Advancing Electric Transportation
How to Leverage Federal Support in the Southeast
Our Speakers

Nick Nigro  
Founder  
Atlas Public Policy

Tom Taylor  
Policy Analyst  
Atlas Public Policy

Shauna Basques,  
Communications Coordinator  
and Energy Analyst  
TDEC, Office of Energy Programs

Josh Cohen  
Director, Policy  
Greenlots
Atlas Public Policy

Nick Nigro, Founder
&
Tom Taylor, Policy Analyst
FEDERAL EV INVESTMENTS

A summary of the largest ever proposed U.S. investment in transportation electrification

Nick Nigro and Tom Taylor, Atlas Public Policy
November 2021
ABOUT
ATLAS PUBLIC POLICY

DC-based policy tech firm started in 2015

We equip businesses and policymakers to make strategic, informed decisions that serve the public interest

Our Key Focus Areas

• **Access**: Collect and disseminate publicly available information.
• **Interpret**: Create dashboards and tools to spur insights and conduct data-driven analyses.
• **Empower**: Strengthen the ability of policymakers, businesses, and non-profits to meet emerging challenges and identify opportunities that serve the public interest.

We equip businesses and policymakers to make strategic, informed decisions that serve the public interest.
ABOUT THE ATLAS EV HUB

• The EV Hub gives stakeholders from across the EV industry quick access to key data and information on the market, policies and regulations, and activities by the EV community

• A one-stop shop for businesses, policy professionals, and the advocacy community to learn more about what’s going on in the EV market

• A comprehensive platform for the EV community: www.atlasevhub.com

• Data drawn from the EV Hub unless otherwise noted

Free access for public agencies and Clean Cities Coordinators!
ABOUT TRANSPORTATION ELECTRIFICATION

Status of transportation electrification around the country
U.S. EV SALES UP 160% IN Q1+Q2

- Monthly sales records in each month of 2021
- Considerable growth in 2021 across the industry
- ~5% of all light duty vehicle sales in Q3 2021
WHO IS INVESTING IN ELECTRIC VEHICLES IN THE UNITED STATES?

- **PUBLIC FUNDING** ($2.5 BILLION)
- **UTILITIES** ($3.1 BILLION)
- **VOLKSWAGEN SETTLEMENT** ($2.9 BILLION)
- **INDUSTRY** ($143 BILLION)
- **RECONCILIATION BILL** (UP TO $209 BILLION)
- **BIPARTISAN BILL** ($30.7 BILLION)
PRIVATE INVESTMENT IN EVS

LARGE INCREASES IN INVESTMENT IN EVS AROUND THE WORLD TOTALING $574 BILLION

$146 BILLION IN INVESTMENT DIRECTED TOWARDS THE U.S.

FORD PLEDGED $11 BILLION IN SEPTEMBER TO BUILD EVS IN THE US INCLUDING IN KENTUCKY AND TENNESSEE

Data from EV Hub as of 11/3/2021
LARGE INCREASE IN PUBLIC FUNDING FOR TRANSPORTATION ELECTRIFICATION

- Public funding for transportation electrification has increased dramatically
- More than $881 million awarded so far in 2021
- Transit bus, charging stations and school buses are the top three funded initiatives

Public funding for transportation electrification 2015 to present (million $)

<table>
<thead>
<tr>
<th>Year</th>
<th>Funding (million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>$43</td>
</tr>
<tr>
<td>2016</td>
<td>$97</td>
</tr>
<tr>
<td>2017</td>
<td>$12</td>
</tr>
<tr>
<td>2018</td>
<td>$686</td>
</tr>
<tr>
<td>2019</td>
<td>$785</td>
</tr>
<tr>
<td>2020</td>
<td>$561</td>
</tr>
<tr>
<td>2021</td>
<td>$882</td>
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</table>
## Public Charging Need in SEEA States

### Number of ports needed by 2030

<table>
<thead>
<tr>
<th>State</th>
<th>DCFC</th>
<th>Level 2</th>
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</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>6,484</td>
<td>7,069</td>
</tr>
<tr>
<td>Arkansas</td>
<td>3,450</td>
<td>3,350</td>
</tr>
<tr>
<td>Florida</td>
<td>14,149</td>
<td>7,582</td>
</tr>
<tr>
<td>Georgia</td>
<td>8,957</td>
<td>5,458</td>
</tr>
<tr>
<td>Kentucky</td>
<td>5,168</td>
<td>4,414</td>
</tr>
<tr>
<td>Louisiana</td>
<td>4,040</td>
<td>2,812</td>
</tr>
<tr>
<td>Mississippi</td>
<td>2,907</td>
<td>8,957</td>
</tr>
<tr>
<td>North Carolina</td>
<td>8,684</td>
<td>5,256</td>
</tr>
<tr>
<td>South Carolina</td>
<td>4,556</td>
<td>6,454</td>
</tr>
<tr>
<td>Tennessee</td>
<td>6,580</td>
<td>7,567</td>
</tr>
</tbody>
</table>

Source: U.S. Passenger Vehicle Electrification Infrastructure Assessment (Atlas 2021)
TWO BILLS IN CONGRESS

- Infrastructure Investment and Jobs Act (also known as the Bipartisan Infrastructure Framework)
- Build Back Better Act (also known as the Reconciliation Bill)
INFRASTRUCTURE INVESTMENT AND JOBS ACT

• The Bipartisan Bill (HR 3684) passed on November 5

• Total of $30.7 billion in EV eligible funding including:
  • $7.7 billion for EV dedicated funding
  • $12.7 billion for “clean vehicles”
  • $10.3 billion for grid and batteries

Source: INVEST in America Act tracker on EV Hub
<table>
<thead>
<tr>
<th>Category</th>
<th>DOT</th>
<th>DOE</th>
<th>EPA</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated to Zero Emissions Vehicles</td>
<td>$5,000</td>
<td>$200</td>
<td>$2,500</td>
<td>$7,700</td>
</tr>
<tr>
<td>&quot;Clean&quot; Vehicle Eligible</td>
<td>$9,188</td>
<td>$1,000</td>
<td>$2,500</td>
<td>$12,688</td>
</tr>
<tr>
<td>Grid &amp; Batteries</td>
<td>$400</td>
<td>$9,885</td>
<td>$0</td>
<td>$10,285</td>
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<tr>
<td><strong>Total Funds EV-Eligible</strong></td>
<td><strong>$14,588</strong></td>
<td><strong>$11,085</strong></td>
<td><strong>$5,000</strong></td>
<td><strong>$30,673</strong></td>
</tr>
</tbody>
</table>
DEPARTMENT OF TRANSPORTATION PROGRAMS

- National Electric Vehicle Formula Program ($5 billion)
- Fleet Transition Plan ($4 billion)
- Grants for charging and fueling infrastructure ($2.5 billion)
- Port Infrastructure Development Program ($2.25 billion)
  - Includes funding for port electrification for drayage or medium and heavy-duty trucks
DEPARTMENT OF ENERGY PROGRAMS

• Deployment of Technologies to Enhance Grid Flexibility ($3 billion)
  • Includes Vehicle to Grid technologies
• Battery Processing and Manufacturing
  • Battery Manufacturing and recycling grants ($3 billion)
  • Battery Material Processing Grants ($3 billion)
• Advanced Energy Manufacturing and Recycling Grant Program ($750 million)
ENVIRONMENTAL PROTECTION AGENCY PROGRAMS

- $2.5 billion for Clean School Bus Program (zero-emission buses only)
- $2.5 billion for Clean School Bus Program (zero-emission or lower emission buses)
THE BUILD BACK BETTER ACT

• The Reconciliation Bill is under negotiation
• Text has changed since the original proposal
• Total of $209 billion:
  • $23.98 billion for EV dedicated funding
  • $96.2 billion for EV Eligible Tax Credits
  • $88.68 billion for EV eligible funding

Source: The Reconciliation Bill – Atlas EV Hub
## FUNDING SUMMARY BY DEPARTMENT

<table>
<thead>
<tr>
<th>Lead Department</th>
<th>ZEV Only</th>
<th>ZEV Eligible</th>
<th>Tax Credits</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Energy</td>
<td>$4,500</td>
<td>$19,090</td>
<td>$0</td>
<td>$23,590</td>
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<tr>
<td>Environmental Protection Agency</td>
<td>$10,500</td>
<td>$30,110</td>
<td>$0</td>
<td>$40,610</td>
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<tr>
<td>United States Postal Service</td>
<td>$5,985</td>
<td>$0</td>
<td>$0</td>
<td>$5,985</td>
</tr>
<tr>
<td>General Services Administration</td>
<td>$2,995</td>
<td>$4,225</td>
<td>$0</td>
<td>$7,220</td>
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<tr>
<td>Department of Transportation</td>
<td>$0</td>
<td>$18,600</td>
<td>$0</td>
<td>$18,600</td>
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<tr>
<td>Department of Housing and Urban Development</td>
<td>$0</td>
<td>$6,000</td>
<td>$0</td>
<td>$6,000</td>
</tr>
<tr>
<td>Department of Labor</td>
<td>$0</td>
<td>$5,000</td>
<td>$0</td>
<td>$5,000</td>
</tr>
<tr>
<td>Department of Treasury</td>
<td>$0</td>
<td>$0</td>
<td>$96,200</td>
<td>$96,200</td>
</tr>
<tr>
<td>Department of Commerce</td>
<td>$0</td>
<td>$5,650</td>
<td>$0</td>
<td>$5,650</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$23,980</strong></td>
<td><strong>$88,680</strong></td>
<td><strong>$96,200</strong></td>
<td><strong>$209,000</strong></td>
</tr>
</tbody>
</table>
BUILD BACK BETTER: TAX CREDITS

- **$5,000** Expansion of the EV tax credit
  - $4,500 to union, domestic made vehicles
  - $500 for domestic made batteries
  - In addition to existing $7,500
    - From 2027, only apply to US made vehicles
  - Tax is refundable and transferrable
- Used EV credit of up to **$4,000**
BUILD BACK BETTER: EQUITY

• Greenhouse gas reduction fund ($29 billion)
  • $2 billion for EV charging equipment
  • $8 billion for projects in low income or disadvantaged communities

• Environmental and Climate Justice Block Grants ($3 billion)
  • Funding for low and zero emissions technologies and infrastructure
BUILD BACK BETTER: MDHD

- EPA to purchase clean heavy-duty vehicles ($5 billion)
- EPA to install zero-emission technology at ports ($3.5 billion)
BUILD BACK BETTER: FLEET ELECTRIFICATION

• Federal fleet electrification ($2.995 billion)
  • Other GSA funding for clean technologies
• USPS to electrify federal fleets ($5.985 billion)
  • More than half for charging infrastructure
• Zero Emissions Vehicle Infrastructure Grants ($1 billion)
  • Including $200 million for hydrogen fuelling
NEXT STEPS: TIMELINE IS NOT FIRM!

5 November:
Congress approved the bipartisan bill

From 15 November:
House plans to vote on the Build Back Better bill

TBC
Senate to vote on Build Back Better bill

Sources: Infrastructure bill passes: What's next for Biden Build Back Better plan (cnbc.com)
Tennessee Department of Environment and Conservation
Shauna Basques, Communications Coordinator and Energy Analyst, Office of Energy Programs
Primary & Secondary Corridors With Existing Electric Vehicle DC Fast Charging Infrastructure (July 2021)

Each location includes at least one SAE Combo and one CHAdeMO plug.
Tennessee Electric Vehicle Charging Opportunity Map

Primary & Secondary Corridors With State Parks + Distressed & At Risk Counties (July 2021)
$11.9B+ capital investment from EV projects since 2017

19,700+ Tennesseans employed by companies with EV operations

159,000+ electric vehicles manufactured since 2013

#1 in southeast for electric vehicle manufacturing
TENNESSEE EV PRODUCTION

IN 2021, ALL FOUR TENNESSEE OEMS MANUFACTURE ELECTRIC VEHICLES

TENNESSEE CLAIMS 46% OF THE SOUTHEAST’S EV MANUFACTURING JOBS AND 61% OF EV MANUFACTURING INVESTMENT

TENNESSEE IS HOME TO FOUR LITHIUM-ION BATTERY PLANTS.

WITH 16,000+ ELECTRIC VEHICLES BUILT ANNUALLY; TENNESSEE RANKS #1 IN THE SOUTHEAST FOR EV MANUFACTURING
EV-Specific Workforce Training

Tennessee is focused on creating an environment for continued, rapid growth of electric vehicle production and is proactively working with industry to develop comprehensive workforce training programs. Areas of focus include:

- supply chain,
- waste management
- automotive assembly
- manufacturing of the electric vehicle battery + electric motor

Hybrid Electrical Vehicle

- Return to TOC/Program Inventory
- COP Code: 25.47.3814.4.10
- Program Description:
  This program provides training in hybrid and electric vehicle fundamentals as well as other systems in which a technician may be challenged. Training in each area includes classroom instruction and position on simulated vehicle systems before resorting to hands-on experience diagnosing and repairing "real" vehicles.
- Program Outcomes:
  - Train students for entry into the hybrid Electric Vehicle Technology repair field.
  - Encourage professional and ethical behavior to ensure success in a wide range of endeavors.
- Professional Accrediting Body: If Applicable
- State Agency/Entity Oversight: If Applicable
- Applicable Certification/License or Industry-recognized Certificate to be Awarded: If Applicable

Automotive Electronics Technician

- Award Type: Certificate
- Clock Hours: 864
- MTT1001 - Vehicle Characteristics
- MTT 1012 - Safety
- MTT 1040 - Electrical Theory

Tennessee Tech is driving autonomous and electric vehicle research

Researchers at Tennessee Tech are staying up to speed on the latest automotive advances.

Camile Kassunzal, for Tennessee Tech
Published on 10-Jul-2021

[Image of a person sitting in a car, possibly a driver or technician.]
Greenlots

Josh Cohen
Director, Policy
Pathways for Federal Investment to Advance Transportation Electrification in the Southeast

Southeast Energy Efficiency Alliance
About Greenlots

Together with Shell and our partners, Greenlots is powering the transformation to electric mobility to create a more sustainable future. Our industry-leading software and services equip drivers, site hosts and network operators to efficiently deploy, manage, and leverage EV charging infrastructure at scale.

We provide what our customers need: expertise, solutions, and support to transition to electric and flexible solutions that deliver economically effective, reliable charging at scale.

Founded in 2008 with over a decade of experience
Headquartered in Los Angeles, California
Acquired by Shell Renewables and Energy Solutions in January 2019
Global footprint with offices throughout the US and in Canada, India, Singapore, and Southeast Asia
Over 200 Employees and contractors worldwide
Working with utilities, cities, automakers, fleet and retail customers across the US and the world
Themes

1. Plan and budget for O&M
2. Software unlocks value
3. Collaborative planning will enable success
4. Partnerships are key
1. Plan and budget for O&M

- Station uptime is critically important to support a positive driver experience
- For fleets, uptime is mission critical to ensure vehicles can dispatch as needed
- A hardware warranty is only part of the picture—an enhanced maintenance contract can help assure uptime
- Take advantage of funding opportunities to cover O&M up front

**Lesson Learned:**
ARRA Stimulus projects that leveraged federal dollars to deploy EVSE but lacked a plan and funding source for ongoing O&M often resulted in abandoned chargers left in disrepair
2. Software unlocks value

- Electrification is more than just buying vehicles and chargers
- Software enables data collection, access control and pricing
- Rethinking operations can yield efficiencies and savings
- Resilience can entail on-site energy solutions
- Reliability requires end-to-end testing, validation and support
- The grid impacts and electricity costs of EV charging at scale make software-based managed charging an imperative

Lesson Learned:
Software-enabled chargers that support open communication standards and interoperability minimize the risk of stranded assets.
Leverage software to manage load and costs

Smart charging enables “set it and forget it” load optimization

**EV Charging Load Sharing**

**Benefit:**
Eliminate or reduce the need for infrastructure upgrades and install more EV chargers than the site’s transformer capacity would allow

**Working mechanism:**
Automatic sharing of available power between EV chargers when charging load is expected to go beyond its limit

**EV Charging Load Scheduling**

**Benefit:**
Reduce electricity costs by preventing or curtailing charging sessions during hours with high electricity costs

**Working mechanism:**
Based on utility tariffs, site hosts can manually set the maximum site load for specific hours during a day when the cost of electricity is high

**Integrated DER & Storage**

**Benefit:**
Reduce utility bills by pulling energy from the Distributed energy resources (DER), rather than the grid during peak demand charges

**Working mechanism:**
Integrate DER, such as energy storage or solar PV, into EV charging systems
Example: non-optimized fleet charging

Vehicles start charging as soon as they are connected. Extended periods where vehicles are connected but are not charging.

Unmanaged Fleet Charging

Vehicle 1
Vehicle 2
Vehicle 3
Vehicle 4
Vehicle 5
Vehicle 6
Vehicle 7
Vehicle 8

12PM 1PM 2PM 3PM 4PM 5PM 6PM

Departure Time
Example: optimized fleet smart charging

Vehicles don’t start charging as soon as they are connected. The load limit and the schedule will determine when the vehicle is to be charged.

Optimized Fleet Smart Charging Schedule

Vehicle 1
Vehicle 2
Vehicle 3
Vehicle 4
Vehicle 5
Vehicle 6
Vehicle 7
Vehicle 8

12PM  1PM  2PM  3PM  4PM  5PM  6PM

Example: optimized fleet smart charging

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Optimized Fleet Smart Charging Schedule

Vehicle 1
Vehicle 2
Vehicle 3
Vehicle 4
Vehicle 5
Vehicle 6
Vehicle 7
Vehicle 8

12PM  1PM  2PM  3PM  4PM  5PM  6PM
Case study: smart charge management

Minimizing charging speeds when utility rates are higher – or to avoid peak rates – while ensuring that fleet vehicles can meet their delivery obligations.

Each black line represents a daily charging profile for a site with delivery vans. The purple line represents a peak for the period and the green line represents an average.

Greenlots has worked with the customer to reduce charging speeds from 4-6 pm every afternoon to avoid super peak charges (each Sunday is not managed because super peak rate is not in place).
3. Collaborative planning will enable success

- For state and local governments: have goals and timelines for EVs and EV infrastructure
- Establish collaborative plans that implicate public agencies and private partners to support those goals
- Pursue funding opportunities that support those goals and leverage collaborative partners

**Lesson Learned:**
States that waited to develop VW mitigation plans have lagged behind in deployment.
4. Partnerships are key

• Leverage federal funding to support EV infrastructure deployment

• Engage stakeholders across utilities, installers, hardware and software providers, site hosts and others

• Engage the local utility early and throughout the process to understand grid constraints and optimize rates and tariffs
Case Study: Volvo LIGHTS
Case Study: Volvo LIGHTS

- **16 Public & private organizations collaborating**
- **23 Battery Electric Heavy-Duty Trucks**
- **29 Battery Electric Equipment**
- **58 Public & Private Chargers**
- **2 Electric Truck After Market Service Centers**
- **2 Colleges Designing Electric Truck Maintenance Programs**
- **1.8 million kWh Solar Energy Generation**
- **2 Ports Providing Infrastructure Planning**
Thank you!

Josh Cohen
Director, Policy
jcohen@greenlots.com
410-989-8121
Discussion with Panelists
Thank You to Our Speakers

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Thank you!

We’d like to hear from you. Please give us your feedback on today’s webinar. 
https://forms.office.com/r/wY7xaCVjzn

Join us for *Electric Vehicle Programs: How to strike a balance between excitement and execution*

*Wednesday, December 15, 2021 | 1 p.m. ET*

Register at seealliance.org/events

Become a member! Contact Pamela Fann, director of membership and diversity integration at pfann@seealliance.org or visit us at seealliance.org/membership for more information.