Better Buildings® CHALLENGE
U.S. DEPARTMENT OF ENERGY

INDUSTRIAL PARTNER

HARBEC

Implementation Model: Taking a Longer-term View on Energy Project Financing

ORGANIZATION TYPE
Custom Injection Molder and Precision Part Manufacturer

BARRIER
Difficulty financing energy efficiency and renewable energy projects with lengthy payback periods

SOLUTION
Adopted a new finance method to fully capture the economic and environmental benefits of large-scale energy projects that are often left out of short-term valuations

OUTCOME
Projects outside of the traditional investment model that would not have received authorization were funded and implemented, resulting in long-term energy savings and improved price certainty in predicting energy costs

Overview

Typically industrial companies have a short payback threshold for financing equipment based on a 1 to 3 year return on investment (ROI) and generally this is considered a good business practice. This means that if energy cost savings from a potential project are not expected to pay for the cost of the project within a couple of years, it typically will not be approved.

At HARBEC, they follow the same practice unless the equipment purchase decision has to do with equipment that can generate, reduce or offset energy requirements. In those situations, HARBEC uses a financing method, which looks at energy project payback periods differently. Rather than adhering to strict return on investment (ROI) payback rules, the company began to

evaluate potential projects on the basis of financial impacts over the entire course of the projects' expected lives.

Simply put, HARBEC is using the dollars they would have given to the energy providers and utilities, and are investing instead in new assets that provide the power needed to manufacture products. Even though this type of project will often take longer to pay for itself, the additional economic upside is that it will continue to contribute cost savings for many additional years. As a result of this approach, HARBEC has implemented a variety of successful energy efficiency and renewable energy projects, including two on-site wind turbines and an onsite CHP generating plant that would likely not have been approved and financed by other manufacturers using "conventional wisdom."

HARBEC's Playbook

Policies

Under HARBEC's project finance method, first put in place in 1998, if the energy savings over the expected life of an energy efficiency or renewable energy project are greater than the project's implementation costs, then the project is considered economically justifiable and likely to be approved, pending the availability of external financing. This financing criterion applies to both energy efficiency and renewable energy projects.

HARBEC applies "traditional" payback rules for all capital projects, with the exception of energy efficiency and renewable energy projects. New pieces of equipment typically must show benefits to the business– increased throughput, higher product quality, etc. – that cover the project's costs within two years or so. But company officials realized that while such an approach might make sense for most business investments, energy projects are fundamentally different. Due to its small size, HARBEC has limited internal capital at its disposal, and works with banks and investment groups to finance most energy projects. From HARBEC's point of view, a project is economical, and worth doing if it can secure financing, and if the project's benefits exceed its costs over the life of the project. When HARBEC takes out a loan to finance an energy efficiency project, the company views the loan payments as essentially substituting for higher energy bill payments. The company needs to pay approximately the same amount of money– to the bank or the electric utility – under either scenario. The advantage of paying the bank is that at a certain point, the loan gets paid off, and the company is left with a real asset that continues to pay dividends through the remaining life of the asset. HARBEC calls this concept "leveraging consumption" and has used it to drive capital investments in some big-ticket items that would not have been funded otherwise.

Process

The installation of two different wind turbines—250 kilowatts (kw) and 850 kw—on the company's one plant in upstate New York are good examples of HARBEC's financing method in action over the last two decades. These projects also demonstrate how the financial community has matured over time, embracing energy efficiency and renewable energy projects in ways it had not before. In 1998, when HARBEC developed its first major wind energy project, most banks were reluctant to provide financing

due to the project's anticipated payback period of as much as ten years. After being turned down by over 30 banks, HARBEC found four local institutions that shared the risk and made the loan.

The loan for the wind project was ultimately paid back in eight years, two years ahead of schedule. More importantly, with the loan now paid off, HARBEC is reaping no-cost electricity for the remainder of the project's life, which could span another 15 years. Additionally, HARBEC has reduced its exposure to unexpected electricity price spikes for years to come. Had HARBEC taken a more traditional approach to project financing, and insisted on a two- or three-year payback period, the wind turbine would have never been built, and these significant benefits would not have been realized. The success of this first project instilled confidence for future investment in wind generation projects as well as other generation projects.

HARBEC's second wind project was initiated in 2012. This project had a cost of about $2.1 million and a projected payback period of around six years, factoring in around $500,000 in state incentives. Over the preceding decade, the financial sector had become more familiar and comfortable with alternative energy projects. As a result, HARBEC had little difficulty securing financing for the recent wind project. In fact, HARBEC fielded four offers within a month, including two leasing arrangements that would have required no upfront capital on HARBEC's part. Under this arrangement, the financial institution owns the asset, absorbs much of the risk associated with the project, and recoups its investment over time through the lease payments provided by HARBEC. The financier provides HARBEC with a buyout option at 10 years, after which HARBEC could take full ownership of the asset. After evaluating the options, HARBEC chose to stick with a more traditional loan to finance this wind project. While the company will bear more of the risk, the loan arrangement will result in a greater financial return for HARBEC over the life of the project.

Measuring Success

HARBEC's success can be measured in at least three different ways.

- First, the company has funded a number of projects that would not have been approved had it used more traditional project financing mechanisms. This includes renewable projects such as two wind turbines, CHP, and efficiency projects including lighting and insulation upgrades.
- Second, in 2013, HARBEC achieved carbon neutrality after fifteen years of exploring ways to reduce total energy consumption and greenhouse gas emissions.
- Third, the company's primary manufacturing facility in Ontario, New York, ranks as one of the most successful facilities certified under the U.S. Department of Energy's Superior Energy Performance (SEP) program. Under SEP, HARBEC achieved a 16.5% improvement in energy performance, which was verified by an independent third party. Additionally, through SEP, HARBEC developed an ISO 50001 certified energy management system, which stresses continual improvement in energy efficiency.

Outcomes

HARBEC's project finance methodology has enabled the company to move forward with several successful energy projects. This not only includes the two high-profile wind turbines, but also several less capital-intensive energy efficiency projects.

Notable HARBEC energy efficiency projects advanced under its unique project finance method include:

- 2000-1 Combined Heat and Power (CHP) System Installation: By using the thermal energy from the system's exhaust, this CHP project heats and air-conditions a 9,000 square foot molding area and a 17,000 square foot manufacturing/warehouse space. The project achieved a 7-year return on investment paid for with energy dollars not spent.
- 2007 Plant-wide Lighting System Upgrade: Interior lighting was replaced with energy-efficient T-8 type fluorescent bulbs and reflectors. The $65,000 investment was paid partly by a New York State Energy Research and Development Authority (NYSERDA) grant for $16,000 and a federal tax credit of $8,000. The project improved the quality of lighting, reduced maintenance costs, and resulted in an 18-month return on investment. To date, facility lighting energy consumption has been reduced by nearly 50% on average, saving $38,000 per year.
- 2009 Barrel Insulation Installation: HARBEC applied insulation to the barrels of every injection molding machine, which led to a 40% reduction in the energy needed for molding operations.
- 2014 LED Lighting Upgrade: Only seven years after the first comprehensive lighting upgrade, HARBEC is doing another major lighting project, this time installing LEDs that result in 45% less energy for the facility's lighting needs. The complete facility lighting upgrade will replace 880 bulbs at a cost of $24,000. Grants from NYSERDA and other state agencies will cover 50% of the expense. The project will result in less than a one-year payback with the grant, less than a two-year payback without the grant, and an annual energy cost savings of $22,000.

  Many of these projects are described in a presentation HARBEC delivered at the April 2014 GLOBALCON Conference and Expo in Atlantic City, New Jersey.