From:	Gilks, Greg E TRAN:EX
To:	Callander, Alan TRAN:EX
Subject:	FW: 2015CMN1039-0 01953 - Change - Vehicles - Hybrids & Electric Vehicles
Date:	Tuesday, May 5, 2015 10:09:59 AM
Attachments:	Report 2015CMN1039-0.pdf

Greg Gilks, Executive Director
Transportation Policy
Transportation Policy & Programs
Ministry of Transportation and Infrastructure
250-387-0882

From: Rockerbie, Kirk TRAN:EX
Sent: Tuesday, March 24, 2015 10:08 AM
To: Gilks, Greg E TRAN:EX
Subject: FW: 2015CMN1039-0 01953 - Change - Vehicles - Hybrids & Electric Vehicles

From: Termuende, Rob [mailto:Rob.Termuende@icbc.com]
Sent: Tuesday, March 24, 2015 10:06 AM
To: Rockerbie, Kirk TRAN:EX
Subject: FW: 2015CMN1039-0 01953 - Change - Vehicles - Hybrids & Electric Vehicles

As requested. Please let me know if you need anything else. Cheers.
Rob.

Insurance Corporation of British Columbia
Business Insights Road Safety
151 West Esplanade
North Vancouver, BC V7M 3H9

Report #: 2015CMN1039-0
Report Title: Count of actively insured hybrid and electric vehicles in B.C. by region

Approvals: This report has been approved for release to **< the Ministry of Transportation and Infrastructure >**, by the Communications Division at ICBC.

! Please contact your ICBC representative if you want to share any portions of the data within, with other parties for which the report was not originally intended. Any intentional violation of this policy may result in discipline.

Requested By: Shelley Coombes, Vehicle Registration Programs
Requested On: 17-Mar-15

Prepared By: Dana Smatanova, Business Insights
Completion Date: 23-Mar-15

Data Source: Business Information Warehouse
Data As Of: 28-Feb-15

Synopsis of Request: Count of actively insured hybrid and vehicles by region
Locations: B.C. by region
Date Period: as of Dec. 31, 2014

Disclaimer: This report is intended to provide general information only and should not be viewed as an “audited, or otherwise formally validated” report. In addition, this report and all of the information it contains is provided "as is" without warranty of any kind, whether express or implied. Any reliance on this report or on any information it contains, is solely at the user's own risk. ICBC disclaims all responsibility for all consequences of any person acting on, or refraining from acting on, this report or any of the information contained in this report. The provision of this report does not indicate or in any way imply ICBC's support, authorization or endorsement of any use which the user may make of it or of any information contained in it.

Caveats: Data Settling:
Numbers will continue to change, especially for the most recent time periods, because of late reporting, and corrections and adjustments.

Locations:
Accurate and verifiable information is not always available, therefore precise mapping of incidents to locations is not always possible. Counts by location should not be considered comprehensive.

Title: Count of actively insured hybrid and electric vehicles
Location: British Columbia, by region
Period: As of December 31, 2014
Reported by: ICBC

Region	Vehicle Type		Counts as of Dec. 31/14
Fraser Valley	Hybrid		8,925
	Electric	LSV type	9
		non-LSV type	361
Greater Vancouver	Hybrid		13,499
	Electric	LSV type	10
		non-LSV type	849
Vancouver Island	Hybrid		5,701
	Electric	LSV type	19
		non-LSV type	332
Southern Interior	Hybrid		3,131
	Electric	LSV type	3
		non-LSV type	91
North Central	Hybrid		885
	Electric	LSV type	1
		non-LSV type	22
Unknown	Hybrid		369
	Electric	LSV type	0
		non-LSV type	19
Total	Hybrid		32,510
	Electric	LSV type	42
		non-LSV type	1,674

Notes:
Counts include Autoplan and Temporary policies; Storage policies are excluded.
Unknown Region: Vehicles are categorized into regions based on customers' postal codes. Retired or new postal codes, not currently in ICBC systems, are categorized as "Unknown."
LSV = Low Speed Vehicle
Please see the next page for complete lists of hybrid and electric vehicles.

Prepared by: Dana Smatanova
ICBC, Business Insights

Hybrid Vehicles include the following models:

ACURA ILX HYBRID 4DR	INFINITI Q50 HYBRID 4DR
ACURA RLX SPORT HYBRID 4DR AWD	INFINITI Q50 HYBRID 4DR ALL WHDR / INFINITI Q50 HYBRID 4DR AWD
AUDI Q5 HYBRID 4DR ALL WHDR / AUDI Q5 HYBRID 4DR AWD	INFINITI Q70 HYBRID 4DR
BMW ACTIVE HYBRID 3 4DR / BMW ACTIVEHYBRID 3 4DR	INFINITI QX60 HYBRID 4DR AWD
BMW ACTIVE HYBRID 5 4DR	KIA OPTIMA EX HYBRID 4DR
BMW ACTIVEHYBRID 7 4DR	KIA OPTIMA HYBRID 4DR
BMW ACTIVE HYBRID 7L 4DR / BMW ACTIVEHYBRID 7 L 4DR	KIA OPTIMA LX HYBRID 4DR
BMW I8 2DR AWD	LEXUS CT 200H 5DR
BMW X6 HYBRID 4DR ALL WHDR / BMW X6 HYBRID 4DR AWD	LEXUS ES 300H 4DR
CADILLAC ESCALADE ESV PLATINUM HYBRID 4DR ALL WHDR / CADILLAC ESCALADE ESV PLATINUM HYBRID 4DR AWD	LEXUS GS 450H 4DR
CADILLAC ESCALADE HYBRID 4DR 2WD	LEXUS HS 250H 4DR
CADILLAC ESCALADE HYBRID 4DR ALL WHDR / CADILLAC ESCALADE HYBRID 4DR AWD	LEXUS LS 600H L 4DR ALL WHDR / LEXUS LS 600H L 4DR AWD
CHEVROLET MALIBU HYBRID 4DR	LEXUS NX300H 4DR AWD
CHEVROLET SILVERADO 1500 HYBRID 2WHDR CREW CAB / CHEVROLET SILVERADO 1500 HYBRID CREW CAB 2WD	LEXUS RX400H 4DR 2WD
CHEVROLET SILVERADO 1500 HYBRID 4WHDR CREW CAB / CHEVROLET SILVERADO 1500 HYBRID CREW CAB 4WD	LEXUS RX400H 4DR ALL WHDR / LEXUS RX400H 4DR AWD
CHEVROLET SILVERADO 1500 LS HYBRID 2WHDR EXT CAB / CHEVROLET SILVERADO 1500 LS HYBRID EXT CAB 2WD	LEXUS RX450H 4DR 2WHDR (U.S. IMPORT) / LEXUS RX450h 4DR 2WD
CHEVROLET SILVERADO 1500 LS HYBRID 4WHDR EXT CAB / CHEVROLET SILVERADO 1500 LS HYBRID EXT CAB 4WD	LEXUS RX450H 4DR ALL WHDR / LEXUS RX450H 4DR AWD
CHEVROLET TAHOE HYBRID 4DR 2WHDR / CHEVROLET TAHOE HYBRID 4DR 2WD	LINCOLN MKZ HYBRID 4DR
CHEVROLET TAHOE HYBRID 4DR 4WHDR / CHEVROLET TAHOE HYBRID 4DR 4WD	MERCEDES E400 HYBRID 4DR
CHRYSLER ASPEN HYBRID 4DR 4WD	MERCEDES S400 HYBRID 4DR
DODGE DURANGO LIMITED HYBRID 4DR 4WD	MERCURY MARINER HYBRID 4DR 2WD
FORD C-MAX SE & SEL HYBRID 5DR	MERCURY MARINER HYBRID 4DR 4WD
FORD C-MAX SE HYBRID 5DR	MERCURY MARINER HYBRID 4DR 4WHDR (U.S. IMPORT) / MERCURY MARINER HYBRID 4DR (U.S. IMPORT)
FORD C-MAX SEL HYBRID 5DR	MERCURY MILAN HYBRID 4DR
FORD ESCAPE HYBRID 4DR 2WD / FORD ESCAPE HYBRID 4DR 2WHDR	NISSAN ALTIMA 2.5S HYBRID 4DR
FORD ESCAPE HYBRID 4DR 4WD / FORD ESCAPE HYBRID 4DR 4WHDR	NISSAN PATHFINDER PLATINUM HYBRID 4DR 4WD
FORD ESCAPE LIMITED HYBRID 4DR 2WD	NISSAN PATHFINDER SV HYBRID 4DR 4WD
FORD ESCAPE LIMITED HYBRID 4DR 4WD	PORSCHE CAYENNE S HYBRID 4DR ALL WHDR / PORSCHE CAYENNE S HYBRID 4DR AWD
FORD FUSION HYBRID 4DR	PORSCHE PANAMERA S 4DR HYBRID / PORSCHE PANAMERA S HYBRID 4DR
FUSION HYBRID 4DR INCL SE & TITANIUM	SATURN AURA GREEN LINE HYBRID 4DR
FORD FUSION S HYBRID 4DR	SATURN VUE GREEN LINE HYBRID 4DR 2WHDR / SATURN VUE GREEN LINE HYBRID 4DR 2WD
FORD FUSION SE HYBRID 4DR	SUBARU XV CROSSTREK HYBRID 5DR AWD
FORD FUSION TITANIUM HYBRID 4DR	TOYOTA AVALON LIMITED HYBRID 4DR
GMC SIERRA 1500 HYBRID 2WHDR CREW CAB PICKUP / GMC SIERRA 1500 HYBRID CREW CAB 2WD	TOYOTA AVALON XLE HYBRID 4DR
GMC SIERRA 1500 HYBRID 4WHDR CREW CAB PICKUP / GMC SIERRA 1500 HYBRID CREW CAB 4WD	TOYOTA CAMRY HYBRID 4DR
GMC SIERRA 1500 SLE HYBRID 2WHDR EXT CAB / GMC SIERRA 1500 SLE HYBRID EXT CAB 2WD	TOYOTA CAMRY LE HYBRID 4DR
GMC SIERRA 1500 SLE HYBRID 4WHDR EXT CAB / GMC SIERRA 1500 SLE HYBRID EXT CAB 4WD	TOYOTA CAMRY SE HYBRID 4DR
GMC YUKON DENALI HYBRID 4DR 2WD	TOYOTA CAMRY XLE HYBRID 4DR
GMC YUKON DENALI HYBRID 4DR ALL WHDR / GMC YUKON DENALI HYBRID 4DR AWD	TOYOTA HIGHLANDER HYBRID 4DR 2WD
GMC YUKON HYBRID 4DR 2WD / GMC YUKON HYBRID 4DR 2WHDR	TOYOTA HIGHLANDER HYBRID 4DR 2WHDR INCL LIMITED
GMC YUKON HYBRID 4DR 4WHDR / GMC YUKON HYBRID 4DR 4WD	TOYOTA HIGHLANDER HYBRID 4DR 4WHDR / TOYOTA HIGHLANDER HYBRID 4DR 4WD
HONDA ACCORD HYBRID 4DR	TOYOTA HIGHLANDER HYBRID LIMITED 4DR 2WD
HONDA ACCORD TOURING HYBRID 4DR	TOYOTA HIGHLANDER HYBRID LIMITED 4DR 4WHDR / TOYOTA HIGHLANDER HYBRID LIMITED 4DR 4WD
HONDA CIVIC HYBRID 4DR	TOYOTA HIGHLANDER LE HYBRID 4DR 4WD
HONDA CR-Z 2DR HYBRID INCL EX	TOYOTA HIGHLANDER XLE HYBRID 4DR 4WD
HONDA CR-Z EX HYBRID 2DR	TOYOTA PRIUS 4DR
HONDA CR-Z HYBRID 2DR	TOYOTA PRIUS 5DR
HONDA INSIGHT 2DR	TOYOTA PRIUS 5DR LIFTBACK
HONDA INSIGHT EX 5DR	TOYOTA PRIUS C 5DR HATCHBACK / TOYOTA PRIUS C 5DR
HONDA INSIGHT LX & EX 5DR	TOYOTA PRIUS PLUG-IN 5DR
HONDA INSIGHT LX 5DR	TOYOTA PRIUS TOURING 5DR
HYUNDAI SONATA HYBRID 4DR	TOYOTA PRIUS V 5DR HATCHBACK / TOYOTA PRIUS V 5DR
HYUNDAI SONATA LIMITED HYBRID 4DR	VOLKSWAGEN JETTA HYBRID 4DR
INFINITI M35H 4DR	VOLKSWAGEN TOUAREG HYBRID 4DR AWD

Electric Vehicles include the following models:

A.C.G. ALL LSV MODELS	GLOBAL ELECTRIC MO TYPE 2 (ALL LSV MODELS)
BMW I3 5DR	IMPACT GM PROTOTYPE ELECTRIC CAR
BOMBARDIER ALL LSV MODELS	KIA SOUL EV 5DR
CADILLAC ELR 2DR	MILES ZX40ST (TYPE 2)
CANADIAN ELECTRIC MIGHT E TRUCK (ALL LSV MODELS)	MITSUBISHI I MIEV (LEFT HAND DRIVE)
CHEVROLET SPARK EV 5DR	MITSUBISHI I MIEV (RIGHT HAND DRIVE) / I-MIEV 5DR
CHEVROLET VOLT 5DR	MITSUBISHI I-MIEV ES 5DR
DYNASTY MOTORCAR ALL LSV MODELS	MITSUBISHI I-MIEV SE 5DR
E RIDE EXV2 (TYPE 2 LSV MODEL)	NISSAN LEAF S 5DR
E RIDE EXV4 (TYPE 1 LSV MODEL)	NISSAN LEAF SL 5DR
FISKER KARMA	NISSAN LEAF SV & SL 5DR
FISKER KARMA ECOCHIC 4DR	NISSAN LEAF SV 5DR
FISKER KARMA ECOSPORT 4DR	SMART FORTWO ELECTRIC DRIVE 2DR COUPE
FISKER KARMA ECOSTANDARD 4DR	SMART FORTWO ELECTRIC DRIVE CABRIOLET
FISKER KARMA SIGNATURE SERIES 4DR	TESLA MODEL S 4DR
FORD C-MAX SEL ENERGI 5DR	TESLA MODEL S SIGNATURE 4DR
FORD FOCUS ELECTRIC 5DR	TESLA ROADSTER
FORD FUSION SE ENERGI & TITANIUM ENERGI 4DR	VANTAGE EVC1000 VAN (LSV MODEL)
FORD FUSION SE ENERGI 4DR	VANTAGE EVP1000 VAN (LSV MODEL)
FORD FUSION TITANIUM ENERGI 4DR	VANTAGE EVX1000 PICKUP (LSV MODEL)
GLOBAL ELECTRIC MO TYPE 1 (ALL LSV MODELS)	ZENN TYPE 1 (ALL LSV MODELS)

Prepared by: Dana Smatanova
ICBC, Business Insights

From:	Gilks, Greg E TRAN:EX
To:	Callander, Alan TRAN:EX; Jordison, Kim D TRAN:EX
Subject:	FW: Electric vehicle technical paper
Date:	Tuesday, March 3, 2015 9:56:55 AM
Attachments:	HEV and EV in HOV Lanes Technical Memorandum -updated.docx

Here is the Engineering document. It does not support hybrids. We are focusing on pure electric vehicles. I have talked with Patrick Livolsi and he agrees with allowing electric vehicles, but not hybrids.

Greg Gilks, Executive Director
Transportation Policy
Transportation Policy & Programs
Ministry of Transportation and Infrastructure
250-387-0882

-----Original Message-----
From: Steele, Bob D TRAN:EX
Sent: Friday, March 7, 2014 6:31 PM
To: Gilks, Greg E TRAN:EX; Rockerbie, Kirk TRAN:EX
Subject: FW: Electric vehicle technical paper

Sincere apologies as I thought I had transmitted this to you earlier for your review (this one fell through the cracks).

Bob

-----Original Message-----
From: Halwani, Lina TRAN:EX
Sent: February-14-14 11:15 AM
To: Livolsi, Patrick C TRAN:EX
Cc: Steele, Bob D TRAN:EX
Subject: RE: Electric vehicle technical paper

As requested..

Regards,

Lina Halwani, P. Eng.
Regional Manager, Engineering
Suite 310 – 1500 Woolridge Street, Coquitlam, BC V3K 0B8
Phone: 604-527-2170
Fax: 604-527-2165
email: lina.halwani@gov.bc.ca

-----Original Message-----
From: Livolsi, Patrick C TRAN:EX
Sent: February-14-14 6:27 AM
To: Halwani, Lina TRAN:EX
Cc: Steele, Bob D TRAN:EX
Subject: Electric vehicle technical paper

Lina

Could you please forward a copy to bob and I on the current draft of the electric vehicle in HOV lane paper.

Thanks

Patrick C. Livolsi, P. Eng.
Regional Director - South Coast Region
Ministry of Transportation and Infrastructure

Suite 310 - 1500 Woolridge Street, Coquitlam, BC, V3K 0B8 Office phone: 604-527-2172 Office Fax: 604-527-2222

TECHNICAL MEMORANDUM

Date 2014-01-23

To: Patrick Livolsi, Regional Director

CC: Lina Halwani, Manager of Engineering

Re: Considerations for Permitting Hybrid Electric, Plug-In Hybrid Electric and Electric Vehicles In Provincially Operated HOV Lanes

INTRODUCTION

The objective of this technical memorandum is to consider the potential impacts of permitting Hybrid Vehicle (HV), Plug-In Hybrid Electric Vehicles (PHEV) and Electric Vehicles (EV) in High Occupancy Vehicle (HOV) lanes in the Lower Mainland.

This memorandum will discuss the following:

- Green House Gas Emissions and Incentives for Advanced Vehicle Technologies
- People Moving Capacity of HOV Lanes in the Lower Mainland
- Performance of HOV lanes
- Enforcement and Tolling Challenges
- Overall Benefits

GREEN HOUSE GAS EMISSIONS AND INCENTIVES

There are three categories of Advanced Vehicle Technologies currently available[1]:

1. Hybrid Electric vehicles are defined as vehicles that combine conventional internal combustion engines and battery electric engines. These vehicles recharge their batteries through the use of the conventional internal combustion engine, coasting and regenerative braking. They do not require charging by external electricity. Examples of this type of hybrid technology include the Toyota Prius, which has a CO_2 emission of 1748 kg/year, and the Chevrolet Tahoe Hybrid Electric, which emits 4324 kg/year of CO_2 emissions.
2. The second category of advanced vehicle technology is the Plug-In Hybrid Electric Vehicle. This advanced technology employs an internal combustion engine and high capacity battery that is

[1] This section is based on information taken from Fuel Consumption Guide 2013 produced by Natural Resources Canada. http://oee.nrcan.gc.ca/transportation/tools/fuelratings/FCG2013_e.pdf

charged by being plugged into an external electric source. PHEVs can operate without external charging; however, will only reach optimal fuel consumption with regular charging. This vehicle category includes the Chevrolet Volt (0 – 2944 kg/year of CO_2 emissions) and the Toyota Prius Plug-In (184 – 1748 kg/year of CO_2 emissions).

3. Electric Vehicles employ electric motors and rechargeable batteries. The must be plugged in to recharge when the batteries run low. These vehicles have no tailpipe CO_2 emissions. Examples of this type of vehicle include the Ford Focus Electric and the Nissan Leaf.

It should be noted that there are traditional gasoline engines, such as the Ford Fiesta (2806 kg/year of CO_2 emissions), which can produce low emission levels. The level of emission is comparable to those of Hybrid Vehicles. On the other hand, the Tahoe Hybrid emits twice as much CO_2 as a Toyota Prius Hybrid.

Although HVs, PHEVs, and EVs typically have lower CO_2 emissions than traditional gasoline vehicles, PHEV and EVs require electricity to charge their batteries. There are environmental costs associated with fuel sources required to produce the electricity; however, 60% of Canada's electricity is produced using hydroelectric generators and 15% using nuclear reactors which create very little air pollution. In addition, some HVs and PHEVs, such as the Ford Fusin Hybrid and the Prius Plug-In, consume less fuel in stop-and-go traffic then free flow conditions. Comparatively, the Chevrolet Tahoe Hybrid consumes more fuel when driving in stop-and-go traffic.

Existing incentives for of a HV, PHEV or EV owner's include:

- Clean Energy Vehicle point of sale incentive
- Lower Fuel Costs
- Preferred parking at some commercial retailers

PEOPLE MOVING CAPACITY

Although it is often perceived that HOV lanes are underutilized, they move a larger volume of people per lane than general purpose lanes. Occupancy surveys conducted on Highway 99 have shown that the HOV lanes moves 2600 person/hour and 2200 person/hour in the AM peak and PM peak, respectively. 2011 screenline surveys on Highway 1 indicate that the HOV lanes move 2300 person/hour in the AM peak and 2000 persons/hour in the PM peak. In comparison, general purpose lanes can move a maximum of 2000 persons/hour.

Allowing single occupancy vehicles (SOV) HV, PHEVs and EVs in HOV lanes will increase the number of vehicles utilizing the lane; however, it will reduce the person capacity of these facilities.

PERFORMANCE OF HOV LANES

ICBC has indicated that in 2012 there were 193 EVs and nearly 24,000 Hybrid and Plug-In Hybrid Electric vehicles registered in British Columbia. BC Hydro forecasts there will be 100,000 EV, HV and PHEVs vehicles in the province by 2022.

If we assume that the number of registered EV, HV and PHEV is proportional to the population distribution in the province and a 2% growth rate in HOV users, the following results are anticipated.

	Existing Conditions HOV Only	Existing Conditions HOV + HV/PHEV/EV	2022 HOV only	2022 HOV + HV/PHEV/EV
Highway 99 NB AM Peak	LOS B	LOS B	LOS B	LOS C
Highway 99 SB PM Peak	LOS B	LOS B	LOS B	LOS C
Highway 1 WB AM Peak	LOS B	LOS B	LOS B	LOS C
Highway 1 EB PM Peak	LOS C	LOS C	LOS C	LOS D

Table 1: Level of Service for Freeways based on forecasted volumes (assumes number of HV, EV and PHEV on Highway 99 and Highway 1 is proportion to AADT for the respective corridor and number of registered vehicles in the Lower Mainland)

Level of service is a measure of operating conditions for a roadway or lane related to speed, ability to maneuver and service quality. Permitting HVs, PHEVs, and EVs into the HOV lane will reduce the level of service in the HOV lanes form B/C to C/D. A decrease in level of service form B to C indicates that free flow speed will still be achievable; however, ability to maneuver into the lane will be noticeably restricted. In addition, incidents within the lane will cause local deterioration in service. If the level of service is reduced to a D rating, the operating speed of the lane will be reduced and incidents in the lane will cause queuing. Level of service D can create discomfort for drivers.

HOV facilities currently allow motorcycles, which are a form of SOV, however, they do not have any significant impact on the performance of HOV lanes. Motorcycles have been permitted use of the HOV facility as a result of the increased safety benefits for the rider.

Permitting HVs, PHEVs and EVs in HOV lanes will increase the amount of weaving and turbulence on the roadway and lead to a potential increase in incidents. Permitted HVs, PHEV and EVs would need to maneuver across four lanes of traffic on Highway 1 to enter into the HOV lane.

ENFORCEMENT AND TOLLING CHALLENGES

Current HOV lane regulations assist law enforcement officers in quickly determining whether a vehicle is authorized to use a provincial HOV lane. Consideration of the inclusion of HVs, PHEVs and EVs as a permitted vehicle will require a determination of how these vehicles will be identified for HOV enforcement. Certain measures could be implemented to assist in vehicle identification, such as special

license plates or decals, however; this would require registration through ICBC or Ministry of Transportation and Infrastructure. It would be possible to consider self-regulation for HV, PHEV and EVs, however; easy identification is important from both an enforcement perspective and as a means to allow other drivers to see that a single occupant electric vehicle is authorized to use the HOV facility.

Permitting HVs, PHEVS and EVs in HOV lanes also presents tolling challenges. Currently, HOV users are entitled to a reduced rate at the Port Mann Bridge. If other types of vehicle were allowed use of this lane, the tolling system would not be able to distinguish HOVs from other vehicle in the HOV lane. In addition, this raises the question of tolling fees for HVs, PHEVs, and EVs on the Highway 1 corridor. Permitting use of the HOV lane for HVs, PHEVs and EVs would require they be entitled to the HOV discounted rate.

BENEFITS

Permitting HVs, PHEVs and EVs has the following potential benefits:

- supports the Clean Energy Vehicle program initiative, which includes charging station installation and residential rebates for electrical equipment
- provides additional incentives to consumers to purchase a HV, PHEV and EV which reduces GHG emissions
- supports Idle Free BC program by reducing amount of vehicles idling while waiting in congested conditions
- alleviates perception that HOV lanes are underutilized, however, it will reduce the amount of person capacity of the facility

RECOMMENDATION

Before a policy decision is made to permit HVs, PHEVs and EVs in the HOV lanes, attention needs to be given to whether this initiative will meet the goals of this Ministry. Considering the ultimate goals are to reduce greenhouse gas emissions, move people and facilitate the sale of HVs, PHEVs and EVs, we can conclude that this initiative would not meet those objectives as the person capacity and performance of the HOV lane would be degraded.

The overall benefits of allowing HVs, PHEVs and EVS are summarized below:

- supports the Clean Energy Vehicle program initiative
- provides additional incentives to consumers to purchase a HV, PHEV and EV
- supports Idle Free BC program
- alleviate perception that HOV lanes are underutilized

The challenges include:

- reduced performance and level of service in HOVs Lanes

- reduced person capacity and person throughput of HOV lanes from 2000 – 2600 person/lane to below 2000 person/lane.
- increased difficulty for enforcement if not properly mitigated with an easily identifiable license plates or decals
- potential for increased turbulence due to additional lane changes at exit and entrance ramps
- tolling challenges on Port Mann Bridge since HOVs are entitle to a discounted rate and the system may not be able to differentiate HVs, PHEVs and EVs and HOVs

Allowing SOV vehicles in the HOV lanes could be considered if the following mitigation measure were put in place:

- a restricted number of HVs, PHEVs and EVs were permitted in the HOV lanes to ensure acceptable performance measures are met
- a mechanism is put in place to remove permitted HVs, PHEVs and EVs from using the HOV lane during certain hours to mitigate degradation to performance
- consideration is given to minimizing enforcement and tolling challenges

In conclusion, permitting all HVs, PHEVs and EVs in HOV lanes is not recommended for facilities within the Lower Mainland due to the potential degradation in level of service and reduced person capacity in these lanes.