eMobility Task Force – Team 3 building a robust charging infrastructure

EVCE Siting Recommendations – May 2022

Summary

As the growth of EV adoption expands, so will the need for EV infrastructure. The expansion and placement of EV infrastructure is strategic in nature and should follow some standard guidelines that are aimed at stimulating a high adoption rate of Electric Vehicles and ensuring equitable access and affordability to users, while pursuing the best return on investment. There are several major dimensions that should be considered when installing infrastructure:

1. **The speed of the charging unit.** Charging speeds range from 4 miles per hour of charging all the way to 750 miles per hour. As can be expected, the costs are similar in range, varying from little to no cost for a Level 1 charger at home, to millions of dollars to install high speed super charging hubs.
2. **The proximity to amenities.** Even the fastest charger will require 15-30 minutes to replenish a battery on cars designed to accept high speeds. This means that it is necessary to provide customers basic resources, like restroom access, as well as options and tools to pass the time, such as food retail or commercial services, or seating with accessible WIFI.
3. **Operational procedures to ensure customers share a limited resource.** It is important to incentivize customers to limit the time parking at the charging station to the time it takes to actively charge the car, otherwise other customers will find it difficult to gain timely access to charging stations. While this applies predominantly for high speed chargers, mechanisms to drive turnover at any charging station should be a core consideration.

This document is intended to provide guardrails for our customers to make best use of their investment into the next generation of transportation.

Speed of charging

Charging stations are classified by the number of kW it can support; as a rule of thumb, for every kW of capacity the car will gain 3 miles of distance. There are three basic levels of charging:

- Level 1 (can be addressed through standard 120v outlets). Level 1 typically charges at a rate of 1.3 – 2.4 kW or up to 12 miles per hour.
- Level 2 (can be addressed through standard 240v outlets). Level 2 typically charges at a rate of 6.2 – 19 kW or up to 57 miles per hour.
- Level 3 requires specialized installation and power requirements. Level 3 typically charges at a rate of 20 – 350 kW or up to 750 miles per hour.

Note: charge times vary by vehicle type and model. Each vehicle typically has governing software that protects the battery from being charged too quickly and therefore causing potential damage.

It is important to note that each level of charging has appropriate locations where the investment makes sense and the use case for charging aligns with the speed capabilities.

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Level 1 charging

Level 1 is best targeted to any location where the car may be stationary for 12 hours or more. Typically this would be a single family or multi-family home, airport or potentially the workplace. Level 1 charging can be accomplished through either standard 120/240 V outlets and is therefore less expensive than Level 2 and greater. Typical use cases require that the customer bring their own portable charging unit. Typical locations include home, work or airport parking.

Level 2 charging

Level 2 charging is best targeted where the car is likely to be parked for 2-6 hour time period. Typically this would be a retail or restaurant setting, or workplace. Some homeowners that have higher daily mileage or multiple EVs may also consider installing a Level 2 charger at home. Level 2 charging can be installed through 240 kV, but more typically it is installed by a qualified electrician and includes a built in charging port and network software for billing and troubleshooting. Level 2 can be positioned on street or within parking lots or garages.

Level 3 charging

Level 3 charging is best positioned for cars that require a quick turnaround for charging. Typically the car is parked for less than an hour. Ideal locations include along interstates, at locations where errands tend to be short (i.e., a grocery store), and electric "fuel" stations (20-30 minute charge). These locations must be very strategically located; they should be positioned for long-range travelers off the interstates or in locations that allow for quick turnaround for electric fleets, such as rideshare and last mile delivery. Additional criteria that should be considered for ideal sites:

- Spacing to handle both light and medium duty trucks, (i.e., turning radiuses and access points for medium class freight trucks);
- Access to shading and/or amenities (bottle filling stations, restrooms, WIFI);
- Utilizing solar power for chargers, considerations for floating solar;
- On site battery storage to assist with resilience;
- Ongoing access through 24 hour operation;
- Safety lighting and mechanisms;
- Proximity to food and beverage;
- On site and/or remote customer service;
- Maintenance needs, such as litter and trash removal and general cleaning;
- Landscaping, ideally incorporating Florida native plants that can assist with storm water management/drainage;
- Partnerships for successful implementation and management (i.e., charging hub for LYNX but with public access).
- Ability to make sure these spaces turn around quickly to allow service to many customers.
- Considerations for incentive based charging to push customers to off peak times

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Parking/charging enforcement

While there are State laws prohibiting non-EV customers from blocking the charging station, there are other situations that may impair customers from using the site. Consistency with this enforcement is advantageous across all Central Florida jurisdictions. Controls that monitor the use and abuse of charging stations are typically built into the managing network and at the discretion of the station owner. There are multiple opportunities for owner/operators to dissuade customers from parking inappropriately at a charging station beyond the time required to replenish a charge. These include service fees for staying after charging has completed or hourly parking rates added to the bill. Orlando Parking enforcement is listed in Chapter 39 of code enforcement, for Orange County it is in Sec. 35-63 (m), Orange County Code. In both cases the vehicle must be capable of charging, and this must be clearly marked through signage. Enforcement can address internal combustion cars that are parked in a charging location but not parking beyond the time needed to charge. Parking beyond the time needed to fill the EV will need to be addressed through penalty fees in the charging station.

Additional considerations for all public charging include:

- Signage for wayfinding use and assistance
- Art / placemaking / iconic cultural installation
    - Solar flower
    - Cost considerations…
- Demographic and other parameters for locations
    - EC effort with Orlando on EVSE Plan
    - MetroPlan Orlando Study
    - Orange county EV charging locations study
    - Evacuation routes
- Micromobility charging
    - Right of way implications
    - Co-location with other charging

Hub examples and best practices

- https://www.businessinsider.com/shell-gas-station-electric-vehicle-charging-hub-london-uk-2022-2

Other resources:

- Additional information on shading, wifi, seating, solar, storage: https://lumossolar.com/products/solarzone/
- Design guidelines: https://cleantechnica.com/2019/02/16/technical-design-guidelines-for-ev-charging-infrastructure-cleantechnica-report/

REQUEST FOR INFORMATION (RFI) from the Florida Dept. of Transportation

This RFI is being issued by the Florida Department of Transportation (FDOT) to solicit feedback and recommendations for the planning, coordination, and development of electric vehicle charging infrastructure within the State of Florida. The FDOT is currently developing a *Statewide EV Infrastructure Deployment Plan*, which is in response to the recent The National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance authorized under the Bipartisan Infrastructure Law (BIL). As such, the purpose of this RFI is to collect input from potential market participants across varying sectors to obtain information on how to best support the deployment for direct current fast charge (DCFC) electric vehicle supply equipment (EVSE).

Background
According to Federal Highway Administration (FHWA) guidance for the NEVI formula program under the BIL, Florida can expect to receive $198 million in federal funding between 2022-2026. While formula funds are essentially guaranteed for each state, the BIL requires each state DOT to submit an EV Infrastructure Deployment Plan which details how the NEVI formula funds will be utilized consistent with FHWA guidance on developing charging networks along designated alternative fuel corridors (AFC's). Responses from this RFI will be used to inform FDOT's *Statewide EV Infrastructure Deployment Plan* as well as future competitive solicitations.

Respondents are requested to not provide proposals or marketing material and should instead focus on providing detailed answers to the questions in this RFI. Respondents may also choose to abstain from answering questions that may not be relevant to them. Furthermore, the purpose of this RFI is for information-gathering purposes only; FDOT will not select a vendor for DCFC EVSE deployment based on responses to this RFI. No contracts will result from this RFI.

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?

   Orlando Utilities Commission (OUC) has been a leader in providing EVSE infrastructure in Central Florida since 2010. We have helped to place more than 350 charging stations throughout the Orlando area. OUC is currently building a DC Fast Charging hub in downtown Orlando that offers 20 DCFC stations, expected to be functional in December of 2022 and completed by July of 2023. In addition, OUC, in cooperation with the Orange County Convention Center, is building a public charging hub that will offer 6 DCFC charging units. Specific accomplishments include:

   - OUC has installed, maintained and operated 250 charging stations since 2014. Our stations are both public and private, and are Level 2 and 3.
   - OUC has installed an additional 100 Level 2 stations through our Own it Charge it program. This program allows our customer base to leverage OUC purchasing power to install charging stations at their location, paying for a 5-7 year lease on-bill.
   - We have agreements with third-party equipment and installation vendors and are able to install and operate as many stations as requested.
   - Further OUC plans to install, own and operate 8 high-speed hubs throughout our service territory. Our first station at 129 Robinson Street will be the largest non-Tesla site in the

State of Florida and one of the largest in the U.S., with 14 120 kW plugs and 6 240 kW plugs. Our second site is in planning and design for the Orange County Convention Center.

- OUC has installed a DCFC system to support LYNX's adoption of electric buses. LYNX is Central Florida's mass transit operator. This system is located at 2500 LYNX Lane, Orlando, and is a private charging station dedicated for the sole purpose of charging LYNX's electric buses. There are 8 dispensers capable of discharging at up to 120kW each, with a site-level limit currently set at 480kW. The current site-limit will only allow 4 dispensers to charge at 120kW simultaneously, or 8 dispensers at 60kW. Near-term expansion of the system will enable a site-level limit increase to 960kW, allowing all 8 dispensers to operate at 120kW simultaneously.

OUC has committed to spend $45 million before 2030 to further the electrification of the transportation sector in OUC's territory. These expenditures include charging infrastructure, transmission upgrades, charging hubs, and customer education. OUC has been and remains committed to designing and implementing innovative electrification adoption programs, including support for e-buses, fleet adoption programs, dealership education programs, and realizing additional DCFC stations as we work to maintain Orlando's position as one of the Top 10 most-EV ready cities in the nation.

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.

- NEVI funds can accelerate the establishment of networks of high-speed charging equipment ─ critical to overcoming range anxiety and accelerating the adoption of EV vehicles by individuals and fleet owners. Specifically, NEVI funds would accelerate OUC's Charging Hub Plan buildout for our service territory. Eight charging hubs will be strategically placed throughout our service territory to accommodate residents, visitors, and evacuees in the event of a disaster.
- NEVI funds can offset the additional costs needed to associate high speed charging with storage and solar. By augmenting stations with these technologies we are better able to flatten the load required to serve high speed stations and mitigate demand charge expenses.
- NEVI funds can fund an increase in the number of ports in existing or planned hubs. Where installation plans include 4 or 8 port DCFC charging hub, NEVI funds could be used to match the number of ports, expanding the size of the hub. This recognizes that the incremental cost for ports is not quite as expensive as the initial installation.
- NEVI funds could establish a statewide agreement with a network provider, minimizing network POS cost, which currently averages $300/port/year. This expense is financially burdensome at low-utilization rates, making Level 2 station installations difficult to financially justify. Many locations are not charging for energy consumption, as it is less expensive to forego energy revenue and avoid the Network POS costs, establishing an unsustainable consumer expectation of the cost of refueling.
- NEVI funds could be allocated to offset the first-purchase cost of charging equipment for larger fleets that are considering converting. The offset could be dependent on a commitment to convert a minimum number of vehicles within a defined time period. Consider incorporating funding for energy storage at the site to mitigate demand expenses with lower initial utilizations.
- NEVI funds should be used to encourage matching funds from industrial partners. Currently, both infrastructure and operating costs are high, making commercial viability of DCFC stations challenging. By offsetting installation and operating costs for a period of time, commercial operators may be able to pilot and build business cases that

incorporate total cost of ownership while keeping associated costs competitive with alternate technologies for customers during build out of the initial network of stations.

3. What are the biggest challenges or barriers that should be addressed to expedite reaching the goals of the NEVI program?
   - Network POS access fees currently exceed the revenue generated from energy sales for most Level 2 charging stations. Finding ways to minimize the network fees initially until a utilization and energy sales tipping point is reached that can support the current network fees is critical to seeing further deployment of Level 2 stations at scale.
   - Identifying locations within 1 mile of an evacuation route exchange to qualify for funding is a significant barrier for communities that are not served by federal interstate highways. This could be mitigated by consideration of secondary routes, including state and county major roads. Commercial locations that are not necessarily positioned at exchanges but can demonstrate proximity to large fleets, highly trafficked corridors and population centers should be considered for funding. Commercial locations should be allowed to demonstrate potential need, not bound by the geographies of interstates or secondary transportation corridors.
   - The excessive costs associated with associating storage and/or solar at a recharging location. The addition of renewable distributed generation and storage adds significant cost to projects and without a storage component, does not provide 24/7 access during an outage or emergency.
   - Since commercial viability of an EV charging station is directly related to high utilization, EV infrastructure should be placed in locations that will experience the highest utilization. However, predicting where EV stations should be placed to achieve high utilization is challenging. Funding and sharing study results on key factors that identify potential locations and increase utilization of charging stations would be beneficial for all parties working to increase the presence of charging infrastructure,
   - As EV range increases, and charging infrastructure is incorporated into home and workplace electrical system design, the dependence on DCFC will likely change. Current understanding of DCFC utilization may not be sufficient for efficient placement of stations. Funding thought leadership that anticipates these changes would be of great value for organizations making long term investments in charging infrastructure

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?
   - Responses to this question vary widely by market served:

Residential

   - Attached find work that was completed by the eMobility charging infrastructure taskforce, comprising a wide membership including Utility, City Planning, County planning and EV advocacy groups.
   - In every scenario, users balance proximity to primary task, station access and availability, time required to charge, pricing and dwell time in the assessment of the convenience of a charging station.
   - DCFC utilization is primarily driven by EV owners who are either passing through the area on a longer trip, or are limited by a very short duration followed by a longer distance traveled. In this scenario, DCFC users are looking for a quick boost in range (100 – 200 miles) before continuing their journey. If the user expects to stay longer than a couple of

hours, they should be incented to charge using a Level 2 charger, with pricing aligned to promote this behavior.

- Ideal DCFC is likely located along high-volume, high-speed corridors (e.g. interstates, turnpikes) to support long-distance journeys, and should be co-located in proximity to food or specific retail destinations. An EV could charge while the owner takes a food break, or perhaps engage in a short (less than 30 minutes) shopping trip.
- DCFCs may also be located at destinations (e.g. attractions, sporting events, etc), but these destinations may also be sufficiently served by AC Level 2 chargers, depending on their distance and the typical time spent at the destination. Alternately, with events and locations that support valet services, DCFC would be an added value for the valet parking experience, maximizing utilization of the charging equipment.
- Consideration should be given to supporting evacuation routes during hurricanes. This may lead to overbuilding a site (i.e. excess stations than may be commercially-viable), which will tend to decrease the per-station utilization, but these will be necessary for EV owners who are evacuating. Consideration of alternate uses for overbuilt stations (dedicated fleet charging locations, reservation-only stations) may assist in recovering deployment expenses associated with overbuilding.

Commercial

- Commercial locations should be located at the fleet depot yards that are currently in place. For smaller fleet operations, a shared charging depot may permit larger volume deployment of DCFC, allowing participants to share the infrastructure expenses associated with deployment.
- Charging hub proximity to common fleet destinations (e.g., distribution centers) may be required to incent the development of longer-haul use of electric class 8 vehicles. These stations should include scheduled access, encouraging planned stops with guaranteed access for fleet management.
- Additional consideration should be given for commercial sites with higher costs for renovation vs. green field installation. “EV ready” incentives could be employed for new construction to encourage preparation for future EVSE installation, even if the owner is not currently considering deployment of charging infrastructure on the site.

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

- OUC is considering locations that offer easy public access to the charging stations along with the ability to include alternate monetization strategies to mitigate the capital investment for the equipment and site preparation. These include consideration of advertising revenue potential, access to convenience services, including quick-service food and shopping, along with potential for valet-like services that ensure the maximum utilization of the charging equipment while offering convenience to vehicle owners. OUC has worked with 3rd party data analysis firms that specialize in siting EV equipment based on potential consumer advertising impressions.
- OUC utilizes FDOT registration data to understand the quantity of EV vehicles in geographic regions of the service territory and considers siting equipment within proximity of the higher density communities, generally nearer to commercial enterprises where owners are likely to remain for 30 to 60 minutes – grocery stores, restaurants and retail outlets. Where the potential exists for owners to remain for longer than 60 minutes, a mix of Level 2 and DCFC equipment is critical, along with a pricing structure that incents owners to minimize their time parked in locations with access to a charging station beyond the time necessary to adequately charge the owner’s vehicle. We employ very similar location siting as is stated in the attached residential criteria.

- Other specific considerations:
  - Our first consideration is to ensure that the DCFC site maximizes territory coverage and does not significantly overlap with existing or planned sites.
  - Our second consideration is to look at the density of EV ownership and potential for EV ownership at the location, looking specifically for multi-family housing density, ease of access, and supporting amenities.
  - OUC also considers the potential for fleet opportunity charging, including any potential barriers to use by class 2 – 8 fleet vehicles.
  - A final consideration is with land ownership and the capability for a long-term site agreement. Land ownership with a public agency like OUC, Orange County and City of Orlando make ideal locations. Private ownership requires a solid site agreement allowing for long-term positioning of the equipment and consideration of how to unwind any siting relationship if necessary.
- OUC is considering leveraging analytic solutions that are used by third-party analytical services providers to identify ideal locations. OUC has specifically worked with Volta to review their siting tools.

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?
   - Shared sites should be encouraged, where a Commercial fleet uses the location overnight, and it is open to public charging during the day. Another examples includes the extreme charging station requirements for semis. In this case, the cost for installation and demand mitigation would warrant multiple fleets sharing a single high-speed location.
   - As has been demonstrated with ICE fueling, OUC believes it will be critical to combine EV charging with additional value propositions that drive revenue streams, including food purchases, vehicle servicing and other amenities. The margins associated with stand-alone EV charging are likely to require very high station utilization to recover purchase, installation and operation expenses. Co-locating charging with other revenue streams with equivalent or greater margins permits lower equipment utilizations and may prove a more cost-effective, profitable solution at an individual site level.
   - Extreme high-speed charging stations today require 10-15 minutes dwell time at a location. As charging speeds increase and dwell times reduce, it would be harder to justify micromobility pairing since the overall charging time would not give EV owners enough time to mobilize to a different location before having to return.
   - DCFC stations would significantly benefit from the introduction and wide-scale adoption of autonomous driving technology. Owners would schedule appointments to recharge their vehicle and the vehicles would reposition themselves to support recharging. This will require charging equipment that does not need to be manually connected to the vehicle and may also require more area to support vehicle movement and storage. In the absence of automated approaches, this could also be handled through an on-site valet approach with other value added services to encourage utilization.
   - High-speed data transmission access may also be required on site, permitting vehicle manufacturers to offer software upgrades, run vehicle diagnostics or download operational data while the vehicle is being recharged. Incorporation of other automotive maintenance services (e.g., car washes, compressed air access, tire services, route planning information) or inclusion of driver's license and license plate renewals, access to vehicle insurance and the like may give rise to a new style of auto service center.

- Multimodal access accommodations (to rail, bus, e-bike or scooter) are likely, with considerations made for weather conditions (e.g., excessive heat or cold, precipitation). However, as previously stated, there is a need to consider dwell times and return times to allow for station availability.

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.
   - OUC has strong partnerships with the City of Orlando, Orange County and LYNX to help facilitate their transition to electric.
   - OUC has partnered with LYNX to procure and install DCFC stations for its electric bus fleet. LYNX initiated the outreach very early in its planning process, which was connected to its application for federal funds through the FTA Low/No Emissions grant program. An agreement was established between LYNX and OUC for on-bill payment of the charging stations.
   - OUC does maintain contracts with EV hardware and software entities for provision and installation of EVCE and has done so since 2014 to benefit customers in the territory.
   - OUC is exploring partnerships with other entities that are capable of combining revenue streams in order to better justify the expense of installing EVCE. Pairing revenue streams such as marketing, food and retail sales with charging opportunities speeds the financial return for the investment in the infrastructure deployment.
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.
   - All parties must be demonstrably vested and able to see a tangible return on their investment of time and money.
   - Responsibilities must be clearly identified and agreed upon. Failure to deliver on responsibilities will lead to a failed relationship. If all parties are equally invested, then failure of one partner should be structured contractually to allow for replacement.
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.
   - OUC is in conversations with private entities and believes it is too early to disclose the full nature of the relationship under consideration. However, from OUC's side we seek an adequate return on equipment investment.
   - OUC and LYNX entered into an agreement to support the purchase and installation of DCFC for LYNX's e-buses. In this model, OUC agreed to provide the initial purchase of the equipment, as well as a mid-life equipment replacement costs. In return, LYNX agreed to a monthly usage payment that allows OUC to recover costs in addition to the energy revenue. The payment from LYNX to OUC is made through an on-bill line expense created for this purpose. Electricity costs for the operation of the charging station are collected per tariff, and are separate from the station installation, operation and maintenance costs.
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.
    - It's unclear what the overall workforce requirements will need to be to support the deployment of EVs and charging infrastructure. EV maintenance requires a mix of old and

new knowledge and is currently hampered by the lack of industry standardization of equipment component design. A lack of operating history hampers understanding of what materials, training and frequency of inspection are necessary to ensure 99%+ uptime.

- While there likely may be enough workforce for today, it is clear that some level of workforce reskilling and retraining will be required. Currently there is shortage of skilled electricians and electrical technicians. As the total vehicle fleet converts from ICE to EV, there will be opportunities for current workers to extend their knowledge and new workers to be trained in this emerging skillset.
- There is not a comprehensive maintenance approach for the current investment in EVCE. Most stations remain under warrantee and are serviced by OEM service technicians, who may be based out of state and require 24 to 48 hours to reach a site to diagnose a failure. This leads to delays in returning a station to service, resulting in a negative customer experience and a loss of charging revenue.
- Programs are needed at vocational schools to prepare students to theoretically understand design and operation of EVCE while developing the skills and abilities to be able to maintain EVCE equipment and EVs in general for both residential customers and fleet operators.

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.
    - This depends entirely on the permitting process, site ownership and size of the installation.
    - For large installations that will require significant equipment design and installation, it will take from 1-1.5 years. This can be reduced if the site preparation is minimized.
    - For smaller installations with limited site preparation, this takes between 6-12 months.
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.
    - Most suppliers have developed solutions to support requirements of Buy America. The addition of the Buy America provision adds time and cost to the procurement process in addition to requiring records retention and audits that would otherwise not be required.
    - As we engage equipment suppliers we are able, if needed, to add this requirement. However, doing so may affect price and availability.
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.
    - Transformers currently have a greater than 1 year lead time.
    - Charging stations are escalating in price rapidly. Raw materials costs, supply chain challenges, and a significant increase in interest resulting specifically from the announcement of government funding for EV infrastructure development are driving up costs and lengthening delivery cycles.
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?

- OUC employs third-party software managed by the POS network provider. Security is handled through this provider.

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 are currently energy based for residential charging. There is currently no defined EV charging rate. We are actively considering alternatives.
    - For Commercial we employ our standard Commercial rates that includes both energy and demand components. We are exploring alternative rate structures that limit the impact of demand fees.
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.
    - OUC is supported by 3 EV installers and maintenance providers. The maintenance process is executed as follows:
    - OUC personnel check the unit and reset breaker if needed within 24-48 hours of receiving an out-of-service call.
    - If the charger does not come back on line, OUC will contact service vendors and request a maintenance check.
    - OUC requires a response for troubleshooting of the units within 48 hours of receiving the maintenance request call.
    - All of our equipment, including L2 and fast chargers, are monitored via a network service that allows receipt of warning messages, executes software updates, provides real-time charger status and in some instances may perform remote power cycle (depending on the EVSE model and network service). OUC currently utilizes a number of network service subscription providers. These include: Chargepoint, Greenlots and ChargeUP
    - L2 chargers at minimum receive an annual inspection or more frequently if a maintenance call is received to check the equipment. The visit also includes a surrounding area assessment to make sure the units are free of hazards or debris. This inspection is done by OUC's personnel.
    - DCFC stations require an annual checkup to clean filters and tighten bolts. This service is provided by the EVSE equipment supplier.
    - The typical lifespan for our L2-L3 chargers is 5-7 years, and we have performed a full inventory replacement and upgrade since the chargers were acquired in 2010.
    - The current public inventory for the DCFC does not exceed the 50kW capacity and the correspondent rate applicable is the General Service non-demand rate. Performance measurements include kw-hr dispensed and basic EVSE usage frequency.

17. How would your EVSE share data to a FDOT sponsored central data repository? What type(s) of data can you provide?
    - OUC is able to provide anonymized charging information, session length, unique session counts, kWh provided.
    - OUC is able to provide in typical standard forms such as .XLS or as .CSV files
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.
    - OUC believes that establishing a network aggregator would allow customers to join a single network that operates many EVSE. This should be paired with a call center that is able to assist customers having issues at the location.
    - A rapid-response team, capable of handling charging port issues such as network restart, power resets, etc., within a prescribed period of time, should be deployed to address outages that cannot be remotely addressed.
    - Provide that a suitable inventory of spare parts, up to and including hardware replacement as required, is readily available to ensure that stations that are not working can be served within a prescribed period of time, preferably within 24 hours.
    - Accurate real-time reporting mechanisms to ensure customers are aware of current status for any charging ports, allowing them to adjust plans for charging due to unexpected outages.
    - Evacuations: OEMs should consider evacuations when building billing and controls. There may be opportunities to adjust billing considerations during an evacuation process in order to ensure equitable pricing (i.e., avoid price gouging). Also, controls may be instituted to maximize station utilization. For example, an EV may be charged to 80% quickly, but charging from 80% to 100% can take significantly longer as the EV ramps down the charge rate. There should be some consideration to ensuring an EV has received sufficient charge to reach the next station without charging to 100%. Perhaps there can be an “evacuation mode” for the DCFC where it stops charging once the EV reaches 80%. This would encourage drivers to leave the station and continue to the next.
    - FDOT could require fleet equipment installed under FDOT grants be made available for public access during a declared emergency event, unless otherwise considered critical emergency infrastructure. Appropriate metering and billing modifications may be necessary during the declared emergency.
    - Power outages: The criticality of the site should be considered when evaluating potential mitigation strategies for power outages. A site with low criticality may not warrant additional equipment to avoid power outages – merely clear notification via signage and other communication tools. However, a site that is expected to serve evacuation routes may necessitate deployment of on-site storage and/or renewable generation to power the station during an unplanned outage. On-site storage is likely to take the form of batteries, but may be supplemented with solar PV, depending on the need. In the event of battery-only solutions, consideration should be made to how many EVs may be charged during an outage, and if there should be any individual vehicle state of charge restrictions placed on the site to ensure more EVs are charged. For example, during an outage, it may make sense to limit all charging events to 60-70% state of charge so as to provide energy to a larger group of EVs. Additional study is needed to determine if this is a viable approach. Sizing of the on-site battery could be determined by evaluating the typical amount of energy delivered to an EV, and then identifying the number of EVs that is expected to be served during an outage. Also, the on-site storage may be permanent or mobile. In the event of a permanent solution, it may be possible to leverage the storage solution for other activities during normal grid

operation. For example, the battery could be used to serve peak grid demand, or offset the site's peak demand. There may be opportunities to engage with the local utility in these applications.

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

- Deployment of mobile EVCI in rural areas will provide two opportunities: First it will allow periodic reviews of usage and adjust the locations if there is little to no usage. Second, it will allow deployment of the mobile devices along the most appropriate evacuation route during emergency situations.
- For disadvantaged areas, shared resources may be an opportunity. As an example, LYNX is considering its super stop location for charging buses, these could be setup with dual purpose dispensers that would allow residential customers to charge during daytime.
- Another option would be to centralize charging infrastructure, storage and distributed generation in rural areas around public schools – distributed equitably within a community. This would offer a known location for charging school buses and private vehicles while the storage and distributed PV could serve to mitigate school building power demand and provide emergency shelters with a continuous source of power during an emergency.

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

- EVs are still expensive, and may be out of reach for many underserved or disadvantaged communities, even though they are likely to benefit more than other adopters. In order to increase adoption rates in these communities, income-based incentive programs could be developed that support low-income lease or purchase of EVs. In this way, underserved or disadvantaged communities could benefit from EV ownership and lower their typical operating costs relative to gasoline-powered vehicles.
- Providing incentives that create a market for used EVs, which could include unique income-based financing options, extended service contracts, battery replacement programs and 'certified used' guarantees that offer confidence in the operation of an EV by a second or third vehicle owner.
- Ride and drive events aimed specifically to rural customers, highlighting vehicles likely to be best utilized in rural settings.
- Creating a fleet of ride-share vehicles centralized in disadvantages communities that may be checked out as part of a membership program for transportation to and from public transit stops
- Ride share opportunities that provide an electric vehicle at a discounted lease to underserved population as a driver (providing employment and income) with discounted rates to underserved passengers, particularly those attending medical appointments or procuring necessary supplies such as food..

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.

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.

4. *Software Information*

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

5. *Maintenance Plan*

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

6. *Project Approach*

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

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.

Please Email Responses to: Co.Purch@dot.state.fl.us
Subject Line: DOT-RFI-22-9114-PB
Please note there is a 25MB limit on emails received by the Department.
&
Please provide *one copy* of the response to this RFI on a non-returnable flash drive.

Contact for Questions or clarification:
Please email Paul Baker at co.purch@dot.state.fl.us with any questions or comments

The requested information must be received by 5:00 pm (EST) on June 28, 2022.

Send to: The Department of Transportation
Attention: Paul Baker
Subject: DCFC EVSE
Mailing Address:605 Suwannee Street, MS20, Tallahassee, FL 32399

PLEASE NOTE:
1) Responses to this Request for Information (RFI) will be reviewed by the agency for informational purposes and will not be considered as offers to be accepted by the agency to form a binding contract.
2) The Department may contact respondents that respond to the questions to discuss product information in further detail.
3) Information obtained in response to this RFI is public record as defined by Chapter 119, Florida Statutes (F.S.).
4) In accordance with Section 287.057, F.S., information obtained in response to this RFI may be used to develop scope and solicitation documents for future procurements at the discretion of the Department. Respondents eligible to respond to this RFI will remain eligible for any subsequent related contract with the agency.
5) Advertisement of any subsequent competitive solicitation that may result from this RFI will be posted on the Florida Vendor Bid System.

If the responses to this RFI are subject to non-disclosure, then the Proposer must include any materials it asserts to be exempted from the public disclosure under Chapter 119, Florida Statutes, in a separate bound document labeled "Confidential Materials". The proposer must identify the specific Statute that authorizes exemption from the Public Records Lay. Any claim to confidentiality on materials the Proposer asserts to be exempt from public disclosure and placed elsewhere in the proposal will be considered waived by the Proposer upon submission, effective after opening.