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Project Title:	U.S. Department of Transportation’s Charging and Fueling Infrastructure Grant Program
TN #:	256683
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TurnOnGreen's Response to 24-EVI-01 RFI Ideas and Considerations for Tri-State USDOT CFI

Additional submitted attachment is included below.

RESPONSE TO RFI: 24-EVI-01: RFI IDEAS AND CONSIDERATIONS FOR TRI-STATE USDOT CFI

TURNONGREEN SUBMISSION

Abstract

TurnOnGreen is a CA based EV Charging Company interested providing comments for 24-EVI-01: RFI Ideas and Considerations for Tri-State USDOT CFI

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TurnOnGreen Inc.

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Phone: 1-877-634-0982

May 28, 2024

To: Spencer Kelley
RE: 24-EVI-01: RFI Ideas and Considerations for Tri-State USDOT CFI

Dear Spencer,

TurnOnGreen is pleased to submit a response to Tri-State CFI RFII issued by the California Energy Commission.

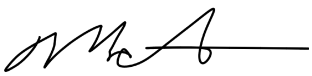
TurnOnGreen works across North America to provide custom power solutions and Electric Vehicle charging infrastructure to commercial retail, hospitality, fleet, municipal, and residential properties. We believe that our expertise and our extensive experience in this industry makes us the ideal vendor to provide response to this RFI.

If you have any questions regarding the response documents, please contact the following people approved to obligate, negotiate and clarify items on behalf of TurnOnGreen.

Marcus Charuvastra, President
Phone: (310) 593-1428 | Email: marcus@turnongreen.com

Amos Kohn, CEO
Phone: (510) 657-2635 | Email: akohn@turnongreen.com

Sincerely,



Marcus Charuvastra
President, TurnOnGreen Inc.
Phone: (310) 593-1428
Email: marcus@turnongreen.com

1. Business Type and Vehicle Class

TurnOnGreen (TOG) and subsidiary, Digital Power Inc., an advanced power electronics company founded in 1969, leverages 50+ years of technology expertise to provide scalable power solutions to a variety of industries. Headquartered in Milpitas, CA, with satellite offices in Los Angeles, Santa Barbara and Orange County, TOG works across North America to provide custom power solutions and Electric Vehicle charging infrastructure to commercial retail, hospitality, fleet, municipal, and residential properties.

TurnOnGreen (TOG) is the preferred EV charging partner of Best Western Hotels and Resorts North America, IHG Hotels and Resorts, Purdue University, E.&J. Gallo, and the EV charging provider for Avis Budget PA and Avis Alaska. TOG designs and manufactures level 2 residential EV charging stations and a series of 120kW-180kW DC fast chargers.

TOG specializes in:

- Level 2 AC Chargers – Networked and Non-Networked
- DC Fast Chargers
- EV Charging Software
- EVSE Property Planning and Installation
- EVSE ADA Planning
- EV Charging support and education

TurnOnGreen offers EV driver support 24 hours per day 7 days a week, 365 days per year. At TurnOnGreen, we take immense pride in our commitment to providing top-notch 24/7 driver support. Our dedication shines through in our impressive 24-48 hour response time for service requests, ensuring that our customers' needs are addressed promptly and efficiently. We understand the importance of keeping your EV chargers operational, and that's why we maintain a remarkable 99% uptime rate across all TurnOnGreen EV chargers. Our emphasis on fast response times, unwavering reliability, and exceptional customer service sets us apart in the industry. We're not just about providing charging solutions; we're about delivering a seamless and reliable experience to our valued customers.

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2. CFI Grant Funding

Yes, TurnOnGreen is highly interested in applying for CFI grant funding for site development if the tri-state agencies are awarded funding. We believe that such funding is crucial for accelerating the deployment of our comprehensive EV charging infrastructure across the California, Oregon, and Washington regions. The grant will enable us to develop strategically located charging sites that align with the goals of the National Zero-Emission Freight Corridor Strategy, supporting the transition to zero-emission vehicles and reducing greenhouse gas emissions.

3. Zero-Emission Battery Electric MDHD Vehicles

Does not apply.

4. Important MDHD ZEV Public Charging (2024-2027)

We anticipate that both en route and overnight charging will be critical. En route charging will support long-haul freight and drayage, while overnight charging will benefit last-mile delivery and other services requiring longer charging periods.

En Route Charging:

- **Support for Long-Haul Freight:** En route charging stations are essential for long-haul freight vehicles that travel extended distances along major corridors. These charging stations will enable trucks to recharge quickly and continue their journeys with minimal downtime, ensuring efficient logistics and supply chain operations.
- **Drayage Operations:** Drayage trucks, which transport goods over short distances between ports and distribution centers, also benefit from en route charging. Providing strategically located fast chargers along key routes will help maintain operational efficiency and reduce emissions in urban and port areas.
- **Reduced Range Anxiety:** The availability of en route charging stations helps alleviate range anxiety for drivers of electric MDHD vehicles. Knowing that they can access reliable charging points along their routes ensures smoother and more confident long-distance travel.

Overnight Charging:

- **Last-Mile Delivery:** Overnight charging is particularly beneficial for last-mile delivery vehicles that operate within urban areas. These vehicles can be charged during off-peak hours, ensuring they are ready for a full day of deliveries. This approach helps manage electricity demand and leverages lower overnight energy rates.
- **Fleet Management:** Fleet operators can take advantage of overnight charging to maintain and manage their electric vehicle fleets efficiently. By charging vehicles overnight, fleets

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can ensure all trucks are fully charged and ready for the next day's operations without the need for mid-day charging stops.

- **Longer Charging Periods:** Overnight charging provides the necessary time for MDHD vehicles with larger battery capacities to fully recharge. This is especially important for vehicles that require more extensive charging times due to their high energy consumption and longer daily operational hours.

5. Priority for Charging Ports and Power

- **En Route Charging:** Priority for high-power DC fast chargers (150 kW+) with at least 10 charging ports per station.
- **Overnight Charging:** Priority for Level 2 chargers (11kW - 19.2 kW) with 20-30 charging ports per station.
- **Secondary Configurations:** Implementing additional Level 3 chargers (350 kW) to accommodate the high energy demands of large electric trucks, ensuring faster charging times and improved operational efficiency.

6. Parking and Station Configurations

To effectively accommodate the diverse needs of medium- and heavy-duty (MDHD) electric vehicles, our preferred station configuration includes 70% pull-through and 30% pull-in parking. This layout is designed to ensure smooth operations for both freight and delivery trucks, providing ease of access and maneuverability.

Pull-Through Parking (70%):

- **Ease of Access for Large Vehicles:** Pull-through parking spaces are essential for large trucks, including long-haul freight and drayage vehicles. These spaces allow trucks to enter and exit without the need for complicated reversing or maneuvering, which can be challenging for longer vehicles.
- **Efficient Flow of Traffic:** Pull-through parking reduces congestion and enhances the flow of traffic within the charging station. Trucks can drive in, charge, and drive out without causing delays or obstructions.
- **Safety and Convenience:** By minimizing the need for reversing, pull-through parking increases safety for drivers and reduces the risk of accidents or damage to vehicles. It also provides a more convenient and user-friendly experience for truck drivers, who often operate under tight schedules.

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Pull-In Parking (30%):

- **Flexibility for Smaller Vehicles:** Pull-in parking spaces are suitable for smaller MDHD vehicles, such as last-mile delivery trucks and service vehicles, which are more maneuverable and can easily reverse out of parking spots.
- **Maximizing Space Utilization:** Including pull-in parking in the configuration allows for more efficient use of available space, accommodating a variety of vehicle sizes and types.
- **Support for Different Charging Needs:** Pull-in spots can be strategically placed to support overnight charging or longer dwell times, making them ideal for vehicles that can remain parked and charging for extended periods.

7. Distance Between Charging Stations on I-5 Corridor

Charging stations should be spaced approximately 50 miles apart and be located within 1 mile from the highway exit to effectively support zero-emission trucks along the I-5 corridor. This strategic placement ensures that electric trucks have reliable and consistent access to charging infrastructure, which is crucial for both long-haul freight and last-mile delivery operations.

Typical Routes and Use-Cases Considered:

- **Long-Haul Freight:** Long-haul freight trucks travel extensive distances and require frequent access to charging stations to maintain operational efficiency. By placing charging stations 50 miles apart and within 1 mile of highway exits, we ensure that these vehicles can plan their routes with confidence, knowing that a charging point is always easily accessible.
- **Last-Mile Delivery:** Last-mile delivery trucks operate within urban and suburban areas, often traveling shorter distances but requiring reliable charging options to complete their routes. The 50-mile spacing with convenient highway access provides these vehicles with ample opportunities to recharge, minimizing downtime and ensuring timely deliveries.
- **Drayage Operations:** Drayage trucks, which transport goods over short distances between ports and distribution centers, benefit from closely spaced charging stations. This ensures they can quickly top up their batteries between trips, maintaining high productivity levels.
- **Emergency and Contingency Planning:** The 50-mile interval and proximity to highway exits also serve as a safety net for unexpected detours or delays, providing drivers with peace of mind that they are never too far from a charging station.

Benefits of 50-Mile Spacing and Proximity to Highway Exits:

- **Enhanced Coverage:** This spacing strategy ensures comprehensive coverage along the entire I-5 corridor, supporting a wide range of trucking operations and reducing the risk of range anxiety for drivers.
- **Operational Efficiency:** Frequent and easily accessible charging stations allow trucks to maintain optimal battery levels, enhancing overall fleet efficiency and reducing idle times.

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- **Flexibility:** The 50-mile distance, combined with being within 1 mile of highway exits, is a balanced approach that caters to various vehicle types and operational needs, from high-frequency short-haul trips to long-distance travel.

By spacing charging stations approximately 50 miles apart and ensuring they are within 1 mile of highway exits, we create a robust and reliable network that supports the diverse needs of zero-emission trucks, ensuring seamless operations along the I-5 corridor.

8. Desired Amenities at Charging Facilities

To maximize the convenience and utility of charging facilities for medium- and heavy-duty zero-emission vehicles, we emphasize the following essential amenities:

- **Additional Parking Beyond Charging Stalls:** Providing ample parking space beyond the designated charging stalls is crucial. This extra parking accommodates drivers waiting for a charging stall to become available and supports fleet management activities. It ensures that the facility can handle high traffic volumes without congestion.
- **Reservation Options for Scheduling Charging Times:** Implementing a reservation system allows drivers and fleet operators to schedule charging times in advance. This reduces wait times, ensures efficient use of charging infrastructure, and helps manage peak demand periods. Such a system provides predictability and reliability, which are essential for maintaining tight delivery schedules.
- **Rest Areas with Amenities:** To support drivers during charging periods, rest areas equipped with essential amenities are necessary. These should include:
    - **Restrooms:** Clean and accessible restrooms are fundamental for driver comfort and hygiene.
    - **Wi-Fi:** Providing Wi-Fi access allows drivers to stay connected, manage logistics, and use their downtime productively.
    - **Food Services:** Availability of food services, such as vending machines, food trucks, or nearby eateries, ensures that drivers can take meal breaks while their vehicles are charging.

Including these amenities ensures that charging facilities are not only functional but also driver-friendly, supporting the well-being and productivity of those who rely on them.

9. Cost Estimates for MDHD Charging Stations

These cost estimates include both the charger units and installation expenses, providing a comprehensive overview of the financial requirements for establishing MDHD charging stations.

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Category	Level 2 Chargers	DC Fast Chargers (150 kW)	DC Fast Chargers (360 kW)
Charger Power Level	19.2 kW	150 kW	360 kW
Cost per Charger Unit	$2,200	$59,000	$110,000
Installation Cost per Unit	$3,500 (including site preparation, electrical work, and labor)	$35,000 (including site preparation, electrical work, and labor)	$50,000 (including site preparation, electrical work, and labor)
Total Cost per Charger	$5,700	$94,000	$160,000
Number of Chargers per Station	20	10 (20 ports)	10 (20 ports)
Total Cost per Station	$114,000	$940,000	$1,600,000

Public Cost Share:

Range of Public Cost Share as Percentage of Total Project Cost: 60% - 80%
This public funding contribution is necessary to make the development of more public charging stations economically viable and to support the transition to zero-emission vehicles along freight corridors.

Breakdown Example:

Type of Charging Station	Total Cost per Charger	Total Station Cost	Public Cost Share (80%)	Public Cost Share (60%)
Level 2 Charging Station (20 Chargers)	$5,700	$114,000	$91,200	$68,400
DC Fast Charging Station (150 kW, 10 Chargers)	$94,000	$940,000	$752,000	$564,000
DC Fast Charging Station (360 kW, 10 Chargers)	$160,000	$1,600,000	$1,280,000	$960,000

These cost estimates include both the charger units and installation expenses, providing a comprehensive overview of the financial requirements for establishing MDHD charging stations.

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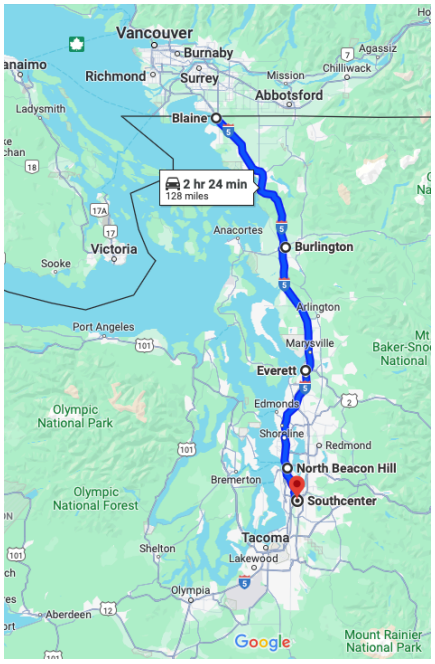
The public cost share is essential for supporting these projects, ensuring that the infrastructure is both feasible and sustainable.

10. Preferred Locations for EV Charging (2024-2027)

Washington:

- **Segment 1: Blaine to Southcenter**
    - Burlington, Interchanges of I-5 and Hwy 20
    - Everett, Interchanges of I-5 and Hwy 2
    - North Beacon Hill, Interchanges of I-5 and Hwy 90



- **Segment 2: Du Pont to Vancouver**
    - Marys Corner, Interchanges of I-5 and Hwy 12
    - Longview, Interchanges of I-5 and Hwy 30 and Hwy 4

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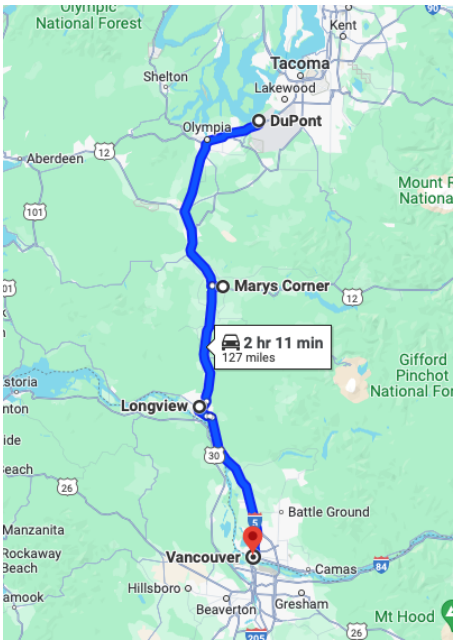
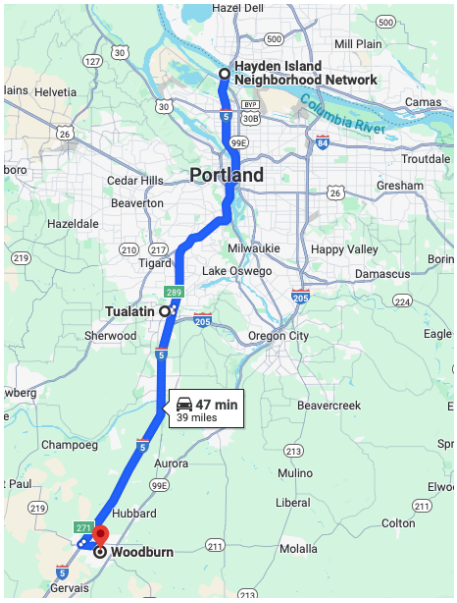


Oregon:

- **Segment 1: Hayden Island to Woodburn**
    - Tualatin, Interchanges of I-5 and Hwy 205



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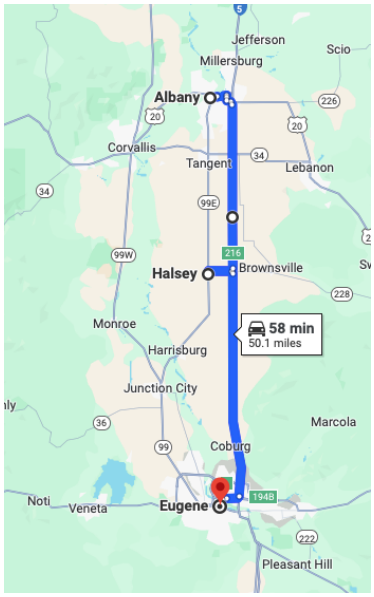
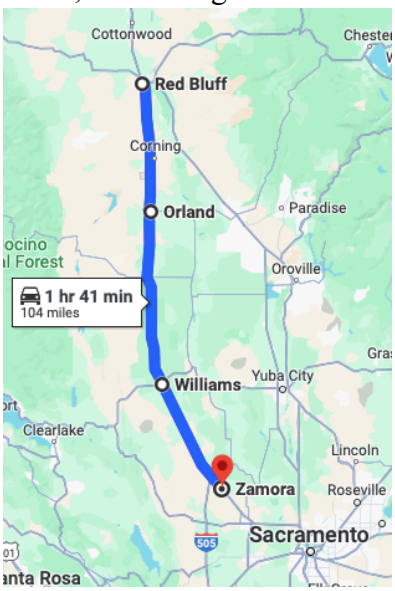
- **Segment 2: Albany to Eugene**
    - Halsey, Interchanges of I-5 and Hwy 228



California:

- **Segment 1: I-5 Red Bluff to Zamora**
- Orland, Interchanges of I-5 and Hwy 32
- Williams, Interchanges of I-5 and Hwy 20



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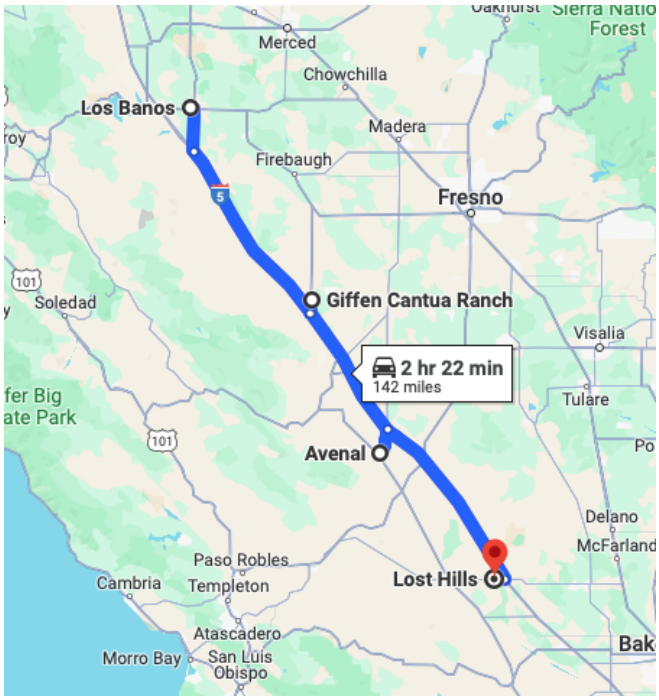
- **Segment 2: Everett, Interchanges of I-5 and Hwy 2, and I-5 and Hwy 46**
    - Giffen Cantua Ranch, Interchanges of I-5 and Hwy 33
    - Marys Corner, Interchanges of I-5 and Hwy 145



Overall Recommendations: For each location, the installation of 150 kW+ DC fast chargers with 10-20 charging ports is crucial for supporting the high energy demands of large electric trucks and ensuring rapid charging to minimize downtime. Level 2 chargers with 20-30 ports are recommended for overnight charging, providing a reliable solution for vehicles that can charge over extended periods, such as those used in last-mile delivery and regional transport. This combination of charging options ensures that the infrastructure meets the diverse needs of MDHD vehicle operators, supporting both long-haul and local operations effectively.

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11. Utility Considerations

As TurnOnGreen is not a utility, this question does not apply to us directly. However, we emphasize the importance of collaborating with local utilities to ensure adequate power supply and infrastructure support for the proposed charging stations.

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