THIRD WAY

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Bipartisan Infrastructure Law Will Jumpstart EV Charger Buildout

Alexander Laska
Senior Policy Advisor for Transportation, Climate and Energy Program
@ThirdWayEnergy

Ellen Hughes-Cromwick
Senior Resident Fellow for Climate and Energy Program
@EllenHughesCrom

Key Takeaways

The Infrastructure Investment and Jobs Act (IIJA) includes $5 billion in formula funds to help every state build out a network of EV chargers, focused on installing DC fast chargers (DCFC) along highway corridors. Third Way's new map shows how many DCFC each state could install with these funds and how many jobs this buildout will create. In total, this EV charging program could build over 34,000 new DCFC and create nearly 16,000 jobs annually across the country.

In implementing this and the IIJA's $2.5 billion competitive grant program for EV charging and other alternative refueling infrastructure, the Biden-Harris Administration should award

the money quickly to ensure plentiful chargers as more people start buying EVs. The Administration should also ensure an equitable buildout that includes rural and disadvantaged communities and tie all funding to interoperability standards so that federally funded chargers will be usable by all EV drivers.

Background on the National EV Infrastructure (NEVI) Program

The recently passed Infrastructure Investment and Jobs Act (IIJA) includes as much as $7.5 billion for electric vehicle (EV) charging infrastructure, including $5 billion in formula funds distributed to every state to build out EV chargers along transportation corridors. If spent the right way, these National EV Infrastructure (NEVI) formula funds will go a long way towards building out the national network of EV chargers we need to accommodate a fast transition to EVs that is led by American workers and manufacturers.

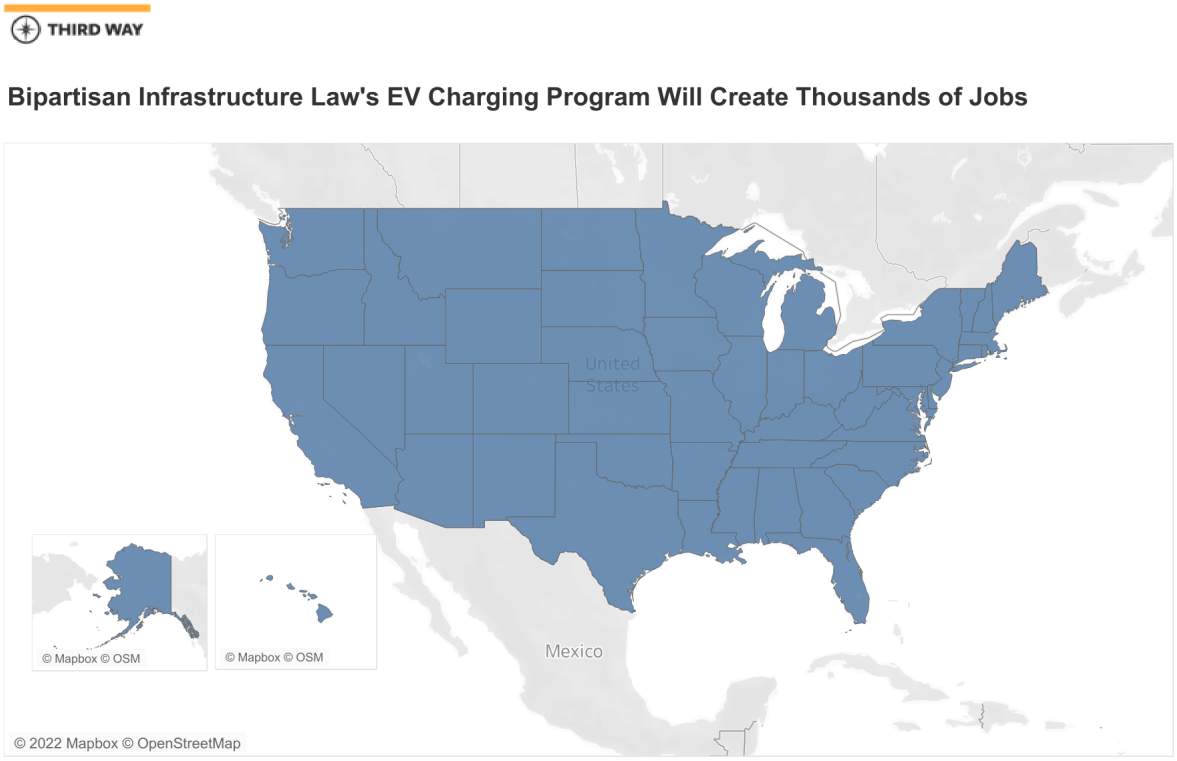
In February 2022, the U.S. Department of Transportation (DOT) released guidance designed to help states craft their State EV Infrastructure Deployment Plans, which will spell out how each state will spend their NEVI funds. Per the guidance, states are directed to focus their formula dollars on building out DC fast charging networks along highway corridors, capable of charging at least four EVs simultaneously at 150kW. Charging stations should be located no more than 50 miles apart, though the Administration may make exceptions to allow stations to be located further apart along sparsely populated corridors. State plans were due in early August; every state plus DC and Puerto Rico submitted their plans, with USDOT expected to review plans and release the first year of funds by the end of September.

Mapping the Benefits of NEVI

To understand how many chargers this program can fund for each state, we used USDOT's fact sheet outlining available funds for every state and estimated an average cost of $150,000 per DCFC. We then used the Department of Energy's JOBS EVSE tool to estimate the annual jobs related to construction, installation, operations, and maintenance of these chargers for each state. For more details, read our Methodology section below.

Third Way's new map shows that this $5 billion federal investment, plus the 20% non-federal share, could support the installation of as many as 34,500 DC fast chargers, though the exact number is dependent on how much each charger costs to purchase and install, and how much of their NEVI funds states spend on other eligible activities related to the buildout. We also estimate that this program can create nearly 16,000 jobs annually across the country.

Hover over a state on the map below to see how much funding the state will receive from the NEVI Program, and how many DCFC that funding could pay for. The map also shows how many annual jobs the program could create in each state, including jobs related to the construction and installation of charging stations as well as jobs related to operating and maintaining them.



Sources:
State federal funding amounts in the IIJA from the US Department of Transportation:
https://www.transportation.gov/briefing-room/usdot-releases-state-state-fact-sheets-highlighting-benefits-bipartisan
Co-authors assume DCFC plug costs $150,000 including purchase and installation based on estimates from: https://www.cell.com/joule/pdfExtended/S2542-4351(2030231-2
Average annual jobs estimated using US Department of Energy's JOBS EVSE: https://www.anl.gov/es/jobs-evse

Key Findings

The NEVI Program could help fund over 34,000 EV chargers

The USDOT guidance on the NEVI Program says states must use their funds for DCFC for at least the first year of the program; once a state has built out charging stations along designated highway corridors, it may be able to spend funds on Level 2 chargers, which are far less expensive than DCFC but charge more slowly. [1] States will need to make their own decisions about which types of chargers to prioritize, and this will affect how many chargers they will be able to deploy for the money. Given the Biden Administration's clear prioritization of DCFC in this program, we assume all of the chargers deployed using NEVI funds will be DCFC for the purposes of this map.

Our map shows that if states spend their entire NEVI funds on DCFC, they will be able to deploy a total of 34,500 additional chargers. This would more than double the number of publicly accessible DCFC, currently at 25,134 at the time of writing—though roughly 14,700 of these are Tesla Superchargers, which are not currently compatible with non-Tesla EVs for fast charging, meaning the NEVI-funded buildout would significantly expand fast charging options for non-Tesla owners. [2]

How many chargers each state will be able to deploy depends on how much money they get from the program. For Pennsylvania, it would mean more than tripling the number of DCFC available, adding as many as 1,433 new chargers to the 621 currently available. Arizona could more than double theirs, adding 633 new chargers to the 494 already available.

These are very general estimates assuming each DCFC costs $150,000 to purchase and install on average (see the Methodology section for more information). States can also use their NEVI funds for other activities related to the charger buildout beyond charger acquisition and installation, including development phase activities (such as environmental review and permitting processes), forecasting and analysis activities to help inform where chargers would be best located, deploying on-site renewable energy generation and storage, installing traffic control devices and signage, and operating and maintaining chargers for up to five years. The more a state's NEVI funds go to these other activities, the fewer chargers they will be able to deploy.

It is important to keep in mind that the NEVI Program is only one slice of the EV charging pie. In addition to the NEVI Program, states and cities will also be able to apply for federal funds from the $2.5 billion competitive grant program also established by the IIJA, which can go towards EV chargers as well as hydrogen, natural gas, and propane fueling equipment. Additionally, we expect utilities and the private sector to continue their own buildout of EV charging networks; recently, the White House announced a slate of private sector investments to manufacture more than 250,000 EV chargers per year in the US to help enable a robust and seamless charging network across the country.

The NEVI Program will create thousands of jobs

Nationally, we project the program could create just over 12,000 average annual jobs related to constructing and installing EV chargers over the next five years. This includes direct, indirect, and induced jobs. Additionally, it will create an average of 3,838 jobs each year related to operating and maintaining these new chargers (direct, indirect, and induced)—jobs that will continue to be in-demand after the five-year funding window. (See the Methodology section below to learn more about how we came to these estimates.)

How many jobs each state will see is proportional to how many EV chargers they will be able to install. For example, our map shows that Michigan will be able to install as many as 917 DCFC using NEVI funds, creating 348 average annual jobs in construction and installation through 2027 and 76 average annual jobs in O&M. Georgia, which will receive enough funding to deploy 1,125 DCFC, is

expected to create 467 average annual jobs in construction and installation and 144 average annual O&M jobs.

These are only the jobs created by this one, five-year formula program; we will also see job growth in this industry thanks to the $2.5 billion competitive grant program, as well as additional buildout funded by other levels of government, utilities, and the private sector. For example, the aforementioned White House announcement on private sector investments estimated that the industry is expected to add at least 2,000 manufacturing jobs in the coming years.

Key Considerations for Implementing the NEVI Program

Our previous research found we need to deploy roughly one million additional chargers (L2 and DCFC) to accommodate the Biden-Harris Administration's goal of 50% EV sales by 2030. How many chargers are ultimately needed will depend on the mix of L2 and DCFC. Currently there are just over 124,000 public EV chargers of both types. Our map shows that the NEVI Program could help deploy as many as 34,500 additional chargers if they are all DCFC.

Whether we can achieve our buildout goal by 2030, then, will depend not only on efficient use of NEVI funds, but also on how much of the $2.5 billion competitive program goes towards EV charging and how much state, local, and privately funded buildout takes place between now and then. California, for example, plans to distribute $2 billion by 2026 as part of their effort to increase the number of EV chargers in the state from the current 15,000 to 1.2 million.

When will the buildout happen?

How many chargers we deploy is important, but just as important is how quickly they're installed and where they're installed. As the price of an EV continues to come down, we expect to see more and more consumers buying these vehicles in the coming years. It's important that we frontload our charging infrastructure buildout so these chargers will be up and running as more EVs hit the road. Consumers want to see that there are plenty of chargers out there before making the switch to an EV so they don't have to worry about getting stranded.

Where will the chargers go?

Where the chargers will be installed is another critical question. The NEVI Program provides grant funding to install chargers primarily along highway corridors. This will help ensure commuters and people driving long distances can do so with an EV, but the vast majority of charging will take place in homes, workplaces, and other places around our communities. Half of the $2.5 billion competitive program ($1.25 billion) is set-aside for "community grants," which will help deploy publicly available chargers throughout our communities, but this amount won't be enough to build out the extensive network of chargers we need in cities and towns across the country. That's why other policies, like the extended and expanded tax credit for alternative refueling properties

included in the recently passed Inflation Reduction Act, are also important to building out the charging network we need.

Equity is an important consideration when deciding where to install public EV chargers, and it is a stated goal of the Biden-Harris Administration as it relates to the EV charger buildout. Third Way agrees, and we highlighted this point in public comments submitted to USDOT earlier this year during the development of their guidance. We need to make sure that everyone has access to this infrastructure so that everyone can access the benefits of EVs. This means we need to install chargers in all types of communities—not just in wealthier neighborhoods and dense downtown areas, but also in rural, low-income, and underserved communities as well.

This equitable buildout is particularly important for minority and other historically underserved populations which have borne the brunt of the air pollution from our current transportation system and which are less likely to have dedicated off-street parking at home to charge their car.

It's also important for rural communities, which are not responsible for the bulk of transportation emissions but for whom cars are particularly important given the lack of investment in other forms of transportation in rural America. We can't let rural communities get left behind in our transition to EVs: FHWA should ensure funding is available to deploy chargers along heavily traveled rural routes that may be off the highway system but are nevertheless important corridors for rural drivers.

The $1.25 billion for "community grants" in the IIJA prioritizes projects that expand access to charging infrastructure in rural areas, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces or a high ratio of multi-unit dwellings. This amount alone doesn't guarantee a robust buildout of EV chargers in these communities. In implementing both grant programs, FHWA should ensure states are installing chargers everywhere they'll be needed.

Who can charge?

Lastly, we must make sure every EV driver can use these chargers. Interoperability—the compatibility between different EVs and different EV charging networks—is essential if we're going to ensure all EV drivers will be able to charge up their vehicle no matter what EV charger they pull up to. Congress directed the U.S. Department of Transportation (USDOT) to develop minimum standards for interoperability as part of the IIJA; USDOT has released the proposed rule for NEVI including the interoperability standard, with the final rule due in August. Ideally, USDOT should apply this standard to both of the IIJA grant programs. This is smarter spending: if we're going to put billions of dollars towards building out publicly available charging infrastructure, we should ensure all the public can use them no matter which EV they're driving.

Methodology

USDOT has published fact sheets spelling out how much funding each state will receive under the IIJA, including from the National Electric Vehicle Infrastructure Formula Program. The program comes with a 20% cost-share, meaning states will need to pay for 20% of the cost of charger installation projects to the federal government's 80% (per the IIJA, a private entity that the state contracts with to install the chargers may also pay the non-federal share). We included this cost-share in our calculation of how many chargers each state will be able to deploy with their formula dollars, assuming each state will use all of the funding available to them.

We estimate that a DCFC costs $150,000 on average, including $90,000 to purchase the equipment and $60,000 to install it. This is based on billing receipts compiled by the National Renewable Energy Laboratory (NREL). [3] Inflation has led to increases in material and labor costs, which may reduce the number of chargers states will be able to deploy with this money. In general, as charger installations increase over time, we expect that the cost trend will likely fall as economies of scale emerge. Note that these costs exclude any additional utility upgrades, such as a new transmission line, or any land purchases or transportation infrastructure improvements (such as signage or repaving) that may be needed to accommodate a new charging station. These costs will vary significantly by site, so we did not include them here.

The buildout of a public EV charging network will create short-term jobs in charger installation and related tasks, as well as ongoing jobs in operation and maintenance (O&M) of this infrastructure. To estimate both types of jobs, we used JOBS EVSE 1.0, a tool developed by Argonne National Laboratory that enables users to estimate the economic impacts associated with the development, construction, and operation of EV charging stations. Note that JOBS EVSE reports jobs per charging station, not per charger; for the purposes of these estimates, we assumed chargers would be installed at stations of four chargers each, per USDOT's guidance for the NEVI Program.

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ENDNOTES

1. For more information on the differences between DCFC and L2 chargers, see Appendix A: The ABCs of EV Charging in: Hughes-Cromwick, Ellen and Alexander Laska, "Beyond BID: Getting EV Charging Plugged Into Reconciliation." Third Way, 16 Aug. 2021, https://www.thirdway.org/memo/beyond-bid-getting-ev-charging-plugged-into-reconciliation#appendix-a-the-abcs-of-ev-charging

2. "Alternative Fueling Station Locator." US Department of Energy, Accessed July 5, 2022. https://afdc.energy.gov/stations/#/find/nearest

3. Borlaug, Brennan et al, "Levelized Cost of Charging Electric Vehicles in the United States." *Joule* 4, 15 July 2020, Page 1482, https://www.cell.com/joule/pdfExtended/S2542-4351(2030231-2