union des consommateurs

Photovoltaics for Small Consumers

Executive Summary
June 2008

Energy demand growth in Canada and concerns about greenhouse gases (HGH) are making governments, energy distributors and consumers more and more interested in decentralized energy production (DEP) from renewable sources.

Among the technologies that might reach a large number of small consumers (residential consumers), solar energy technologies offer very great deployment potential. According to recent data from the Canadian Solar Industries Association (CANSIA), almost half (47%) of Ontario homes could use photovoltaic solar energy to produce electricity, whereas more than 2.5 million homes could use passive solar energy to heat water. This number could climb to 4.7 million by 2025 only in Ontario. Far from being reserved for new housing starts, solar energy technologies can also be integrated to already-built homes.

The report is intended as a status report on photovoltaic energy in Canada, and on issues of concern to residential consumers regarding the deployment of photovoltaic solar energy. First, it describes this technology's applications and draws a portrait of the various aspects that a consumer interested in this technology must consider (products offered, prices in effect, financing or installation terms, standards, maintenance, connection to electrical distribution networks (also called "grids"), etc.). The report then examines the situation and development of photovoltaic markets in Canada, Europe and the United States, with special attention to incentive programs and various policies put forward to stimulate this market.

Photovoltaic power is a promising path of development: the solar radiation that reaches the earth in one hour represents a quantity of energy greater than all the energy consumed by humanity in one year. The technology necessary to convert solar radiation into electricity is performing better all the time, and the price of PV components offered to consumers is constantly falling. New products are now integrated to architecture and, in addition to their energy-producing functions, these products are construction materials of higher quality. PV systems require little maintenance, are simple to use, non-polluting (no emission, no noise, no movement) and leave a minimal ecological footprint. It takes a panel from 4 to 10 years to produce the energy consumed to manufacture it. Panels have a useful life of about 30 to 40 years and thus maintain a high resale value. Finally, at the end of its useful life, all the components of a solar panel can be recycled.

Research reveals that the Canadian residential photovoltaic market is dominated by autonomous systems, mainly installed in remote areas, for homes not connected to electrical distribution networks. This is a Canadian peculiarity compared to the main countries where the photovoltaic market is flourishing: there, the majority of photovoltaic installations are connected to an electrical distribution network, which in many cases they help supply under the principle of distributed electrical production. These countries have opted, in many cases, for measures that encourage the installation of small rooftop systems, linked in a network and often in densely populated environments favouring the establishment of a decentralized energy production model. In that vein, the FIT, which enables residential energy producers to obtain a tariff for reselling their surplus electricity, better reflects the actual production costs of that energy.

Several factors discourage homeowners from depending on electricity produced by solar panels: the still-high costs of this technology, the relatively low prices of conventional electricity,

the lack of government incentives, the slowness of public utilities to consider PV as a viable alternative to producing fuel-generated electricity, etc.

Moreover, awareness of environmental issues constitutes, in several European countries, a powerful stimulus to the development of the renewable energy industry and PV. In many of those countries, mass production of electricity from fossil fuels or nuclear power has significant effects on the environment or GHG emissions, which governments are trying to reduce. In Quebec and elsewhere in Canada, these environmental problems are less acute, since hydroelectricity is itself considered to be a renewable energy.

The obstacles still preventing small consumers from acquiring photovoltaic systems could be overcome, with true political will. The experience of countries where PV technology is widespread demonstrates that political decision-makers are the ones who led the way by setting high objectives and adopting measures that help develop a PV market, raise consumer awareness, open public utilities to the technology, establish a distributed system of energy production, etc.

If the current context still doesn't favour democratizing PV technology in Canada, the price of PV electricity being, for one, still much higher than that of conventional electricity, this situation could change in the event of an explosion of energy prices and/or a technological breakthrough that would make photovoltaic components more efficient and less costly to produce. In that event, the experience of countries where photovoltaic power is well established gives many indications of the success factors to adopt and the pitfalls to be avoided in deploying this technology. Canada and the provinces must now show leadership and vision, and lay the foundations for developing this technology of the future.

With a view to establishing coherent policies regarding photovoltaic power, the report puts forward propositions inspired from foreign experiences and from the recommendations concluding the European Best Practice Report.

This document is the Executive summary of the report

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For Small Consumers

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For more information:
Union@consommateur.qc.ca
514 521-6820 ou 1-888-521-6820

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