

## Appendix B - Electric Vehicle Charging Station Cost Revenue Analysis

### Estimated operational and unit replacement costs

The following fixed and variable operating costs as well as the anticipated cost of unit replacement were considered for the purpose of this analysis. The fixed operating costs include scheduled maintenance, repairs, and manual snow shoveling around the stations. In addition, a fixed network connection fee is charged by a third-party operator, currently ChargePoint, in order to collect data, remotely monitor the stations, and collect payments. Variable operations costs include costs for electricity and a transaction fee per session which is 10% of the revenue collected. BC Hydro electricity rates of 10 cents per kWh were assumed. This is a simplified assumption as BC Hydro rates usually include not only the cost of electricity but also transaction charges from network providers, and demand charges.

The tables below outline the estimated annual operations and maintenance costs for Level 2 and DCFC EV infrastructure in Whistler.

Table 1: Estimated fixed operational and maintenance cost

Fixed operational cost item	Cost per charging /year	Total per charging station per/ month
Data acquisition to monitor usage	\$ 300	\$ 25
Maintenance and repairs	\$ 300	\$ 25
Snow hand shovelling	\$ 200	\$ 17
<b>Total annual fixed operating cost</b>	<b>\$ 800</b>	<b>\$ 67</b>

Table 2: Estimated variable operational cost

Variable operational cost item	Cost per unit
Electricity cost	\$ 0.1 per kWh
Transaction fees	10 per cent of revenues

Table 3: Estimated unit replacement cost

Capital cost of charger replacement	Cost per unit
Level 2 charger unit	\$ 9,000
Level 2 unit installation	\$ 2,000
DCFC charger unit	\$ 55,000
DCFC unit installation	\$ 10,000

## Estimated monthly revenues per Level 2 EV charging station that charges a user fee of \$1/hour

### Level 2 chargers – Fees of \$1/hr

Item	per station*	per session	per station per month
# of sessions			57
changing time (h)		3	171
Average energy usage (kWh)		10.9	621.3
<b>Capital cost for charger replacement</b>			
charger unit	\$ 9,000		
installation	\$ 2,000		
<b>Fixed operational costs</b>			
Data acquisition to monitor usage			\$ 25
Maintenance and repairs			\$ 25
snow hand shovelling			\$ 17
<b>Variable operational costs</b>	per hour	per session	per station per month
Electricity cost (0.1\$/kWh)	\$ 0.36	\$ 1.09	\$ 62
<b>Total operating cost per station per month</b>			\$ 129
<b>User fee revenue per station per month</b>	\$ 1	\$ 3	\$ 171
Transaction fees (10% of revenue )	\$ 0.10	\$ 0.30	\$ 17.10
<b>Net revenue RMOW</b>	\$ 0.90	\$ 2.70	\$ 153.90
<b>Net revenue over operating per month</b>			\$ 25
<b>Annual revenue over operating</b>			\$ 301

\*One station includes 2 ports and 2 parking stalls

## Estimated monthly revenues per Level 2 EV charging station that charges a user fee of \$2/hour

### Level 2 chargers – Fee of \$2/hr

Item	per station*	per session	per station per month
# of sessions			57
changing time (h)		3	171
Average energy usage (kWh)		10.9	621.3
<b>Capital cost for charger replacement</b>			
charger unit	\$ 9,000		
installation	\$ 2,000		
<b>Fixed operational costs</b>			
Data acquisition to monitor usage			\$ 25
Maintenance and repairs			\$ 25
snow hand shovelling			\$ 17

<b>Variable operational costs</b>	<b>per hour</b>	<b>per session</b>	<b>per station per month</b>
<i>Electricity cost (0.1\$/kWh)</i>	\$ 0.36	\$ 1.09	\$ 62
<b>Total operating cost per station per month</b>			\$ 129
<b>User fee revenue per station per month</b>	\$ 2	\$ 6	\$ 342
<i>Transaction fees (10% of revenue )</i>	\$ 0.20	\$ 0.60	\$ 34.20
<b>Net revenue RMOW</b>	\$ 1.80	\$ 5.40	\$ 307.80
<b>Net revenue over operating per month</b>			\$ 179
<b>Annual revenue over operating</b>			\$ 2,148
<i>simple payback years for Level 2 charger replacement</i>			5

\*One station includes 2 ports and 2 parking stalls

### Estimated monthly revenues per DCFC EV charging station that charges a user fee of \$16/hour

#### DC Fast Charger

<b>Item</b>	<b>per station*</b>	<b>per session</b>	<b>per station per month</b>
<i># of sessions</i>			125
<i>charging time (h)</i>		0.5	62.5
<i>Average energy usage (kWh)</i>		25	3,125
<b>Capital cost for charger replacement</b>			
<i>charger unit</i>	\$ 55,000		
<i>installation</i>	\$ 10,000		
<b>Fixed operational costs</b>			
<i>Data acquisition to monitor usage</i>			\$ 25
<i>Maintenance and repairs</i>			\$ 25
<i>snow hand shovelling</i>			\$ 17
<b>Variable operational costs</b>			
<i>Electricity cost (0.1\$/kWh)</i>		\$ 2.50	\$ 313
<i>Transaction fee (\$0.5/session)</i>		\$ 0.50	\$ 62.50
<b>Total operating cost per station per month</b>			\$ 442
<b>User fee revenue</b>	\$ 16/hr	\$ 8/session	\$ 1000
<b>Net revenue over operating per month</b>			\$ 558
<b>Annual revenue over operating per station</b>			\$ 6,700
<i>Simple payback years per DC Fast Charger replacement</i>			10

\*One station includes 1 ports and 1 parking stall