



2013 COMMUNITY EXCELLENCE AWARDS  
Category Worksheet

LEADERSHIP & INNOVATION  
Climate Action

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**Name of Local Government: City of Colwood**

**Project/Program Title: Solar Colwood**

**Project Summary Paragraph**

*Please provide a summary of your project/program in 150 words or less.*

The Solar Colwood program demonstrates whole community change towards energy conservation and use of renewable clean energy. Its goal is for 1,000 Colwood residents and businesses to take action to save energy and reduce greenhouse gas (GHG) emissions. To date nearly 600 households (almost 10% of our community) are participating, saving 365 tCO<sub>2</sub>e of GHG emissions annually. The program is piloting tests of the market for ductless split heat pumps, use of BC Hydro's Power Smart Home Loan, a new Smart Home/Home Energy Monitoring System, an innovative Solar Hot Water system, and charging of electric vehicles using photovoltaics. Solar Colwood's comprehensive partnership includes the federal and provincial governments, BC Hydro, the Chamber of Commerce, Royal Roads University, Camosun College, the T'Sou-ke Nation, and local businesses and developers. Colwood was named as Canada's second "Canadian Solar City" and was a Canadian finalist in the 2013 international Earth Hour City Challenge.

**Project Analysis**

*Please answer the question in 300 words or less in 11 pt Arial font (our judges value directness and brevity). If you experience difficulty answering a particular question, consider the aspects of your program that may relate to the question and show us how they are linked.*

*Remember to include measurable results whenever possible.*

1. CLIMATE

*Please describe how the program/project contributes to the achievement of one or more of your [Climate Action Charter](#) goals:*

- i. Corporate carbon neutrality:*
  - ii. Using your community energy and emissions inventory:*
  - iii. Creating complete, compact, energy efficient rural and urban communities:*
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- i. Installation of solar hot water and solar photovoltaics (PV) at Colwood's Fire Station has contributed to reducing the City's corporate emissions, moving us towards carbon neutrality. Since installation in May 2012, the solar hot water

system has produced 29,070 MJ of hot water; the PV system has generated 4.3 MWh of power. In addition to reducing GHGs, these systems are saving the City more than \$1,000 a year in energy costs.

- ii. Solar Colwood works with residents and businesses to find ways to make their buildings more energy efficient, and provides financial incentives for energy-saving ductless split heat pumps and solar hot water systems. Since the program started (June 2011), energy saving actions have reduced community energy use by 7,500 MJ and reduced GHG emissions by 365 tCO<sub>2</sub>e. Where Solar Colwood has provided incentives for energy upgrades, the City has acquired ownership of GHG emission reductions, so that these can be used for carbon balancing under the Carbon Neutral Framework.
- iii. Royal Roads University is one of the Solar Colwood partners and conducts research on various aspects of the program. One group of students is currently investigating the carbon balancing opportunities from the “PV4EV” initiative, where owners of electric vehicles (EVs) install solar PV systems to power their vehicles and homes.

## 2. PROCESS

*Please provide a brief outline of the steps involved in the program/project and the status of each step.*

1. **Municipal installations.** The City installed solar hot water and solar PV at the Fire Station, and six EV charging stations on municipal lands. (Completed.)
2. **Energy retrofits.** Solar Colwood encourages homeowners and businesses to undertake a building energy assessment and complete energy upgrades. Incentives are provided for installing ductless split heat pumps, solar hot water systems, and solar photovoltaics for electric vehicle charging stations to further reduce energy usage. (Ongoing.)
3. **Smart Home installations.** We are testing smart home applications and home energy monitoring systems in partnership with Horizon Technologies. In-home displays provide the homeowner with real-time information on how much electricity the home is using and thus helps to adjust energy use habits. (In initial stages.)
4. **Research and monitoring.** Royal Roads University is conducting program monitoring and research. More than ten groups of students have conducted research on clean energy and other aspects of the Solar Colwood program. (Ongoing.)
5. **Training and skills development.** Solar Colwood supported 12 members of the T'Sou-ke Nation taking CanSIA (solar hot water installation) training, who then worked with Solar Colwood installers to get hands-on experience. (Completed.)

6. **Shared learning.** Colwood is sharing “lessons learned” with individuals and other communities to encourage consider similar programs and action, via presentations, home tours, information on “energy champions” (homeowners who have taken action), and e-newsletters. (Ongoing.)
7. **New developments.** The high density re-development at Colwood’s Capital City Centre is being designed with a district energy sharing system that will exchange energy from sewage in order to heat or cool buildings; there will also be significant water recovery from the planned wastewater treatment plant; aiming to reduce energy needs by 60% and water needs by 40%.

### 3. RESULTS

*Tell us how your submission addresses climate change issues in terms of reduced GHG emissions and /or supports your community to prepare for the impacts of climate change.*

Solar Colwood supports **mitigation** through reduced GHGs:

- From 2007 – 2010, Colwood reduced its per capita community emissions by about 2%. This was the highest per capita reduction of municipalities in the Capital Regional District.
- Over 600 homeowners (about 10% of Colwood households) have taken some form of energy saving action. This includes about 350 water and energy savings kits, 170 LiveSmart BC energy retrofits (including ~100 ductless split heat pump and 37 solar hot water systems), and five home EV charging stations powered by solar PV. Home installations have reduced energy use by 7540 GJ and reduced annual GHG emissions by 365 tCO<sub>2</sub>e.
- The City has reduced its corporate emissions by 23% between 2007 and 2012.

Solar Colwood supports **climate adaptation** through increased resilience:

- A study of Disaster Risk Reduction conducted by a team at RRU found that the Solar Colwood program encourages self-sufficiency and takes the strain off local infrastructure, making the community more disaster resilient.

Solar Colwood supports **climate action** through education and information:

- This program empowers residents to take action to address climate change in their own homes, and has raised awareness of simple actions that can be taken.
- Perhaps the most rewarding result is the ‘customer satisfaction’ from residents participating in the program. One resident posted on Facebook: *“My average daily household consumption for the May 2011 billing period: 140 kwh per day My average daily household consumption for the April 4-May 2 2012 billing period: 82.9 kwh per day!!!! That's a 41% reduction in consumption since the ductless heat pump and solar hot water installation. WOW. These numbers don't lie. Real savings, relatively quick pay back, decreased carbon footprint, and local economic stimulus. A no-brainer. This is the future and Colwood should be proud to be a proactive leader in promoting sustainable energy alternatives.”*

#### 4. LEADERSHIP

*How does the project reflect leadership and excellence in the advancement of climate action?*

Local governments have a critical role to play in climate action, in that we (i) can show leadership through our own actions, (ii) require high standards in new developments and (iii) work with our citizens to encourage them to take action at home and at work. Colwood has taken action on all three fronts.

Even before the Solar Colwood program, Colwood showed leadership by being one of the first BC communities to include an all-electric vehicle in its Public Works fleet, and developing a Community Energy and Emissions Plan. Under the Solar Colwood program, examples of Colwood's leadership include:

- Being one of the first communities in Canada to promote whole community change through retrofits to existing buildings;
- Encouraging pilot testing of innovative energy saving programs (e.g., ductless split heat pumps, Power Smart Home Loan, Smart Home Systems);
- Leading the "charge" on EV charging stations (before the provincial Community Charging Infrastructure Program got underway);
- Adopting the solar hot water ready regulation.
- Working with the developer at Colwood Corners to use resource recovery at a tertiary sewage treatment plant as part of the development and creating a community energy exchange loop as a result.

Solar Colwood is a demonstration of excellence in partnerships (in 2011, Colwood, Royal Roads and BC Hydro won a Climate and Energy Action Award for our collaborative approach). The program also demonstrates excellence in its 'adaptive learning' model, that constantly reviews and adjusts the program as we learn more about what works well and what does not.

#### 5. ECONOMICS

*a. How was the project a good use of budget and resources?*

Solar Colwood was set up in ways that minimize the amount of Colwood taxpayer funds (less than \$9,000 to date) and staff time required to run the program. By tapping into expertise, resources and support from partners, we have been able to run an effective program with minimal resources. For example, the WestShore Chamber of Commerce has funding from LiveSmartBC to undertake free energy assessments for businesses, and the Solar Colwood program has linked seamlessly into this.

Program funding from Natural Resources Canada has been extensively leveraged to make the best use of available funds. In the first two years, the Solar Colwood program resulted in investment of \$1 million from the federal Clean Energy Fund with a contribution from program partners valued at almost \$2.5 million.

We have also taken advantage of inexpensive ways to promote the program. For example, one of our most effective marketing approaches is using Colwood's solar-powered roadside signs (at no cost) to let people know about offers and events.

*b. How does the project encourage economic sustainability? (e.g. life cycle analysis, internalizing costs and alternative financing, economic instruments)*

An important program goal is to reduce energy costs for homeowners, so that the cost of living in Colwood becomes more affordable for these residents.

- Solar Colwood is contributing to the flourishing of local, clean energy jobs through training programs and through incentives that drive private investment in renewable energy. Through partnership with Camosun College's Solar Thermal Lab, Solar Colwood is contributing to an encouraging environment for clean energy innovation in the region.
- The program focuses on energy retrofits that make good economic sense (i.e., there is a business case). The Solar Colwood team offers a free "SolarPlus" site visit that helps homeowners to understand the economics of solar investments.
- Low interest financing is made available through the Vancity Bright Ideas Home Loan. As well, the BC Hydro Power Smart Home Loan now makes it possible for homeowners to finance energy retrofits and repay over a 10 year period while enjoying lower energy bills. In addition, these loans can be transferred to future property owners.

Solar Colwood is also supporting economic investment in Colwood. Since the program has begun, Colwood has acquired a reputation as a community interested in clean energy solutions, and this has caught the attention of several private sector investors. While not all of these inquiries prove fruitful, there are several leads that are being actively followed.

## 6. ENGAGEMENT

*How does the project encourage engagement? (e.g. stakeholder engagement, public participation, equity and diversity, knowledge sharing, capacity building, community identity and marketing)*

- **Community engagement:** Solar Colwood engages the community through special events and workshops, as well as participation in community events. We have an extensive email list and make extensive use of social media and earned media to share information.
- **Partnerships:** Solar Colwood is an extensive and comprehensive partnership of more than 14 organizations, including the federal and provincial governments, BC Hydro, T'Sou-ke Nation, Royal Roads University, Camosun College, the Chamber of Commerce, New Car Dealers Association of BC, local businesses and developers, and technology experts. Each of these partners in turn engage their own community of interest.

- **Knowledge sharing:** An objective of Solar Colwood is to share our lessons with others, in the hope of encouraging them to take similar (or even better!) approaches. We are working to enable the solar hot water grants to be available throughout the Capital Regional District, expanding the community of engagement in this program.

## 7. INNOVATION

*What makes your program/project innovative?*

- The **concept** of the program is innovative: Colwood is one of the first municipalities in Canada to take a “whole community” approach to home energy retrofits.
- The program **approach** built on the lessons of the SolarBC program and T’Sou-ke Solar to create a user-friendly program. For example, incentives are provided upfront (and paid directly to installers). Homeowners benefit from lower initial investment; the program is simpler to administer as on the financial side we only deal with 5-6 installers rather than 100s of homeowners.
- The program has led to several **innovations**:
  - Recognizing an opportunity to benefit from the Solar Colwood incentives, and that the initial cost of solar hot water is one of the barriers to uptake, one of the solar installers worked with Camosun College to develop a less expensive system that works well in the south-west BC climate. This “CamoSun” system makes solar hot water available at about 60% of the cost of a typical system.
  - A local business (bakery) installed solar PV to operate his bakery and the public EV charging station at this location. Solar Colwood supported this innovative approach and has expanded its program offer to include incentives for “PV4EV” – photovoltaics for electric vehicles. By replacing gas for vehicles with sunshine, each system reduces GHG emissions by an average 3.47 tCO<sub>2</sub>e per year.
  - Horizon Technologies are using Colwood homes to test and develop a smart home and home energy monitoring system that allows homeowners to see their home energy use on a second by second basis.

## 8. TRANSFERABILITY

*How is this program/project transferable to other local governments?*

- Any local government could (should!) have programs that provide information to support energy retrofits and direct people to available grants (e.g., LiveSmartBC). These programs benefit residents, create local jobs and help to reduce community GHGs.
- The data being gathered by Royal Roads University will provide BC-specific information on the economic benefits of energy retrofits for homeowners.
- The outcomes of the pilot projects will provide valuable information to shape and improve on their implementation in other communities.

9. KNOWLEDGE SHARING

*What helpful advice would you share with other communities looking to embark on a similar project?*

- Even small incentives can help people to think about and adopt energy-saving technologies.
- Providing incentives to encourage property owners to get an energy assessment is a relatively low cost that can lead to dramatic savings when the owners see the business case.
- Work with community leaders—chambers of commerce, environmental organizations, neighbourhood associations and developers—to help spread information on the benefits of energy retrofits.
- Get all staff “on the same page”. It doesn’t make sense to residents if one department is promoting energy conservation while another department creates roadblocks.
- Installers, suppliers and energy advisors are a valuable resource for marketing these types of program.
- Build on the experience of others, there are many good ideas and good programs out there.
- Take an adaptive learning approach! You will not get it all right from the beginning. Every community is different.
- Be willing to try new ideas. Some will work, some won’t, you never know until you try.
- Be patient! Uptake of new technology and programs takes time.
- Don’t stop! Stop and go programs are bad business for installers. Better to start small and stay small than to start big and then disappear.

10. TELL US MORE

*Please share any other information you think may help us better understand your submission.*

Colwood was named as Canada’s second “Canadian Solar City” in February 2013. As well, Colwood was named as one of the three Canadian finalist cities in the 2013 international Earth Hour City Challenge (one of only 17 cities globally). It is also the smallest finalist city!

Video clips and more information on the Solar Colwood program can be found at [www.solarcolwood.ca](http://www.solarcolwood.ca)

***Excellence in climate action may include, but is not limited to the following types of actions:***

**Corporate Operations (Mitigation)**

- Energy efficient retrofits
- Fuel switching
- District energy for civic buildings
- Employee awareness building

**Community Wide Action (Mitigation)**

- Density zoning
- Developing trail networks
- Improving/expanding transit options
- Community energy plans

- Corporate energy plans

- Rebate programs for energy efficient home appliances

**Adaptation**

- Adaptation scenarios or visualizations
- RGS or OCP adaptation policies
- Vulnerability and risk analysis
- Tree master plan or tree protection bylaws
- Storm water management bylaw referencing water balance model

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