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THE GREENEST COMMUNITIES IN THE WORLD; A residential complex in Victoria is proving that 'district energy' not only reduces greenhouse gas emissions, it can save and even make money

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Several times a week, a truck rolls up to a non-descript sheet metal-clad industrial building on Victoria's upper harbour. The trucks dump loads of small chunks of wood, waste that has been reclaimed from construction sites in the region and acquired from a nearby recycling facility.

The wood is fuel. Inside, the wood is turned into synthetic gas, which then is burned to boil water. This water, moved through the district energy system at the new Dockside Green community, provides heat and hot water to four residential and two commercial buildings, located adjacent to the power facility on six hectares. The system slashes the buildings' energy needs by more than 80 per cent.

Dockside Green blooms on land that was long underused, faded industrial ground that was once home to whaling boats and shipbuilders. The neighbourhood is now bustling, vibrant and home to businesses and hundreds of people occupying about 270 units. About one-third complete, (it opened in 2007-2008) it's being hailed as one of the greenest communities in the world.

The pioneering work, the community design, and what's known as a "district energy" system that underpins it, is now a model for others in Canada, and beyond.

"It's not just the West Coast any more," says Vancouver-based architect Robert Drew of Perkins + Will, who led a local group - including financier Vancity, a credit union, energy system maker Nexterra and utility manager Corix Group - that came together to build the world-leading community.

"It was the birthplace. But it's spread all across Canada. Developers are buying in because they see marketing opportunities."

Dockside Green, Mr. Drew believes, is "done evidence" that green energy projects are more than feel-good initiatives. It works. And it makes economic sense. Energy costs are radically reduced and it didn't cost a fortune. Mr. Drew estimates that condo units cost, at most, \$5,000 more than a non-green version - a small amount equivalent to B.C.'s property transfer tax on a \$400,000 unit.

It certainly didn't dissuade buyers. All the units sold, even as the world suffered recession, and even as other projects in the saturated Victoria market struggled.

The urgency to build more housing like Dockside Green is immense, according to the International Energy Agency, the Paris-based advisory to rich nations created in the mid-1970s in reaction to the Arab oil embargo.

This month, the agency issued a declaration, fearing that countries are too focused on building new infrastructure based on last-century technology: "The world is locking itself into an unsustainable energy future which would have far-reaching consequences."

So while transportation - clogged arteries such as the Hwy 401 in Toronto and Hwy 1 in Vancouver - gets the most attention when the need to reduce greenhouse gas emissions is debated - buildings are a little-noticed big problem. Emissions from residential and commercial buildings are a significant part of global greenhouse gases.

District energy, as a general idea, is not new, though it continually improves because of better insulated pipes and advances in measurement equipment.

Corix, the utility company that now runs the Dockside district energy system, used its expertise in metering and general utility management to, a decade ago, pursue opportunities in district energy. Now, Corix has used its Dockside success to win business against competitors elsewhere.

The Portland Development Commission in October awarded Corix a deal to present a district-energy plan for several facilities in its downtown core.

In Toronto, Corix was signed on by the city to plan district energy for the rehabilitation of Regent Park, Canada's biggest social housing community.

Other Dockside Green collaborators have won business far afield. Nexterra, the Vancouver startup whose gasification technology turns wood into heat and hot water, has sold its system to the likes of the U.S. Department of Energy for its Oak Ridge National Laboratory in Tennessee.

The advantages of district energy powered by green sources make the most sense when measured against long-term economics. The Nexterra-powered Oak Ridge facility will save as much as \$7-million annually in fuel costs, which would see the system paid off in a dozen or so years. Nexterra's smaller system at Dockside saves the community \$500,000 a year.

Tom Rand, author of Kick the Fossil Fuel Habit, said district energy's most exciting potential is with geothermal, and points to available technology from Vancouver's Fenix Energy Ltd., which claims its systems "radically reduce energy costs" in new and existing buildings.

"I don't know why every single neighbourhood isn't built with a geothermal loop. But it's not in the minds of most developers," Mr. Rand says. "I'd like to see it under all of our suburbs."

South of Calgary, on the edge of the town of Okotoks, the new community of Drake Landing is comprised of single-family homes and cul-de-sacs, seemingly the very definition of the wasteful suburban sprawl. But the 52 homes at Drake Landing - completed in 2007 - are connected by a district energy system that stores and distributes solar energy for space and water heating - which cuts the need for natural gas by about 90 per cent.

"What's really required," says Mr. Rand, "is a change in attitude of the executives who run the development companies."

GLOBAL SOURCES OF HUMANITY'S GREENHOUSE GAS EMISSIONS

Energy supply: 26%

Industry: 20%

Forestry 17%

Agriculture: 14%

Transport: 13%

Buildings: 8%

Other : 2%

SOURCE: Intergovernmental Panel on Climate Change, 2007

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