Design and construction: OLIN SOLAR TEST STAND

Which are appropriate for Olin?

CBA of 45kWh battery

As part of the SCOPE contract for Premium Power and Olin College, Premium Power would contribute a 22kWh Pro 45 battery. This battery is the smallest of the battery systems that Premium Power produces, and it’s 45kWh.

We evaluate all potential duty cycle details for the grid connected grid, with a 45kWh energy system. The system considered consists of only the battery connected to the grid, with a solar array.

Peak Shaving

Electric rates include a demand charge, which is a fee based on the greatest amount of power used every month. If Olin’s diesel unit is in operation in September (2005) and October (2006) and charged $23,000 to $27,000, resulting in a demand charge of $26,000. (or 10% less). The average rate or the total number of kWh billed in September (2005) and October (2006) will be approximately $23,000 to $27,000, resulting in a demand charge of $26,000. This tariff is calculated by the electricity utility that the demand charge is the greatest of the peak demand month, the month in which the energy usage is the highest. This tariff is calculated by the electricity utility that the demand charge is the greatest of the peak demand month, the month in which the energy usage is the highest.

Uninterruptible Power Supply (UPS)

This is an important consideration for any building with the same peak demand charge. In this case, the UPS would be required to supply power to the Olin College campus in the event of an emergency or a power outage.

Load Shifting

This concept is similar to a load management system, where the load is moved to a period when the energy usage is lower. This can be achieved by increasing the energy usage during peak hours and reducing the energy usage during off-peak hours.

Grid-connected solar

Grid connection is a key factor in determining the cost of a solar power system. A grid-connected system allows for the energy generated by the solar panels to be sold back to the utility grid, and this revenue can be used to offset the cost of the system. The efficiency of the solar panels and the amount of energy generated by the panels are also important factors in determining the cost of a grid-connected system.

Future directions

Due to the time constraints of the SCOPE project, the Premium Power contract was unable to complete all of the work that was intended to be done in the future. The work that was completed included the development of a new solar power plant, the installation of a new solar array, and the development of a new solar tracking system. The progress report for the future work was submitted to the Massachusetts Technology Collaborative (MACTC) and is available on-line at the Premium Power website. The report includes a summary of the work that was completed and the plans for future work.

Grid w/ storage

A grid connected solar system makes use of a battery to store energy during peak times and dispense it during off-peak hours. This system has a slope of 0.6, as shown in Figure 3. The solar array is designed to charge the battery during the day and discharge it during the night. The system is designed to provide a maximum of 24kWh of power during peak hours and 12kWh during off-peak hours.

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conclusions

We conclude that grid connected solar is not currently financially feasible for the college.

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