Renewable Energy Projects for Government Agencies and Businesses

Part Two of Two
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SP&H has assisted clients with successful energy plan implementation, due diligence, life-cycle analysis, and financial incentives (Part One, last issue). We also help clients understand financing structures and financial feasibility analysis as well as other quantitative benefits (Part Two).

In the previous issue of *Valorem Principia*, Part One of this article discussed successful energy plan implementation, due diligence, life-cycle financial analysis of a solar photovoltaic ("PV") system, and financial incentives. In Part Two we will discuss financing structures and financial feasibility analysis as well as other quantitative benefits.

FINANCING STRUCTURES

Non-profit organizations are not able to benefit from any tax credit or depreciation incentives since they do not generate taxable income. For-profit third party ownership allows non-profit organizations to indirectly benefit from all available incentives that would otherwise not be available. This benefit is passed through to the non-profit organization in the form of a lower payment under the chosen financing structure, as discussed next.

POWER PURCHASE AGREEMENTS

A PPA can be a contract between a non-profit organization and a third party, typically an investor, where the non-profit organization purchases power produced by a PV system based on a pre-determined price per unit, i.e., $/kWh produced. A PPA specifically for the purpose of providing a solar energy system is also known as a *solar service agreement*. A typical PPA term is 20 years. Such an agreement allows a non-profit organization, which cannot fully utilize all available incentives, to indirectly benefit from them through a lower PPA energy rate.

EQUIPMENT LEASE AGREEMENTS

Under an equipment lease agreement, the installer sells the PV system to a third party, typically an investor, which then leases the PV system to a non-profit organization. As the PV system owner, the lessor can apply for and receive the Treasury Cash Grant ("TCG"). The lease payment is a fixed amount and, unlike a PPA, does not vary with production. A typical lease term is 15 years. Tax counsel should be consulted to assure that the terms of the lease meet the criteria of an operating lease. All available incentives are reflected in the form of a lower lease payment.

MEASURING SAVINGS FROM A PV SYSTEM

Determining if a PV system is financially feasible requires a comparison of annual costs to the purchasing party, i.e., non-profit organization, over the life of the PV system to the purchasing party's offset utility costs during the life of the PV system.

The first step in calculating the utility cost that is being offset by the PV system production is establishing the appropriate utility rate per kilowatt hour, and then applying it to the PV system's kilowatt hours produced. For example, Southern California Edison utility rates include charges for energy use, by customer, and by demand. Energy use charges involve delivery service and generation charges based on time of use ("TOU"), customer charges and related facilities, and a power factor adjustment. Demand charges are not TOU charges. Time related demand depends on TOU during summer (12 a.m. on the first Sunday in June through 12 a.m. of the first Sunday in October) and winter (the remainder of the year). TOU rates are based on three time periods, on-peak, mid-peak, and off-peak, with maximum demand rates established for each time period based on the maximum average kilowatt input recorded during any 15-minute interval during each month. On-peak hours are noon through 6 p.m. on summer weekdays, except holidays. Mid-peak hours are 8 a.m. to noon and 6 p.m. to 11 p.m. on summer weekdays, except holidays, and off-peak hours account for all remaining hours.

FINANCIAL FEASIBILITY ANALYSES

There are three primary methods of financial analyses.

The first is the net present value ("NPV") method, which is the sum of the present values of the annual cash flows during the life of the PV system minus the present value of the investments. An appropriate discount rate accounts for the time value of money and uncertainties associated with the cash flows. This method is important, as it shows the net value of the PV system from year to year.

Another method is based on the internal rate of return ("IRR"), which is the discount rate that makes the project's cash flows and investments have a zero NPV. It is important to define a threshold IRR prior to evaluating the PV system. An IRR of 0% does not make a project financial feasible as it fails to compensate an investor for the time value of money and the uncertainties associated with future cash flows.

The last method is the payback period, which is the length of time required to recover an initial investment through cash flows generated by the investment. The payback period is important when considering an organization's financial ability to implement a PV system.

All financial feasibility analyses are highly dependent on a PV system's cost, which in turn is subject to market price fluctuations of commodity type raw materials, such as PV panels and steel. If these price fluctuations cannot be controlled in the procurement process, there is the potential for a significant adverse impact. This could make a PV system financially unfeasible.

OTHER QUANTITATIVE BENEFITS

Additional quantitative benefits to the PV system owner include carbon credits, renewable energy credits ("RECs"), and possible employee health care savings as a result of a cleaner environment. Qualitative externalities include reduction of pollution and greenhouse gas emissions, reduced dependency on utility providers, and greater control over energy price volatility. In addition, PV systems can provide power during traditional power outages, whether due to natural disasters or any other reason.

Installing PV systems in parking lots and on rooftops or other existing structures provides shade while not infringing on an organization's operations and not requiring the acquisition of additional space. Finally, minimal maintenance costs are associated with PV systems, with long-term reliability of 25 to 40 years.

CONCLUSION

Financial analysis is critical to assessing the feasibility of an energy consumption plan. A complete financial analysis includes all factors present during the life-cycle of a PV system. These factors include, but are not limited to, the financing structure terms, investment costs, available incentives, utility energy costs, and externalities. Proper application of financial analyses to determine the financial feasibility of a PV system provides a critical portion of the overall due diligence procedures in implementing a PV system.

ABOUT THE AUTHOR

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Mr. Thomas E. Pastore is Chief Executive Officer and co-founder of Sanli Pastore & Hill, Inc. Mr. Pastore is an Accredited Senior Appraiser (ASA), Business Valuation Discipline, of the American Society of Appraisers, a Chartered Financial Analyst (CFA) Charterholder, a Certified Management Accountant (CMA), and received his Masters in Business Administration (MBA). He has valued over 2,000 businesses during his career, including numerous energy and clean technology companies. He regularly testifies in court as an expert witness. Mr. Pastore frequently speaks on business valuation to professional organizations.