

Charge-Zero Response to FDOT Request for Information Regarding Florida's Statewide Electric Vehicle Infrastructure Deployment Plan

Information Requested:

General

1. Please describe your organization's involvement and experience with DCFC infrastructure. What are your long-term EV plans? How many chargers and/or charging stations are you able to build, install, and/or maintain on an annual basis?

Charge-Zero is a specialty finance and project management company that works with tax exempt entities to meet energy and EV charging needs. We propose to create specialty financing and source the designing, building, operation, and maintenance of a portfolio of DCFC chargers and solar microgrids (solar arrays combined with onsite battery storage systems) for FDOT. We are the first company to offer a solution offering access to federal tax credits and solar energy based chargers. This combination beats any other EV charging solution at lowering operating cost, ensuring energy access reliability, reducing the carbon footprint of the State, and evolving as the state's EV needs grow. To not access the tax credits available for installing this infrastructure is to spend tens of millions of dollars unnecessarily. Our primary purpose is to ensure this money does not get left on the table for Florida and that, therefore, the State gets the most bang for its buck.

Charge-Zero is the specialty finance and project management company, but not the engineering company who will be installing the stations and solar arrays. That will be done by our engineering partner. Our primary partner is Black & Veatch, a nationally recognized engineering firm with a track record of installing 10,000+ EV chargers and an ability to install, operate, and maintain thousands of EV chargers annually. As our primary business is the financing, we are also able to work with other engineering partners, if the State has a preference for a different installation provider, or wants to combine our solution with others it is seeing in this process, but still wants to access the tax credits.

2. Where does your organization see the biggest opportunities for the utilization of NEVI funds? This could be in terms of innovative technology solutions, partnerships, and/or targeting geographic locations.

The biggest challenges with EV charging are with the electricity generation, not literally putting in the stations. How do you get that much electricity, where and when you need it, reliably, and produced in a clean way (so that they whole EV transition is not pointless)? Therefore the opportunity from the NEVI funds is to put in solar arrays together with each charging station, so as to address each of these challenges with one infrastructure solution. Expansion of access to DC fast chargers (DCFCs) is needed to enable and embolden greater EV adoption by both the public and the public sector. Consequently, DCFCs are required by NEVI. However, DCFCs also require significant amounts of energy. Currently the majority of DCFCs installed nationwide rely solely on the local grid for this energy. This approach is financially

costly because of demand spike pricing and grid upgrade charges passed from utility to consumer. It is also erosive to the reliability of energy wherever grid-attached DCFCs are installed. Grids are already under increasing pressure from changing weather patterns, among other causes. Today, for each new EV on the road, the grid requires between \$1,800 and \$5,600 just to maintain its integrity.

Instead of relying on an ever more fragile grid for EV energy, it would be more practical to rely on renewable energy that is readily available in Florida. Infrastructure to connect this energy to DCFCs is the unlock needed to accelerate DCFC expansion in a way that protects the grid for other uses. NEVI funding would unlock the infrastructure needed to speed up the transition to DCFC infrastructure that is reliable, clean, and useable for other purposes as needed.

3. What are the biggest challenges or barriers that should be addressed to expedite reaching the goals of the NEVI program?

A transition to EVs defeats the primary purpose unless it is generated with cleaner energy. It would also be easy to not be cost effective or properly take advantage of all avenues for cost savings and subsidies when trying to put together a large plan under time pressure. Further, it would be easy to myopically install chargers without figuring out solutions for keeping energy distribution cost effective and reliable. Our solution addresses each of these primary challenges.

Data collection and availability to state and national overseers, safe, secure, and easy access to DCFCs, and DCFC charging infrastructure are also obstacles to achieving NEVI program goals. One of our solution partners, Xeal, discussed below, provides answers to this challenge.

Site Location

4. Please describe what you believe makes an ideal DCFC location including amenities as well as any risk factors that should be considered. How would you rank the relative importance of these factors?

Charge-Zero was founded by EV drivers who have driven (and charged, sometimes with difficulty) across the US. From our experienced vantage point, in ranked relative importance order an ideal DCFC location:

- Is compliant with NEVI program guidelines,
- Is sited in a high traffic area (otherwise there's a risk of infrastructure not being used enough to justify its expense),
- Is in a place where a driver can feel safe while charging (otherwise people won't use the chargers, no matter how fast),
- Is well lit (again, safety is a risk),
- Has a clean restroom and a place to get food and drinks within reasonable walking distance,
- Has space for multiple DCFCs,
- Has covered parking comparable to gas station amenities, and

- Has space for one or more batteries to store and dispense energy (about the width of three parking spaces).

5. Please describe your process, including market research, land use requirements, and business development opportunities for determining a DCFC site location.

We would put together a team of representatives from FDOT, Florida utility providers, and our engineering and business development partners to identify and then prioritize DCFC locations in accordance with NEVI program guidelines. We plan to consider siting infrastructure in areas that are both well trafficked and accessible in both safe and emergency situations with relative ease.

During our evaluation process, we would also seek land or areas (e.g., install canopies above charging areas to site solar panels), to site solar arrays to provide the needed energy to be eligible for low carbon emission incentives available via Federal tax credits. These incentives can be thought of as “coupons” that drive the price of sited infrastructure down considerably.

6. What do you think the DCFC site of the future looks like? Will location to amenities be as important or will micromobility be used to get to the amenities? What innovations/disrupters are coming?

Our model – solar microgrids coupled with onsite batteries – represents the tip of the spear of innovation on its way. Next on the innovation list is vehicle to grid (V2G) capabilities: a way for excess or lower cost energy to be stored in EVs and then distributed to the grid when grid-based energy prices are higher, often later in the day. V2G opens a path to turn transportation into an additive partner to an area’s energy distribution strategy.

While technology to further reduce charging time is on the horizon, access to amenities will remain an important characteristic for an ideal charging location. However, a DCFC site itself may become an anchor site where amenities are available with minimal amenity space. For example, it’s not difficult to envision food or related deliveries occurring at charging sites, perhaps with delivery storage lockers. Such a scenario may allow the site itself to generate additional revenue without the expense needed for full-scale installed amenities.

Our vision for the DCFC site of the future extends far beyond this. We welcome the opportunity to share our vision with FDOT during further discussions.

Partnerships and Business Models

7. Please explain any previous partnerships regarding EV infrastructure your organization has had including which parties initiated the outreach and what, if any, contracting mechanisms were used. These should include public and private entities as well as utility owners.

As a specialty finance company, our model works via established partnerships. These partnerships operate on a contract-to-contract basis, allowing us the flexibility to select the right partners, hardware, and software solutions to meet FDOT’s unique needs.

8. Describe what makes a successful business model and partnership. Also, please describe threats that can lead to a business and partnership's failure. These can be examples from current and/or previous partnerships.

One of our founding members, Eric Lowitt, wrote a book on public and private partnerships called *The Collaboration Economy*. In his experience, partnerships are built to last when communication among partners is clear, agendas are known and well understood, and incentives to remain in partnership exist. Our company has witnessed situations where partnerships dissolve, either when one company ceased operations. For example, we've seen this in Pennsylvania, where the Commonwealth owns EV chargers in need of maintenance, but the company that contracted to maintain them no longer exists, thus leaving the Commonwealth with stranded assets that do not work. We have also seen problems occur when one company has more power in its partnership than another; for example, if the company that installs EV chargers also provides the EV charger software and retains most revenue. In this case, what is its incentive to remain an active partner with a site host or grant providing entity?

9. Please provide your organization's viewpoints on contracting methods for DCFC infrastructure, including leasing and/or revenue sharing agreements. Have you implemented any cost/revenue sharing models for the operation of DCFC EVSE? If yes, please share what you can about the terms of those partnerships.

Charge-Zero has a simple philosophy when it comes to the cash flows related to EVSE: we finance and the site host reaps the financial and energy benefits of the developed site. First, we develop a financing plan that combines NEVI program funds; institutional "tax equity" provided by an institutional investment manager, such as Goldman Sachs; and any supplemental loans that may be needed. This funds both the installation and ongoing maintenance of the EVSE. Our approach both lowers project installation fees and delivers lowest kWh energy fees for EVSE site hosts. We welcome the opportunity to explain the economics to FDOT in detail. The institutional investor would maintain technical legal ownership of the site for the first 78 months, in accordance with Federal tax law. Then we will transfer ownership (if desired) to the State. This ownership structure has no impact on the State's full ownership of the energy and revenues generating by the solar arrays and charging stations.

10. Does Florida have the workforce required to operate and maintain DCFC EVSE charging sites? If not, please describe what you think is required to develop it.

Yes, through our engineering and maintenance partners, Florida has the workforce needed to operate and maintain DCFC EVSE charging sites.

Equipment

11. On average, how long does it take to install a DCFC from start to finish? This includes site determination, design, permitting, site preparation, utilities, and installation.

Our engineering and installation partners have installed thousands of DCFCs throughout the country. Our primary partner, Black & Veatch, tells us that given current supply chain constraints, the range of stakeholders involved, and the difficulty of forecasting materials availability until a contract is executed, it is difficult to forecast how long it will take to install DCFCs in Florida. We can ensure that a team experienced with Florida EV charging installations will be engaged upon execution of a contract. Understanding Florida's needs and interests will help determine timelines, a discussion to be had during subsequent conversations.

12. Are you currently able to meet the requirements of Buy America for DCFC infrastructure projects? If not, please explain your plans to meet the requirements and any potential issues.

Yes, our engineering, manufacturing, and procurement partners are US-based and any proposal from our company will be compliant with the FTA's Buy America program.

13. Are there any components required for DCFC infrastructure that are in short supply that could delay the goals of the NEVI program? Please describe what steps you have taken or what processes you have implemented to ensure the continuity of your supply chain.

Since we are free to contract with any vendor of hardware and software, as long as we are in compliance with the FTA's Buy America program, we are able to bring a range of vendor options to our Florida program. Companies that provide DCFC EVSE to be considered may include Freewire, Tritium, Clipper Creek, and Paired Power. Batteries are readily available, and we are in discussion with US-based solar array manufacturers to determine lead times for array delivery on site.

14. Please describe how your organization mitigates cybersecurity vulnerabilities. Is this consistent with industry standards? If not, where are the differences? Do you follow national cybersecurity standards including National Institute of Standards and Technology (NIST) Cybersecurity Framework? Do you comply with Florida's 60GG-2 for ensuring the security of your infrastructure? What other technologies do you offer for an end-to-end secured operation?

This is one of the largest obstacles to grid-reliant EVSE that our model is largely able to avoid as we operate via microgrids. We are bringing together our potential software partners, including EV Connect, Xeal, and Paired Power, with data management and analytics companies such as Palantir, to ensure cybersecurity risk is mitigated

Each of our software partners takes a proactive approach to cybersecurity. For example, Xeal uses a closed-loop architecture and uses near field communication (NFC) as the means by which a user interfaces with a charging station. While other connected EV charging infrastructure is vulnerable to suffering from cyber threats due to a network connection at the station level, Xeal's infrastructure is not connected and only an encrypted token from an authorized user's phone can unlock and transmit data to the chip embedded inside a Xeal charger. Xeal uses 128-bit encryption technology to transmit messages between the user's phone and the chipset within a Xeal charger. The information flows to the Xeal back-end database as an encrypted packet of data via a token and ledger system.

Operation, Maintenance and Data Sharing

15. What are your current or planned fee structures (time-based, energy-based, power-based, etc.) and what payment mechanism do you accept? Please explain any issues you have encountered or identified.

We collect our fees as a component of the financing arrangement. It is fully built into the cost of the financed project, similar to how a mortgage broker makes their money through “points” when you buy a home.

16. Describe the typical maintenance for your organization’s EVSE infrastructure as well as the maintenance schedule including any required hardware and software updates. Please include the typical lifecycle for your DCFC and what performance measurements are monitored.

Our engineering partners, such as Black & Veatch, offer 5-, 7-, and 10-year operations and maintenance programs to ensure EVSE uptime. All operations and maintenance will be fully paid for and secured up front. All EVSE will be capable of software updates as needed. We even have a specific software partner that can ensure all EVSE remains in operation as we migrate from 5G to 6G and 7G environments. This bandwidth reliance issue is making 3G reliant EVSE inoperable nationwide. We can offer solutions to avoid this problem going forward.

17. How would your EVSE share data to a FDOT sponsored central data repository? What type(s) of data can you provide?

All data captured by our EVSE, with the exception of data that may compromise privacy rights, will be made available to both FDOT and the national effort to collect EVSE usage data.

18. What should FDOT do to ensure the end-users of EVSE infrastructure have the most convenient and reliable charging experience? Please include how emergency evacuations and power outages should be addressed.

Convenience and reliability are based on several factors:

- Ensuring the charging stations readily findable by drivers,
- The number of chargers available per site,
- Ensuring power supply is not interrupted so chargers are running when and where needed (including during emergency evacuations and power outages), and
- Paying for charging experience is quick, seamless, and as low cost as possible

The Charge-Zero approach – solar microgrids with onsite batteries to store and dispense energy – is the right approach to ensure end-users have chargers that are up at all times, including emergency evacuation and power outage times. Reliance on the grid for the power to charge EVs is an obstacle to convenience that our approach completely removes.

Strategies for Low Utilization

19. FDOT is looking to provide DCFC in rural and disadvantaged communities that may have a lower return on investment and is interested in how to make these projects more desirable to potential applications. What strategies can FDOT utilize to encourage deployment of DCFC EVSE into rural, underserved, or disadvantaged communities? When answering please include information on driving factors.

- a. Guaranteed number of projects for economies of scale
- b. Short term operation and maintenance agreements (5 years or less)
- c. Long term operation and maintenance agreements (longer than 5 years)
- d. Any others?

One significant strategy not listed is the vehicle-to-grid (V2G) approach. EVs that charge (and therefore store energy in the car) during times when energy costs are the lowest should have the ability to sell this energy back to the grid at times when energy demand is highest, in return for a fee. While fees for are likely to rise in coming years, in rural and disadvantaged communities, the revenue an individual can generate from contributing use of their vehicle in a V2G approach could make the difference between gut-wrenching decisions, such as food or medicine, shelter or clothing, schooling or working for minors, etc.

Charge-Zero has the partnerships in place to enable V2G strategies in these (and other) communities and would welcome the chance to further discuss with FDOT.

20. To increase utilization rates to rural, underserved, or disadvantages communities what considerations or innovation solutions should be considered?

In addition to the economic incentive of V2G participation, finding ways to get used EVs into these communities for use in ride-sharing and related economic activities should be considered. We have a partner in Tennessee that acquires used EVs, hires drivers in disadvantaged communities, and provides them with work opportunities in the ride-sharing and related fields. The response has been quite positive, with both the company...and its portfolio of participating drivers...rapidly growing. We'd welcome the opportunity to explore this with FDOT.

Specific Information Requested

Interested vendors may respond to some or all the following topics, based on their proposed role in the creation of a DCFC EVSE network:

1. Summary of Experience
FDOT is interested in a summary that describes your organization's experience with DCFC EVSE.

We partner with Black & Veatch and other nationally recognized engineering firms that design, operate, and maintain networks of more than 10,000 EVSEs across the country.

2. System Block Diagram

FDOT is interested in a high-level system block diagram that illustrates all components and connections required to create the proposed system.

Given the uniqueness of our solution relative to our grid plug and play peers, we would be delighted to share this information in a more private setting to continue the conversation. High-level, we combine solar arrays, onsite batteries, appropriate interties and interconnections, and EVSE to create our proposed system.

3. Hardware Information

FDOT is interested in datasheets and technical specifications for components included and required to create a typical DCFC system.

Given the uniqueness of our solution relative to our grid plug and play peers, we would be delighted to share this information in a more private setting to continue the conversation. Datasheets on hardware will be provided as we move further in discussions.

4. Software Information

FDOT is interested in information on software components included and needed to create a typical DCFC system.

Given the uniqueness of our solution relative to our grid plug and play peers, we would be delighted to share this information in a more private setting to continue the conversation. Datasheets on software will be provided as we move further in discussions.

5. Maintenance Plan

FDOT is interested to know about the maintenance services and typical maintenance schedule for DCFC infrastructure.

Our engineering partners, including Black & Veatch, provide 5-, 7-, and 10-year operation and maintenance contracts to ensure problems are addressed rapidly and expertly.

6. Project Approach

FDOT is interested in the approach that your organization would take to deliver the DCFC EVSE.

We are the only EVSE company that provides a full suite of design-build-finance-operate-maintain services for a network of EVSEs. By partnering with nationally recognized engineering firms, we can bring a fresh canvass, without entrenched interests (such as selling our specifically designed and branded EVSE only) to the design stage of this program. We can finance the entire project in a way that ensures all low carbon “coupons” – such as the solar investment tax credit – are captured for FDOT’s benefit. And we will work with FDOT to adjust the capability of individual charging stations as needs arise. We excel at working with tax exempt entities and would welcome the opportunity to bring the best we offer to FDOT’s unique EVSE program.

The Department may exercise the choice to invite each vendor that responds to the questions above to meet and discuss the information provided in more detail.