

# Electric Car

INSIDER

## EV BUYERS GUIDE COMPLETE REVIEWS

ELECTRIC CAR Insider

ELECTRIC CAR Guest Drive

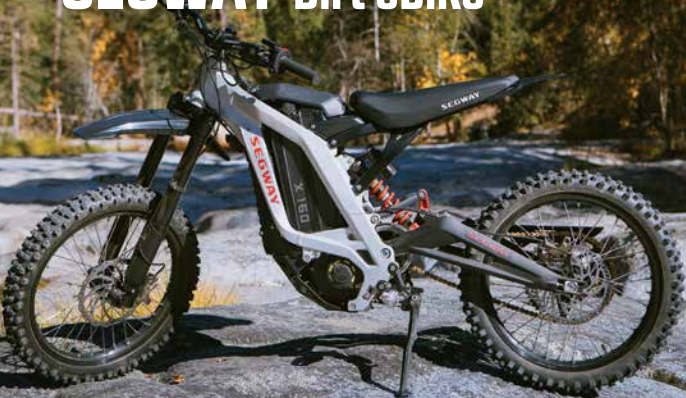
REBATES GUIDE Mobile App



### FORD Mustang Mach E

300 MILE ALL-ELECTRIC

### SEGWAY Dirt eBike



### LIGHTNING STRIKE CARBON



US: \$5.95 CA: \$7.95



# Electric Automobile Matrix

## Specification Quick Reference



BATTERY

Make	Model	Yr Intro	Battery kWh	Range (mi)	MPGe	MSRP Base	Fed Tax Cr	Lease	Page
Audi	e-tron	2019	95.3	204	74	<b>\$74,800</b>	\$7,500	--	26
BMW	i3	2014	42	153	118	<b>\$44,450</b>	\$7,500	\$359	42
Bollinger	B1	2021	120	200	70.2	<b>\$125,000</b>	--	--	22
Bollinger	B2	2021	120	200	70.2	<b>\$125,000</b>	--	--	16
Chevrolet	Bolt	2016	66	259	118	<b>\$36,620</b>	\$1,875	\$325	41
Ford	Mustang Mach E	2020	76-98.8	210-300	--	<b>\$43,895</b>	\$7,500	--	35
Honda	Clarity	2017	25.5	89	114	<b>Lease Only</b>	\$7,500	\$199	51
Hyundai	Ioniq Electric	2016	38.3	170	136	<b>\$29,500</b>	\$7,500	\$275	56
Hyundai	Kona Electric	2019	64	258	120	<b>\$36,990</b>	\$7,500	--	40
Jaguar	I-Pace	2018	90	253	76	<b>\$69,850</b>	\$7,500	\$849	25
Kia	Niro Electric	2019	39	239	112	<b>\$38,850</b>	\$7,500	--	50
Kia	Soul EV	2014	27	93	105	<b>\$33,950</b>	\$7,500	\$199	48
Mercedes-Benz	EQC	2020	80	279	80	<b>\$67,900</b>	\$7,500	--	30
Mini Cooper	SE	2020	32.6	110	93	<b>\$29,900</b>	\$7,500	--	45
Nissan	Leaf, Leaf Plus	2010	40	149-226	112	<b>\$31,600</b>	\$7,500	\$199	49
Porsche	Taycan	2019	93	192-201	68-69	<b>\$150,900</b>	\$7,500	--	9
Rivian	R1S	2020	105-180	240-400	--	<b>\$72,500</b>	--	--	21
Rivian	R1T	2020	105-180	240-400	--	<b>\$69,000</b>	--	--	17
Tesla	Cybertruck	2021	100-200	250-500	--	<b>\$39,900</b>	\$0	--	23
Tesla	Model 3	2017	50-75	220-322	141	<b>\$35,400</b>	\$0	--	38
Tesla	Model S	2012	100	348-373	104	<b>\$79,990</b>	\$0	\$1,060	8
Tesla	Model X	2015	100	305-328	93	<b>\$79,690</b>	\$0	\$1,159	18
Tesla	Model Y	2020	74	280-300	--	<b>\$43,700</b>	\$0	--	34
Volvo/Geely	Polestar 2	2020	78	275	--	<b>\$6,3000</b>	\$7,500	--	24
Volvo	XC40 Recharge	2020	78	200	--	<b>\$55,000</b>	--	--	27

PLUG IN HYBRID

Make	Model	Yr Intro	Battery kWh	Range (mi)	MPGe/MPG	MSRP Base	Fed Tax Cr	Lease	Page
BMW	330e	2016	12	28/350	71/30	<b>\$47,000</b>	\$4,001	\$379	43
BMW	530e	2020	12	21/309	69/27	<b>\$53,900</b>	\$5,836	--	39
BMW	745e xDrive	2020	12	16/290	56/22	<b>\$95,550</b>	\$5,836	--	13
BMW	i3 REX	2014	42	97/108	109/35	<b>\$48,300</b>	\$7,500	\$329	42
BMW	i8	2015	11.6	18/292	69	<b>\$147,500</b>	\$3,793	\$1,219	7
BMW	X5 xDrive40e	2015	9.2	13/527	56/24	<b>\$63,200</b>	\$4,668	\$569	29
Chrysler	Pacifica Hybrid	2016	16	33/520	82/32	<b>\$39,995</b>	\$7,500	\$468	54
Ford	Escape PHEV	2020	14.4	30/550	--/30	<b>\$34,235</b>	--	--	46
Ford	Fusion Energi	2013	35	26/610	104/91	<b>\$37,000</b>	\$4,609	--	55
Honda	Clarity PHEV	2017	17	47/340	110/42	<b>\$34,290</b>	\$7,500	--	51
Hyundai	Ioniq PHEV	2017	8.9	29/630	119/52	<b>\$26,500</b>	\$4,543	\$269	56
Hyundai	Sonata PHEV	2015	9.8	27/563	99/42	<b>\$34,600</b>	\$4,919	\$356	53
Karma	Revero	2018	28	80/360	70/23	<b>\$135,000</b>	\$7,500	\$1,299	11
Kia	Niro PHEV	2018	8.9	26/550	105/46	<b>\$28,840</b>	\$4,543	\$259	50
Kia	Optima PHEV	2016	9.8	28/602	101/41	<b>\$36,090</b>	\$4,919	\$319	52
Lincoln	Aviator PHEV	2020	13.6	21/379	56/23	<b>\$68,800</b>	\$6,534	--	14
Mercedes-Benz	S560e	2015	13.5	31/--	113/--	<b>\$109,750</b>	\$4,460	--	12
Mini	SE Countryman	2017	10	18/278	65/27	<b>\$36,900</b>	\$5,002	\$339	44
Mitsubishi	Outlander	2018	12	22/288	74/25	<b>\$36,295</b>	\$5,836	\$423	32
Porsche	Cayenne PHEV	2015	14.1	14/476	47/22	<b>\$81,100</b>	\$6,712	--	28
Porsche	Panamera 4	2014	14.1	14/476	48/20	<b>\$103,800</b>	\$6,712	--	10
Range Rover	PHEV	2019	13	19/--	--/20	<b>\$95,950</b>	\$7,087	--	20
Subaru	Crosstrek PHEV	2019	8.8	17/--	90/35	<b>\$34,995</b>	\$4,502	--	33
Toyota	Prius Prime	2017	8.8	25/615	133/54	<b>\$27,995</b>	\$4,502	\$148	57
Toyota	RAV4 Prime PHEV	2020	17.8	39/--	90/--	--	--	--	47
Volvo	S60 T8	2020	11.6	22/510	69/39	<b>\$64,800</b>	\$5,419	--	36
Volvo	S90 T8	2017	11.6	21/389	71/29	<b>\$63,200</b>	\$5,419	--	15
Volvo	XC60 T8	2017	10.4	19/352	59/26	<b>\$53,895</b>	\$5,419	\$585	31
Volvo	XC90 T8	2015	11.6	18/361	62/27	<b>\$67,000</b>	\$5,419	\$665	19

Vehicles not available for sale within the next 12 months of printing deadline will appear in subsequent editions of ECI magazine. Subscriptions available at [electric-car-insider.com](http://electric-car-insider.com). Dashes in the matrix represent specs not available at time of printing.

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Battery  
Electric



## 2020 TESLA Model Y

Since its inception, Tesla has produced some of the most highly rated vehicles of all time, securing 75 percent of the EV market share and selling over 891,000 cars in the process. Far from resting on its laurels, Tesla is now preparing to launch the EV world's next big thing: the Model Y Crossover.

Built with the best-selling Model 3's electric platform, the Model Y sports a wide, dipping midline, high rear roof, and relatively low ride height. The Model Y is 10 percent bigger than the Model 3 but smaller than the Model X, offering consumers a compact SUV option. It is nonetheless spacious with a max cargo space of 66 cubic feet and an all-glass roof for increased headroom. The Model Y is seven-seat-capable with an optional \$3,000 third row.

Tesla has promised that full self-driving will be available at some time with an over the air update. The option for the future feature delivery is available for an extra \$7,000. The Model Y is rated best-in-class for safety with a low center of gravity, rigid body, and large crumple zones. All four trims are equipped with 360-degree camera-enabled visibility, a dozen ultrasonic sensors to detect nearby vehicles, and collision warning and auto e-braking to prevent accidents. With a user-friendly 15-inch touchscreen and access to over 14,000 Superchargers around the world, the Model Y affords drivers luxury and convenience. The Model Y's competitive \$39,000 base price promises to build upon the Model 3's success and strengthen Tesla's mass appeal. Deliveries begin in April 2020.



### ACQUISITION

MSRP\$ ..... **\$43,700 - \$56,700**  
 60 Month@6% est **\$772 - \$1,001**  
 Lease w \$10k down ..... --  
 Availability ..... **2020**  
 U.S. Sales Units ..... --

### RANGE

EV Range ..... **300, 280 mi**  
 MPGe ..... --

### PERFORMANCE

0-60 mph ..... **5.5, 4.8, 3.5 sec**  
 Top Speed ..... **130, 135, 150 mph**

### BATTERY

Volts ..... --  
 Watts ..... **74 kWh**  
 Cooling ..... **Liquid**

### DRIVETRAIN (ELECTRIC)

HP/Lb-ft ..... **283-456/307-471**  
 Drive Type ..... **RWD, AWD**

### CHARGING

Power Rating ..... **11 kW**  
 Charge Time L1 ..... **23.75 hrs**  
 Charge Time L2 ..... **8 hrs**  
 Charge Time DC ..... **30 min**  
 Connector ..... **UMC**

### CAPACITY

Passengers ..... **7**  
 Cargo ..... **max 66 cu ft**

### DIMENSIONS

Curb Weight ..... **4,078.5 lbs**  
 Length ..... **188 in**  
 Width ..... **73 in**  
 Height ..... **63 in**

Plug-In Hybrid



**ACQUISITION**

MSRP .....	<b>\$53,900</b>
60 Month @ 6% est .....	<b>\$952</b>
Lease .....	--
Availability .....	<b>2017-present</b>
U.S. Sales Units .....	--

**RANGE**

EV/ICE Range .....	<b>21/309 mi</b>
MPGe/MPG .....	<b>69/27</b>

**PERFORMANCE**

0-60 mph .....	<b>5.9 sec</b>
Top Speed .....	<b>146 mph</b>

**BATTERY**

Volts .....	--
Watts .....	<b>12 kWh</b>
Cooling .....	--

**DRIVETRAIN (HYBRID)**

HP/Lb-ft .....	<b>248/310</b>
Drive Type .....	<b>RWD, AWD</b>

**CHARGING**

Power Rating .....	<b>3.7 kW</b>
Charge Time L1 .....	<b>7 hrs</b>
Charge Time L2 .....	<b>3 hrs</b>
Charge Time DC .....	<b>N/A</b>
Connector .....	<b>J1772</b>

**CAPACITY**

Passengers .....	<b>5</b>
Cargo .....	<b>15 cu ft</b>

**DIMENSIONS**

Curb Weight .....	<b>4,264 lbs</b>
Length .....	<b>194.6 in</b>
Width .....	<b>73.5 in</b>
Height .....	<b>58.4 in</b>

2020  
**BMW  
530e**

BMW has no shortage of plug-in hybrid vehicles, and the 530e is another gorgeous option. This 5-series boasts the high class expected of the line while adding improved fuel economy. Whereas the past 530e capped out at 16 miles of electric range, the 2020 model, by virtue of a larger 12-kWh battery pack, tacks on five extra miles for a total of 21. While the under-the-trunk battery placement shaves the rear cargo space down from 19 cubic feet in the gas model to 15 in the 530e, sacrificing four cubes for the ability to travel petroleum-free is a sensible trade-off.

Lest drivers be limited to 21 miles of range, the 530e's 113-horsepower electric motor is joined by a 2.0-liter TwinPower Turbo inline four-cylinder engine and a generator that burns gas to juice up the battery when your plug-in charge runs out. The trio provides a total range of 330 or 350 miles depending on whether the 530e is outfitted with rear-wheel drive or all-wheel drive.

The 530e has three main drive modes. To extend your overall mileage, switch on Eco mode. For maximum performance, engage Sport mode. For a happy medium, select Comfort mode. There are also three sub-modes. Max eDrive runs exclusively on electricity unless you floor it. Battery Control maintains battery-charge via electricity generation. Lastly, Auto eDrive trusts the vehicle to engage the powertrain in the most efficient manner. Whether you're concerned with performance or avoiding pollution, the 530e has you covered.





# Ford Mustang Mach E

Ford Applies Muscle to their First Long Range Electric

BY AUSTIN TANNENBAUM

The public's response has been polarized. Neophiles praise the shake-up while purists denounce the betrayal.

In 2017, incoming CEO James Hackett recognized that for Ford to remain relevant in the 2020s, it had to step up its game. To this end, Hackett announced an \$11 billion investment into electric vehicle technology in January 2018 and assembled a group of engineers—dubbed “Team Edison”—to put the money to good use. In less than two years, these efforts materialized in the Mustang Mach-E: a fully electric, high-performance crossover.

The Mach-E is a radical reimagining of the Mustang brand. The pony car's typical coupé exterior is swapped out for an SUV body with an arching fastback roofline. A recessed solid-plate grille replaces the Mustang's typical mesh, referencing the electric vehicle's

reduced need for ventilation. The Mach-E's sharply terminating rear deck further separates it from its flat-backed predecessor. Nevertheless, Ford has linked the two models with a “Mach-E” moniker that references Mustang's first-generation Mach 1 variant. Additional nods to the Mach E's Mustang heritage include a long hood, three-stripe taillights, and plenty of pony emblems.

The public's response has been polarized. Neophiles praise the shake-up while purists denounce the betrayal. Ford likely anticipated this controversy and decided that elevated publicity is worth catching some flak. Besides, Ford has a strong response to the critics. While the Mach-E may lack a V-shaped engine, it is not left wanting for power.

The top-trim GT boasts two electric motors—one on the front axle, the other on the rear—that provide a combined 459 horsepower and 612 pound-feet of torque. The GT gallops to 60 mph in under four seconds. A 98.8-kWh extended range battery pack offers 235 high-performance miles per charge. Exclusive flourishes include 20-inch machined-face wheels and a metallic grille. At \$60,500, the GT is the most expensive of the lineup.

At the opposite end of the spectrum is the \$43,895 Select trim, which can be outfitted with AWD or RWD. Its specs are more modest: 255 horsepower, 306 pound-feet of torque, and a 5.9-second (AWD) or 6.9-second (RWD) 0-60 mph time. The Select

is limited to the 75.7-kWh standard range battery pack, which affords 210 or 230 miles depending on drive type. Standard perks include 18-inch aluminum wheels, LED lights, and wireless phone charging.

The next trim up the ladder is the Premium, which gives the choice of AWD or RWD and standard range or extended range battery packs for four possible configurations. Depending on the selection, drivers will possess between 255-332 horsepower, 306-417 pound-feet of torque, 210-300 miles of range, and a mid-five to mid-six second 0-60 mph time. The Premium starts at \$50,600.

The penultimate trim is the California Route-1 Edition. Its RWD, extended range layout achieves 300 miles per charge while maintaining a respectable 282 horsepower, 306 pound-feet of torque, and a mid six-second 0-60 mph time. For \$52,400, buyers will enjoy amenities such as a panoramic glass roof, a 360-degree camera, and parking assist.

Finally, there is the limited-production First Edition. It will sport special badging, red brake calipers, and a bright-blue paint job, among other unique touches. Its single AWD, extended range configuration carries 332 horsepower and 417 pound-feet of torque with a range of 270 miles and a 0-60 mph time of five

seconds. The First Edition is nearly as pricey as the GT at \$59,900—and is reportedly sold out.

All versions share some key features. Every Mach-E will be built using Ford's new all-electric architecture that places the battery between the front and rear axles for a low center of gravity and uncompromised SUV-level space. Inside of each Mach-E is a roomy five-seat cabin with a 29-cubic-foot trunk and a 4.8-cubic-foot frunk under the engineless hood. The latter is drainable to accommodate coolers.

Each model also receives a titanic 15.4-inch portrait-oriented touchscreen with a single volume knob that provides a one-stop shop for all the driver's needs. Ford's Sync 4 infotainment system is designed for easy one-tap access to commonly used settings such as music, climate, and navigation, and supports Bluetooth, Apple CarPlay, and Android Auto.

Being a forward-looking vehicle, the Mach-E is equipped with futuristic features. Its stereo system pumps out an engine-revving "Mustang growl" during acceleration. Its handleless doors pop open with a button or a smartphone. Its software offers intelligent route-planning that accounts for battery life and directs the driver toward charging stations as needed. Ford's Co-Pilot 360 driver-assist system provides auto e-braking, blind-spot



monitoring, backup cameras, lane-keeping, and auto high beams. The company has suggested that autonomous driving will ultimately be available via over-the-air updates.

The Mach E offers charging through a multi-mode Combined Charging System (CCS) port. Using a standard 120v wall outlet, the Mach-E will juice-up at a rate of four miles per hour. The included Ford mobile charger adds 22 miles per hour on a 240V outlet. Those interested in a charge speed of 32 miles per hour can take advantage of Ford's partnership with Amazon Home to install a 240V domestic charging station. Finally, owners can replenish their battery to 80 percent in 38-45 minutes (depending on battery size) with 150 kW DC fast chargers at locations within the FordPass Charging Network.

Because Ford has not yet sold 200,000 electric vehicles, the Mach-E benefits from the full \$7,500 federal electric vehicle tax credit. When combined with state and local incentives where available, buyers could shave as much as \$10,000 off the Mach-E's ticket price. The vehicle will be assembled at Ford's Cuautitlan, Mexico factory. Deliveries of the Premium and First Edition begin in late 2020. The remaining trims will be available in 2021. Drivers can preorder the Mach-E on Ford's website with a \$500 deposit. 🚗

**Ford's Co-Pilot 360 driver-assist system provides auto e-braking, blind-spot monitoring, backup cameras, lane-keeping, and auto high beams. The company has suggested that autonomous driving will be available via over-the-air updates.**



**Every Mach-E will be built using Ford's new all-electric architecture that places the battery between the front and rear axles for a low center of gravity and uncompromised SUV-level space.**

# EV Educational Resources

Supporting EV Adoption from Awareness to Advocacy

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