MEMORANDUM

September 22, 2017

TO: MEMBERS, PORT COMMISSION
Hon. Willie Adams, President
Hon. Kimberly Brandon, Vice President
Hon. Leslie Katz
Hon. Doreen Woo Ho

FROM: Elaine Forbes
Executive Director

SUBJECT: Request for Issuance of Request for Information to determine market demand for fast charging electric vehicle chargers on select sites within Port jurisdiction

DIRECTOR'S RECOMMENDATION: Approve attached resolution

EXECUTIVE SUMMARY

Electrification of vehicles is a key component of the San Francisco Climate Action Plan (SF Climate Action Plan), but widespread adoption of electric vehicles (EVs) is limited in part due to a lack of adequate charging infrastructure. In particular, the lack of publicly available "fast charging" stations is a barrier to development of the EV market in San Francisco. It is a challenging proposition to find sufficiently large and commercially viable sites in San Francisco that can support the investment in the charging-stations and required electric infrastructure.

As a result, the San Francisco Department of Environment (SF Environment) has initiated efforts to reach out to the EV market to assess the feasibility and business needs to develop EV fast charging stations in San Francisco, including the Port waterfront. Enhancing electrification at Port sites will demonstrate the Port's commitment to the City's climate goals, and could yield additional benefits beyond electrification of the passenger car fleet. With consideration of current leases and future development, Port staff has identified five potential locations within its jurisdiction to pilot fast charging-stations.

1. Seawall Lot 314
2. Pier 27
3. Piers 30/32
4. Pier 54
5. Pier 70

THIS PRINT COVERS CALENDAR ITEM NO. 8A

The Port has been approached by several companies with an interest in building EV fast charging-station hubs. Port staff believes that there may be more companies interested in developing and operating fast charging stations for passenger and commercial vehicles. Port staff seeks Port Commission authorization to issue a Request for Information (RFI) to gauge market demand and the viability of Port properties for this use. The RFI would allow operators to identify other possible sites as well. After reviewing RFI response submittals, Port will be able to better formulate a strategy and will return to the Port Commission with further details and a proposed course of action. Depending on the responses, and subject to Commission authorization, the Port may opt to directly negotiate with certain entities, follow up with a Request for Qualifications or Proposals (RFQ or RFP) or take other actions. Port staff will also conduct community outreach to solicit input on site and project objectives.

PORT'S STRATEGIC PLAN OBJECTIVE

The expansion of infrastructure to support the charging of electric vehicles, implements the following goals of the Port's Strategic Plan:

Sustainability: *Limit climate change and employ strong environmental stewardship principles through implementation of Port-wide practices that protect the environment and promote ecological balance.*

Resiliency: *Lead the City's efforts in addressing threats from earthquakes and flood risks through research and infrastructure improvements to the Seawall and Port property.*

BACKGROUND

SF Environment produced the San Francisco Climate Action Plan to establish city-wide goals to reduce greenhouse gas (GHG) emissions of 25% below 1990 levels by 2017, and 40% below 1990 levels by 2025. SF Environment is pursuing policies to support the development of zero emission vehicles, with heavy emphasis on electric vehicles supported by a nearly 100% renewable energy grid system.[1] The Port of San Francisco's Strategic Plan of 2016-2021 (Strategic Plan) includes an explicit sustainability objective that is designed to meet the City's climate goals.

In support of this strategy the Port Commission has previously approved the acceptance of EV solar charging stations, and Port staff has been engaged with ferry and tour operators on the waterfront to support the use of a hybrid or an all-electric vessel as well as vessels that run on alternative fuels such as hydrogen. Most recently the Port co-hosted a renewable diesel workshop with the Mayor's Office and SF Environment to promote the use of renewable diesel among the ferry operators and water taxis.

[1] Hydrogen fuel cell vehicles are the alternative to battery EVs in the category of "zero emission vehicles." While both technologies are promising and have relative advantages/disadvantages to each other, EVs in San Francisco benefit from a very clean power grid, which weighs significantly in their favor in the short-to-medium term. Vehicle emissions remain the most intractable portion of San Francisco's emissions portfolio; as a consequence, zero emission vehicles, and thus EVs in particular, are now a major focus.

With 46% of San Francisco greenhouse gas emissions resulting from the transportation sector, dealing with this challenge is a major focus of the City. While emissions in the building sector can be addressed over time through better efficiency and low-carbon power delivered through centralized and distributed grids, cars and trucks are particularly troublesome because the sector is so dependent on fossil fuels. San Francisco has taken an increasingly ambitious posture to advance electric vehicles.

A major component of this push for vehicle electrification is development of EV charging infrastructure throughout the City[2], and in particular, so-called fast chargers, also known as Level-3 chargers, that can typically add 75-170 miles of range for an EV car battery in about 30 minutes.[3] Increased availability of Level-3 charging stations is likely to have a dramatic impact on the development of EV markets. As charging speeds increase with adoption of the latest technical standards, fast chargers could approximate the refueling times of gas stations, measured in minutes rather than hours[4].

Despite San Francisco's affluence, its strong push for sustainability, the presence of numerous technology companies (including several of the most famous EV designers and manufacturers in the world) and the obvious demand for EVs, the City has few publicly accessible Level-2 and Level-3 charging stations. There are approximately 200 publicly-available Level-2 chargers in the city (including the airport); there are between 15 and 20 total Level-3 chargers in San Francisco. Many chargers are not available 24 hours per day / 7 days per week. Others are restricted to customers of private companies. None of the existing chargers operate at the higher speeds accepted by long-range EVs like the Chevy Bolt (up to 80 kW) and Tesla (up to 120 kW)

SF Environment believes that this lack of adequate charging infrastructure is a significant barrier to expansion of the EV fleet and a deterrent to commuters and visitors adopting EV technology more quickly. Unfortunately, these chargers require high electrical throughput and must be connected to the main electrical grid, rather than solar panels.

Port property provides for a number of potentially ideal locations to establish fast charging pilot clusters. Accordingly, in consultation with SF Environment, the Port has been in discussions with several possible providers of EV charging technology to obtain information and gauge interest in Port locations.

The primary challenge for any potential hub of Level-3 chargers is that this kind of fast charging requires both a great deal of power and expensive equipment; in general, the Port is not well equipped to handle dramatic increases in electrical load at most of its

[2] See https://SFEnvironment.org/news/press-release/mayor-lee-and-supervisor-katy-tang-introduce-legislation-requiring-all-new-buildings-to-be-100-electric-vehicle-ready. The Port is in the process of updating its own building code to reflect a similar mandate.

[3] SF Environment is also supporting roll-out of "level-2" chargers, which can typically add 25 miles of range for every hour of charging. Level 3 charging is more appropriate for public venues, however, because it allows for faster turnover.

[4] It should be noted that we are use EV fast charging as a particular use case or shorthand for what should more accurately be described as "direct current fast chargers." While we anticipate EVs being the first and primary use of DCFC installation, they are not the only potential use case.

facilities. Utilities typically require charging companies to install their own transformers, and in turn charging companies typically seek to create parking hubs of 10 or more charging-stations to spread the cost of the transformers across multiple stalls. A hub of 10 charging-stations requires at least 750kVA power, which in most Port locations would require a new primary service connection. Where the Port location already does have adequate power (e.g. Pier 27), there are competing demands for it.

REQUEST FOR INFORMATION

The Port has been approached by several companies with an interest in building EV fast charging-station hubs. Port staff believes that there may be more companies interested in developing and operating passenger and commercial vehicle fast charging stations. To obtain information and gauge market interest, Port staff seeks Port Commission authorization to issue a Request for Information (RFI) to better understand market opportunity and the viability of Port properties for this use.

The Port staff has identified five possible pilot sites as shown in Exhibit A. The criteria for these sites included sufficient space for the infrastructure, the suitability for parking, the existence of adequate power or the ability to supplement power, and a distribution that could provide access to charging stations for all of the Port's neighboring communities. The sites generally fall into two categories: 1) they are underpowered and will need a new primary connection to the City's power grid; or 2) they have sufficient power but have competing demands on that power, which poses logistical challenges.

- Seawall Lot 314 (across from Pier 35): 10-15 stalls (would require new primary electrical service)

- Pier 27: 10-20 stalls, but only available during those times when cruise ships are not docked or when the parking lot is not in use for events, which is approximately 200 days of availability a year (would not require new primary electrical service)

- Pier 30/32: 20+ stalls (would require new primary service)

- Pier 54: 10-20 stalls (would not require new primary service, but would require the PUC to share the existing primary service with the chargers)

- Pier 70, Building 109, which is designated as parking in the Pier 70 development plan: 20+ stalls (Might not require new service if an arrangement can be worked out with the new shipyard operator)

Expanding the EV infrastructure at the Port will advance the climate goals of the City and Port. It is expected that the responses to an RFI will illuminate other potential benefits such as enhancements to parking lot utilization and parking rates. The RFI responses will also clarify the ability of the installers to carry the costs of installation and electricity.

There are also potential benefits beyond the passenger vehicle market. Electric ferries and other watercraft are likely to emerge in the near-to-medium term and could capitalize on this infrastructure. Electric ferries are already viable in several short-haul locations in

Europe and are under study by operators here in San Francisco. Use of electric trucks is developing rapidly and has the potential to displace the short-haul internal combustion engine (ICE) fleet moving goods back and forth from the Port to the airport. Trucking contributes to a significant percentage of local pollution and carbon emissions. A shift to EVs would be a direct contribution by the Port to a more sustainable and healthier city. Finally, many of the potential charging company providers are also interested in installing batteries. This energy storage infrastructure would provide a public benefit for potential disaster response and emergency management.

There are additional strategic benefits that could develop. The establishment of pilot technology sites on the waterfront helps establish the Port as a campus for tech innovation and application. This could itself attract more interested parties across the spectrum of new environmental innovation and other technologies.

A second strategic consideration is that the Governor plans to host the Climate Action Summit next fall in San Francisco, and an expanded EV charging infrastructure would be a compelling showcase item for the City to highlight at that event. It would draw particular attention to the importance of the Port and its efforts to promote sustainability and resiliency along the waterfront.

A draft RFI is attached in Exhibit B. If authorized by the Port Commission, Port staff would finalize and issue the RFI. Staff anticipates a three-week open period. Responses to the RFI will not trigger any commitment from either the Port or the respondents. An RFI would allow operators to identify other possible sites beyond those identified above. After reviewing RFI response submittals, Port will be able to better formulate a strategy and will return to the Port Commission with further details and a proposed course of action. Depending on the responses, the Port may propose to directly negotiate with certain entities, follow up with a Request for Qualifications or Proposals (RFQ or RFP) or take other actions. The Port will also conduct community outreach to solicit input on site and project objectives to be included in any further proposal.

RECOMMENDATION

Port staff recommends that the Port Commission approve the attached Resolution.

Prepared by: Keven Brough, Senior Fellow
Special Projects
Richard Berman, Utility Specialist
Planning and Environment

For: Brad Benson, Deputy Director
Special Projects
Diane Oshima, Deputy Director
Planning and Environment

Exhibit A: Maps of Potential EV Charging Sites
Exhibit B: Request For Information (RFI)

PORT COMMISSION
CITY AND COUNTY OF SAN FRANCISCO
RESOLUTION NO. 17-54

WHEREAS, the City and County of San Francisco is meeting the challenge of climate change with leading policies, programs, and partnerships; and

WHEREAS, the Port of San Francisco 2016-2021 Strategic Plan includes a sustainability strategy that articulates a commitment to the City's climate goals; and

WHEREAS, a core component of both San Francisco's and the Port's climate change approach relies on the promotion of electric vehicles to displace transportation sector emissions; and

WHEREAS, the market for electric vehicles is limited by the lack of publicly available fast charging technology; and

WHEREAS, the following Port locations have the potential to support pilot fast charging clusters: Seawall Lot 314, Pier 27, Piers 30/32, Pier 54 and Pier 70; and

WHEREAS, buildout of direct current fast charging clusters may have benefits for both electric vehicle development and other electric services, including commercial trucks and ferries;

WHEREAS, costs and other complexity in building out fast charging infrastructure suggest that several pilots are a better approach than a slower and larger Port-wide rollout; now, therefore, be it

RESOLVED, that the Port Commission hereby authorizes the Executive Director to issue a Request for Information (RFI), which is presented in draft form in Exhibit B, to obtain information and gauge market demand to operate fast charging stations at a limited set of sites on Port property, and

RESOLVED, responses to the RFI would allow operators to identify other possible sites in addition to those identified, and allow Port to conduct community outreach to solicit input on site and project objectives in any future plans;

RESOLVED, the RFI would not obligate the Port to any further actions, and

RESOLVED, depending on the information obtained and community input, Port staff may return to the Port Commission to seek authorization to directly negotiate with one or more entities; issue a Request for Qualifications or Proposals (RFQ or RFP) or take other appropriate actions.

I hereby certify that the foregoing resolution was adopted by the Port Commission at its meeting of September 26, 2017.

_____
Secretary