

Green energy in North America

Conventional electricity generation is one of the most polluting sectors of our economy. In North America, the electricity sector emits more than 70 percent of all NO_x emissions, and 75 percent of SO₂ emissions. Available data in Canada and the United States shows that electric utilities account for 65 percent of mercury air emissions. These pollutants contribute to global climate change, acid rain and smog.

Other energy sources can present different environmental and health risks. Large-scale hydroelectric facilities can displace communities, destroy or degrade critical habitats such as streams and rivers, and harm wildlife and native fish populations. Nuclear power plants pose health, safety and security challenges related to their operations and require the safe storage of radioactive waste for 10,000 to 240,000 years.

To address these issues and respond to energy supply and pricing concerns, North Americans are turning to a variety

of solutions, including renewable sources of energy that are inexhaustible and have significantly reduced environmental impacts. Solar energy, for instance, uses the sun's heat and windmills use air currents to drive turbines that make electricity. Biomass, geothermal, small-scale hydropower and tidal energy also offer renewable energy choices.

Since 2000, the CEC has been gathering data, analyzing the North American market, and disseminating information on renewable energy. Among the many initiatives it has undertaken, the organization has mapped existing and planned renewable energy capacity for North America through 2010, promoted the successes of companies, municipalities and governments in purchasing green energy, and documented the various regulatory mandates, initiatives and incentives for growing the renewable electricity market (all shown on this page).

Paper on renewable electricity a 'blueprint' for growing market

In June, the CEC published an executive summary to a paper entitled *Fostering Renewable Electricity Markets in North America*, which provides a survey of the regulatory mandates, initiatives and incentives that are in place to fuel the growth of the renewable electricity market.

Governmental mandates, for instance, can require the use of renewable resources through various laws and regulations. In Canada, Mexico and the United States, it's estimated that governmental mandates will drive the demand for 9,000 MW, 642 MW and 40,000 MW, respectively, of new renewable capacity by 2017.

In the United States, the report says that the voluntary market has experienced exponential growth since the mid-1990s. This has been a result of increased availability and decreasing prices. In 2004, 6.2 million MWh of renewable electricity were sold in the voluntary market, of which almost half were to commercial, industrial and non-federal governmental customers.

Federal procurement of renewable electricity, however, can also be an important demand driver in North America. The combined total of Canadian and United States federal government procurement is estimated to be 2,850,000 MWh/year. Mexico does not currently have a federal renewable electricity procurement program, but it participates in the North American Green Purchasing Initiative (NAGPI) led by the CEC to advance the procurement of environmentally preferable office products, cleaning products and renewable energy.

The paper then looked at supply-side drivers in each of the three countries. In both Canada and the United States, there is an attractive array of incentive programs to support renewable development, but the most significant supply-side drivers for on-site generation are "net-metering, standardized interconnection rules, and financial incentives." Canadian

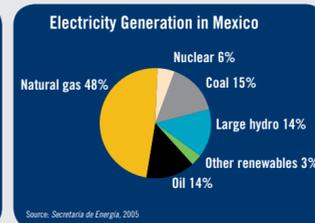
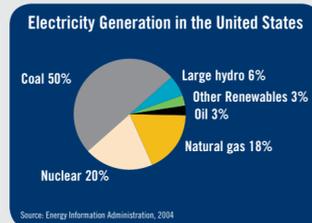
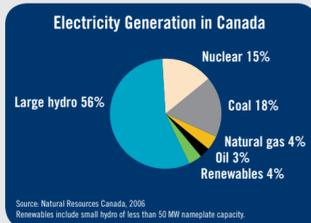
provinces and American states have both played critical roles in helping to bring down the costs of installed distributed generation.

In Mexico, the current regulatory and legal framework supports the development of self-supply projects—the generation of power on the consumer's site. Future large-scale grid-connected self-supply is expected to contribute 1,000 MW of new installed capacity in coming years and is benefiting from a new interconnection agreement developed by the Energy Regulatory Commission (CRE).

Notwithstanding these achievements and positive trends, the report says there is still room for improvement. Effective public policies supporting renewables need to be more widely implemented and lessons-learned about programs that worked or didn't work need to be more widely disseminated. More effort needs to be made to bring non-large hydro renewables on par with non-renewable generators in terms of subsidies, tax incentives and other favorable government financing policies.

In Mexico, the legal framework of the energy sector has become one of the greatest barriers to more renewable development. However, a renewable energy bill ("LAFRE") and other bills have been proposed in Congress that would create a Renewable Energy Fund, require an increased amount of renewable electricity in the utilities' portfolio and pave the way for a voluntary green power market.

The report ends with a series of recommendations to the governments of Canada, Mexico and the United States, in which the authors identify a number of opportunities where advancements would help achieve growth. A copy of the executive summary and the full report are available online at <www.cec.org>.



CITY OF CALGARY, ALBERTA

"Ride the Wind!" is a Calgary Transit program that uses wind-generated electricity to power its commuter CTrains. The CTrain is 100 percent emissions-free and is the first public light-rail transit system in North America to power its train fleet with wind-generated electricity. It is estimated that switching from coal or natural-gas generated electricity to wind power has reduced CO₂ emissions by 26,000 tonnes annually since 2001.

STARBUCKS COFFEE COMPANY, WASHINGTON

In 2004, the Seattle-based company evaluated its contribution to global warming and calculated its total annual emissions to be equivalent to 254,000 tonnes of CO₂. As a result of this inventory, Starbucks committed to purchase enough green power to cover five percent of its retail energy needs in North America, cutting CO₂ emissions by two percent. Subsequently, in 2006, Starbucks increased its green power commitment to 20 percent.

DYESS AIR FORCE BASE, TEXAS

Dyess became the largest consumer of wind energy at a single site in the United States when it entered into a contract to be supplied with 76 million kWh of wind energy annually in 2003. This represents 100 percent of the base's electrical requirements, all of which is pollution-free. Since then, seven other Department of Defense installations in Texas have purchased a total of nearly 30 million kWh of renewable energy.

CITY OF MONTERREY, NUEVO LEÓN

With funds from the World Bank, the federal government of Mexico and the private sector, a 7 MWh biogas power generation plant was built in Monterrey. Used for street lighting, the Simeprodeso plant generates power from methane gas emitted by solid waste at a landfill. The plant's design is considered a model for other municipalities in Mexico.

FEDEX KINKO'S, PENNSYLVANIA

Green power satisfies 10 percent of FedEx Kinko's electricity needs in the United States and is used by 25 percent of its branches. The company buys more than 25 million kWh per year of renewable energy in 18 states, including Pennsylvania, where 13 locations have upgraded to 100 percent green power supplied by renewable resources such as wind and biomass.

