Measures of Electric Vehicle Charging Infrastructure Across the Southeast: Recent Growth and State Trends

Nicholas Sommer and Trey M. Gowdy

Authors and Affiliations

Nicholas Sommer, Duke University
Trey M. Gowdy, Nicholas Institute for Energy, Environment & Sustainability, Duke University

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CONTENTS

Overview

Electric vehicle (EV) market share is increasing and substantial public and private investment in EV charging infrastructure is rising to meet demand across the nation (AFDC 2024c, EIA 2024, Southern Alliance for Clean Energy 2024). This report examines recent developments across a dozen states in the Southeast, expanding on annual EV infrastructure analysis for six states (Southern Alliance for Clean Energy 2023) and a national recap of the EV charging landscape and needs by 2030 (Wood et al. 2023).

EV charging infrastructure, also known as *electric vehicle supply equipment*, includes both public charging stations and the individual charging ports that provide energy to vehicles. This report focuses on EV charging ports as a primary indicator because they offer a more precise tally of available charging services, as compared to other indicators, such as charging stations, that may feature one or more charging ports.

In particular, this brief will answer:

- What are the recent changes in overall Level 2 and direct current fast charging (DCFC) port counts across Southeastern states?
  - Are there substantial differences in the growth of EV ports between states during the last year (2023)?
- How has EV charging infrastructure per capita changed in the last five years across the region?
  - Are there substantial differences in the number of EV ports per capita in the last five years?

To date, the private-sector buildout of EV charging infrastructure has developed from investments by charging companies, automakers, and utilities. Meanwhile, public-sector support plus implementation of Volkswagen Clean Air Act Civil Settlement funding (DOE 2017) has led to the installation of additional charging locations through state and local government programs. With investment from both sectors, public EV charging infrastructure now includes charging stations in public spaces such as government buildings, schools, and public parking, alongside private workplaces, hotels, shopping centers, and more.

Currently, Level 2 charging ports can charge an electric vehicle from empty to full charge in about 4 to 10 hours, while DC fast chargers can do so in about 20 minutes to 1 hour. Level 2 stations can be located at residences, workplaces, public places, and businesses, whereas DCFC stations are typically found only in public places and businesses (USDOT 2023b). Further federal investment is expected to extend this growth (USDOT 2023a, Joint Office 2024).

Each type of public charging infrastructure serves different use cases, optimizing for electricity capacity and equipment cost. Level 2 charging primarily serves as a place to charge a vehicle that will be parked for a period of multiple hours (e.g., overnight at a hotel or at a

workplace), whereas DCFC ports are useful for quick charges, such as during long-distance road trips (e.g., a location near an interstate exit). Each type complements the other in the overall public charging landscape. In general, by 2030, there is an expected need for 5.8 times more public Level 2 charging ports than public DCFC ports nationally, in addition to substantial amounts of private charging at home and elsewhere (Wood et al. 2023). Note that this report does not cover private charging infrastructure, such as individual homes, but does include multifamily apartment dwellings where data is publicly available. Here we explore measures and recent trends of public charging infrastructure across 12 Southeastern states to better understand how charging infrastructure has developed to date across the region.

METHODOLOGY

This analysis uses data on electric vehicle charging ports from the Alternative Fuels Data Center (AFDC 2024a). We downloaded data on installed public charging ports from the last five years (2018–2023). These data were filtered to include active ports in 12 Southeastern states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

To illustrate the year-to-year change in Level 2 and DCFC ports between 2022–2023, data from December 31 of each year were isolated and the yearly installation totals determined for each state.

To illustrate the number of Level 2 and DCFC ports per 100,000 residents in each state and the United States generally, data from 2018–2023 were combined with annual statewide and national population estimates from the US Census Bureau (2021, 2023).

YEAR-OVER-YEAR CHANGE (2022–2023)

General Insights

Our analysis finds that the rate of DCFC port growth is substantially greater than that of Level 2 charging port installations in the region; however, there are more Level 2 charging ports overall. The ranking of states by total charging ports for both Level 2 and DC fast chargers generally correlates with state population (see the Appendix for state population totals).

Level 2 Charging Ports

States in the Southeast saw growth of Level 2 charging ports ranging from 10% (West Virginia) to 43% (Louisiana) (Figure 1). We summarize the following key observations:

- The average growth rate across the region from 2023 was 28%.

- The total number of ports across the region increased by 26%—from 18,235 to 23,033 ports year-over-year.

- Florida continued to lead in total port counts, with more than 7,200.

- Georgia's rate of growth in 2023 (18%) was the second-lowest in the region, but it installed the second most ports overall.

Figure 1. Level 2 charging ports installed in the Southeast: 2022–2023 change
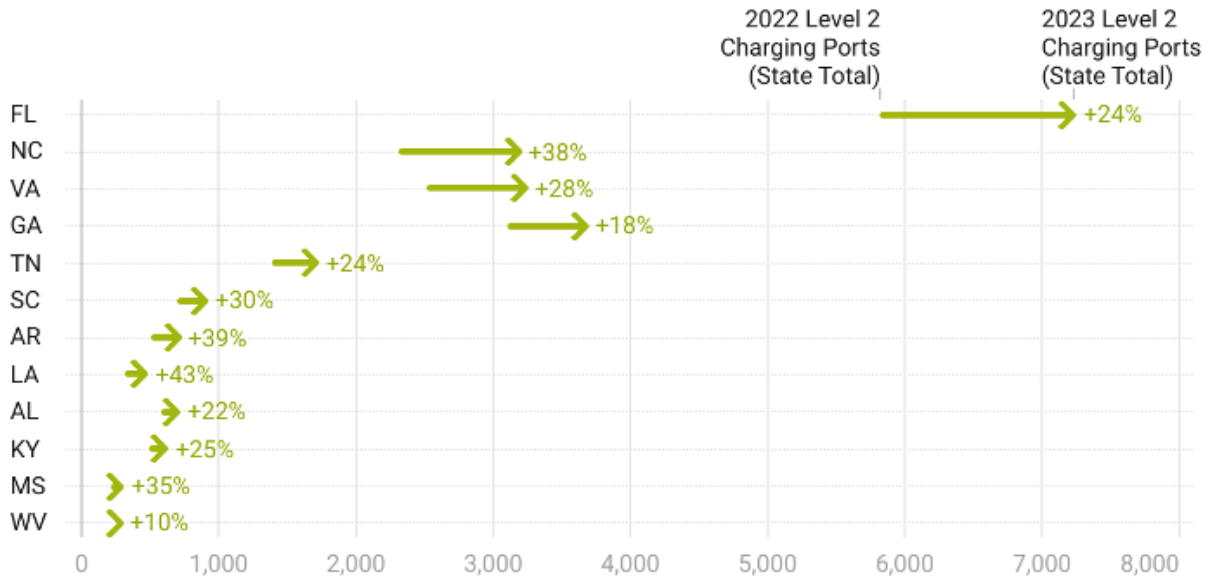
Year-over-year change of Level 2 charging ports across 12 Southeastern states between 2022 and 2023. *Source*: AFDC (2024a). Created with Datawrapper.

- Port totals roughly correspond to state population.
  - The relatively lower totals of Level 2 ports in six of the seven lowest states (South Carolina, Louisiana, Alabama, Kentucky, Mississippi, and West Virginia) correlate with those states having the lowest populations (see Appendix for regional population totals and ranking).
  - Florida, Georgia, North Carolina, and Virginia's relatively higher number of total ports correlates with their higher populations.

DCFC Ports

Between 2022 and 2023, states in the Southeast saw growth of DCFC ports ranging from 25% (Virginia) to 87% (Kentucky) (Figure 2). We summarize the following key observations:

- The average growth rate across the region from 2023 was 52%.
- The total number of ports across the region increased 41%—from 5,268 to 7,429 ports year-over-year.
- Like Level 2 ports, Florida leads total DCFC ports in the region with more than 2,100.
- Four states (Tennessee, Kentucky, South Carolina, and Louisiana) saw year-to-year increases greater than 70% in 2023.

Figure 2. DCFC ports installed in the Southeast: 2022–2023 change
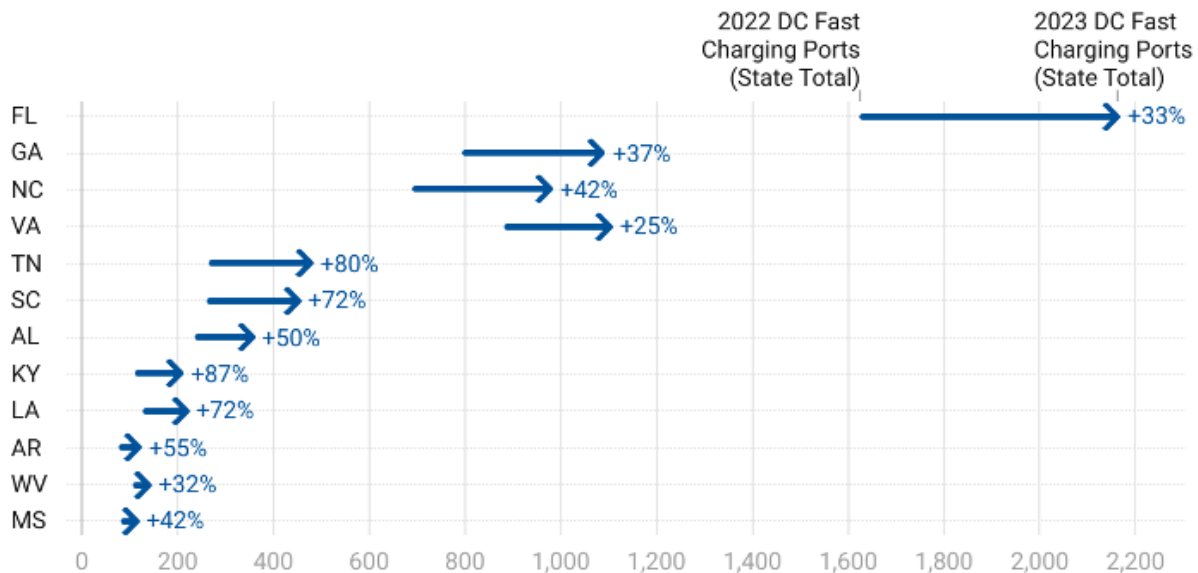
Year-over-year change of DCFC ports across 12 Southeastern states between 2022 and 2023.

Source: AFDC (2024a). Created with Datawrapper.

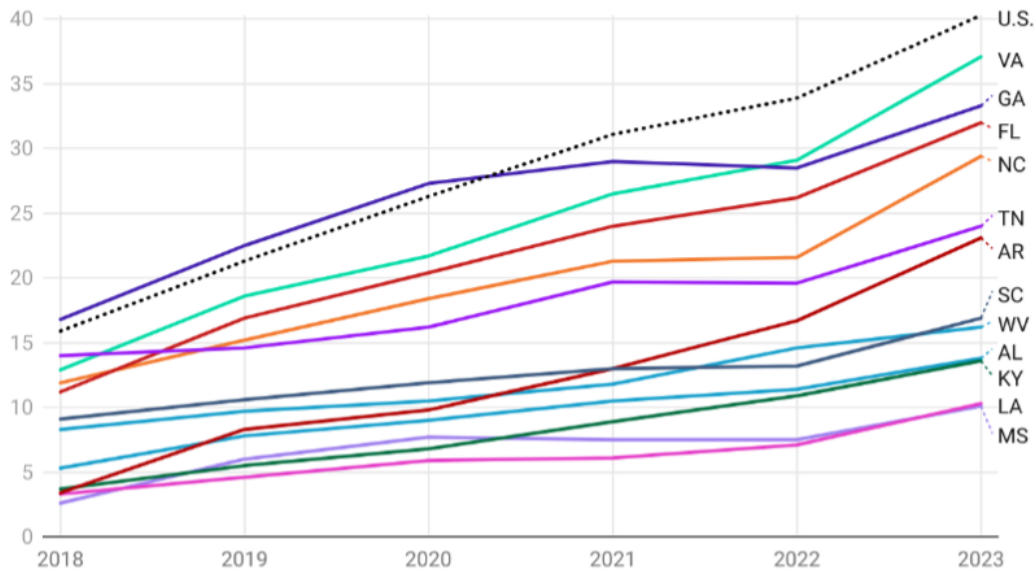## CHARGING PORTS PER CAPITA (2018–2023)

General Insights

With state populations varying significantly across the region, we looked at EV infrastructure per 100,000 residents (Figures 3 and 4). This analysis shows that, for Level 2 ports (Figure 3), all Southeastern states are below the per capita national average (per capita defined as ports per 100,000 residents). For DCFC ports, all states but Virginia lie below the per capita national average. Of note, the growth trend in Level 2 ports in Southeastern states between 2018–2023 has remained largely linear (with a common inflection point in 2022) while the trend in DCFC ports has been more exponential.

Level 2 Charging Ports per Capita

As shown in Figures 3 and 4, aside from Georgia, Southeastern states have generally been below the national average for Level 2 ports per 100,000 residents since 2018. On average, this lag ranges from 1.2 to 22.1 ports below the national average.

For context, Vermont had the highest number of Level 2 charging ports installed per capita with 159.2 ports per 100,000 residents across all US states, as of 2023 (see the Appendix for all US state rankings).

Figure 3. Level 2 charging ports per 100,000 residents in the Southeast, 2018–2023

Five years of changes in Level 2 charging ports per 100,000 residents across 12 Southeastern states (2018–2023). Interactive chart: https://datawrapper.dwcdn.net/mYUL1.

Source: AFDC (2024a). Created with Datawrapper.

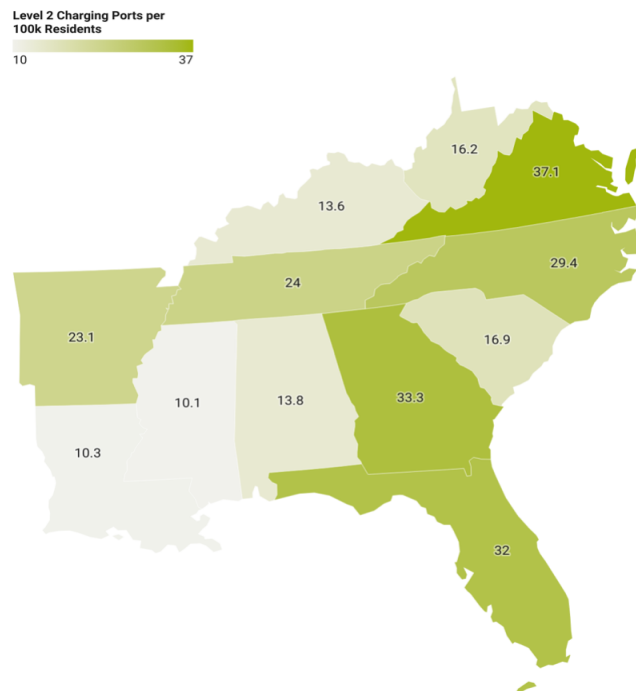## Figure 4. Level 2 charging ports per 100,000 residents in the Southeast

Number of Level 2 charging ports per 100,000 residents across 12 Southeastern states through 2023. The US average is 40.3 Level 2 charging ports per 100,000 residents. Interactive map: https://datawrapper.dwcdn.net/nL6Ta.

Source: AFDC (2024a). Created with Datawrapper.

We summarize the following key observations:

- The regional average in the Southeast for Level 2 ports per 100,000 residents is 14.8 as of 2023.

- In 2022, Virginia surpassed Georgia with the highest number of Level 2 charging ports per capita in the region.

- In general, Level 2 ports per 100,000 residents in each state have increased linearly year-to-year. For most states, 2022 represents the greatest deviation in this trend, which is followed by accelerated growth in 2023.

- Of the 12 Southeastern states analyzed, Virginia, Georgia, Florida, North Carolina, and Tennessee have consistently shown significantly higher per capita charging port rates per 100,000 residents than the other states.

- By contrast, Arkansas's recent growth of Level 2 chargers has led it to outperform other states with lower populations.

- Southeast states rank in the following order nationally across all states plus the District of Columbia for Level 2 charging ports per capita: Virginia (No. 16), Georgia (No. 19), Florida (No. 21), North Carolina (No. 24), Tennessee (No. 30), Arkansas (No. 32), South Carolina (No. 39), West Virginia (No. 41), Alabama (No. 46), Kentucky (No. 47), Louisiana (50), and Mississippi (No. 51). (See Table A1 for all US state rankings.)

See Appendix (Table A1) for full national per capita totals for Level 2 charging ports and additional context as to how the region fares comparatively.
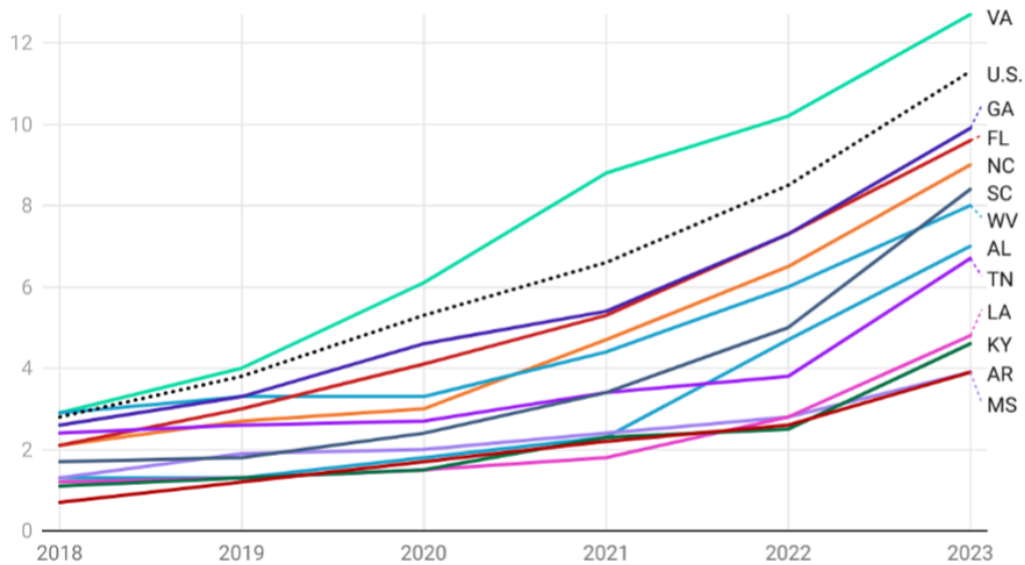
DCFC Ports per Capita

As shown in Figures 5 and 6, among Southeastern states, only Virginia exceeds the national average for DCFC ports per 100,000 residents. Since 2020, the average lag of Southeastern states (excluding Virginia) ranges from 1.1 to 5.5 ports below the national average.

For context, California has the most DCFC ports installed per capita across all US states, with 27.1 ports per 100,000 residents (see the Appendix for all US state rankings).

We summarize the following key observations:

- Since the uptick in DCFC port installations in 2020, the regional average for ports per 100,000 is 4.8 as of 2023.

- In general, DCFC installations per 100,000 have increased exponentially from 2018–2023 with 2020 and 2022 serving as major inflection points for many states.

- Of the top six states with the largest total populations, five hold the top slots for DCFC port installations per 100,000 residents.

- Although West Virginia has the lowest total population in the region, it consistently ranks in the top six states for DCFC ports installed per 100,000 residents.

- Southeast states rank in the following order nationally across all states plus the District of Columbia for DCFC ports per capita: Virginia (No. 14), Georgia (No. 21), Florida (No. 24), North Carolina (No. 26), South Carolina (No. 27), West Virginia (No. 29), Alabama (No. 41), Tennessee (No. 44), Louisiana (No. 46), Kentucky (No. 49), Arkansas (No. 50), and Mississippi (No. 51) (See Table A2 for all US state rankings.)

Figure 5. DCFC ports per 100,000 residents in the Southeast, 2018–2023

Five years of changes among DCFC ports per 100,000 residents across 12 Southeastern states (2018–2023). Interactive chart: https://datawrapper.dwcdn.net/0Ejve.
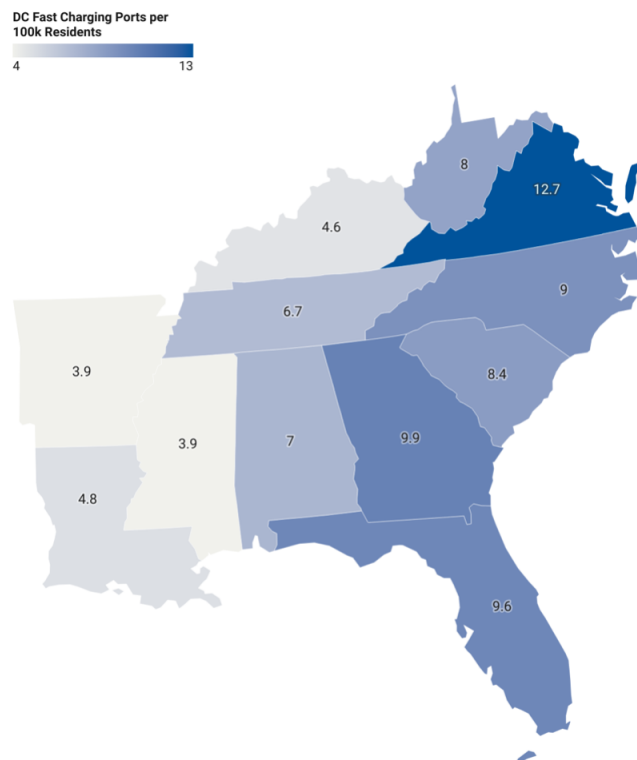
Source: AFDC (2024a). Created with Datawrapper.

Figure 6. DCFC ports per 100,000 residents in the Southeast

Number of DCFC ports per 100,000 residents across 12 Southeastern states through 2023. The US average is 11.3 DCFC ports per 100,000 residents. Interactive map: https://_/2XwZh/.

Source: AFDC (2024a). Created with Datawrapper.

See the Appendix (Table A2) for full national per capita totals for DCFC ports for additional context on how the region fares comparatively.

CONCLUSION

Our analysis reveals that the number of EV charging ports in the Southeast continues to grow rapidly; however, the at-large public EV charging port access in the region remains behind the national average. To summarize our findings, we provide answers to key questions in Table 1 and identify areas of interest for further analysis.

Table 1. Research Questions and Findings

Question	Findings	Takeaway(s)
What are the changes in Level 2 and DCFC port counts across Southeastern states?	• Since 2018, the five-year increase in Level 2 charging ports was 162% (8,791 to 23,033). • During the same time, DCFC ports increased by 334% (1,709 to 7,429).	EV charging infrastructure has grown substantially across both charging types and in all states in the region
Are there substantial differences in the growth of EV ports between states from 2023?	• Yes. From 2022 to 2023, the average statewide growth rate for Level 2 charging ports in Southeastern states was 28%. • During the same time, the average statewide growth rate for DCFC ports was 52%.	The rate of DCFC growth is currently outpacing Level 2 growth, with Level 2 having more ports installed overall.
How has EV charging infrastructure per capita changed in the last five years across the region?	• There has been substantial growth in the number of EV charging ports per capita in the last five years. • Across Southeastern states, there is substantial variation between state EV charging infrastructure per capita, for both port types. • Across states, at-large, public EV charging port access in the Southeast falls behind the national average.	Although there has been substantial growth in EV charging infrastructure since 2018, the state-to-state variation and below-national-average levels of per capita charging infrastructure highlights the need for more progress to ensure equitable access to public charging across states.
Are there substantial differences in the number of EV ports per capita in Southeastern states in the last five years?	• Yes. The 2.6–16.8 range of Level 2 charging ports per 100,000 in 2018 has increased to 10.1–37.1 in 2023. • During the same time, the range of DCFC ports increased from 0.7–2.9 in 2018 to 3.9–12.7 in 2023.	Although the range spread for per capita charging ports in the region has widened, the percentage gaps between upper and lower bounds for both charging types have narrowed.

With the dynamic growth of EV charging infrastructure, it will be important to reexamine the indicators in this report over time to assess how the Southeast compares nationally to other regions and if progress is continuing.

Beyond population, a key consideration for DCFC infrastructure is the amount of long-distance or interstate travel that likely plays a role in the quantity of fast charging infrastructure in a given state. Future research could analyze this metric by incorporating road volume statistics in addition to population. Additional studies could evaluate infrastructure in conjunction with other per capita metrics such as charging ports per registered EV in a state/location.

Finally, as new EV infrastructure develops, it is worth noting how federal and private funding are expected to play a major role in future buildout. As noted in a National Renewable Energy Laboratory analysis, "Existing [public and private] announcements put the United States on a path to meet 2030 investment needs" of fulfilling a mid-adoption scenario of 33 million light-duty plug-in EVs on the road by 2030 (Wood et al. 2023).

The federal initiatives leading this effort includes significant funding from the Infrastructure Investment and Jobs Act, which supports programs such as the National Electric Vehicle Infrastructure Program, the Charging and Fueling Infrastructure Discretionary Grant Program, and the Communities Taking Charge Accelerator (USDOT 2023a, Joint Office 2024). Currently, the US Department of Energy's Alternative Fuels Data Center provides a state-by-state inventory of active public incentives and laws related to EV programs and charging port installations in the United States (AFDC 2024b).

In coming years, additional private-sector investment from automakers will also further EV charging infrastructure buildout (PR Newswire 2023). With numerous public and private investments underway and forthcoming, these listed are just a small number of illustrative examples. As investment continues, it will be important to monitor the kinds of facilities where new charging stations are located and how trends in the Southeast compare to those nationally.

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APPENDIX

Figure A1. Southeast states ranked by total population, 2023
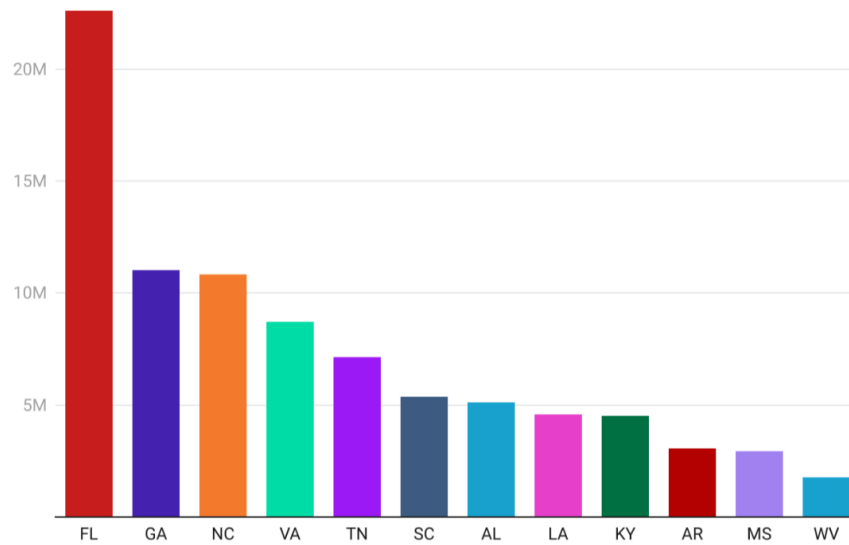
State population totals across 12 Southeastern states through 2023. Interactive chart: https://datawrapper.dwcdn.net/6NlU4.

Source: US Census Bureau (2021). Created with Datawrapper.

Table A1. All States (and District of Columbia) per Capita Rankings—Level 2 Ports

Rank	State	2023 Population	Total Level 2 Ports	Level 2 Ports per 100,000
1	District of Columbia	678,972	1,081	159.2
2	Vermont	647,464	838	129.4
3	California	38,965,193	38,217	98.1
4	Massachusetts	7,001,399	6,300	90.0
5	Colorado	5,877,610	4,414	75.1
6	Maryland	6,180,253	4,054	65.6
7	Maine	1,395,722	840	60.2
8	Rhode Island	1,095,962	644	58.8
9	Washington	7,812,880	4,578	58.6
10	Connecticut	3,617,176	2,065	57.1
11	Oregon	4,233,358	2,326	54.9

Rank	State	2023 Population	Total Level 2 Ports	Level 2 Ports per 100,000
12	Utah	3,417,734	1,838	53.8
13	Hawaii	1,435,138	766	53.4
14	New York	19,571,216	9,717	49.6
15	Nevada	3,194,176	1,348	42.2
16	Virginia	8,715,698	3,235	37.1
17	Missouri	6,196,156	2,248	36.3
18	Arizona	7,431,344	2,478	33.3
19	Georgia	11,029,227	3,675	33.3
20	Kansas	2,940,546	960	32.6
21	Florida	22,610,726	7,235	32.0
22	Delaware	1,031,890	321	31.1
23	New Hampshire	1,402,054	415	29.6
24	North Carolina	10,835,491	3,188	29.4
25	New Jersey	9,290,841	2,704	29.1
26	Michigan	10,037,261	2,629	26.2
27	Minnesota	5,737,915	1,484	25.9
28	Pennsylvania	12,961,683	3,245	25.0
29	Ohio	11,785,935	2,864	24.3
30	Tennessee	7,126,489	1,712	24.0
31	Wyoming	584,057	140	24.0
32	Arkansas	3,067,732	709	23.1
33	New Mexico	2,114,371	441	20.9
34	Texas	30,503,301	6,297	20.6
35	Nebraska	1,978,379	400	20.2
36	Illinois	12,549,689	2,489	19.8
37	Idaho	1,964,726	371	18.9
38	Iowa	3,207,004	544	17.0
39	South Carolina	5,373,555	906	16.9
40	Wisconsin	5,910,955	977	16.5
41	West Virginia	1,770,071	286	16.2
42	Montana	1,132,812	180	15.9
43	North Dakota	783,926	121	15.4

Rank	State	2023 Population	Total Level 2 Ports	Level 2 Ports per 100,000
44	Indiana	6,862,199	1,017	14.8
45	South Dakota	919,318	127	13.8
46	Alabama	5,108,468	704	13.8
47	Kentucky	4,526,154	617	13.6
48	Oklahoma	4,053,824	514	12.7
49	Alaska	733,406	87	11.9
50	Louisiana	4,573,749	469	10.3
51	Mississippi	2,939,690	297	10.1

Table A1 shows population totals, Level 2 charging port counts, and ports per 100,000 residents for all 50 states plus the District of Columbia, with Southeastern states highlighted.

Table A2. All States (and District of Columbia) Per Capita Rankings—DCFC Ports

Rank	State	2023 Population	Total DCFC Ports	DCFC Ports per 100,000
1	California	38,965,193	10,548	27.1
2	Oklahoma	4,053,824	843	20.8
3	Nevada	3,194,176	624	19.5
4	Delaware	1,031,890	197	19.1
5	Oregon	4,233,358	790	18.7
6	Wyoming	584,057	108	18.5
7	Vermont	647,464	119	18.4
8	Maine	1,395,722	222	15.9
9	Colorado	5,877,610	928	15.8
10	Maryland	6,180,253	929	15.0
11	Montana	1,132,812	164	14.5
12	Washington	7,812,880	1,074	13.7
13	Arizona	7,431,344	1,019	13.7
14	Virginia	8,715,698	1,104	12.7
15	New Hampshire	1,402,054	177	12.6
16	New Mexico	2,114,371	244	11.5

Rank	State	2023 Population	Total DCFC Ports	DCFC Ports per 100,000
17	Connecticut	3,617,176	417	11.5
18	North Dakota	783,926	88	11.2
19	South Dakota	919,318	103	11.2
20	New Jersey	9,290,841	1,003	10.8
21	Georgia	11,029,227	1,089	9.9
22	Utah	3,417,734	332	9.7
23	Iowa	3,207,004	307	9.6
24	Florida	22,610,726	2,164	9.6
25	Massachusetts	7,001,399	666	9.5
26	North Carolina	10,835,491	979	9.0
27	South Carolina	5,373,555	453	8.4
28	Rhode Island	1,095,962	91	8.3
29	West Virginia	1,770,071	141	8.0
30	Nebraska	1,978,379	153	7.7
31	Illinois	12,549,689	970	7.7
32	Pennsylvania	12,961,683	997	7.7
33	Minnesota	5,737,915	438	7.6
34	Kansas	2,940,546	222	7.5
35	District of Columbia	678,972	51	7.5
36	Indiana	6,862,199	508	7.4
37	Texas	30,503,301	2,257	7.4
38	Missouri	6,196,156	440	7.1
39	Wisconsin	5,910,955	414	7.0
40	Michigan	10,037,261	703	7.0
41	Alabama	5,108,468	357	7.0
42	New York	19,571,216	1,359	6.9
43	Idaho	1,964,726	136	6.9
44	Tennessee	7,126,489	479	6.7
45	Ohio	11,785,935	748	6.3
46	Louisiana	4,573,749	219	4.8
47	Hawaii	1,435,138	68	4.7
48	Alaska	733,406	34	4.6

Rank	State	2023 Population	Total DCFC Ports	DCFC Ports per 100,000
49	Kentucky	4,526,154	208	4.6
50	Arkansas	3,067,732	121	3.9
51	Mississippi	2,939,690	115	3.9

Population totals, DCFC port counts, and ports per 100,000 residents for all 50 states plus the District of Columbia, with Southeastern states highlighted.