Title
Electric Vehicle Incentives in 13 Leading Electric Vehicle Markets

Authors
Kong, Nathaniel
Hardman, Scott

Publication Date
2019-05-01

UCDAVIS
PLUG-IN HYBRID & ELECTRIC VEHICLE RESEARCH CENTER
of the Institute of Transportation Studies

Research Report – UCD-ITS-RR-19-04

Electric Vehicle Incentives in 13 Leading Electric Vehicle Markets

May 2019

Nathaniel Kong
Plug-in Hybrid & Electric Vehicle Research Center, Institute of Transportation Studies, University of California, Davis
nskong@ucdavis.edu

Scott Hardman*
Plug-in Hybrid & Electric Vehicle Research Center, Institute of Transportation Studies, University of California, Davis
shardman@ucdavis.edu

*Corresponding author

Plug-in Hybrid & Electric Vehicle Research Center
Institute of Transportation Studies ◦ University of California, Davis
1605 Tilia Street ◦ Davis, California 95616
PHONE (530) 752-6548 ◦ FAX (530) 752-6572
www.phev.ucdavis.edu

Contents

Introduction

This document provides an overview of incentive strategies in 13 leading plug-in electric vehicle (PEV) markets. The document looks at incentives for both battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). We do not comment on the effectiveness of each incentive, rather we provide an overview of the different ways in which PEV incentives are designed. The hope is that policymakers can gain insights into different strategies for incentivizing the purchase of PEVs. The document focuses on purchase incentives, it does not take a detailed look into non-financial, indirect, or re-occurring incentives. The main focus is on consumer incentives, not fleet or business incentives.

Incentives for PEVs are applied in several different ways including as income tax credits, rebates, point of sale incentives, grants, purchase-tax or purchase-fee waivers, subsidies, and feebates (or bonus malus). Each section below outlines how incentives for BEVs and PHEVs are administered in the top 13 PEV markets. Each section presents the value of incentives in U.S. dollars (US$) for BEVs and PHEVs (and in local currencies) then outlines how the program operates. We also show PHEV and BEV sales in each nation to provide some context. Table 1 shows an overview of the countries considered in this document, the incentive amount for BEVs and PHEVs (in US$), and the type of incentive. In some nations, incentives are not a fixed value for a BEV or a PHEV. The values shown in the table serve as an overview of incentives, the actual value received can differ. The structure of incentives, actual value, and how they work is outlined in more detail in the sections on each respective nation.

Table 1: Leading Electric Vehicle Markets, Financial Incentive Value for BEVs and PHEVs, and the Incentive Type.

Country	BEV Incentive (US$)	PHEV Incentive (US$)	Incentive Type
Canada	3,800	1,900	Point of sale incentive
China	3,700	1,500	Acquisition Tax and Excise Tax Exemption
France	9,100	1,000	Bonus-malus or Feebate
Germany	4,600	3,400	Purchase Rebate and Tax Exemption
Japan	3,500	1,700	Purchase Tax Subsidy
Netherlands	8,000	3,800	Registration Tax Exemption or Discount
Norway	11,600	10,000	VAT and Purchase tax Exemption
Portugal	3,400	1,300	National Subsidy and Tax Exemption
South Korea	13,200	6,700	Purchase Subsidy and Tax Reduction
Spain	6,400	0	National Subsidy and Tax Benefits
Sweden	6,500	2,400	Bonus-malus or Feebate
United Kingdom	4,500	0	Point of sale grant
United States	7,500	7,500	Federal Tax Credit & State Rebates

Incentives in 13 leading electric vehicle markets

Canada

BEV Incentives: USD$3,800
PHEV Incentives: USD$1,900

Incentive Type: Point of sale incentive

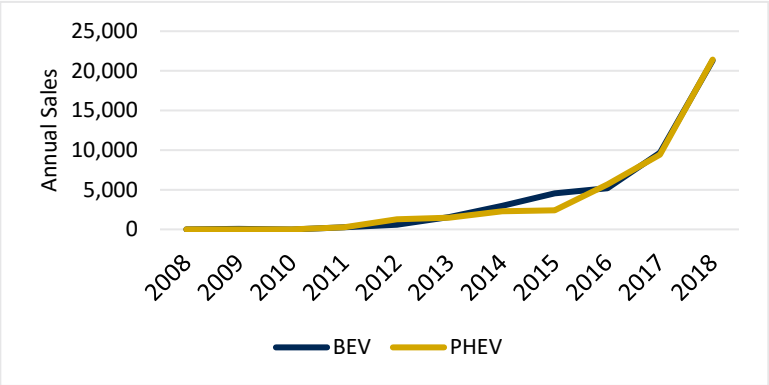

Figure 1: BEV and PHEV Sales in Canada.

Canada's incentives include a recently announced national incentive of C$5,000 (US$3,800) for BEVs and C$2,500 (US$1,900) for PHEVs. The incentive is received directly at the point of vehicle sale. Vehicles with fewer than 6 seats must have a base price under C$45,000 (US$33,800), though higher priced trims are also eligible up to C$55,000. Vehicles with 7 seats may have a base price up to C$55,000, and C$60,000 for higher trim levels (Gouvernement du Canada, 2019). The incentive became effective on May 1, 2019 and will provide 100% of the values above for the purchase of a BEV or PHEV until 2023. After this, the incentive drops to 75% of its value for 2024-2025, then 55% for 2026-2027.

On a provincial level, Ontario had the highest incentive of C$14,000 (US$10,500). However, the program ended on September 10, 2018 (Electric Mobility Canada, 2018). British Columbia has the next highest incentive which is C$5,000 (US$3,700) as a subsidy for Clean Energy Vehicles and an additional C$6,000 (US$4,500) for replacing an old vehicle with a lower-emitting one. Quebec has similar incentives of lesser value for BEVs. For PHEVs, Quebec offers a maximum incentive of C$8,000 (US$6000) that varies based upon battery size (Electric Mobility Canada, 2018).

Table 2: Overview of Canada Provinces and Incentives (Electric Mobility Canada, 2018)

Province	**Max Incentive CAD$ (USD$)**
Ontario (ended 9/10/18)	14,000 (10,500)
British Columbia	11,000 (8,200)
Quebec	8,000 (6,000)
Federal (as of 5/1/18)	5,000 (3,800)

China

BEV Incentives: USD$3,700
PHEV Incentives: USD$1,500

Incentive Type: Acquisition Tax and Excise Tax Exemption

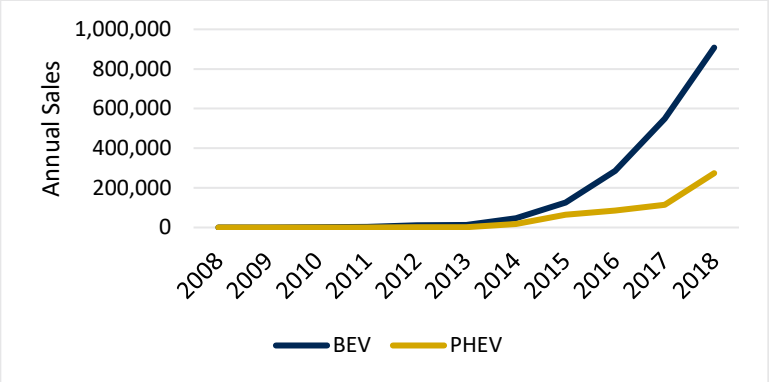

Figure 2: BEV and PHEV Sales in China.

The Chinese subsidy for PEVs is based upon PHEV and BEV electric range (D1EV, 2018). The Chinese subsidy for BEVs that can travel 400 kilometers or more is CNY 25,000 (US$3,700) (Bloomberg, 2018). The method to calculate the Chinese subsidy is shown in Table 3 (D1EV, 2018). Before June 2019, local incentives can add up to 50% of the maximum value of the national level subsidy, for a total maximum value of CNY 75,000 (US$10,100) (International Energy Agency, 2017). After June 2019, local subsidies are removed. PHEVs that have a range greater than 50 kilometers receive CNY 10,000 (US$1,500) (D1EV, 2018).

An additional factor in Beijing is that electric vehicles are guaranteed a vehicle license, whereas others must enter a lottery of 3 million applicants at a time to obtain one. This makes it more difficult and costly to register a conventional vehicle compared to an electric vehicle (Perkowski, 2018). Other local incentives include bus lanes, free charging, and free parking (International Energy Agency, 2017).

Table 3: China National Subsidies for PEVs since 2013 (Data collected by China Center for Energy and Transportation, Institute of Transportation Studies, UC Davis).

Pre-2015 Incentive values (10,000 CNY)					Post 2015 Incentive values (10,000 CNY)				
	Range (km)	2013	2014	2015	Range (km)	2016	2017	2018	2019*
BEV	80-150	3.5	3.33	3.15	100-150	2.5	2		
	150-250	5	4.75	4.5	150-200	4.5	3.6	1.5	
	>250	6	5.7	5.4	200-250	5.5	3.6	2.4	
					250-300		4.4	3.4	1.8
					300-400		4.4	4.5	1.8
					>400		4.4	5	2.5
PHEV/ REEV	50=<R	3.5	3.33	3.15	50=<R	3	2.4	2.2	1

*effective 25th June 2019

France

BEV Incentives: USD$9,100
PHEV Incentives: USD$1,000

Incentive Type: Feebate or Bonus-malus

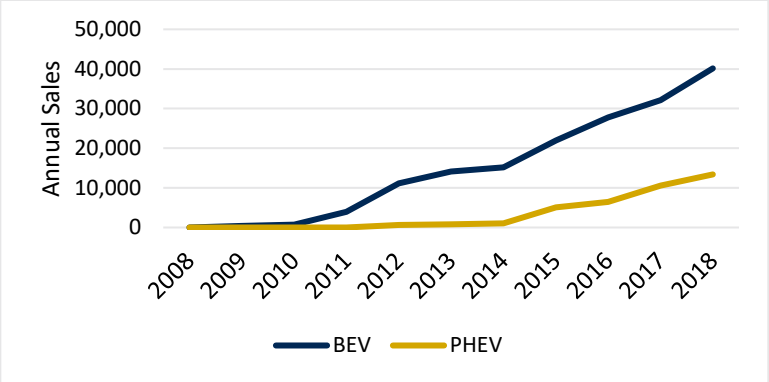

Figure 3: BEV and PHEV Sales in France.

France has a federal bonus-malus scheme (also known as feebates) (International Energy Agency, 2017). A Zero Emission Vehicle (20 gCO_2/km or less) receives a reward of €6,000 (US$7,000), a vehicle emitting 21–60 gCO_2/km (often the emissions of PHEVs) would receive €1,000 (US$1,200), and vehicles emitting more than 100 g/km CO_2 pay a fee based on the amount of CO_2 emissions per kilometer (Economie-finances, Centre de Documentation, 2018). Table 4 and Figure 4 show how the feebate system is structured. France has additional purchase subsidies for trading in a diesel vehicle and buying a second-hand electric vehicle of €2,000 (US$2,300) and €1,000 (US$1,200), respectively (European Alternative Fuels Observatory, 2018).

Table 4: Table showing an overview of Frances Bonus-Malus system.

Vehicle Emissions (gCO_2/km)	**Subsidy Amount € (USD$)**
<20	6000 (6800)
21 – 60	1000 (1100)
60-120	0 (0)
>120	CO_2 emissions-based fee, see figure 4.

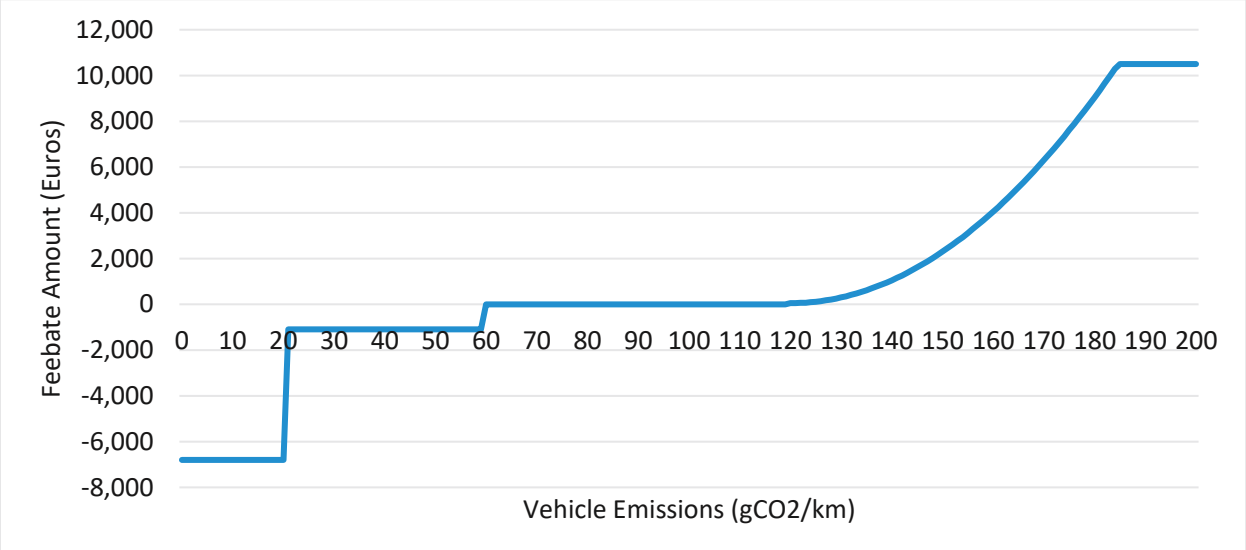

Figure 4: France Bonus-Malus System 2008-2017. Positive values indicate the purchaser pays a fee, negative values indicate the purchaser will receive a rebate (https://droit-finances.commentcamarche.com/faq/20269-malus-automobile-taxe-co2-2018-2019).

Germany

BEV Incentives: USD$4,600
PHEV Incentives: USD$3,400

Incentive Type: Purchase Rebate and Tax Exemptions

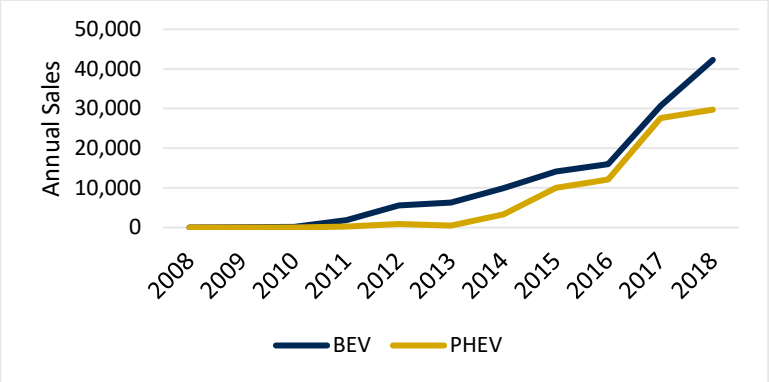

Figure 5: BEV and PHEV Sales in Germany.

Germany has a national purchase subsidy of €4,000 (US$4,600) for BEVs, and €3,000 (US$3,400) for PHEVs (Bundesministerium für Wirtschaft und Energie, 2018). This subsidy is in effect until either 400,000 vehicles are sold or until 2020 (International Energy Agency, 2017). Other significant incentives include tax exemption from the Motor Vehicle tax for 5 to 10 years from the first date of registration, and tax deductions for company cars. Local incentives include free parking, reserved parking spots, and support of charging stations (Bundesministerium für Wirtschaft und Energie, 2018, (European Alternative Fuels Observatory, 2018).

Japan

BEV Incentives: USD$3,500
PHEV Incentives: USD$1,700

Incentive Type: Purchase Subsidy

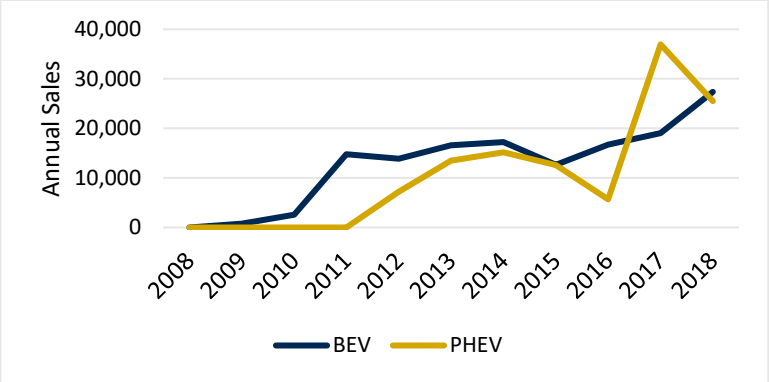

Figure 6: BEV and PHEV Sales in Japan.

Japan has a purchase subsidy based on the range of the vehicle (クリーンエネルギー自動車 AtoZ, 2018). A BEV gains JP¥1,000 for each kilometer of range when the vehicle is fully charged. That number is then multiplied by different multipliers based upon the vehicle type (see Table 5). The maximum value a BEV can receive is JP¥400,000 (US$3,500). PHEVs receive a maximum of JP¥200,000 (US$1,800). Table 5 illustrates how to calculate the subsidy amount for BEVs and PHEVs and other eligible vehicles. Table 6 shows examples of vehicles and their subsidy amounts. Local incentives include waivers on fees and access to restricted traffic (クリーンエネルギー自動車AtoZ, 2018).

Table 5: Monetary Incentive Table Calculations for Japan.

Vehicle Type	Subsidy Amount JP¥ (USD$)	Subsidy Multiplier	Upper Limit JP¥ (USD$)
PHEV	200,000 (1,800)	1	200,000 (1,800)
BEV	1000 yen per km of range	1	400,000 (3,600)
Clean Diesel	Vehicle Price – Comparable Gas Vehicle Price	1/12	-
Fuel Cell	Vehicle Price – Comparable Gas Vehicle Price	2/3	-

Table 6: Example Vehicles and Subsidies for Japan.

Vehicle	Propulsion	WLTP Electric Range km (mi)	Subsidy Amount JP¥ (USD$)
Nissan Leaf	BEV	285 (177)	285,000 (2,500)
Tesla Model S 75	BEV	491 (305)	400,000 (3,600)
Hyundai Ioniq Electric	BEV	204 (124)	204,000 (1,821)
Toyota Prius Prime	PHEV	50 (31)	200,000 (1,800)

Netherlands

BEV Incentives: USD$8,000[1]
PHEV Incentives: USD$3,800[2]

Incentive Type: Registration tax exemption or discount

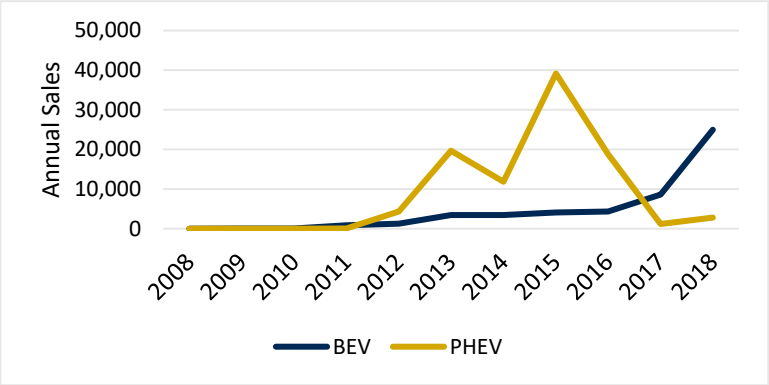

Figure 7: BEV and PHEV Sales in the Netherlands.

All vehicle owners in the Netherlands pay a CO_2-based tax for registration and ownership. New vehicle owners pay a registration tax based on their vehicle's CO_2 emissions and weight. The tax is calculated using Table 7 for a conventional car and Table 8 for a PHEV using the format below:

$$((\text{Emission g/km } CO_2 - \text{Column I}) \times \text{Column II}) + \text{Column III} = \text{Registration Tax}$$

For example, a gasoline Volkswagen Golf (109 g/km CO_2 emission) would pay a registration tax of €3,600 (US$4,200) (see Table 9). Diesel vehicles pay an additional surcharge (Rijksdienst voor Ondernemend Nederland, 2018). BEVs are exempt from the purchase tax (Rijksdienst voor Ondernemend Nederland, 2018). In addition, owners of vehicles pay a road tax called the "Motor Vehicle Tax (MRB)," which is usually €400-1,200 (US$450-1,350). BEVs are exempt from this tax, and PHEVs pay 50% of the tax (Belastingdienst, 2018).

The Netherlands also has company car incentives. If drivers use a company car for private use, a percentage of the vehicles value is added to their income before taxes: 4% is added for BEVs, and 22% is added for other vehicles (Belastingdienst, 2018).

Table 7: Passenger Car Multiplier Table for Calendar Year of 2018.

(I) Emissions Greater Than (Subtract) g/km CO_2	(II) Multiply by	(III) Add
0	2	356
73	63	502
98	139	2077
144	229	8471
162	458	12593

[1] Estimate based on average tax value of common gas vehicle in the Netherlands subtracted from the tax payable for PHEVs or BEVs.

Table 8:PHEV Car Multiplier Table for Calendar Year of 2018.

(I) Emissions Greater Than (Subtract) g/km CO_2	**(II) Multiply By**	**(III) Add**
0	19	0
30	87	570
50	289	2310

Table 9:Example Vehicles in Netherlands and the purchase Taxes Payable

Vehicle	**Emissions g/km CO_2**	**Taxes Payable € (USD$)**
Volkswagen e-golf	0	0 (0)
Volkswagen golf (gas 1.0 litre)	109	3606 (4100)
Nissan Pulsar (gas 1.7 litre)	134	7081 (6235)

Norway

BEV Incentives: USD$11,600[2]
PHEV Incentives: USD$10,000[2]

Incentive Type: VAT and Purchase Tax Exemption

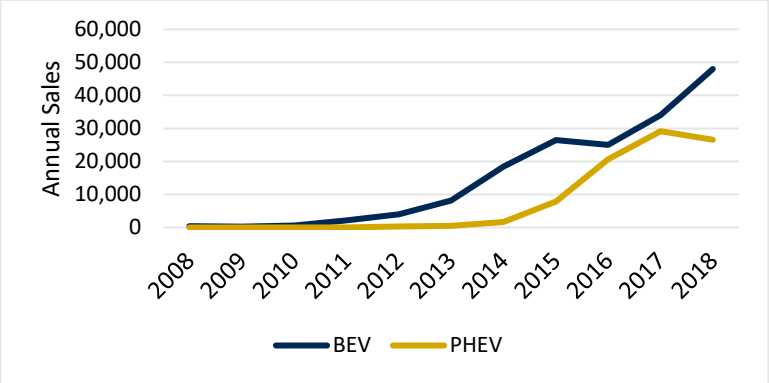

Figure 8: BEV and PHEV Sales in Norway

Vehicles in Norway pay a combination of VAT (value added tax) and an emission and weight-based purchase tax (Norsk elbilforening, 2019). VAT is 25% of the purchase price. The method to calculate the payable purchase tax is shown in Table 10. The calculation considers CO_2 emissions, NOx emissions, and the vehicle curb weight. The tax on NOx emissions is calculated by multiplying 69.19 NOK (US$7.89) per milligram of NOx per km above 0 mg. Tax payable from CO_2 and weight is accumulated for each band of **CO_2** greater than zero (see the first column of Table 10Table 10). The amount of total tax cannot be negative, vehicles with negative values are taxed 0 NOK. BEVs are exempt from both taxes. Table 11 shows some example vehicles sold in Norway and tax payable at point of purchase.

Table 10: Registration Taxes in Norway (National Budget 2018).

CO_2 (g/km)	**NOK (US$) per g/km CO_2**	**NOx (mg/km)**	**NOK (US$) per mg NOx /km**	**Curb Weight (kg)**	**NOK (US$) per kg Curb Weight**
0 - 40	-1085 (124)	>0	69 (8)	0–350	0 (0)
40 - 74	-922 (105)			351–1200	2.61 (0.3)
75	0 (0)			1201–1400	65.01 (7.4)
76–100	900 (103)			1401–1500	203.15 (23.3)
101–130	980 (112)			>1500	236.27 (27.0)
131–200	2644 (303)				
>200	3395 (389)				

[2]Estimate based upon the purchase tax a comparable conventional vehicle would pay, minus the tax a BEV or PHEV would pay.

Table 11:Common Vehicles in Norway and Their Registration Taxes (with VAT)

Vehicle	**Propulsion**	**Taxes Payable NOK (US$)**
Volvo V90	Diesel	240,912 (27,800)
Volkswagen Golf	Gas	97,932 (11,300)
Volkswagen E-Golf	BEV	0 (0)
Volkswagen Golf GTE	PHEV	14,689 (1,700)
Nissan Leaf	BEV	0 (0)

Portugal

BEV Incentives: USD$3,400
PHEV Incentives: USD$1,300

Incentive Type: National Subsidy and Tax Exemption

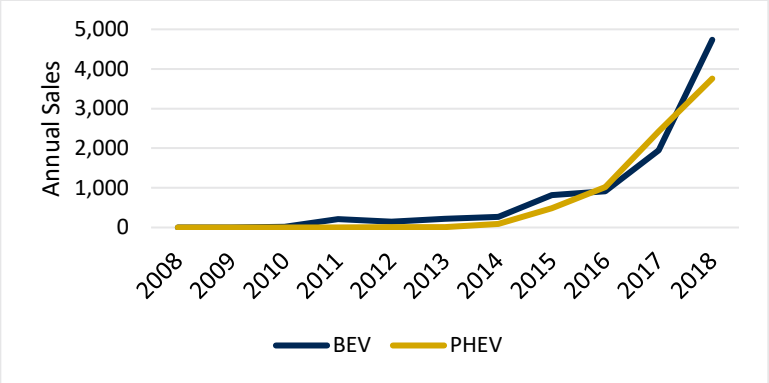

Figure 9: BEV and PHEV Sales in Portugal

Portugal has a national subsidy of €3,000 (USD$3,400) for BEVs and €1,125 (USD$1,300) for PHEVs (Associação de Utilizadores de Veículos Elétrico, 2019). The vehicle purchase price must be under €62,500 (USD$70,600) to qualify for the incentive (Associação de Utilizadores de Veículos Elétrico, 2019). Vehicles in Portugal also receive tax exemptions on registration tax and ownership tax based upon Carbon Dioxide emissions. BEVs are exempt from the registration and ownership tax (European Alternative Fuels Observatory, 2018). In addition, PHEVs with an all-electric mode of up to 25 kilometers receive 25% reduction from taxes. VAT is also deductible for companies with a price cap of €62,500 (USD$70,600) (European Alternative Fuels Observatory, 2018).

Other incentives include those for motorcycles, which have a €400 (USD$450) incentive, and electric scooters, which have a €250 (USD$300) incentive. Local incentives include free parking and one year of discounted electricity (European Alternative Fuels Observatory, 2018).

South Korea

BEV Incentives: USD$13,200
PHEV Incentives: USD$6,700

Incentive Type: Purchase Subsidy and Tax Reduction

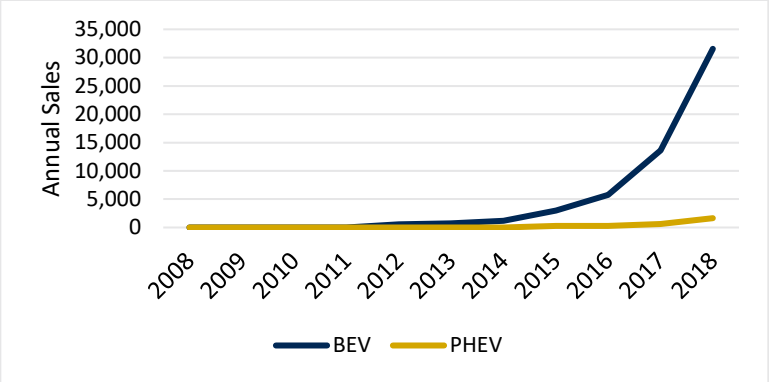

Figure 10: BEV and PHEV Sales in South Korea

Korea has a national subsidy for the purchase of PEVs. Example subsidies are shown in Table 12 (Korea Environmental Corporation, 2019). Korea also has subsidies for BEVs from local governments between KRW 4,500,000 (USD$4,000) and KRW 10,000,000 (USD$8,900) (Korea Environmental Corporation, 2019).

In addition, Korea has a tax reduction for Electric Vehicles, with a limit on each (see Table 13) (Korea Environmental Corporation, 2019). Other subsidies include the possible reduction of public parking in Seoul and reduction of the electricity rates for vehicle charging (Korea Environmental Corporation, 2019).

Table 12: Korea Example Incentive table (Korea Environmental Corporation, 2019)

Vehicle	Propulsion	Subsidy Amount KRW (USD$)
Nissan Leaf	BEV	9,000,000 (7,900)
Renault Samsung SM3 Z.E	BEV	7,560,000 (6,600)
Kia Soul EV	BEV	9,440,000 (8,200)
Tesla Model S	BEV	9,000,000 (7,900)
Hyundai Ioniq	PHEV	5,000,000 (4,400)
Kia Niro	PHEV	5,000,000 (4,400)

Table 13: Korea Tax Reduction Rate (Korea Environmental Corporation, 2019)

Tax	Charge Rate	BEV Reduction Limit KRW (USD$)	PHEV Reduction Limit KRW (USD$)
Individual Consumption (National)	5% of the vehicle price	3,000,000 (2,700)	1,000,000 (880)
Education (National)	30% of individual consumption tax	900,000 (800)	300,000 (260)
Acquisition (Local)	7% of vehicle price	100,000 (1,200)	1,400,000 (1,200)

Spain

BEV Incentives: USD$6,400
PHEV Incentives: USD$0

Incentive Type: National Subsidy and Tax Benefits

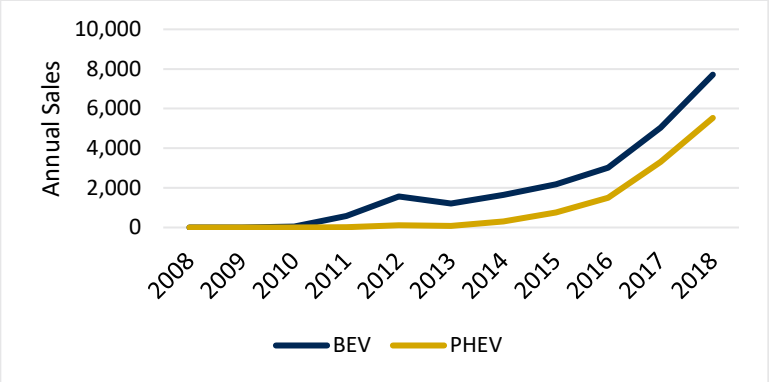

Figure 11: BEV and PHEV Sales in Spain

Spain has a national subsidy of up to €5,500 (USD$6,400) for BEVs (European Alternative Fuels Observatory, 2018). BEVs are also exempt from purchase taxes. In contrast to other major countries, Spain has no PHEV incentive (European Alternative Fuels Observatory, 2018). Spain provides subsidies for private and public charging points (European Alternative Fuels Observatory, 2018). Local incentives include road tax exemptions, free parking, and toll exemptions on some highways (European Alternative Fuels Observatory, 2018).

Sweden

BEV Incentives: USD$6,500
PHEV Incentives: USD$2,400

Incentive Type: Bonus-Malus or Feebate

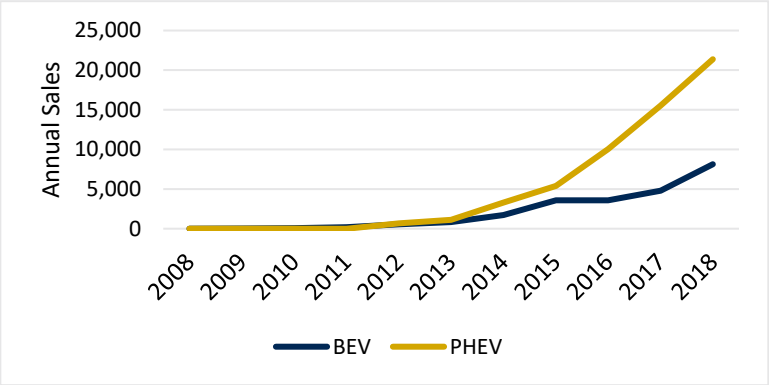

Figure 12: BEV and PHEV Sales in Sweden

Sweden's main incentive until June 2018 was a purchase rebate called the "Super Green Vehicle Rebate," that rewarded owners 40,000 SEK (USD$4,300) for BEVs and SEK 20,000 (USD$2,200) for PHEVs (Transport Styrelsen, 2018). For company cars, a slightly different system was used. For a BEV, the owner was rewarded 35% of the difference in new car price between a comparable internal combustion engine vehicle, but no more than 40,000 SEK (USD$4,300). For a PHEV, the owner was rewarded 17.5% of a comparable car with an upper limit of SEK 20,000 (USD$2,200). New vehicles also received a five-year tax exemption from the annual circulation tax, on average SEK 1,760 (USD$190) (Transport Styrelsen, 2018).

As of June 2018, the purchase rebate system has been replaced by a bonus-malus (or feebate) system (Transport Styrelsen, 2018). The system rewards vehicles (bonus system) that emit lower than 60 g/km of CO_2 and penalizes vehicles (malus system) that emit more than 95 g/km of CO_2. For the bonus system, a vehicle is rewarded the maximum bonus minus SEK 833 for each g/km CO_2 (capped at SEK 60,000). See the following equation for the bonus system:

$$60{,}000 - (\text{g } CO_2/\text{km} \times 833) = \text{Bonus}$$

BEVs receive the highest possible bonus of SEK 60,000 (USD$6,500), though the bonus cannot exceed 25% of the car's new price. Vehicles that can use alternative fuels receive a minimum of SEK 10,000 (USD$1,100). The malus system increases the vehicle tax for the first three years since registration. All vehicles pay a flat rate of SEK 360, and the remainder of the tax is calculated based on the emissions of the vehicle (see Table 14) and the following equation:

$$(\text{Emission g}CO_2/\text{km} - \text{Column I}) \times \text{Column II Multiplier} + 360 = \text{Malus}$$

Table 15 shows example vehicle incentive amounts in Sweden. Negative values indicate a fee or malus.

Table 14: Malus System SEK (effective end of June 2018)

(I) Emissions Greater Than (Subtract) g CO_2 /km	**(II) Multiply By**	**(III)Add**
0	0	360
95	82	360
140	107	360

Table 15: Example Vehicles in Sweden and Incentive Amounts SEK (USD$).

Vehicle	**Propulsion**	**Emissions g/km CO_2**	**Incentive SEK (USD$) (Before June 2018)**	**Incentive SEK (USD$) (After June 2018)**
Volkswagen eGolf (Private)	BEV	0	40,000 (4,300)	60,000 (6,500)
Volkswagen eGolf (company)	BEV	0	40,000 (4,300)	60,000 (6,500)
Volkswagen Golf	Gas	109	0	-1,508 (-150) [3]
Volvo V90 PHEV	PHEV	45	20,000 (2,200)	22,515 (2,500)

[3] Negative value indicates a fee

United Kingdom

BEV Incentives: USD$4,500
PHEV Incentives: USD$0

Incentive Type: Point of sale grant

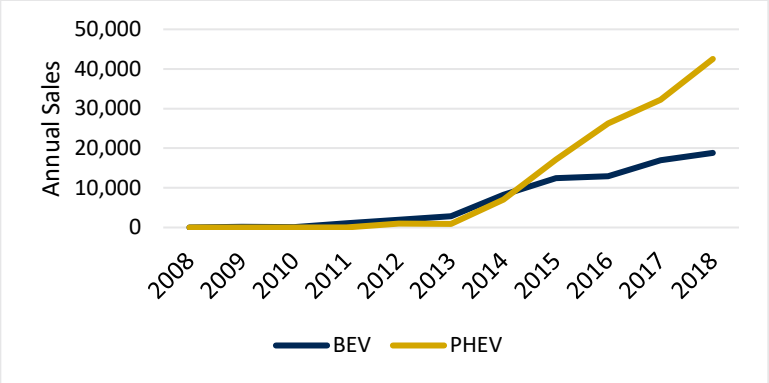

Figure 13: BEV and PHEV Sales in the United Kingdom

The PEV purchase incentive in the United Kingdom is known as the plug-in car grant. The program was updated on November 9th 2018 (Table 16 shows the grant pre and post November 9th). Zero emission vehicles with greater than 70 miles of range receive up to 35% of their purchase price, with a maximum of GBP£3,500 (USD$4,500) (Gov.uk, 2018). After November 9th, PHEVs no longer receive any incentive (Gov.uk, 2018). Battery electric motorcycles receive up to 20% of their purchase price with a maximum of GBP£1,500 (USD$2000) (Gov.uk, 2018). Table 16 shows the incentives for passenger vehicles and other vehicles (including motorcycles).

In the UK income tax exemptions are available for company cars drivers. The income tax exemption provides a substantial yearly incentive for drivers of BEVs. The incentive is not tied to the point of purchase. Company car drivers pay benefit in kind (BIK) tax which is calculated based on the value of the vehicles, the company car driver's annual income tax, and the emissions of the vehicle. The emissions of the vehicle are used to determine the BIK tax band for the vehicles. 2019 and 2020 BIK rates go from 16% (for vehicles <50g CO^2/km) to 37% (for petrol vehicles >185g CO^2/km). The following calculation is used:

$$\text{Vehicle MSRP} \times \text{BIK rate} \times \text{Income tax band} = \text{BIK tax liability}$$

The incentive means an owner of a diesel VW golf would currently pay around £2,614 per year in BIK tax whereas a BEV VW e-Golf would pay around £887. In 2020 a 2% BIK rate will be introduced for BEVs, thus providing a substantial incentive to own a BEV company car. PHEVs will pay between 8% and 14% depending on their electric range.

Table 16: United Kingdom Plug-in Car Grant (Gov.uk, 2018)

Category	CO2 Emissions	Electric Range	Price Cap	Incentive (GBP£) (Before November 9th, 2018)	Incentive (GBP£) (After November 9th, 2018)
1	<50 g/km	>70 miles	n/a	£4,500	£3,500
2	<50 g/km	>10 miles	£60,000	£2,500	0
3	50-75 g/km	>20 miles	£60,000	£2,500	0
Motorcycles	0 g/km	>31 miles	£1,500	£1,500	£1,500
Mopeds	0 g/km	>19 miles	£1,500	£1,500	£1,500
Vans	<75 g/km	>10 miles	£8,000	£8,000	£8,000
Taxis	<50 g/km	>70 miles	£7,500	£7,500	£7,500

United States

BEV Incentives: USD$7,500[4]
PHEV Incentives: USD$7,500

Incentive Type: National (Federal) Tax Credit and Some State Rebates

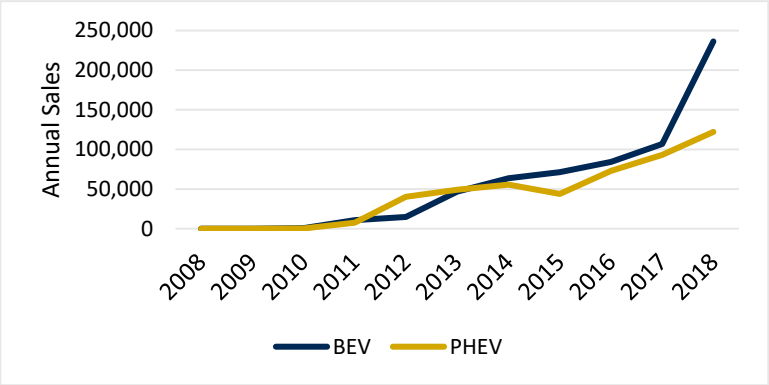

Figure 14: BEV and PHEV Sales in the United States

The United States has a national (federal) incentive which is a tax credit which consumers receive one filing their income taxes. The incentive ranges from $2,500 to $7,500, based on the size of the PEVs battery capacity (U.S. Department of Energy, 2018, IRS, 2018). The vehicle must draw propulsion energy from a battery with at least 5 kWh of capacity, and gains an additional $417 for each kWh after 5 kWh to a maximum of USD$7,500 (IRS, 2018). Table 17 shows the value of the federal tax credit for several PEVs. The maximum federal tax credit is applicable to vehicles sold by each automaker until they sell 200,000 PEVs. For the following two quarters the maximum tax credit value falls by 50% (USD$3,750). For the third and fourth quarter after 200,000 PEVs are sold, the incentive is reduced to 25% of it's original value (USD$1,875). After the fourth quarter, no incentive is available for that vehicle (IRS, 2018). Note Tesla and General Motors were the first automakers to exceed 200,000 PEVs sold in the US.

State incentives range from zero to as much as Colorado's incentive of $5,000 for a BEV (U.S. Office of Energy Efficiency & Renewable Energy, 2018). In California, the state with the highest PEV sales, rebates are available for PEVs (U.S. Office of Energy Efficiency & Renewable Energy, 2018). BEVs receive $2,500 and PHEVs receive $1,500 (U.S. Office of Energy Efficiency & Renewable Energy, 2018).

Table 17: Sample tax credit amounts assuming the automaker has not reached their 200,000 sales volume.

Vehicle	Propulsion	Battery Capacity (kWh)	Tax Credits Earned (USD$)
Nissan Leaf	BEV	40	7500
Ford Fusion Energi	PHEV	7.6	4007
Toyota Prius Prime	PHEV	8.8	4502
Tesla Model S	BEV	75 - 100	7500

[4] Maximum possible federal incentive. This does not include applicable state incentives.

Acknowledgements

The authors would like to thank the following for reviewing sections on their respective countries and helping ensure the accuracy of this document: Jonn Axsen, Marta Ferreira Dias, Erik Figenbaum, Patrick Jochem, Jae Hyun Lee, Zoe Long, Niklas Jokobsson, Sonja Munnix, Patrick Plötz, Jose Pontens, Frances Sprei, Bert Witkamp, and Yan Xing. The authors would also like to thank Seth Karten for proofreading and editing this document.

References

Associação de Utilizadores de Veículos Elétrico. (2019). Retrieved from https://www.uve.pt/page/

クリーンエネルギー自動車AtoZ. (2018). *国・自治体の補助金、税優遇*. Retrieved from http://www.cev-pc.or.jp/lp_clean/supports/#hojokin02

Belastingdienst. (2018). *Ik ben ondernemer en rij in een auto van de zaak - hoe zit het met de bijtelling voor privégebruik?* Retrieved from https://www.belastingdienst.nl/wps/wcm/connect/nl/auto-en-vervoer/content/ik-ben-ondernemer-en-rij-in-een-auto-van-de-zaak-hoe-zit-het-met-privegebruik

Bloomberg. (2018). *China Raises Subsidies to Reward Longer Range Electric Cars*. Retrieved from Bloomberg: https://www.bloomberg.com/news/articles/2018-02-13/china-raises-subsidies-to-reward-longer-traveling-electric-cars

Bundesamt für Wirtschaft und Ausfuhrkontrolle. (2018). *Elektromobilität (Umweltbonus)*. Retrieved from http://www.bafa.de/DE/Energie/Energieeffizienz/Elektromobilitaet/elektromobilitaet_node.html

Bundesamt Für wirtschaft und Ausfuhrkontrolle. (2019). *Elektromobilität (Umweltbonus)*. Retrieved from https://www.bafa.de/SharedDocs/Downloads/DE/Energie/emob_zwischenbilanz.pdf?__blob=publicationFile&v=41

Bundesministerium für Wirtschaft und Energie. (2018). *Elektromobilität in Deutschland*. Retrieved from https://www.bmwi.de/Redaktion/DE/Dossier/elektromobilitaet.html

D1EV. (2018). *The four ministries and commissions issued a subsidy policy for 2018, and the new energy commercial vehicles were fully degraded (comparative interpretation of the attached drawings)*. Retrieved 12 6, 2018, from https://www.d1ev.com/news/zhengce/62776

economie-finances, centre de documentation. (2018). *Comment fonctionne le bonus-malus sur l'achat d'un véhicule ?* Retrieved from economie.gouv.fr: https://www.economie.gouv.fr/cedef/bonus-malus-automobile

Economie-finances, Centre de Documentation. (2018). *Comment fonctionne le bonus-malus sur l'achat d'un véhicule ?* Retrieved from economie.gouv.fr: https://www.economie.gouv.fr/cedef/bonus-malus-automobile

Electric Mobility Canada. (2018). *EV INCENTIVES*. Retrieved from https://emc-mec.ca/ev-101/ev-incentives/

European Alternative Fuels Observatory. (2018). Retrieved from https://www.eafo.eu/

European Automobile Manufacturers Association. (2018). *Overview on Tax Incentives for Electric Vehicles in the EU*. Retrieved from https://www.acea.be/uploads/publications/EV_incentives_overview_2018.pdf

Gouvernement du Canada. (2019). *Zero-emission Vehicles*. Retrieved from Gouvernement du Canada: http://www.tc.gc.ca/en/services/road/innovative-technologies/zero-emission-vehicles.html

Gov.uk. (2018). *Low-emission vehicles eligible for a plug-in grant*. Retrieved from Gov.uk: https://www.gov.uk/plug-in-car-van-grants

International Energy Agency. (2017). Global EV Outlook 2017. Retrieved from Global EV Outlook 2017: https://www.iea.org/publications/freepublications/publication/GlobalEVOutlook2017.pdf

IRS. (2018). *Plug-In Electric Drive Vehicle Credit (IRC 30D)*. Retrieved from https://www.irs.gov/businesses/plug-in-electric-vehicle-credit-irc-30-and-irc-30d

Korea Environmental Corporation. (2019). *친환경차 종합정보지원시스템*. Retrieved from http://www.hybridbonus.or.kr/

Norsk elbilforening. (2019). *Norweigan EV Policy*. Retrieved from https://elbil.no/english/norwegian-ev-policy/

Perkowski, J. (2018). *What China's Shifting Subsidies Could Mean For Its Electric Vehicle Industry*. Retrieved from Forbes: https://www.forbes.com/sites/jackperkowski/2018/07/13/china-shifts-subsidies-for-electric-vehicles/#7df5648a5703

PwC Canada. (2019). *2019 Federal Budget Analysis*. Retrieved from https://www.pwc.com/ca/en/services/tax/budgets/2019/federal-budget-analysis.html

Rijksdienst voor Ondernemend Nederland. (2018). *Financiële ondersteuning elektrisch rijden*. Retrieved from https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/energie-en-milieu-innovaties/2-elektrisch-rijden/aan-de-slag/financi%C3%ABle-ondersteuning-elektrisch-rijden

Transport Styrelsen. (2018). *Frågor och svar om supermiljöbilspremie*. Retrieved from https://www.transportstyrelsen.se/sv/vagtrafik/Miljo/Klimat/Miljobilar1/supermiljobilspremie1/#13993

U.S. Department of Energy. (2018). *Federal Tax Credits for All-Electric and Plug-in Hybrid Vehicles*. Retrieved from www.Fueleconomy.gov: https://www.fueleconomy.gov/feg/taxevb.shtml

U.S. Office of Energy Efficiency & Renewable Energy. (2018). *Electric Vehicles: Tax Credits and Other Incentives*. Retrieved from energy.gov: https://www.energy.gov/eere/electricvehicles/electric-vehicles-tax-credits-and-other-incentives

Yang, Z. (2018). *Practical lessons in vehicle efficiency policy: The 10-year evolution of France's CO2-based bonus-malus (feebate) system*. Retrieved from The International Council on Clean Transportation: https://www.theicct.org/blog/staff/practical-lessons-vehicle-efficiency-policy-10-year-evolution-frances-co2-based-bonus