BACKGROUNDER

Drake Landing Solar Community Hits Target For Year Three Performance

Drake Landing Solar Community is North America's first large-scale seasonal storage solar heating system and the first in the world to provide such a high percentage of space heating from solar energy. The project includes a district heating loop that uses solar energy to supply space heating for 52 homes built in Okotoks, Alberta, just south of Calgary. Currently in its third year, Drake Landing Solar Community has met its year three target of supplying 80% of the space heating requirement through the solar energy collected. The year five target is 90%. Both targets are unprecedented in the world.

The Drake Landing Solar Community project was announced in March 2005 and on June 21, 2007, following the successful completion of the design and construction phase, the first rays of solar energy began to flow into the borehole thermal energy storage system. Drake Landing Solar Community demonstrates the successful integration of Canadian energy efficient technologies with the unlimited renewable energy of the sun.

Okotoks, Alberta is an ideal location for solar-energy collection as it is one of the "top-ten" Canadian locations for sunny days per year and receives almost as much solar energy as Italy and Greece. However, in order to accommodate Canada's climate and geographic location, where solar radiation is lower during the winter months, Drake Landing Solar Community uses a central district heating system that stores abundant solar energy during summer months and distributes the energy to each home for space heating needs during winter months.

The Drake Landing Solar Community project was initiated by Natural Resources Canada's CanmetENERGY, who continue to be the project's central coordinator. Natural Resources Canada is the leading federal department responsible for renewable energy, including solar energy activities. The department works with industry and research engineers and scientists in Canada to accelerate the development and deployment of innovative solar technologies and building designs that are economically viable, environmentally friendly and commercially adoptable.

The Government of Canada has committed to reduce Canada's total greenhouse gas emissions by 17 per cent from 2005 levels by 2020, in addition to the objective of having 90 per cent of Canada's electricity needs

…/ 2

be met by clean and non-emitting energy sources. The Drake Landing Solar Community project is an excellent showcase for Canada's clean energy targets as it demonstrates how a clean energy residential community can be accomplished through the use of record breaking solar thermal energy technology, which helps lower energy consumption and greenhouse gas emissions. The project is currently achieving its third year goal of 80 per cent solar fraction, meaning 80 per cent of the homes' space heating needs are being supplied by solar energy, and is well on its way to achieving its five year goal of over 90 per cent solar fraction.

The Government of Canada's Technology Early Action Measures program and Natural Resources Canada (TEAM, PERD and REDI program funding) have contributed $2 million to the building of this project. The Federation of Canadian Municipalities' Government of Canada-funded Green Municipal Fund has invested an additional $2.5 million. The Government of Alberta's Innovation Fund has contributed $625,000. Sustainable Development Technology Canada (SDTC) has contributed $1 million and Alberta Environment has contributed $500,000. The other project partners include United Communities, Sterling Homes, ATCO Gas, the Town of Okotoks, Climate Change Central, and EnerWorks.

In addition to Natural Resources Canada's initial contribution, the department has also been funding the performance monitoring, along with addressing model calibration and system optimization work with PERD funding since 2006/2007, which has amounted to an additional $ 1.3 million in funding.

The project is estimated to reduce GHG emissions by 5 tonnes per year per house (this includes the combined benefits of solar and energy efficiency), which translates into 260 tonnes per year for the entire community.

The technical makeup for the community consists of seven-hundred and ninety-eight solar thermal collectors (2,293 m^2) mounted on roofs of interconnected garages / breezeways, which capture heat and send it to short term storage in the energy centre. Solar heat from short term storage is sent through the district loop to heat the 52 homes as required (to maintain the temperature set by each homeowner).

In summer, when there is more solar energy than is needed, the excess is taken from short term storage and stored in a "borehole field" under the neighbourhood park. This is called Solar Seasonal (or long term) Storage. During the milder, sunny days in winter, sufficient solar energy may be collected to heat the homes directly without using seasonal storage. However there are many cloudy or cold winter days when more energy is needed than the sun can provide. Heat (stored solar energy) is then extracted from the long term storage / borehole field to keep the district distribution temperature hot enough for heating the homes.

The borehole field is located two metres underneath the community park and consists of 144 holes drilled 35m deep. The borehole field is an underground area of approximately 35m diameter and 35m deep that will be heated during the summer to approx. 80º C in the center. A structure, called the "energy centre", has been built in the park to house the mechanical equipment, controls and a monitoring system, as well as two large hot water tanks of 120,000 litres each for short-term heat storage.

The District Distribution System delivers solar energy to the 52 homes via heated water in underground, insulated pipes. Each home has an "air handler" instead of a furnace, whereby the heated water is circulated through a fan coil converting it to warm air which is distributed throughout the home using conventional forced-air ducts. The homeowners set their thermostats for individual comfort, just like other homes.

In addition to the solar space heating system, each home includes an independent two-panel, solar thermal, hot water system to meet 60 percent of the domestic hot water needs. Each home is certified to R-2000 standards (the first R-2000 subdivision in Alberta) and registered with the Built Green™ program at the Gold Level, its highest standard. Some of the numerous energy efficient and "green" innovations include superior insulation and air tightness, low-flow plumbing fixtures, advanced appliances and low-impact landscaping.

Drake Landing Solar Community has been honoured with several awards, including the Emerald Award for Climate Change from the Alberta Emerald Foundation, and the Gold Award from the International Awards for Liveable Communities program, endorsed by the United Nations Environment Program. Not only has the Drake Landing Solar Community project received numerous awards for its outstanding and innovative clean energy accomplishments but one of its project partners, Sterling Homes, was presented with the coveted Sales and Marketing Industry Achievement Award for Best New Idea of 2005 by Alberta Home Builders Association.

This first of a kind renewable energy project was made possible through Natural Resources Canada and the many partnerships that the department has made with well-known, innovative and environmentally conscious companies.

Among the project partners are: the Province of Alberta, Sustainable Development Technology Canada, the Federation of Canadian Municipalities' Green Municipal Funds, United Communities, Sterling Homes, ATCO Gas, the Town of Okotoks, Climate Change Central, SAIC Canada, IFTech International, Enermodal Engineering Ltd., Bodycote Materials Testing Canada Inc., Thermal Energy System Specialists, EnerWorks Inc., Nu-Air

Ventilation Systems Inc., Sunbow Consulting Ltd., Hurst Construction Management Inc., the Drake Landing Steering Committee from Chalmers University (Sweden), the Bavarian Centre of Applied Energy Research (Germany), the University of Calgary, Queens University and Environment Canada.

- 30 -

Media may contact:

Mary-Ann Dewey-Plante
Press Secretary
Office of the Minister
Natural Resources Canada
Ottawa
613-996-2007

Media Relations
Natural Resources Canada
Ottawa
613-992-4447

NRCan's news releases and backgrounders are available at www.nrcan.gc.ca/media.