

## THE BUSINESS CASE FOR USING RENEWABLE ENERGY

INSTALLMENT 7

BY CRAIG HANSON

### I. GROWING CORPORATE INTEREST IN USING RENEWABLE ENERGY

Over the past five years, more and more corporations have started to use renewable energy resources for their electricity and thermal energy needs. For instance:

- FedEx Kinko's, IBM, Johnson & Johnson, and other Fortune 500 firms are buying wind-generated electricity from their retail power providers.
- Johnson & Johnson, Lowes Home Improvement, Staples, and other firms have installed on-site solar electric (also called *photovoltaic*) systems to provide clean power at some of their facilities.
- DuPont, General Motors, Interface, S.C. Johnson, and others are using landfill gas instead of natural gas or coal to generate heat and steam at their industrial sites.
- Major corporations, including FedEx Kinko's, Interface, Johnson & Johnson, NatureWorks LLC, Pitney Bowes, Staples, and Starbucks now obtain at least 10 percent of their annual electric load in the United States from renewable resources.

Why are these and other firms switching to energy from renewable resources such as wind, solar, biomass, landfill gas, geothermal, and low-impact hydropower? This installment of the World Resources Institute's (WRI) *Corporate Guide to Green Power Markets* series explores this question. It identifies and discusses the three major types of business benefits companies obtain by using renewable energy. It also illustrates these "business cases" through corporate examples.

### II. THREE BUSINESS CASES FOR USING RENEWABLE ENERGY

While working with corporate members of its Green Power Market Development Group (Box 1), WRI has observed that firms in the United States and abroad are switching to renewable energy to obtain one or more of the following business benefits: (1) lower or stable operating costs, (2) reduced emissions of pollutants that pose a current or future regulatory risk, and (3) stronger stakeholder relationships. Each benefit is a "business case" for using renewable energy. In other words, each constitutes a business rationale for management to switch at least some of the corporation's energy supply to renewable resources.

#### Summary

What is the business case for companies to use renewable resources to meet their energy needs? The World Resources Institute's experience working with a number of Fortune 500 corporations over the past five years indicates that firms are switching to renewable energy to obtain one or more of the following business benefits:

- *Lower or stable operating costs.* In some situations, using renewable energy can directly lower corporate energy costs, stabilize corporate energy prices, or reduce operating losses caused by power outages.
- *Reduced emissions.* Using renewable energy can help companies reduce their emissions of greenhouse gases and other airborne pollutants that pose regulatory and financial risks to firms.
- *Stronger stakeholder relationships.* Using renewable energy can strengthen a company's image and relationships with its various stakeholders, including customers, local communities, employees, and shareholders.



Before exploring these business cases, four observations should be made. First, not every renewable energy opportunity has a strong business case for corporate energy end users. In some situations, the potential business benefits do not justify the cost of renewable energy.

Second, the particular business case that is relevant to management often varies among companies and even among facilities within the same firm. Furthermore, because of differences in regional incentives, a renewable energy project that is financially attractive to a corporation's branch in one region may not be economically viable in another.

Third, some renewable energy projects or purchases can provide more than one business benefit simultaneously. That is, one benefit does not preclude another. Finally, many of the benefits provided by renewable energy also may benefit energy users outside the corporate sector, including universities and government agencies.

### III. LOWER OR STABLE OPERATING COSTS

In some circumstances, using renewable energy can directly lower a corporation's energy costs, stabilize corporate energy prices, or reduce operating losses caused by power outages.

#### Lower corporate energy costs

A common misperception is that renewable energy is always more expensive than energy from conventional sources. But many companies are finding that under the right conditions, this is not necessarily so. In fact, some firms are switching to renewable resources in order to *reduce* their energy costs.

Several types of on-site renewable energy projects can cut costs. Substituting landfill gas for natural gas in industrial boilers can save money for firms that have thermal energy loads. Landfill gas typically is less expensive than natural gas, especially since the price of the latter has increased 75 percent over the past three years.<sup>1</sup> Each of General Motors' five landfill gas-to-

#### Box 1

### The Green Power Market Development Group

Convened in 2000 by the World Resources Institute, the Green Power Market Development Group is a unique commercial and industrial partnership dedicated to building corporate markets for green power. The Group is transforming energy markets to enable corporate buyers to diversify their energy portfolios and reduce their impact on climate change. The Group seeks to develop 1,000 MW of new, cost-competitive green power by 2010 – enough energy to power 750,000 homes. Group partners are Alcoa Inc., The Dow Chemical Company, DuPont, FedEx Kinko's, General Motors, IBM, Interface, Johnson & Johnson, NatureWorks LLC, Pitney Bowes, Staples, and Starbucks.

More information about the Group and its activities can be found at [www.thegreenpowergroup.org](http://www.thegreenpowergroup.org). This website includes publications, corporate renewable energy case studies, background information about various green power technologies, and an online green power marketplace. The website also contains the Green Power Analysis Tool, a Microsoft Excel-based tool designed to help managers evaluate green power projects from an integrated financial and environmental perspective.

energy projects, for instance, is improving the company's bottom line. In fact, GM's Fort Wayne Truck Assembly Plant in Indiana saves well over \$500,000 per year by using landfill gas instead of natural gas.<sup>2</sup>

Georgia-Pacific and other companies in the forest products industry combust wood wastes to generate heat and electricity at their processing plants. Using biomass residues as fuel reduces their energy costs compared with that of buying natural gas or electricity from their retail power suppliers. This is particularly true if the residues are a by-product of a manufacturing process (e.g., food-processing or wood mill wastes), if the residues would have incurred a "tipping" fee if dumped in a landfill, or if they already are being collected near the point where they would be used as fuel (thereby reducing transportation costs).

In order to lower the cost of their electricity, some companies with sufficient land consider installing on-site wind turbines that deliver power directly to their facilities. Power from wind turbines located at a corpo-



rate facility can sometimes be cost competitive, especially if the wind resource is attractive and the company can avoid utility transmission and distribution charges by having the wind power delivered directly to the nearby facility. Ford, Michelin, and Pirelli, for instance, have installed several megawatts of wind turbines at corporate facilities in the United Kingdom.

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*IBM's energy managers consider green electricity to be a hedge against possible price increases of fossil fuel-generated power.*

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### Stable corporate energy prices

Some companies switch to renewable resources in order to hedge their energy costs against volatile fossil fuel prices. In 2001, for example, IBM signed a five-year fixed-price contract with its utility to provide wind-generated electricity at IBM operations in Austin, Texas. When the company initially signed up, the green electricity was slightly more expensive than the utility's conventional power. But because the utility periodically adjusts its conventional power prices to reflect changes in primary fuel wholesale costs, IBM's energy managers considered the green electricity to be a hedge against possible price increases of fossil fuel-generated power. The green electricity helps stabilize the IBM facility's costs over time, thereby contributing to less volatile earnings quarter after quarter.

IBM's hedge strategy yielded results rather quickly. As natural gas prices rose through 2001, conventional power prices climbed along with them until they became more expensive than the utility's wind-generated electricity. IBM thereafter started to save on its electricity bill. Because natural gas prices have remained high, IBM now expects to save more than \$60,000 per year through this contract.<sup>3</sup>

Solar power, as well, can stabilize corporate electricity costs. Two Staples distribution centers in California, for example, host solar photovoltaic (PV) systems on their rooftops. The PV systems reduce the amount of power Staples buys from its retail electricity provider during

the peak (and most expensive) hours of the day. Furthermore, the negotiated price for power is competitive with market rates and the fixed-price provides a hedge against retail electricity price increases.<sup>4</sup>

Renewable energy is more likely to offer corporate energy users with a hedge value under certain conditions. For electricity, these conditions include:

- The wholesale prices of the key primary fuels that generate power (e.g., natural gas but not nuclear) fluctuate relatively frequently.
- The price changes of primary fuels are passed on to end users and updated frequently (more likely in deregulated electricity markets).
- The corporate end user is able to sign long-term fixed-price power contracts.
- The corporation's retail electricity provider is willing to offer long-term fixed-price green electricity.<sup>5</sup>

### Reduced operating losses caused by power outages

On-site renewable energy systems serving as backup or standby generators can reduce operating costs during blackouts or grid failures. For many firms, power outages can be very expensive owing to idle production lines, lost data, contaminated processing equipment, or product spoilage. Many companies therefore already have diesel generators in place to serve as backup energy sources. Switching generator fuels to biodiesel can help firms avoid these operating losses in a manner that reduces emissions of greenhouse gases and many airborne pollutants.

## IV. REDUCED EMISSIONS

Another business rationale for using renewable energy is to lower the emissions of airborne pollutants and also greenhouse gases, which are responsible for climate change. Renewable energy can help companies in markets where these emissions are regulated as well as where regulations have not yet been introduced.



### Reduced regulated emissions

Switching from using fossil fuels to renewable energy can lower the amount of regulated emissions. Emissions reductions, however, are often not an end among themselves. Rather, the goal is to improve the corporation's operating margins. When regulated, emissions effectively become monetized; emitters incur costs in the form of pollution taxes, allowance/permit costs, emissions control equipment expenses, or other mechanisms. Renewable energy can lower these emissions-related operating costs by reducing emissions, a financial impact that is readily quantifiable.

The use of renewable energy can be an attractive emissions reduction strategy for corporate facilities regulated under mandatory carbon dioxide (CO<sub>2</sub>) or greenhouse gas cap-and-trade emission allowance systems, such as those under the Kyoto Protocol. For example, a DuPont manufacturing plant in Uentrop, Germany, converted from using natural gas to biomass for some of its thermal energy needs. By switching fuels, the facility has decreased its on-site CO<sub>2</sub> emissions, thereby reducing its need to buy CO<sub>2</sub> allowances on the market or to use allowances allocated by the German government.

Renewable energy can help firms lower regulated emissions besides CO<sub>2</sub>. In order to satisfy local air quality regulations, some companies may want to cut the amount of sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and particulate matter (PM) released from their manufacturing facilities. For these companies, switching from fossil fuels to renewable resources may be an attractive option. Converting an industrial boiler from using coal to biomass, for example, or co-firing biomass together with coal can reduce a facility's SO<sub>2</sub>, NO<sub>x</sub>, and PM emissions.<sup>6</sup>

### Reduced unregulated emissions

Using renewable energy also can be an attractive emissions reduction strategy for corporate facilities located in countries that currently do not regulate CO<sub>2</sub>, other greenhouse gases, or airborne pollutants. For example, many leading firms in the United States, including Alcoa, 3M, and Lockheed Martin, have established voluntary greenhouse gas emissions reduc-

tion targets. Operating under the assumption that mandatory controls on greenhouse gases might eventually emerge in the United States, companies are setting these targets in order to build the internal capacity required for operating in a carbon-constrained world.

This strategy reduces a company's exposure to the operational and financial risks associated with possible future regulations of greenhouse gas emissions. In addition, setting voluntary targets identifies firms as being "green" or as proactively addressing the global challenge of climate change.

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*Using renewable energy can be an attractive emissions reduction strategy for corporate facilities regulated under mandatory CO<sub>2</sub> cap-and-trade systems.*

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Many firms are switching to renewable energy to help them achieve these voluntary emissions reduction goals and manage regulatory risk. For example, Staples' greenhouse gas emissions reduction target is motivating the company to buy renewable energy certificates (RECs).<sup>7</sup> Likewise, this business rationale is a primary driver of Johnson & Johnson's purchase of green electricity and installation of several on-site solar photovoltaic systems in the United States.

## V. STRONGER STAKEHOLDER RELATIONSHIPS

Using renewable energy can strengthen a company's relationships with its various stakeholders, including customers, local communities, employees, and shareholders.

### Customers

Some companies try to differentiate their brands from those of their competitors by being seen as "green" or as environmentally responsible corporate citizens. Using green power can help enhance this corporate image or improve a company's reputation by demonstrating



leadership in environmental performance. This is one of the reasons that firms such as FedEx Kinko's and Staples use renewable energy in many of their stores. Likewise, Whole Foods Market purchases RECs to appeal to one of its main customer segments: environmentally conscious consumers. WRI's experience suggests that companies in business-to-consumer industries more commonly use this business rationale than do companies in business-to-business sectors.

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*Firms are switching to renewable energy to achieve voluntary emissions reduction goals and manage regulatory risk.*

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Other firms leverage their use of green power to differentiate not only corporate brands but also individual products. Interface Fabrics Group, for example, uses its purchase of RECs to differentiate its Terratex® brand of commercial interior fabrics from those of its competitors. This strategy appears to be working, as the sales of Terratex® fabrics have nearly doubled since it launched the REC branding initiative.<sup>8</sup> White Wave, the maker of Silk® soy milk, highlights on its cartons the fact that all the electricity used to manufacture the soy milk is matched by wind-generated RECs.

### Local communities

On-site renewable energy generation systems can establish a company as a responsible neighbor in local communities. For example, Johnson & Johnson installed a 500 kilowatt solar PV array in 2003 on the roof of one of its facilities in Titusville, New Jersey. The system reduces local air pollution by decreasing the amount of fossil fuel-generated electricity that the facility buys from the local utility. The system also gives Johnson & Johnson an opportunity to provide on-site educational tours to local schoolchildren and science classes, further strengthening the company's relationship with the community.

### Employees

Using green power also may enhance a corporation's relations with its employees, an important audience for

## About This Series

This publication is the seventh installment of the *Corporate Guide to Green Power Markets* series, which is based on WRI's experiences with the Green Power Market Development Group. Previous installments are:

1. *Introducing Green Power for Corporate Markets: Business Case, Challenges, and Steps Forward*
2. *Opportunities with Landfill Gas*
3. *Corporate Greenhouse Gas Emissions Inventories: Accounting for the Climate Benefits of Green Power*
4. *Introducing the Green Power Analysis Tool*
5. *Renewable Energy Certificates: An Attractive Means for Corporate Customers to Purchase Renewable Energy*
6. *Developing "Next Generation" Green Power Products for Corporate Markets in North America*

Each of these *Corporate Guides* can be found at [www.thegreenpowergroup.org/publications.html](http://www.thegreenpowergroup.org/publications.html).

corporate management. A recent KPMG survey of 1,600 of the world's largest companies in sixteen industrialized countries found that approximately half believed that employee motivation, and therefore the "war for talent," was a major driver of corporate social responsibility (CSR) activities.<sup>9</sup> Other commentators, as well, have observed that many employees want to work for firms that have a mission beyond just increasing shareholder value.<sup>10</sup>

Switching to renewable energy sources can be one element of a CSR strategy. Through this strategy, a company communicates and substantiates corporate values that may be important to both current and prospective employees. A commitment to green power therefore can help make its employees proud of their employer and thereby help the company attract high-quality employees.





## Shareholders

Renewable energy can help strengthen a company's image with shareholder activists and some institutional investors. Capital markets have entered an era of shareholder resolutions regarding climate change, with the number of climate change resolutions each year among U.S. and Canadian companies more than tripling, to thirty-one, between 2001 and 2004.<sup>11</sup>

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Likewise, many institutional investors are becoming increasingly concerned about companies' financial and regulatory exposure regarding climate change and corporate greenhouse gas emissions. The emergence of the Carbon Disclosure Project illustrates such investor concern.<sup>12</sup> Furthermore, some investors perceive strong environmental performance as an indication that corporate management has a forward-looking strategy and runs a tight ship. Indeed, several recent studies have shown a correlation between environmental performance and financial performance.<sup>13</sup>

Switching to renewable energy is one way that a company can signal to both shareholder activists and institutional investors that it is managing its greenhouse gas emissions and, therefore, climate-related risk.

Finally, using renewable energy can make a company more attractive to socially responsible investors (SRI). For instance, after a corporate member of the Green Power Market Development Group announced that it had switched 10 percent of its U.S. electric load to green electricity in 2003, a major SRI firm increased its holdings of the company's stock.

## VI. CONCLUSIONS

Many corporations are increasing their use of renewable energy to meet some or all of their energy needs. These companies are switching to renewables to obtain a variety of business benefits:

- Lower or stabilized operating costs
- Reduced emissions
- Stronger stakeholder relationships.

Each of these business cases directly or indirectly links renewable energy use to better margins and operating performance. As a result, opportunities exist for firms to conduct business in an economically and environmentally sustainable manner.



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The author alone is responsible for the views and perspectives expressed in this publication.

## NOTES

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The **World Resources Institute** is an environmental think tank that goes beyond research to create practical ways to protect the Earth and improve people's lives. Our mission is to move human society to live in ways that protect Earth's environment for current and future generations.

Our program meets global challenges by using knowledge to catalyze public and private action:

- *To reverse damage to ecosystems.* We protect the capacity of ecosystems to sustain life and prosperity.
- *To expand participation in environmental decisions.* We collaborate with partners worldwide to increase people's access to information and influence over decisions about natural resources.
- *To avert dangerous climate change.* We promote public and private action to ensure a safe climate and sound world economy.
- *To increase prosperity while improving the environment.* We challenge the private sector to grow by improving environmental and community well-being.

In all of its policy research and work with institutions, WRI tries to build bridges between ideas and actions, meshing the insights of scientific research, economic and institutional analyses, and practical experience with the need for open and participatory decision making.

WRI's **Climate, Energy, and Pollution Program** strives toward the achievement of WRI's climate goal: To protect the global climate system from further harm due to emissions of greenhouse gases and help humanity and the natural world adapt to unavoidable climate change. WRI believes that clear economic and development benefits must accompany measures to slow the use of fossil fuels and to manage land use in an environmentally protective manner.



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