Response to RFI

Deployment for Direct Current Fast Charge (DCFC) Electric Vehicle Supply Equipment (EVSE)

DOT-RFI-22-9114-PB

June 28, 2022

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?***

Experience and Capacity. Our team has industry-leading experience in the full cross section of DCFC infrastructure implementation, including modeling, design, planning, supply, installation, construction oversight, maintenance, performance monitoring, and evaluation. Across three separate installation partners on our team, we have installed 3,800+ sites and have the capacity to manage 50 simultaneous site installations, yielding up to 1,000 per year. Our supply lead (SemaConnect) currently has more than 17,000 charging stations and is quickly expanding service across the US.

Our engineering team was involved in the early implementation of EVSE equipment in Florida, including deployment support for 40 Level 2 chargers across North Florida and we have implemented EVSE equipment as part of public and private electrification projects at airports in Atlanta, Cleveland, Columbus, Dallas-Fort Worth, Flint, Houston, Salt Lake City, San Luis Obispo, and Tampa.

Long Term EV Plan. Our long-term Electric Vehicle (EV) plan is to assist agencies like FDOT build out the electric vehicle infrastructure to support the needs of the growing demand in electric vehicle usage, private and public EV fleet deployment and transit vehicle transitions. We are working with private commercial fleet owners, developers of mixed use properties, airport authorities and MPOs to stay abreast of their needs and connect the various parties to innovative approaches and financing.

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.***

Headquartered in Florida with a strong staff presence across the state, our Engineering Lead (RS&H) knows the FDOT Interstate system and has experience working with various Districts, MPOs, counties, and cities across the state. The biggest opportunity is to build out existing alternative fuel corridors identified by FHWA, which may include major Interstate corridors such as I-4, I-10, I-75, I-95, I-275, and I-595, as well as the Florida's Turnpike. These corridors will be of specific concern since they provide for the largest amount of traffic and are major hurricane evacuation routes. But there will be other rural corridors of importance that serve local communities and also provide important evacuation and mobility needs. Because of our experience planning and designing many of these corridors, we have strong familiarity with the adjacent land uses and can effectively target major and low utilization site selection. We also believe strategic deployment along Florida's Strategic Intermodal System, major freight corridors, as well as secondary hurricane evacuation routes are crucial to support increased adoption of EVSE by fleets, as well as the resilience of electric transportation in the state. Our experience working with agencies in Florida's rural areas equips us with unique insights for operations and equity.

We envision that FDOT will benefit from applying a layered approach that enables private parties to request partial funding for EVSE equipment and facilitates partnerships with energy providers, MPOs, local cities, and counties to encourage landowners and developers to install EVSE equipment. Our innovative use of GIS-based tools and robust data, from both general and freight-specific fleet sources, will can be applied to assist FDOT evaluate corridor charging facilities, prioritize targeted sites and to achieve a minimum saturation of qualified sites within 50 miles or less along designated corridors as well as to enable efficient private fleet transitions. Once low-utilization areas are identified, we can use traffic and land use data to effectively target specific commercial and public sites for EVSE deployment. Our team can develop Incentive Programs, as we did for the North Florida Transportation Planning Organization (NFTPO) to encourage landowner participation in EVSE.

When the call comes in from a party interested in participating in the program and it is a valuable customer located within FDOT targeted corridors, we will be available and ready to react to support their need. Our team has considerable bench strength with regard to network evaluation, design, permitting and implementation. The NEVI program is designed to emphasize equity, and inclusion with respect to EV infrastructure. Our team will focus on helping set goals to achieve this purpose. In addition we will develop partnerships with local businesses, developers, retail providers, and private truck stops that may not be eligible for NEVI funding and may benefit from private financing to advance their EVSE implementation programs. From our prior experience providing resources to assist these partnerships through education, and technical planning can be instrumental in gaining their support and participation. Involving the electric power companies in these partnerships is equally valuable since they can connect with every customer and are a stakeholder in the EVSE process.

Our team includes three installation partners to construct or oversee construction and validate the installation process in accordance with NEVI requirements. We also have the ability to provide operational and maintenance services to guarantee service.

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

Although the EV sector is growing rapidly, there are multiple outstanding challenges and barriers involved in DCFC deployment and the broader NEVI program; specifically, (1) targeted access to reliable power infrastructure, (2) sustainable partnerships with utility companies and private sector partners, (3) long-term operation and maintenance (O&M), and (4) effective deployment in low-utilization, rural, and under-represented communities.

Our team can help FDOT properly locate, effectively integrate, and sustainably operate new DCFC sites across the state by proactively identifying site-specific challenges. We can generate reliable models to forecast both power distribution and consumption with associated costs to inform long-term plans. Through use of our team's backend management software, FDOT can create tailored strategies to monitor grid capacity and dynamically manage peak load demands.

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?*

Technical and operational considerations must equally inform site selection for DCFC deployment, taking into account both the suitability of existing infrastructure as well as the operational demand for DCFC infrastructure.

Currently, DCFC location selection hinges primarily on access to reliable, sufficient power infrastructure where capacity can support the DCFC load with no more than the addition of basic new service equipment (e.g., a cable and meter).

The operational demand must incorporate more subjective considerations, which must be ranked in accordance with local and regional values more than the basic technical requirements. For example, targeting low-utilization sites will help achieve equity goals, but must also contend with dwell times, accessibility, and queue management requirements, favoring locations where adjacent facilities or amenities are suitably accommodating

The Justice40 requirements of the NEVI program also require the planning and implementation teams to be willing to apply innovative thinking. In addition to consideration of deployment of EVSE equipment in disadvantaged zones, there are other approaches that can help make service EV equipment more available to the broader needs of the communities. Crafting a multi-modal approach, addressing mirco-mobility and transit through the creation of hubs and micro-transit which often serve the transportation disadvantaged and can be integrated with public agency facilities.

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

Our DCFC site selection process leverages both quantitatively optimized models to combine technical and land-use requirements with the qualitative knowledge of the various operational environments and community characteristics across the state of Florida. We initiate site selection by overlaying maps of grid access and quality with existing charging locations and general traffic and transit patterns to identify candidate polygons with 3-5 potential sites, based on power availability, major coverage gaps for long-haul trips, and overall projected growth. Coordination with public utility companies, local cities, counties and MPOs. Conducting educational webinars with business leaders and developers. Networking with Transit agencies and providers of micro-mobility services. Additional factors include:

- Proximity to the next DCFC station
- Proximity to amenities
- Density of EV registrations w/in a specific radius
- Freight volume along segment
- Location along the Strategic Intermodal System
- Surrounding land use
- Equity benefits

Local staff with strong familiarity with each region reviews the modeling output to contextualize quantitative considerations with information about historical development, local values and attitudes, as well as regional partnership opportunities to determine the feasibility and value of different site combinations. From our ongoing work with FDOT and local agencies across the state, we have direct input from local residents and government leadership which will help develop more reliable plans than created through modeling alone.

For previous electrification contracts, we created new partnerships with local utilities to solicit and select private landowner applications for new stations, using a geospatial site suitability analysis to both reduce "range anxiety" and ensure sufficient station demand. Through this program, we obtained capital funding from the site host to cover equipment and installation costs as well as two years of operating funds and because of the program's success, we expanded access in Phase II to include additional adjacent local governments.

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/disruptions are coming?*

Two major scenarios are likely to govern consumer oriented DCFC infrastructure development: in dense population areas, directly adjacent amenities must be suitable to accommodate even shorter dwell times, whereas in more distributed or rural deployments, connectivity (e.g., free Wi-Fi) may be a more suitable provision for the near-term. In the long-term, provision for excess conduit and planning for site expansion and demand growth is the best way to future-proof any site against unknown technology changes and market disruptions.

In the long-term DCFC is not likely to be a one size fits all scenario. Commercial property owners will structure their sites around their customer needs. Certain land uses may align better with long-term parking such as shopping malls, airports or multi-family housing. Long term parking may be best served by lower costs Level 2 charging equipment. Retail and urban locations may allow for a more quick turnover of users and therefore the faster DCFC charging equipment is essential.

Fleet operators are not likely to keep vehicles out of service for long periods of time, the demand for DCFC equipment becomes essential for these commercial purposes but power supply and cost can become prohibitive. This is where the benefit of a public-private financing model may become valuable in advancing the commercial users EVSE plans.

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.*

Our team has a multi-disciplinary business partnership to integrate all requisite DCFC supplies and services and streamline costs for our public and private sector clients. RS&H has existing relationships with Florida-based utility companies (e.g., FPL, Duke Energy, TECO, OUC, and JEA) to fully incorporate power availability and consumption data into reliable models and plans.

Our engineering team has developed partnerships with many of the regional MPOs, every aviation authority in Florida, Broward County Transit, MDTA, LYNX, JTA, HARTline, Voltran, CFX, MDX, THEA, and a majority of the major municipalities and counties within Florida as well. We have working relationships with many of the DoD airforce and militarily bases which all have plans to transition to EV, including the Florida Space Port and NASA.

Miller Electric is based in Jacksonville and Power Engineers works for all of the electric power companies. Miller Electric has partnered with the following industry segments for over a decade:

» Program Managers: for large, multi-site, nationwide roll-outs. (e.g. Electrify America, ABM, InCharge, CBRE, JLL, and Bureau Veritas)

» Owners/Direct: for Florida State University and JTA

» Manufacturers: Charging infrastructure (e.g. ADS-TEC, Sema-Connect, etc.), Emerging technologies (e.g. Ecolution, etc.), and Autonomous Vehicle developers (e.g. Ohmio)

PROGRAM MANAGEMENT & ENGINEERING LEAD

- ✓ RS&H has eight separate Office locations in Florida with 400 local associates
- ✓ Florida-based company with strong understanding of FDOT Electric Vehicle Master Plan
- ✓ Local experience in connecting communities, stakeholders, transit, aviation, toll agencies, MPOs, cities and counties and private stakeholders throughout Florida

EVSE SUPPLY LEAD

- ✓ Leading provider of fully integrated EVSE solutions for government, commercial, residential and fleet operations
- ✓ Largest privately held EVSE manufacturer in North America of Level 2 and DCFC products
- ✓ Supports 1,800 clients and 1.2M+ annual charging sessions

POWER AND FINANCIAL MODELING LEAD

– Power Engineers – is a nationally recognized consulting firm that specializes in power service, transmission, distribution, and evaluation.

– Equipped with industry leading modeling tools and data sets

POWER AND FINANCIAL MODELING

– Heartland is National provider of integrated services related to EV charging equipment, DB installation, finance and equipment maintenance.

NETWORK INSTALLERS

– Multiple installations partners increases deployment reliability and best practice sharing

– DBE participation

– Experience deploying over 3,800 sites nationally including over 300 DCFC facilities

– Veteran-Owned/Small Business Enterprise (Pontchartrain)

– Largest installer of EV equipment in Florida (Miller Electric)

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.***

Successful business partnership requires a clear understanding of project objectives and priorities, respective leadership roles, distributed responsibility, and communication protocols and is enhanced by personal connections that promote collaboration. Our team brings experience working on similar statewide EVSE deployment programs along with valuable lessons learned that will benefit FDOT.

Business and partnership failures can stem from failure to fully validate critical elements of project plans early in project initiation (e.g., expected lead times, inventory constraints, task interdependencies) leaving insufficient time and options to mitigate project threats. Similarly, failure to coordinate across different teams and activities can undermine well-coordinated delivery of project value.

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.

Our team's preference is for an Engineering, Procurement, Construction Management (EPCM) contract model in which FDOT allocates a fixed portion of the state budget to each authorized contractor or a PMC design-build delivery model. This would equip our team to streamline interrelated activities and condense the overall implementation timeline.

We can also support a leasing model in which FDOT creates a long-term lease of real property (e.g., parking spaces, garages, fleet facilities) to our member company Heartland Charging for our team to purchase, install, commission, and maintain DCFC infrastructure across the lease lifecycle. This approach allows FDOT to leverage existing real estate for EVSE build-out at no additional cost to the state.

A hybrid approach would leverage public funds to build out as much of the infrastructure as possible under state ownership through ECPM or design-build contracts and to allocate remaining funds through long-term leases to address gaps where locations may not fit federal funding requirements, budgets, or timelines. This approach may give FDOT the most efficient approach to implementation of the EV Master Plan and development of the state EV Infrastructure Deployment Plan.

We propose the following recommendations for FDOT's DCFC Contracts:

- » Because the sector is changing as fast as it grows, plan to issue multiple rounds of solicitation to avoid getting locked into a model with unforeseen technical or business challenges.
- » Create a uniform matrix for performance evaluation of each installed site to aggregate data and feedback on the density of chargers by location, distance between chargers, accessibility, utilization, and associated outcomes.
- » Solicit public feedback from all community stakeholders through an equitable roundtable of business owners, regional and local government leaders, community residents, and others to fully address FDOT's traveler needs.
- » Create a fee-based online permitting process with quick approvals to promote operational efficiency and sustaining revenue.
- » Standardize the EVSE Review Process.
- » Utilize an industry-approved specification for hardware and software.
- » Require only an Electric Permit for more efficient implementation during construction, buildout, and installation.
- » Allow EVSE to build "at risk" and fast track refunding and grant reimbursements, when awarded.

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.

Florida is uniquely prepared for electrification, with clear plans and robust stakeholder engagement across the state; however, the national demand is increasing quickly and all states will need additional resources to effectively support operation and maintenance (O&M) of DCFC EVSE across its full lifecycle. Several of our team members have substantial resources in Florida and two have their headquarters in Florida as well.

Contracted resources will help the state with dynamic EVSE workforce and infrastructure management, including specific contract provision for on-going performance evaluation of the broader statewide electrification effort to inform specific identification of staffing and other resource needs. Specifically, we can help FDOT to build capacity in EV Planning and Engineering, EVITP-certified Electricians, and EV Technicians as Florida's EVSE footprint grows.

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.

In general, the total timeline for DCFC implementation is approximately eight (8) months and is heavily weighted on the early activities between site selection and permitting. Once the general design is completed for a site, build-out and installation can usually be completed within a 60-day timeframe.

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.

No EVSE products currently meet full BAA guidance due to lack of manufacturing plants in the United states; however, we anticipate we can deliver BAA DCFC within 12 months (before June 2023). Our current expectation is that temporary waivers will be required for the first 12-24 months as new facilities are built, opened, and ramp up operations.

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.

Current lead times for DCFC products (150kW+) are 16-36 weeks; however, the governing variable is likely to be equipment for requisite transformer service upgrades, which can have wait times in excess of 52 weeks.

We have identified specific equipment that is in short supply to include: CT Cabinets, switchgear, and many electrical components; however, our team has and is growing an inventory of all components required for DCFC installs. Our long-standing relationships with vendors and suppliers helps keep us at the front of the queue for new orders and we expect minimal, if any, disruption from delay in receiving required components for FDOT EVSE build out.

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?

We fully adhere to the Five-Step NIST Cybersecurity Framework version 1.1 and our specific approach incorporates (and in some cases exceeds) all elements of Florida's Cybersecurity Standards (FCS), dedicated by Rules 60GG-2.001 through 60GG-2.006. We adopted and are being certified (in the next 6 months) against the NIST Special Publication 800-171 for protecting Controlled Unclassified Information (CUI) and we maintain FedRamp Certification for our Defense clients.

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.

In accordance with leading industry trends, we predominantly use a time-based fee structure to disincentivize drivers from leaving cars parked in EV charging spaces longer than needed; however, our backend management software enables dynamic configuration of different power allocation and charging protocols to accommodate owner-specific requirements and emerging state laws that require power-based fees. Our EVSE equipment accepts payment through a smartphone or web-based application, tap-to-pay, Credit Card, or 1-800 phone number. We have not encountered any fee-collection issues.

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.

Purchase of any DCFC (Level 3) charger from our supplier includes two years of parts and labor warranty with option to extend for an additional two years of either parts, labor, or a combined extended warranty. Upon notification by a station owner of any issue, SemaConnect staff attempt remote diagnostic and remedy for immediate resolution. Where remote remedy is not possible, we dispatch qualified maintenance personnel in accordance with contract requirements. Our typical DCFC equipment lifecycle is 10 years, minimum, and we maintain the industry's highest uptime of 98 percent.

Our value-add, "Day 2" Maintenance Plan (offered through Heartland Charging) is a preventative service to complete at least six scheduled station checks per year to increase overall usability and prevent downtime. We developed this service in response to personal experience with broken EV chargers that were listed as operational on networked maps.

During our preventative maintenance, we have discovered problems with cords, touchscreens, plugs, adaptors, credit card machines, internet access, and other component failures that may not register as problems on backend network monitoring programs. This maintenance plan also enhances our team's ability to identify and aggregate best practices to maximize uptime and the overall system lifecycle.

This plan also includes provision for Outage Response, in which we have a technician within 24 hours to hotswap any components or charging heads to minimize downtime and revenue loss. We have multiple team sof EVITP-certified Electricians and Technicians who will be deployed at strategic locations across the state to fulfill the needs of Florida's EV Master Plan.

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

We can provide either a direct API, encrypted export, or secure portal for visibility and offer the following data elements: kWH, utilization, CO2 offset, demand chargers, pricing profiles, power sharing, peak and valley power reporting.

Our team is prepared to share data directly with FDOT's IT system, in accordance with NEVI guidelines, and to provide stored data sets and reports on a regular basis (e.g., monthly, quarterly, and annually).

Through our application, EVSE owners can easily:

» Authenticate and Authorize Different User Groups
» Monitor Real-Time and Overall kWh Utilization
» Add or Drop Network Charging Stations
» Register or Remove Users
» Set Pricing and Policies for Charging Station Access (e.g., time-of-use, peak demand, and other strategies)
» Create Historical Usage Reports
» Consolidate Parking and Energy Metering
» Monitor Fault-Trip Events
» Implement Demand-Response Procedures

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.

Preventative maintenance, dedicated customer support, and unified user experience are the central tenets of a convenient and reliable charging experience. In accordance with industry best practice, FDOT should require that only Open-Architecture software be used along corridors to facilitate seamless charging experience for all users.

We recommend that locked emergency breakers be installed and visible at all sites to quickly cut main power from the service panel to mitigate emergencies and that extra plugs and higher charging rates be implemented along major evacuation routes. Mobile, generator-powered (800kW) DCFC units can temporarily increase capacity along designated routes and be quickly re-positioned based on need.

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.

Beyond utilizing traditional public and other funding sources (e.g., VW Mitigation Settlement Fund) for EVSE equity, one strategy for increasing DCFC implementation in rural and disadvantaged communities is to implement building and development requirements to ensure that any new project authorization includes funding and provision for EVSE installation to support organic growth of the charging network over time.

We also recommend maximum utilization of rural land uses near the major corridors such as, public rest areas, private truck stops, fast food restaurants, park and ride facilities and services stations.

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

While technology innovation spurred growth and maturity of the EV car market, many of the charging innovations will be policy-based. Innovative operational strategies and financial policies can help to increase utilization rates in rural, underserved, and disadvantaged communities.

Linking EVSE installation projects with rural transit improvements can help bridge economic disparities, improve access to jobs and schools, and increase connectivity to critical medical needs (such as dialysis, which has historically been a unique challenge for rural communities). Beyond tax rebates and other purchase incentives, community outreach during EVSE project planning can increase public awareness and use of new chargers.

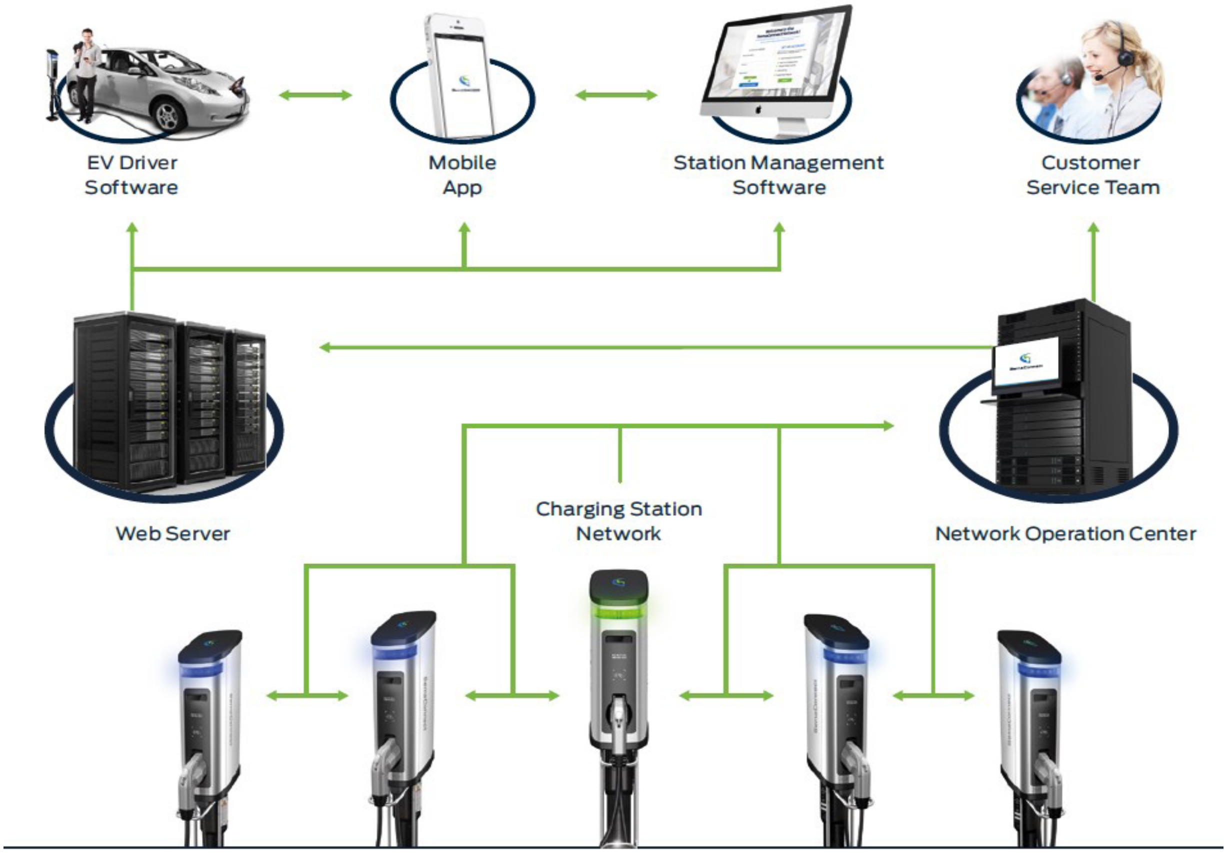
Specific Information Requested

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

Our team has industry-leading experience in the full cross section of DCFC infrastructure implementation, including modeling, design, planning, supply, installation, construction oversight, maintenance, performance monitoring, and evaluation. Across three separate installation partners on our team, we have installed 3,800+ sites and have the capacity to manage 50 simultaneous site installations, yielding up to 1,000 per year. Our supply lead (SemaConnect) currently has more than 17,000 charging stations and is quickly growing across the US.

Our engineering team was involved in the early implementation of EVSE equipment in Florida, including deployment support for 40 Level 2 chargers across North Florida and we have instrumented EVSE equipment as part of public and private electrification projects at airports in Atlanta, Cleveland, Columbus, Dallas-Fort Worth, Flint, Houston, Salt Lake City, San Luis Obispo, and Tampa. Our team also provided EVSE equipment for MassDOT, Johnson Space Center, and at Landgley Air Force Base.

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.



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

Hardware spec sheets are included as an appendix.

4. Software Information. Information on software components included and needed to create a typical DCFC system.

Station Management Software. Our web-based management software enables station owners to dynamically monitor and manage station equipment and usage in real time. Through our station management software, station owners can register users, monitor costs, set pricing, and track system usage. We also offer a custom package that can be integrated into commercial customers' existing operational software tools. We designed our web interfaces to be user friendly and maximize utility to station owners and fleet managers. Mindful of our customers' business needs, we designed the platform's open architecture to maximize portability into existing fleet management software tools to maximize the benefit of EV solutions. Our Management Software functions (Figure 3) include the ability to:

- Authenticate and authorize different user groups
- Monitor kWh utilization
- Add or drop charging stations in network
- Register or remove users
- Set pricing for charging station access

- Monitor usage in real time
- Create historical usage reports
- Set time-of-use policies and pricing
- Consolidate parking and energy metering
- Monitor fault-trip events
- Implement demand response procedures

Driver Software. Our charging system includes web-based tools for drivers that provide account management and charging insights to registered users. For individual drivers, this portal can help manage payment methods, identify charging locations, initiate charging sessions, and track usage and cost. Drivers may also request a smart card for authenticated access, which can help station owners manage different user groups. For example, commercial or residential station owners may provide free charging to employees, customers, or residents, while collecting revenue from other users to offset costs.

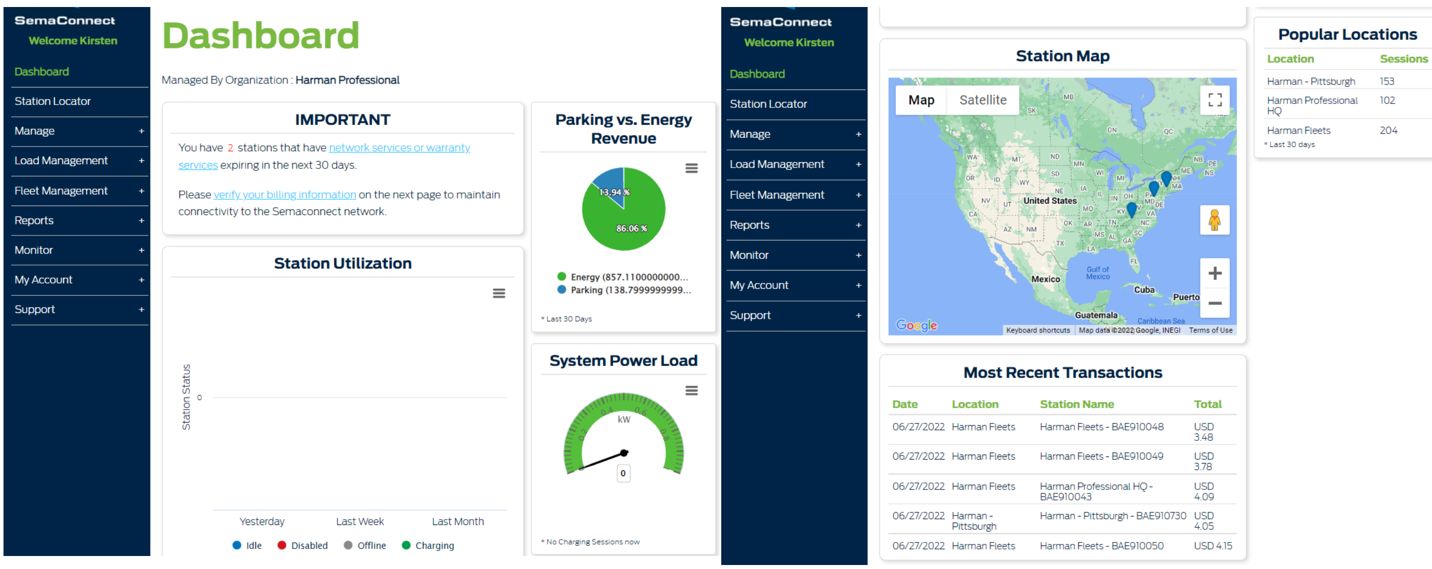


Figure 3. Sema Connect's Station Management Software provides real-time insights to station owners

Metering or Load/Energy Management Technology. We provide standards-based software to effectively monitor and manage energy consumption, including active peak power management and load management groups, described in the following sections. Our team offers all our clients robust configuration support and detailed information about each power management and sharing option with specific configuration examples for calculating power consumption and charge times under different scenarios.

Our load management software enables charging station owners to optimize their charging program by adjusting the power delivery of their chargers. The software enables customers to easily perform both peak power management and power sharing management across a group of chargers at the circuit, panel, or site level.

Peak Power Management can be applied to an upper limit on cumulative power consumption at a group of chargers to reduce or eliminate expensive infrastructure improvements or utility peak charges. The following strategies can be applied to manage peak power:

» Constant Peak Power: A single limit is always in effect.

» Time-of-Use Peak Power: The limit may vary according to the time of day or day of week.

» Demand-Response: A default limit is in effect but may be reduced by a utility signal.

Power Sharing Management defines how the EVSEs under load management utilize available power through one of three strategies:

1. Set Power: Stations will always have the same maximum power output regardless of how many vehicles are charging.
2. Equal Power: Stations may output a different power level depending on how many vehicles are charging at a given time. As more vehicles start charging, the amount of power output by each station will drop.
3. First-in/First-out: Vehicle priority is based on the order in which they connect to stations. The first vehicles can charge at full power until the available power is allocated and subsequent

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

Purchase of any DCFC (Level 3) charger from our supplier includes two years of parts and labor warranty with option to extend for an additional two years of either parts, labor, or a combined extended warranty. Upon notification by a station owner of any issue, SemaConnect staff attempt remote diagnostic and remedy for immediate resolution. Where remote remedy is not possible, we dispatch qualified maintenance personnel in accordance with contract requirements. Our typical DCFC equipment lifecycle is 10 years, minimum, and we maintain the industry's highest uptime of 98 percent.

Our value-add, "Day 2" Maintenance Plan (offered through Heartland Charging) is a preventative service to complete at least six scheduled station checks per year to increase overall usability and prevent downtime. We developed this service in response to personal experience with broken EV chargers that were listed as operational on networked maps.

In the course of our preventative maintenance, we have discovered problems with cords, touchscreens, plugs, adaptors, credit card machines, internet access, and other component failures that may not register as problems on backend network monitoring programs. This maintenance plan also enhances our team's ability to identify and aggregate best practices to maximize uptime and the overall system lifecycle.

This plan also includes provision for Outage Response, in which we have a technician within 24 hours to hotswap any components or charging heads to minimize downtime and revenue loss. We have multiple teams of EVITP-certified Electricians and Technicians who will be deployed at strategic locations across the state to fulfill the needs of Florida's EV Master Plan.

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

The SemaConnect/RS&H Team has been structured to be flexible in our delivery of the FDOT DCFC EVSE program, Our preference is for an Engineering, Procurement, Construction Management (EPCM) or Design-Build (DB) contract model in which FDOT allocates a fixed portion of the state budget to each authorized contractor. This would equip our team to streamline interrelated activities and condense the overall implementation timeline.

We can also support a leasing model in which FDOT creates a long-term lease of real property (e.g., parking spaces, garages, fleet facilities) to our member company Heartland Charging for our team to purchase, install, commission, and maintain DCFC infrastructure across the lease lifecycle. This approach allows FDOT to leverage existing real estate for EVSE build-out at no additional cost to the state.

A hybrid approach would leverage public funds to build out as much of the infrastructure as possible under state ownership through ECPM contracts and to allocate remaining funds through long-term leases to address gaps where locations may not fit federal funding requirements, budgets, or timelines. This approach may give FDOT the most efficient approach to implementation of the EV Master Plan and development of the state EV Infrastructure Deployment Plan.

We propose the following recommendations for FDOT's DCFC Contracts:

- Because the sector is changing as fast as it grows, plan to issue multiple rounds of solicitation to avoid getting locked into a model with unforeseen technical or business challenges.
- Create a uniform matrix for performance evaluation of each installed site to aggregate data and feedback on the density of chargers by location, distance between chargers, accessibility, utilization, and associated outcomes.
- Solicit public feedback from all community stakeholders through an equitable roundtable of business owners, regional and local government leaders, community residents, and others to fully address FDOT's traveler needs.
- Create a fee-based online permitting process with quick approvals to promote operational efficiency and sustaining revenue.
- Standardize the EVSE Review Process.
- Utilize an industry-approved specification for hardware and software.
- Require only an Electric Permit for more efficient implementation during construction, buildout, and installation.
- Allow EVSE to build "at risk" and fast track refunding and grant reimbursements, when awarded.

Having flexibility in the delivery method used is important since these are not one size fits all projects. Property owners could be businesses, operate fleets, be municipalities or public agencies. Our team has done it all and we have provided innovative solutions to address specific site constraints and address user's preferences. The goal is to make the charging experience painless and efficient while deploying the DCFC EVSE equipment as efficiently as practical as the FDOT charging network gets built out and fully completed.

DS Series Standalone DCFC

- Dual CCS1 or CHAdeMO/CCS1
- 15ft Cable/Optional 23ft Cable
- Altitude: 6,561ft
- Operating Temp: -30˚C~50˚C
- Optional Cable Management
  OCPP Compliant, RFID, LCD

  60kW/90kW/120kW/150kW/180kW

DO series

360kW - Fan Cooling System DC Charger

Features

- Simultaneously 4 DC charging, up to 360KW per output with liquid-cooled connector
- Power cabinet supports Pantograph Charging
- Multi-standard: CCS, CHAdeMO and GB/T
- Network or standalone operation
- User authentication
- Support smart charging and load balancing
- Customization available

Applications

- EV bus station
- Highway gas/service station
- Parking garage
- EV dealer workshops
- Commercial fleet operators
- EV infrastructure operators/service providers

DO Series			
Model Name		CE, DO 360 Series	UL, DO 360 Series
Picture			
Power Specification			
AC Input	Input Rating	3Φ_380~415Vac (±15%)	3Φ_480Vac (+10%, -15%)
	AC Input Connection	3P+N+PE (Wye configuration), TN/TT/IT	3P+N+PE (Wye configuration), TN/TT
	Max. Input Current	396kVA	
	Frequency	50Hz/60Hz	
	Power Factor	>0.99 @ (APFC)	
	Efficiency	>94% at nominal output power	
DC Output	Output Voltage Range	CCS :150~950Vdc / GBT: 150~750Vdc / CHAdeMO: 150~500Vdc	
	Max. Output Current	Single Liquid-cooled plug:500A@720V, 380A@950V Single Regular plug: 250A@720V, 200A@900V CHAdeMO: 125A@500V	
	Max. Output Power	360kW	
	Voltage Accuracy	±2%	
	Current Accuracy	±2%	
User Interface & Control			
Display		7" TF T-LCD	
Push Buttons		Operation buttons/ Emergency stop button	
User Authentication		RFID ISO14443A (M1/MIFARE Card)	
Display Information		RFID: support ISO 14443A/B, ISO 15693, FeliCa Lite-S (RCS966) OCPP, 2D barcode, APP, Mobile payment	
Communication			
External		Ethernet/4G/Wi-Fi	
Internal		CAN bus/RS485	
Environmental			
Operating Temperature		-30˚C~50˚C, power derating from 50 and above	
Humidity		5%~95% RH, non-condensing	
Altitude		≦ 2000m	
IP/IK Level		IP55/IK10 (not including screen and RFID module)	
Cooling Method		Fan cooling	
Mechanical			
Cabinet Dimension(W x D x H)		1400 x 800 x 1900mm (main cabinet), 700 x 550 x 1800mm (sub cabinet)	
Weight		≦ 1000Kg	
Cable Length		4m	
Protection			
Input Protection		OVP, OCP, OPP, OTP, UVP, RCD, SPD	
Output Protection		OCP, OVP, UVP, OTP, IMD	
Regulation			
Compliance		IEC 61851-1, IEC 61851-23, IEC 61851-21-2	UL 2202, UL 2231-1/-2
Safety		TBD	
Charging Interface		CHAdeMO V1.2, DIN 70121, GB/T 20234.3, (ISO15118:2020/Q4)	

DS series

150kW Free Standing DC Fast Charger

Features

- Simultaneously 2 DC and 1 AC charging (AC will be available in 2020/Q4)
- Multi-standard: CCS, CHAdeMO and GB/T
- Network or standalone operation
- User authentication
- Optional cable management accessories
- Support smart charging and load balancing
- Efficiency > 94% ; PF > 0.99(APFC)
- 7 inches LCD screen with user friendly interface
- OCPP 1.6 JSON
- IK10(Not including screen and RFID module), IP55
- Customization available

Applications

- Highway gas/service station
- Parking garage
- Commercial fleet operators
- EV infrastructure operators and service providers
- EV dealer workshops

Accessory

Please refer to page 37 for accessory information.

- Cable Management

Simultaneously 2 DC and 1 AC charging
(AC will be available in 2020/Q4)

DS Series			
Model Name		CE, DS 150 Series	UL, DS 150 Series
Picture			
Power Specification			
AC Input	Input Rating	3Φ_380~415Vac (±15%)	3Φ_480Vac (+10%, -15%)
	AC Input Connection	3P+N+PE (Wye configuration), TN/TT/IT	3P+N+PE (Wye configuration), TN/TT
	Max. Input Current	DC System:3Φ270A(Typ.±1%) AC module(43kW):3Φ63A(±1%) or AC module(22kW):3Φ32A(±1%)	DC System:3Φ226A(Typ.±1%) AC module(19.2kW):1Φ80A(±1%)
	Frequency	50Hz/60Hz	
	Power Factor	>0.99 @ full load	
	Efficiency	≥94%	
DC Output	Output Voltage Range	CCS2:150~950Vdc GBT: 150~750Vdc CHAdeMO:150~500Vdc AC:3Φ_380~415Vac (±15%)	CCS1:150~950Vdc CHAdeMO:150~500Vdc AC:1Φ_240Vac (+10%, -15%)
	Max. Output Current	CCS2:158A@950Vdc GBT:200A@750Vdc CHAdeMO:120A@500Vdc AC(43kW):3Φ63A@230Vac or AC(22kW):3Φ32A@230Vac	CCS1:158A@950Vdc CHAdeMO:120A@500Vdc AC(19.2kW):1Φ80A@240Vac
	Max. Output Power	DC System:150kW + AC module:3-phase 43kW or 22kW	DC System:150kW + AC module:Single Phase 19.2kW
	Voltage Accuracy	±2%	
	Current Accuracy	±2%	
User Interface & Control			
Display		7" TFT-LCD	
Push Buttons		Operation button/Emergency stop button	
User Authentication		RFID: support ISO 14443A/B, ISO 15693, FeliCa Lite-S (RCS966) OCPP, 2D barcode, APP, Mobile payment	
Communication			
External		Ethernet/4G/Wi-Fi	
Internal		CAN bus/RS485	
Environmental			
Operating Temperature		-30˚C~50˚C, power derating from 50˚C and above	
Humidity		5%~95% RH, non-condensing	
Altitude		≦ 2000m	
IP/IK Level		IP55/IK10 (not including screen and RFID module)	
Cooling Method		Fan cooling	
Mechanical			
Cabinet Dimension (W x D x H)		800 x 650 x 1900mm ±1%	
Weight		≦ 460kg ±1%	
Cable Length		4m	4m
Protection			
Input Protection		OVP, OCP, OPP, OTP, UVP, RCD, SPD	
Output Protection		OCP, OVP, UVP, OTP, IMD	
Regulation			
Certificate		IEC 61851-1, IEC 61851-23, IEC 61851-21-2	UL 2202, UL 2231-1/-2
Safety		CB, CE	NRTL - cETLus
Charging Interface		CHAdeMO V1.2, DIN 70121, GB/T 20234.3, (ISO15118:2020/Q4)	

DS series

180kW Free Standing DC Fast Charger

Features

- Simultaneously 2 DC and 1 AC charging (AC will be available in 2020/Q4)
- Multi-standard: CCS, CHAdeMO and GB/T
- Network or standalone operation
- User authentication
- Optional cable management accessories
- Support smart charging and load balancing
- Efficiency > 94% ; PF > 0.99(APFC)
- 7 inches LCD screen with user friendly interface
- OCPP 1.6 JSON
- IK10(Not including screen and RFID module), IP55
- Customization available

Applications

- Highway gas/service station
- Parking garage
- Commercial fleet operators
- EV infrastructure operators and service providers
- EV dealer workshops

Accessory

Please refer to page 37 for accessory information.

- Cable Management

Simultaneously 2 DC and 1 AC charging
(AC will be available in 2020/Q4)

DS Series			
Model Name		CE, DS 180 Series	UL, DS 180 Series
Picture			
Power Specification			
AC Input	Input Rating	3Φ_380~415Vac (±15%)	3Φ_480Vac (+10%, -15%)
	AC Input Connection	3P+N+PE (Wye configuration), TN/TT/IT	3P+N+PE (Wye configuration), TN/TT
	Max. Input Current	DC System:3Φ330A(Typ.±1%) AC module(43kW):3Φ63A(±1%) or AC module(22kW):3Φ32A(±1%)	DC System:3Φ270A(Typ.±1%) AC module(19.2kW):1Φ80A(±1%)
	Frequency	50Hz/60Hz	
	Power Factor	>0.99 @ full load	
	Efficiency	≥94%	
DC Output	Output Voltage Range	CCS2:150~950Vdc GBT: 150~750Vdc CHAdeMO:150~500Vdc AC:3Φ_380~415Vac (±15%)	CCS1:150~950Vdc CHAdeMO:150~500Vdc AC:1Φ_240Vac (+10%, -15%)
	Max. Output Current	CCS2:190A@950Vdc GBT:240A@750Vdc CHAdeMO:120A@500Vdc AC(43kW):3Φ63A@230Vac or AC(22kW):3Φ32A@230Vac	CCS1:190A@950Vdc CHAdeMO:120A@500Vdc AC(19.2kW):1Φ80A@240Vac
	Max. Output Power	DC System:180kW + AC module:3-phase 43kW or 22kW	DC System:180kW + AC module:Single Phase 19.2kW
	Voltage Accuracy	±2%	
	Current Accuracy	±2%	
User Interface & Control			
Display		7" TFT-LCD	
Push Buttons		Operation button/ Emergency stop button	
User Authentication		RFID: support ISO 14443A/B, ISO 15693, FeliCa Lite-S (RCS966) OCPP, 2D barcode, APP, Mobile payment	
Communication			
External		Ethernet/4G/Wi-Fi	
Internal		CAN bus/RS485	
Environmental			
Operating Temperature		-30˚C~50˚C, power derating from 50˚C and above	
Humidity		5%~95% RH, non-condensing	
Altitude		≦ 2000m	
IP/IK Level		IP55/IK10 (not including screen and RFID module)	
Cooling Method		Fan cooling	
Mechanical			
Cabinet Dimension(W x D x H)		800 x 650 x 1900 mm ±1%	
Weight		≦ 500kg ±1%	
Cable Length		4m	4m
Protection			
Input Protection		OVP, OCP, OPP, OTP, UVP, RCD, SPD	
Output Protection		OCP, OVP, UVP, OTP, IMD	
Regulation			
Certificate		IEC 61851-1, IEC 61851-23, IEC 61851-21-2	UL 2202, UL 2231-1/-2
Safety		CB, CE	NRTL - cETLus
Charging Interface		CHAdeMO V1.2, DIN 70121, GB/T 20234.3, (ISO15118:2020/Q4)	