

Electric Car

I N S I D E R

EVSE BUYERS GUIDE INDEPENDENT REVIEWS



Comprehensive Specifications

Tesla
Wall Connector



Siemens
VersiCharge
Residential



US: \$9.45 CA: \$11.45

SIEMENS
Ingenuity for life

Energizing the evolution of eMobility

Come charge on with Siemens VersiCharge™

The next generation of Siemens VersiCharge AC chargers is the perfect charger for any application. Enjoy many benefits and features, such as easy to use app, smart building integration, flexible communication connections (Wi-Fi, Cellular, Ethernet), ISO15118 hardware ready, open payment options, secure billing, faster charging, smart load management, OCPP and Modbus communications, and more.

Siemens has a full range of eMobility® solutions for light, medium, and heavy-duty electric vehicles. Our PlugtoGrid™, end-to-end set of solutions for EV infrastructure, allow you to easily connect chargers to the grid with electrical power distribution solutions, as well as flexible options like energy storage, renewable power integration, and managed cloud services. Come charge on with Siemens!

usa.siemens.com/versicharge

From the Editor

It's easy to take your local utility for granted. U.S. electricity is so reliable most people only think about it when they pay the monthly bill or in those rare cases that weather, a hapless squirrel or a lightning strike take their portion of the grid offline for a few hours.

But if you're thinking about buying an electric car, it's worthwhile to look into what kind of EV rate programs your utility offers; the savings can be significant. In this issue, we take a look around the country at dozens of utilities to see what they're doing to support people who make the EV switch and how they are educating customers about the technology.

There are five main ways electric utilities are facilitating the transition to electric transportation.

The first is Time of Use (TOU) rates. Instead of a tiered system in which electricity rates are based on total usage, the TOU rates are set by the clock, with the cheapest "off-peak" electricity available overnight when it's most convenient to charge your car.

The second is rebates on charging equipment installation. Only a few utilities offer rebates, but for those that do, it can mean significant savings on the cost of buying and installing a fast 240v charger.

The third is public charging infrastructure. Utilities in some cities are rolling out DC Fast Charging and 240v Level 2 chargers to help give electric car drivers the confidence that if they ever need to charge away from home, the facilities will be there. This will become less common as mainstream EV range reaches from 107 to 238 miles, but it is occasionally needed and the utilities are in a good position to make the long term investment in electrical equipment throughout a city. Some utilities are also focusing on multi-family dwellings like large apartment complexes where charger installation may not be practical on an individual basis, but can be economically accomplished when done on scale.

The fourth program utilities are fielding is consumer education about electric vehicles, especially residential, commercial and public charging. From "Lunch & Learn"

“Time of Use electric rates can save you a bundle on car charging.”

presentations to interactive "Ride & Drive" events, utilities are engaging the community through auto

Time of Use electric rates can save you a bundle on car charging shows and dedicated EV expos.

The fifth program that many utilities are engaged in is internal use – the incorporation of electric transportation into their passenger car fleets and heavy-duty service vehicles. Many utilities are also providing incentives to their employees to drive electric, ranging from workplace charging to rebates on purchases. Developing EV expertise throughout the organization by promoting personal use of the vehicles is a smart way to lead by example and to be in a position of having a deep bench of people with daily personal experience operating the vehicles.

Take a multi-state armchair excursion through the reviews of utility programs to see how your utility compares to the market leaders. If your local utility doesn't already have a strong EV program, consider dropping an email addressed to the CEO asking about their future plans. The electrification of transportation will likely be one of the most consequential developments in the history of the industry. Let them know you're not taking it for granted.

It's a good time to drive electric.

Christopher Alan
PUBLISHER

Staff

Editorial:

Christopher Alan
Austin Tannenbaum

Design:

Richard Baron
Christina Schulz

Main Cover Photo:

EVSE Photo:

Electric Car Insider is hiring!

Contact:

Electric Car Insider
9740 Campo Rd #171
Spring Valley, CA 91977
619.335.7102
chris@electric-car-insider.com

Electric Car Guest Drive

An educational and social gathering

Learn about EVs
Talk with EV Owners
Drive multiple EVs

TEST DRIVE A
TESLA MODEL 3



For locations and FREE registration:
ElectricCarGuestDrive.com
or call 619.335.7102

Also Available to Drive

Tesla Model S
Tesla Model X
Jaguar i-Pace

Audi e-tron
Chevrolet Bolt
and others



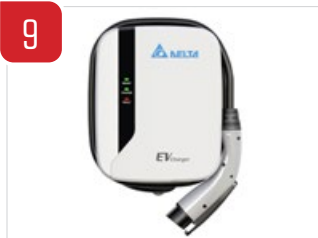
ELECTRIC CHARGERS

Bosch EV 400	7
Clipper Creek LCS-20	8
Delta AC Mini	9
Electrify America Level 2	10
GRIZZL-E Home EV Charging	11
Leviton EVBL2-P12, P18	12
Siemens VersiCharge Res.	13
Wallbox Pulsar Plus	14
WattZilla Black Mamba	15
WattZilla Wall Wattz	16
Clipper Creek HCS-30	17
Aerovironment TurboCord	18
Chargepoint Home 12, Home 25	19
Quick Charge Power Jesla	20
Phillips & Temro EVOCHARGE	21
Tesla Wall Connector	22

7



9



16

**FEATURES****From the Editor**

Time of Use Electric Rates	3
----------------------------	---

Home Charging Stations

Installation Tips	23
-------------------	----

EV Time of Use Utility Rate Plans

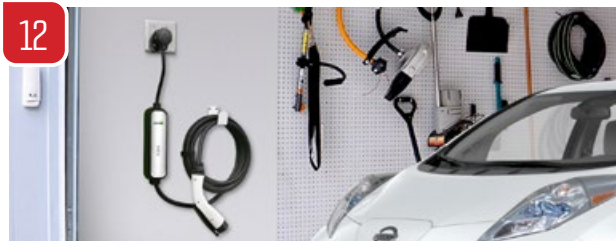
Switching to a TOU Plan can save a lot of money	24
---	----

EV CHARGER BUYERS GUIDE**Residential EV Chargers**

Specifications Matrix	6
-----------------------	---

Profiles and Specifications	7
-----------------------------	---

12



17



EV Charger Matrix

Specification Quick Reference

Mfg	Model	Yr Intro	Volts	Amps	kW	MSRP Base	Hardwire	Page
Aerovironment	TurboCord	2014	120/240	12, 16	1.4, 3.8	\$649	--	18
Bosch	EV 400	2019	208/240	32	7.6	\$559	Optional	7
Chargepoint	Home 12, Home 25	2015	208/240	16-18, 37-32	3.8, 7.7	\$499-\$699	Optional	19
Clipper Creek	HCS-30	2015	240	24	5.7	\$565	Yes	17
Clipper Creek	LCS-20	2012	208/240	16	20	\$379-\$395	Yes	8
Delta	AC Mini	--	208/240	30, 40	7.2, 9.6	--	Optional	9
Electrify America	Level 2	2019	208/240	32	7.6	\$449	Optional	10
GRIZZL-E	Home EV Charging	2019	208/240	40	10	\$399	No	11
Leviton	EVBL2-P12, P18	2015	208/240	20	4.8	\$399, \$449	No	12
Quick Charge Power	Jesla	2015	208/240	40	9.6	\$999	No	20
Phillips & Temro	Evocharge EVSE, iEVSE	--	208/240	32	7.7	\$479, \$679	Optional	21
Siemens	VersiCharge Residential	2014, 2015	208/240	30	7.2	\$376, \$725	Optional	13
Tesla	Wall Connector	2012	208/240	12-48	2.8-11.5	\$500	Yes	22
Wallbox	Pulsar Plus	--	208/240	40	9.6	--	Optional	14
WattZilla	Black Mamba	2018	208/240	40, 48	9.6	\$999, \$1,099	Optional	15
WattZilla	Wall Wattz	2017	240	40, 48, 75	9.6, 11.5, 18	\$749, \$849, \$1,049	Optional	16

Products 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. Dashes in the matrix represent specs not available at time of printing.



ACQUISITION

MSRP	\$559
Availability	2019-present
Warranty	3-year

RATING

Volts	208/240VAC
Amps	32A
Watts	7.6kW

WIRING

Hardwire	Optional
Plug Type	240V, hardwired
Breaker	50A

CABLE

Connector	J1772, Mennekes
Cord Length (ft)	25 ft

USER INTERFACE

Interface Type	Manual
Communications	N/A
Software	N/A

DIMENSIONS

Dimensions	9" H x 7.3" W x 2.8" D
Weight	12 lbs
Enclosure	NEMA 3R
Rating	Indoor/outdoor
Temperature	-31F to +122F

2019-2020 BOSCH EV 400

The EV 400 Series is Bosch's smallest available charger with the dimensions of a coffee table book. Nonetheless, the charger boasts a 7.6kW power output that recharges an EV six times faster than a Level 1 charger.

Bosch emphasizes the EV 400 Series's portability and ease of installation. At just 12 pounds, transport is light and convenient. Furthermore, the EV 400 Series requires a relatively undemanding 50A, 240V breaker. If an owner already has one, installation is as simple as plugging in the charger. If not, installing such a breaker is a simple and cost-effective alternative to hardwiring. The EV 400 Series is mounted to the wall using two screws. A one-screw wall-mounted cable hook allows its 25-foot charge cable to be neatly wrapped up when not in use.

The EV 400 Series's electronics package is housed in a sleek rectangular enclosure that is NEMA 3R certified for outdoor use. The charger will operate safely in rain, snow, sleet, and ice provided an in-use cover is placed over the breaker. The EV 400 Series has a simple two-button LED design: the top Power/Stop button indicates that the charger is receiving power and may be pressed to disconnect the charger while the bottom Status/Reset button displays the charger's color-coded status and may be pressed to reset the charger in the event of an error. The EV 400 Series is made in the US.



Level 2



2012-2020

CLIPPER CREEK LCS-20

ClipperCreek recently lowered pricing on their 240 volt 15 amp charge station to \$395. The sub-\$400 price makes the LCS-20 the lowest cost 240v charger available from a major manufacturer.

The unit is matched for plug-in cars with 3kW on-board chargers which includes plug-in hybrids and older Leafs. The unit is also ideal for people who want to install the slower 240v charger using an existing 20amp electrical circuit to avoid the expense of installing new wiring to the garage or parking space.

The LCS-20 can be ordered with a plug, or hard-wired in a garage or parking area. The compact rugged case, shared across the company's LCS line, carries a NEMA 4 rating suitable for outdoor installations.

A couple of thoughtful design features make it clear that Clipper Creek designers understand the little details that make the charger easier to use. There is no on/off button. The unit stays in a very low-power standby mode, drawing power only to light the single status LED, until it is plugged in. Cord reel ears are integrated into charger body; the cord wraps around the unit to keep it off the floor. ClipperCreek provides a rugged, low cost plastic charge coupler holster for just \$19 that keeps the charge coupler out of the way until needed.

The LCS-20 is made in America, has ETL Certification and comes with a 3 year warranty.

ACQUISITION

MSRP **\$379-395**
Availability **2012-present**
Warranty **3 Years**

RATING

Volts **208/240VAC**
Amps **16A**
Watts **20kW**

WIRING

Hardwire **Yes**
Plug Type **NEMA 14-30, 14-50, 6-50**
Breaker **20A**

CABLE

Connector **J1772**
Cord Length (ft) **25 ft**

USER INTERFACE

Interface Type **LEDs**
Communications **N/A**
Software **N/A**

DIMENSIONS

Dimensions .. **11" H x 4" W x 3" D**
Weight **lbs**
Enclosure **NEMA 4**
Rating **Indoor/Outdoor**
Temperature **-22F to 122F**





ACQUISITION

MSRP	--
Availability	--
Warranty	--

RATING

Volts	208/240VAC
Amps	30A, 40A
Watts	7.2kW, 9.6kW

WIRING

Hardwire	Optional
Plug Type	240V, hardwire
Breaker	40A, 50A

CABLE

Connector	J1772, GB
Cord Length (ft)	18 ft, 25 ft

USER INTERFACE

Interface Type	Manual
Communicat	WiFi, WLAN, OCPP
Software	App, RFID

DIMENSIONS

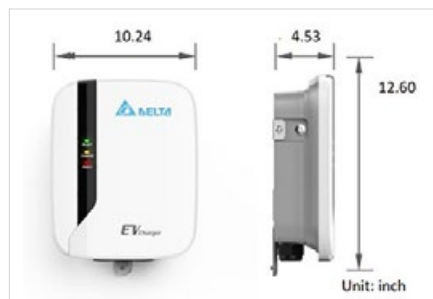
Dimension	12.6" H x 10.2" W x 4.5" D
Weight	5 lbs
Enclosure	NEMA 3R, IK08
Rating	Indoor/outdoor
Temperature	-22F to +122F

2020 DELTA AC Mini

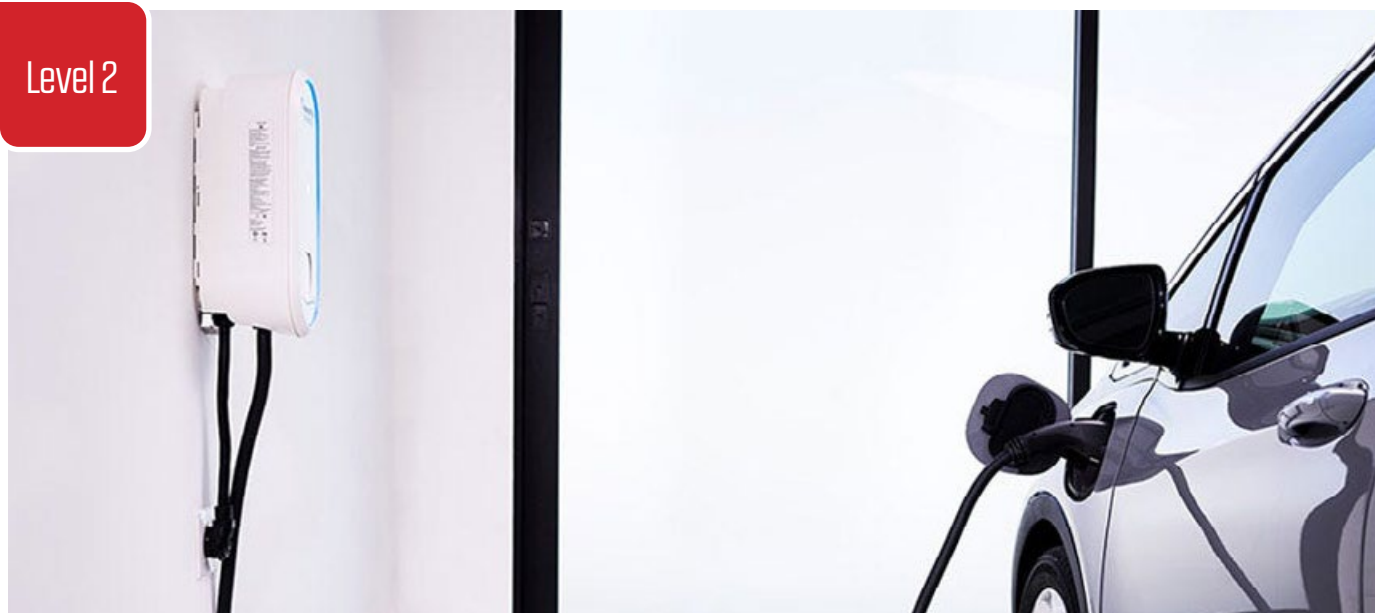
The AC Mini is Delta's entry level charger. It can be configured with an amperage of either 30A or 40A to afford power outputs of 7.2kW or 9.6kW. The AC Mini lives up to its name with a height just over 12 inches and a width even less than that. Its four-inch depth enables attractive and space-saving wall-mounting. Pedestal mounting is also an option. Delta offers the AC Mini with 18-foot and 25-foot cable lengths. The charger can be fitted with a J1772 or GB connector.

The AC Mini has a flat, square design and a simple-to-use interface. To charge, remove the port from the holster and plug it into an EV. Three lights on the face of the charger provide status information. The green Ready light tells the user that the charger is operable. The red Fault light tells the user that there is a problem. The green Charging light indicates that the charger is in use.

The AC Mini has a robust NEMA 3R certified enclosure for outdoor use and is IK08-certified vandalproof. It is also UL listed. Owners can utilize the charger's RFID reader and app to grant selective access. The AC Mini also connects to WiFi, which enables the charger to assess utility rates and adjust its electricity consumption accordingly.



Level 2



2019-2020 ELECTRIFY AMERICA Level 2

Volkswagen's Electrify America charging network was founded in 2016 to help offset the environmental ills—and negative PR—of its diesel emissions scandal. Primarily known as a supplier of ultra-fast public charging stations, the VW Group subsidiary recently entered the residential charging sphere with its Level 2 Home Electric Vehicle Charger. As its name suggests, the AC charger is intended for use in single-family homes, apartments, condos, and townhouses. It offers a maximum power output of 7.6kW, which translates to a best scenario of 25 miles of added range per hour. The electronics housing has a slim elliptical shape with an LED color ring around its perimeter. The ring flashes green as it establishes a connection with a vehicle and turns blue once charging has commenced. Solid green indicates that the charging session is complete while red indicates a fault. The charger's NEMA 3R enclosure is safe for gentle outdoor use. A sliding door at the bottom of the enclosure's front facade provides storage for the J1772 port. Electrify America provides a wall-mountable dock to keep the charger off the ground. The Level 2 Home Electric Vehicle Charger is equipped with WiFi, which allows owners to remotely monitor their charger's status and data from the Electrify America app and participate in cost-saving utility demand response programs. Electrify America partner Qmerit guarantees professional and cost-effective installation by conducting site surveys and providing up to three competitive pricing quotes. The Level 2 Home Electric Vehicle Charger is backed by a 3-year warranty and 24-hour customer support.

ACQUISITION

MSRP **\$449**
Availability **2019-present**
Warranty **3-year**

RATING

Volts **208/240VAC**
Amps **32A**
Watts **7.6kW**

WIRING

Hardwire **Optional**
Plug Type **240V, hardwired**
Breaker **--**

CABLE

Connector **J1772**
Cord Length (ft) **24 ft**

USER INTERFACE

Interface Type **Manual**
Communications **WiFi**
Software **App**

DIMENSIONS

Dimensions ... **18" H x 7" W x 7" D**
Weight **33.5 lbs**
Enclosure **NEMA 3R**
Rating **Indoor/outdoor**
Temperature **--**





ACQUISITION

MSRP	\$399
Availability	2019
Warranty	3-year

RATING

Volts	208/240VAC
Amps	40A
Watts	10kW

WIRING

Hardwire	No
Plug Type	240V
Breaker	--

CABLE

Connector	J1772
Cord Length (ft)	18 ft, 24 ft

USER INTERFACE

Interface Type	Manual
Communications	N/A
Software	N/A

DIMENSIONS

Dimension:	16.5" H x 12.7" W x 9.5" D
Weight	18.26 lbs
Enclosure	NEMA 4
Rating	Indoor/Outdoor
Temperature	-22F to 122F

2019-2020

GRIZZL-E Home EV Charging

The Home EV Charging Station is a Level 2 charger from Canadian manufacturer GRIZZL-E. The charger has a physical switch on the back of the circuit board that is toggled to adjust the charger's amperage to the user's desired level. Users may choose between 16A, 24A, 32A, and 40A options to fit the specifications of their vehicle's on-board charger. For vehicles with large capacities, the Home EV Charging Station affords a 10kW maximum power output.

In designing the Home EV Charging Station, GRIZZL-E struck a balance between simplicity, power, and durability. Its water- and fire-, and crush-resistant aluminum-cast metal enclosure is NEMA 4-certified to withstand the elements and is suitable for outdoor use. The charger can be fitted with a premium output cable that remains flexible in cold temperatures. Even so, the charger is light and compact enough to transport to and from various locations if need be. For stationary applications, the Home EV Charging Station is mounted to the wall with a pin and mounting bracket that GRIZZL-E provides. The charger also comes with a handy wall-mounted charge port holster that doubles as a storage hook to keep the charging cable off the ground.

The Home EV Charging Station has a stylish design with an electric blue claw-mark graphic and a white "GRIZZL-E" logo whose "I" is dotted with a green LED light that indicates charge status. An optional security lock is available to prevent unauthorized access.





2015-2020

LEVITON

EVBL2-P12 and P18

The EVBL2 is a mini Level 2 EV charger from Leviton. Leviton offers the EVBL2 in two variations: The EVBL2-P12, which has a 12-foot cable length, and the EVBL2-P18, which has an 18-foot cable length. The EVBL2 is a 20A unit with a 4.8kW power output that affords a maximum of 20 miles of charge per hour. The EVBL2's selling point is its compactness: Leviton reports that it is designed to be the smallest wall-mounted EV charging station available in North America. Operation is simple with a plug-and-charge design. The charger plugs into a 30A, 250V, NEMA 6-30R, 2P, 3W outlet, which Leviton sells.

The EVBL2's rectangular electronics package is located in-line between the J1772 connector and the wall plug. It is slim and lightweight with a silver face and a thermoplastic polyester enclosure that is rated NEMA Type 6 for temporary submersion. On its front facade are three light indicators: Ready (available to charge), Charge (in use), and Fault. The EVBL2 comes with a wall-mounted cable clip to store the cable up off the ground when not in use. The EVBL2 is UL-listed.

ACQUISITION

MSRP **\$399, \$449**
 Availability **2015-present**
 Warranty **2-year**

RATING

Volts **208/240VAC**
 Amps **20A**
 Watts **4.8kW**

WIRING

Hardwire **No**
 Plug Type **NEMA 6-30R, 2P, 3W**
 Breaker **30A**

CABLE

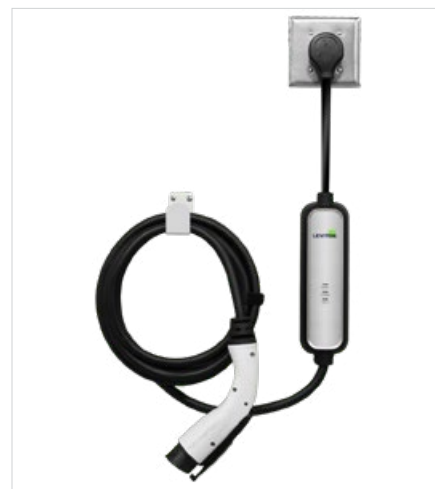
Connector **J1772**
 Cord Length (ft) **12 ft, 18 ft**

USER INTERFACE

Interface Type **Manual**
 Communications **N/A**
 Software **N/A**

DIMENSIONS

Dimensic **20.89" L x 3.15" W x 1.77" D**
 Weight **8 lbs**
 Enclosure **NEMA Type 6**
 Rating ... **Temporary submersion**
 Temperature **-40F to +122F**





ACQUISITION

MSRP	\$376, \$725
Availability	2014, 2015
Warranty	3-year

RATING

Volts	208/240VAC
Amps	30A
Watts	7.2kW

WIRING

Hardwire	Optional
Plug Type	Hardwired, 240V
Breaker	40A

CABLE

Connector	J1772
Cord Length (ft)	20 ft

USER INTERFACE

Interface Type	Manual, Networked
Communication	N/A, Wifi/ZigBee
Software	N/A, App

DIMENSIONS

Dimensions	16" H x 14.5" W x 6.5" D
Weight	14.5 lbs
Enclosure	NEMA 4
Rating	Indoor/Outdoor
Temperature	-22F to 122F

2014-2020 SIEMENS VersiCharge Residential

Consistently rated as one the top chargers in the industry, Siemens's VersiCharge Residential stands out from the pack with its unique design and features.

The charger's shape is an unconventional upside-down trapezoid that looks almost shield-like with a ribbed outer edge. A halo status indicator bordering the charger's top half glows solid green when the charger is ready for use and pulses green when the charger is in use. The center of the charger has a recessed panel with light indicators that specify charge status plus pause and delay buttons. The latter is used to operate a programmable timer that can postpone a charging session for 2, 4, 6, or 8 hours. Consumers set the timer accordingly to take advantage of off-peak utility rates or calibrate their charging session to their solar panel's electricity generation. The VersiCharge has an adjustable power output between 1.8kW and 7.2kW that recharges an electric vehicle up to 75 percent faster than a typical Level 1 charger that EV owners receive off the lot.

Siemens offers a SmartGrid (SG) version of the VersiCharge Residential that communicates via WiFi or Zigbee. A smartphone app syncs to the SG to allow users to track charger data, turn the charger on and off, view charger status, adjust power output, and program an automatic charging schedule, all remotely.



Level 2



2020 WALLBOX Pulsar Plus

In 2019, Wallbox upgraded their best-selling Pulsar to the Pulsar Plus. The Pulsar Plus retains its predecessor's compactness and power while offering a number of added benefits. The Level 2 charger now contains DC leakage detection to avoid losing stored electricity to the grid, which increases efficiency and reduces utility bills. It also includes WiFi connectivity in addition to its pre-existing Bluetooth capability.

The Pulsar Plus is a 40A charger with a 9.6kW output—impressive stats for a unit with less than 8 by 8 inch dimensions. Its shape resembles a tiny TV set with a light ring that displays charge status when plugged into a vehicle. Wallbox sends technicians to the residence to conduct a site survey. The unit is then installed via a wall mount alongside a parallel-mounted charge port holster.

Wallbox provides useful software with the Pulsar Plus. With the MyWallbox App, users can remotely monitor and program their charger to adjust rates and restrict or grant access. The app can be programmed to remind users to charge their vehicle, notify them when their charging session is complete, and suggest software updates when they become available. MyWallbox also grants users access to charging data such as electricity costs, energy consumption, and connection time. The information is displayed in easy-to-read graphs and charts. The App is Smartwatch compatible to afford maximum convenience to on-the-go users.

ACQUISITION

MSRP --
Availability --
Warranty **3-year**

RATING

Volts **208/240VAC**
Amps **40A**
Watts **9.6kW**

WIRING

Hardwire **Optional**
Plug Type **240V, hardwire**
Breaker --

CABLE

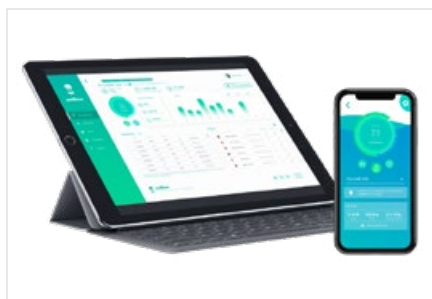
Connector **J1772**
Cord Length (ft) **25 ft**

USER INTERFACE

Interface Type
Communications **WiFi, Bluetooth**
Software **App**

DIMENSIONS

Dimensions **7.9" H x 7.8" W x 4" D**
Weight --
Enclosure --
Rating --
Temperature --



**ACQUISITION**

MSRP	\$999, \$1,099
Availability	2018-present
Warranty	1-year

RATING

Volts	208/240VAC
Amps	40A, 48A
Watts	9.6kW

WIRING

Hardwire	Optional
Plug Type	240V
Breaker	50A, 60A

CABLE

Connector	J1772
Cord Length (ft)	25 ft

USER INTERFACE

Interface Type	Manual
Communications	N/A
Software	N/A

DIMENSIONS

Dimensions	7.25" L x 2.5" W
Weight	15 lbs, --
Enclosure	NEMA 4X
Rating	Indoor/outdoor
Temperature	-31F to +149F

2018-2020

WATTZILLA

Black Mamba

The Black Mamba is a 9.6kW Level 2 residential charger from WattZilla. It is named after the small but powerful sub-Saharan African snake; its black cable and cylindrical in-line electronics package resemble a serpent that has recently swallowed a meal. It is offered in 40A and 48A models. A 25-foot charging cable and a 6-foot power cable afford a combined 31 feet of reach between car and outlet. The charger is lightweight at 15 pounds and compact with a 7.25-inch enclosure length. The Black Mamba is easy to use with a simple plug-and-charge design. The Black Mamba's NEMA-4X enclosure is impressively rugged for its small size. Its aircraft grade aluminum affords crush-resistance and weatherproofing. The enclosure is also corrosion-resistant and sealed off to prevent dirt, rain, sleet and windblown dust from entering the unit.

An innovative LED light ring on the side of the Black Mamba's cylindrical enclosure displays recharging progress. It also indicates the charger's status: blue means ready to operate, yellow means connected to a vehicle, and pulsating green means currently in use. A combination of red and blue signals an error message, with different patterns representing different errors.

The Black Mamba comes with a "Quick Connect" wall-mounting bracket to keep the charger off the ground. WattZilla also includes a complimentary canvas storage bag. The Black Mamba is compatible with any EV that accepts a J1772 connector. All of WattZilla's chargers are made in the US.



Level 2



2017-2020

WATTZILLA Wall Wattz

The Wall Wattz is a Level 2 charging station with 40A, 48A, and 75A models corresponding to 9.6 kW, 11.5kW, 18kW power outputs, respectively. Depending on the model, the charger can either be plugged into a 240V outlet or hardwired. The 75A model is ENERGY STAR certified. All models are UL certified and made in the US.

The Wall Wattz is a sleek metallic unit with a front-facing, scratch-resistant LCD screen. The LCD screen displays status messages such as the amount of amperage being delivered and the duration of the charging session. The LCD screen's information is color coded: green indicates in use, blue indicates a transitional state, and red indicates an error. The Wall Wattz comes standard with a 25-foot straight black cable. An optional \$149 red coiled cable is also available.

The Wall Wattz comes standard with a Type 1 indoor enclosure. For \$50, purchasers can upgrade to a NEMA 4X indoor/outdoor stainless steel enclosure. The Wall Wattz's standard enclosure is silver, but can be customized with the Wall Wattz "Artist Series" option. WattZilla uses rugged, UV-resistant coatings and powder-coated finishes to preserve the integrity of the wrap. WattZilla offers both solid color and graphic design customizations. For the latter, customers may work with WattZilla authorized artists to create a graphic or design their own using WattZilla's template. Example graphics include sports teams, movies, and comic book characters.

ACQUISITION

MSRP **\$749, \$849, \$1,049**
Availability **2017-present**
Warranty **1-year**

RATING

Volts **240V**
Amps **40A, 48A, 75A**
Watts **9.6, 11.5, 18kW**

WIRING

Hardwire **Optional**
Plug Type **240V, Hardwire**
Breaker **50A, 60A, 100A**

CABLE

Connector **J1772**
Cord Length (ft) **25 ft**

USER INTERFACE

Interface Type **Screen**
Communications **N/A**
Software **N/A**

DIMENSIONS

Dimensions **7.75" W x 10" H x 5" D**
Weight **21 lbs**
Enclosure **Type 1, NEMA 4X**
Rating **Indoor/outdoor**
Temperature **-31F to +149F**





ACQUISITION

MSRP	\$565
Availability	2015-present
Warranty	3 years

RATING

Volts	240V
Amps	24A
Watts	5.7kW max

WIRING

Hardwire	Yes
Plug Type	Hardwired
Breaker	30A

CABLE

Connector	J1772
Cord Length (ft)	25 ft

USER INTERFACE

Interface Type	LED
Communications	--
Software	--

DIMENSIONS

Dimensions ...	11.19" x 7.06" x 4.96"
Weight	13 lbs
Enclosure	--
Rating	--
Temperature	--

2015-2020

CLIPPER CREEK HCS-30

ClipperCreek continues to fill out its HCS line with the introduction of the HCS-30; a new 24-amp Level 2 charging station. The HCS-30 provides the maximum charging power available through a standard 30-amp circuit, which means it is less expensive to install because it doesn't require changes to most home's electric systems.

The HCS-30 shares the robust build-quality associated with the entire ClipperCreek line. The unit is intended for hard-wired installation in a garage or parking area. The compact rugged case is NEMA 4 rated for indoor or outdoor installations.

A couple of thoughtful design features make it clear that ClipperCreek designers understand the little details that make the unit easier to use. There is no on/off button, the unit is ready for use as soon as it is plugged in to an EV. Four simple-to-understand front panel lights give users information at a glance. Yellow indicates power is available to the charger. Green shows the vehicle is requesting a charge and AC power is currently applied to the vehicle. The two red lights indicate faults including problems due to improper installation wiring, the HCS is unable to communicate with the vehicle properly, or a safety fault has been detected with the charger. Cord reel ears are integrated into the unit's body so the cord can be wrapped around the unit keeping it off the floor. ClipperCreek also provides a complimentary rugged plastic charge coupler holster to keep the charge coupler out of the way until needed.





2014-2020

AEROVIRONMENT TurboCord

Aeroenvironment's TurboCord is such a marvel of compact, elegant design that you can't help but wonder why all electric cars do not come with this unit standard-issue. In fact, Volvo has included the TurboCord in their top-of-the-line PHEV SUV. The dual-voltage TurboCord plugs in to either a standard 120v household socket or a 20-amp 240v outlet. The TurboCord is especially well suited for owners of plug-in hybrids and other cars that have 3kW chargers, which charge at 16 amps. Although the TurboCord will charge cars with 6kW chargers like the Fiat 500e and most newer Nissan Leafs, it will be at half the speed they are capable of.

It is by far the smallest 240v EVSE on the market, less than half the size of the 120v units that auto manufacturers provide with EVs. The complete unit weighs just 4.2 lbs. The 20 ft cord is also remarkably small and lightweight for a 3kW unit. Indicator lights at the top of the enclosure show charge status.

The 240v connector plugs into a NEMA 6-20R outlet, which uses the same small blades as a 120v outlet, but with one of the blades rotated 90 degrees relative to the other, like a T. Although not the most common 240V plug, installation of the outlet at home or work would be a relatively simple job for an electrician, which should keep installation costs low. The TurboCord comes in its own high quality nylon carrying case, allowing you to carry just one cord for 120v charging, or 240v charging at 6-20R outlets.

ACQUISITION

MSRP **\$649**
Availability **2014-present**
Warranty **3 years**

RATING

Volts **120V/240V**
Amps **12A/16A**
Watts **1.4, 3.8 kW**

WIRING

Hardwire --
Plug Type --
Breaker **20A@240/208VAC**

CABLE

Connector **J1772**
Cord Length (ft) **20 ft**

USER INTERFACE

Interface Type **LED**
Communications --
Software --

DIMENSIONS

Dimensions **16" x 9.3" x 4.4"**
Weight **4.2 lbs**
Enclosure --
Rating --
Temperature --



**ACQUISITION**

MSRP	\$499-\$699
Availability	2015-present
Warranty	3 years

RATING

Volts	208V-240V
Amps	16-18A/37-32A
Watts	3.8, 7.7kW

WIRING

Hardwire	Optional
Plug Type	NEMA 6-20 or 6-50
Breaker	20A/40A

CABLE

Connector	J1772
Cord Length (ft)	12, 18, 25 ft

USER INTERFACE

Interface Type	LED
Communications	WiFi
Software	Mobile App

DIMENSIONS

Dimension: 11.19" x 7.06" x 4.96"	
Weight	--
Enclosure	--
Rating	--
Temperature	--

2015-2020

CHARGEPOINT

Home 12, Home 25

ChargePoint has been a leader in the public and commercial charging business since the modern reintroduction of electric cars. With the introduction of their Home 12 and Home 25 products, ChargePoint brings the sophisticated connectivity and 24-hour customer service the company is known for to the residential EVSE market. The smart appliance allows users to use the ChargePoint mobile app to remote start, schedule and set charging reminders for their home charger. The app allows them to see how much energy is used and the number of miles added based on their car model. ChargePoint Home chargers update automatically with the latest software upgrades over WiFi. The residential charger integrates with the entire ChargePoint network allowing users to see all the residential, public and workplace charging done with their ChargePoint account and consolidate electricity usage information. It also works with Nest brand smart home thermostats allowing users to track usage and energy costs through integration with Nest and Nest energy reports. Plus, Home identifies the local utility provider and recommends the best time to charge.

ChargePoint's Home 25 is their flagship home charger and delivers 7.7kW charging. Their entry level unit is the Home 12 which provides 3.8kW charging. The Home 25 can be equipped with either an 18-foot or 25-foot cord. The Home 12 comes with a 12-foot cord. Replacement cords can be swapped out quickly without needing tools.





2015-2020

QUICK CHARGE POWER

Jesla

The JESLA™ is a custom conversion of a Tesla 40 amp charging cable to make it compatible with any EV that accepts a standard J1772 connector. Depending on your car's internal charger rating, the JESLA can charge an EV up to 600% faster than using the OEM charging cable.

Just like the OEM Tesla cable, the JESLA comes with both a 240V (NEMA 14-50) and 120V (NEMA 5-15) adapter. QC Power also makes optional 10-30, 14-30, and 5-20 adapters, so you can plug in just about anywhere there is a 240 circuit.

The charge cable automatically adjusts the amperage by simply switching out the adapter. This allows you to connect to 5 different kind of power supply outlets without worry of overloading the circuit.

QC Power also includes a padlock for charging at public charge stations without worry about being disconnected or theft of the cable.

The JESLA™ will operate at up to 40 amps at 240 volts when connected to a 50 amp/240 volt outlet. The cable works with a Tesla when using the standard UMC-J1772 adapter that comes with the vehicle. So if you have a Tesla and another EV, you could use the JESLA to charge both cars. QC Power also makes an extension cord called the JLONG (depicted below) that allows you to extend the reach of any J1772 cable.

ACQUISITION

MSRP **\$999**
 Availability **2015-present**
 Warranty **1 year**

RATING

Volts **208V-240V**
 Amps **40A**
 Watts **9.6kW**

WIRING

Hardwire **No**
 Plug Type **NEMA 14-50, 5-15**
 Breaker **50A**

CABLE

Connector **J1772**
 Cord Length (ft) **19**

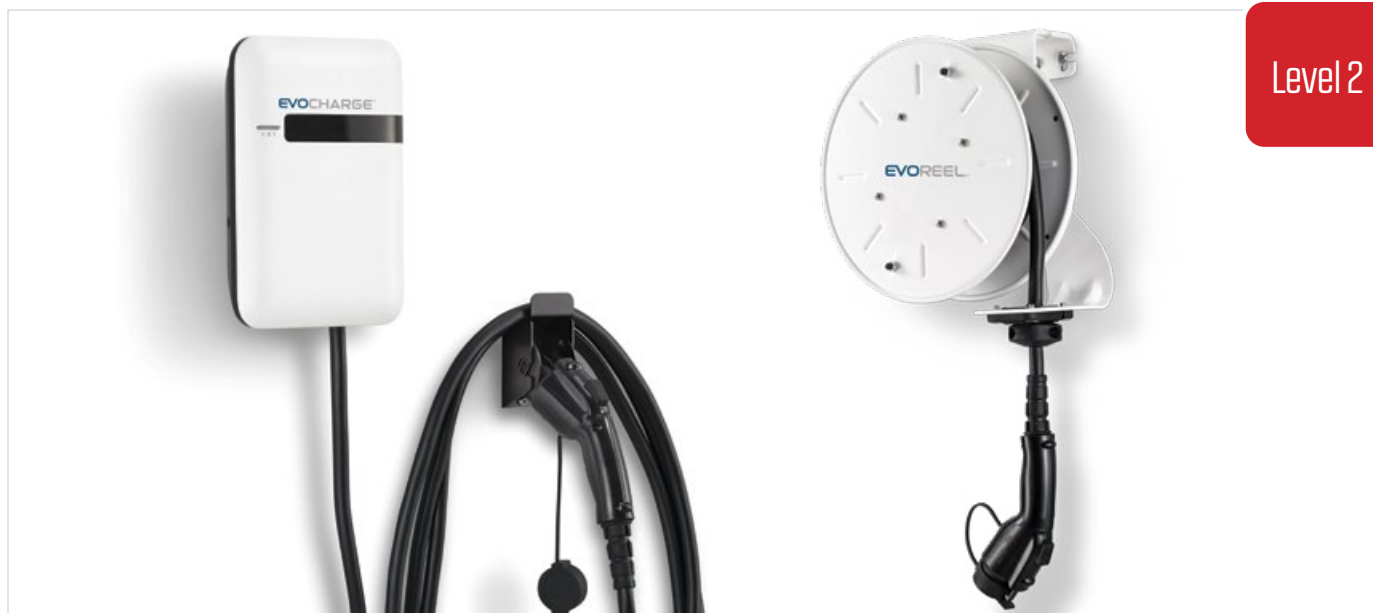
USER INTERFACE

Interface Type **LED**
 Communications **None**
 Software **None**

DIMENSIONS

Dimensions **--**
 Weight **--**
 Enclosure **--**
 Rating **--**
 Temperature **--**





ACQUISITION

MSRP	\$479, \$679
Availability	Contact Mfg
Warranty	3 years

RATING

Volts	208/240VAC
Amps	32A
Watts	7.7kW

WIRING

Hardwire	HW or Plug
Plug Type	NEMA 6-50
Breaker	40A

CABLE

Connector	J1772
Cord Length (ft)	18-25 ft

USER INTERFACE

Interface Type	Networked
Communications	WiFi, OCPP
Software	App

DIMENSIONS

Dimension	11"H x 7.5"W x 3.2" D
Weight	14 lbs (18ft), 16 lbs (25ft)
Enclosure	NEMA 4
Rating	Indoor/Outdoor
Temperature	-40F to +122F

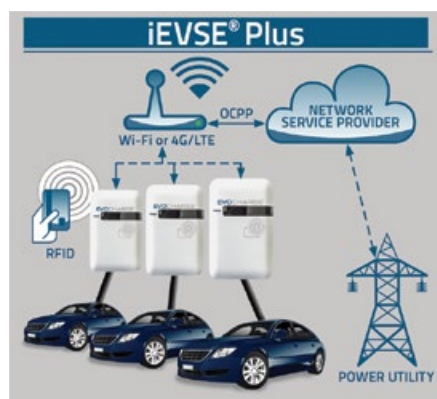
2012-2020

PHILLIPS & TEMRO EVOCHARGE EVSE & iEVSE

The EVOCHARGE line is a trio of Level 2 chargers from Phillips & Temro industries. The chargers supply 32A of current and 7.7kW of power, which translates to about 25-35 miles of charge per hour depending on vehicle efficiency. The chargers' amperage can be adjusted from 16-32A to support multiple circuit ratings. The unit ships standard with an 18-foot cable and offers a 25-foot option. With the EVOREEL cable management system, you can fit the unit with either a 22ft or 30ft option.

The EVOCHARGE EVSE and iEVSE have a smooth rectangular case with dimensions smaller than a letter-size sheet of paper. The charging stations' slim 3.2-inch depth allows them to lay nearly flat against any surface. Installation is simple. A universal mounting bracket secures the charger to a wall, pedestal, or other structure. A mountable holster is used to store the charge port and wrap the cable. The chargers are NEMA 4 certified for outdoor use and UL listed.

EVOCHARGE chargers come in both networked and non-networked configurations. The standard EVOCHARGE EVSE is non-networked while the iEVSE can be connected to WiFi and OCPP networks to perform local load management and demand response to adjust electricity consumption. The iEVSE Plus adds an RFID reader for selective access granting and 4G-LTE cellular. To lower acquisition costs, Phillips & Temro's web site helps connect customers to information about federal, state, and utility incentive programs.





2012-2020

TESLA Wall Connector

The Tesla Wall Connector is now in its third generation. The new model has an attractive tempered white glass faceplate. It is configurable to deliver between 12 to 44 miles of range per hour of charge depending on the capacity of the circuit it is connected to.

One of the most significant changes in the Gen 3 edition is Wi-Fi connectivity. The connection can be used to access usage data, and will allow the unit to automatically receive firmware updates. New software features and functionality can be pushed to the units.

The cable, previously available in 24ft length, is now 18ft. For most installations, that's plenty, but sometimes longer charge cables come in handy. The unit used to be available with a NEMA 14-50 plug so that it could be plugged into a 240v outlet. The new Gen 3 unit is only available in hardwire configuration, with wiring entry options from the top, bottom and rear. The device can be configured by the installer, who can limit the power level to match a circuit limit.

Tesla says a future over-the-air firmware update will enable up to 16 Wall Connectors to be linked together to share power. The power sharing feature will allow Wall Connectors installed at the same site to intelligently share the site's total available power via unit-to-unit Wi-Fi. This will minimize the need for residential and commercial applications to have electrical panel upgrades for concurrent multi-vehicle charging.



ACQUISITION

MSRP	\$500
Availability	2012-2020
Warranty	1 year

RATING

Volts	208/240V
Amps	12-48A
Watts	2.8kW -11.5kW

WIRING

Hardwire	Yes
Plug Type	NA
Breaker	15A-60A

CABLE

Connector	Tesla UMC
Cord Length (ft)	8ft-18 ft

USER INTERFACE

Interface Type	App, LEDs
Communications	WiFi
Software	Tesla

DIMENSIONS

Dims.....	9.8"Hx4.7"Wx2.0"D
Weight	10 lbs
Enclosure	3R
Rating	Indoor/Outdoor
Temperature	-22F to +122F



Home Charging Stations

Installation Tips

BY CHRISTOPHER ALAN

There are a couple of things that can make the installation of a 240v home charger quicker, cheaper and more functional.

The first is kind of simple. Make sure the power rating of the charge station you buy, also called EVSE, is matched to your car. You only need to get a charge station as powerful as your car can make use of.

The second is to make sure the cord length is long enough to reach from your intended installation point to your car's charge port. This sounds really obvious but take it one step further. Make sure the cord can reach your car's charger port even if you need to charge another EV with the charge point in another position. For example, the Nissan Leaf's charge point is sensibly

positioned in the front center of the car. The Fiat 500e has the charge port in the right rear quarter panel, where the gas filler neck is located on the gas-powered variant. If you buy another EV in a few years, you'll want to be able to charge without the difficulty or expense of moving your charge station or getting a longer charge cable installed (they cost up to \$200). You might even want to make sure that there is enough cable length to charge if your car isn't in the ordinary position, for example reaching out to the driveway.

Phillips & Temro sells a retractable reel with a charge cord up to 30 ft in length. It's a terrific solution to managing the cable, especially if you need one with additional length.

Next decide whether you want to hard-wire your charge station or attach it with a suitable 240v plug.

A lot of suppliers are putting 240V NEMA plugs on their EVSE. If the unit is reasonably small, some people want to be able to take it with them when they travel to a vacation home or relative's house. RV parks are also very popular charging points among EV pioneers who aren't afraid to buck conventional wisdom and take their EVs on a road trip. RV parks almost always have 240V circuits with dedicated meters for each parking slip.

Getting a building permit for a 240V outlet (often used for shop equipment) is sometimes much simpler and cheaper than getting a permit for a hard-wired EV



A cord management system keeps the cord tidy and up off the ground when not in use.

charge station. It also gives you some flexibility if you need to plug in that arc welder and get down to business.

Another thing to consider is that the majority of the cost of installing your new circuit is going to be labor. Unless you're lucky enough to already have the right kind of wire in place, your electrician is going to pull new wire. Even if you buy a 16 amp

EVSE because your car only has a 3.3kW charger, like a Volt, you might want to go for copper wire that will support at least 7.2kW and maybe even 9.6 kW. Prices are coming down on EVSE, so in a few years a higher power EVSE might be much cheaper. But if you have to run heavier gauge wire, you'll pay that labor cost all over again, vs. just a relatively small increase in the cost of

installing heavier wire now. For example, the difference in cost for 50 ft of #12 gauge which can handle 20 amps and #8 which can handle 40 amps is only about \$30 at Grainger, a major electrical supply house. The cost to re-wire later would be very similar to your original wiring job cost, which could be as much as \$1,000-\$1,500. The likelihood that any future EVs you buy will have a higher power onboard charger is very good – that has been the trend.

Some utilities offer special rates for EV charging during off peak hours. The cost savings calculations can be complicated. Check to see if your utility has online or spreadsheet calculators that can evaluate your historical energy use and give you specific guidance. Electricians are often familiar with these electrical rate calculations and can be a great resource if this task seems a little daunting. 🔧

EV Time of Use Utility Rate Plans

Switching to a TOU Plan can save a lot of money

BY CHRISTOPHER ALAN

You probably don't think all that much about your local utility. It's one of those services that have become so reliable that most people take it for granted, like the sun rising every morning.

When you buy an electric car, it's a good idea to give your utility some thought though, because most have special rate programs to encourage you to charge your car overnight, when there is plenty of spare capacity on the grid. The cost savings are substan-

tial. Some utilities even offer rebates on residential and commercial charging equipment or public access to fast chargers, perks worth hundreds of dollars.

The big savings for EV drivers come from switching from a Tiered rate plan to Time of Use, or TOU. It can save a lot of money – from tens to hundreds per month depending on where you live. Most people are familiar with the Tiered rate structure; the more electricity you use, the more

you pay per kilowatt hour (kWh).

If it's not completely clear exactly what a kWh is, think of it as enough electric fuel to travel three miles. The national average price per kWh is about 12 cents. So a typical EV driver spends the equivalent to \$1 per gallon of gas, compared to a car that gets 25 mpg. As you'll see below, that cost can vary quite a bit so buckle up and we'll carefully pick our way through the potholes.

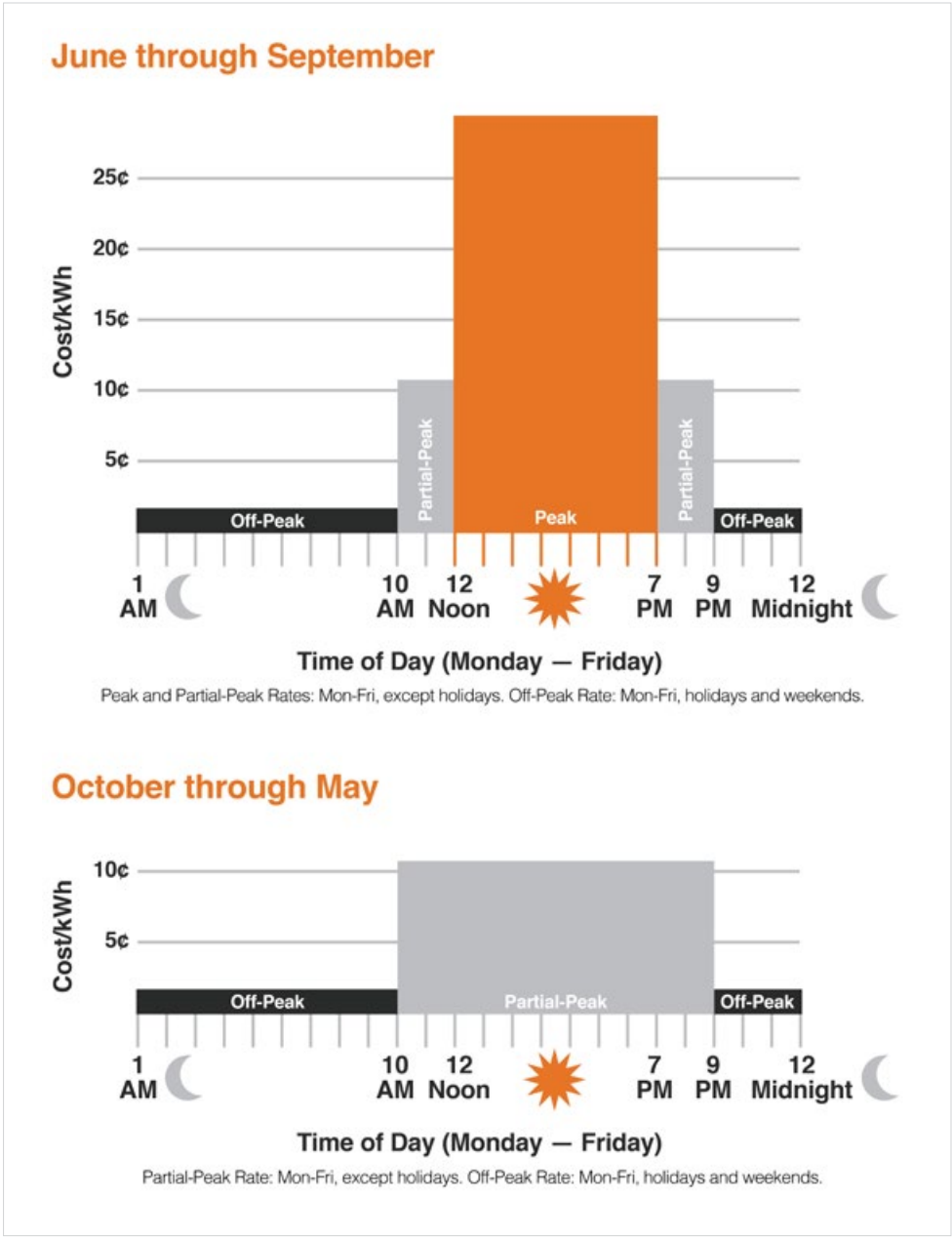
According to the US Energy

Information Administration, an average dwelling uses about 900 kWh per month. At the national average cost, that's about \$108. For medium to large sized households, it's not uncommon to use enough energy to put you in the upper rate tiers where the cost per kWh is much higher – for example 36 cents per kWh in San Diego - and pay an electric bill of \$200-\$300 dollars per month or more. If you're adding your transportation fuel on top of that, you'll pay the highest rate for that fuel, perhaps up to three times what you would otherwise.

Residential electric rates vary widely throughout the US, from an average of 8 cents per kWh in Idaho to 33 cents in Hawaii. The total savings will differ by area, but the fundamental concept is the same: fuel your EV using electricity at the cheapest rate you can get. In high utility rate areas, the TOU savings could be as much as half of your car lease payment.

For example in Southern California, if you purchase electric fuel on top of all of your other household use and you're already in the third or fourth tier, you'll pay about \$0.36 per kWh. That pushes the fuel cost of driving a Nissan Leaf up 233%. Instead of paying a typical five cents per mile, or five bucks to go 100 miles, you would pay 12 cents a mile or \$12 to go 100 miles. To put this in perspective, at \$3.50 per gallon the fuel cost for a gas-powered car that gets 25 mpg is 14 cents a mile or \$14 to go 100 miles.

Fortunately, switching to a Time of Use rate allows you to charge your car overnight at a price closer to the lowest Tier rate. You will pay higher rates during the peak window, typically from noon to 6 pm, but if you're at work and don't run a bunch of appliances or air conditioning at home in the afternoon, your energy use during that time is



minimal anyway. The rates in the morning and early evening are typically lower than Tier 3+ rates, so many ratepayers experience lower overall bills after purchasing an EV and switching to TOU.

If you pay off-peak rates in the neighborhood of 6 cents per kWh, you'll get electric fuel at the equivalent of 50 cents per gallon. That's just 2 cents per mile.

If you haven't already purchased your EV, it's a good idea to make arrangements to switch to a TOU rate plan in advance of delivery – most utilities take a month or so to make the switch

because they'll wait for your new billing cycle to start before changing your service over to the TOU rate plan.

Almost all of the utilities have rate calculators on-line that help you determine what your savings would be by switching to Time of Use. ⚡

A sample Time of Use rate chart showing the difference in electricity cost based on which time of day the electricity is used. (Orange and Rockland Utility)

EV Educational Resources

Supporting EV Adoption from
Awareness to Advocacy

Electric Car INSIDER

EV&EVSE Buyers Guides



Comprehensive, full page profiles of the best EVs and EV chargers.

Electric Car Guest Drive



Test drive the latest electric cars and learn from EV owners at a no-pressure social event.

Discount Pricing Guide



The app that can save you thousands of dollars on EV and EVSE purchases. Customizable for utilities and AQMDs.

Educational Pillars



Large scale interactive exhibits for indoor and outdoor events.

Mobile EVSE Classroom



ECI will deploy a mobile classroom – towed by a Cybertruck – throughout the US in 2021.

EV Navigator



Online, interactive app to guide prospective EV drivers on the path to ownership and advocacy.

ECI creates electric vehicle educational resources for utilities, AQMDs, automakers and EVSE manufacturers, integrators and installers.