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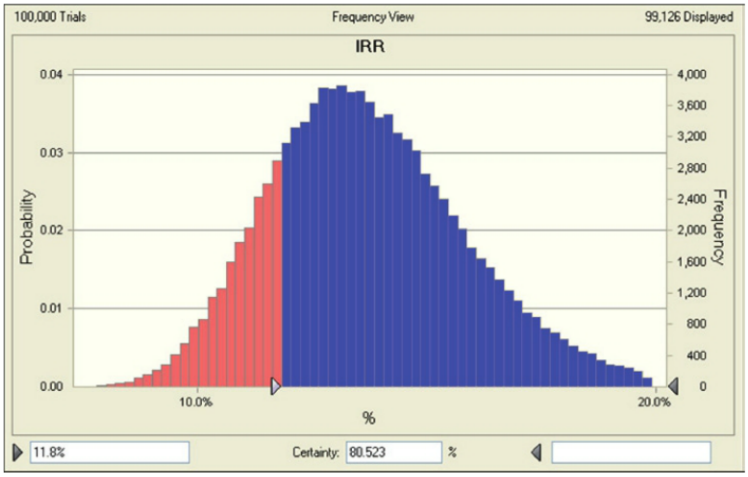
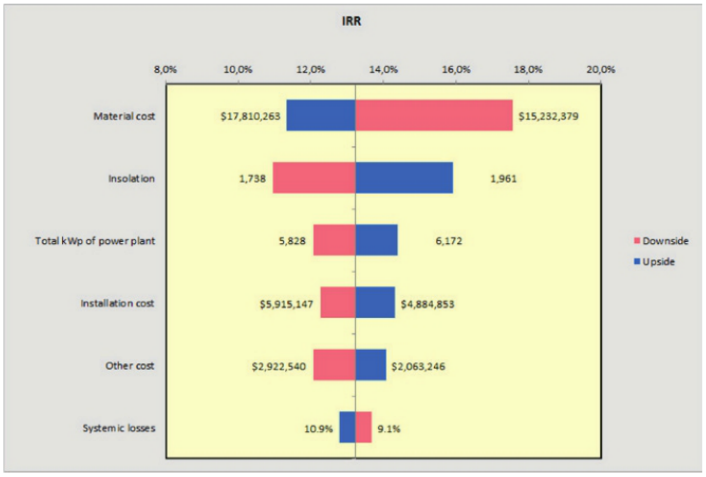
Selling Solar

Finding utility-scale success in a downturned economy

By Johannes Ritter



Graph 1: *The Probability Density Function (PDF) shows the likelihood of different levels of IRR being achieved.*



Graph 2: *The Tornado graph shows the impact of the key revenue and expenditure drivers on profitability, and the range of outcomes associated with the best and worst case scenarios.*

In the early days of the solar energy industry, political support and generous subsidies made solar modules so attractive to customers that little or no selling was required. Manufacturers invested heavily in plant and equipment, building up a high level of capacity. However, a reduction in subsidies has caused sales to decline sharply and the downturn, which started in mid-2011, is proving deeper and more extended than previously anticipated. At the same time, the financial crisis has made the financing of solar plants more difficult. Manufacturers like Solyndra and Sterling Energy have gone bankrupt, and others might follow.

For those players who can survive the hard times ahead and remain in the industry, the future may prove brighter. Solar energy is becoming cheaper and more efficient, plus the goal of grid parity—the point where its costs per kilowatt-hour (kWh) are equal to or lower than electricity supplied through the grid—is now within sight. The commercial development of solar power is expected to accelerate when that point is reached.

The minimum requirement for the industry to be competitive is for the efficiency of the modules, as well as the inverters and mountings, to keep improving. Production costs need to be reduced as far as possible without compromising quality. This much is fairly obvious, but "best practice" approaches to selling and project planning are just as important. Suppliers need to develop a more proactive approach to selling, a shift to providing more integrated turnkey solutions and business cases that inspire confidence in customers and bankers alike.

Proactive sales

Suppliers to the solar industry have historically been order takers, responding to sales already generated by government subsidies, which gave an attractive deal to customers. Now that subsidies have been cut back, the industry needs to strengthen its selling and business development capabilities, and allocate more resources to these areas. Manufacturers should be actively looking for projects to sell instead of waiting for customers to come to them.

Integrated solutions

There are many examples of new industries progressing rapidly from selling physical products in the early stages to selling services and solutions as they mature. Many of the big IT companies started out producing hardware, and moved toward selling computer services and turnkey solutions geared specifically to customers' requirements. Even the wind power industry has moved from manufacturing turbines to handing over completely installed wind power parks to its customers.

Solar power needs to follow suit. The old methods of selling panels based on the peak output (kWp) needs to give way to a more nuanced approach. Suppliers now must consider the interactions between all the factors that can reduce peak output, such as poor air circulation, location of panels, and site selection. They can learn from the example of EPC (engineering, procurement, and construction) suppliers who already operate within the industry. These organizations function either as intermediaries, or as overall project managers, for the delivery of complete turnkey solar plants, providing everything from project management, engineering, installation, and sometimes even marketing.

Understanding risks

Investors and customers need to know project-specific risks—from potential module degrading or poor inverter lifespan to local environmental regulations. In some countries, regulations have been changed after solar plants were built, significantly impacting profits. Statistically validated numbers, assigning financial values to the risks, and taking probabilities into account are necessary for success. A risk assessment will also show how to mitigate or reduce the more significant risks.

Investors need reliable numbers concerning costs and key performance indicators, including the internal rate of return (IRR), net present value (NPV), and payback period for the project. This does not mean that these numbers should be exact, however, especially for large projects where uncertainties need to be accounted for. For example, in a recently con-

structed solar plant, the IRR was initially calculated as 13.2%, with the payback period as 10 years. Such numbers suggest a false degree of precision that's unrealistic for a project with such a long lifecycle.

Applying a risk and sensitivity analysis to this same project demonstrates the variety of possible outcomes that could occur because of uncertainty. The Probability Density Function (PDF) in Graph 1 confirms that the average expected IRR is in the region of 13%, but gives a much clearer indication of the range of possible outcomes, most of which lie between 10% and 20%. The tool allows for predicting the probability of achieving any given IRR (in this case, it has a probability of 80% of being greater than 11.8%). Estimates such as these, based on thorough risk analysis, are of real value to investors and to banks.

Revenue & expenditures

All the main factors that affect the revenue or expenditure for a project can be calculated for three outcomes: the base case, the worst case, and the best case. Factors to consider include: the costs of installation, materials, maintenance, insurance, and leasing; the amount of solar energy received or insolation; the kWp of the power plant; systemic and other losses; as well as inverter efficiency and solar panel degradation. The impact that each has on profitability and the IRR can then be plotted on a graph that shows their relative importance, along with the amount of risk or potential variation associated with each one.

Graph 2 shows the results for the project previously discussed. The most significant risks herein were the material costs, which make a difference of 6.2% to the IRR, followed by insolation with 5%. Other significant items include the kWp, installation costs, systemic losses, and other costs. The greater the impact on profitability/IRR, the longer the line on the graph. The high-impact items appear at the top of the graph, and the tapering of lines toward the bottom gives this tool its name: the Tornado. The items that have the least impact are omitted from the graph, leaving only key issues. The resulting graph clearly illustrates which items are most important for the bottom line, and how great the risks are in each case.

Conclusion

Getting a bank loan has become more difficult as banks are increasingly risk averse, and are under pressure to improve their capital ratios. Banks are already asking for 20% to 25% equity for solar projects, compared to only 15% a few years ago. The business case methodology shown here reduces the perceived risk by providing a bank with all the relevant, project-specific information.

Manufacturers of solar modules, especially those with no strong brand image, are struggling at present. They can turn their fortunes around by adapting to the new market conditions, as other providers of mature technology have done before them. By focusing their sales approach to individual customer requirements and using techniques such as those outlined here, they can increase the value of their products, improve their margins, and overcome customer inertia and fear of the unknown.

Johannes Ritter is a partner at Solution Matrix. He's an expert on business case methodology, and has experience with solar and wind park projects.

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