

China announced 2020–2022 subsidies for new energy vehicles

On April 23, 2020, China's Ministry of Finance (MOF), Ministry of Industry and Information Technology (MIIT), Ministry of Science and Technology (MOST), and National Development and Reform Commission (NDRC) jointly released A Notice on Optimizing Fiscal Subsidies for Promoting New Energy Vehicles (hereafter "the Notice").¹ In the Chinese context, new energy vehicles (NEVs) refer to battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs; extended-range electric vehicles included), and fuel cell electric vehicles (FCVs).

The Notice is the 2020 annual adjustment to China's decade-long national subsidy program for NEVs, the historical evolution of which is illustrated in Figure 1. The last major adjustment was detailed in ICCT's policy update published in June 2019.² The Notice basically follows the overall design of the policy described in the previous policy update, but there are five major changes:

- » Subsidies are extended for two years, from the end of 2020 to the end of 2022, as a way to stimulate the automobile market, which has been severely impacted by the COVID-19 pandemic and the global downturn of the auto industry since 2018
- » The technical criteria for qualification are tightened
- » The subsidy size is phased-down
- » For the first time, vehicle price and sales limits are introduced
- » Subsidies for FCVs are replaced by dedicated promotion packages

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1 Ministry of Finance (2020). 关于完善新能源汽车推广应用财政补贴政策的通知 ["Notice on optimizing fiscal subsidies for promoting new energy vehicles"]. http://jjs.mof.gov.cn/zhengcefagui/202004/t20200423_3502975.htm?from=timeline&isappinstalled=0

2 Hui He, Hongyang Cui, *China announced 2019 subsidies for new energy vehicles*, (ICCT: Washington, DC, 2019), <https://theicct.org/publications/china-announced-2019-subsidies-new-energy-vehicles>

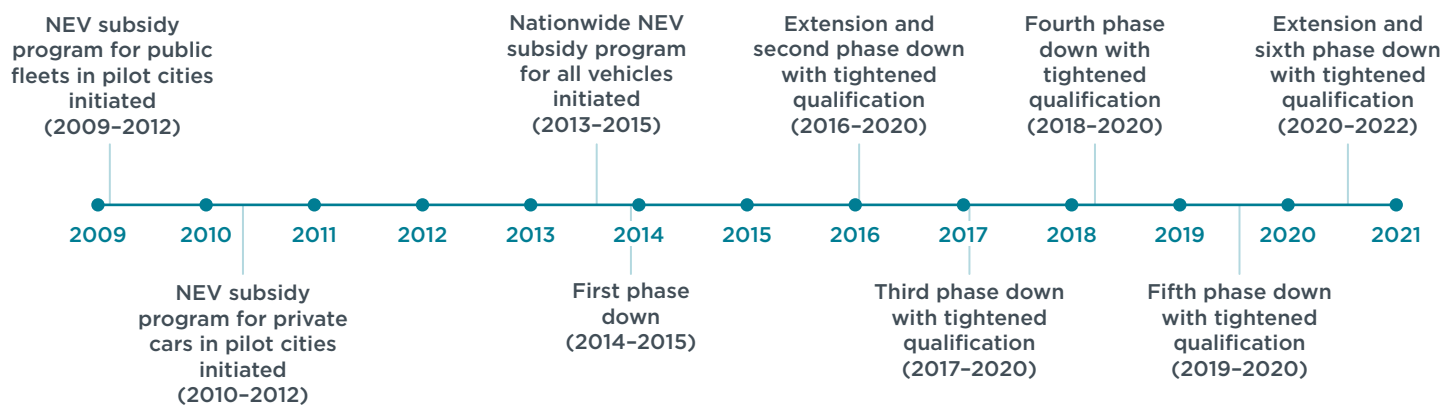


Figure 1. Timeline of China’s national subsidy program for new energy vehicles

The Notice will fully take effect on July 23, 2020, after a three-month transition period from the time of its release. The next to last section of this policy update describes a special provision regarding how the 2019 and 2020 policies connect during the transition period.

REVISED SUBSIDIES AND COMPARISON WITH CURRENT LEVELS

The overall design of the policy outlined in the Notice is similar to all past policies. Vehicles must meet minimum technical and performance requirements to qualify, and the size of the subsidy is indexed to a variety of vehicle specifications and utility parameters. This section first describes the qualification criteria for the 2020 subsidy and then provides a comparison between the new and current policies using real vehicle model examples.

As shown in Table 1, the 2020 policy broadly follows the 2019 qualification criteria, with only a few requirements modestly tightened. Specifically, the requirement regarding minimum electric range is tightened from 250 kilometers (km) to 300 km for battery electric passenger cars. Thresholds for electric energy consumption are slightly elevated for BEVs across all types and also for longer-range plug-in hybrid passenger cars, i.e., electric range no shorter than 80 km. For passenger cars, the thresholds for electric energy consumption, in kilowatt hours (kWh)/100km, is a function of vehicle curb mass, in kilograms (kg), using the formulas shown in Table 2. Additionally, similar to the electric vehicle incentive designs of the United Kingdom, Germany, and a few other leading markets, the 2020 policy introduces a new maximum pre-subsidy vehicle price with tax included for passenger cars, which is CNY300,000 (approximately U.S.\$43,000). Vehicles with battery-swapping functions are exempted from the limit on vehicle price, and that is to promote the technology and battery swapping as a business model. Influenced by this new requirement, Tesla announced on April 30, 2020 that it would cut the pre-subsidy price of its standard-range Model 3 made in China from CNY355,800 to CNY291,800 to maintain eligibility for the national subsidies.³ According to the Notice, the qualification criteria will remain stable on the whole in 2021 and 2022; however, no detailed information is provided.

³ “Tesla cuts price for China-made Model 3 cars by 10% to qualify for subsidies,” *Reuters*, May 1, 2020, <https://www.reuters.com/article/us-tesla-china-price/tesla-cuts-price-for-china-made-model-3-cars-by-10-to-qualify-for-subsidies-idUSKBN22D458>

Table 1. Qualification requirements for the 2020 subsidy

Vehicle type	Technology	Year	Design parameters						Pre-subsidy vehicle price with tax included (CNY)
			ER ^[a] (km)	FS ^[j] (%)	SP (km/h)	BD (Wh/kg)	EC	CS (C-rate)	
Passenger car	BEV	2019	≥250		≥100	≥125	0 ^{[d][f]}		300,000 ^[i]
		2020	≥300						
	PHEV	2019	≥50	>40 ^[b]			0 ^{[d][e][f]}		300,000 ^[i]
		2020							
Bus/Coach	BEV	2019	≥200 ^[c]			≥135 ^[c]	≤0.19 ^[c]	>3C ^[g]	
		2020					≤0.18 ^[c]		
	PHEV	2019	≥50	>60					
		2020							
Truck/Vocational	BEV	2019	≥80			≥125	≤0.30 or ≤0.08 ^[h]		
		2020					≤0.29 or ≤0.08 ^[h]		
	PHEV	2019	≥50	>40					
		2020							
FCV		2019	≥300					0 ^[k]	
		2020	N/A ^[m]						

Notes: BEV = battery electric vehicle; PHEV = plug-in hybrid electric vehicle; FCV = fuel cell electric vehicle; ER = electric range, measured in kilometers (km); FS = fuel saving compared with standards for conventional fuel vehicles, measured in %; SP = maximum vehicle speed, measured in kilometers per hour (km/h); BD = battery energy density, measured in watt hour per kilogram (Wh/kg); EC = electric energy consumption, measured in kilowatt-hour per hundred kilometers (kWh/100-km) for passenger cars, or watt-hour per kilometer per kilogram (Wh//km·kg) for buses, coaches, trucks, and specialized delivery vehicles, or kilowatt-hour per ton per kilometer (Wh/ton·km) for other types of vocational vehicles; CS = charging speed of batteries, measured in C-rate; RP = rated power of fuel cell system, measured in kilowatt (kW).

^[a] Electric range is tested under the New European Driving Cycle (NEDC) for light-duty trucks up to 3,500 kg of maximum mass and passenger cars. For other types of vehicles, electric range is tested at a constant speed of 40 km/hour.

^[b] This requirement is only applicable to short-range (electric range shorter than 80 km) PHEVs.

^[c] This requirement is not applicable to fast-charging BEVs.

^[d] The electric energy consumption requirements are a function of vehicle curb mass.

^[e] This requirement is only applicable to long-range (electric range no shorter than 80 km) PHEVs. Electric energy consumption is tested under charge-depleting mode.

^[f] This requirement is slightly tightened in the 2020 policy compared with the 2019 policy.

^[g] This requirement is only applicable to fast-charging BEVs.

^[h] The first number is for trucks and specialized delivery vehicles, measured in Wh/km·kg; the second number is for other types of vocational vehicles, measured in Wh/ton·km.

^[i] The requirement is not applicable to NEVs with battery swapping functions.

^[j] For plug-in hybrid passenger cars, fuel consumption here refers to the fuel consumption tested under charge-sustaining mode. For other PHEVs, fuel consumption here refers to the weighted fuel consumption when both charge-sustaining mode and charge-depleting mode are considered.

^[k] The rated power of the fuel cell system is required to be no less than 10 kW or 30% of the rated power of the electric motor, whichever is larger.

^[l] The rated power of the fuel cell system is required to be no less than 30 kW or 30% of the rated power of the electric motor, whichever is larger.

^[m] FCV will be excluded from this subsidy program and instead dedicated promotion packages will be phased in when the 2020 policy takes effect.

Table 2. Thresholds for electric energy consumption for passenger cars to qualify for the 2019 and 2020 subsidies

Curb weight (m, kg)	Vehicle electric energy consumption (EC, kWh/100km)	
	2019	2020
$m \leq 1,000$	$EC \leq 0.01134 \times m + 0.405$	$EC \leq 0.0112 \times m + 0.4$
$1,000 < m \leq 1,600$	$EC \leq 0.00972 \times m + 2.025$	$EC \leq 0.0078 \times m + 3.8$
$m > 1,600$	$EC \leq 0.00405 \times m + 11.097$	$EC \leq 0.0044 \times m + 9.24$

PASSENGER CARS

The subsidy calculation method for battery electric passenger cars outlined in the Notice is exactly the same as in the 2019 policy, and is specified in the following equation:

$$Subsidy = \min\{Subsidy_{ER}, Subsidy_{BC}\} \times F_{BD} \times F_{EC} \times F_{OS}$$

Where,

$Subsidy_{ER}$ = base subsidy determined by electric range

$Subsidy_{BC}$ = base subsidy determined by battery capacity

F_{BD} = battery energy density multiplier

F_{EC} = electric energy consumption multiplier

F_{OS} = ownership type multiplier

The base subsidy determined by electric range in 2020 is 10% lower than the 2019 level, as shown in Table 3. The base subsidy determined by battery capacity, which is a linear function of battery capacity, is also reduced by 10%, from CNY550/kWh to CNY500/kWh.

Table 3. Base subsidy determined by electric range for passenger cars in 2019 and 2020

Year	BEV electric range (ER, km)		PHEV electric range (ER, km)
	$300 \leq ER < 400$	$ER \geq 400$	$ER \geq 50$
2019	CNY18,000	CNY25,000	CNY10,000
2020	CNY16,200	CNY22,500	CNY8,500

There is no change to the battery density multiplier or the ownership type multiplier. The former is still indexed in three battery density bins: 0.8 for 125–140 Wh/kg; 0.9 for 140–160 Wh/kg; and 1 for 160 Wh/kg and above. The latter remains 1 for private cars and 0.7 for non-private cars.

The electric energy consumption multiplier is determined by the percentage reduction of a BEV's electric energy consumption compared with pre-defined thresholds, which are a function of vehicle curb mass and determined using the formulas shown in Table 2. The multiplier values remain unchanged in the Notice: 0.8 for 0–10% savings; 1 for 10%–25% savings; and 1.1 for at least 25% energy savings. However, the pre-defined thresholds in the Notice are tightened beyond those of the 2019 version, and this is illustrated in Figure 2.

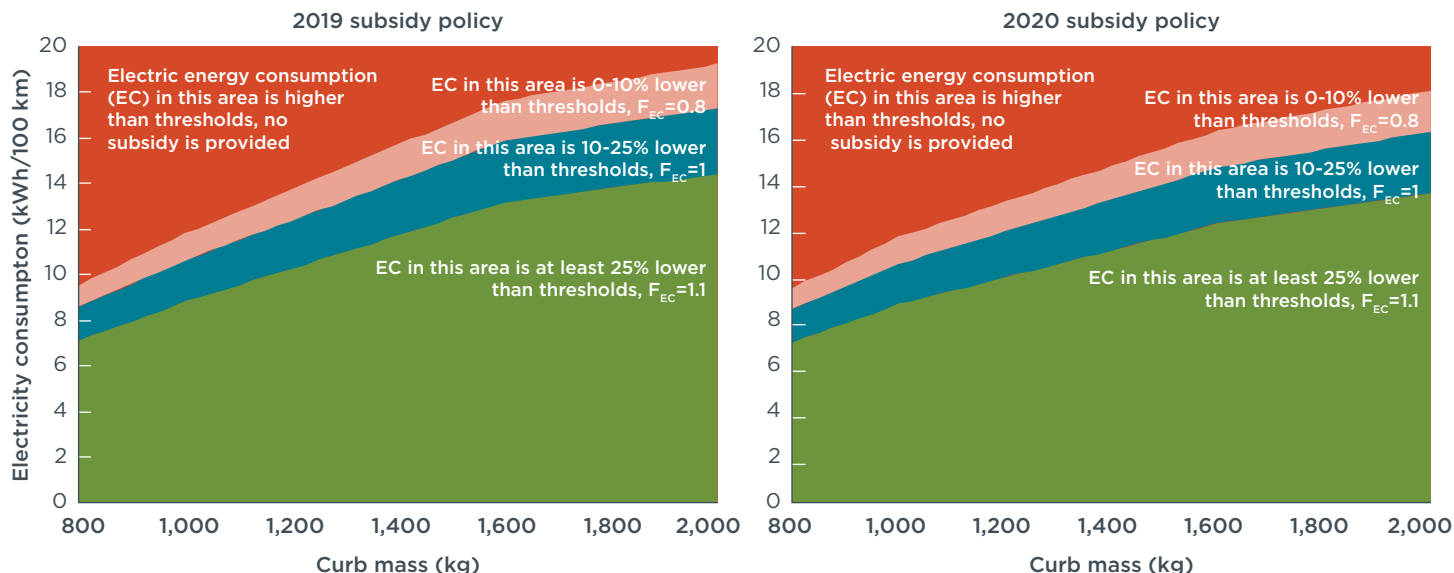


Figure 2. Illustration of electric energy consumption multiplier for battery electric passenger cars in 2019 (left) and 2020 (right)

For plug-in hybrid electric passenger cars, once qualified, a vehicle's 2020 base subsidy is CNY8,500, 15% lower than the 2019 level of CNY10,000. Shorter-range PHEVs with more than 45% fuel savings compared with standards for conventional fuel vehicles, when tested under charge-sustaining mode, are eligible for the full base subsidy. Those that save between 40% and 45% of fuel consumption only receive half of the base subsidy (see Figure 3). These thresholds are the same as the 2019 levels. Longer-range PHEVs, ≥ 80 km, are subject to the same energy consumption requirements to qualify for the full base subsidy as battery electric cars (see Table 2), when tested under electric mode.

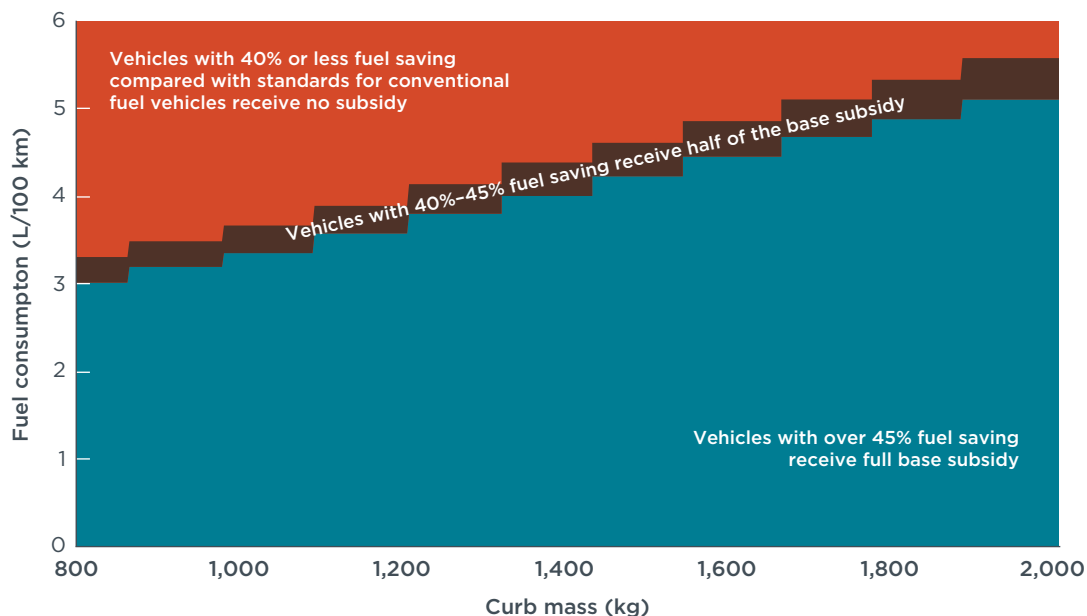


Figure 3. Illustration of fuel-saving-based subsidies for shorter-range plug-in hybrid electric passenger cars in both 2019 and 2020

BUSES AND COACHES

The subsidy calculation method for battery electric and plug-in hybrid electric buses and coaches outlined in the Notice is exactly the same as in the 2019 policy, and is specified in the following equation:

$$\text{Subsidy} = \min\{\text{Subsidy}_{BC-i}, \text{Subsidy}_{VL-i}\} \times F_i$$

Where,

Subsidy_{BC-i} = base subsidy determined by battery capacity for vehicle type i (regular BEV, fast-charging BEV, or PHEV)

Subsidy_{VL-i} = maximum subsidy allowed by vehicle length for vehicle type i

F_i = multiplier for vehicle type i (electric energy consumption for regular BEV, charging speed for fast-charging BEV, and fuel saving for PHEV)

The values of base subsidies, vehicle-length-determined subsidy caps, and multipliers for different vehicle types in 2020, as shown in Table 4, are the same as in the 2019 policy, with the one exception that the 2020 policy tightens the threshold for electric energy consumption for regular BEVs from 0.19 Wh/km·kg to 0.18 Wh//km·kg.

Table 4. Subsidies for battery electric and plug-in hybrid electric buses and coaches in 2020

Technology	Base subsidy (CNY/kWh)	Maximum subsidy by vehicle length (L) (1,000 CNY/vehicle)			Multiplier		
		6m<L≤8m	8m<L≤10m	L>10m	Parameter	Bin	Value
Regular BEV	500	25	55	90	Electric energy consumption (EC, Wh/km·kg)	0.17<EC≤0.18	0.8
						0.15<EC≤0.17	0.9
						EC≤0.15	1
Fast-charging BEV	900	20	40	65	Charging speed (CS, C-rate)	3C<CS≤5C	0.8
						5C<CS≤15C	0.9
						CS>15C	1
PHEV	600	10	20	38	Fuel saving (FS, %)	60%<FS≤65%	0.8
						65%<FS≤70%	0.9
						FS>70%	1

TRUCKS AND VOCATIONAL VEHICLES

The subsidy calculation method for battery electric and plug-in hybrid electric trucks and vocational vehicles remains unchanged in the Notice. To be specific, the subsidies are determined as a function of their battery capacity and are further subject to various ceilings dependent on technology type and vehicle weight class. As detailed in Table 5, the values of both the subsidy bases and ceilings in 2020 are 10% lower than the 2019 levels.

Table 5. Subsidies for battery electric and plug-in hybrid electric trucks and vocational vehicles in 2019 and 2020

Technology	Base subsidy (CNY/kWh)	Max. subsidy by gross vehicle weight (M) (CNY1,000/vehicle)		
		M≤3,500kg	3,500kg<M≤12,000kg	M>12,000kg
2019				
BEV	350	20	55	55
PHEV	500	—	—	35
2020				
BEV	315	18	35	50
PHEV	450	—	20	31.5

In general, the 2020 subsidies for passenger cars, trucks, and vocational vehicles are 10% lower than the 2019 levels and those for buses and coaches remain unchanged from 2019. Moreover, the Notice announced that taxis, ride-hailing vehicles, airport vehicles, government vehicles, sanitation trucks, urban delivery trucks, and postal trucks could also enjoy the same levels of subsidies in 2020 as 2019. This is a way to stimulate electrification in the public service sector. For vehicles with an unchanged subsidy size in 2020, the Notice sets the 2021 and 2022 subsidies at 90% and 72% of the 2020 levels, respectively. The other vehicles are eligible for 80% and 56% of the 2020 subsidies in 2021 and 2022, respectively.

We use four typical BEVs and PHEVs, the subsidy-relevant specifications of which are shown in Table 6, as real-world examples to calculate the 2019, 2020, 2021, and 2022 subsidies for the purpose of comparison. The calculated results are illustrated in Figure 4.

Table 6. Specifications for typical BEVs and PHEVs in China

Vehicle type	Passenger car	Passenger car	City bus	Dump truck
Model name or model number	BAIC EU5 R600	BYD Tang DM	GTQ6131BEVST6	NJL3311KHKBEV
Technology	BEV	PHEV	Fast-charging BEV	BEV
Electric range (km)	501	81		351
Battery capacity (kWh)	60.2		150.14	422.87
Battery energy density (Wh/kg)	144.44			160.26
Electric energy consumption (kWh/100km)	13.42	19.5		
Electric energy consumption (Wh/km·kg)				0.170
Vehicle length (m)			12.8	
Curb mass (kg)	1,680	2,390		
Gross vehicle weight (kg)				31,000
Maximum speed (km/hour)	155			
Charging speed			5.03C	
Ownership type	Private			
Vehicle price (CNY)	158,900	258,400		

4 The vehicle specifications for the battery electric city bus model and battery electric dump truck model are derived from Ministry of Industry and Information Technology (2020). 新能源汽车车型目录 (2020年第4批) [“New energy vehicle product catalogue 2020-4”]. <http://www.miit.gov.cn/n1146295/n1652858/n1652930/n4509607/c7844607/part/7844635.pdf>

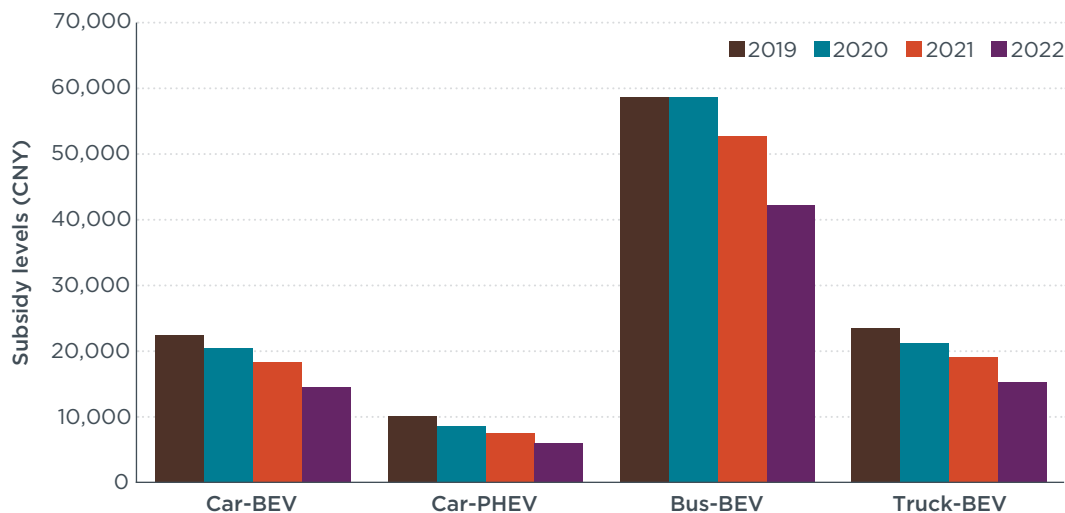


Figure 4. Comparison of subsidies for typical BEVs and PHEVs

FUEL CELL ELECTRIC VEHICLES

The Chinese central government stopped providing purchase subsidies for FCVs on April 23, 2020. In place of the subsidies, a new four-year pilot program will be initiated and suitable cities will be selected to carry out research and development and application demonstrations of FCVs. This pilot program aims to encourage innovation and to stimulate the development of hydrogen and the FCV industry in China. The Chinese central government will reward successful pilot cities and details of those benefits are to be provided in a separate policy document.

Based on the Notice, FCVs sold between June 26, 2019 and April 22, 2020 could still enjoy the subsidies. The base subsidy for fuel cell electric passenger cars is a linear function of the rated power of the fuel cell system (CNY4,800/kW) and capped at CNY160,000 per car. For light-duty fuel cell electric commercial vehicles—i.e., buses, coaches, trucks, and vocational vehicles—the base subsidy is CNY240,000 per vehicle. For medium to heavy-duty commercial vehicles, the base subsidy is CNY400,000 per vehicle. The final subsidy is then calculated via a rated power multiplier, as shown in Table 7.

Table 7. Rated power multiplier for fuel cell electric vehicles in 2019

Rated power of fuel cell system as a percentage of rated power of electric motor (RP, %)	Rated power multiplier
30% < RP ≤ 40%	0.8
40% < RP ≤ 50%	0.9
RP > 50%	1

OTHER PROVISIONS

The Notice also includes details regarding how to calculate the subsidy during the three-month transition period, the annual cap on the number of vehicles that can receive subsidies, and anti-fraud requirements. Other provisions from the previous policy—e.g., mileage requirements, vehicle safety requirements, and enforcement measures—continue to apply.

Transitional subsidy schedule: During the transition period for the 2020 policy (as related above, this is April 23, 2020 to July 22, 2020), BEVs and PHEVs that meet the 2019 qualification requirements, but not the 2020 requirements, can receive 50% of the 2019 subsidy. BEVs and PHEVs that meet the 2020 qualification requirements can receive the full 2020 subsidy.⁵ FCVs that meet the 2019 qualification requirements can receive the full 2019 subsidy.

Sales unit cap: The subsidies will be limited to 2 million NEVs per year from 2020 to 2022. When the annual sales of NEVs are close to the limit, the four relevant ministries (i.e., MOF, MIIT, MOST, and NDRC) will release a policy notice to declare the date after which the subsidy will be adjusted.

Anti-fraud requirements: Local industry and information technology departments, together with other relevant government bodies, are responsible for verifying the subsidy application materials submitted by manufacturers and publicizing the verification results on their websites and the official website of MIIT's Communication Clearing Center (www.miitcfc.cn). The public can also report fraud to MIIT through a phone hotline (010-68206302), email (xnybz@miitcfc.cn), or by sending relevant materials to MIIT's Communication Clearing Center (address: No. 13, West Chang'an Avenue, Beijing). MIIT will investigate all reported activities.

NEXT STEPS

The Notice does not detail the qualification criteria for subsidies in 2021 and 2022. Details of the new four-year pilot-city program to stimulate the research, development, and application demonstration of FCVs, as well as how the Chinese central government will reward successful pilot cities, are not provided, either. Separate policy documents are expected to be released to illustrate the corresponding policy designs. As it stands now, the national subsidy program will be terminated by the end of 2022. New combinations of national and local policy tools are also expected to be developed to continue spurring the growth of NEV market in China in the post-subsidy era.

⁵ The limit on vehicle price, CNY300,000, is not valid during the transition period.