

WHITE PAPER

RENEWABLE ENERGY



RENEWABLE ENERGY IS RAPIDLY GROWING AS BOTH AN ECONOMIC FORCE AND SOURCE OF POWER FOR INDIVIDUALS, BUSINESSES AND UTILITY COMPANIES.

The increase in renewable energy awareness seen in the last few years means more businesses are seeking out effective pathways to install their own infrastructure for this purpose, whether to power their own operations, or use as an investment by selling electricity back to the grid or by selling the project or a combination of these activities.

Sapere's work with an industrial client focused on the many economic, practical use and


regulatory considerations involved in developing four sites owned by the company into renewable energy generation sites. At the start of the project, the final determination between using wind or solar energy generation had not yet been made. Sapere's major tasks for analyzing each site involved evaluation, screening and business case development.

The environmental requirements involved were especially important, as the four sites were classified as brownfields by the U.S. EPA and similar state agencies. That meant the four sites in the Western United States had to be carefully assessed in relation to any activities that could impact air, water soil or any native species. This central concern had to be addressed throughout the entire process.

EFFECTIVE INITIAL ANALYSIS

The ultimate goal of the project, to develop effective use cases that make financial sense and allow at least one of the four locations to be effectively utilized as a site for renewable energy production, needed to take many components

into account. While the best-case scenario would be the option to use all four sites, careful analysis was required to ensure a proper level of suitability was found and the economic realities of operation would play in our client's favor.



The first task for Sapere was a feasibility – level investigation of each site, with a goal of creating a ranking of each site that could inform future efforts and guide the development of the process. Consultants started with a review of each site to find any fatal flaws on the property or in the surrounding environment. This approach ensures any overarching or obviously serious issues are sought out and recognized before any more work goes into screening and evaluation.

A VARIETY OF DATA HAD TO BE COLLECTED TO CRAFT EFFECTIVE AND COMPLETE PROFILES OF THE FOUR POSSIBLE SITES.

Along with a general recording of information such as the size of the plot of land, vegetation in

the area and changes in topography, other, more specific metrics were measured. They included existing provisions of any prior permitting, the likelihood of restrictions on further project development – ranging from the presence of protected species and wetlands to the need for environmental clean-up - and the proximity of any residential or commercial facilities that may be impacted by the operation of solar or wind energy generation and storage processes. A review of the potential strategies available to effectively work around existing limitations in a timely fashion was also an important part of the investigation as well.

With more than one possible benefit available from the process, it was important to take both the use of each site for power generation and subsequent sale as well as the financial value of accelerating cleanup and release of jurisdiction from regulatory agencies.

FOCUS ON ENERGY GENERATION VIABILITY

Determining the suitability of a given site for energy generation, whether through solar or wind, is a multifaceted process. Following the initial assessments, our consultants took a

detailed look at each site to uncover potential benefits and concerns and determine the usability of each. Some of the specific factors investigated included:



Determining whether solar or wind power generation was a better fit for each site.



Quantifying the ease or difficulty of electrical interconnection.



Estimating whether building on each site would be a reasonable task.



Measuring the likelihood of obtaining the necessary permits and other regulatory permissions.



Finding potential markets for the power generated at each site.


WITH THE RESULTS OF THE SCREENING ANALYSIS, INCLUDING THE ENVIRONMENTAL CONSIDERATIONS, AND THE ENERGY GENERATION VIABILITY REVIEW IN HAND, RANKING THE FOUR SITES IS A DATA-DRIVEN, OBJECTIVE TASK.

Following a review of those rankings with our client and a decision about which sites should be further investigated, the next step – business case development – is ready to proceed.

DETERMINING FINANCIAL AND OPERATIONAL REALITY

With each site evaluated and ranked, the most in-depth analysis can occur. Business case development ultimately means developing a clear understanding of each chosen site's ability to generate revenue once development costs are accounted for. That means estimating the projecting the energy output, comparing rates from buyers, calculating rate of return and net cash flow and many other considerations.

Project costs also need to be determined, including the construction of any necessary infrastructure as well as permitting and other regulatory needs. Additionally, the ongoing price of production, maintenance and many other related concepts need to be adequately determined before a full, accurate financial model can be developed and used successfully.



OUR CONSULTANTS WORE A WIDE VARIETY OF HATS WHEN FOLLOWING THROUGH ON BUSINESS CASE DEVELOPMENT TASKS.

Just a few of their duties included developing pro-forma energy production values for solar energy production, market surveys to determine

pricing and formulating realistic estimates of capital expenditure and operation and maintenance needs.

Other assets developed at this stage include a schedule for project development, a narrative of tasks needed for full implementation, analysis of the optimal time to sell the project or enter into long-term operating agreements and much more.

MOVING FORWARD ON TWO SITES

With detailed analysis completed, Sapere's consultants ultimately proposed two solar projects and completed the related business case development for each. Our client agreed with the results of the business case development – that the two sites offered the potential to be viable investments - and moved ahead with evaluating both. With one of the locations near an existing Superfund site, our

client can use part of the impacted land to both generate clean energy and offer economic opportunities to a local community that has had to deal with the repercussions of being so close to a contaminated area.

THAT'S A STRONGLY POSITIVE RESULT MADE POSSIBLE THANKS TO THE INSIGHT, EXPERTISE AND HARD WORK DONE BY SAPERE.

