



SENSIBLE SOLAR AZ™

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Sensible Solar Az
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What are the benefits or drawbacks to storage battery only without adding solar panel system?

To hook up a Tesla Powerwall (or similar battery storage) to a home without solar panels, you would configure it as a backup energy storage system that charges from the grid. Here's how it would work and what's needed:

Basic Setup Without Solar

1. Battery Selection:

- Tesla Powerwall (typically 13.5 kWh capacity per unit)
- Choose the number of units based on how much backup power you want.

2. Main Components:

- Powerwall battery
- Tesla Gateway (manages power flow between grid, home, and battery)
- Compatible electrical panel (breaker box)
- Home grid connection

3. How It Works:

- Powerwall charges from the utility grid during off-peak hours (if allowed).
- In a grid outage, it powers your home automatically.
- You can also use it to reduce peak demand costs if your utility has time-of-use rates.

4. Installation Steps:

- Site Assessment: Certified installer evaluates your home's electrical system.
- Permits: Local permits and utility approval are required, even without solar.
- Installation: Installer connects Powerwall to your main panel through the Tesla Gateway.
- Configuration: Gateway is set up to manage charging and discharging as per your preferences.

5. Control System:

- Tesla app lets you monitor and control energy use.
- Set modes like "Backup-Only" or "Time-Based Control" for optimizing use.

Important Notes

- Utility Approval: You need utility approval even if you're not generating power.
- Cost: A single Powerwall installed (without solar) typically costs \$15,500, depending on location and labor.
- Charging from Grid: Not all utilities allow battery charging from the grid, so check your local regulations.

To estimate the typical savings of using a Tesla Powerwall (without solar) on a home using 13,000 kWh/year (about 1,083 kWh/month), we need to consider a few key variables:

1. Your Electricity Rate Plan (e.g. TOU)

Since Powerwall saves money primarily by shifting energy use, your savings depend largely on:

- Time-of-Use (TOU) Rates: Cheaper electricity at night, expensive during the day.
- Rate Difference: The bigger the price gap between off-peak and peak, the more you can save.
- APS TOU Example:
 - Off-peak: ~\$0.16/kWh
 - On-peak: ~\$0.34/kWh
 - Difference: \$0.18/kWh

2. Powerwall Specs

- Usable capacity: 13.5 kWh

- Cycle efficiency: ~90%
- Daily savings potential (1 cycle/day):
 $13.5 \text{ kWh} \times \$0.15/\text{kWh} \times 0.9 \text{ efficiency} = \sim \$1.94/\text{day}$
- Annual savings: $\$1.82 \times 365 = \sim \$709/\text{year}$

3. Real-World Adjustments

- Not all usage is during peak hours.
- You may not fully discharge/recharge every day.
- APS may have demand charges, which batteries can help reduce (but estimating that requires load profiles).

A realistic estimate for a battery-only setup (without solar) in Arizona with TOU pricing is:
 \$400–\$600 in savings per year per Powerwall, assuming daily full cycles.

Cost vs Savings

- Powerwall cost installed: ~\$15,500.00 (for 1 unit)
- Simple payback period:
 $\$15,500 \div \$709/\text{year} = \sim 21.86 \text{ years}$
 (Battery warranty = 10 years)

Financially ROI is poor (20+ years) without solar or other incentives, whereas solar+ battery averages 8-12 years.



Key Considerations

- **Functionality:** The Backup Gateway manages the connection between your home, the Powerwall, and the grid. It enables features like automatic backup during outages and energy monitoring.
- **Installation Costs:** Depending on your home's electrical setup and local labor rates, installation can add several thousand dollars to the total cost.
- **Model Selection:** Ensure compatibility between the Gateway model and your Powerwall version. Consulting with a certified Tesla installer can help determine the appropriate configuration for your needs.

If you're considering integrating a Tesla Powerwall into your home energy system, it's advisable to obtain quotes from certified installers to get a comprehensive understanding of the total costs involved, including equipment and installation. Great question. Using battery storage with solar instead of battery-only offers strategic and financial advantages, especially for homeowners.

Here's why solar + battery is usually the smarter route:

1. Better Return on Investment (ROI)

- Solar panels generate free electricity from sunlight.
- Batteries can store that free energy, allowing you to use it at night or during high-rate peak hours.
- With battery-only, you're just storing grid electricity (which you pay for), so you're not really saving money—just shifting when you use it.

Example:

- Solar + battery can offset 60–100% of your electric bill.
- Battery-only may save 5–10% via time-of-use shifting—often not enough to justify the cost alone.

2. Maximize Incentives

- Federal tax credit (ITC) applies to the full cost of a solar + battery system (currently 30%).
- If the battery charges only from the grid, it may not qualify for the tax credit.
- Many state and utility incentives also require solar.

3. Energy Independence and Outage Protection

- During outages, solar+battery setup recharges battery during day and powers your home continuously.
- Battery-only systems won't recharge until the grid returns—a problem in any outage.

4. Environmental Benefits

- Solar lets you reduce your reliance on fossil-fueled grid energy.
- Battery-only setups don't reduce your carbon footprint unless you're in a region with a very green grid.

5. Long-Term Resilience and Scalability

- You can scale a solar + battery system over time—start with solar and add a battery later or vice versa.
- Future electricity costs are likely to rise; generating your own power can hedge against that.



Charging a Home Battery from the Grid with APS

APS permits batteries to charge from the grid without solar panels, enabling homeowners to:

- Time-shift energy usage: Charge the battery during off-peak hours when electricity rates are lower and discharge during peak hours to reduce energy costs.
- Provide backup power: Ensure essential appliances remain powered during grid outages.



Key Considerations for Battery-Only Installations

- Utility Approval: Even without solar panels, installing a battery system requires submitting an interconnection application and obtaining approval from APS.
- Certified Installers: Installation must be performed by a licensed contractor familiar with APS requirements.
- System Configuration: The battery system should be set up to charge from the grid and discharge to the home, aligning with APS's guidelines.



Next Steps

If you're considering installing a battery system without solar panels:

1. Consult with Certified Installers: Reach out to licensed contractors experienced with APS's interconnection process.
2. Review APS Guidelines: Familiarize yourself with APS's requirements for battery installations to ensure compliance.
3. Evaluate TOU Plans: Assess APS's TOU rate plans to determine the potential cost savings from time-shifting energy usage.

The purpose of my information is to open your eyes to the fact even though you can do storage battery by itself, normally does not make sense financially or practically.

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