



Agenda Item No. (5)

To: Building and Operating Committee/Committee of the Whole  
Meeting of October 22, 2020

From: Ron Downing, Director of Planning  
John R. Eberle, Deputy District Engineer  
Ewa Z. Bauer-Furbush, District Engineer  
James P. Swindler, Deputy General Manager, Ferry Division  
Denis J. Mulligan, General Manager

Subject: **STATUS OF ELECTRIC VEHICLE CHARGING STATIONS AT THE LARKSPUR FERRY TERMINAL**

### **Recommendation**

This report is provided for informational purposes only and does not require any action.

### **Background**

The electrical system at the Larkspur Ferry Terminal predates the advent of electric vehicles and has limited capacity, so the District cannot add Level 2 chargers to the existing light poles unless the buried conduits, electrical wiring and circuits are replaced. The electrical circuits for the existing light poles also do not accommodate Level 1 chargers.

Electric vehicle (EV) chargers were first installed at the Larkspur Ferry Terminal in the early 2000s to support emerging EV technology available in Toyota RAV4 vehicles, beginning in 1997. These early EVs had a range of 95 to 130 miles per charge, which varied with driving conditions and terrain. The Golden Gate Bridge, Highway and Transportation District (District) received grant funding to install two charging stations to support these early EVs, and it was stipulated that the parking spaces adjacent to those charging stations must be dedicated at all times to EVs. During that time period, parking supply was ample for demand at the Larkspur Terminal. The parking spaces adjacent to the charging stations were sparingly used by EVs, as the RAV4 EV was only modestly adopted in Marin County. One of the concerns that diminished wider adoption was that the cost to replace the battery pack exceeded the cost of the vehicle. A further consideration was that the charging stations were specific to the RAV4 EV and could not be used by other EV models that came later.

Between 1998 and 2001, high-speed catamarans were introduced to Larkspur Ferry service, creating a surge in demand, where ridership and parking demand exceeded available capacity during morning peak periods. The District ultimately expanded the Larkspur Ferry parking lot in 2002 and again in 2008 to approximately 1,800 parking spaces to accommodate that demand, along with the stipulation that parking in the lot was for Larkspur Ferry passengers only. Two additional

high-speed catamarans joined the fleet in 2009 and 2011, respectively, and by 2013, the Larkspur parking lot was filling up regularly by 8:00 a.m. on weekdays. Many passengers used other official and unofficial nearby locations to park outside the ferry terminal. The overflow lot on Larkspur Landing Circle opened on October 23, 2015, providing an additional 230 parking spaces. On occasions when ridership was high, additional vehicles could park in the SMART right-of-way, prior to its development for railroad use.

The main Larkspur lot continued to fill up between 8:00 a.m. and 8:30 a.m. as recently as January 2020, with the overflow lot following later in the morning. While the COVID-19 pandemic has diminished demand for ferry service, the District expects ferry ridership to return once the pandemic eases.

In parallel with those ridership and parking trends, the District replaced one of the two electric vehicle-charging stations with more contemporary technology in 2013, to allow for other types of EVs to charge. The District did not replace the second charger that supported RAV4 EVs, because there were a small number still in use at that time.

Tesla has its own unique charging system that is not shared by other EVs and Tesla provides charging stations for its customers throughout the region, with three currently in existence now in Marin and a fourth available soon. For non-Tesla EVs, charging stations are widely available throughout Marin and Sonoma Counties, with some specifically near the Larkspur Ferry Terminal; three are adjacent to Larkspur Landing Circle, and four are at Drake's Landing.

Recent efforts, in conjunction with the Transportation Authority of Marin (TAM), have focused on replacing the older RAV4 EV charging station and the newer one installed in 2013 with two charging stands to support four vehicles each instead of two. This action would increase the capability from two vehicles to eight, using two contemporary charging stations. District staff is assessing the existing power supply to determine what modifications will be required to increase the capacity of the two existing charging stands.

The District and TAM have discussed grant opportunities to complete the work to replace the current charging heads and research additional opportunities. TAM staff understands that any EV parking within the two Larkspur parking lots must be reserved for ferry passengers. TAM has also been advised that if they wish faster completion of the replacement work, the District would grant them an encroachment permit to allow TAM to complete the work.

More broadly, none of the existing lighting circuits can currently handle EV charging. The existing parking lot lighting circuits are 20 amp or 30 amp circuits. Level 2 chargers require 40 amp circuits. The existing electrical wiring is also deficient for the use of Level 2 chargers. So neither the circuit breakers nor the wiring to the light poles is sized for even a single Level 2 charger. Level 1 chargers are rated for 120V supply but power supply to the lighting is 208V or 277V. Therefore, no Level 1 chargers can be put on the existing lighting circuits.

The spare power supply capacity at the Larkspur Ferry facility is only about 116kVA, which translates into about 16 Level 2 charging stations because each Level 2 charging station requires 7.2kVA of power. A Fast Charger requires about 75kVA of power, which means that the spare power supply can support only one Fast Charger. Also, any additional charging stands will require

new underground electrical feeds.

With the advancement of EV technology, it would appear that Larkspur Ferry passengers might have less need to charge their vehicles at the terminal to make a round trip to and from the ferry. While the initial phase of newer EVs in the form of the 2015 Nissan Leaf had a range of 84-110 miles, technology has made very quick advances such that 2019 and 2020 model EVs have ranges of 204 miles for the Audi e-Tron to 258 miles of range for the Hyundai Kona and Chevrolet Bolt. Tesla vehicles have an even greater range, between 320 miles for the Model Y to 373 miles for the Model S. The 2020 Nissan Leaf also has improved range, between 150 and 226 miles on a charge.

Looking forward, the District will be studying how to provide additional parking in the vicinity of the Larkspur Terminal for our ferry patrons, including incorporating charging stations as part of the expansion.

**Fiscal Impact**

There is no fiscal impact associated with this report.

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