

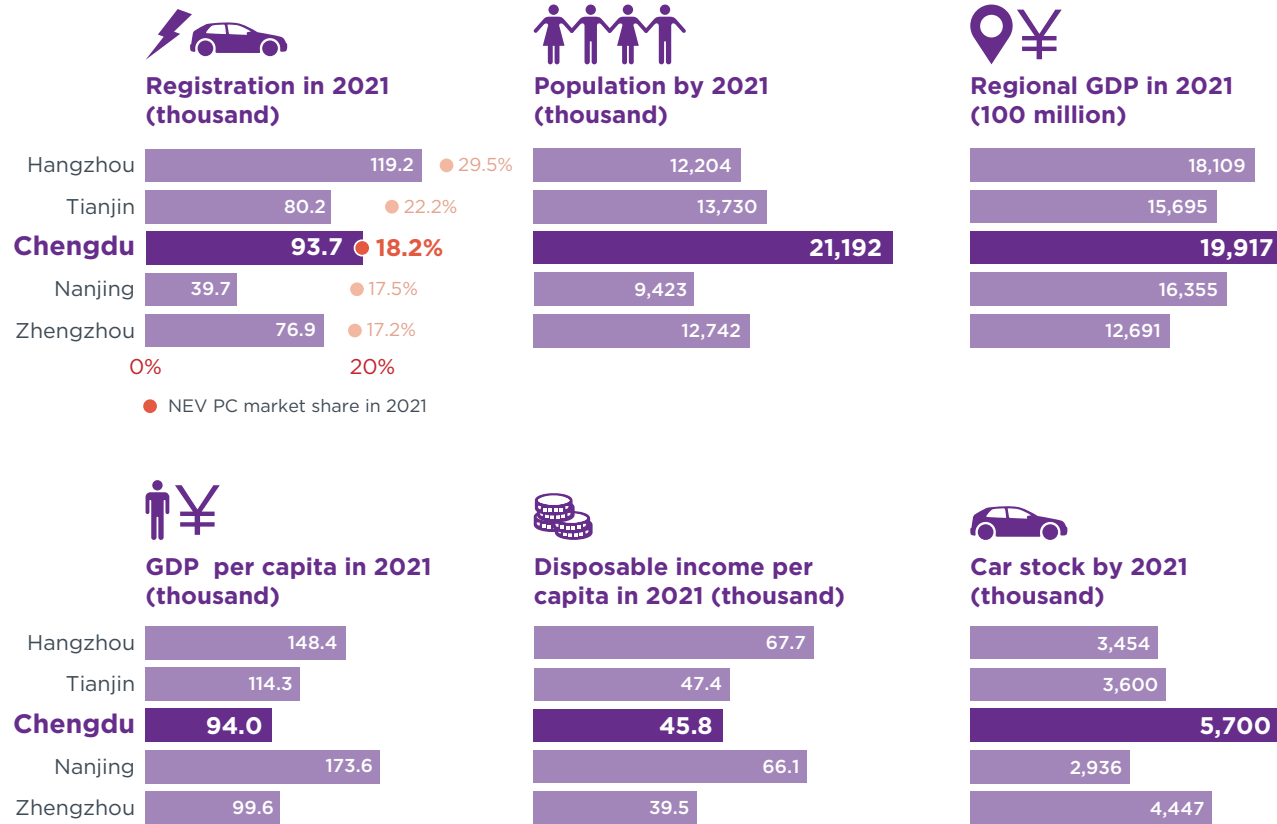
# EV CITY PROFILE

## PASSENGER CAR MARKET, CHENGDU

YIDAN CHU

### KEY FACTS ABOUT THE CITY

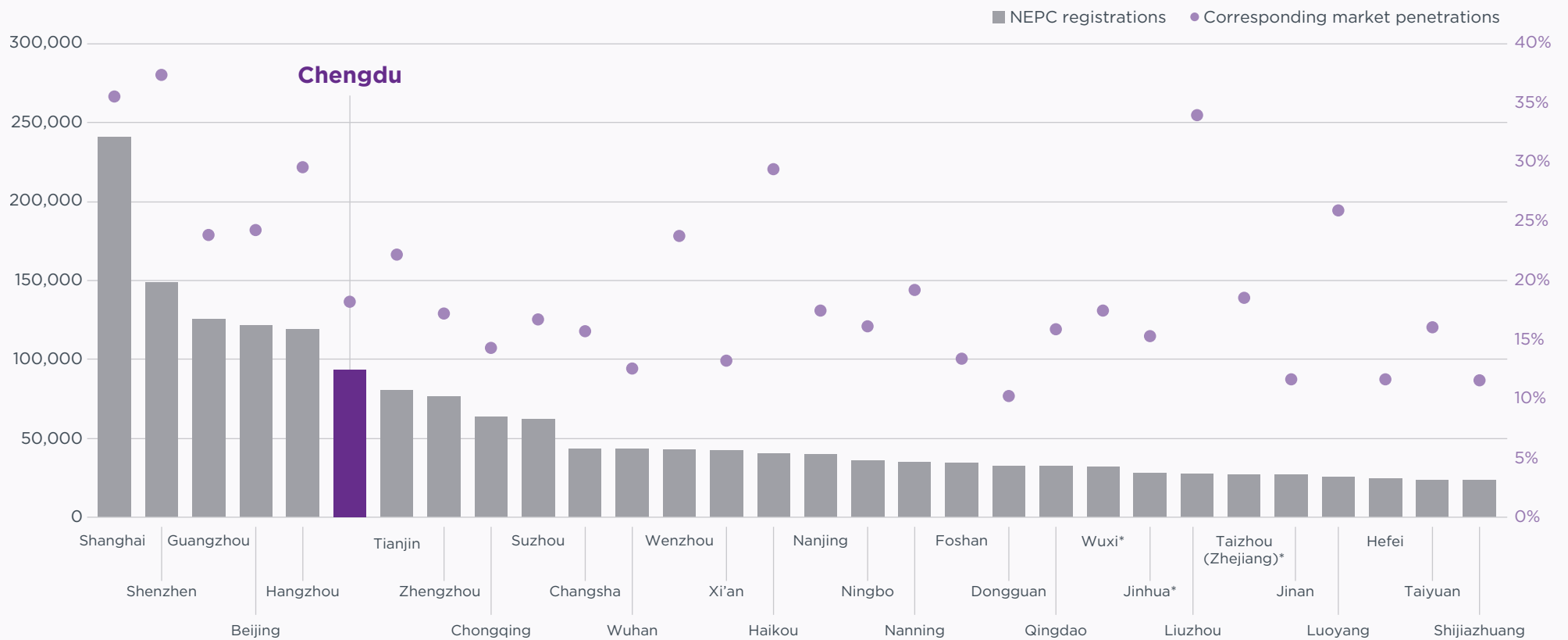
Chengdu is the capital of Sichuan Province in southwestern China. One of 15 New Tier 1 cities, Chengdu has more than 20 million people. The stock of nearly 6 million cars is the second largest in the country, behind only Beijing. Disposable income per capita in 2021 was CNY 46,000, 30% higher than the national average.



# MARKET PERFORMANCE

- » In 2021, more than 93,000 new energy passenger cars (NEPC) were sold and registered in Chengdu. It ranked sixth for NEPC registrations among all Chinese cities.
- » NEPCs were 18% of all car registrations in 2021; Chengdu ranked third among New Tier 1 cities in terms of NEPC market penetration that year.

**FIGURE 1**  
Market performance in top 30 cities for new NEPC registrations, 2021.

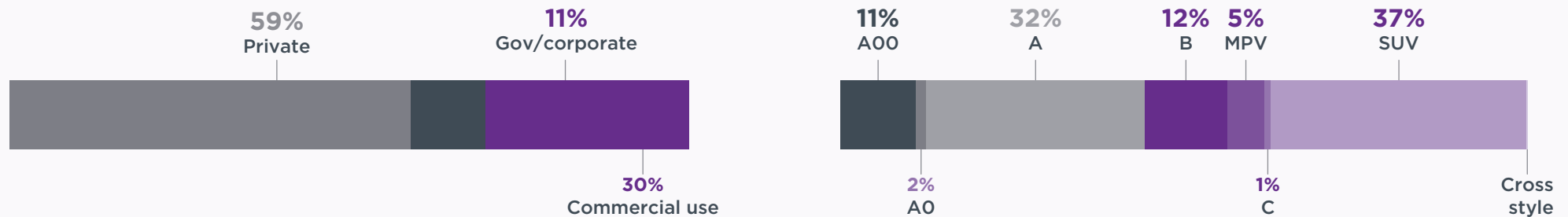


\*Denotes cities that were new members of the top 30 list in 2021.

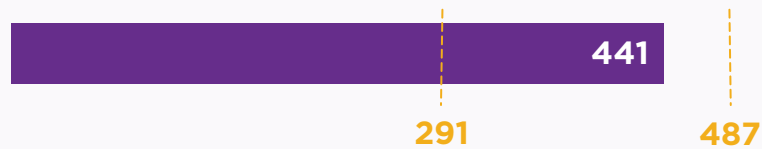
# MARKET SNAPSHOT

- » In 2021, 59% of NEPCs registered in Chengdu were for private use.
- » Sport utility vehicles (SUVs) and compact cars were the most popular NEPC segments, with a combined 69% of NEPC registrations.
- » Long-range battery electric vehicles (BEVs) dominated the market and were led by Tesla's Model Y. The average battery capacity in Chengdu was 56 kWh, 19% higher than the national average.

**FIGURE 2**  
New energy passenger car market snapshot for Chengdu, 2021.



2021 BEV sales-weighted E-range (km)



2021 BEV sales-weighted battery capacity (kWh)



2021 Most popular BEV model and its market share in local BEV market



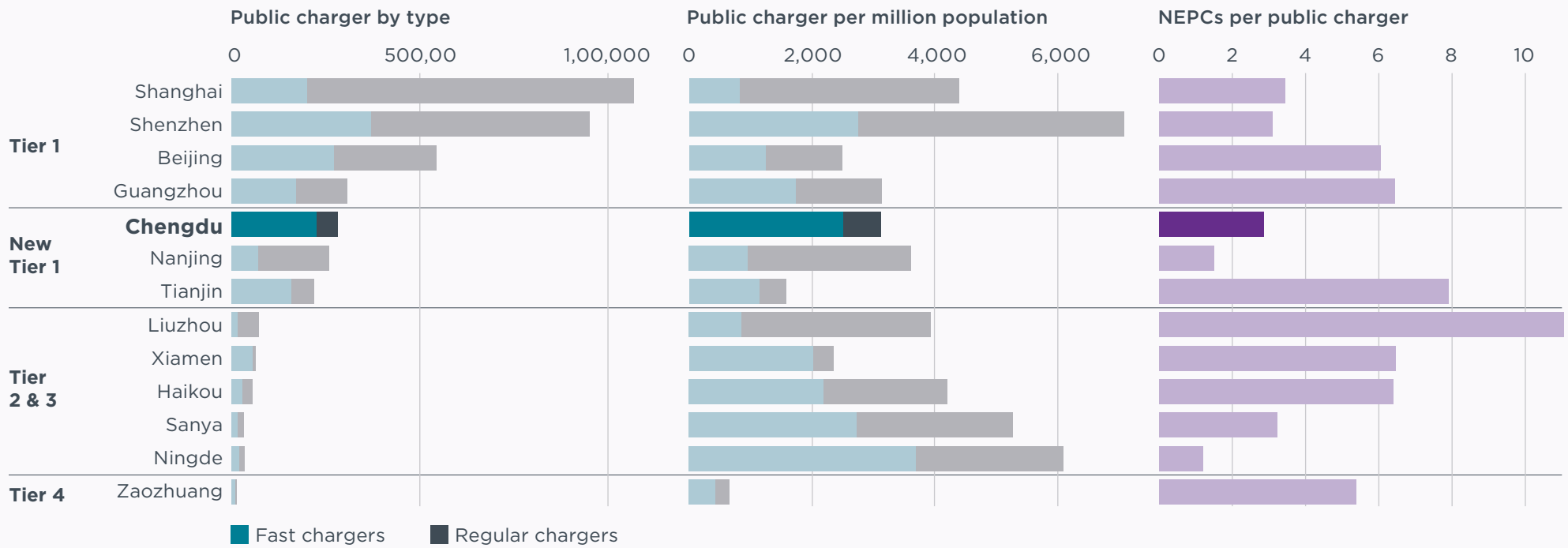
Note: Yellow indicate the corresponding lowest and highest values of all the top 30 cities for new NEPC registrations.

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# CHARGING INFRASTRUCTURE

By 2020, Chengdu had a stock of 28,000 public chargers, 80% of them fast chargers. This was 2.87 NEPCs per public charger and 3,130 public chargers per 1 million people.

**FIGURE 3**  
Charging infrastructure status in selected leading cities, 2020.



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## POLICIES AND DRIVING FACTORS

Chengdu deployed a variety of policies to incentivize the NEPC market in 2020.

Other driving factors include:

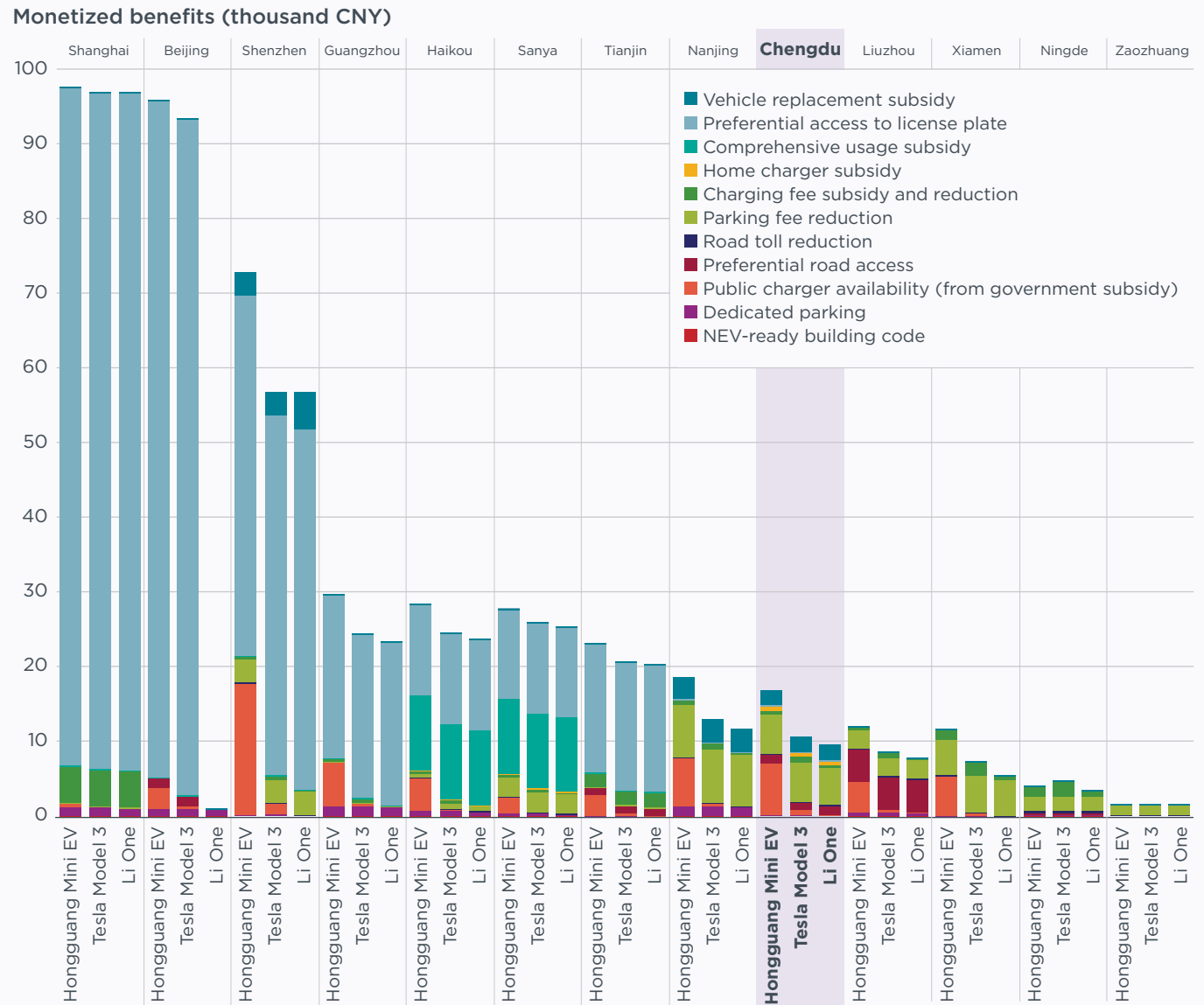
- » Chengdu is a pilot city of the national “Ten Cities, Thousand Vehicles” program and a destination city of the national “NEVs to the Countryside” campaign in 2020.
- » Chengdu has production facilities for automakers Geely and FAW-Volkswagen, and a battery production facility for CATL that had an annual battery production capacity of 36.2 GWh in 2020.

<b>City planning</b>	<b>NEV development target</b>	By 2020, conservative target: 120,000 NEV stock; ambitious target: 200,000 NEV stock
	<b>Charging infrastructure planning</b>	By 2020, conservative target: 110,000 charger stock; ambitious target: 200,000 charger stock
<b>Consumer incentives for vehicle purchase</b>	<b>Vehicle replacement subsidy</b>	A one-time subsidy of CNY 2,000 offered for replacing a vehicle of China 3 or earlier emission standard with either an NEV or a China 6 vehicle
<b>Consumer incentives during vehicle use</b>	<b>Home charger subsidy</b>	In 2020, Chengdu offered a one-time subsidy for private chargers and semi-public chargers: CNY 100/ kW for alternating current (AC) chargers and 200 CNY/kW for DC chargers, up to CNY 200,000 per charger
	<b>Charging fee subsidy or reduction</b>	Chengdu set a limit of CNY 0.6/kWh on the maximum charging service fee that a public charger can charge
	<b>Public charger subsidy</b>	Chengdu provided a progressive subsidy for the operation of charging facilities based on annual electricity charged: CNY 0.1/ kW for the first 10 million kWh; CNY 0.15/ kWh for the next 10 million kWh; CNY 0.2/ kWh for the electricity charged above 20 million kWh
	<b>Parking fee reduction</b>	First 2 hours of parking free on the street and in government-funded parking facilities; half-price fee from 7:00-19:00 in the government-funded park and ride
	<b>Road access privilege</b>	NEPCs were exempted from weekday rush-hour traffic restrictions based on the last digit of the license plate within Ring Expressway from 7:30-9:30 and 17:00-19:00
	<b>Charging in existing neighborhoods</b>	Chengdu provided subsidies to expand electricity capacity and to facilitate the installation of private chargers by property management companies
	<b>NEV-ready building code</b>	Required buildings in all new residential areas to be NEV-ready; 18%-30% of spots must be NEV-ready in new public parking lots

# MONETIZED CONSUMER BENEFITS

- » The overall benefits of Chengdu's policy suite for NEPC owners were approximately CNY 10,000 in 2020.
- » Parking-fee reduction was the most valued incentive for consumers in Chengdu. On average, an NEPC owner saves CNY 5,100 from this policy.
- » The value of increased range confidence from government-subsidized public charges is estimated at over CNY 7,000 for shorter-range minicars such as Model 1—the Wuling Hongguang Mini EV.

**FIGURE 4**  
Monetized private consumer benefits from city incentives for the three selected models in 2020.



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## DEFINITIONS, ASSUMPTIONS, AND METHODOLOGIES

- » New energy vehicle (NEV) refers to battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and fuel-cell electric vehicles (FCEVs).
- » Passenger cars: ≤ 9 seats and maximum designed gross vehicle weight ≤ 3,500 kg.
- » The top 5 cities in the New Tier 1 class were ranked based on the new NEPC market penetration in 2021.
- » The top 30 cities in Figure 1 were ranked based on new NEPC registrations in 2021.
- » Data in Figure 2 was based on new NEPC registrations in 2021.
- » Data in Figure 3 was based on the NEV Annual Statistics Yearbook (charger), China Statistics Yearbook (population), and 2012–2020 cumulative registrations of NEPCs.
- » Quantitative analysis of monetized consumer benefits
  - Assumptions: average vehicle retainment: 4 years; vehicle discount rate: 4.35%.
  - Main specifications of selected models:

Specification	Model 1: Wuling Hongguang Mini EV	Model 2: Tesla Model 3	Model 3: Li-One
Technology	BEV	BEV	PHEV
Battery capacity (kWh)	9.3	52.9	38.5
Electric range (km)	120	445	148
Energy consumption (kWh/100 km)	8.8	12.4	16.9

- Monetized consumer benefits were calculated from direct fiscal incentives and indirect incentives. Direct fiscal incentives usually have clear values, either in the form of subsidies or fee reductions, and were added up directly; for indirect incentives, benefits were estimated via multiple methods (see the following sections).

- Indirect incentive estimation methods:

**Preferential access to license plate:** In 2020, some cities continued to impose an upper limit on new passenger car registrations by restricting vehicle license plates of internal combustion engine (ICE) cars but offering NEPCs preferential access. There were three mechanisms to get a license plate in those cities—auction, lottery, and the two forms combined. For cities with an auction mechanism, we regard the annual average auction price of the license plate for an ICE counterpart as the consumer benefit. For cities that adopted a lottery mechanism only, we refer to the annual average auction price of another city of the same city class and adjust the values with the lottery winning probability.

**Preferential road access:** Many cities exempted NEVs from traffic restrictions during weekday rush hours or heavy pollution days. Those consumers who enjoyed preferential road access would not need to pay to take a taxi or a bus to travel on traffic restriction days. These saved travel expenditures are counted as monetized consumer benefits of this policy.

**Public charger availability:** A sufficient public charging network will benefit consumers by saving on alternative car rentals for trips that exceed electric mileage per charge. This monetized consumer benefit was calculated from the saving of rental car expenditures by referring to the annual travel distribution pattern from the Oak Ridge National Laboratory research.

**Dedicated parking:** The consumer benefit of this policy was estimated via the consumer’s willingness to pay (WTP) to avoid looking for a parking lot. WTP was based on cooperative research from the University of Pennsylvania and Cornell University.

**NEV-ready building code:** The relevant estimation was based on hours saved multiplied by the average national hourly wage. Only residential parking benefits were quantified here. The estimate assumes that it takes six hours to install a charger in a residential spot where there is no NEV charger infrastructure. If the spot is NEV-ready, the installation work will take two hours less. We adjust this consumer benefit for cities that have detailed requirements for the percentage of buildings that must have chargers installed in residential areas.

For more details regarding methodology and more information, please refer to our published report.<sup>1</sup>

<sup>1</sup> Lingzhi Jin et al., “Assessment of Policies for Private Passenger Cars in Leading City Markets,” (ICCT: Washington, D.C., 2023), <https://theicct.org/publication/pv-chinese-cities-nev-policies-feb23/>.



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