National Roadmap on Transportation Electrification

Session # 6
Infrastructure deployment plan
FROM HOME TO PUBLIC STATIONS

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EV VÉ
TRADESHOW + CONFERENCE + SALON COMMERCIAL
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Infrastructure deployment plan
From Home to public stations

- Mandate, and deliverables : How to plan the deployment over the next 5 years to satisfy technology evolution and the next generation of EV drivers (> early adopters)
- Objectives of the consultation, and rules
- Agenda :
  - Introduction : 5 minutes
  - Presentation and consultations themes (Infrastructure) : 20 minutes
  - Presentation and consultations themes (R&D – Precommercialization) : 20 minutes
  - Discussions : 45 minutes
  - Pause : 30 minutes
  - Discussions : 45 minutes
  - Wrap-up presentations : 40 minutes (10X4)
  - Conclusion : 5 minutes

Discussions :

Canadian EV charging infrastructure

- > 2000 Level 2 public charging stations
- Around 50 DC fast chargers, more to come

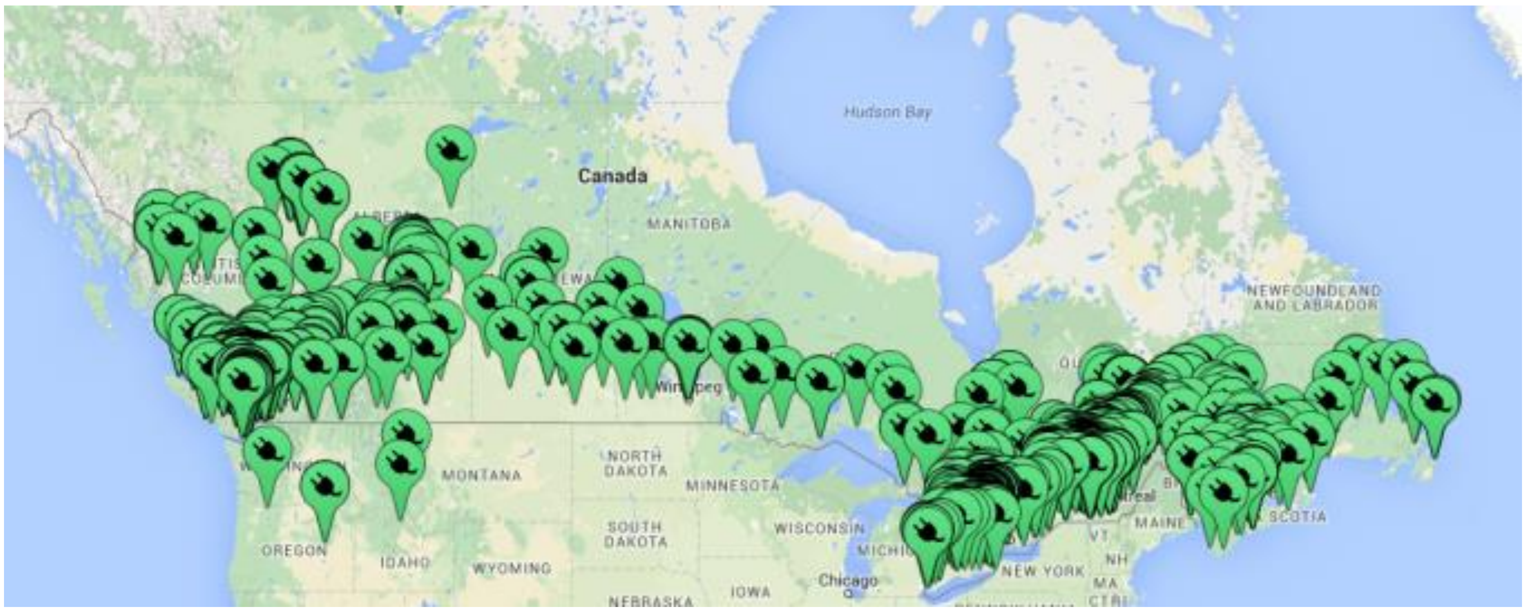

Table 2. DCFC locations in Canada

	Locations	CHAdeMO ports	SAE ports	Tesla ports
Alberta	2			8
British Columbia	20*	15*		24
Manitoba	1	1	1	
Nova Scotia	1	1		
Ontario	9	5	5	44
Québec	14	12	12	9
Total	**47**	**34**	**18**	**85**

* Including 2 to be installed in coming weeks.

Thanks to Marcon, with the contributions from PlugShare, Mogile Technologies, the Tesla SuperCharger site as well as input from Hydro-Québec, BC Hydro, AddEnergie and AZRA.

In total, there are 47* DCFC locations in Canada (including 15 Tesla SuperCharger locations), hosting 137 ports.

The DCFC are concentrated in the country's three most populous provinces: 91% of the DCFC locations are in British Columbia (43% of sites, 28% of ports), Ontario (19% of sites, 39% of ports) and Québec (30% of sites, 24% of ports).

DCFC locations in the US and Europe

- Actually :
  - 2765 DCFC in the US (mostly Chademo for locations/ports, followed by Tesla for ports)
  - 3256 DCFC in Europe

DCFC Deployment

Network / Province	Type	Price	Choice of deployment	Remarks
Tesla	Tesla charger	Free for owners	Included with the EV	Several ports /site
BC	Chademo	Free except 2 locations 0.35$/kWh	$ Govn. (BC and CDN) BC managed Greeenlot operated	Up to 30 DCFC
Quebec	Chademo + SAE	10$/hr/min.	Electric Circuit (PPP) and with L2	Up to 50 DCFC
Ontario				

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Consultation - *GROUP #1*

- Priorities in deployment
  - Objective
    - What type of EVSE should be available for these market segments ? (public, workplace, residential, fleet). What is their effect on range anxiety vs real needs
  - WHERE
    - After the home charger, and with the deployment of work, and public charging well underway, which market segment should be prioritized ? Incentivized ?
    - Which type of locations are neglected and should generate more interest in deploying EVSE ?
  - WHY
    - With the increasing range of new electric vehicles, are DCFCs becoming more important than L2 chargers?
    - Free charging: Good or bad ?
- Technology
  - Should all charging stations be integrated in the smart grid ?
  - In the context of the Big Data, how can the EV driver data benefits both the driver, and the charging station owners ?

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Consultation - *GROUP #2*

- The trends for DCQC deployment
  - Chademo, Tesla or SAE ?
    - Should all Chademo sites be upgraded to SAE or multi-standard ?
  - Preferred sites (urban, highway, retail, curbside,…)
    - Which type of sites should be prioritized ?
  - How many DCFC per site ?

- Pricing
  - How much should be charged ?
  - On what basis (electricity consumed, time, other) ?
  - Approach : Start low/free with plans to increase ?
  - Is uniformity across Canada important ?

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Consultation - *GROUP #2*

- Stakeholders and their role
  - Where will the $ for purchase & installation come from ?
  - What is the place of the utilities and governments in the deployment of EVSE ?
  - When governement / utilities have $ to invest, should it …
    - Build, Own and Operate as a public service ?
    - Provide grants to private networks ?
    - Others ?
  - Who should Own ? Finance ? Operate ?
  - What are the successful Public-Private partnerships
    - Short term
    - Long term

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Consultation - *GROUP #2*

- Planning for short or longer term vehicle needs?
  - How many DCFCs required?
  - At what intervals?
  - With limited $ & knowledge of future capabilities of BEVs, prioritization of DCFCs or L2s?

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Conclusions

- Priorities
- Technology
- Importance of DCQC
- Stakeholders and their role

Conclusions Group # 1

		Residential	Workplace	Public	Fleets
Priorities	Type of EVSE				
	Where				
	Why				
Technology	How much • L2 • DCFC				
	Smart Grid integration				
	Big data				

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Conclusions Group # 2

		Remarks
Trends for DCFC	Chademo or SAE	
	Prefered sites (urban, highway, retail, curbside)	
Pricing	Fee ? On What ? How much ?	
Stakeholders and their role	Utilities / Governments	
	Own ? Finance / Operate ?	
	Successful PPP • Short term • Long term	
Planning for short term and long term	• # DCFC / interval • Prioritization L2 or DCFC	