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OLYMPIA POLICE DEPARTMENT FLEET ELECTRIFICATION: PRELIMINARY ANALYSIS AND RECOMMENDATIONS

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TO: Lt. Bryan Wyllie, City of Olympia Police Department
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FROM: Mike Usen | DKS Associates

SUBJECT: Olympia Fleet Electrification Project #24669-000

INTRODUCTION

The purpose of this memo is to document our preliminary understanding of Police operations and how these will impact electrification of the Police Department's fleet and provide preliminary recommendations to evaluate further in subsequent phases of this project. The following content is based on discussions between the DKS-led fleet electrification team and City of Olympia Police Department as well as on the DKS team's experience electrifying other Police Department fleets. This memo summarizes the Department's existing and future fleet operations, potential opportunities and challenges for electrification, options to consider and preliminary recommendations.

EXISTING AND FUTURE FLEET OPERATIONS

Currently, the Police Department operates 24/7 with a fleet of 39 pursuit-rated vehicles, including 24 interceptors equipped with power-hungry devices such as cameras, computers, and radios. Up to 15 of these 24 interceptors are in constant use, hot-seated between shifts, likely with insufficient dwell times for charging. The Police Department plans to shift from a depot-based fleet to a take-home model. Because the fleet will be parked at officers' homes during their night or off-work shift, the overall fleet will need to increase to about 70 vehicles. This transition will take at least three years, starting in 2028 by replacing ICE vehicles that were purchased five years earlier in 2023, since pursuit vehicles have a five -year life span.

The remainder of the Police Department's fleet is comprised of administrative vehicles. Administrative vehicles are response vehicles that despite note needing to be pursuit-rated, still

need to be ready for long deployment in the field and often used as such. However, they have simpler logistics for charging, making them more suitable for EV operations in the short term.

ELECTRIFICATION OPPORTUNITIES

Police pursuit vehicles drive the most miles of any fleet in the City so electrifying them will provide the greatest fuel cost savings and greenhouse gas and other emissions benefits. Olympia Police Department's experience with Plug-in EVs (PHEVs) proved unsuccessful as their run time resulted in battery failure and extreme vehicle down time, requiring early asset replacement. Compared to ICE vehicles, EVs are higher performing with greater torque, lower center of gravity for better handling, and smoother and driver comfort, and greater reliability and longevity than PHEVs. EVs also have fewer moving parts and require less maintenance resulting in less down time than their ICE or PHEV counterparts. Depending on availability of future EV models suitable for police missions, electrifying the fleet is expected to Olympia aims to improve officer recruitment and retention. Additionally, electric pursuit vehicles benefit from being quieter for mission stealth and reduced noise impacts on the community.

Like most municipal fleet vehicles, administrative vehicles are very suitable for electrification as they don't need to be pursuit-rated and they are not hot-seated, making them available for charging overnight, supplemented by fast charging options while parked at the station during the day. Take-home Administrative EVs can be charged during the day at the station.

ELECTRIFICATION CHALLENGES

The electrification of the Police Department fleet faces several challenges, especially duty cycle and availability of pursuit-rated EVs. The continuous use of vehicles leaves little downtime for charging, and officers cannot easily switch vehicles due to personalized equipment. The high energy demands of onboard equipment and the need for operational readiness during unpredictable events like protests or emergencies further complicate the transition. Pursuit-rated electric vehicle models suitable for police work are currently very limited. Once they do become available, the station will need electrical capacity upgrades to provide sufficient power for charging, especially high-power DC Fast Charging. Additionally, labor contracts will need to be renegotiated to accommodate the operational changes inherent to an EV fleet. New labor contracts will need to address charging take-home electric vehicles at officers' homes, public chargers, and adjusting shift schedules to optimize shared use of high-speed DC Fast Chargers installed at the station. Finally, the purchase cost of EVs is still higher than their internal combustion engine-powered (ICE) counterparts and investments in charging infrastructure will be substantial, so Olympia needs to be prepared for financial implications of fleet electrification.

FLEET CHARGING OPTIONS

To address these challenges, the Police Department is exploring various charging options. The current police station can charge up to four electric vehicles. However, the Department recognizes the need for fast-charging options to support operational flexibility using high-power DC Fast

Chargers of at least 150kW at the station as well as a sufficient quantity of AC Level 2 chargers for use during the day or night when administrative EVs are parked at the station.

For the future take-home fleet, home charging, opportunity charging, and other solutions for officers will need to be planned and implemented. These considerations highlight the complexity of transitioning a police fleet to electric vehicles while maintaining operational effectiveness.

PRELIMINARY RECOMMENDATIONS

Given these factors, a phased implementation plan should be developed, spanning several years, to allow for a gradual transition. The fleet electrification process should begin with electrifying non-patrol, administrative vehicles with more predictable usage patterns and longer dwell times for charging. This will require installation of high-power DC Fast Charging infrastructure at the police station to support operations and ensure operational readiness as well as deployment of Level 2 chargers at the residents of officers with assigned take-home EVs.

Engaging with labor unions will be needed to address the many changes inherent to EV fleet operations. Examples include policies related to charging fleet EVs at the station, at home (for take-home EVs) and potentially at other locations as well.

The Department will continue to need to closely monitor and evaluate pursuit-rated electric vehicle options as they emerge in the market. The Department can gradually transition its take-home fleet to electric as the existing fleet ages out of service and suitable pursuit-rated electric vehicles become available. This process will require careful planning and implementation over several years and should be regularly reassessed and adjusted based on technological advancements and evolving operational needs.

CONCLUSION

By following this approach, the Olympia Police Department can gradually transition to an electric fleet while maintaining operational effectiveness. This strategy acknowledges the unique challenges of police vehicle electrification and allows for flexibility as technology improves and more suitable electric vehicles become available. The transition to an electric fleet not only aligns with environmental goals but also has the potential to reduce long-term operational costs and showcase the department's commitment to innovation and sustainability.