

California Sustainable Freight Action Plan: Pilot Project

Caltrans District 4

1. Dylan Grabowski, Transportation Planner
Dylan.Grabowski@dot.ca.gov
(510) 286-6304
2. Title: **“Oakland Idle-Free and Freight Vehicle Charging Station Rest Area”**
3. **Potential Location Areas for Pilot Project** (See Attachment A: Potential Sites Map.)
The City of Oakland locations have been prioritized based on proximity to access and egress ramps.
 - a. 6th and Madison Street
 - b. 5th and Filbert Street
 - c. 5th and Market Street
 - d. 5th and Brush Street
 - e. 5th and Castro Street
 - f. 6th and Castro Street
 - g. 27th and Northgate Avenue
4. **Executive Summary**
Within the San Francisco Bay Area there is a shortage of safe, legally accessible locations for freight truckers to park and rest for their federally-mandated rest period of ten hours per day, or to wait for delivery or instructions for their next shipment. The Alameda County Transportation Commission’s Truck Parking Feasibility and Location Study in 2008 identified a list of potential truck parking sites, including those owned by Caltrans under I-880 in Oakland near the Port of Oakland. I-880 is a Tier 1 Highway Freight route, which connects Oakland to other Tier 1 Freight Facilities making the city a connecting point between key freight gateways and regions. The *Oakland Idle-Free and Freight Vehicle Charging Station Rest Area* Pilot Project describes a variety of potential locations, and proposes to equip them with electrical infrastructure for freight vehicles to plug-in to power their cabs (such as, air conditioning, heat, refrigerators, personal electronics, etc.), reducing over-night idling, and thus GHG emissions.

The short-term vision is to provide the first legally sanctioned, secure rest stop in the urbanized Bay Area with electric hook-ups to reduce overnight idling, similar to the Port of Oakland providing shore power to docked freight vessels. The initial installation of plug-in stations, would lay the ground work to the development of a charging network for some of the anticipated 100,000 Battery Electric Truck (BET) freight vehicles expected for deployment in California by 2030.¹ This pilot project will serve as a case study for identification of future sites and their selection, re-designing, and installation of the future urban electric charging stations.

¹ A target introduced at the October 2015 California Freight Advisory Committee meeting.

5. Description of advanced technologies, alternative fuels, freight and fuel infrastructure, and local economic development.

There is well-documented need for additional truck parking areas in the Bay Area. By providing new truck parking areas, the proposed pilot project will help reduce unnecessary driving for truckers looking for a parking spot and associated pollutant and greenhouse gas emissions, and alleviate the impacts from unauthorized parking to the surrounding communities. The proposed projects sites are also strategically located near freeway ramps and within close proximity to the Port of Oakland, one of the largest freight movement destinations in the region. The provision of idle-reduction technologies and charging stations will also help reduce emissions and promote alternative fuels. The proposed project will help advance the California Sustainable Freight Action Plan's goals of improving freight efficiency, transitioning to zero-emission technologies and increasing competitiveness of California's freight system.

a. Advanced Technologies

- i. Short-term, idle-reduction technology is currently available for installation at parking facilities. Two examples of such companies providing the technology and services include IdleAire and ShorePower. This type of technology accesses power from the local electric grid, and provides a medium for freight vehicles to plug-in and draw power from, so that diesel engines won't need to idle for long periods of time to power refrigerated units or the basic necessities for parked truck drivers (such as heat/ac, power for laptops, etc).
- ii. Long-term electric freight vehicle charging technology
 1. BET Charging Stations
 - a. Similar to electric vehicle charging stations becoming more apparent throughout the State of California. This technology would provide great amounts of necessary electricity to charge the batteries in upcoming electric freight vehicles.
 - b. While currently the technology is under development, as Battery Electric Truck freight vehicle technology is improved, there will need to be a network that supports the use of such vehicles. Installing such charging facilities in urbanized areas expands the potential network of this fleet in the not too distant future.
- iii. ITS/Real-time vacancy information
 1. Technology will use real time data, to relay location of potential facilities, and the availability of vacant sites to truckers and freight haulers.

b. Alternative Fuels

- i. Reduction in diesel fuel consumption via non-overnight idling.

- ii. Electric Freight Vehicle charging facility logistics and transition from diesel trucks to electric trucks.

c. *Freight and Fuel Infrastructure*

- i. Rest stop for freight truckers in Oakland along I-880 so that they don't get "stuck" in the Bay Area and are forced to park their truck in places not in compliance with such activities.
- ii. Reduction in diesel fuel emissions from over-night idling.
- iii. Providing the groundwork for installation of charging stations for future all-electric fleet.

d. *Economic Development*

- i. Providing freight truck drivers with rest stop(s) in Oakland increases opportunity for local businesses and restaurants to gain access to more customers. Additionally, within walking distance of the proposed facilities are a handful of services truck drivers can access by foot (See Attachment B Destinations within Walking Distance from Potential Sites)
- ii. Associated freight facilities also generate income for the community and State directly in the form of property taxes, corporate income taxes, sales taxes, and the various permitting fees that accompany the activities at the site.

6. Estimated cost

a. *Short-term idle reduction technology*

- i. An example cost can be modeled off the 'ShorePower Truck Electrification Project (STEP)' which estimates (\$22.2 million for development of 1,250 spaces): \$17,760 per station

b. *Long-term Battery Electric Truck charging technology*

- i. AC Chargers (current private auto EV): \$6,000 per station.
- ii. DC chargers (current private auto EV): \$50,000 - \$100,000 per station.
**Installation costs will be comprised of: actual charging station hardware, other hardware and materials associated with construction, labor costs, construction time including an initial on-site consultation, and municipal permitting costs.*

c. *Re-striping of facility*

- i. Cost can roughly assume \$1/square foot. (For example, restriping a 30,000 sq. ft. facility will cost around \$30,000.)
(Note: These costs estimates are from park-and-ride facility re-design, and may vary for freight parking facilities.)

d. *Interactive signage*

- i. \$50,000 - \$150,000 per sign.

e. *Contingency*

- i. Incorporate 15% contingency for other infrastructural components such as lighting and communications.

7. Timeline

a. Short-Term (idle-reduction)

i. 2 - 3 years

1. Lot(s) selection and acquisition (all lots may not be selected/acquired).
(Note: The project will assume Caltrans' project development process in the timeline, which includes environmental studies and permitting. For this proposal, it will be assumed that the timeline will be about two years.)
2. Striping or restriping.
3. Installing electric plug-in infrastructure.
4. Installing signage to inform truck drivers of station location.
5. Change in legislation or exemption to allow to park and rest the federally mandated 10 hours.

b. Long-Term (electric freight vehicle charging stations)

i. 5 – 15 years

1. Retrofit idle-reducing power connections to local power grid so they may charge the freight BET fleet, or install new BET charging stations at the Pilot Project facilities.

8. Means for measuring progress toward meeting goals over time.

- a. Record how many freight vehicles access the rest area and time of day.
- b. Record number or percentage of greenhouse gases reduced.
- c. Survey freight trucks that access the facility, and if more urban rest stops would be utilized by them, and their cohorts. Future needs assessment and satisfaction survey.

9. Description of the potential roles each of the interagency partners could provide to support the project's implementation.

a. California Air Resources Board

- i. Calculate the costs of idling, and how much GHG has been reduced via the provision of safe, overnight rest areas where truckers can power their cargo and vehicle from Oakland's electric grid.
- ii. Use Proposition 1B funds to replace existing diesel Truck Refrigeration Units (TRUs) with zero-emission transport refrigerators, as well as purchase and install electric infrastructure.²

b. Caltrans

- i. Provide the facility or coordinate with local agencies when acquiring facilities.
- ii. Provide the labor necessary for the restriping and redesign of the facility.
- iii. Install signage along the State Highway System to indicate location of facility.

² <http://www.arb.ca.gov/diesel/tru/tru.htm>

iv. General maintenance/security of facility over time with adequate funding.

c. *California Energy Commission*

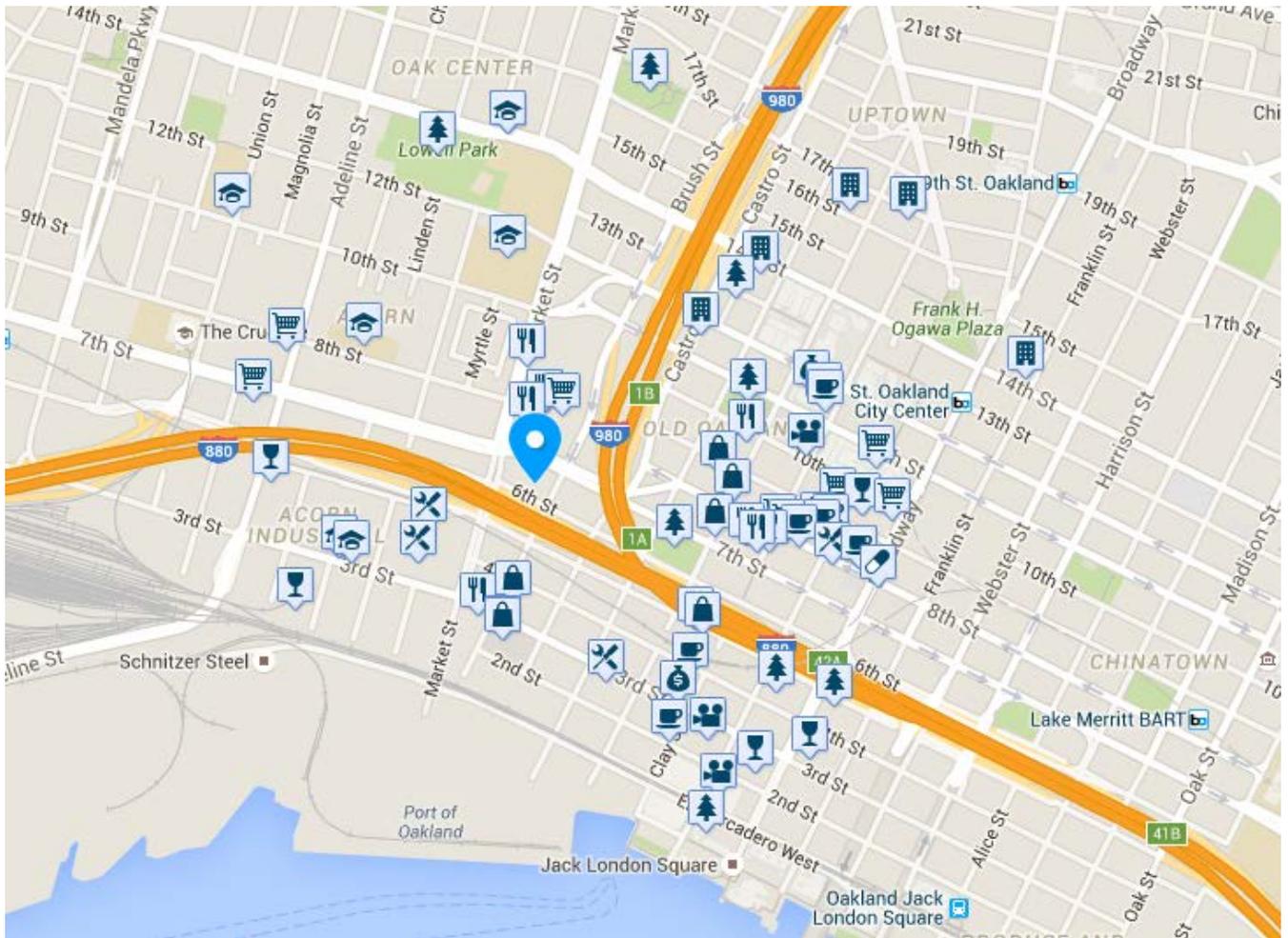
- i. Develop policy that decreases the hurdles and limitations of installing both short-term power hookups, and long-term charging stations.
- ii. Provide financial incentives for the installation of charging facilities for freight vehicles.
- iii. Develop regulations for local energy companies to provide maintenance for electric facilities.
- iv. Continue to provide funding via *Alternative and Renewable Fuel and Vehicle Technology Program* as this is a Pilot Project that supports medium- and heavy-duty vehicle technologies; expands infrastructure connected with existing fleets, public transit, and transportation corridors; optimizes alternative and renewable fuels for existing and developing engine technologies; and, decreases, on a full fuel cycle basis, the overall impact and carbon footprint of alternative and renewable fuels and increase sustainability.³

d. *Governor's Office of Business and Economic Development*

- i. Incentivize diners, sit down restaurants, and other providers of amenities freight truck drivers utilize to locate closer to new rest stop areas.
- ii. Monitor and develop reports for change in local economic patterns from before and after installation of the facility.

³ <http://www.energy.ca.gov/altfuels/>

Attachment B. Destinations within Walking Distance from Potential Sites*



* Search results from Walkscore.com using 601 Brush St. (6th St. and Brush St.) as an example