



Springerville Generating Station Solar System

4.6 MW Original PV System Fact Sheet — March 1, 2011

System Information:

Total Array Coverage Area:	44 acres
Number of PV Arrays - Fixed at 34 Degrees Tilt:	34 arrays
Total Number of PV Modules:	34,980 modules
Total PV DC Array Capacity Rating (STC):	4,590 kW
Total System AC Rating:	3,812 kW
Expected 2011 Annual Net AC Energy Production:	6,598 MWh
Average Annual Energy Production Site Rating:	1,730 kWh / kW DC

Array Information:

Parameter:	ASE – Phase 1	First Solar – Phase 2	BP Solarex – Phase 3
Number of Arrays:	26	4	4
Module Type:	300 DG/50	FS-45 & FS-50	MST-43
Modules per Array:	450	2688 to 3024	3000

Inverter Information:

Inverter Type:	Xantrex PV-150
Rated Capacity:	150 kW

SGS Solar System Description (4.6 MW DC system)

The Solar System located at the Springerville Generating Station (SGSSS) was designed to be built in phases with a fully completed continuous generating capacity of 8,000 AC kW, of which nearly 4,000 AC kW has been completed. The modules are fixed, south facing with a tilt of 34 degrees from the horizontal. Most of the blocks on the east side of the field use crystalline silicon PV modules of type 300 DG/50 from RWE Schott. Each block uses 450 of the modules for an STC DC power rating of 135 kW.

Blocks built on the west side of the field accommodate thin film PV modules. Four of these blocks have 2,688+ Cad-Tel First Solar FS-50 PV modules for an STC DC rating of 134.4+ kW. Four other blocks have 3000 a-Si BP Solarex MST-43 PV modules. These units have an STC DC rating of 129 kW.

All units use a Xantrex PV-150 inverter to convert the variable 300 to 600 volt DC power to 208 volt 3 phase AC power. Each unit has a DC disconnect, 208 to 480 volt step-up/isolation high efficiency transformer, revenue meter and AC disconnect. All data from this field is transmitted back to Tucson, AZ for evaluation and posting.

The electrical infrastructure is tied into groups of four blocks that are connected in parallel to each

of eleven 500 kVA 480 volt to 34,500 volt high efficiency step up transformers. Each transformer has a continuous rating of 500 kVA and can accommodate up to 650 kVA for brief intervals. The high voltage sides of the transformers are connected to a 34.5 kV distribution system which feeds the well field pumps of the Springerville Generating Station. The pumps operate



continuously with an average load of about 10,000 kW. The SGS Solar System is a customer based distributed generation system providing power to the pumps. As the distribution line is connected to the main switchyard at SGS, any excess energy produced will flow through the switchyard to the grid.

The system produces the most power capacity during the cooler months of the year when the sun is near latitude angle. This typically occurs

in March and April. Solar insolation at the 6,650 foot elevation site has been measured at over 1,500 watts per sq-meter in these months for short periods and at over 1,300 for one minute averages. These events occur during cloud passage which creates strong sunsplash conditions. The actual AC output of the units during severe sunsplash conditions have been measured at 157 kW for 10 second averages. The average net annual production is 7,550,000 kWh. The average monthly capacity factor for the system is 19%.

The system operates as an unmanned site and is monitored continuously via an Internet based communications channel. Nearly all operational functions can be performed by remote control, including inverter reconfiguration. Alarms are logged and data is taken from each of the 34 inverters and the revenue meters on 10 second scan cycles and averaged for one minute archiving. Spare parts are maintained on site and local based service personnel dispatched to site to perform repairs in response to alarms.

