

# The 'Why and How' of Vehicle-to-Grid (V2G)

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Note: Space restrictions limit explanations, but the online, clickable links clarify everything.

Charging your electric vehicle (EV) with power from your home is pretty straightforward. But what about allowing your EV to send some of that power back to the grid? Why would I do that, you ask? Two answers: money and grid stability.

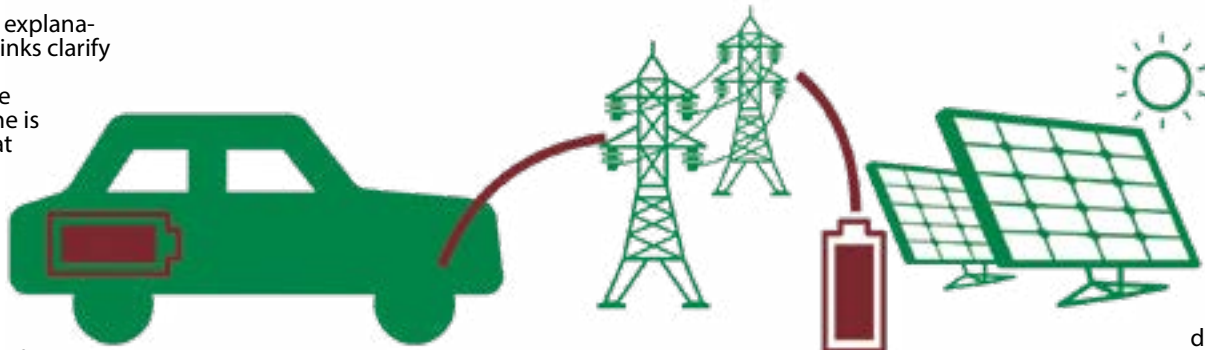
You might know people who are taking advantage of Time-of-Use (TOU; aka: time-of-day (TOD)) pricing for their domestic water heater (DHW), which the utility adjusts for lower electrical rates. TOU DHW acts like a battery, as far as your utility is concerned ([www.bit.ly/dhw-batt](http://www.bit.ly/dhw-batt)); and it works even better when the tank is well-insulated: [www.bit.ly/dhw-jacket](http://www.bit.ly/dhw-jacket).

Perhaps you have heard of utilities paying homeowners for tapping into their home backup batteries to flatten out power peaks: e.g., [www.bit.ly/gmp-vpp](http://www.bit.ly/gmp-vpp). The vehicle-to-grid (V2G) option refers to using EV batteries in this same way.

These three strategies are part of virtual power plants (VPPs): [www.bit.ly/ct-vpp](http://www.bit.ly/ct-vpp). With VPP, the electricity supplied to your home comes from your utility in the usual way, plus some of it comes from backup batteries, EV batteries, and solar PV panels from within a large area: [www.bit.ly/rmi-vpp](http://www.bit.ly/rmi-vpp)! Whole communities, including their businesses, factories, schools, etc., participate in VPPs: [www.bit.ly/uk-vpp](http://www.bit.ly/uk-vpp)

Part of the fear, uncertainty and doubt (FUD being spread by fossil fuel (FF) supporters suggests that "too many EVs will cripple the grid." As you can see, the opposite is true: [www.bit.ly/wired-v2g](http://www.bit.ly/wired-v2g)!

What's all this to you? Don't worry,



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you set the terms, and it is beneficial all-around. The Renewable Energy Vermont 2022 conference featured a program in Connecticut, where low-income underserved renters benefited both financially and with home battery backup coverage during blackouts: [www.bit.ly/low-bkp-vpp](http://www.bit.ly/low-bkp-vpp).

And, beyond VPP, is grid-interactive efficient buildings (GEB), which makes all of this perhaps the most effective solution we have for air pollution and the Climate Crisis: [www.bit.ly/get-geb](http://www.bit.ly/get-geb). GEB means that the building envelope is efficient (properly insulated and airtight); heat pumps and induction cooking reduce energy demand; and solar panels, backup batteries and EVs all contribute toward sharing the electrical supply.

As you're probably aware, the U.S. is pretty far behind most First World and even many Second World countries in EV adoption and some other green-energy technologies. But all of these pieces are being employed here and there in the U.S. already, and it won't be long before VPP and GEB will be coming to a town near you!

You'll have the option of joining in on the savings, extra income ([www.bit.ly/tx-vpp](http://www.bit.ly/tx-vpp)), efficiency, security, resiliency and pollution reduction that these technologies offer. So, avoid buying soon-to-be-out-of-date technology and being stuck with replacing it or being left out when the time comes. As it happens, V2G technology is available to you now - perhaps through your upcoming purchase of a Level 2 EV charger! (See the article on home chargers in this issue.)

Those Powerwall-type home backup batteries hold about 10 - 13 kWh, whereas EV batteries typically start around 65 kWh now -- some more than 100 kWh. The authors have 130kWh of EV power parked in their garage. You already own your EV. Unlike the Powerwall, your EV's battery isn't a stand-alone, one-trick device which you hope you never have to use. Your EV can run your critical circuits at home for days longer than a couple of Powerwalls can. Then it can be driven to a place where there is power for recharging ([www.bit.ly/v2g-demo](http://www.bit.ly/v2g-demo)).

With V2H and an EV or two you could "island" your home when the grid fails -

essentially become off-grid and independent until the grid comes back up - some solar PV at your home would make this even easier. A high-performance home running on heat pumps, induction cooking and LED lighting with some solar PV would be perfect.

Step 1: Nowadays, weather disasters are more frequent, widespread and damaging. The grid goes down more frequently and for longer periods. Grids that didn't go down before are going down now. All because the old top-down approach of utility distribution

isn't capable of handling our worsening climate. Buying the right Level 2 charger could be your foot in the door to a future partnership with your utility company where you cooperate to keep the juice flowing and your energy costs low!

You might not yet have solar PV, or TOU DHW electricity price reduction, or even a home backup battery system, but you can get started with a bi-directional V2G charger. Chargers able to handle solar and TOU and battery backup and EV charging are available now: [www.bit.ly/enphase-pv2ev2h2g](http://www.bit.ly/enphase-pv2ev2h2g).

Ask your car dealer (or charger seller) if your particular car can share its battery power. Ask your solar installer if the inverter can tie into batteries, EV chargers and the grid. Ask your EV charger installer if the charger supports V2G. Don't be left behind. Embrace the future!

*The Whitchurches live cheaply and securely with their EVs, heat pumps and induction range at their solar-powered Net Zero+ Passive House. For related articles: [www.bit.ly/get-w-ev](http://www.bit.ly/get-w-ev).* ♻️

## No More Gas Hookups in Beacon, NY

### Beacon, NY Adopts All-Electric Construction Law

On March 20, the Beacon City Council (Beacon, New York) passed environmentally friendly legislation, which will require all-electric construction beginning in 2024.

"We think it's the right thing to do," said City Councilman George Mansfield. "We will be leading by example and hopefully others will follow suit."

Mansfield and others gathered at a park across from city hall prior to the city council meeting to praise residents for supporting this legislation.

"There will be no more gas hookups, no more oil heat," said Mansfield. "It will be all-electric, and then ultimately we hope all-electric will be generated in sustainable ways."

Beacon becomes the third city in New York state, after New York City and Ithaca, NY, to pass bans on new building construction using fossil fuels as part of the design. Buildings are considered the

largest polluters in the state, releasing 32% of the state's greenhouse emissions.

The State Assembly and Senate recently endorsed statewide bans on fossil fuels in new construction in their budget proposals.

And Dan Aymar-Blair, a Beacon city council member, thinks Beacon should do its part, too. "Beacon has to do its part in cutting emissions," he said.

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*[Note from G.E.T. for a good decision: All of us here at Green Energy Times (G.E.T.) would like to commend the city council members for upholding these important environmental standards. This decision will serve the community in ways they may not realize yet. The health of our children and future of the planet will benefit greatly.] ♻️*

### JDP POWER'S EV SATISFACTION - Cont'd from p.6

alphabetical order): accuracy of stated battery range, availability of public charging stations, battery range; cost of ownership, driving enjoyment, ease of charging at home, interior and exterior styling, safety and technology features, service experience, and vehicle quality and reliability.

The study is conducted in collaboration with PlugShare, the leading EV driver app maker and research firm. This study sets the standard for benchmarking satisfaction with the critical attributes that affect

the total or overall EV ownership experience for both BEV and PHEV vehicles. Survey respondents for the study include 7,073 owners of 2022 and 2023 model-year BEVs and PHEVs. The study was "fielded in" from August through December 2022.

For more information about the U.S. Electric Vehicle Experience (EVX) Ownership Study, visit <https://bit.ly/EVX-study>.

See the online press release at <https://bit.ly/JDP-press-release>. ♻️



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