

Renter's Dilemma



Dilemma: Energy Storage Access

Of the 132 million US households, 34% are renter households consisting of single-family units and multi-unit dwellings, such as condos and apartments. Current large scale stationary energy storage systems are not readily available to the 44.9 million US households who rent. The equipment, installation, and utility connection costs of these systems, often exceed \$25K USD and have a 15-year payoff period. Even should a property owner allow a renter to install these systems, the upfront costs and lengthy payoff periods are prohibitive for those who rent. The situation is even more grim for multi-family dwelling households, where installation of individual energy storage systems is not physically feasible for most property locations. Owners of rental properties, themselves, are reluctant to install costly energy storage systems without a reasonable expectation that they will be able to recover their costs.

Solution: Personal Energy Platform™ (PEP™)

We designed the product to allow all energy consumers, whether they own their home or rent an apartment, to have more control over their energy usage and access the benefits of energy storage. There are 1000s of GW (gigawatts) of energy storage that is being overlooked and which can be tapped into with the Personal Energy Platform's portable energy storage solution.

The Personal Energy Platform consists of a super-smart power management system, a battery management system, internal batteries providing backup capability, 120V/240V grid power accessed via an AC wall outlet, direct connections of renewable sources like solar and wind, and it provides power to multiple directly connected AC and DC end devices.

Simply plug the platform into the wall outlet, plug your devices into the platform, quickly configure your preferences via the mobile app, and the platform operates autonomously 24/7/365 without further intervention. The use of the platform doesn't involve utilities or agencies for installations, approvals, or permits. The Personal Energy Platform learns when to purchase the lowest cost cleanest power, when to use stored energy to lower electric bills, maintains uninterrupted power during grid outages without the need to swap device power cords, and based on your preferences keeps you informed on outage events and durations.

Consumer Questions

The following are common questions from 200+ consumers, many of them renters.

Where would I use it?

You would use it wherever you have multiple devices plugged into a wall outlet or powerstrip or for devices you want to stay up when the power goes out. The PEP maintains power to the devices that are connected to it during power outages and intelligently manages the daily electric energy used by those devices to lower your electric bill.

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Can I backup my entire house with this?

The PEP is not intended to provide backup power to an entire house via the existing internal wiring circuits. You can place multiple PEPs in your house to support your most critical devices such as, entertainment center devices, computer desk area, internet router, smart home, web cameras, home healthcare devices, or your refrigerator and kitchen devices. Thus, you can deploy an aggregate of 3-8kWh, or greater, of energy storage at a much lower cost than a whole-house stationary system.

Can the PEP support my air conditioning unit?

Initial models can support 20% of the typical air conditioning or HVAC energy load during normal operations. We plan to fully support normal and backup operations for HVAC systems in future higher storage capacity models.

How long does it provide backup power?

The duration of backup power is determined by the energy capacity of each PEP, the more batteries per unit, the longer the duration. We view 4 hours to be the optimum backup power duration for most devices and up to 10 hours for larger appliances, like a refrigerator. The duration can be extended by interconnecting multiple PEP units or directly connecting renewable energy sources like solar panels, solar shades, wind turbines, other DC sources, or existing rooftop solar via in-house AC circuitry or directly to the PEP's DC source port.

How much does it cost?

PEP costs are mostly based on the types of end devices connected and the desired backup duration that determine the amount of energy storage capacity (number of batteries) required. The base communications model, CommHub, is anticipated to be \$465 USD for 440W/.44kWh for 2-4 hours of backup or \$695 USD for 660W/.66kWh for 4-6 hours of backup power. The expanded capacity PowerPlus model is anticipated to be \$1345 USD for 1250W/1.25kWh for 5-10 hours of backup power.ⁱ

How much does it save me? How long until it's paid off?

The PEP saves money by using low-cost grid electrons during daily periods of higher-cost grid electrons. The cost differences could range from \$0.14 to \$0.70 per kilowatt (kW) for grid generated energy between these periods.ⁱⁱ Estimated yearly minimal savings are \$38 for the CommHub and \$78 for the PowerPlus PEP.ⁱⁱⁱ Using rooftop solar, or direct PEP solar panel shade or window offers 4x the yearly savings, \$154 and \$320. Renewable electrons have \$0/kW generation costs and don't incur transmission and distribution costs, which typically equal the utility's generation costs and added to one's utility bill.

The average PEP payoff period is 4-7 years with a lifecycle of 10 years. It is important to note that over configuring the energy storage capacity of the PEP for extended backup duration periods increases the overall PEP costs and potentially reduces the daily savings benefit. Optimum savings and payoff periods are achieved when the PEP energy storage capacity is slightly higher than what the connected devices use during daily higher-rate periods. By more closely matching the amount of stored lower-cost energy with the actual daily energy usage patterns maximizes the savings benefits and reduces the payoff period.

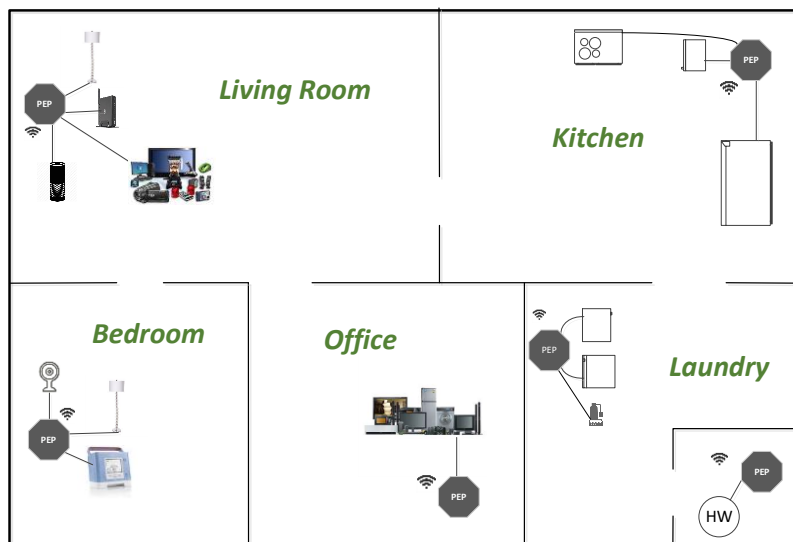
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We believe the CommHub and the PowerPlus models closely match the daily power usage patterns of the devices used by most renters and allows for an acceptable minimal backup power reserve capacity. We intend to provide PEP sizing guidance to customers to help analyze their utility rates and the connected devices' daily power loads and to recommend an appropriate PEP model and energy storage capacity.

Portable Residential Storage

We approach residential storage from the renter's perspective. The Personal Energy Platform's portable energy storage solution allows renters to purchase the appropriate amount of energy capacity for the devices they want to backup and the opportunity to lower their electric bills from the aggregate energy savings across multiple platforms.



Customers can deploy multiple PEPs with different energy storage capacities to match different power needs.

The combined PEP energy storage can lower energy bills by 10-20% and provide hours of backup power.

A single Personal Energy Platform intelligently manages energy for up to 8 attached devices, has a built-in wireless charging pad, and allows for simultaneous use of renewable energy sources via direct solar panels, solar shades, wind turbines, or other generation sources.

Energy Efficiency

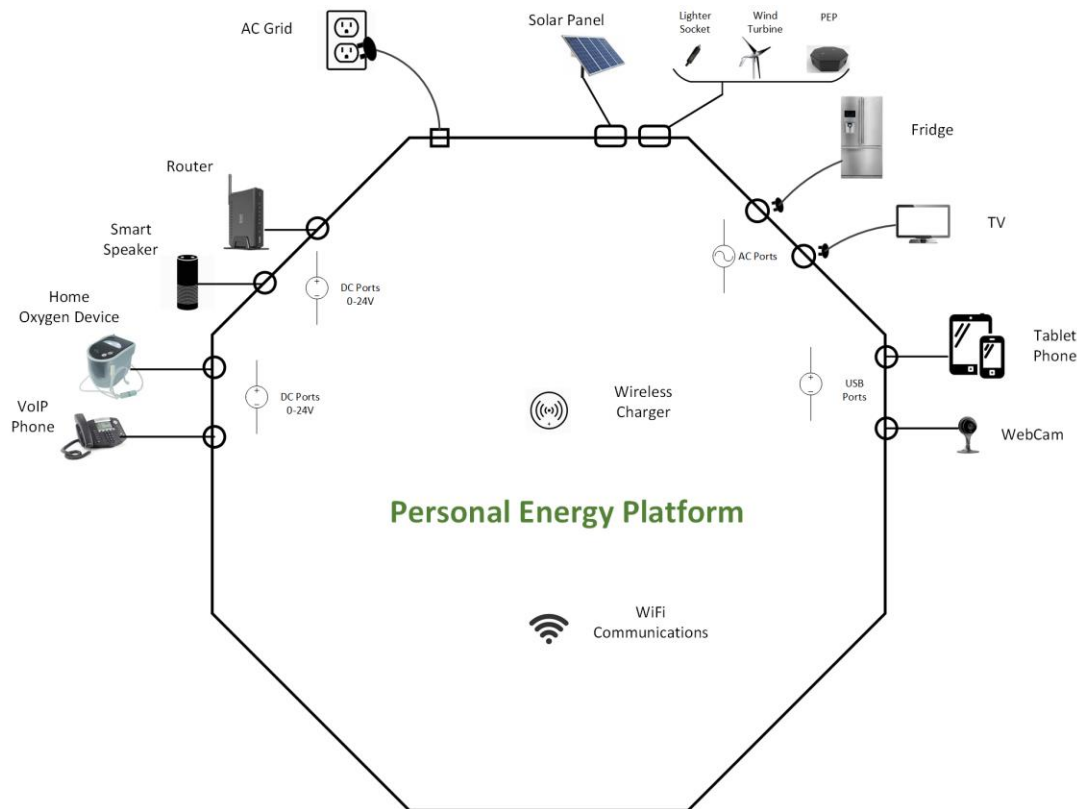
The Personal Energy Platform addresses multiple energy efficiency and consumer usability concerns not addressed by stationary whole-house energy storage systems or standalone portable backup power systems. The Personal Energy Platform is designed to be integrated into the daily energy usage behaviors of our customers, improving their energy efficiencies, reducing their CO2 emissions, broadening their energy awareness, and enabling personal energy control.

The Personal Energy Platform power architecture design provides approximately 10% greater energy efficiency during daily operations and 20% greater energy efficiency during backup power periods,

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thereby lowering your electric bill. The Personal Energy Platform can extend device backup power duration by 15% over a whole-house energy storage system with an equivalent energy storage capacity.



Although the grid delivers AC power, 95% of all consumer devices actually operate on DC power. The Personal Energy Platform's internal AC-DC power inverter allows us to replace individual device AC-DC inverter power cords with a direct DC-DC device power cord. This alone reduces energy inefficiency by up to 10% per device, eliminating 200W-500W of wasted energy per device per day.

Energy Awareness

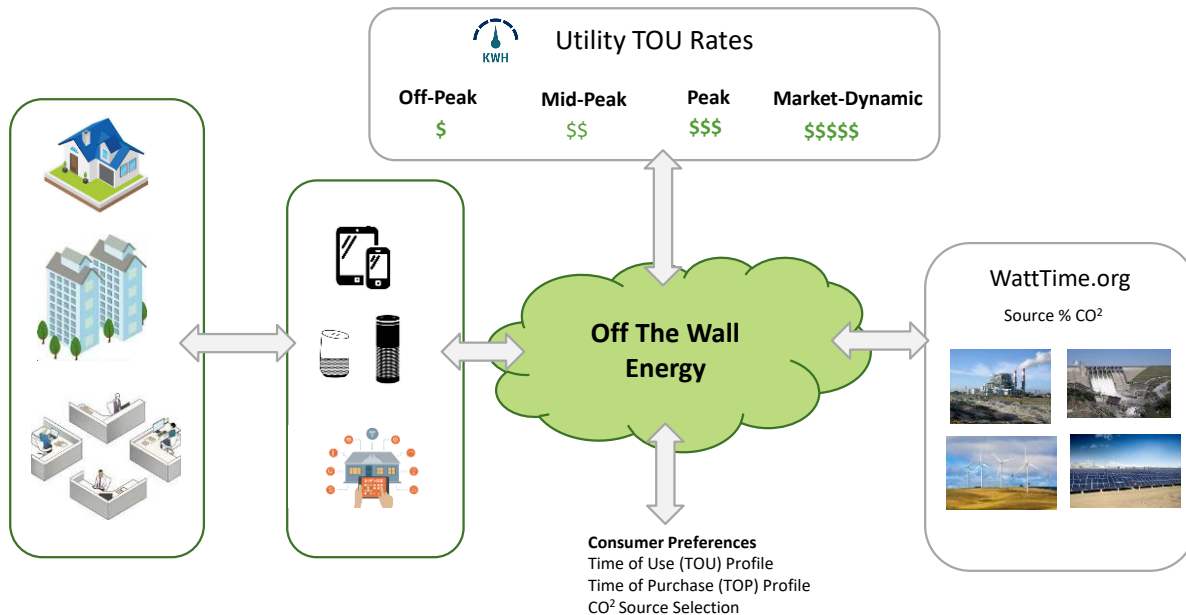
To make a meaningful impact on climate change through energy efficiency efforts will require broad large-scale changes be adopted by everyone, no matter their socio-economic status or ability to change their lifestyles. The Personal Energy Platform can bring greater energy awareness to everyone and be a tool to help make a difference.

We want to give consumers control over their energy purchase options and provide a means to set individual decarbonization goals to help with Climate Change. Today, consumers can pre-set the Time-of-Purchase times to charge their Personal Energy Platforms with the lowest cost utility rates and shift

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that power to be used during times of high rates. Tomorrow, we anticipate the ability to dynamically purchase the cleanest energy from the lowest CO² generation source.^{iv}



Every day we see media articles and new renewable energy solutions emerge that are shifting the energy paradigm to lower carbon emissions and sustainable energy sources. An expanding ecosystem of renewable energy solutions offers renters new opportunities to control their energy usage. The Personal Energy Platform's portable energy storage system can participate in this ecosystem and bring benefits to all consumers, especially renters.



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Energy Equity is a core value of our company.

The Pacific Northwest National Lab defines it as:

Energy equity recognizes that disadvantaged communities have been historically marginalized and overburdened by pollution, underinvestment in clean energy infrastructure, and lack of access to energy-efficient housing and transportation. An equitable energy system is one where the economic, health, and social benefits of participation extend to all levels of society, regardless of ability, race, or socioeconomic status. Achieving energy equity requires intentionally designing systems, technology, procedures, and policies that lead to the fair and just distribution of benefits in the energy system.

The Personal Energy Platform advances Energy Equity for renters and provides opportunities for them to independently lower their CO2 emissions.

WattTime.org

“Off The Wall Energy is truly thinking differently about empowering each of us with the ability to lower our carbon footprint. Giving consumers intelligent control over their energy usage in ways that increase efficiency and resilience is a perfect complement to Automated Emissions Reduction (AER) which provides the added benefit of environmental impact. Expanding these capabilities into new regions is well aligned with WattTime's mission to enable all organizations and consumers with new clean energy choices. WattTime intends to act as a project partner with Off The Wall to develop a marginal emissions model which would allow Off The Wall's Personal Energy Platform to automatically shift energy use to the cleanest time periods and avoid the dirtiest. Please note that engineering research to determine feasibility of development of emissions data in the region would be needed to determine WattTime's role in the project.”

ⁱ Personal Energy Platform prices represent current estimates in USD, actual retail prices may differ.

ⁱⁱ Utility rates expressed in kWh are representative of multiple US regional utility generation and full delivery rates.

ⁱⁱⁱ Calculated using 2022 TOU-DR2 rates of San Diego Gas & Electric (SDGE), an investor-owned utility IOU. <https://www.sdge.com/total-electric-rates>

^{iv} WattTime is a nonprofit subsidiary of the Rocky Mountain Institute founded in 2014 by UC Berkeley researchers to give energy customers the freedom to choose the power they consume. We seek to give organizations the information they need to make smart energy decisions. Our analytical approaches are built on research at Carnegie Mellon and UC Berkeley and make us uniquely qualified to deliver Automated Emissions Reduction (AER) technology, conduct avoided emissions analyses and other environmental impact assessments.