



CITY OF BEVERLY HILLS
TRAFFIC & PARKING COMMISSION

January 5, 2016

TO: Traffic & Parking Commission

FROM: Chad Lynn, Assistant Director of Public Works Services
Caitlin Simms, Senior Management Analyst
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SUBJECT: Electric Vehicle Policy Proposal

ATTACHMENTS: Attachment 1 – List of Electric Vehicle Charging Stations and Capacity
Attachment 2 – Proposed Informational and Regulatory Signage

INTRODUCTION

The City currently operates 35 publicly available electric vehicle (EV) charging stations in 14 City parking facilities and at Roxbury Park. In September 2011 the City received multiple grants covering approximately 28 charging stations and the associated maintenance and operating fees through January 2014 from ChargePoint America/Coulomb. Between December 2012 and October 2015, the City has added an additional 7 charging stations to its inventory through additional grant opportunities and as part of new building construction. The City has been responsible for the associated installation costs of the units and for the ongoing cost of energy (power) for the operation of these units. As of January 2014, the City has been responsible for all of the associated cost of operating its inventory of stations, which includes hosting services (user customer service) and maintenance and repair of the infrastructure.

The EV charging stations currently in service conform to the following configurations:

- Level 2 Only – 1 Connection
- Level 2 Only – 2 Connections
- Level 2 and Level 1 – Once connection for each

Level 1 charging refers to a 110V/120V connection, similar to a household electrical outlet. This is a slower method of charging and can range from 7 to 28 hours to charge a completely depleted battery to a full charge. This connection is located under a covered panel on select charging stations and is not readily visible to the customer. The City does not provide the cord or connection to this outlet; it is the responsibility of the driver to provide and connect this cord to both their vehicle and the charging station.

Level 2 charging refers to a 240V connection, similar to what powers a home electric dryer or oven, and has a standardized cord provided by the City which is connected to the charging station for the user to connect to their vehicle. Level 2 allows for a wide range of charging speeds, which translates to about 70 to 80 miles of range per hour of charging depending on the vehicle. The time to charge from fully depleted to fully charged ranges from 2 to 10 hours depending on the vehicle.

At the time of installation, the City's goal was to promote the use of EVs and to make charging infrastructure available to existing and future EV users. This included the location of the EV spaces along with the ability to obtain unlimited connectivity free of charge. When the original grants for the EV stations were accepted, the associated fees for hosting and maintenance were included, prompting the City to promote and provide free access to the then underutilized asset. The City 'reserved' two parking spaces for each charging station as part of the original design, which allowed for both a Level 1 and a Level 2 connection to each charging station. Due to the configuration of the Level 1 charging station and lack of informational signage, many users are not aware the Level 1 connection is present. In some cases, at the time of installation, power limitations did not allow the City to install units with both Level 1 and Level 2 charging capability, providing for more spaces than ability to connect, such as at 221 N Crescent Drive and 216 S Beverly Drive.

Based on usage and in recognition of the goal to promote the use of EV charging stations, the City adopted very few enforcement protocols; user etiquette and informal courtesies recognized by early EV adopters largely governed the use and accessibility to the EV charging infrastructure. Over time, as the etiquette and courtesies changed with the proliferation of the technology, new challenges arose. EV parking spaces were generally installed adjacent to vehicle and pedestrian entrances, which are often perceived to be prime or desirable parking locations, and more users began parking in these 'prime' spaces irrespective of connectivity for charging. In cases with more spaces than charging connections, or where confusion about Level 1 and Level 2 availability, users have disconnected a vehicle currently charging or which has completed charging. This scenario, in which a user may have connected at the time of arrival and was disconnected by another user, creates an enforcement dilemma at the time of citation issuance based on the origin of the violation. The City slowly and disjunctively created and implemented incremental changes to the enforcement program, many of which have or will become difficult to measure or practically enforce.

Current enforcement policies include:

- Non-Electric vehicles may not park in designated EV spaces.
- Vehicles must be moved from the charging station within one hour after reaching a full charge. Unmoved vehicles may be subject to citation.
- Patrons cannot lock, or in any way convert the charging cable for their exclusive use.
- A vehicle parked in a charging stall without the charging cable connected to the vehicle is subject to citation.

Time limits based on the vehicle's charging time, such as the removal of the vehicle within 1 hour after charging has completed, are difficult to measure and impractical to enforce as it requires multiple trips by parking enforcement officers (PEO) to establish a violation. Additionally, early signage that was adopted for 'reserved' spaces did not make clear the requirement for the vehicle to be connected to a charging station as prescribed by the California Vehicle Code (CVC).

DISCUSSION

As a result of these impacts and the lack of practical, enforceable policies, staff is proposing adoption of new, simplified and more comprehensive policies related to EV charging stations. The proposals are intended to promote the short-term use of EV charging stations throughout the City, while allowing as many users as possible to connect while visiting a Beverly Hills public parking facility.

In an effort to create a policy which is simple to communicate to the public, is enforceable and achieves the usage goals, staff considered the following:

- Whether customers should be charged a fee for utilizing the City's EV stations;
- Whether there should be a time restriction for utilizing the City's EV stations;
- Whether there should be spaces dedicated for electric vehicles (not hybrids) only; and
- Changes which may need to be made to the City's enforcement efforts.

Citywide statistics for the month of November 2015 were as follows:

- Approximately 38,000 total connections
 - Level 2 Connections – 87.5% - approximately 33,250
 - Level 1 Connections – 12.5% - approximately 4,750
- Shortest connection time – Less than 1 minute
- Longest connection time – 17 hours 30 minutes
- Mean (average of all) connection time – 2 hours 18 min
- Median (middle number) connection time – 2 hours
- Mode (the most recurring time) connection time – 30 minutes

Based on this information, the short mode, an excessively long 'longest' connection time and a mid-range mean suggest that the system may have several long and short connections that balance out the mean. Both the mean and median appear to paralleling the 2 hour free parking offered in many of the City's parking facilities. Based on the high turnover at most City parking facilities and the longest connection time of 17+ hours, it is likely that user perception could be a lack of availability of EV charging spaces. This experience may be occurring at all locations and is even more likely to occur at parking facilities which provide for monthly parking, where long-term users may connect to a charging station upon their arrival and leave the vehicle parked and connected for the entire day. Since many of these users often arrive in the early part of the day, before peak usage, it is likely that short-term visitors and those arriving in the later part of the day will experience a lack of availability in access to charging stations.

Staff conducted on-site interviews to better understand the customer experience, areas of confusion and to identify customer concerns. Based on those interviews staff identified the following concerns:

- Confirmed lack of familiarity with Level 1 charging availability and connectivity;
- Confusion related to the requirement to be connected to the charging station and actively charging versus simply having an EV and being able to park in reserved EV spaces;
- Ability to return to the vehicle once the vehicle has completed charging or based on a pre-determined time-limit;
 - Anxiety is exacerbated by the potential issuance of a parking citation
- Lack of availability of EV spaces when a charge is needed/wanted;
 - EV vehicles parked in EV charging spaces that are NOT connected to the charging stations
- Lack of spaces in the parking garage at peak times. If a customer has to move his/her vehicle after it is charged, depending on the garage and on the time, there might not be spaces available to move the vehicle.

The charging stations are capable of charging three different types of rates that would be applicable to the City as follows:

- Energy Fee
 - Fee associated with the amount of energy consumed by the connected vehicle. This is based on a flat rate per Kilowatt Hour (kWh) and is charged only when the vehicle is actually charging. There is no fee when the vehicle is not charging.
- Station Fee
 - This is a fee associated with the connection to the charging station, irrespective of whether the vehicle is charging or not. As long as the vehicle is connected to the charging station, this fee would be applicable.
- Access Fee
 - This is a fee associated with gaining access to the charging station irrespective of if the vehicle is charging and/or how long it remains connected. It is essentially a flat rate for connecting to the charging station.

The associated fees may be applied individually or may be combined. They may be incremental and/or they may fluctuate based on the time of day, creating various rate pockets.

To promote simplicity and ensure drivers are able to view (on websites and smartphone apps), understand and base decisions on the rates, staff is recommending a simple combination of the Energy Fee and Station Fee.

Staff is proposing the rate policy be implemented uniformly in all facilities as follows:

Table 1

Recommended Proposed Escalating Rates		
<u>Type of Fee</u>	<u>Increment 1</u>	<u>Increment 2</u>
Station Fee	First Two Hours FREE	Per Hour Thereafter \$6.00
Energy Fee	\$0.25 Per kWh	SAME
Access Fee	NONE	NONE

The use of an Energy Fee address two issues. It ensures the City is able to recover the cost of the actual energy being consumed by the charging vehicle and it provides for a differentiation in fees for those connected to Level 1 and Level 2 connections based on the amount of energy they are receiving. The cost of the energy fee will vary by vehicle, but is estimated to be approximately \$1.80 per hour for a Level 2 connection and \$.48 per hour for a Level 1 connection while the vehicle is charging. Once a vehicle reaches a full charge, it will no longer be charged the Energy Fee.

The use of a Station Fee addresses on-going connections to the charging station irrespective of whether the vehicle is charging or if it is using a Level 1 or Level 2 connection. This fee is associated with the actual connection to the charging station. Staff is proposing allowing a free connection to the station for the first two hours and then a \$6 per hour fee for continued connection. The fee is pro-rated, so drivers are charged based on the hourly fee for only the

portion of the hour they are connected. This fee is in addition to the Energy Fee if the vehicle continues to charge and remains connected longer than 2 hours.

At this time, staff is not proposing implementing an Access Fee, which is a flat rate for connection to the charging station.

Based on the proposed implementation of rates, the average driver would be able to connect and charge for 2 hours at Level 2 for approximately \$3.60, which would provide approximately 50 miles of additional range. If the vehicle were to complete charging within 2 hours, but were to remain connected for a 3rd hour, the fee would be approximately \$9.60.

- Energy Fee of approximately \$1.80 per hour x 2 hours = \$3.60
- Station Fee of \$6.00 per hour for the 3rd Hour
- Total Fee = \$9.60

If the vehicle were to continue to charge during the 3rd hour, the fee would be approximately \$11.40.

- Energy Fee of approximately \$1.80 per hour x 3 hours = \$5.40
- Station Fee of \$6.00 per hour for the 3rd Hour
- Total Fee = \$11.40

Staff believes that the Implementation of an escalating fee addresses and supports the goals of the EV charging program across various user needs. The charging of a fee, even a modest one for the consumption of energy (\$1 to \$2) for the first 2 hours of connectivity, allows for and balances EV use by several user profiles. For example, users of plug-in hybrid vehicles or fully charged EVs may be less likely to connect to charging stations which are fee based if they have sufficient charge/fuel and are not as prone to monopolize the asset simply because it is available.

The combination of the Energy Fee and Station Fee promotes turnover based on the cost of connectivity with the understanding that users may require additional charging to meeting their immediate need or may wish to remain connected for reasons of convenience. This practice mitigates the need to impose time-limits/restrictions (1hr or 2hr) and the threat of enforcement (citations) for users that do not return to their vehicles within the prescribed time.

The increasing cost of remaining connected to the charging station encourages disconnecting the vehicle (or at least requires the driver to continually return to the vehicle) as time elapses. The proposed rate structure is aligned with the average length of stay in City parking facilities by non-EV users, which balances the EV user experience with traditional visitors without respect to regulatory compliance. The combined rate also provides for users that need a longer connection time to charge to choose to accept the escalating rate in exchange for longer connectivity. Lastly, this provides users with the flexibility to stay parked longer than anticipated without the risk of committing a violation based on a single moment in time, such as exceeding a 1 or 2 hour time restriction. This provides an opportunity for a user with a meeting or appointment that goes longer than expected to incrementally pay the increasing fee for their use and connection compared to an average \$60 fine based on a citation issued at the moment of violation. The flexibility of the return time is consistent with user preferences related to off-street parking facilities, which provide for non-time limited parking experience.

Information and education are the foundations of the implementation of any new program. Staff is recommending signage (Attachment 2) which is intended to communicate the following:

- Diagram, description and 'How To' for use of the Level 1 Chargers
- Regulatory/Etiquette expectations for overall uses of this equipment
 - Requirement to be connected to the machines
 - Helpline Contact Information
- Reserved sign for non-EV vehicles
- Rate Sign

Since the charging of a rate for energy use and continued connectivity are expected to change user behavior, staff is recommending continued measurement of usage during the first six months of operation. If the rate structure and policies as proposed do not create an average length of connection to an EV charging station that is proximate to the average vehicle duration of non-EV users, staff will incrementally implement the following complementary policies as needed:

- Adjusting Station Fees (Up or Down) in \$1 increments
- Adding Access Fees
- Turning off the charging capability after a prescribed period of time (1 – 2 hours)
- Establishing a time limit restriction with enforcement (1 – 2 hours)

In order to provide the flexibility to measure and change rates and policies based on actual usage information, staff is proposing the formal rate language be adopted similar to monthly and special event parking rates; as a range to be implemented in a manner consistent with the local and regional market and in a manner which achieves the desired outcomes.

The proposed official rate language would be as follows:

- As established by the Director of Public Works Services
 - Energy Fee
 - Low \$0.00 Per kWh
 - High \$1.00 Per kWh
 - Station Fee
 - Low \$0.00 Per Hour
 - High \$20.00 Per Hour
 - Access Fee
 - Low \$0.00
 - High \$20.00

If the Traffic and Parking Commission wishes to consider alternatives, this may include:

- Alternative Rates for Energy Fee
- Alternative Rates for Station Fee
- Implementing Access Fees
- A change in the rates or combination of fees which are assessed
- Changing rates on a facility-by-facility or machine-by-machine basis
- Implementing restrictions with or without associated rates (1hr or 2hr max parking)
- Including a completely free period of connection (no Energy or Station Fee)

At this time, staff does not recommend these alternatives as they do not support the initial concepts of uniformity with the goal of balancing consumer anxiety (citations) with promoting turnover (combination of fees). Staff does not recommend including a free connection period based on the high use of short-term connections which has a high likelihood of exacerbating the perception of lack of EV charging availability. This also promotes a scenario in which a user that 'needs' to charge is displaced by a user 'topping-off' simply because the free asset is available.

FISCAL IMPACT

The estimated cost of operating the EV charging stations is as follows:

Estimated One-Time Expenses

New Signage & Installation	<u>\$1,100</u>
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Estimated Ongoing Expenses

Hosting Fees	\$ 2,500
Preventive Maintenance	\$19,500
Materials/repairs	\$16,500
Energy Costs (247,141 kWh)	\$49,000
Est Cost of Transaction Fees (10%)	<u>\$13,400</u>

Total Estimated Ongoing Costs	<u>\$100,900</u>
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Estimated Revenues

Using current usage statistics, a \$0.25 per kWh fee for actual energy usage and a conservative average of \$5 for users that exceed 2 hours, revenues are estimated to be \$134,200 annually.

Based on estimated expenses, this provides \$33,300 on an annual basis which may be accrued toward the upgrading and replacement costs associated with this infrastructure.

RECOMMENDATION

Staff recommends creating the official rate language as outlined herein to provide for ongoing flexibility in both the type of rates and the actual fees to be applied facility-by-facility and or machine-by-machine as information is gathered and user profiles are better understood or as they may change over time.

Staff proposes implementing the combined Energy Fee and Station Fee outlined in Table 1, uniformly in all parking facilities, along with the informational and regulatory signage as outlined in Attachment 2.

Staff proposes measuring usage on a facility-by-facility basis to promote and maintain an average connection time that is comparable to each facilities' average length of stay for non-EV vehicles. For those facilities that do not reach this goal, staff will incrementally implement the complimentary policies as outlined herein.

Staff is requesting the Traffic and Parking Commission support staff's recommendation by making a formal recommendation to the City Council supporting the EV charging rates and policies as outlined herein or to provide feedback and request staff return to the Commission with additional information and/or alternatives.

ATTACHMENT 1

Electric Vehicle Charging Stations Inventory

Address	EV Charging Stations	EV Ports		Installed / Go Live
		Level 1	Level 2	
345 N. Beverly Drive	4	4	4	Feb-12
216 S. Beverly Drive	2	0	2	Feb-12
9510 Brighton Way	2	2	2	Feb-12
440 N. Camden Drive	2	2	2	Feb-12
450 N. Rexford Drive	2	2	2	Feb-12
438 N. Beverly Dr. - 439 N. Canon Dr.	2	2	2	Feb-12
241 N. Canon Dr. - 242 N. Beverly Dr.	2	2	2	Feb-12
9333 W. Third Street	2	2	2	Feb-12
461 N. Bedford Drive	2	2	2	Feb-12
333 N. Crescent Drive	2	0	2	Feb-12
221 N. Crescent Drive	2	0	2	Feb-12
9361 Dayton Way	2	0	2	Feb-12
450 N. Crescent Drive	4	0	6	Dec-12
321 S. La Cienega Blvd.	2	2	2	Feb-12
City Council Parking Lot	1	0	2	Oct-15
Roxbury Park Community Center	2	0	2	Jul-14
	35	20	38	

Type

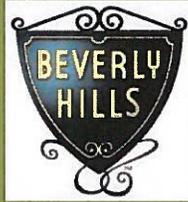
ChargePoint

restricted use

parking meters

General Electric

ATTACHMENT 2



ELECTRIC VEHICLE CHARGING STATIONS PROCEDURES AND RATES

- EV charging station stalls are only for the purpose of charging vehicles.
- Vehicles parked in a charging stall without the charging cable connected are subject to citation, tow, or, if a repeated violation, forfeiture of parking privileges.
- Unauthorized vehicles will be subject to citation, tow, or, if a repeated violation, forfeiture of parking privileges.

Electric Vehicle Charging Station Rates		
<u>Type of Fee</u>	<u>Increment 1</u>	<u>Increment 2</u>
Station Fee	First Two Hours FREE	Per Hour Thereafter \$6.00
Energy Fee	\$0.25 Per kWh	SAME
Access Fee	NONE	NONE

If You Have Any Questions Please Call 310-288-2699

C.V.C. 22511.1 (A)

C.V.C. 22511.1 (B)

B.H.M.C. 7-3-107

RESTRICTED PARKING

ELECTRIC VEHICLES ONLY

**VIOLATORS WILL BE CITED AND TOWED
UNAUTHORIZED VEHICLES NOT CONNECTED
FOR ELECTRIC CHARGING PURPOSES WILL
BE TOWED AWAY AT OWNER'S EXPENSE.
TOWED VEHICLES MAY BE RECLAIMED AT
TIP TOP TOW SERVICES**

**1654 12th Street, Santa Monica, CA 90404
(310) 314-4040**

OR BY TELEPHONING B.H.P.D. (310) 550-4951

C.V.C. 22511.1(A) :C.V.C. 22511.1(B)

C.V.C. 22511(C) :C.V.C. 22658(A)

B.H.M.C. 7-3-107 :B.H.M.C. 7-3-105A

**LEVEL 1
CHARGING AVAILABLE
SWIPE CHARGEPOINT
CARD
TO UNLOCK LEVEL 1
COMPARTMENT**

