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The Advisory Services team has over 250 management consultants with premium, strategic advice that is rooted in the practical, solid-state service that our infrastructure clients around the world have come to expect. We have expertise in funding and finance, economics and decision analysis, strategic planning and policy, sustainability and resiliency, strategic communications and business improvement.

Advisory Services professionals review infrastructure policy developments and prepare summaries of key provisions to help keep our clients informed of the changing landscape in Washington, D.C.

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# Zero Emission Transportation

## Infrastructure Investment and Jobs Act Advisory Services Policy Brief #12

Technological advancement, demographic changes, and shifting societal values are working to fundamentally transform the role of surface transportation infrastructure. The Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law, advances a strategic policy framework and dedicates substantial funding to facilitate the transition from carbon-intensive transportation toward cleaner, more sustainable fuels.

This Advisory Services Policy Brief summarizes the key funding programs created or modified by the IIJA to facilitate this transition. It also provides an overview of the major policy directives and federal activities designed to influence or standardize the way these systems are implemented.

**Zero-Emission Vehicles** are predominantly battery and fuel-cell electric. Relevant programs and policies addressing these vehicles include those aimed at manufacturing, adoption, and transitioning fleets toward these vehicle types. The IIJA dedicates billions of dollars specifically targeted at these efforts to reduce reliance on gasoline- or diesel-powered internal combustion engines.

The United States Department of Energy (DOE) and Department of Transportation (USDOT) established the Joint Office of Energy and Transportation to facilitate collaboration between the two agencies as they implement the provisions of the IIJA that seek to deploy a network of electric vehicle (EV) chargers, zero-emission fueling infrastructure, and zero-emission transit and school buses<sup>1</sup>. The provisions of the IIJA that address these priorities are discussed below.

<sup>1</sup> <https://driveelectric.gov/>

## Supporting the Zero-Emission Vehicle Transition

The IIJA places significant emphasis on transitioning the nation's vehicle fleets from gasoline- or diesel-powered internal combustion engines to those powered by electricity or other alternative fuel sources. The broad approach includes a series of policies, funding programs, and incentives spanning several federal agencies. These activities generally fall within these major categories:

- Establish standards for national infrastructure deployment for electric and alternative fuel vehicles (AFVs)
- Create and complete a nationwide alternative fuel network
- Support regional and local efforts to establish alternative fuel networks
- Subsidize the transition of public and private vehicle fleets to AFVs

### Establish standards

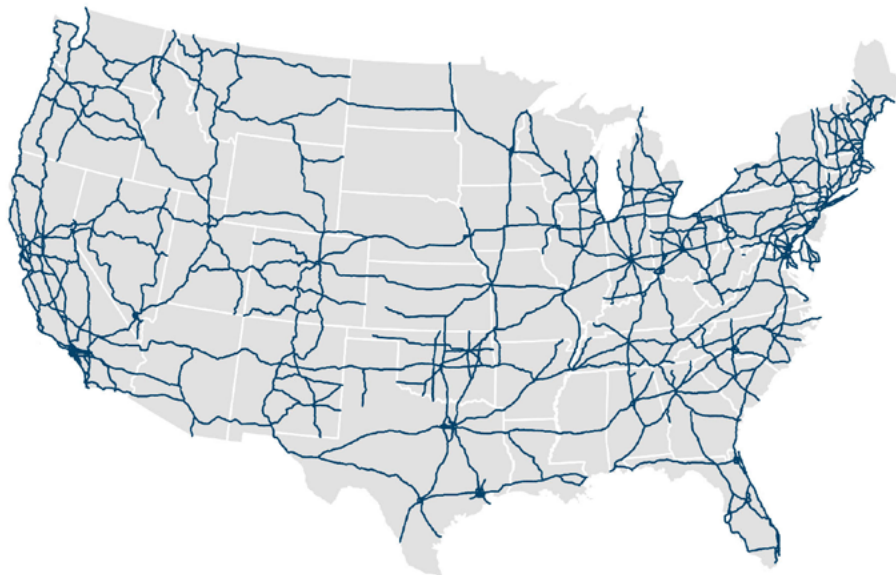
The IIJA directs the USDOT to update the [Manual on Uniform Traffic Control Devices \(MUTCD\)](#) to include EV standards. The agency must also establish a working group on EVs, responsible for creating a series of reports that outline an alternative fuel “road map,” including analysis of existing barriers and opportunities, standardization and interoperability, equity considerations, viable business models, fee collection methods, policy frameworks, and

more. Further, any project that uses federal funds to establish EV supply equipment will be treated as a federal-aid Highway Program, which requires implementation of non-proprietary charging connectors that meet applicable industry standards and allow for open access payment methods that are available to the public.

### Create and complete a nationwide alternative fuel network

In announcing the Joint Office to support deployment of \$7.5 billion from the IIJA, U.S. Energy Secretary Jennifer Granholm and U.S. Transportation Secretary Pete Buttigieg emphasized the need to build public confidence, with a focus on filling gaps in rural, disadvantaged, and hard-to-reach locations.<sup>2</sup> The Joint Office will support programs such as the [FHWA Alternative Fuel Corridor \(AFC\) program](#), which was established by the Fixing America's Surface Transportation (FAST) Act to designate national EV charging, hydrogen, propane, and natural gas fueling corridors, with charging and fueling infrastructure at strategic locations along major national highways to improve mobility of passenger and commercial vehicles that employ alternative fuels across the United States.<sup>3</sup> The roadway segments identified as either “corridor-ready” or “corridor-pending” by the Federal Highway Administration through the first five rounds of the program are shown in **Figure 1**.

**Figure 1: FHWA Alternative Fuel Corridors (AFCs)**



All corridors identified as “ready” or “pending” as of 2021 for one or more eligible fuel types: electric vehicle charging, natural gas, propane, and hydrogen. Data is for illustrative purposes and does not include areas outside contiguous United States.

<sup>2</sup> <https://www.energy.gov/articles/doe-and-dot-launch-joint-effort-build-out-nationwide-electric-vehicle-charging-network>

<sup>3</sup> [81 FR 47850](#)



The FHWA must update and redesignate the corridors by May 14, 2022, and periodically thereafter. During the designation and redesignation process, in consultation with the DOE, the FHWA will issue a report identifying charging and fueling infrastructure, best practices and guidance for predictable infrastructure deployment, analyzing standardization needs for fuel providers and purchasers, and reestablishing the goal of achieving strategic deployment of fueling infrastructure in the designated corridors.

The FHWA must also establish the Discretionary Grant Program for Charging and Fueling Infrastructure by November 15, 2022. With \$2.5 billion, this competitive grant program will fund projects that strategically deploy publicly accessible EV charging infrastructure and other alternative fueling infrastructure along designated alternative fuel corridors. At least 50 percent of this funding must be used for a community grant program where priority is given to projects that expand access to EV charging and alternative fueling infrastructure within rural areas, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces.

The National Electric Vehicle Formula Program provides \$5 billion to states to strategically deploy EV charging

infrastructure and to establish an interconnected network to facilitate data collection, access, and reliability.<sup>4</sup> Funding is available for up to 80% of eligible project costs, including:

- Acquisition, installation, and network connection of EV supply equipment to facilitate data collection, access, and reliability
- Proper operation and maintenance of EV supply equipment
- Long-term EV supply equipment data sharing

In addition to the EV formula program, the USDOT will establish a grant program by November 15, 2022, for states and localities requiring additional assistance to strategically deploy EV supply equipment under this program.

To receive funding from either program, states must submit plans to the USDOT describing how the state intends to distribute the funds. The USDOT and DOE [have published guidance dictating the requirements](#) for accessing both the formula-based and discretionary grant-based EV programs. The guidance announcement was accompanied by an apportionment table by state for FY 2022 EV formula funds, as well as a solicitation for new submittals to the AFC network<sup>5</sup>.

<sup>4</sup> [https://www.fhwa.dot.gov/bipartisan-infrastructure-law/nevi\\_formula\\_program.cfm](https://www.fhwa.dot.gov/bipartisan-infrastructure-law/nevi_formula_program.cfm)

<sup>5</sup> See state-by-state breakdown here: [Dashboard: National Electric Vehicle Funding by State \(arcgis.com\)](#)





## Support regional and local efforts to create alternative fuel networks

Although the IIJA prioritizes the national AFC network along interstates and U.S. highways, it also creates opportunities for local agencies to use federal funding to support the creation of alternative-fuel supportive infrastructure within their own networks. This infrastructure is funded through a competitive grant program to fill gaps in publicly accessible EV charging and hydrogen, propane, and natural gas fueling infrastructure in community locations, such as parking facilities, public schools, public parks, or along public roads. Funding for up to 80% of project costs will be available for both development phase planning activities and the acquisition and installation of charging or alternative fueling infrastructure. Five percent of the grant fund awarded may be used for educational and community engagement activities to develop and implement education programs through partnerships with schools, community organizations, and vehicle dealerships to support the use of zero-emission vehicles and associated infrastructure. The DOT must prioritize projects that expand access to charging and alternative fueling infrastructure within rural areas, low- and moderate-income neighborhoods, and communities with limited parking space or a high ratio of multi-unit dwellings to single-family homes. Eligible grant recipients include states, metropolitan planning organizations, local governments, political subdivisions, and tribal governments.

In addition to the discretionary programs supporting these projects, there is funding for these activities within the broader formula programs, both new and existing, many of which specifically identify charging infrastructure as an eligible project type. This includes the [Surface Transportation Block Grant \(STBG\)](#) and [Congestion Mitigation and Air Quality \(CMAQ\)](#) Improvement Programs, which are the two largest federal-aid roadway programs open to projects not located on the federal highway system<sup>6</sup>.

The STBG provides flexible funding that may be used by states and localities for projects to preserve and improve the conditions and performance on any federal-aid highway, bridge and tunnel projects on any public road; pedestrian and bicycle infrastructure; and transit capital projects, including intercity bus terminals. The IIJA updated project eligibilities for the STBG to include "[T]he installation of electric vehicle charging infrastructure and vehicle-to-grid infrastructure."

<sup>6</sup> For a geographic breakdown of known apportionments through the federal-aid highway program, see [Dashboard: Highway Funding by State \(arcgis.com\)](#)



The CMAQ Program provides funding to state departments of transportation, local governments, and transit agencies for projects and programs that help meet the requirements of the Clean Air Act by reducing mobile source emissions and regional congestion on transportation networks. Eligible activities include transit improvements, travel demand management strategies, congestion relief efforts (such as high occupancy vehicle lanes), diesel retrofit projects, AFVs and infrastructure, and medium- or heavy-duty zero emission vehicles and related charging equipment. Transportation projects supported with CMAQ funds must demonstrate emissions reductions and be located in or benefit a U.S. Environmental Protection Agency (EPA)-designated nonattainment or maintenance area for national air quality standards.

### **Subsidize the transition of public and private vehicle fleets to AFVs**

The IIJA also includes funding for the purchase of AFVs and associated facilities. The legislation creates or expands programs dedicated specifically to this transition for public transit fleets, school bus fleets, and ferries.

The Low or No Emission Bus Program, administered by the Federal Transit Administration (FTA), will provide \$5.6 billion to transit agencies that support purchasing or leasing zero-emission or low-emission transit buses, as well as acquisition, construction, and leasing of required supporting facilities.<sup>7</sup> This funding for low- and no-emission buses represents a nearly 870% increase in funding for clean buses. With this increase in funding, new requirements are in place for recipients to prepare “fleet transition plans” when pursuing these zero- and low-emission grants.<sup>8</sup>

The EPA will provide \$5 billion over five years to replace existing school buses with low- and zero-emission buses. Half of the available funding is dedicated to zero-emission school buses and half to clean school buses. Low-income or rural areas may be prioritized for funding. State,

localities, contractors, and nonprofit school transportation associations are eligible grant recipients.

Beyond buses, the IIJA also supports the electrification of port infrastructure through the Port Infrastructure Development Program (PIDP) and the Reduction of Truck Emissions at Port Facilities programs. The Maritime Administration’s PIDP is funded at \$450 million per year, nearly double the \$230 million funded in fiscal year 2021, and expands eligible costs beyond “traditional” port infrastructure to capture project elements that transition to low- or no-emission infrastructure:

- Port electrification or electrification master planning
- Harbor craft or equipment replacement/retrofits
- Development of port or terminal microgrids
- Idling reduction infrastructure
- Worker training to support electrification technology
- EV charging or hydrogen refueling infrastructure for drayage, and medium- or heavy-duty trucks and locomotives that service the port and related grid upgrades
- Other port activities including charging infrastructure and electric rubber-tired gantry cranes

The FHWA’s Reduction of Truck Emissions at Port Facilities program is funded with \$400 million over the five-year term of the IIJA to “coordinate and provide funding to test, evaluate, and deploy projects that reduce port-related emissions from idling trucks, including through the advancement of port electrification and improvements in efficiency, focusing on port operations, including heavy-duty commercial vehicles, and other related projects.”

The FTA also administers a new pilot program for electric or low-emitting ferries. With \$250 million, the program will provide grants to public ferry operators for the purchase of electric or low-emitting ferries.

<sup>7</sup> <https://www.transit.dot.gov/lowno>

<sup>8</sup> <https://www.transit.dot.gov/funding/grants/fact-sheet-buses-and-bus-facilities-program>



Additional programs that support the transition to low- or no-emission vehicles include:

- State Carbon Reduction Program – A new FHWA formula program that supports projects such as truck stop electrification, diesel engine retrofits, vehicle-to-infrastructure communications equipment, port electrification, and deployment of AFVs to include charging or fueling infrastructure and the purchase or lease of zero-emission vehicles.
- The DOE's State Energy Program – Existing program that provides grants to states to assist in designing, developing, and implementing renewable energy and energy efficiency programs, including programs to help reduce carbon emissions in the transportation sector by 2050 and to accelerate the use of alternative transportation fuels for, and the electrification of, state government vehicles, fleet vehicles, taxis and ridesharing services, mass transit, school buses, ferries, and privately owned passenger and medium- and heavy-duty vehicles.
- Through the DOE's Advanced Technology Vehicles Manufacturing (ATVM) Loan Program, manufacturers may be eligible for direct loans for up to 30% of the cost of re-equipping, expanding, or establishing manufacturing facilities in the United States used to produce qualified ATVs, ATV components, or alternative fuel infrastructure, including associated hardware and software. Qualified ATVs are light-, medium-, and heavy-duty or ultra-efficient vehicles that meet specified federal emission standards and fuel economy requirements. Ultra-efficient vehicles are fully closed compartment vehicles designed to carry at least two adult passengers, which achieve at least 75 miles per gallon while operating on gasoline or diesel fuel, as hybrid electric vehicles operating on gasoline or diesel fuel, or as fully electric vehicles. Qualified components must be designed for ATVs and installed for the purpose of meeting ATV performance requirements, as determined by the DOE.
- The DOE will establish a competitive grant program for energy improvement upgrades, including installation of AFV fueling or charging infrastructure on school grounds and purchase or lease of AFVs. AFV fueling or charging infrastructure can be exclusively for the school fleet or students, or open to the public. Eligible AFVs include school buses and school fleet vehicles.
- The Joint Office will establish an EV working group to make recommendations regarding the development, adoption, and integration of light-, medium-, and heavy-duty EVs into the transportation and energy system of the United States. The 25 members will come from federal agencies, the automotive industry, the energy industry, state and local governments, labor organizations, and the property development industry.
- The Federal Energy Regulatory Commission requires each state to consider measures to promote greater transportation electrification, by amending rates to promoting affordable and equitable EV charging, improving customer experience with EV charging, accelerating third-party investment in EV supply equipment, and recovering marginal costs of electricity delivery to EV supply equipment.



## Zero Emission Vehicle Funding Opportunities for States and Local Agencies

A summary of the major programs that create funding opportunities for states and local agencies can be found in **Table 1**.

**Table 1: Zero Emission Vehicle Funding Programs**

PROGRAM NAME (AND ADMINISTERING DOT AGENCY)	SUMMARY PROGRAM DESCRIPTION	FUNDING AMOUNT (\$ IN MILLIONS)	FUNDING MECHANISM	NEXT PROGRAM MILESTONE
<b>UNITED STATES DEPARTMENT OF TRANSPORTATION</b>				
Low or No Emission (Bus) Grants (FTA)	Provide capital funding to replace, rehabilitate, purchase, or lease buses and bus-related equipment and to rehabilitate, purchase, construct, or lease bus-related facilities. Provide capital funding for low- or no-emission bus projects.	\$5,625	Formula and Competitive Grants	<a href="#">NOFO published 3/4/22, applications due 5/31/22</a>
National Electric Vehicle Infrastructure Formula Program (FHWA)	Strategically deploy EV charging infrastructure and establish an interconnected network to facilitate data collection, access, and reliability. Set aside 10% of funding for discretionary grants to state and local governments that require additional assistance to strategically deploy EV charging infrastructure.	\$5,000	Formula Grant	<a href="#">Apportionments announced 2/10/22</a> States must prepare a statewide EV Infrastructure Deployment Plan by August 1, 2022 to access funding under this program.
Charging & Fueling Infrastructure Grants (FHWA)	Corridor Charging: Deploy EV charging and hydrogen/propane/natural gas fueling infrastructure along designated alternative fuel corridors and in communities. Community Charging: Grants to install EV charging and alternative fuel infrastructure in locations on public roads, schools, parks, and in publicly accessible parking facilities.	\$2,500	Competitive Grant	NOFO in 2022
Electric or Low-Emitting Ferry Program (FTA)	The Bipartisan Infrastructure Law establishes an Electric or Low-Emitting Ferry Pilot Program that makes federal funding available to support the transition of passenger ferries to low- or zero-emission technologies.	\$250	Competitive Grant	NOFO expected in spring 2022
Reduction of Truck Emissions at Port Facilities (FHWA)	Reduce truck idling and emissions at ports, including through the advancement of port electrification.	\$400	Competitive Grant	On hold, pending federal FY22 budget appropriation
<b>ENVIRONMENTAL PROTECTION AGENCY</b>				
Clean School Bus Program	State or local governments, eligible contractors, and nonprofit school transportation associations are authorized to receive grant funds. The EPA Administrator is authorized to provide funds to cover up to 100 percent of the costs for replacement of the bus.	\$5,000	Grant, Rebate and Contract	Applications for funding will be made available in spring 2022
<b>DEPARTMENT OF ENERGY</b>				
Electric Vehicle Battery Recycling and 2nd Life Apps	Research, development, and demonstration of EV battery recycling and second-life applications for vehicle batteries.	\$200	Cooperative Agreement	Estimated application opening in the first quarter of 2022
Battery Manufacturing and Recycling Grants	Develop a viable domestic manufacturing and recycling capability to support a North American battery supply chain.	\$3,000	Grant	Estimated application opening date in the third quarter of 2022

PROGRAM NAME (AND ADMINISTERING DOT AGENCY)	SUMMARY PROGRAM DESCRIPTION	FUNDING AMOUNT (\$ IN MILLIONS)	FUNDING MECHANISM	NEXT PROGRAM MILESTONE
Battery Materials Processing Grants	Develop a viable battery materials processing industry. Funds can also be used to expand our domestic capabilities in battery manufacturing and enhance processing capacity.	\$3,000	Grant	Estimated application opening date in third quarter of 2022
Grants for Energy Efficiency and Renewable Energy Improvements at Public School Facilities	Make energy efficiency, renewable energy, and alternative fueled vehicle upgrades and improvements at public schools.	\$500	Grant	Expected NOFO in fall 2022

Source: <https://www.whitehouse.gov/build/>

\*\$ in millions, FY 2022-2026.

## What's Next

Now that the bill is signed into law, federal agencies have begun the process of implementing the programs and policy directives articulated in the legislation. FHWA issued [a policy framework](#) to help articulate an overarching approach, and FTA has generated [a series of fact sheets and guidance materials](#) to explain key changes to its programs.

The ongoing federal move toward implementation also includes several specific efforts relevant to emerging transportation technologies. The DOE has established a [Build a Better Grid Initiative](#) to develop cohesive strategies, and the FHWA has issued [a request for information](#) to gather stakeholder input as it works to implement the IIJA's EV charging programs.

### Discretionary Grant Opportunities

Notice of funding opportunities (NOFOs) for competitive grant programs will be issued more-or-less continuously over the life of the IIJA — FY 2022 to 2026 for now, with a continuation of many programs likely beyond that. The NOFO for the RAISE program was issued in January 2022, and opportunities for several other major programs will open in the coming months.

### Planning Requirements

Many of the new programs require the development of a strategic plan, typically at the statewide level. This includes the EV charging programs (as discussed previously), the carbon reduction formula program, and several programs not detailed here (such as those associated with the resiliency focused PROTECT and the extensive broadband strategy). Individual transit agencies will be responsible for

developing zero-emission fleet transition plans. Metropolitan planning organizations (MPOs) and local agencies will have opportunities to advance specific projects and community goals for their transportation networks through these plans and programs.

Other policy briefs in this series offer further analysis of several topics relevant to the next generation of transportation. Of particular note is the [Transportation Discretionary Grants Policy Brief \(#2\)](#), which provides a detailed breakdown of the grant programs administered by the United States Department of Transportation (USDOT). Subject matter and mode-specific briefs related to climate change and resiliency, ports and freight, transit and passenger rail, energy, and grid resiliency (among others) offer greater detail and broader context for many of the programs and activities introduced here.





## What Does This Mean and How Can We Help?

HDR's diverse network of professionals have helped clients around the globe take a proactive role in adapting to emerging technologies, making them work in the service of community goals and leveraging opportunities such as the IIJA. Our Advisory Services group will continue to monitor and analyze the implementation of this new legislation, working with technical experts and local offices throughout the country to stay ahead of the curve and help to maximize the funding opportunities available.

The Global Advisory Services Team has the experience and understanding of the federal programs created or modified by the IIJA to help clients position their projects for success. HDR's Advisory Services blend deep infrastructure knowledge with insightful business management expertise to develop tailored solutions. Our experts help plan, procure, develop, manage, operate, and finance projects and programs. Our management consultant professionals create value by leveraging our unparalleled technical expertise of planners, engineers, researchers, policy experts, senior executive advisors, and data scientists to produce performance improvements.

Our approach integrates technical and business professionals who generate sustainable solutions with a rich understanding of the challenges that clients face. As a trusted advisor, we help clients make lasting, positive change. We value our client relationships over the long term. Our experts provide services in:

- Funding and Finance
- Strategic Planning and Policy
- Economics and Decision Analysis
- Sustainability and Resiliency
- Strategic Communications
- Management and Business Improvements

Our team of experts provide these services in all infrastructure types affected by the IIJA and can help clients chart a path forward to successfully plan, fund, design, and deliver their programs.

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