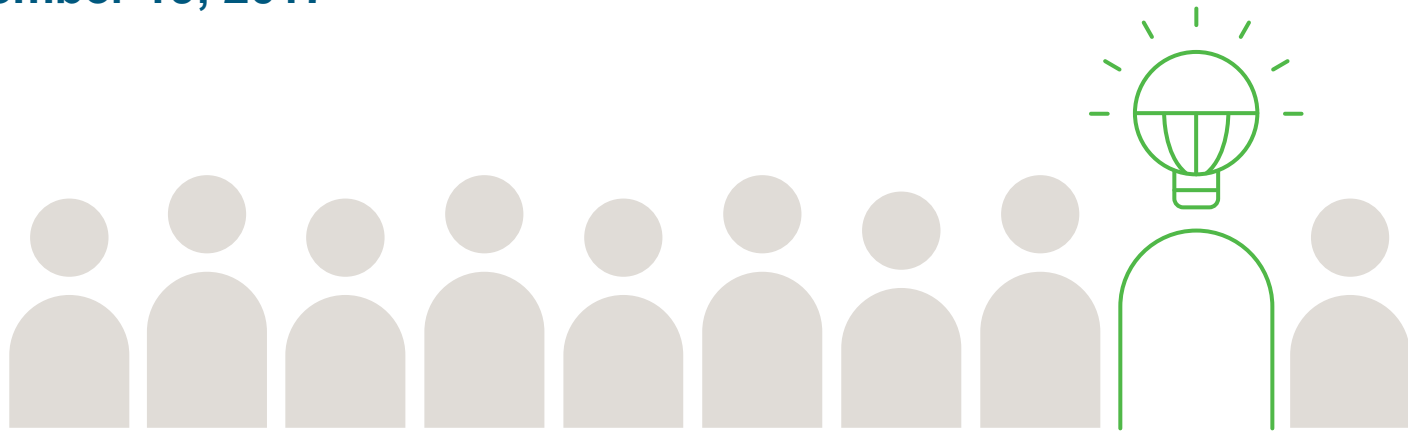


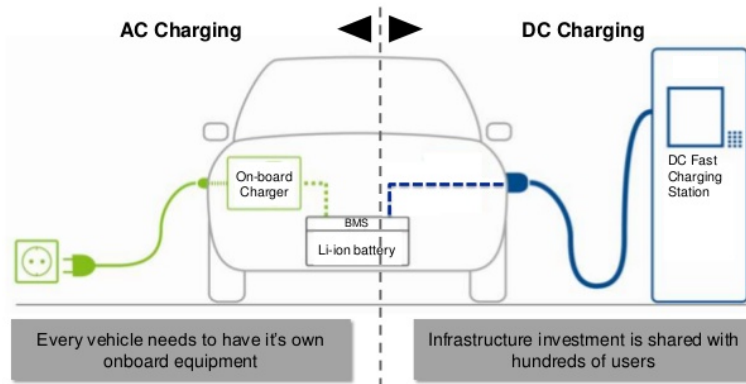
BC Hydro's DCFC Station Network Existing and Planned

**Presentation to the Vancouver Electric Vehicle Association
September 19, 2017**



Background - Types of EV Charging

DC charging versus AC charging
On-board versus Off-board equipment



- Since batteries are direct current (DC) devices, charging needs to occur using DC power
- If plugged into AC current, the vehicles onboard charger must convert the AC current into DC current
- DC fast charging avoids the need for onboard conversion from AC to DC, and charges the battery directly
- The use of DC charging allows for significantly higher current levels and faster charging
 - Typically 50 kW (145 kW Tesla Supercharger)

Charging Level	Specification	Total Charging Time	Application
AC Level 1	120V, 8-16A, 12A typical	PHEV: 8-12 hours BEV: 16+ hours	Suitable for PHEVs with smaller batteries. May be suitable for BEVs for overnight, workplace or long term parking.
AC Level 2	240V, 6-80A, 30A typical	PHEV: 2-4 hours BEV: 4-8 hours	Most common type of public charging.
DCFC	50 kW	30-40 mins to 80% Charge	Most common fast charging stations today

DCFC Station Network

Phase I Deployment - EV Smart Infrastructure Project

- From 2012 to 2016, BC Hydro implemented the EV Smart Infrastructure Project, which included the deployment of 30 DCFC stations across the province
 - The project was jointly funded by NRCan (\$4.1 million), the Province of BC (\$1.4 million), and BC Hydro (\$0.5 million)
 - For 29 of 30 stations the operator is the municipality in which it is located (i.e., they pay tariff rates for electricity and collect any charging revenues) The remaining station, EcoDairy, is a private sector enterprise in Abbotsford and has received a UCA exemption enabling it to resell electricity
 - BC Hydro owns all stations and leases these to the respective station operator for a nominal fee
 - As owner, BC Hydro must ensure that all stations remain operational
 - The last station (Vernon) was completed in the fall of 2016

DCFC Station Network

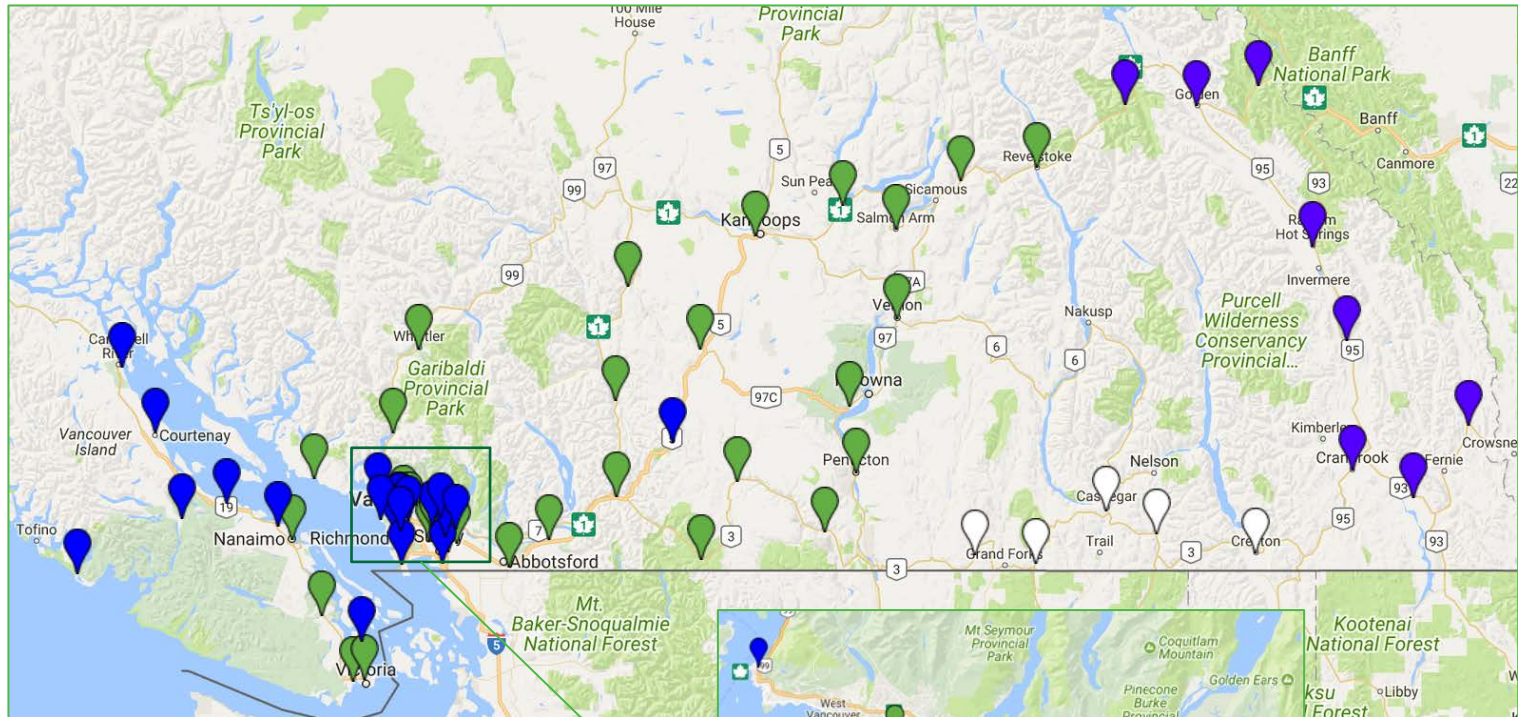
Phase II Deployment

- BC Hydro has secured funding partners for the deployment of an additional 21 DCFC stations
 - Total project costs are \$2.6 million
 - BC Hydro's share of project costs is \$650k
- In addition to the above 21 stations, the Community Energy Association is providing funding for 8 stations in the Kootenay region
- It is expected that the deployment of all stations will be completed by March 31, 2018
- Unlike the deployment for the first 30 stations (Phase I deployment), BC Hydro will be the operator of the Phase II stations




DCFC Station Network

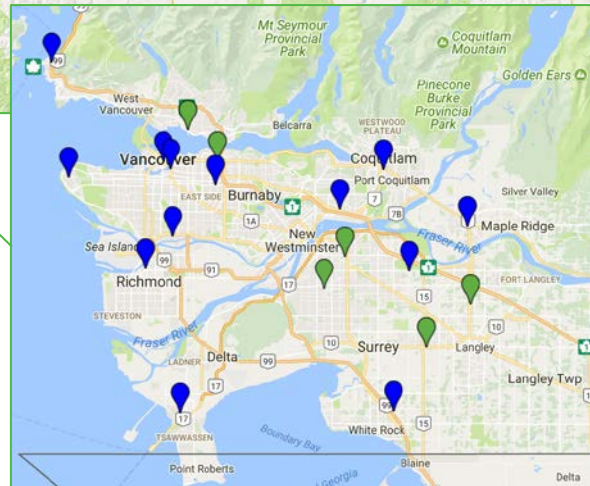
Phase I - Complete		Phase 2 - In Deployment (Some Locations Preliminary)	
1	Abbotsford	31	Vancouver Homer Street - BC Hydro
2	Boston Bar	32	West Vancouver - Horseshoe Bay
3	Chase	33	Surrey - Peace Arch Superstore
4	Chilliwack	34	Richmond - No. 3 Rd Superstore
5	Colwood	35	Port Alberni - No Frills
6	Duncan	36	Britton Creek - Coquihalla Hwy
7	Hope	37	Qualicum Beach - Quality Foods
8	Kamloops	38	Surrey - Tynehead Shell
9	Kelowna	39	Vancouver - Science World
10	Keremeos	40	Ucluelet - Pacific Rim Visitors Centre
11	Langley	41	Vancouver - UBC Student Union Building
12	Malakwa	42	Nanaimo - Superstore
13	Manning Park	43	Coquitlam - Superstore (West)
14	Merritt	44	Coquitlam - Superstore (East)
15	Nanaimo	45	Campbell River - Community Centre
16	North Vancouver	46	Tsawwassen - TBD
17	Penticton	47	Pitt Meadows - Superstore
18	Princeton	48	Vancouver - Grandview Hwy Superstore
19	Revelstoke	49	Courtenay - Quality Foods
20	Saanich	50	Sidney - Fire Hall
21	Salmon Arm	51	Vancouver - SE Marine Drive Superstore
22	Sechelt	52	Field
23	Spences Bridge	53	Golden
24	Squamish	54	Sparwood
25	Surrey - Powertech Labs	55	Jaffray
26	Surrey City Hall	56	Radium
27	Surrey Museum	57	Cranbrook
28	Vancouver - Empire Field	58	Canal Flats
29	Vernon	59	Rogers Pass
30	Whistler		

DCFC Station Map – Existing and Planned



Legend:

-  Phase I (30 Stations - Deployed)
-  Phase II (29 Stations - Planned)
-  FortisBC (5 Stations - Planned)



DCFC Station Network

Station Maintenance

- Upon completion of the Phase II deployment, BC Hydro will be responsible for the ongoing maintenance of all 59 stations (Phase I and Phase II deployments)
- Based on experience from the stations deployed to date, the resolution of station faults have been as follows:
 - 80 percent are corrected via a remote reboot of the station
 - 15 percent are corrected via an on-site reboot by an electrician
 - 5 percent of faults required physical repair or adjustment, including in some instances a replacement of parts

DCFC Station Network

Station Maintenance

- BC Hydro is planning the replacement of the following stations (from single standard to dual standard):
 - Sechelt
 - Merritt
 - Hope
 - Kamloops
 - Surrey
- Depending on the availability of funds, both the Revelstoke and Saanich stations may be replaced

Questions

1. Expansion to north (Highways 97 and 16)?
2. Missing locations?
3. Willingness to pay for charging

