



## Power in a solar system

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Most adults probably don't know what a solar panel is, let alone most three-year-olds. But a Burnaby couple, Laura Iwan and Brian Gulayets, have become so accustomed to discussing this issue that their little boy Niklas has added "solar panel" to his repertoire.

"He really likes to help out with cooking or working in the workshop," Gulayets said in a recent phone interview with the Georgia Straight. "It's kind of neat to listen to the kid's vocabulary."

Niklas has picked up on this term because his family is one of a minuscule number of homeowners who have installed solar photovoltaic systems in their homes to generate electricity in the Lower Mainland. Gulayets estimated that his system, which is being completed this month, will cost \$30,000. He said the couple was motivated by a desire to reduce greenhouse-gas emissions and increase their self-reliance.

"That's the bottom line as to why we signed up to do this," he said. "And [we did] not have to look for government subsidies and those sorts of things, although those would have been nice to have."

As described in a report presented to the Metro Vancouver environment committee on September 11, a solar photovoltaic panel "is made of chemically treated silicon that, when exposed to the sun's radiation, causes electrons in the silicon atoms to be dislodged". This creates a net positive charge, and electricity is generated from the flow of electrons.

Solar energy begins as a direct current, and must be converted to an alternating current to become compatible with home-electricity systems. Fortunately, a well-established Burnaby company, Xantrex Technology Inc., sells equipment that makes this conversion possible. Another Burnaby company, Day4 Energy Inc., sells some of the most efficient solar photovoltaic panels in the world.

Iwan, who works at Ballard Power Systems, said their system also enables them to be synchronized with the B.C. Transmission Corporation grid, which distributes electricity across the province. If the grid goes down, certain circuits—linked to the fridge, furnace, and freezer—will still function.

Gulayets said that if the grid comes back on, the system detects it and brings the entire system back on-line. "That technology is a bit amazing," he said.

Rob Baxter, a director of the Vancouver Renewable Energy Cooperative, told the Straight that he knows of only four homes in the Lower Mainland that use solar power to generate electricity. With all the concern about global warming and greenhouse-gas emissions, he expects that number to increase in the coming years.

"I actually did get a phone call last week from someone; I'm assuming he is a developer," Baxter said. "He said he is looking at putting it on several buildings, and he just wanted to get some general pricing guidelines."

The Vancouver Renewable Energy Cooperative is a workers' co-op with a mandate to reduce greenhouse-gas emissions and society's dependence on unsustainable energy sources.

Baxter acknowledged that with current electricity rates, it might take 50 years to pay off the cost of a solar photovoltaic system. Iwan said it could take up to 100 years. But that could change if electricity prices increase or if the B.C. and federal government introduce subsidies.

"A lot of people think Vancouver is not a good area because of our climate," Baxter said. "In fact, the largest base of solar photovoltaics is in Germany, which gets less sunlight on average than we do here. So the main barrier to people going with solar photovoltaics in B.C. is the fact that we have some of the lowest electricity prices in the world."

Baxter said the easiest and least expensive way to install these systems is to go with a grid-connected system that's "net metered". This means that if the home is generating excess electricity, it is sold into the B.C. Transmission Corp. grid, and generates a credit on electricity bills.

The sales manager for Day4 Energy, Daniel Murray, told the Straight that his company is "shipping skid loads" of solar photovoltaic panels to Seattle, where there are five system integrators. He said, for example, that if a company installs solar photovoltaic panels on the roof of its building in Seattle, the federal government will provide a tax credit of 30 percent. "It's a viable business down there," Murray said.

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