

Hybrid Power System

Repeater Site in Sierra Vista, AZ



This is the site of a cellular repeater along a remote stretch of highway near Sierra Vista, Arizona.

At the time of installation, there was no utility connection at this cellular repeater site. Initially the repeater was powered by a 10kW Onan propane generator. Running this generator 24/7 required an inordinate amount of generator maintenance and fuel. It was costing over \$21,000 annually to power the 250W continuous load. Alpha Energy engineered the perfect solution, a Hybrid Power System (HPS). This HPS is now saving about \$20,000 per year and had a payoff period of roughly two years.

The HPS24-900/1500 combines two power sources (photovoltaic and engine generator) with energy storage (battery bank) to provide reliable, 24/7 power. The PV array delivers over 75% of the total energy consumed by the repeater and, in combination with the battery bank, reduces the generator runtime from 8,760 hours per year to less than 200 hours per year. This allows for a smaller, lighter duty generator to be used, resulting in significant fuel savings.

System Specifications

System Voltage:	24VDC
Maximum Customer Load:	300W DC, continuous
PV Array:	(6) BP solar SX150 modules (900W, 24VDC)
Generator:	Kohler COM-6 (6kW, 24VDC, variable speed, 1800 to 3600RPM, propane)
Battery Bank:	(12) AIP OPzS-1500 (flooded, 1500Ah, 24VDC)
Weight:	5400lbs
Temperature:	-4 to 104°F
System Maintenance:	Every 3 to 6 months (generators and batteries)

System Configuration

