The program provides loans from $50,000 to $1 million, covering up to 100% of the project costs.	Energy Efficiency Revolving Loan Program Website
	Volkswagen Environmental Mitigation Trust - The South Carolina Department of Insurance (DOI) is responsible for administering the state’s Volkswagen Environmental Mitigation Trust funds.	DOI Website
Utility Actions	**Major Utilities** – South Carolina has three major investor-owned utilities, Duke Energy Carolinas (DEC), Duke Energy Progress (DEP), and Dominion Energy South Carolina. South Carolina also has a number of rural cooperatives and municipal utilities.	U.S. EIA Form-861
	Duke Energy Carolinas Plug & Play Incentive – Duke Energy Carolinas provides an incentive of $500 for residential customers to purchase a Level 2 charger for their home. Customers will receive an additional $13.87 per month for every month they comply with the program’s charging schedule.	Park & Plug
	Duke Energy Public DCFC Charging Program – In September 2020, the South Carolina Public Service Commission approved an amended application from Duke Energy for a public DCFC program in which DEC and DEP will own and operate and 40 and 20 charging stations respectively.	DEC Order DEP Order
	Electric Highway Coalition – Duke Energy is a member of the recently formed Electric Highway Coalition, which is a partnership of utilities working to establish a network of DC fast charging stations along major highways.	Press Release

Recent Policy Activity	S.B. 304 provides that a person or corporation that sells electricity exclusively for the charging of plug-in EVs from an immobile charging station is not deemed an electric utility. The Senate passed the bill in March 2021. The House amended the bill by adding provisions to establish a Joint Committee on the Electrification of Transportation. The Joint Committee will study the challenges and opportunities associated with the electrification of the transportation sector and make recommendations to the General Assembly to enable a fair, efficient, and cost-effective transition to electric transportation. It also directs the Public Service Commission to open a docket no earlier than April 1, 2023 for the purpose of identifying the regulatory challenges and opportunities associated with the electrification of the transportation sector. At a minimum, the commission will study the following issues: (1) grid integration and resource planning to facilitate electrified transportation; (2) the interaction between transportation electrification and the electric power grid; (3) regulatory policies to support efficient and cost-effective transition to electric transportation; (4) the need for data management and coordination among a number of energy system participants; (5) grid investments that support EV deployments as a part of planned modernization efforts to enable an efficient and cost-effective transition to electric transportation; (6) increased EV adoption and the development of their charging infrastructure and how those advancements align with grid modernization efforts; (7) whether rate designs and other load management strategies are appropriate to mitigate potential negative grid impacts and maximize potential grid benefits of transportation electrification; (8) other critical issues related to transportation electrification, such as service reliability, privacy, affordability, and security. Upon completion of the proceeding, the commission is to issue a report to the Joint Committee on the Electrification of Transportation. The commission must then open a new docket at least every three years thereafter to study the regulatory issues related to the electrification of the transportation sector and report back to the Joint Committee on the Electrification of Transportation and the General Assembly. The bill further directs the South Carolina Office of Regulatory Staff to complete a stakeholder process to facilitate a broad, collaborative statewide discussion among stakeholders to explore the opportunities to advance electrification of the transportation sector. The Office of Regulatory Staff must also identify any challenges associated with the advancement of electrification of the transportation sector. The Office of Regulatory Staff must make initial recommendations to the Joint Committee on the Electrification of Transportation no earlier than July 1, 2022. The Office of Regulatory staff	S.B. 304

	must convene additional stakeholder initiatives and report recommendations to the Joint Committee at least every two years thereafter. The House passed the amended bill in May 2021 and the Senate concurred with the amendments. The Governor signed the bill in May 2021.	
Industry Groups and Non-Profits	• Palmetto Clean Cities • Southeast Energy Efficiency Association (SEEA) • Southern Alliance for Clean Energy.	Palmetto Clean Fuels SEEA SACE
Private Industry	EV Manufacturers in South Carolina: • Proterra • Freightliner • BMW • Volvo Battery Manufacturers and Battery Suppliers: • Dreamweaver International	Proterra Freightliner BMW Volvo Dreamweaver International
Universities and Research Centers	Clemson University • Center for Connected Multimodal Mobility	Center for Connected Multimodal Mobility

TENNESSEE

Key Takeaways:

- Tennessee is the largest producer of electric vehicles in the Southeast.
- Tennessee is covered almost entirely by the Tennessee Valley Authority, a federally-owned electricity provider, which establishes its own policies and programs for electric vehicles.
- The Tennessee Department of Environment and Conservation works closely with the Tennessee Valley Authority on electric vehicle infrastructure planning and initiatives.

Tennessee ranks 25th in terms of sales of electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles out of 50 states and the District of Columbia.[76]

While Tennessee's Governor Bill Lee has not announced any formal goals for adoption of electric vehicles, he has indicated his support for electric vehicles through supporting the funding of electric vehicle charging corridors in the state in coordination with the Tennessee Valley Authority (TVA).[77] Tennessee is almost entirely covered by TVA, a federally owned electric provider that serves numerous local distribution utilities in the Tennessee and neighboring southeast states. TVA is governed by federal statues, with a Board of Directors otherwise regulating its activities and policies. TVA has worked closely with the Tennessee

Department of Environment and Conservation on a number of electric vehicle initiatives, including the state's electric vehicle roadmap and infrastructure opportunity map. TVA's Board of Directors has allowed the resale of electricity for vehicle charging and also approved a new wholesale rate structure for high-power charging.

There are multiple auto companies making battery electric vehicles in Tennessee; the state has the largest electric vehicle manufacturing base in the Southeast. Volkswagen has a plant in Chattanooga that also tests their batteries.[78] General Motors has a plant in Spring Hill, TN, and it is partnering with LG to build a battery manufacturing plant there under the joint venture Ultium Cells LLC.[79] Nissan has a production plant in Smyrna and Nissan's subsidiary Envision AESC produces batteries for Nissan in Smyrna. Microvast Power Solutions makes battery power systems for electric vehicles in Clarksville, while Denso Manufacturing Tennessee, Inc. makes components for electric vehicles in Maryville. Gestamp makes components for electric vehicles in Chattanooga.[80] NOVONIX makes materials for batteries in Chattanooga.[81] Local Motors has a microfactory in Knoxville, where the company makes 3D-printed autonomous electric shuttle buses.[82]

There is some biofuels and hydrogen industry presence in Tennessee as well. Green Energy Biofuels makes biodiesel in the state.[83] Eco-Energy LLC is an ethanol supply chain company based out of Franklin, TN.[84] For hydrogen, Plug Power has a hydrogen plant in Tennessee, which produces hydrogen for fuel cells in a plant in Charleston, TN.[85] One Scientific is a small company based out of Johnson City, TN that developed an alternative to electrolysis for producing hydrogen on-site.[86]

Installers and ongoing support companies that are active in Tennessee include Kimley Horn (which installs electric vehicle chargers), Chargepoint (which sells chargers and provides support services), and Seven States Power Corporation (which is partnering with many local power companies across Tennessee to install EVSE).[87]

There are two Clean Cities coalitions in Tennessee: East Tennessee Clean Fuels and Middle-West Tennessee Clean Fuels Coalition, who coordinate as Tennessee Clean Fuels.[88] Both of these groups convene stakeholders and are a good introduction to the green mobility industry in the state. Other groups that are involved in this arena include the Tennessee Advanced Energy Business Council (which is working to foster innovation in the state and is involved with incubators), Launch Tennessee (which has an automotive and mobility mentor network), and Drive Electric Tennessee (which is working to advance transportation electrification in the state).[89]

In terms of research centers in the state, one of the largest and most influential is Oak Ridge National Laboratory (ORNL), which is managed by the U.S. Department of Energy. Among the facilities at ORNL is the National Transportation Research Center, where researchers are examining many different aspects of sustainable transportation.[90] The University of Tennessee Chattanooga has the Center for Energy, Transportation, and the Environment, which engages in

research into advanced technology vehicles, including electric vehicles and hydrogen vehicles.[91]

The biggest opportunities in Tennessee are related to its robust and growing electric vehicle manufacturing industry and the related industries that support that. Given its prominence in the electric vehicle manufacturing industry, it is well situated to take advantage of future growth in the industry. Tennessee also has a strong network of stakeholders working together to advance electric vehicle charging infrastructure development. The relative weakness of Tennessee is the lack of more formal stakeholder engagement opportunities and regulatory oversight, due to coverage by TVA. As TVA is a federal entity, the state legislature and Public Utility Commission do not have authority over TVA, and local electric distribution companies are subject to TVA's rules and policies.

Table 11. Major Policies and Stakeholders in Tennessee

Category	Description	Source
State Legislation & Regulation	**Electric Vehicle Registration Fee** - Tennessee has an annual registration fee of $100 for plug-in EVs.	Tennessee Code § 55-4-116
State Executive Actions	**Volkswagen Environmental Mitigation Trust** - The Tennessee Department of Environment and Conservation is responsible for administering the state's Volkswagen Environmental Mitigation Trust funds.	TDEC Website
	EV Charging Infrastructure Opportunity Map – The Tennessee Department of Environment and Conservation developed EV charging infrastructure opportunity maps to identify the key primary and secondary corridors for charging station deployment.	TDEC Website
	Tennessee Electric Vehicle Roadmap - In January 2019, a broad group of stakeholders, including the Department of Environment and Conservation and the Department of Transportation, released an EV roadmap for Tennessee.	A Roadmap for Electric Vehicles in Tennessee
Utility Actions	**Major Utilities** – Tennessee is covered by the Tennessee Valley Authority, a federally owned electric provider in the southeastern U.S. TVA provides electricity to 153 local power providers.	TVA Website
	Electric Highway Coalition – The Tennessee Valley Authority is a member of the recently formed Electric Highway Coalition, which is a partnership of utilities working to establish a network of DC fast charging stations along major highways.	Press Release
	Tennessee EV Fast Charging Network – The Tennessee Department of Environment and Conservation,	TDEC Website

	in partnership with the Tennessee Valley Authority, is developing a statewide EV fast charging network.	
	TVA EV Charging Rate - At the Tennessee Valley Authority's (TVA) November 2020 board meeting, the Board of Directors approved a motion to create EV charging wholesale and retail rate classifications, create a wholesale EV high-power charging rate, and authorize TVA staff to take further actions to implement EV policy and pricing.	November 2020 Meeting Presentation
	TVA Public Utility Regulation - At the Tennessee Valley Authority's November 2020 board meeting, the Board of Directors approved a motion to allow the conditional resale of electricity for transportation.	November 2020 Meeting Presentation
Recent Policy Activity	S.B. 912, enacted in May 2021, appropriates $2.24 million for the deployment of EV charging stations across the state.	S.B. 912
Industry Groups and Non-Profits	Tennessee Clean Fuels	Tennessee Clean Fuels
	Tennessee Advanced Energy Business Council	TAEBC
	Launch Tennessee	Launch Tennessee
	Drive Electric Tennessee	Drive Electric Tennessee
Private Industry	EV Manufacturing: • General Motors • Volkswagen • Nissan • Local Motors	GM VW Nissan Local Motors
	Battery Manufacturers and Battery Supply Chain: • Ultium Cells LLC • Envision AESC • Microvast Power Solutions • NOVONIX	Ultium Cells LLC Envision AESC Microvast Power Solutions NOVONIX
	EV Manufacturing Supply Chain: • Denso • Gestamp	Denso Gestamp
Universities and Research Centers	Oak Ridge National Laboratory	ORNL
	University of Tennessee Chattanooga- Center for Energy, Transportation, and the Environment	CETE

CONCLUSION

As the focus on green mobility, including electric and alternative fuel vehicles, grows nationwide, it is expected that green mobility investment opportunities will also increase in the U.S. Southeast specifically. However, the outlook for these opportunities varies significantly by state and technology. Georgia, North Carolina, South Carolina, and Tennessee present some of the greatest manufacturing opportunities for electric vehicle, battery, and charging infrastructure manufacturing, while Florida is a leader in electric vehicle technology deployment and biofuel production. For other alternative fuels, such as synthetic fuels and hydrogen, Louisiana presents significant opportunities due to its existing manufacturing infrastructure.

State policies and utility efforts will also play a large role in determining the comparative green mobility market opportunities in the Southeast states. Legal and regulatory barriers can affect the pace and location of technology deployment, while clear policy goals can provide market certainty and accelerate deployment. Electric utilities are also taking a leadership role in advancing transportation electrification in several Southeast states through direct infrastructure deployment, incentive programs, and special rate offerings. As the market share of electric vehicles increases, an issue likely to be addressed in many Southeast states is the potential grid impacts of vehicle charging and ways to manage charging, either actively or passively, to avoid the need for additional generation capacity or grid investments.

One of the strongest areas of opportunity for Southeast states is electric vehicle charging infrastructure deployment. Florida, Georgia, North Carolina, and South Carolina are leaders in this area, with Tennessee also showing strength in fast charger deployment specifically. Florida and North Carolina are current leaders in electric vehicle deployment, with Florida's numerous utility programs and North Carolina's state goal. Synthetic fuel vehicles also show potential in the Southeast, with Florida and North Carolina also showing leadership in this area.

Overall, several of the Southeast states present significant opportunities in different elements of green mobility. The region's existing manufacturing infrastructure, combined with federal, state, and utility policies and plans to expand green mobility, offer an opportunity to capitalize on the growing electric and alternative fuel vehicle markets.

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