BRITISH COLUMBIA'S

CLEAN ENERGY VEHICLE PROGRAM

PHASE 1 REVIEW

July 9, 2015

BRITISH COLUMBIA | LiveSmart BC

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2 EXECUTIVE SUMMARY

British Columbia's Clean Energy Vehicle (CEV) Program (the "Program"), announced in November 2011, was designed to support a market transformation to the use of clean energy fuels and vehicle technologies in the light duty transportation sector. The $14.3 million CEV Program was designed to support the increased use of plug-in electric vehicles, natural gas vehicles, and hydrogen fuel cell vehicles. The Program had three distinct components:

- Point of sale incentive program for the purchase or lease of eligible CEVs.
- Residential Rebate Program for installation of charging stations at single family residential dwellings.
- Charging or fuelling infrastructure investments, including investments in hydrogen fuelling infrastructure and the delivery of the 1,000-point Charging Infrastructure Project.

The objective of the Program was to reduce barriers and stimulate demand to the widespread adoption of clean energy vehicles: higher vehicle cost; limited fuelling infrastructure; and a lack of general awareness and knowledge among British Columbians, by:

- Making the purchase of clean energy vehicles more affordable;
- Developing a province-wide fuelling infrastructure network that enables the use of clean modes of transportation; and
- Raising awareness of the availability, practicality and benefits of clean energy vehicles.

Phase 1 of the CEV Program, funded with $14.3 million, ended March 31, 2014. The Program supported three initiatives: the Clean Energy Vehicles for British Columbia (CEVforBC™) Point Of Sale Incentive Program; the CEV Infrastructure Deployment Program; and the Capacity Building Fund. The Program was successful in stimulating demand and encouraging the adoption of clean energy vehicles by supporting deployment of:

- 950 CEVs;
- 306 single family Level 2 residential charging stations;
- 142 charging stations in multi-unit residential or commercial tenanted buildings;
- 550 publicly available Level 2 charging stations throughout B.C.;
- 13 operating direct current fast charging stations in B.C., with 17 remaining stations planned for installation by March 31, 2016;
- 1 new hydrogen fuelling station, and the operation and maintenance of 4 existing stations;
- 10 research and training projects;
- tools and guides to aid in community and business deployment of infrastructure and acquisition of CEVs; and
- Growth in outreach and awareness through the "Emotive" campaign.

It is estimated the Program will result in 57,000 tonnes of greenhouse gas emissions avoided over a 15-year period, $48 million in direct economic activity in the CEV market in BC, and approximately $1,600 in fuel cost savings per year for each CEV purchased. The Program achieved the completion of B.C.'s portion of the West Coast Electric Highway from B.C. to California, one of the commitments under the 2010 Pacific Coast Collaborative agreement between B.C., Washington, Oregon and California.

The program placed the Province on the long term path to transforming the light duty vehicle market in B.C. The Program was a first-of-its kind in Canada, and this Program Review summarizes lessons learned

and recommendations for future programs. Additional reports and materials from Phase 1 of the CEV Program are available on the Plug-In BC website under the Resources section at: www.pluginbc.ca.

3 PROGRAM OVERVIEW

3.1 Context

The Province of British Columbia has set legislated targets for reducing greenhouse gas emissions (GHGs) that contribute to global climate change. Under the *Greenhouse Gas Reduction Targets Act*, the Province must achieve a 33% reduction in GHG emissions below 2007 levels by 2020, and an 80% reduction by 2050. Personal and commercial vehicle transportation account for 13% and 24% of B.C.'s GHG emissions respectively.

The 2010 Speech from the Throne committed the Province to pursue investment partnerships in infrastructure that encourage and enable clean modes of transportation such as vehicles powered by electricity, hydrogen, compressed natural gas, and liquefied natural gas.

The Clean Energy Vehicle (CEV) Program, announced in November 2011, was designed to support a market transformation to the use of clean energy fuels and vehicle technologies in the light duty transportation sector. The $14.3 million CEV Program was designed to support the increased use of plug-in electric vehicles, natural gas vehicles, and hydrogen fuel cell vehicles. The Program had three distinct components:

- Point of sale incentive program for the purchase or lease of eligible CEVs.
- Residential Rebate Program for installation of charging points at single family residential dwellings.
- Charging or fuelling infrastructure investments, including investments in hydrogen fuelling infrastructure and the delivery of the 1,000-point Charging Infrastructure Project.

On December 1, 2011, the Province launched Phase 1 of the Clean Energy Vehicle Program as a catalyst for establishing CEVs in the B.C. market and building a foundation for significantly reducing GHG emissions in the personal vehicle sector.

3.2 Program Objectives

The objective of the Program was to overcome barriers to the widespread adoption of clean energy vehicles: higher vehicle cost; limited fuelling infrastructure; and a lack of general awareness/knowledge among British Columbians, by:

- Making the purchase of clean energy vehicles more affordable;
- Developing a province-wide fuelling infrastructure network that enables the use of clean modes of transportation; and,
- Raising awareness of the availability, practicality and benefits of clean energy vehicles.

The Program supported three initiatives designed to address these barriers: the Clean Energy Vehicles for British Columbia (CEVforBC™) Point Of Sale Incentive Program, the CEV Infrastructure Deployment Program, and the Capacity Building Fund.

CEVforBC™ – provided B.C. residents with a rebate of up to $5,000 off the pre-tax sticker price for qualifying new, highway capable CEV vehicles (battery electric, hydrogen fuel-cell electric, plug-in hybrid electric, and compressed natural gas vehicles) that were eligible for sale in B.C. The Province partnered with the New Car Dealers Association of British Columbia (NCDABC) to administer and promoted this program.

CEV Infrastructure Deployment Program - committed $6.84 million in infrastructure funding for electric vehicle charging stations and upgrading existing hydrogen fuelling stations through:

- a Community Charging Infrastructure Fund administered by the Fraser Basin Council;
- a LiveSmart BC Residential Rebate program administered by the Ministry of Energy and Mines;
- a LiveSmart BC Multi Unit Residential Building (MURB) Electric Vehicle Charging Program and a Building Owners and Managers Association (BOMA) Clean Connect Multi-Owner Tenanted Building (MOTB) Program administered by LiveSmart BC and BOMA respectively;
- a Direct Current Fast Charging (DCFC) Station program administered by BC Hydro;
- Hydrogen Infrastructure administered by Powertech Labs; and
- A Charge & Go Vancouver Trial administered by the City of Vancouver.

A portion of funding from the Infrastructure Deployment Program called the "Capacity Building Fund" was used to support general infrastructure design, academic research, curriculum development, and outreach on clean energy vehicles and infrastructure.

4 PROGRAM REVIEW

Phase 1 of the Program operated from December 2011 to March 2014. The program was assessed based on:

- Achievement of intended results;
- Financial management;
- Program implementation and management; and
- Acceptance and legacy.

4.1 Achievement of Intended Results

The Program was successful in meeting its objective to stimulate demand for clean energy vehicles. The Program supported the purchase of 950 vehicles; funded over 1,000 electric vehicle charging stations; and supported research projects, development of best practices for practitioners and owners, and outreach activities across B.C.

A small number of electric vehicles were available to the B.C. market in 2010, and by the fall of 2011 electric vehicles became more broadly available. The Program was able to leverage North American vehicle availability by stimulating demand for electric vehicles in B.C. with incentives and investments in infrastructure.

Hydrogen fuel cell vehicles were not available to the public throughout the period of the Program; as such, the Program did not support the acquisition of a notable number of hydrogen fuel cell vehicles. The Program was successful in supporting a relatively large number of prototype hydrogen fuel cell vehicles in B.C. through strategic investments in infrastructure that are expected to continue to attract automaker interest in investing in hydrogen fuel cell vehicle manufacturing in B.C., and in selecting B.C.

as one of the first regions in the world to deploy their hydrogen fuel cell vehicles expected in the 2015-2017 period.

Automakers did not make light duty natural gas vehicles available in B.C. during the period of the Program; as such, the Program did not support the acquisition of a notable number of light duty natural gas vehicles. In 2012, the Province established the Greenhouse Gas Reduction (Clean Energy) Regulation that permits utilities to make investments in programs that support greenhouse gas emissions reductions. This regulation enabled FortisBC to implement a Natural Gas Vehicle Program that has stimulated the use of compressed and liquefied natural gas in the medium and heavy duty vehicle market.

The Program originally ran between December 1, 2011 and March 31, 2013. It was forecast that sales of CEVs would begin slowly, moderately increase as vehicle availability and product awareness grew, and ramp-up as the price of new vehicles began to fall. The Phase 1 budget for the Program was adjusted to reflect the anticipated slow start and resulted in a correspondingly low number of vehicle purchases in the first year of the program. As forecast, sales of electric vehicles firmly increased over the course of the first phase of the program as both public awareness and the availability of CEVs in B.C. grew. In March 2013, an additional year of funding was approved and by February 2014, the full $2.5 million allocated for fiscal 2013/2014 had been disbursed.

The number of charging stations targeted for the Program was exceeded: 1,028 versus the 1,000 target, including 30 DC fast charging stations, 17 of which will be operational by March 2016.

The targeted number of hydrogen fuelling stations supported was met: 1 station upgraded, 4 additional operated and maintained.

Through the academic program, 10 research and training projects were completed with colleges and universities throughout B.C. that resulted in new training for automotive technicians and graduate students in the CEV sector, and research that is informing utility and government policy.

The “Emotive” outreach and awareness program reached British Columbians across the province.

Table 1 provides a summary of the planned versus actual deliverables by initiative.

Table 1: Summary of Planned vs. Actual Deliverables by Initiative

Initiative	Planned	Actual	Difference
CEVforBC™	1,373 vehicle incentives	950 vehicle incentives	-423 vehicles
CEV Infrastructure Deployment Program	1,000 across public and private (see details below)	1,028 Electric Vehicle Charging Stations (EVCS) (see break-down below)	+28 EVCS (see break-down below)

- LiveSmart Residential Charging Station Rebate Program and MURB/commercial tenanted building program (LiveSmart BC MURB and BOMA Clean Connect)	400 Level 2 charging station rebates (200 single residential family, 200 multi-unit residential/office tenanted buildings)	306 single residential Level 2 charging station rebates 142 multi-unit residential and commercial tenanted building EVCS	+48 EVCS
- Community Charging Infrastructure Fund; Charge & Go Vancouver	570 Level 2 stations	456 Level 2 stations + 94 Charge & Go stations = 550 Level 2 stations	-20 EVCSs
- DC Fast Charging Program (DCFC)	30 DCFCs	7 operational by Mar/14 Remaining 6 operational by Mar/15 17 additional by Mar/16 Total of 30 by Mar/16	30 of 30 DCFCs planned by March 2016
- Hydrogen Fuelling Stations	1 new; 4 operated & maintained	1 new; 4 operated & maintained to Mar/14	5 of 5 stations supported
Capacity Building Funds	Research projects, best practices reports	The following completed: - eight academic research projects - one curriculum project - tools for EV planners - best practices report from community EV station planning - 4 EV station case studies - YouTube videos - signage design guidelines and templates for EV charging stations	These are completed. Planned Activities in the Extended Work Plan are on schedule for Mar/16

It is estimated that the average GHG emissions reduction per vehicle was 4 tonnes per year, and the Program resulted in 57,000 tonnes of GHG emissions avoided in the transportation sector over a 15-year period. New CEVs on the road also support improved air shed quality and a healthier environment for British Columbians.

Annual fuel savings for CEV owners is estimated at $1,600, and it is expected that CEVs will have lower maintenance costs compared to internal combustion engines. As a result of the CEV Infrastructure Deployment Program, B.C.'s contribution to the West Coast Electric Highway from Canada to California along Interstate 5 and Highway 99 is now complete[1].

Program investments helped stimulate significant direct expenditures in the CEV market in B.C., including approximately $34 million in vehicle sales and approximately $14 million in infrastructure and training investments.

An increase in public awareness of electric vehicles (EVs) as a result of the CEV Infrastructure Program and Capacity Building Funds was noted by the Fraser Basin Council in their final report, including

[1] Under the 2010 Pacific Coast Collaborative Action Plan, B.C., Washington, Oregon and California committed to complete a Green Highway.

outreach efforts from media, local governments and private organizations to improve public awareness of environmental and economic benefits of electric cars and charging infrastructure. The World Wildlife Fund's 2014 Electric Vehicle Status Update notes that B.C. has the highest percentage of residents who have driven an electric vehicle in Canada.

The Program placed the Province on the long term path to transforming the light duty vehicle market in B.C. Since the completion of the Program, fewer electric vehicles are reported being stocked in B.C. and many vehicles still have to be special-ordered. Anecdotal evidence suggests that manufacturers are delivering vehicles to markets that: (a) continue to have vehicle incentives in place such as Ontario and Quebec; and/or (b) have regulations requiring the use of clean energy vehicles such as the California Zero Emission Vehicle (ZEV) mandate. Recent studies by Electric Mobility Canada and Green Car Reports note that electric vehicle sales in B.C. may be as low as half of what they would have been if the incentive program had still been in place.

It appears that the market in B.C. has not yet fully matured to the point that CEVs are a vehicle of choice for more than early adopters, and the price of new vehicles can remain a barrier. This was not unexpected given the forecast time required to develop a strong CEV market in B.C.

4.2 Financial Management

Financial management of the program was assessed based on whether funds were dispensed in an agreed-to and responsible manner.

Planned and actual expenditures are described in Table 2.

Table 2: CEV Planned and Actual Expenditures

Initiative	Planned ($M)	Actual ($M)	Discussion
Fiscal Year 2012 (Dec 2011-March 2012)	$2.47	$0.7	Initial Program uptake was slow due to low vehicle availability 104 vehicles received incentives
Fiscal Year 2013 (April 2012-March 2013)	$4.99	$2.1	Program operated as planned Vehicle availability significantly improved 363 vehicles received incentives
Fiscal Year 2014 (April 2013-March 2014)	$2.50 (moved from previous fiscal $4.99)	$2.5	$2.5 M not utilized in previous fiscal years was redrawn to extend the program in FY 2014 483 vehicles received incentives
Vehicle Subtotal	$7.46	$5.3	
Charging Infrastructure Deployment (including all charging and hydrogen fuelling sub-programs and Capacity Building Fund)	$6.84	$6.44	The difference of $0.4 M was mainly due to lower than anticipated uptake on residential charging station program ($0.16M expended of $0.56M budgeted)

Table Updated March 2017

The initial CEV Program budget was $14.3 million. The Program launched later than expected on December 1, 2011, with an end date of March 31, 2013. The initial adoption of the Program was slow due to limited availability of vehicles, limited public awareness, and absence of broad infrastructure, and over the period leading up to March 2013, $2.8 million was distributed. In March 2013, the program

was extended by another year with funding of $2.5 million moved from the Fiscal Year 2013 budget to the Fiscal Year 2014 budget resulting in a total of $5.3 million being claimed for the Point of Sale program component. By February 2014,this new funding had been disbursed and the program was oversubscribed.

The LiveSmart BC Residential Charging Station Rebate program did not have the initial uptake as expected in the first year, and only $0.16 million of $0.56 million allocated was disbursed by March 2014. However, similar to the point-of-sale program, there was a significant increase in program applications in the final months of the program and only $0.40 million of the planned $6.48 million remained unspent.

To ensure operational efficiency and leverage stakeholder expertise, the funds were dispersed as per transfer agreements or inter-ministry agreements with sub-program administrators. Sub-program administrators were:

- the New Car Dealers Association of B.C. (CEVforBC Point-of-Sale Incentive Program),
- Fraser Basin Council (Community Charging Infrastructure Fund),
- BC Hydro (DC Fast Chargers and EV Smart Infrastructure Program),
- Building Owners and Managers Association of B.C. (Clean Connect Program for charging stations in multi-unit residential and commercial tenanted buildings),
- Canadian Hydrogen and Fuel Cell Association (Hydrogen Infrastructure Program), and
- Ministry of Energy and Mines (Capacity Building Fund and LiveSmart BC Residential Electric Vehicle Charging Station Rebate Program)

The administration of the program required considerable staff time both at the Ministry of Energy and Mines, and the Ministry of Environment, and, increased effort to achieve operational efficiencies with the sub-program operators should be sought in any future phases.

4.3 Program Management

The Program was delivered jointly via the Ministry of Environment and Ministry of Energy and Mines, primarily through sub-agreements with sub-program administrators, and benefitted from positive and productive relationships among sub-program managers at key partner organizations. The Program had a clear mandate and defined resources. Strategic direction and operational guidance were provided through various discussions and documents prepared during the development of the Program. Having two ministries responsible for different aspects of the Program, and multiple sub-program managers added complexity to the Program.

The Program could have benefitted from a focussed program charter or program guide at the start of the Program to make clear management direction with elements such as: Program goals and objectives; Program components; associated budgets and timeframes; key stakeholders; endorsement by the respective ministries' executive; and clear roles and responsibilities.

At the time the Program was being developed, there was limited experience that could be drawn upon from other North American jurisdictions regarding CEV programs. Ontario and California launched their programs in 2010; Quebec's program began in January 2012. However, B.C. had the most comprehensive program, including vehicle incentives, extensive infrastructure deployments in new spaces (e.g., DC fast charging), research, education and outreach. Thus, there were many unique lessons learned during Program implementation, and several program adjustments were made to

respond to the changing market and to meet Program objectives. Managing these changes required the Program managers at times to focus more on administrative tasks than strategic direction to sub-programs.

The Program requirements for quarterly, annual and final reports were set-up in advance and defined as part of the individual sub-program agreements with the major partners. The two CEV Program managers communicated with the individual sub-program managers on a regular basis throughout the duration of the Program via scheduled meetings to review deliverables and outstanding operational issues. The Program could have benefitted from more specific direction on the use and approval of administrative and marketing funding in some of the sub-program agreements to possibly increase marketing value per dollar spent. The interim reports and final reports were received in a timely manner from the partners. The program experienced some challenges in receiving the appropriate level of detail, and greater clarity in the reporting requirements listed in the agreements could address this issue for future programs.

The program did not define a close-out budget or resources for post-Program monitoring and reporting; Ministry staff relied on partners, often with limited time, to collect follow-up data.

Overall, Program management was felt to be appropriate and successful, given the novel nature of the program. Program outcomes were achieved while operating a new, innovative program in an emerging market.

4.4 Acceptance and Legacy

The success of the CEV Program was largely driven by uptake by early adopters, and strong efforts and contributions from many partners and stakeholders.

The four main Program sub-program administrators (Fraser Basin Council (FBC), New Car Dealers Association of B.C. (NCDABC), BC Hydro, and Building Owners and Managers Association (BOMA)) were largely satisfied with the direction and support provided by the provincial government to assist them in their operations. BOMA indicated that, “We feel that the success of the program can be attributed to the partnership with the Province and the support we received throughout the program”. Also, Fraser Basin Council reached out to Community Charging Infrastructure Fund participants asking their level of program satisfaction: 95% of CCI Fund recipients were ‘beyond satisfied’ with the level of support from Fraser Basin Council during the application and program execution process; 85% were beyond satisfied with the level of support from the chosen charging station equipment supplier; and 95% were beyond satisfied with the level of support and quality of work from electrical contractors.

Significant interest in Program continuation can also be seen as an indication of CEV Program acceptance. The Fraser Basin Council noted that 58% of organizations involved in CEV Program installations were at least ‘somewhat interested’ in additional charging stations in the future. Once it became known that the CEV Program would be coming to a close in March 2014, there were letters received from several key partners (Vancouver Electric Vehicle Association, BOMA, Metro Vancouver, FBC, NCDABC, Canadian Vehicle Manufacturers’ Association) requesting Program continuation. Several organizations also submitted letters in support of a 2014 Premier’s Award nomination in the innovation category. In correspondence to the Minister of Environment, Electric Mobility Canada noted that, “We fully recognize and applaud the fiscal commitment that your government is pursuing and at the same time we would like to suggest that there would be significant benefits generated from a modest

investment to extend the Program." In addition, there were close to 50 letters from the general public requesting extension to the Program.

Active participation of manufacturers and dealers in this type of Program is vital. Car manufacturers could have made a range of eligible vehicles available in B.C. faster and have had vehicles readily available on lots for the public to test drive. The Program would have benefitted from greater promotion by car dealers; some were reluctant to use NCDABC marketing materials for the CEVforBC™ program, and some Program participants indicated a significant lack of dealer knowledge or discrepancy in information provided to customers about the Program and infrastructure availability. Despite some early hesitation among dealers to put a lot of energy and finances into promoting a sector which represents a fairly small percentage of their total sales, over the length of the program the engagement of dealers improved and this was reflected in improved sales. In the future, the marketing funding under the point-of-sale program could directed more towards increasing public experience with EVs and dealer education on the Program.

Charging infrastructure, the Emotive outreach campaign, the guides and tools to support infrastructure design and deployment, and the research and training activities are the main legacy of the Program. B.C. has the largest charging network in Canada, and local governments and building owners are committed to operate the charging stations for a period of two to five years. With matching partner funding, the outreach campaign has been able to continue beyond March 2014. This outreach campaign, branded as "Emotive", exceeded the Program's expectations achieving greater reach than any other EV outreach programs in Canada. By December 2014, the Emotive Facebook page had 1,442 "likes" and Emotive stories and events were reaching approximately 41,000 people per week achieving a similar reach to a comparable program in San Francisco that had a much higher budget than Emotive's. The expiry of the Program impacted some of the goodwill built up by CEV Program managers.

The new CEV Program announced in March 2015 will distribute $10.6 million over the next three years and will address issues identified within this report such as consistent supply of EV's, infrastructure gaps, meeting fleet adoption targets and continued outreach and academic research.

5 LESSONS LEARNED

The identified key lessons along with the overall results achieved will be beneficial for other jurisdictions looking to learn from B.C.'s initial leadership in CEV programming as well as for any subsequent initiatives that may be undertaken in future by the Province of B.C. or by any one of its partners.

Lessons learned and observations are classified under "Policy and Program Design" and "Program Management and Implementation".

5.1 Policy and Program Design

The following observations are made to inform continuing progress to reducing carbon emissions from the light duty vehicle passenger sector:

- In the short term, a similar future program is likely necessary to ensure a consistent supply of clean energy vehicles in B.C. and to stimulate the CEV market, until a critical acceptance and market penetration threshold has been reached;

- An incentive program could be enhanced and complemented by low-cost regulatory and policy options at provincial and local government levels (e.g., time-limited HOV lane access for CEVs, voluntary electric vehicle-ready building regulations, permitting third party re-sale of electricity from charging stations, mandates requiring CEV supply in B.C.);
- A fleet-specific program to encourage fleet adoption of CEVs to help meet the Pacific Coast Collaborative' s target of having 10% of all new fleet purchases be a CEV where there is a suitable replacement should be considered;
- With B.C. having the largest and most extensive network of charging stations in Canada, designing new infrastructure investments to target specific geographic (e.g., to be able to drive a CEV anywhere in the province) or usage (e.g., buildings, parking lots) gaps in the network should be considered;
- As the uptake in the residential charging rebate program was significantly less than expected, the need for a specific residential charging station rebate program should be re-evaluated;
- Public charging stations may not need to be in prime parking locations within parking lots, especially if this location significantly increases costs for installation;
- Although they constitute a smaller segment of the market with lower emissions reduction potential, consider policies or programs to support other types of CEVs (e.g., electric motorbikes, low-speed vehicles);
- Focus future marketing, outreach and awareness efforts on increasing opportunities for the public to experience CEVs, primarily through test drives and discussions with CEV owners, and on ensuring a central location for information on a program, infrastructure and other supporting CEV-related information (e.g., Plug-In BC);
- Identify barriers to dealers having CEVs on lots, and consider programs or policies to increase CEV availability in B.C.;
- Continue to work with academic and training institutions to receive third-party input to policy and program design, and to ensure a trained B.C. workforce in the CEV sector; and
- Work with industry to complete a roadmap to inform the deployment of hydrogen fuel cell vehicles and infrastructure in B.C.;
- Jurisdictions with zero-emission vehicle mandates see more CEVs than jurisdictions without mandates. However, the B.C. market needs further stimulation through programs like the CEV Program prior to being in a position to consider a zero-emission vehicle mandate for vehicle manufacturers; and
- Identify opportunities to leverage future programming to support economic development in B.C. in the low-carbon transportation sector. As an example, Mercedes-Benz Canada made a significant investment in 2012 in a fuel cell manufacturing facility in Burnaby because of B.C.'s leadership in the hydrogen fuel cell sector.

5.2 Program Management and Implementation

If a new government program is established, the following should be considered:

- Establish a Project Charter and/or Program Guide that clearly outlines the vision, objectives, strategic direction, key program components, roles, responsibilities, expectations, and monitoring and reporting for the Program;
- As B.C.is still on the leading edge of CEV-type programs, carefully note issues, decisions and lessons learned to better respond to and address operational issues and market developments

as they emerge, and to incorporate the lessons learned into any new programs and assist other programs across North America;

- Encourage public or private sector funding for a sufficient period for the long-term objectives of EV market transformation to be fully achieved (e.g., five years, with declining provincial incentives);
- Provide updated information and advice on charging station location, planning, technology selection, site design, construction, and dealing with vandalism;
- Engage the growing number of CEV owners in providing advice on infrastructure deployments, and input on barriers and opportunities for increased market penetration of CEVs, and outreach and awareness efforts;
- Ensure suitable time is available for planning and installing charging infrastructure, including identifying and negotiating agreements for station sites, and addressing electrical upgrade and metering requirements, and structure funding requirements accordingly;
- Ensure all program component advertising funding is coordinated to deliver on one strategy (e.g., consistent branding, leveraging of funding and staff resources, etc.) across all the program components;
- Provide greater direction for point-of-sale marketing funding to focus on increasing customer experience with CEVs, social media outreach, and targeted dealer training on a program (in lieu of general conference or general advertising expenditures);
- Institute more detailed reporting and performance targets in contribution agreements with sub-program administrators;
- Ensure transitioning procedures (e.g., for websites) and comprehensive final reporting requirements are included in agreements for end of program activities; and
- Establish data sharing protocols with the Insurance Corporation of B.C.to better track CEV uptake in B.C.

6 APPENDICES

6.1 CEVforBC Point-of-Sale Incentive Program Data

VEHICLE TYPE	Number of Incentives Issued			Final Total
	2011/2012	2012/2013	2013/2014	Dec 2011-March 2014
CHEVROLET VOLT	41	138	77	256
FISKER KARMA	6	11	0	17
FORD AZURE TRANSIT CONNECT	2	2	2	6
FORD C-MAX	0	3	22	25
FORD FOCUS	0	5	22	27
FORD FUSION	0	0	4	4
MERCEDES SMART	4	5	78	87
MITSUBISHI iMiEV	6	38	31	75
NISSAN LEAF	45	77	101	223
PORSCHE PANAMERA	0	0	1	1
TESLA MODEL S	0	66	126	192
TOYOTA PRIUS	0	18	19	37
TOTAL	**104**	**363**	**483**	**950**

Average amount of incentive per vehicle: $4,820 per CEV

6.2 Residential Charging Station Rebate Program Data

City	# of Units	City	# of Units	City	# of Units	City	# of Units
Abbotsford	6	Fernie	1	Richmond	3	Saanichton	2
Agassiz	1	Gabriola	1	Mission	4	Saltspring	1
Anmore	1	Gibsons	3	North Vancouver	1	Savona	1
Bowen Island	1	Harrison Hot Springs	1	Nanaimo	3	Sechelt	1
Bowser	1	Invermere	1	Nelson	1	Shawnigan Lake	2
Brentwood Bay	1	Kamloops	5	New Westminster	3	Sooke	5
Burnaby	10	Kaslo	1	North Saanich	5	Sorrento	1
Campbell River	2	Kelowna	9	North Vancouver	19	Squamish	2
Chilliwack	7	Kitimat	1	Peachland	1	Summerland	1
Cloverdale	1	Lake Country	1	Pender Island	1	Surrey	26
Cobble Hill	1	Langford	2	Penticton	3	Terrace	1
Coquitlam	15	Langley	9	Pitt Meadows	3	Vancouver	31
Courtenay	1	Lazo	1	Port Coquitlam	4	Vernon	1
Delta	8	Lions Bay	1	Port Moody	4	Victoria	54
Elkford	1	Maple Ridge	12	Prince George	1	West Vancouver	10
Errington	1	Mill Bay	1	Qualicum Beach	1	White Rock	1
						Williams Lake	1
Total Number of Residential Charging Stations Supported:				**306**			

Average amount of incentive issued: $500 per charging station

6.3 BOMA Clean Connect Program Data

Building Type	# of Units approved
Large commercial. Tenant is not owner	23
Mix use commercial/residential	13
Multi-tenanted commercial building	44
MURB	12
Single owner multi-tenant	23
Strata-owned	13
Grand Total	**128**

City	# of Units approved
Vancouver	57
Burnaby	38
Victoria	12
Richmond	4
Surrey	4
Nanaimo	3
Abbotsford	3
Penticton	2
Delta	2
Duncan	1
Sidney	1
North Vancouver	1
Grand Total	**128**

Average amount of incentive issued: $4,320 per station.
Average total station cost: $5,622 per station

6.4 Community Charging Infrastructure Program Data

City	# of Units Approved	City	# of Units Approved	City	# of Units Approved
Abbotsford	8	Kitimat	2	Richmond	29
Armstrong	3	Ladysmith	4	Roberts Creek	1
Burnaby	56	Lake Cowichan	2	Rossland	4
Burns Lake	2	Langford	2	Saanichton	2
Campbell River	6	Langley	10	Salt Spring Island	2
Chase	2	Manson's Landing	2	Sechelt	5
Chilliwack	10	Maple Ridge	8	Sidney	5
Colwood	6	Merritt	4	Sooke	2
Coombs	2	Nanaimo	12	Squamish	1
Coquitlam	2	New Westminster	5	Summerland	3
Courtenay	2	North Vancouver	18	Surrey	16
Dawson Creek	6	Oakville	6	Terrace	2
Duncan	14	Osoyoos	2	Tofino	2
Egmont	4	Parksville	3	Vancouver	35
Esquimalt	2	Pemberton	4	Vernon	2
Fernie	1	Pender Island	5	Victoria, Saanich, Metchosin, Oak Bay	53
Fort St. John	5	Pitt Meadows	4	West Vancouver	4
Gibsons	4	Port Alberni	4	Whistler	7
Hope	1	Port Coquitlam	4	White Rock	2
Houston	2	Port Moody	4	**Total**	**456**
Invermere	2	Pouce Coupe	1		
Kamloops	11	Prince George	2		
Kelowna	12	Qualicum Beach	8		

Average amount of incentive issued: $3,874 per station
Average total station cost: $7,409 per station

6.5 LiveSmart MURB and City of Vancouver Charge-and-Go Data

LiveSmart BC MURB Program: 14 Level 2 Charging Stations
Vancouver Charge & Go Charging Stations: 94 Level 2 Charging Stations

6.6 Capacity Building Fund Projects

The Capacity Building Fund supported:

- the development of uniform, centralized public education and outreach on electric vehicles (primarily via web);
- academic research and curriculum development related to all CEVs (i.e., electric, natural gas, and hydrogen). In total, eight projects from four different research and training institutions were funded for a total of $340,000;
- the development of tools for EV infrastructure planners and implementers in both public locations and multi-owner tenanted buildings that included: guides and templates to support the planning process for public Level 2 charging stations and DC fast charging stations, a summary report on best practices learned from community EV station planning processes, case studies and YouTube videos for four public charging locations (two communities and two businesses), research and guides to address barriers to charging infrastructure in multi-unit tenanted buildings; and
- the development of signage design guidelines and templates for EV charging stations.

In July 2013, the remaining $600,000 in the CCI Fund was redirected towards Phase 2 of the Capacity Building Fund that supported further outreach and engagement between 2013 and 2015 to maximize Program outcomes and benefits. Additional actions included:

a. Coordination and distribution of public information display boards;
b. Development of a comprehensive Plug-In BC website;
c. Driver outreach including development of an EV communications strategy and the Emotive campaign to increase public awareness and interest in EVs;
d. Station host and stakeholder communications;
e. CCI Fund result mapping;
f. EV Smart Infrastructure Pilot support for BC Hydro;
g. Fleet Managers Network support;
h. EV data tracking and procurement project;
i. Program reporting; and
j. Additional charging station infrastructure.

6.7 Partners and Stakeholders

- British Columbia Hydro and Power Authority
- Fraser Basin Council
- Building Owners and Managers Association of BC
- New Car Dealers Association of British Columbia
- Community Charging Infrastructure Fund Recipients (e.g., business owners, local governments, institutions)
- Powertech Labs
- Electric Mobility Canada
- Canadian Hydrogen Fuel Cell Association
- Global Automakers of Canada
- Canadian Vehicle Manufacturer's Association
- Hydrogen Technology and Energy Corporation
- Simon Fraser University
- University of British Columbia TIPS Lab
- Pembina Institute
- University of Victoria
- University of Northern British Columbia

- Community Energy Association
- Condominium Home Owners Association
- British Columbia Automobile Association
- Vancouver Electric Vehicle Association
- CEV owners
- British Columbia Institute of Technology
- Victoria Leaf Club
- Pacific Coast Collaborative
- Vehicle and technology dealers and suppliers
- General public