



# Case Study: Eliminating the Utility Bill

## OutBack Grid/Hybrid Power System Installation



### Overview

**Paso Robles, California** is a populated urban area with an abundance of solar exposure and limited building space. Due to an unreliable utility grid producing frequent service outages, the community sought **an alternative energy solution to offset utility grid dependency and take advantage of California’s lucrative net-metering opportunities.** A grid-tied system would exceed spacing restraints and disconnect from the grid during utility outages— an all-too-frequent occurrence. With these limitations in mind, it was clear that this project required a more advanced system with a small footprint.

Working within project constraints, Mobile Solar designed a PV system with 418Ah/48V battery backup storage housed in a custom-built structure behind the condominium. The state-of-the-art system includes an **OutBack FLEXpower TWO** pre-wired system to maintain the backup batteries at a full state of charge and supply power to the OutBack inverters, allowing the resident to sell excess electricity back to the grid for additional financial incentives. Using this net-metering program, the condominium owner now has the potential to completely eliminate costly utility bills.

### System Specifications

- Location:** Condo Building, Paso Robles, California
- System Power:** 48Ah/48V Battery Backup
- System Components:** FLEXpower TWO (2 FX Inverter/Chargers, FLEXmax 80 and MATE3)
- Power Source:** PV Array and Battery Backup



*When it comes to residential PV systems that are both grid-tied and backed up by batteries, customers want options. That is why we sell and install OutBack Power's line of inverters, charge controllers and fully-integrated systems. The versatility of OutBack inverter/chargers make them easy to integrate. Working with them is a pleasure."*

**Travis Semmes**  
Mobile Solar





## Challenge

An abundance of solar exposure and unreliable utility power led one Paso Robles resident to research alternative energy solutions for a California home. The homeowner's goal was to offset energy costs by using solar power to take advantage of California's net metering incentives by selling excess energy back to the utility, as well as have the added security of backup power for potential blackouts. Limited space and the absence of a garage significantly limited his options. A grid-tied system would help offset utility costs and require significant space, but it would not provide the critical backup power necessary during frequent outages. An off-grid system would take up considerable space and would not permit selling to sell excess power back to the utility company. Mobile Solar recognized these unique challenges and engineered a Grid/Hybrid solar system with a small footprint.

## Objectives

- Install a photovoltaic (PV) solar powered system in a condominium in a densely populated urban area
- Design a battery-based backup system that could fit into a compact, inconspicuous space for a condo
- Ensure uninterrupted power for the resident, in spite of a relatively unreliable local utility source

## Solution

Grid/Hybrid designs provide both grid-tied savings and off-grid independence during outages. Mobile Solar designed this Grid/Hybrid PV system around a 418Ah/48V industrial battery backup system housed in a specially built shed behind the condominium. The system gets power from an array of 12 solar panels and a generator that boosts the system's batteries as necessary. An **OutBack FLEXmax 80** Charge Controller optimizes system charging and is one component of the **OutBack FLEXpower TWO** pre-wired system also consisting of two inverterchargers, a communications hub and an **OutBack MATE3** system display/controller. The inverter delivers AC power back to the main panel, maintains battery charging and sells electricity back to the grid as allowed through California state incentives.

After receiving approval by both the City of Paso Robles and the Pacific Gas and Electric Company, the system now receives DC power from the solar array and runs it to the OutBack charge controller, which maintains the batteries at a full state of charge and supplies power to the OutBack inverters. In addition to financial benefits, **the homeowner now has consistently reliable power and is not effected when the grid goes down**, thanks to a system that seamlessly transitions between grid-tied and off-grid operational modes.



## Benefits

- Grid independence and up to 100% energy cost savings, resulting in a potential \$0.00 energy bill
- Capability to sell excess electricity back to the grid
- True grid independence with a constant, uninterrupted energy supply in the event of a power outage.