

# Hoa Cleantech

## EV Charging Infrastructure Strategy for City Hall Vehicle Fleet

Case Study

May 2020

Our Client, the City of Abbotsford, asked Hoa Cleantech to develop a high-level charging infrastructure strategy and roadmap for the electrification of 38 light-duty vehicles within the City Hall fleet.

### What we did:

Our proprietary software, the Hoa Decarbonisation Platform, carried out the following:



- Analysed the existing electricity loads and fleet utilisation data.
- Developed the specifications for an equivalent electric vehicle (EV) fleet and concept design for the supporting infrastructure to meet the utilisation requirements (electrical infrastructure and charging stations).
- Developed a 10-year roadmap for the gradual replacement of fleet vehicles to EVs and installation of supporting infrastructure.

Type	Vehicles	Average Running [Hr/Vehicle/Day]	Average Distance [km/Vehicle/Day]	Fuel Consumption [L/Vehicle/Day]	Estimated Annual Fuel Cost [\$]	Estimated Annual Emissions [t_CO2eq]
SUV	5	1h05	45 km	5 L	\$ 8,242	14 T
Pickup	18	0h32	29 km	4 L	\$ 26,057	45 T
Car	12	0h37	23 km	2 L	\$ 9,828	17 T
Van	3	0h36	23 km	3 L	\$ 3,447	6 T

Figure 1 – Fleet utilisation analysed from telematics data



## Key Outcomes

- An electric vehicle fleet would require an average daily energy of 0.4MWh and reduce greenhouse gas emissions by approximately 80 tons annually. If each vehicle had a range of 200km, the total battery capacity of the fleet would be approximately 2.3MWh.
- Level 1 charging stations can meet the average daily utilisation requirements for 95% of the fleet between 17:00 and 08:00 the next day. However, based on a 5-day work week and battery size, a charging simulation shows that Level 1 charging stations are sufficient to meet the average utilisation requirements of all fleet vehicles.
- Level 2 charging stations are required to meet the peak utilisation of all fleet vehicles. Although, as these peaks generally do not occur concurrently, the concept design allows for both Level 1 and Level 2 stations to meet the utilisation requirements on any given day.

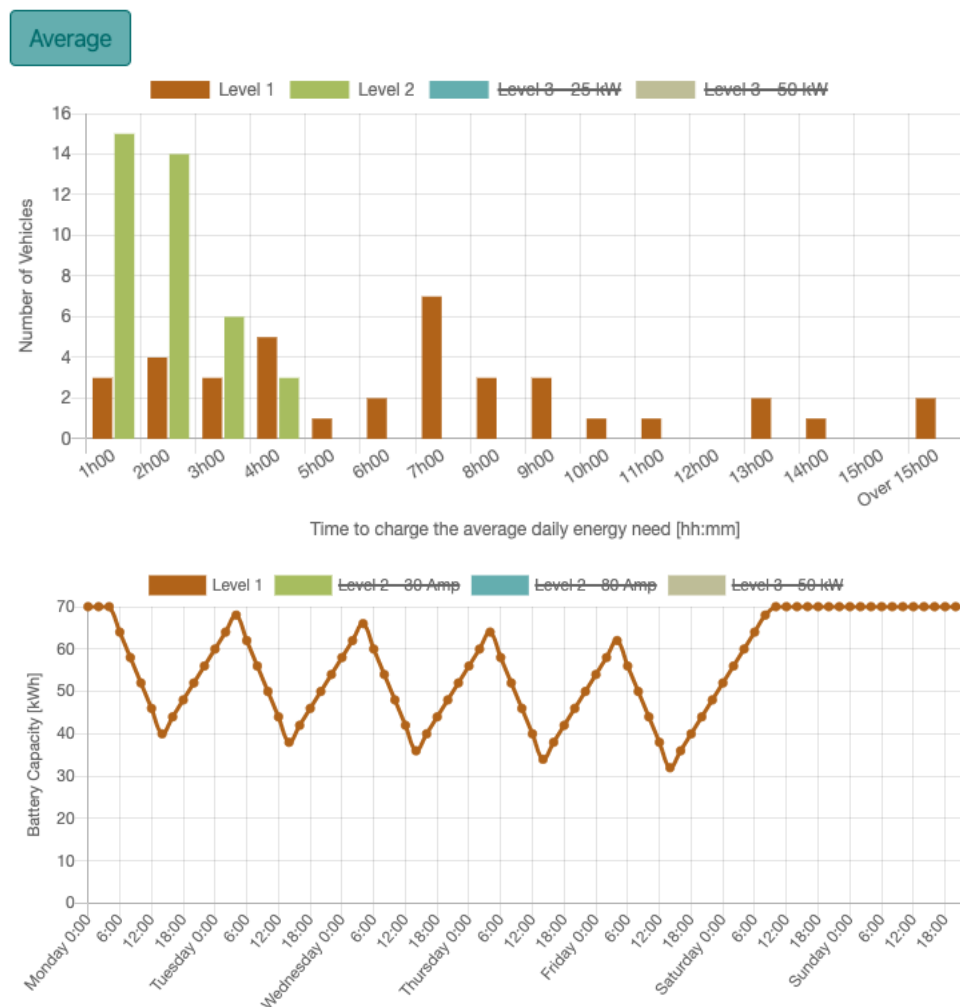


Figure 2 – Analysis of charging stations for fleet (top) and charging simulation of vehicle (bottom)