

New Hampshire VW Environmental Mitigation Trust

Direct Current Fast Charging Infrastructure Request for Information

Respondent Information

- Company name: Greenlots (Zeco Systems, Inc. dba Greenlots)
- National Address: 767 Alameda Street, Suite 200, Los Angeles, California 90021
- Regional Office: 154 West 14th Street, Second floor, NY, NY 10011
- Best Contacts: Annie Gilleo, Manager, Policy & Market Development, agilleo@greenlots.com, (202) 918-5880 and Drew Drummond, Regional Sales Manager, ddrummond@greenlots.com, (603) 456-8479

Greenlots is a leading provider of open-standards-based electric vehicle charging stations, turnkey solutions and accompanying network services. We are committed to providing open-standards solutions, offering our customers flexibility to choose between a variety of hardware options to best meet their needs. Greenlots' customers include cities, government agencies, utilities, fleet owners, and more.

Greenlots seeks to support the state of New Hampshire in growing adoption of electric vehicles (EVs) and the market for EVs and EV charging products and services. We have a deep understanding of local, regional, and national infrastructure needs and welcome the opportunity to work with the State to develop and deploy high quality projects.

General Questions

1. What costs should be eligible? Why?

Greenlots recommends that all costs as allowed under the terms of the Volkswagen Settlement be eligible for funding. That includes up to 100% of costs to purchase, install, and maintain light duty electric vehicle charging equipment on government-owned property and up to 80% of costs on publicly-accessible non-government owned property. While we recognize that the state may seek to minimize individual project costs in order to maximize the number of projects receiving funding, Greenlots recommends that the state prioritize individual project success and sustainability. In particular, we strongly encourage the state to include software services and warranties as eligible costs, since these components are essential for optimizing the integration of charging stations onto the electric grid, offering site host tools, and enabling managed charging strategies. We further suggest that the state ensure that costs related to on-going operation and maintenance of the sites are also eligible as an important measure to help ensure state-funded chargers are consistently operational while helping to make a more positive business case for station hosts.

2. What costs should be ineligible? Why?

Volkswagen Settlement guidelines prohibit the use of funds for purchasing or renting real estate, capital costs not directly related to installation of electric vehicle charging equipment (e.g. construction of buildings), and general maintenance that extends beyond the charging equipment. While we expect and encourage the State to use its judgement in evaluating the

reasonableness of program proposals, Greenlots recommends that the state limit eligible costs only as required by the terms of the Settlement agreement in order to increase the likelihood and number of successful projects developed under the grant.

3. What level of cost share/match is recommended? Why?

We recommend that the state provide the maximum amount of funding as allowed under Appendix D. In our experience, prescriptive, narrow, and limited funding leads to slower deployment, especially in markets that are the most underserved, such as multi-unit dwellings and rural areas. In New Hampshire, low utilization in areas across the state, especially corridors, is likely to remain an issue for the next several years until EV adoption expands, making owning and operating charging infrastructure a nonviable business proposition for site hosts. State support will be needed to help overcome this major economic barrier, with a specific recommendation to follow other states' leads to include operation and maintenance costs for a predetermined period of time during the initial deployment.

Indeed, even at the maximum amounts allowed for each use case, site hosts are not likely to see a return on their investment in charging infrastructure. The state should therefore consider additional strategies to address the poor economics of low-utilization, including supporting the development of complementary utility programs, agreements with fleets to establish utilization guarantees, and non-monetary partnerships to spur EV tourism and economic development.

4. Please provide input on program structure:

- a. Allow for multiple awards or have a winner-take-all approach?**
- b. Assuming both DCFC and Level 2 charging will be required at each location, how many chargers of each type should be required at a minimum? Should the minimum differ by location in the state?**

Greenlots recommends that the state consider multiple awards and offer flexibility as to the number and location of sites included in each bid. At this early stage in the market, infrastructure deployment is critical to help spur electric vehicle adoption and help improve the business case for owning and operating charging infrastructure in the future. It is likely that certain locations previously identified by the state may not have willing site hosts at this early stage. We recommend that the state revisit sites that do not receive bids in any initial bidding process through partnerships with utilities.

In the near term, some flexibility around ownership structures at individual sites will be needed to maximize viable projects. Rather than have the network or installer serve as owner operator, individual site hosts should have the ability to submit application and determine hardware and software options that meet the requirements laid out by the state. While enabling some flexibility for site hosts will help maximize the potential pool of applicants, the state should aim to install clusters of stations, rather than standalone stations. This will create charging hubs that can serve multiple drivers simultaneously, and it will also reduce costs related to installation and maintenance. We encourage the state to aim to install at least 2 DCFC stations at each site.

Greenlots further encourages the state to prioritize future-proofing considerations in granting awards. Chargers should be Open Charge Point Protocol (OCPP) compliant, giving site hosts the ability to mix and match hardware and software solutions both at the time of installation and, in the longer term, as site conditions and market actors enter and exit the market. Open standards will also enable site hosts that operate charging stations at multiple sites to leverage a single network across a variety of charging applications and hardware types, enabling them to customize charging solutions for each individual site while streamlining management and operations.

5. How many charging sites should be anticipated with a total budget of approximately \$2 million?

With site-selection criteria not yet determined by the state, it is premature to anticipate a specific number of charging sites to target for development. Greenlots recommends that the state develop an application process that encourages quality site development at optimal locations (e.g. those that enable electric vehicle tourism), while also considering mechanisms to contain costs (e.g. funding some sites with 50kW stations).

We also encourage the state to consider the importance of addressing long-term costs and future-proofing rather than solely focus on minimizing up-front costs. Encouraging higher power chargers, build out of infrastructure to accommodate additional chargers in the future, and requiring smart charging capabilities may result in higher up-front costs but these features are essential to containing costs in the long term and developing sustainable operations for site hosts.

Greenlots also suggests that the state continue to make clear a long-term plan for development of priority corridors. While initial activity may lead to more limited site development, NHDES can work with utilities to develop additional sites in future rounds of bidding, potentially layering new sources of funding or offering additional incentives to encourage infrastructure build out in sites with more difficult economics.

6. Is the goal of having at least one charger on each of the corridors identified on the attached map realistic?

Greenlots does believe that having at least one charger on each corridor is realistic broadly, but achieving this outcome may require leveraging additional funding and/or exploring partnership opportunities beyond the scope of this funding opportunity. For example, many states have leveraged ratepayer funding to develop charging corridors, including models in which utilities own and operate infrastructure directly.

Ultimately, it is important to communicate a plan for a future robust network to instill confidence, but it is a priority to deploy charging stations at this inflection point that will engender greater usage to help sustain the lesser used sites. We encourage the state to commit to the full network but explore a variety of models for deployment, including guarantees for future rounds of funding, layering and leveraging utility investment, and developing public-private partnerships where the state and stakeholders interested in participating in the state program contract into an offtake agreement that is indexed to the projected year in which EV model availability in New Hampshire ramps up and the projected adoption trajectory follows

suit. These models can all effectively encourage site development even at low levels of utilization and support the development of a true market for electric vehicle charging. As electric vehicle ownership (and station utilization) increases, a better business case for owning and operating charging infrastructure will develop.

7. How can the State design a solicitation that will ensure DCFC locations in the more rural parts of the state are included in the project proposals?

At low utilization, sites in more rural parts of the state face even more difficult economics than those located in and around cities. At the same time, ensuring charging is available along corridors will facilitate tourism and interstate travel. We encourage the state to first focus on deploying stations in areas with interested site hosts. Allowing individual site hosts to submit applications to promote businesses or local areas is a good first step. The state may wish to hold back a portion of funding specifically to incentivize charging infrastructure deployment in rural areas and work to develop additional sources of funding to help improve early economics in these areas. The state should also consider alternative ownership models in rural locations. For example, locations that are not attractive to the private market in the first round of bidding may be more suitable to utility ownership or development of sites on state-owned property where less cost share is required.

8. What communication protocols should be allowed/required?

Open Charge Point Protocol (OCPP) is a global standard that facilitates communication between a network operator and a charging station. OCPP is the preferred industry protocol for ensuring that hardware and software can be mixed and matched, so that as available products enter and leave the market, station owners will be able to easily change and modify hardware and software. In 2019, companies who use OCPP can certify their implementations through a third party lab (Dekra). We recommend that the state require this third-party certification as a condition of funding.

Additionally, the state should require that chargers be networked and able to receive communications from electricity providers and system operators. OpenADR is an open standard that allows utilities to communicate demand response signals, including pricing and curtailment events, with charging stations. This standard is key for enabling utilities to respond to grid conditions.

The state can facilitate roaming through leveraging Open Charge Point Interface (OCPI), a protocol that enables roaming and communication between e-mobility companies and charging network providers.

9. What payment methods should be allowed/required?

We recommend that the state place an emphasis on ease of payment for drivers and offer multiple options at charging stations. Many states have determined that credit card readers (which can be located on individual chargers or at nearby pay stations) are necessary to ensure all drivers have the ability to pay. We recommend that the state require credit card readers in

addition to other options for payment, including contactless cards or the ability to pay by phone provide satisfactory options for payment.

10. What operations and maintenance standards should be required of hosts?

The state should ensure that EV charging equipment includes extended warranties (total of 5 years to match the contract term) and ongoing maintenance service agreements to ensure stations perform reliably and to reduce costs from potential repairs. While this may limit the upfront funding available to for charging stations, it will ensure longevity of the installed network. Operation and maintenance service packages typically entail annual or bi-annual maintenance of DCFC and HP units. This level of maintenance helps to ensure these units have a high uptime to function properly for drivers, and also reduces future costs for repairs.

EV charging software (such as the Greenlots SKY Network Software) can help manage maintenance, as well as allow network operators to view and analyze charging station performance. Software can also help network operators manage charging station utilization to understand charging trends and plan for future charging station infrastructure.

11. The entity named in the Contract must be the owner of the installed EVSE for the duration of the Contract and will have the responsibility for ensuring continued operation of the equipment during the Contract period. Can you suggest potential ownership models for the EVSE funded through the RFP that would meet these criteria?

Greenlots recommends that the State allow individual site hosts (municipalities, retail sites, resorts) to submit applications in collaboration with turnkey EV charging installers, hardware and network providers. Station hosts should be required to enter into warranty agreements and maintenance contracts to ensure continued operation of equipment.

Utility ownership is also a model that the state should explore. Electric vehicles represent an important load building opportunity for utilities. Furthermore, direct ownership streamlines the ability of utilities to manage charging and balance load. The state should consider how it can partner with utilities to deploy EV charging infrastructure in the near-term. While private sector investment will be instrumental in deployment of EV infrastructure in New Hampshire in the future, a long lasting and deeper impact will be felt in the local communities with the utilities having skin in the game. This is partially because it represents a local and embedded responsibility to ensure all communities in their purview have access to electric transportation. As EV adoption increases, the business model will become more viable for the private market, but much more will need to be done in New Hampshire to reach that inflection point.

12. What do you consider to be an adequate length of time to complete a satisfactory proposal in response to an RFP?

The length of time needed to respond to the RFP will depend on the structure chosen by the state. A winner-take-all approach will require more time to coordinate across site hosts and utility service territories, while responses to more limited awards or on a site by site basis could be a quicker turn around (perhaps within two months).

13. What networking requirements (if any) should be included for EVSE funded using VW Environmental Mitigation Trust funds?

We recommend that all stations should be networked and capable of implementing managed charging strategies. Managed charging strategies a key mechanism for keeping costs low for site hosts, drivers, and all electric ratepayers in New Hampshire. For site hosts, technology-enabled managed charging can help them avoid hefty demand charges by sending price signals or toggling power flow to customers. Drivers can benefit from these strategies, saving a few dollars by agreeing to take slightly less power for a period of time, limiting their charging session, or delaying charging by a few minutes.

For ratepayers, managed charging strategies that send price signals aligned with grid costs help ensure that state dollars spent on infrastructure have an equitable impact across customers classes, placing downward pressure on rates by shaping electric load based on available resources and reducing the need for expensive infrastructure upgrades. The New Hampshire Public Utilities Commission is currently considering these and other advanced rate design strategies in IR-20-004. Charging infrastructure that leverages state funds, including VW settlement dollars, should be capable of responding to any rate design or managed charging strategy that is put in place as a result of that (and any future) investigation.

14. What future-proofing requirements for EVSE at the selected sites should be considered? Please provide information on new charging technologies that should be considered, if appropriate.

The EV industry is changing rapidly, and new design elements and capabilities are continually coming to market. For this reason, the most important element of future-proofing is use of open standards to ensure that investments today will not result in stranded assets. As Greenlots has noted previously, OCPP is the preferred industry protocol for ensuring that hardware and software can be mixed and matched, so that as available products enter and leave the market, station owners will be able to easily change and modify hardware and software. By focusing on hardware and software that complies with OCPP, the state can minimize stranded assets, give site hosts flexibility, and minimize costs associated with maintaining and updating equipment.

Whenever possible, ensuring that a site has enough power to supply additional charging stations in the future, or higher-power stations is one way to future-proof. These conversations can be coordinated with the utility provider to understand the potential costs and feasibility of providing additional power. The power capacity should be considered for each site, rather than mandating a universal minimum. Indeed, minimum requirements may lead to unintended consequences, such as high energy charges due to unmanaged charging.

15. Please provide any additional feedback or considerations related to developing voluntary minimum standards for DC fast charging stations.

We recommend the state prioritize approaches that facilitate positive driver experience and ensure longevity of investments by limiting the possibility of stranded assets. There are a wide

range of EV charging hardware models on the market, and the state may wish to test several types or “mix and match” based on specific site needs. To best facilitate this flexibility and future-proof investments, the state should ensure that charging infrastructure meet open standards and interoperability requirements. A key consideration for the state is evaluating the long-term ability for the private partner to maintain and prolong the network beyond the life of the state contract. As we’ve seen in previous state investments, private partners can shift their focus in the market and the basic access to infrastructure must remain regardless of fluctuations in the industry.

In terms of power standards, high powered chargers are becoming available on the market. We recommend that the state set a reasonable minimum standard for DCFC (e.g. 50kW) and encourage site hosts to consider higher powered chargers. Enabling flexibility in this area will help contain costs and enable the state to spread its funding out across more stations.

Interoperability is another consideration to simplify charging for EV drivers. For example, Greenlots is working with other EV charging networks to allow for roaming starting later this year, so drivers with another EV charging network account will be able to execute payment at a Greenlots station through that app. The state can further facilitate seamless use of charging stations by ensuring that drivers are not charged additional fees for use of multiple networks.

Finally, Greenlots emphasizes that utilities must play a central role in electric vehicle charging infrastructure deployment in New Hampshire. Utility programs that provide a variety of options, including helping to defray “make-ready” costs up to the charger, providing full turnkey solutions, and facilitate the development of managed charging strategies are a fundamental component of growing a sustainable market for electric vehicle charging in New Hampshire. While Volkswagen funding is certainly a welcome market stimulus, it is only a piece of what is needed to build out charging infrastructure in an equitable and sufficient way. We encourage NHDES to support efforts to push forward utility programs in the state.

Greenlots is pleased to provide our perspective on the issues raised by the State of New Hampshire. We look forward to continuing to serve as a resource to NHDES and other stakeholders.

Annie Gilleo
Manager, Policy & Market Development
agilleo@greenlots.com
(202) 918-5880

Drew Drummond
Regional Sales Manager
ddrummond@greenlots.com
(603) 456-8479