CONGRESSIONAL BRIEFING
Building Out Electric Vehicle Charging Infrastructure
Briefing Series: Scaling Up Innovation to Drive Down Emissions

Thursday, June 02, 2022

Materials will be available at:
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About EESI

**Non-partisan Educational Resources for Policymakers**
A bipartisan Congressional caucus founded EESI in 1984 to provide non-partisan information on environmental, energy, and climate policies.

**Direct Assistance for Equitable and Inclusive Financing Program**
In addition to a full portfolio of federal policy work, EESI provides direct assistance to utilities to develop “on-bill financing” programs.

**Commitment to Diversity, Equity, Inclusion, and Justice**
We recognize that systemic barriers impede fair environmental, energy, and climate policies and limit the full participation of Black, Indigenous, people of color, and legacy and frontline communities in decision-making.

**Sustainable Solutions**
*Our mission is to advance science-based solutions for climate change, energy, and environmental challenges* in order to achieve *our vision of a sustainable, resilient, and equitable world.*
Policymaker Education

**Briefings and Webcasts**
Live, in-person and online public briefings, archived webcasts, and written summaries

**Climate Change Solutions**
Bi-weekly newsletter with everything policymakers and concerned citizens need to know, including a legislation and hearings tracker

**Fact Sheets and Issue Briefs**
Timely, objective coverage of environmental, clean energy, and climate change topics

**Social Media (@EESIOnline)**
Active engagement on Twitter, Facebook, LinkedIn, and YouTube
Upcoming Briefings & Series

Living with Climate Change
- Polar Vortex – April 13
- Sea Level Rise – May 18
- Wildfires – June 13
- Extreme Heat - TBA

Scaling Up Innovation to Drive Down Emissions
- Green Hydrogen – April 27
- Direct Air Capture – May 25
- Electric Vehicle Charging – June 02
- Offshore Wind Energy - TBA
Scaling Up Innovation to Drive Down Emissions: Building out EV Charging Infrastructure

June 2, 2022

Katherine Stainken
VP, Policy
EV Adoption Programs Around the U.S.

The Electrification Coalition is a nonpartisan, not-for-profit group committed to promoting policies and actions that facilitate the deployment of electric vehicles on a mass scale.
Investment in EV Infrastructure

1. Federal level: Bipartisan Infrastructure Law
   *Agency coordination

2. State and City Level Landscape

3. Utilities

*What’s on the horizon?
Federal Level: Bipartisan Infrastructure Law

Dedicated EV Funding:

1. $5 billion for EVSE build-out along highways (NEVI)
2. $2.5 billion competitive grants; 50% set aside for community grants with priority for rural and underserved communities
3. $2.5 billion for electric school buses, $2.5 billion zero emission and low emission buses

Additional Programs:

*Section 11115: Congestion mitigation and air quality improvement program
*Section 11402: Reduction of Truck Emissions at Port Facilities
*Section 11403: Carbon Reduction Program
*Section 30018: Grants for Buses and Bus Facilities
*Section 40107: Deployment of Technologies to Enhance Grid Flexibility
*Section 40541: Grants for Energy Efficiency Improvements and Renewable Energy Improvements at Public School Facilities
Federal Level: Agency Coordination

- New joint office DOE/DOT: driveelectric.gov
  *technical assistance
- DOT Rural EV toolkit (p. 73-83 EVSE programs); EC Rural Guidebook
- EPA Clean School Bus: epa.gov/cleanschoolbus
  *technical assistance
- Deployment principles:
  - Reliable
  - Effective
  - Equitable
  - High Quality
  - Connected
  - Affordable
  - 100%
State and City Level Landscape

• Corridor programs
• Rebate programs
• Deployment goals
• VW Settlement funds
• EV-Ready Wiring, Codes, Ordinances
• Right-of-way charging programs
• Multi-unit dwellings
• Clean fuels standard
• And more!
Utilities

Figure 4: Electric Utility Filings by Status Between 2012 and June 2021

<table>
<thead>
<tr>
<th>Approved</th>
<th>Pending/Filed</th>
<th>Denied/Withdrawn</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 States</td>
<td>22 States</td>
<td>21 States</td>
</tr>
<tr>
<td>111 Filings</td>
<td>56 Filings</td>
<td>38 Filings</td>
</tr>
<tr>
<td>51 Utilities</td>
<td>33 Utilities</td>
<td>26 Utilities</td>
</tr>
</tbody>
</table>

$3,076,300,118 Investment
6,257 DC Fast Charging Stations
223,858 Level 2 Charging Stations

$2,093,601,953 Investment
2,558 DC Fast Charging Stations
212,148 Level 2 Charging Stations

$537,866,476 Investment
504 DC Fast Charging Stations
86,143 Level 2 Charging Stations

This chart summarizes approved, pending, and denied filings through June 2021.

Credit: Atlas Public Policy, Electric Utility Filing Bi-Annual Update
What’s on the horizon?

Look to the federal level to continue to have the right scale and scope:

- 30C Alt fuel refueling property tax credit
- Additional reconciliation policies for EVSE deployment
- Appropriations
- Guidance from DOT/DOE on standards
- Allow for EVSE at rest stops
- EVs for All Act – grant program for EVSE at public housing (H.R. 6662)
- EVs in Underserved Communities Act (H.R. 1221 / S.507)
- Allow REAP funding to be used for installing EVSE on American farms (H.R. 6390)
- Renewable Fuel Standard policy—credit for generating electricity
Thank you!

Katherine Stainken
VP, Policy
kstainken@electrificationcoalition.org

ElectrificationCoalition.org
EV Charging Industry Overview

Joe Inglisa
Vice President, Business Development
SemaConnect
Our proven technology, integrated solutions, and intimate blue-chip customer relationships have created a strong foundation to provide the charging solutions required for the expected rapid EV adoption and charging industry growth.

**SemaConnect Overview: Leading Provider of EV Charging Solutions in North America**

- **Proven Technology**
  - Comprehensive smart hardware and software solutions
  - Large portfolio of intellectual property with successful defense of patents

- **Vertically-Integrated**
  - End-to-end solution provider
  - Final product assembly at our company headquarters in Bowie, Maryland

- **Robust Customer and User Base**
  - 1,550+ marquee accounts across key end markets
  - Managed over five million charging sessions to date and counting

- **Project Management**
  - Completed most demanding multi-family and workplace program in industry (Electrify America)

- **Partnerships**
  - Strong partnerships with leading commercial real estate firms, network providers, fleet management companies, and owner/operator customers

**Top-2 Market Share in the U.S.**

Current installed base of 16,000+ chargers in the USA and Canada (both public and private)

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- Strong partnerships with leading commercial real estate firms, network providers, fleet management companies, and owner/operator customers

**Top-2 Market Share in the U.S.**

- CBRE Phoenix, AZ
- JLL Denver, CO
- bxp Reston, VA
- Wyndham Worldwide Parsippany, NJ
## EV Charging Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Power</th>
<th>MPH</th>
<th>Availability</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level I</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1 (Level I)</td>
<td>120 V, 12 amps</td>
<td>4 mph.</td>
<td>All EVs</td>
<td>Occasional Use</td>
</tr>
<tr>
<td><strong>Level II</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L2 (Level II)</td>
<td>240 V, 48 amps</td>
<td>45 mph</td>
<td>All EVs</td>
<td>Everyday</td>
</tr>
<tr>
<td><strong>DC Fast</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charging DCFC</td>
<td>480 V, 100+ amps</td>
<td>15-60 min</td>
<td>Select EVs</td>
<td>Road Trips</td>
</tr>
</tbody>
</table>
Cost and Societal Shifts are Fueling Adoption of EVs

EV adoption is expected to reach an inflection point in the coming years driven by rapidly declining battery costs, lower total cost of ownership, friendly regulatory environment, corporate action and shifts in consumer preference.

- Battery costs are expected to decline due to increased scale and new designs coming to market.
- Automotive OEMs released 143 new electric vehicles in 2019. Automakers are expected to launch 450 additional models by 2022.
- OEMs are furthering electrification through pledges and R&D investment such as GM’s pledge to end gasoline powered vehicle sales by 2035 along with $27bn in capital investment.

\[
\text{Lithium-Ion Battery Costs ($/kWh)}^1 \text{ vs EV Adoption (% of total vehicle sales)}
\]

- **2017**: $219
- **2018**: $180
- **2019**: $156
- **2024E**: $93
- **2030E**: $61

\[
\text{EV Adoption}
\]

- **2024E**: 16%
- **2030E**: 40%

**Key Drivers of EV Adoption**

- Declining cost lithium-ion batteries
- Lower relative maintenance costs
- Secular shift in ESG awareness and friendly regulatory environment
- Changing consumer preference driven by proliferation of affordable EVs

Note: Denotes lithium-ion battery pack cost, data has been adjusted to be in real 2019 dollars.
Change in Vehicle “Fueling” Paradigm

EV charging stations are a **NECESSITY** wherever vehicles are parked for a significant duration of time.
Shift to Electric Vehicles is Altering the Fueling Paradigm

- ~90% of all household vehicle trips in the U.S. cover less than 100 miles
- Cars are not in use 90% of the time
- L2 chargers require much lower upfront costs vs DCFC
- No grid upgrades required for L2
- No routine maintenance required for L2
- L2 significantly less to purchase vs DCFC
- L2 is well suited for fleets who can benefit from overnight charging
  - 220kWh school bus can be charged in under 12 hours
  - 68kWh Ford E Transit Van can be charged in under 4 hours
Industry Game Changers & Policy Issues

• Support EV charging in building codes for new construction:
  • “Make-ready” charging to accelerate EV adoption is more cost-effective.
  • States are shifting to kilowatt hour pricing from time/duration pricing.

• Federal and state EV incentives are essential:
  • Renew and expand EV tax credits for consumers to support EV adoption
    • Federal tax credit expired in December 2021.
  • Strengthen incentives/rebates for EV charging infrastructure
    • Maryland is a leader among the states with its 40% rebate & EVSE grant programs.

• Equitable access is vital for transportation electrification:
  • Increase the availability of EV charging in rural and underserved areas
  • Offer reasonable rates for charging in low-income communities
Technology solutions for EV charging maintenance & workforce enablement
Team

Kameale C. Terry
Co Founder & CEO
- Director of Programs and Head of Customer Experience at EVConnect
- Extensive relationships with EVSE Networks
- Small Business Banking

Evette Ellis
Co Founder & Chief Workforce Officer
- Workforce Development / Outreach at Job Corps - Long Beach
- Technician recruiting and development

Jaime Duyck
Chief Revenue Officer
- 7+ Years in EV Industry
- 4 Years as Director of Sales at EV Connect
- $12M+ in EVSE deployments since 2015
- 15+ years of sales experience

Walter Thorn
Head of Product
- Product development leader and startup advisor at Prota Ventures
- 5 years tech and auto strategy at McKinsey
- R&D at Honda Motors
Car OEMs $500B+ investment in EVs that rely on the current EV Charging Infrastructure.

These stations are online & listed as Available
The right workforce for the problem.

- EVSE Technician received U.S. DOL recognition under 49-2095.00 - Electrical and Electronics Repairers, Powerhouse, Substation, and Relay

- Information Technology technicians with all relevant safety certifications.

- Larger pipeline to workforce and an easier transition to work.
Equitable jobs for all people.

Local Diverse Workforce
Scalable affordable on demand repair services offered anywhere.

Equitable wages
High quality workforce improves customer service levels. Minimum $30/hr.

Certified EVSE Maintenance Technicians
A workforce for jobs of the future powered by partnership.

We **secure the work.**

We secure service contracts with Open Charge Point Protocol (OCCP) network providers to receive service tickets in real time.

We **train and hire local talent.**

We partner with local workforce development centers where those stations are located.

We **offer a stackable certification.**

We provide access to our EVSE maintenance training program as a stackable certification.

We **utilize technology to keep our technicians up to date.**

The ChargerHelp! app and platform ensures that technicians can easily troubleshoot any network or EVSE manufacturer.
Our EVSE technician pipeline **improves equity and is highly scalable**

Creating a pool of diverse, qualified applicants...

<table>
<thead>
<tr>
<th>Foundational training - private</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Intensive 3 week in-person training for foundation EVSE technician skills</td>
</tr>
<tr>
<td>● Training program sold to private organizations looking to build a EVSE technician pipeline for their company / product</td>
</tr>
<tr>
<td>● Currently working with LACI, BlocPower, and Southern Company (~$15k per course)</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Community colleges - public</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Open enrollment online resource available to community colleges</td>
</tr>
<tr>
<td>● 6 month training program resulting in EVSE Technician certification</td>
</tr>
<tr>
<td>● Engaged 36 community colleges to date, targeting ~60 total for national coverage</td>
</tr>
<tr>
<td>● $5k - $10k per Community College</td>
</tr>
</tbody>
</table>

...results in a scalable, high quality recruiting process

For 20 EVSE technician positions, **1,600** applicants

Technician hired identified as:

- **60% BIPOC**
- **15%** female or non-binary
- **35%** veteran
ChargerHelp! is leading the industry to reliable EV charging infrastructure.

Good business, good service & good people.

Evette Ellis
Co Founder & Chief Workforce Officer
evette@chargerhelp.com
RURAL ELECTRIC COOPERATIVES & EV INFRASTRUCTURE
SIEA’S TERRITORY

- Southern CO
- 35% Suburban / 65% Rural
- 21,000 members
EV INFRASTRUCTURE

- 4 privately owned
  - 3 DCFC
  - 1 Level II
- 7 SIEA-owned
  - 2 DCFC
  - 5 Level II
- Future
  - State Parks
  - Scenic Highways
  - Local government
  - Transit agencies
Low adoption in rural areas
- 1% territory-wide

Growth potential of:

High AADT along interstate and some state highways

*Households Without Vehicle
EV INFRASTRUCTURE FUNDING

- State grants
- G&T grants
- Community partnerships
RESIDENTIAL CHARGING

- Free with EV ownership and TOU
- Co-op payback of ~2 years
- RESP on-bill financing
RESIDENTIAL CHARGING

- Empower as one-stop shop
  - Assessment
  - Project Management
  - Financing
- EV charging and solar as EE gateway
- $3.8 million in affordable on-bill financing
REC OPPORTUNITIES

- Load growth
- Load management
- Economic development
- Member engagement
REC CONSIDERATIONS

- Affordable connection & grid capacity
- Peak contribution
- Payback
- “Charging deserts”
- Coordination
- Equity
- Maintenance
- Software subscriptions
What did you think of the briefing?

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