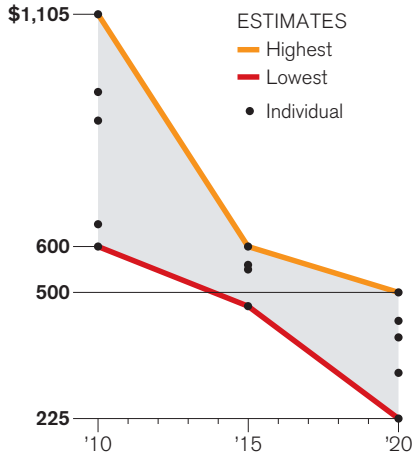


# THE PRICE OF BATTERIES

Although costs are uncertain, they will be key to the success of electric cars.

Expert guesses at present and future battery costs vary widely.

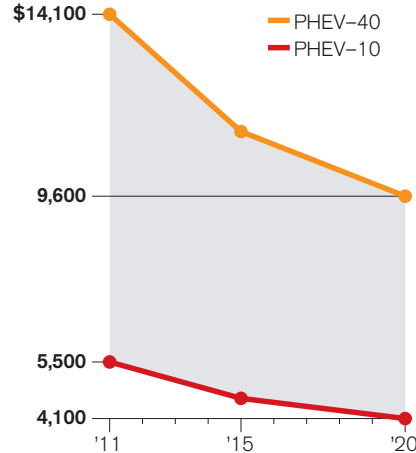
**Estimates of electric-vehicle battery costs**  
\$ per kilowatt-hour



Sources: Advanced Automotive Batteries, Boston Consulting Group, Deutsche Bank, Electrification Coalition, National Research Council, and Pike Research

Plug-in hybrids with modest electric range will remain far more affordable than those that go farther on a charge.

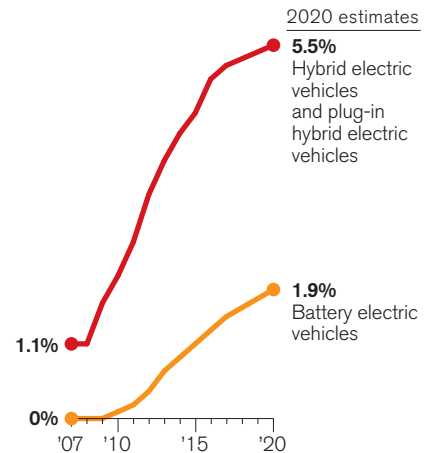
**Additional cost of a plug-in hybrid electric vehicle (PHEV) over a conventional vehicle\***



Note: \*Low estimates for cars with 40- or 10-mile electric range. Source: National Research Council

The share of battery-powered vehicles will grow but will remain small through 2020, largely because of high costs.

**Market share of hybrid and electric vehicles 2007–2020, estimated**



Source: J. D. Power & Associates

The size of the battery packs greatly influences the price of new electric cars and plug-in hybrids. The range automakers expect to get per kilowatt-hour varies because of differences in vehicle weight, expectations about driving patterns, and capacity kept in reserve to hedge against battery deterioration.

High costs could promote small battery packs, which would help limit carbon dioxide emissions. Today, hybrids emit less than plug-ins in most places.

**Important new plug-in hybrids and all-electric vehicles**

MAKE/MODEL	TYPE*	ESTIMATED PRODUCTION DATE	TOTAL ELECTRIC RANGE (miles)	BATTERY CAPACITY (kWh)	PROJECTED PRICE
Chevrolet Volt	PHEV	In production	35	16	\$41,000
Mitsubishi iMiEV	EV	In production	80	16	\$40,000
Nissan Leaf	EV	In production	73	24	\$32,780
Aptera 2e	EV	2011	20	21	\$25,000–\$45,000
BYD e6	EV	2011	250	48 or 72	\$650/mo. lease
Ford Focus	EV	2011	100	23	N/A
Smart ED	EV	2012	85	16.5	N/A
Tesla Model S	EV	2012	160/230/300	42/65/85	\$56,500 and up
Toyota Prius	PHEV	2012	13	5.2	N/A
Volvo C30	EV	2012	90	24	N/A

Notes (vehicles table): \*EV= electric vehicle (battery), PHEV= plug-in hybrid electric vehicle  
Sources: Sentech and manufacturers

Notes (emissions chart): Coal figures are based on highest-emitting coal plants in 2010; natural-gas figures are based on new combined cycle plants in 2010. Source: Electric Power Research Institute, 2007

**Greenhouse-gas emissions**

