

Green power

by Matthew Sachs

Why and how to purchase it

WHAT IF THERE was a simple way you could use your organization's influence to help the environment? Fight global warming? Create local jobs and spur the economy? Increase national security? Stabilize your energy costs? Choosing to purchase green power over conventional electricity, could achieve all of these important objectives, and send a message that true value is more important than least cost.

Green power describes electricity that comes from environmentally friendly sources. No source of electricity is completely benign. However, electricity generated from "green" sources such as solar, wind, geothermal, small and low-impact hydropower and biomass have proved to be environmentally preferable to conventional energy sources like coal and nuclear. These green energy sources are all considered renewable because they are derived from natural sources that replenish themselves over short periods of time.

Determining which sources of power are green can be difficult. For example, hydropower is considered green on a small scale where the technology used does not disrupt the natural flow of the river. However, large-scale hydro projects are not usually considered to be green because they can disrupt natural ecosystems and cause environmental damage. Nuclear power, which avoids greenhouse gas (GHG) emissions during production, is usually not considered green because the mining, transport and pre- and post-production stages are environmentally harmful, and because of the need to deal with radioactive waste.

In Canada, energy sources certified with the EcoLogo label are considered to be true green sources. The EcoLogo symbol designates products and services that meet the Environmental Choice Program's (ECP) stringent environmental criteria. This labeling program, set up in 1988 by Environment Canada, ensures that consumers can be confident that they are

choosing products and services from environmentally preferable sources.

The ECP (www.environmentalchoice.com) has developed criteria for a wide range of products and services, from cleaning products, to appliances, to mutual funds, for example. The list of environmental criteria for power generation includes such factors as ensuring that appropriate consultation with communities and stakeholders have occurred, and that prior or conflicting land use, biodiversity losses and scenic, recreational and cultural values have been addressed. There are also criteria specific to the energy source. For example, for solar projects, wastes containing cadmium must be properly disposed of or recycled. A key aspect of the certification process is that all applicants undergo third party verification of compliance to the criteria before they receive EcoLogo certification.

Green power currently costs more than conventional electricity, largely because of the relative immaturity of renewable technologies, combined with the absence of significant economies of scale. Despite current higher prices, the price of green power has been steadily falling and will continue to decline as growing demand justifies the expansion of manufacturing facilities and reduces production costs. The incremental cost of green power varies widely by region and technology, but most green power providers offer their green power for roughly 1 to 4 cents per kilowatt-hour (kWh) more than conventional energy. In some areas, the cost of green power may even be less than conventional rates, and as the market matures, we can expect the price difference to continue to drop.

Although currently more expensive to produce than conventional power, green power offers more value for society. It does not pollute our air or water and provides many other additional benefits. These benefits all need to be considered as government procurement policies move from "least cost" to "best value."

The real costs of producing conventional power are hidden. Our public health system suffers strain, as air pollution from coal power generation increases the numbers of emergency visits, hospital admissions and even premature deaths. Society pays in present and future government debt as our taxes help subsidize large power generators such as Ontario's nuclear reactors, thus artificially reducing the price of conventional power. And, society pays whenever greenhouse gases enter the atmosphere and increase the risk of natural disasters due to global warming.

In addition to not polluting our environment or emitting greenhouse gases, green power has many other benefits consistent with government goals. Green power can help your organization meet environmental, financial, stakeholder relations, economic development and national security objectives.

- **Environmental Benefits.** When you choose green power you avoid the negative environmental effects of conventional power generation. On average, every kilowatt-hour of green power produced in Canada avoids the emissions of more than one pound of carbon dioxide, the key GHG linked to global warming. Power generated from fossil fuels, such as coal, also emit particulates and organic compounds that lead to smog and its associated health problems. Nuclear power requires the diversion of large amounts of water to cool spent nuclear rods. This heated water is then returned to nearby lakes and rivers, disrupting aquatic ecosystems.
- **Financial Benefits.** Green power offers a hedge against the price instability of traditional fossil fuels. Renewable sources such as wind, solar, geothermal and hydro do not have fluctuating fuel costs and can offer a stable and predictable price over the long term.
- **Stakeholder Relations.** Purchasing green power demonstrates leadership,

generates positive publicity, and can help meet organizational environmental objectives.

- **Economic Development.** Most green power options are selected to take advantage of local conditions and fuel sources. Therefore, choosing green power creates local jobs and helps keep energy dollars within the community.
- **National Security and Energy Security.** Choosing green power increases the diversity of fuel sources, which will minimize the risk inherent in being dependent on one fuel source. Also, the distributed nature of renewable energy reduces the risk associated with vulnerable centralized generating stations.

The public sector consists of many of the biggest purchasers of energy in the country. The federal, provincial and municipal governments, hospitals and schools, and other public agencies collectively spend billions of dollars on electricity every year. Because of the sheer quantities of energy involved, large purchasers face a large responsibility. Even one large energy purchaser switching a small percentage of energy consumed to green power can have tremendous environmental and market transforming impacts. As the market for green power expands, the price drops. That one decision by a large purchaser to switch to green power can help thousands of small businesses and consumers afford green power in the long run.

Generally speaking, there are three types of green power products: electricity purchased from renewable sources, renewable energy certificates (RECs), and on-site renewable generation.

- Electricity purchased from renewable sources is distributed through the grid just like regular electricity. Purchasers can choose to buy blocks of power, or to specify that a certain percentage of their power be supplied from renewable sources. In order to purchase renewable energy in this way, it must be offered by an electric utility in your area. Of course, there is no way to tell if the electrons in your electricity come directly from renewable sources, but in this scenario the utility guarantees to contribute an amount of green power into the grid equivalent to your purchase. This option can be ideal for purchasers that want to guarantee that the price

they pay for electricity will not fluctuate over the length of the contract.

- Renewable energy certificates (RECs, or Green Tags) are certificates that you can buy that represent the environmental and other positive attributes associated with green power, decoupled from the actual commodity of electricity. What this means is that when you purchase a REC, the supplier guarantees that an equivalent amount of green power will be added to the electric grid and sold at conventional rates. Because RECs are sold separately from electricity, they can be purchased from any location and there is no need to switch from your current electricity provider. RECs are purchased as a fixed amount, rather than as a percentage of your actual load. If you are considering purchasing RECs, ensure that the supplier guarantees that the green power supplied to the grid will come from new sources. If the green power comes from existing sources, then it is already a part of the mix that supplies conventional energy and there is no additional advantage.
- On-site renewable generation requires installing power-generating equipment at your facility. This method of obtaining green power requires much more planning and investment than the other options, however, it also supplies some added benefits. With on-site generation you gain enhanced reliability, enhanced power quality, a visible demonstration of environmental commitment, and stability against fuel price volatility for the life of the equipment – often up to 30 years. Some provinces allow you to sell any excess electricity you generate back to the grid in a process known as net metering, which can help the project's economics.

Purchasing green power can be as simple as making a telephone call and ordering renewable energy certificates, or as difficult as siting and installing wind turbines on your facility property. It all depends on the specifics of your organization: how much money you want to spend, how much time you can devote to it, and how much of a commitment you want to make. Green power can be purchased in any region in Canada, as many utilities across the country offer some form of renewable energy or REC program.

For some organizations, purchasing green power for the first time may be more difficult than purchasing conventional power, causing additional effort and transaction costs on top of the price premium. For example, it is best to take an inventory of your facility energy use and rates to determine your power needs. In some cases the utility contracts can be complicated if they include specific time of day rates. Although time consuming, this step is important as it will help your organization evaluate the environmental impacts of your current energy use, help you determine how much green power to buy, and help you find areas where energy can be saved. If necessary, you can hire an energy professional to help with this stage. Once your organization becomes more experienced in this area you can expect the level of effort and additional transaction costs to drop.

Wherever possible, coordinate efforts with the head of your environmental department. At some point the environmental department will be asked to report on GHG reductions, and purchasing green power is often a simple way to make significant gains.

Most importantly, the involvement of senior management is crucial. In order to gain approval for significant purchases of green power, you will need to assemble a business case. For public institutions, this business case should stress the additional benefits and value inherent in green power that corresponds with your organization's stated objectives. Ultimately, you will need to investigate the options, negotiate with utilities and/or intermediaries, and determine what green power options are right for your facility.

For more information on purchasing green energy, or to order an example of a purchase agreement contract, you can contact Leslie Welsh, the head of the Renewable Electricity department of Environment Canada by email at leslie.welsh@ec.gc.ca.

Matthew Sachs is an energy consultant with the firm Marbek Resource Consultants, a leading Canadian environment and energy management consulting firm. Mr. Sachs has worked with both the Energy Star and EnerGuide programs to promote green procurement by preparing tools and content to help procurement officials make well-educated purchasing decisions.