

## **Meadows Field Solar Facility Project Summary**

### **The Request for Proposal (RFP)**

The RFP was first posted on the project website on February 25, 2008. Six competitive proposals were received. The evaluation committee recommended Regenes Power, LLC, Orinda, California as the best overall benefit to the County.

The Board of Supervisors awarded the contract to Regenes on May 6, 2008.

### **The solar facility**

The solar facility consists of 4,704 solar modules, each of which is rated for 185W of direct current (DC) electricity. The 870 kW of DC electricity is converted into 744 kW alternating current (AC) electricity by 3 inverters and a new PG&E transformer, and then fed into the terminal's 480V electrical system.

The solar panels are tilted 15 degrees to the south, and rotate east to west to track the sun during the day. Features include a self-cleaning water system, and a kiosk in the terminal lobby that will show system performance from the solar facility's public website.

Since solar energy is obviously only generated during the day, and the facility has no battery storage system, power at night is provided by the PG&E grid. (In the event of a power outage, the terminal's emergency generator will activate.)

The solar array field can be expanded, but is currently designed to provide power only to the new William M. Thomas terminal. The terminal used about 2,300,000 kW-hours of electricity in 2007. The 744 kW AC solar facility will provide an estimated initial 1,690,000 kW-hours per year of solar-generated electricity, and is expected to degrade at less than 1% per year. (90% of the estimated annual kW output is guaranteed by contract.)

Most of the solar power will be used directly by the terminal, but during peak hours in the summer when solar production exceeds the power demands of the terminal, excess solar power will be automatically sold back to the PG&E grid...at peak rates...by way of a net metering agreement (i.e., the meter "spins backwards"). The County will benefit from the difference in what we bought the energy for (from Regenes, per contract) vs. what we sell it for (to PG&E, based on the A-6 tariff rate).

We will also be doing our part to help mitigate brownouts during these peak periods by adding power to the grid rather than drawing power from it.

In summary, power will be provided to the terminal as follows:

- During the day, power will be provided by the solar facility:
  - When solar production exceeds demand, excess power will be sold back to the grid.
  - When solar production is less than demand, supplemental power will be bought from the grid.
- During the night, power will always be bought from the grid
- There are two ways to measure the overall solar facility output:
  - In terms of overall **kW-hours**, the solar facility will produce about 2/3 of the total annual electricity consumed by the terminal.
  - In terms of the **dollars** spent on electricity, the solar facility will account for about 85% of the terminal's total annual electrical bill.  
(This is due to the on-peak, part-peak, and off-peak rate structure of PG&E's A6 tariff, and *when* power is sold to, or bought from, the grid.)

### **The energy services agreement**

The form of the agreement between the County and Regenes is a Power Purchase Agreement (PPA). The solar array will be designed, financed, owned, operated and maintained by Regenes Power. The total investment will be approximately \$6,000,000.

The County's upfront costs were only hiring a solar consultant, a preliminary soils report, and a refundable deposit for participation in the California Solar Initiative (CSI) rebate program.

The Airport gets an overall reduction in energy costs, while Regensis is the system owner and receives Federal incentives (accelerated depreciation and the investment tax credit, which the Airport as a public agency would not qualify for), as well as the State rebate through the California Solar Initiative.

The County will pay Regensis a fixed amount per kWh for all solar power generated, even if the array produces more than the terminal uses (see the advantage of this overproduction above). The cost of our power from Regensis is set for the 20-year term at \$0.125/kWh for the first-year, with a 2.9% annual escalator (less than PG&E's historical average increase).

While the cost of power purchased from PG&E will be subject to unknown future rate changes, the PG&E power purchased will be from the cheaper electricity during off-peak hours.

At the end of the 20-year initial term, there are two 5-year options. Or the Airport can buy the facility at the then-fair market value and operate it itself, with no further energy bills paid to Regensis, but the Airport would incur the cost of operation, maintenance, insurance, etc.

### **Renewable energy certificates**

Renewable Energy Certificates (RECs) are publicly tradable environmental commodities that derive from the creation of a renewable energy facility. RECs can be sold by the green energy provider to others who want to offset any carbon emission taxes they may owe, or who need to comply with other green mandates to which they may be obligated.

In our case, RECs are split 50/50 between the Airport and Regensis. The value of these certificates is not fixed; estimates vary from \$0.01/kWh of energy produced over the life of the system, to as much as \$0.08/kWh. Assuming \$0.01/kWh, a 50% share would be worth around \$160,000.

### **Land lease**

Regensis will pay \$0.01/s.f./year to lease the airport land the array is built on, covering about 6 acres. Solar is the best use for this land, since it is on highly restricted airport property, and also shares duty with a drainage sump (which also explains why the market-value rent is relatively low).

### **Economic benefit**

When all of the pricing and technical factors are evaluated over the 20-year term of the agreement, we estimate a 16% average annual savings in electrical bills, or well over \$1,000,000 total. Our research of other solar facilities in the area shows they are outperforming their original projections. These savings will be magnified as we begin to institute an internal energy savings program (lighting and HVAC re-programming/reduction).

### **Environmental benefit**

According to Regensis, this solar facility will result in the following annual reductions of greenhouse gasses:

- 4,000 pounds of nitrogen oxides
- 7,000 pounds of sulfur dioxide
- 2,000,000 pounds of carbon dioxide

END