



SECOND ANNUAL REPORT
APRIL 2009–MARCH 2010



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1.0 Executive Summary

Solar is fast becoming an important energy source around the globe. The Province of British Columbia and the Federal Government have taken leadership and action to make solar energy systems more affordable and accessible for British Columbians, and SolarBC is playing an important role in delivering this vision.

SolarBC's mandate is to make solar hot water (SHW) an accessible, affordable and practical energy solution for citizens and communities across the province. In the first two years of operation, SolarBC's strategic focus has been to help transform British Columbia's solar market, bringing SHW systems to homes, communities, local governments, social housing, First Nations' homes, and schools.

SolarBC is a program of the BC Sustainable Energy Association (BCSEA) in collaboration with Eaga Canada Service Inc. Other partners include FortisBC, Terasen Gas, the Community Energy Association, Northern Lights College, the Canadian Solar Industries Association, eight Solar Communities and our network of 23 Registered SolarBC Contractors. An Oversight Committee comprised of diverse representatives oversees the SolarBC project, making high-level funding decisions and monitoring accountability and deliverables.

ON THE AVERAGE,
A HOUSEHOLD THAT
USES ELECTRIC FUEL
TO HEAT THEIR HOME
CAN SAVE \$200 ANNUALLY
AND ALMOST \$6,000 OVER
THE LIFETIME OF A SOLAR
HOT WATER SYSTEM, TO
REDUCE GREENHOUSE
GAS EMISSIONS OF 2
TONNES PER YEAR.

MAKING SOLAR HOT WATER SYSTEMS MORE AFFORDABLE

We have implemented several financial mechanisms with incentives from the Provincial Government, Natural Resources Canada (NRCan), FortisBC and the private financial sector.

For the residential sector, for example, SolarBC designed a \$2,000 point of sale discount to complement other government rebates, including the Federal ecoENERGY Retrofit and LiveSmart BC rebates. Together with other financial mechanisms, such as Zero interest loans and bulk-buy incentives, these mechanisms are making SHW systems a viable alternative for consumers. During the first eighteen months of SolarBC's operations, 246 households installed SHW systems. On average, each system cost \$6,751, and customers paid approximately \$4,945 after the SolarBC discount. As of March 31, 2010, total capital expenditure in the residential sector was \$1,934,808. NRCan, SolarBC and FortisBC contributed \$246,000, \$99,500 and \$17,100 respectively as incentives. Participants may have also received additional rebates from the ecoENERGY Retrofit Program, LiveSmart BC, or the Federal Home Renovation Tax Credit.

SolarBC also provided incentives in the institutional sector. For local government and First Nations buildings as well as social housing projects, we matched the funding received from the ecoENERGY for Renewable Heat Program to a maximum of \$40,000. For schools, we offered 90% of the balance remaining after the ecoENERGY rebate was deducted from total project cost to a maximum of \$20,000. As of March 31, 2010, four local government and three social housing projects were completed with many more projects especially at schools, in progress. Total capital expenditure in the institutional sector was \$1,158,254 (including \$900K for the Olympic Village project). NRCan contributed \$47,298, and SolarBC contributed \$70,332 towards these costs.

While these incentives serve as a starting point, they are short-term in nature and SolarBC is committed to working with the Province and other partners to develop a long-term incentive program that can help generate confidence in the market and realize the full potential of SHW.



CITY OF NORTH VANCOUVER
HOME
Source: Terratek

PROVIDING QUALITY ASSURANCE

Providing Quality Assurance for systems and installations will help build market integrity. As the initial step, SolarBC set mandatory requirements for qualified contractors to become registered with SolarBC. By the end of March 2010, 23 contractors were registered on the SolarBC residential program. Contractors must also register SHW systems that meet CSA standards or provide a stamped engineer's drawing of the proposed system. In order to meet the above criteria, SolarBC appointed Stantec as an independent, licensed, professional engineer to review, stamp and seal drawings of systems. SolarBC covers the cost of providing these approvals.

BUILDING KNOWLEDGE AND AWARENESS

Building Knowledge and Awareness of SolarBC among British Columbians has been a top priority for SolarBC in our first eighteen months. During the last 12 months, a comprehensive marketing plan was developed and implemented focused on partnerships and a grassroots, community approach. A comprehensive, one-stop website enables consumers to learn about SHW, access applications for financial incentives and find a qualified contractor. By the end of March 2010, the site attracted over 77,000 visitors from all over the world and almost 700 people took advantage of free Solar Rating reports for their homes available on our website.

DEVELOPING A NETWORK OF LOCAL SKILLS

Developing a Network of Local Skills has ensured a highly trained industry of solar energy professionals throughout British Columbia. Certified SHW installer training available through the Canadian Solar Industries Association (CanSIA) provides basic training, a class room exam and evaluation of training installations to enable certification. By March 2010, BC had 41 CanSIA certified contractors, more than any other province. SolarBC also worked closely with Northern Lights College and CanSIA on a new training program that could provide practical, hands-on experience. We continue to work with other colleges to implement new training programs in locations across the province.

DEVELOPING REGULATIONS

SolarBC is taking action to bring clarity to regulations and building codes, particularly with respect to issues of concern around back-flow prevention and annual inspection for SHW systems. While guidelines have been published by the Province, perception of lack of clarity on this issue has halted several installations, and SolarBC will continue to work with municipal inspectors to improve this situation.

SHOWCASING OUR SOLAR COMMUNITIES

Dawson Creek, West Moberly First Nation, District of North Vancouver, Kelowna, Saanich, Tofino were joined this year by Whistler and the City of Vancouver, who were appointed as new Solar Communities. Our Solar Communities are the focus for public awareness, training, regulation and are leading public demonstration projects on community centers and schools. SolarBC matches the federal ecoENERGY for Renewable Heat incentive to a maximum of \$40,000 to support institutional demonstration projects. The Community Energy Association has helped to raise awareness of the funding available with a goal of securing 20 local government projects by the end of 2010.

SAVING ENERGY AND REDUCING GHGS

All SHW installations carried out with SolarBC funding to the end of March 2010 are expected to save approximately 2,597 GJ (721 MWh equivalent) every year. With an expected life span of approximately 30 years, the SolarBC installations should deliver lifetime saving of approximately 77,900 GJ (21,640MWh). This equates to an a GHG reduction of approximately 80 tonnes of CO₂ equivalent per year, or 2400 tonnes of CO₂ equivalent over the expected lifetime of the systems.

All SHW installations carried out with SolarBC funding to the end of March 2011 are expected to save approximately 6,553 GJ (1820 MWh equivalent) every year. With an expected life span of approximately 30 years, the SolarBC installations should deliver lifetime savings of approximately 196,600 GJ (54,600MWh). This equates to an a GHG reduction of approximately 213 tonnes of CO₂ equivalent per year, or 6400 tonnes of CO₂ equivalent over the expected lifetime of the systems.

LOOKING AHEAD

Beyond SolarBC's promising achievements in the first two years of operation, the focus remains on ensuring the solar industry can become self-sustaining and grow whilst continuing to support the Province's objectives for clean energy development, technology innovation and greenhouse gas reduction. Factors including clear targets and long-term commitments, regulations, financial support, financial incentives, public awareness and education, skills development and quality assurance, monitoring and evaluation, and high profile demonstration Solar Communities are critical success factors in emerging solar markets around the world. In British Columbia, major barriers in each category still need to be addressed.

The activity during the remainder of 2010 has been very promising, with activity steadily increasing across all sectors. This year saw BC's first Solar Days events in May, modeled after European Solar Days. Over 30 events took place across the province and 40 residential participants held open house tours with over 1,000 visitors.

SolarBC also made a commitment to continue to match the funding provided by NRCan for residential installations, which had a stabilizing effect on the market and residential demand continued to grow despite fluctuating incentives from other programs. The residential program will be fully subscribed by the end of 2010. The industry has grown significantly and the residential program now supports a network of 32 contractors,



CITY OF VANCOUVER BECOMES
OUR 9TH SOLAR COMMUNITY
Source: SolarBC

SOLARBC IS HELPING TO
ACHIEVE THE BC ENERGY
PLAN GOAL TO INSTALL
100,000 SOLAR ROOFS
BY 2020.

with over 40 individuals who have attained formal certification through CanSIA. NRCan has reported that the SolarBC residential program is so far the most successful of fourteen other pilots across Canada.

Similarly, it is anticipated that incentive funding for local government, social housing, and schools installations will be fully subscribed by March 2011. Unfortunately NRCan funding for all the SHW programs will end on December 31, 2010. SolarBC will work with the Province and the utilities to try to develop incentives for all the sectors in the future.

In response to overwhelming demand, a further 25 communities were awarded Solar Community status, bringing the total to 32. The Province of British Columbia also introduced a new “Solar Ready” voluntary regulation in August and 27 communities have opted in.

The Province’s inclusion of funding for SHW projects through the Public Sector Energy Conservation Agreement (PSECA) led to a massive response of over \$7M in SHW projects in schools, hospitals, colleges, universities and Crown Corporations. Although all the projects could not be supported through this call, this has resulted in the developments of promising partnerships with Terasen Gas and BC Hydro.

The 2011/12 fiscal year will be challenging for BC’s solar industry as incentives come to an end. Economic uncertainty and changes to federal and provincial incentives that support the industry will challenge the pace of growth. British Columbia’s emerging solar industry requires government’s continued leadership. SolarBC will work to ensure that the SolarBC legacy and infrastructure that has been put in place can be used for future projects and initiatives. SolarBC is committed to working with the Province and other partners to continue to build a vibrant solar industry in British Columbia, and to supporting the Province’s sustainable energy strategy that will help reduce greenhouse gas emissions (GHGs) by 33 per cent by 2020.

2.0 Supporting Sustainable Energy in B.C.

Launched in September 2008, SolarBC is deploying a comprehensive solar hot water (SHW) program for homes, Solar Communities, local government buildings, social housing, First Nations' homes and schools across British Columbia, supporting the Province of British Columbia's sustainable energy strategy that will help reduce (GHGs) by 33 per cent by 2020.

SolarBC is a program of the BC Sustainable Energy Association (BCSEA). In 2005/06, BCSEA collaborated with other organizations to facilitate 50 SHW installations in homes across the province in a ground-breaking pilot project that demonstrated SHW as an affordable, renewable energy option. Recognizing the benefits for BC communities, the Province announced a \$5 million investment in the program to support SHW system installations. The funding not only moves the Province closer to realizing the goals of the *2007 BC Energy Plan: A Vision for Clean Energy Leadership and Climate Action Plan*, it also provides stimulus to begin the transformation to a self-sustaining SHW market in BC.

BCSEA is collaborating with many partners to advance the SolarBC program including:

- Eaga Canada Services Inc. for the residential program and other aspects of SolarBC. Eaga received funding from Natural Resources Canada (NRCan) under the ecoENERGY for Renewable Heat Residential Pilot Program.
- FortisBC who have combined their PowerSense incentives with SolarBC's incentives, making funding access easier for customers and installers.
- The Community Energy Association on municipal/ local government projects;
- The Canadian Solar Industries Association (CanSIA) and Northern Lights College to facilitate SHW installer courses across the province; and
- The communities of Dawson Creek, Kelowna, District of North Vancouver, Saanich, Tofino, Vancouver, West Moberly First Nation and Whistler on Solar Communities.

An Oversight Committee comprised of the following representatives oversees the SolarBC project, making high-level funding decisions and monitoring accountability and deliverables.

- Guy Dauncey, BC Sustainable Energy Association
- Tom Hackney, BC Sustainable Energy Association
- Gary Hamer, BC Hydro
- Gareth Jones, Terasen Energy Services Inc.
- Norman Connelly, Community Energy Association
- John Stonier, Day4Energy
- Keith Veerman, Fortis BC

The Province of BC and NRCan act in an advisory capacity. BCSEA and Eaga provide input at the Oversight Committee meetings.

SOLAR HOT WATER SYSTEMS CONVERT DAYLIGHT INTO HEAT THROUGH SOLAR COLLECTORS MOUNTED ON THE ROOF. EITHER WATER, OR A WATER AND ANTIFREEZE SOLUTION, CARRIES HEAT FROM THE COLLECTORS AND PUMPS IT THROUGH A HEAT EXCHANGER. HEAT IS THEN TRANSFERRED TO POTABLE WATER AND STORED IN HOT WATER TANKS CONNECTED TO A CONVENTIONAL BOILER SYSTEM. TYPICALLY, SOLAR HOT WATER IS USED FOR DOMESTIC HOT WATER, HEATED SWIMMING POOLS AND SPACE HEATING.

3.0 Solar BC's Targets and Objectives

SolarBC's mandate is to make SHW accessible, affordable and practical across six areas: new and existing homes (residential), Solar Communities, local government buildings, social housing, First Nations' housing and community buildings and schools throughout BC.

To fulfill this mandate, SolarBC set the following targets to be accomplished by March 2011:

TABLE I. Solar hot water system targets for SolarBC program to March 2011.

BUILDING SECTOR	SOLAR TARGETS
Residential	546 systems ¹
Solar Communities	5 communities
Local Government Buildings	20 systems
Social Housing	18 systems
Schools	30 solar hot water (SHW) systems 20 kW of photovoltaic (PV) power

SolarBC will meet these targets by:

- Managing incentive programs for builders and developers, homeowners, local governments, social housing, schools and First Nations' buildings;
- Managing a network of Registered Contractors and SHW systems;
- Implementing a marketing strategy to raise awareness with target audiences;
- Establishing Solar Communities;
- Providing support to local governments;
- Providing a one-stop website for information on the program;
- Assisting with organizing and improving installer training; and
- Working to simplify the regulatory environment.

"WHAT IMPRESSED ME MOST ABOUT SOLARBC WAS THE INFORMATION PROVIDED, THE QUICK RESPONSE TO MY QUESTIONS AND THE POSITIVE AND UPBEAT PRESENTATION. THANKS FOR THE SERVICE YOU PROVIDE."

*Diana Macdonald,
Kaleden*

¹ The original target for the residential program was to reach 2,000 homes. NRCan funding of \$1.6m was significantly reduced during this fiscal and the program target was adjusted accordingly.

4.0 Report on Performance

4.1 RESIDENTIAL PROGRAM

BCSEA is collaborating with Eaga Canada Services to deliver the residential program. In the first 2 years of the residential program:

- 268 applications were approved
- 246 households installed SHW systems, with a combined annual savings of \$58,080 on energy bills, and lifetime savings of almost \$2M on energy bills. The systems chosen by customers (i.e. percentage of market share) are shown in Figure 1.
- Most installations were carried out on Vancouver Island and in the Southern Interior, reflecting the availability of Registered Contractors.
- The 3 most popular systems installed were Enerworks, Swiss Solartech Viessman and Globe Solar.
- The average installed cost of the systems was \$6,751. With the average value of incentive discounts at \$1,475, the average consumer cost was \$5,337.
- The level of incentives available has varied frequently, through a blend of funding from:
 - NRCan – ecoENERGY for Renewable Heat and Retrofit programs,
 - Provincial Government – LivesmartBC and SolarBC programs and
 - FortisBC PowerSense Program.
- A maximum of \$3,675 was available during February and March 2010, which represented approximately 50% of the cost. The rate of installations increased dramatically during this period, with 26% of all installations carried out during these months.
- The total capital expenditure on SHW systems in the residential program to March 31, 2010 was \$1,934,809 with households contributing \$1,577,066 of this cost and incentives funding of \$362,600.

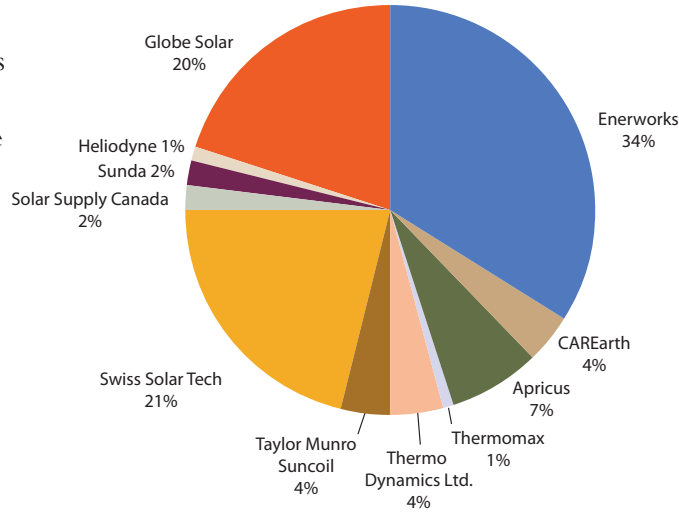
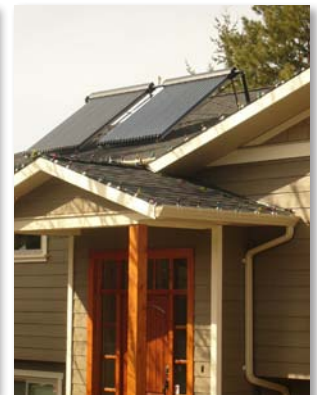


FIGURE 1. Installed SHW systems by manufacturer to March 2010

“CONGRATULATIONS TO SOLARBC FOR MAKING IT SO EASY TO INSTALL SOLAR DOMESTIC HOT WATER SYSTEMS. THIS IS A CONCRETE EXAMPLE OF HOW FINANCIAL INCENTIVES, CAN BE USED TO REDUCE OUR ENERGY FOOTPRINT. THANKS TO SOLAR BC FOR A JOB WELL DONE. YOU ARE AT THE FOREFRONT OF COMBATING CLIMATE CHANGE IN BC.”
-DR. KEN ASHLEY, NORTH VANCOUVER



GLOBE SOLAR SYSTEM IN NELSON
Source: Globe Solar



KELOWNA HOME
Source: Resolution Electric

Table 2 below details the expenditure on SHW systems in the residential program on an annual basis up to March 31, 2010:

TABLE 2. Expenditures in the residential program to the end of March 2010.

		NUMBER OF PROJECTS	INSTALLED COST	FINANCIAL CONTRIBUTORS			TOTAL	CUSTOMER COST
				NRCAN	SOLARBC	FORTISBC		
2008	Q3	7	\$47,545	\$7,000			\$7,000	\$41,545
	Q4	15	\$133,497	\$15,000			\$15,000	\$119,104
2009	Q1	22	\$181,075	\$22,000	\$2,625	\$600	\$25,225	\$155,850
	Q2	52	\$358,879	\$52,000	\$11,625	\$5,700	\$69,325	\$289,554
	Q3	52	\$468,546	\$52,000	\$14,000	\$3,300	\$69,300	\$401,496
	Q4	98	\$745,266	\$98,000	\$71,250	\$7,500	\$176,750	\$569,516
Totals		246	\$1,934,809	\$246,000	\$99,500	\$17,100	\$362,600	\$1,577,066

4.1.1. DISCUSSION AND ANALYSIS

Making solar hot water systems more affordable

“THE INSTALLATION WENT VERY WELL AND I AM VERY SATISFIED WITH THE QUALITY OF WORKMANSHIP AND THE SYSTEM PERFORMANCE. WE NOW HAVE PLENTY OF SOLARHEATED HOT WATER AND ARE PLEASED TO BE DOING OUR PART TO REDUCE GREENHOUSE GAS EMISSIONS.”

*Shawn Brown,
Penticton*

The revised target for the SolarBC residential program required the installations of 350 SHW systems by 31st March 2010. The actual number of systems installed by the end of March 2010 was 246.

The SolarBC point of sale discount was increased to \$2,000 per home during the months of February and March 2010. During these two months, the total value of incentives available peaked at \$3,675 per installation, including \$300 from FortisBC and \$1,375 from LivesmartBC and the ecoENERGY Retrofit Program. These combined incentives represented approximately 50% of the average cost of an installation.

This impetus had an extremely positive impact on program up-take with over 100 systems installed during February and March alone. However, despite the increased activity, the program came in below the target of 350 homes, and as a result \$104,000 of NRCan funding was lost to the program. This reduced the overall target for the program to 546 installations. A further 300 installations are required by December 2010 to reach the target.

SolarBC point-of-sale discount: One of the biggest barriers to SHW is the initial capital required to install a system. To help reduce this burden, the SolarBC incentives are provided as a simple “point of sale” discount for the customer, rather than the traditional rebate approach to incentives. Registered SolarBC installers complete an Installation Agreement with the customer and then claim the discount back from SolarBC on completion of the installation. The SolarBC \$2,000 incentive introduced in February / March 2010 has since been extended to December 31, 2010. The \$2,000 is jointly funding by the Provincial Government and NRCan.

INCENTIVE SOURCE (FEB/MAR 2010)	AMOUNT
SolarBC – point of sale discount	\$2000
ecoENERGY rebate	\$1250
LiveSmart BC rebate	\$125
FortisBC rebate	\$300
Total Rebates	\$3650
Home Reno Tax Credit (approx)	\$800

Other program rebates: Federal ecoENERGY Retrofit and LiveSmart BC rebates automatically apply to existing homes provided an ecoENERGY assessment is carried out before and after the installation. Both the ecoENERGY Retrofit and LiveSmartBC eligibility requirements changed several times during 2010. The impacts of “stop/start” changes to incentives created confusion in the market and affected program participation throughout the year. Unfortunately the ecoENERGY retrofit program ceased accepting new applications as of March 31, 2010. However, the increased incentives from SolarBC help to stabilize the industry and the number of installations steadily increased.

Zero interest loan: The increase of the SolarBC incentives to \$2,000 per home in February 2010, also enabled the provision of a zero interest loan option through our loan provider TD Bank. This provides consumers financial flexibility to help overcome any initial capital outlay barriers. With this option, customers can either choose to take their \$2,000 point of sale discount, OR a zero interest loan. The cost to SolarBC of the interest on the loan on a \$7,000 system is typically around \$1,500 over a 5 year period. The customer would also receive the remaining \$500 of their incentive directly from SolarBC, and use it to pay down their loan with no penalty. A typical monthly loan payment is approximately \$110 per month over five years. SolarBC provides an easy online application process.

FortisBC PowerSense incentives: FortisBC took a leadership role as the first utility to provide incentives of \$300 per SHW installation. The PowerSense incentives are fully integrated with SolarBC’s incentives and provided at the point of sale to FortisBC customers. With a single application process, the two programs are seamless for customers, reducing confusion and generally make it easier for customers to access incentives for SHW installations. A total of 57 participants (23%) were able to take advantage of the incentives during 2010.

Home Renovation Tax Credit: The federal government announced their Home Renovation Tax Credit in January 2009, which retroactively contributed a further \$800 towards the cost of a SHW installation. It is difficult to establish if this tax credit alone had a positive impact on consumers’ decisions to install SHW. The Tax Credit was not directly connected to renewable energy or energy efficiency upgrades, but was awarded for a wide range of home renovations. The Tax Credit ended in February 2010.

Investing in BC’s solar hot water industry.

The SolarBC residential program is strongly aligned with best practice installation standards to help build consumer confidence in a professional, reliable industry that delivers high quality work. The program has been designed to ensure that residential incentives are only available through Registered SolarBC Installers.

Registered SolarBC Installers are pre-assessed and registered in the residential program, on the basis of: their technical ability, quality of work, track record, health and safety,



BURNABY HOME
Source: Homeworks



UTILITY OF THE YEAR, FORTISBC
Source: SolarBC

REGISTERED INSTALLERS AS OF MARCH 31, 2010:

AMBIENT SOURCE ENERGY SYSTEMS
 HOMEWORKS
 GLOBE SOLAR ENERGY (WESTERN) INC.
 JENERGY TECHNOLOGIES
 KCP ENERGY INC.
 MD ENERGY SOLUTIONS
 PACIFIC SOLAR SMART HOMES INC.
 ROCKY MOUNTAIN SOLAR COMPANY
 SEDMEK
 SWISS SOLAR TECH LTD.
 TAYLOR MUNRO ENERGY SYSTEMS INC.
 TERRATEK ENERGY SOLUTIONS INC.
 ELK VALLEY SUSTAINABILITY
 ISLAND ENERGY
 G.E.T. SOLAR SOLUTIONS
 SUN SOLUTIONS
 EARTHRIGHT
 TERRAMECHANICAL
 TERRASOL
 BRIGHT ENERGY
 JB SOLAR
 KEY SOLAR
 RESOLUTION ELECTRIC

REGISTERED SYSTEMS AS OF MAR 31, 2010:

APRICUS
 CAREARTH
 ENERWORKS
 GLOBE SOLAR ENERGY IP-195
 HELIODYNE
 SUNDA
 SWISS SOL-VIESSMANN
 TAYLOR MUNRO SUNCOIL
 THERMO DYNAMICS LTD
 THERMOMAX
 VIESSMANN

customer care and price. A Registered SolarBC Installer must also have at least one staff member who is fully certified under CanSIA's Canadian Solar Hot Water System Installer Certification Program (Level 1), has completed training provided by the applicable solar equipment manufacturer(s), and has passed a WorkSafeBC fall safety course. All residential systems receiving funding from SolarBC must be commissioned and signed off by a CanSIA certified installer.

The SolarBC residential program has helped to grow an industry of qualified and professional installers to service our customers. At the start of the program, there was only one CanSIA certified installer in British Columbia. By March 31, 2010, 23 organizations were registered on the residential program, and a total of 41 individuals had achieved their CanSIA certification, more than any other province in Canada.

As part of the registration process for the residential program, installers must also register the SHW system they plan to use with SolarBC. The minimum system requirements include either CSA certification or an engineer's seal on the system drawing indicating that it meets CSA standard 379.1. SolarBC has appointed Stantec as the independent, licensed, professional engineering firm to review, stamp and seal systems. In addition, all SHW collectors used in the SolarBC program must be approved by NRCan.

All systems include minimum industry standard warranties of ten years for solar collectors, five years for solar storage tanks and one year for labour and all other components.

By March 31, 2010, eleven systems were registered with the SolarBC residential program, of which three were fully CSA certified, and the remaining eight systems had drawings assessed, stamped and sealed to ensure they meet the intent of the CSA standards. SolarBC covered the cost of the engineer's seal.

Building knowledge and awareness

During 2010, a marketing strategy was developed and continues to be implemented as the program advances. The marketing strategy has a strong focus on grass roots and leveraging partnerships to raise brand awareness of SolarBC within Solar Communities and other major population centers.

The SolarBC website (www.solarbc.ca) provides a one-stop information source, where interested participants and stakeholders can learn about SHW, find a Registered SolarBC Contractor, rate installers, share experiences and view



SOLARBC REGISTERED INSTALLERS
Source: Swiss Solar Tech

installations happening across the province. The site also includes SolarBC events and success stories, as well as solar news items from other jurisdictions.

Up to March 31, 2010, the website had received over:

- 77,000 visits,
- 350,000 page views;
- 1,600 people who signed up for e-news; and
- Visits from 130 countries around the world.

SolarBC has a dedicated email address (info@solarbc.ca) and toll-free phone line (1-866-650-6527) to answer queries; help explain the basics of SHW systems, the available systems, and the incentives; and link consumers to Registered Contractors near their homes. Printed materials consisting of brochures, postcards and other marketing pieces were developed and distributed through installers and Solar Communities at public events.

Some of the key marketing activities during 2010 were:

- Double incentives to \$2,000 and Zero Interest Loans;
- Partnership with FortisBC provided additional incentives for 57 participants;
- Partnership with Green Power Labs provided free Solar Rating reports for 661 homes;
- City of Vancouver pilot program marketed from Jan 2010, in partnership with Terasen Gas and Offsetters;
- Monthly SolarBC e-news to over 1,600 recipients with a 45% 'read rate';
- Weekly media releases to local and provincial press; and
- Marketing for the BC Solar Days events on May 28-29 to coincide with European Solar Days in May 2010.
- Organizing Solar Days Open House Tours with program participants;
 - Use of popular social marketing tools, including Facebook, Twitter and Digg;
 - Google map on the SolarBC website providing an interactive tool for people to view installations, installers and Solar Communities across the province;
 - Marketing push through energy assessors, Registered Contractors and other partners to raise awareness of increased incentives
- Featured guests on local radio talk shows;
 - Paid advertising in news and local radio stations across the province;
- 14 Solar Champions featured on website;
- Lawn signs for installers produced;
- David Suzuki established as Honorary Patron of the program;
- Promotion of 4 Solar Community Mayors and 1 First Nations Chief home installations; and
- SolarBC presentations at over 20 community events all over BC.



SOLARBC SPONSORS THE CHBA-BC BUILT GREEN AWARDS IN VANCOUVER
Source: SolarBC

"THE WEBSITE HAS A LOT OF HELPFUL INFO ABOUT SYSTEMS AND INSTALLERS. I'M MONITORING MY OVERALL ELECTRICAL USAGE, SO IT HAS BEEN EASY TO SEE ON A DAILY BASIS, THAT OUR ELECTRIC HOT WATER HEATER HAS NOT NEEDED TO TURN ON ALMOST AT ALL DURING THE SUMMER."
Rich McCue, Victoria



KELOWNA SOLAR DAYS SPONSORED BY FORTISBC
Source: City of Kelowna



RESIDENTIAL INSTALL, SALT AIR BC
Source: Via Solar

Developing a network of local skills

A key component of the SolarBC residential program is the development of skills training around the province so that trained installers are available on a local basis. The training strategy has the following objectives:

- Ensure that registered SolarBC installations are of the highest quality and that SolarBC installers are receiving comprehensive training for SHW installations, including knowledge of best practices;
- Increase the number of certified installers;
- Provide education and awareness of SHW installations to inspectors in order to facilitate issuance of permits;
- Encourage the installation of SHW systems on new-builds;
- Build awareness of SHW systems in the buildings industry; and
- Encourage the inclusion of SHW systems in new building designs by architects/engineers through high profile demonstration projects.

Key to the strategy is an improved solar installer training program. SolarBC worked closely with Northern Lights College and CanSIA to help develop a new CanSIA training program that makes it easier for trainees to meet all certification requirements, including installation experience, on completion of the course. The program consists of a classroom session with exam, fall safety training and installation training on volunteer homes in the community. In 2009/10, this course was held in Tofino, Kelowna, Dawson Creek, Victoria, North Vancouver, and Whistler for a total of 134 students. In addition, SolarBC contacted approximately 80 contractors, who participated in the CanSIA one-day workshop and passed the exam, to encourage them to become certified. In the year ahead, SolarBC's goal is to assist this group in becoming fully certified, and to continue developing highly trained personnel for the emerging solar industry.

Another key goal is to help raise awareness of SHW technology amongst key stakeholders and decision makers who may come into contact with SHW during the installation process including municipal inspectors, architects, engineers and energy advisors.

Some key training events during this year included the following:

- 160 people joined a webinar to raise public awareness about SolarBC.
- 72 staff and elected officials from 40 communities joined a webinar aimed at local government staff to raise awareness of SolarBC.
- Refresher training workshops for SolarBC Registered Contractors focused on roof penetrations, line sets and common issues identified during quality inspections.
- Collaboration with Northern Lights College who offer CanSIA and Worksafe BC fall safety courses.
- Camosun College submitted a proposal to pilot the SHW installer course from the Association of Canadian Community Colleges with licensed plumbers in September. Students would write the NABCEP exam, pre-empting CanSIA's

switch to that exam in 2011. SolarBC will accept NABCEP certification as an equivalent to CanSIA certification.

- A one-day workshop presented at the Building Officials of BC annual conference
- Municipal inspectors’ tour of completed SHW installations in Burnaby and Kelowna
- Exploration of the potential for a SHW apprentice program / plumbing ticket endorsement with Residential Construction Industry Trades Organization (RCITO) and the Construction Industry Trades Organization (CITO).
- A half-day course was presented as a continuing education event through the Association of Professional Engineers of BC (APEGBC).
- A SHW webinar was presented to Certified Energy Advisors (CEAs) in cooperation with NRCan.



GREEN DREAM HOME, KAMLOOPS
Source: EQuilibrium Housing

Ensuring high quality standards

SolarBC is committed to high quality installations through our network of trained and certified Registered SolarBC Contractors. A critical component of SolarBC’s quality assurance program involves field inspections of a percentage of work carried out under the program.

A strategy of early inspections has been adopted to help establish technical issues early on, particularly as new installers are registered in the program. The main aim of our quality assurance program is to help build confidence in the technical ability of installers, and to develop educational and training exercises for both inspectors and contractors.

Inspections are carried out on behalf of SolarBC by Stantec, an independent engineering firm. Inspections are carried out according to the CSA F383 guidelines, the installation code for packaged SHW systems. Wherever possible, contractors are present during the onsite inspections and the majority of issues are addressed at the time of the inspection. All inspection results are fed back to the Registered Contractors for implementation.

Up to the end of March 2010, a total of 54 installations were selected for inspection representing 36% of installations at that time. Installations are selected for inspection at the

INSPECTION ISSUES	Q4 2010	Q3 2009
Clarification needed on seismic restraints	46%	(58%)
Correct labelling of hot surfaces	39%	(54%)
Installation of anti-scald valves	39%	(54%)
Installation of testable backflow preventor	22%	(46%)
Clarification of permit requirements	28%	(42%)
Installation of vacuum relief valves	30%	(38%)
No evidence of manuals left with customer	17%	(31%)
Insulation of pipes required	22%	(27%)
Copper piping required to tank	11%	(15%)
Check valve required	6%	(12%)
Insulation required	22%	(4%)

end of each quarter.

The most common issues reported through the inspection process, in order of priority are shown below. The numbers in brackets represent the percentage of inspected jobs on which the issue was originally identified. The positive impact of the inspection process can be clearly seen in the reduced number of faults in most categories.

“WE’VE BEEN SURPRISED ON THE DAYS IT HAS GENERATED HOT WATER. WHEN IT’S COLD BUT SUNNY WE GET A FULL TANK. WE’RE TELLING THE NEIGHBOURS TO COME OVER AND GET THEIR BUCKETS FILLED WITH HOT WATER”
Dan Scott, New Westminster

The inspection results were also used to inform refresher training courses for Registered SolarBC Contractors.

SolarBC considers Customer Satisfaction to be equal to the technical quality of work carried out. Satisfaction surveys are issued to all participants in the program. By the end of March 2010, 50 responses were received, representing a 20% response rate. The following are a few key findings:

- 93% said SolarBC was good or excellent at understanding customer needs;
- 31% completed the free solar rating report prior to installation;
- 81% found it easy to participate in SolarBC;
- 89% found the information the installers provided to be good or excellent;
- 88% rated their experience as good or excellent;
- 85% were able to name which system they had installed;
- 92% reported they were glad they had installed SHW;
- 54% had already noticed significant changes in their daily hot water routines;
- 23% said their bills had already gone down; 69% said too early to tell;
- 92% would recommend the program to others;
- 85% said they would be happy to be featured on our website; and
- Top 4 reasons for installing were to reduce bills, to “do the right thing”, to reduce carbon footprint and because of the incentives.



HAPPY SAANICH CUSTOMER
Source: Patrick Chenier

Developing regulations

One of the biggest barriers to transforming the market for SHW in BC is the significant confusion around permitting and regulatory requirements for SHW installations. The BC Building Code plumbing standards for installations are seen to be unclear by some, and CSA codes have questionably categorized SHW as a severe risk to the potable water supply. Many local inspectors concerned about liability have, therefore, required rigorous backflow-prevention and annual inspections. Confusion prevails for local plumbing and building inspectors, the solar industry and homeowners. In some BC communities, the confusion has slowed the volume of installations to zero.

To address this issue, SolarBC joined the B64 Action Committee, a committee formed with NRCan and other stakeholders from across Canada to develop changes to the CSA standards. The proposed changes included introducing a rating scale of potential hazards to replace the single, severe hazard rating, and implementing similar steps to those taken by other jurisdictions around the globe.

SolarBC also petitioned the BC Building and Safety Policy Branch to publish a bulletin clarifying the building code with respect to backflow prevention for SHW systems. The bulletin was published in July 2009.

By the end of March 2010 there were five systems certified to CSAF379.1-88 (only three of which are available in BC), and approximately sixteen systems still in the queue for certification. SolarBC appointed an independent engineer to review, stamp and seal an engineer's drawing for each system that has not been certified. This approach meets the requirements of plumbing inspectors.

4.2 SOLAR COMMUNITIES

A key goal of SolarBC was to establish at least five leading ‘Solar Communities’ across BC that would be able to:

- Act as flagship communities and provide leadership to community members;
- Help to develop means to remove barriers to SHW installations;
- Help to promote and raise awareness of SolarBC to community members; and
- Provide visible demonstration projects.

Six communities were appointed in the first year and during the second year of the program, a further two communities were added, bringing the total to eight Solar Communities. Each community was awarded \$10-\$20,000 to help them advance their SHW initiatives and to reach their individual community solar goals.

A meeting to discuss “Barriers and Solutions” to SHW was organized in January, 2010 in Victoria. The meeting brought together representatives from local, provincial and federal governments to identify barriers to the deployment of SHW and actions to help remove the barriers. Participants included SolarBC, the Solar Communities, Ministry of Energy, Mines, and Petroleum Resources (MEMPR), Ministry of Environment (MoE), Climate Action Secretariat, Buildings Policy Branch, Ministry of Community Services and NRCan.

The following key actions were identified as key to the removal of the barriers:

FUNDING AND POLICY

- Develop a plan to become an effective lobby group on specific issues;
- Determine solutions to concerns with linking NRCan ecoENERGY rebates with CSA certification;
- Work with EcoENERGY to mitigate concerns from incentive changes;
- Develop a Communication Plan that addresses awareness and education of homeowners, the business community and industry;
- Develop more collaboration between SolarBC and local government; and
- Clarify benefits to solar, including environmental benefits.

FINANCIAL CHALLENGES

- Work with Province to pilot Local Improvement Charge projects in Solar Communities;
- Provide more financial reasons to install SHW;
- Develop a business case for Pace Bonds or similar initiatives;
- Clearly define the current leadership to champion an energy fund;
- Explore the possibilities of private sector capital, backed by government loan guarantees;
- Complete an analysis to determine what model(s) of Revolving Funds could work best;
- Lobby to expand HST to include heating fuels; and
- Examine the possibility of point of sale rebates with Minister of Finance.

UTILITIES

- Develop a plan to bring more utility companies such as BC Hydro and Terasen Gas on board, utilizing Fortis model; and
- Share monitoring data with other utilities.

CERTIFICATION OF SYSTEMS

- Develop a plan to lobby for harmonizing the certification of systems;
- Include this issue as an Canadian Council of Energy Ministers agenda item; and
- Contract with an engineering firm to determine gaps between US and Canada and complete an analysis to determine what model(s) could work best.

REGULATIONS/POLICIES

- Develop educational kits for stakeholders;
- Clarify position and provide information on BC Building Code;
- Work with CSA and NRCan to update CSA standards;
- Develop inspectors' training manual;
- Work towards consistent permitting procedures; and
- Develop a pilot Merton Rule in a Solar Community.

EDUCATION AND TRAINING

- Develop educational kits for stakeholders;
- Ensure consistency and availability of inspector and installer training; and
- Provide calendar of training/education opportunities.

The primary responsibility for each of the above actions was also identified in this session.

During the year, many requests were received from other communities who expressed interest in becoming a Solar Community. In response, an invitation for local governments and first nations to apply to become Solar Communities was sent out with a deadline of March 31, 2010 for applications.

4.2.1. DISCUSSION AND ANALYSIS

The following provides an update of the progress each Solar Community has made with their initiatives.

Dawson Creek

- Set targets of 10 solar homes by 2010 and 500 solar homes by 2020;
- Developing a Local Improvement Charges pilot
- Developing a model bylaw for the Ministry of Community Development;
- Submitted a proposed amendment to the Building Code for solar readiness;
- Official Community Plan (OCP) undergoing review with energy as one of the areas of focus;
- 4 installers trained, 2 installations in Dawson Creek; and
- Completed SHW installations on all municipal buildings.

Kelowna

- Solar Days committee set up to organize events for May 28/29 Solar Days;
- Development of Athans pool solar project with possible tie in to Rutland school;
- Events list compiled for profiling SolarBC project;
- Developed a process to deal with permitting SHW systems – 40 issued so far; and
- Residential project team and the FortisBC project team in regular communication.

District of North Vancouver

- Master Requirements List for SHW created to outline permitting requirements;
- Community awareness sessions with the aid of a portable SHW system;
- Planning a Solar Days event for the general public;
- Green Building Strategy to include “Alternate Energy Systems”;
- SHW installation on the Northlands Golf course; and
- Assisting North Vancouver School Board to identify a school for a SHW installation.



NORTHLANDS GOLF COURSE
Source: District of North Vancouver

Saanich

- A checklist for inspectors to inspect SHW installations;
- Gordon Head pool installation with participation of Camosun college students; and
- Offering a \$50 rebate on permitting fees.

Tofino

- Solar to be included in the community energy plan;
- Homeowners, who allowed training installations on their houses, are promoting SHW to other community members;
- Working with the District of Ucluelet to organize a bulk buy;
- Working with School District 70 to install SHW on Wickanninish Community School;

- Fun workshop events and community engagement for BC Solar Days;
- Building inspection fee waived for SHW;
- \$150 rebate provided to homeowners who install a SHW system;
- Solar hot water installation at Cox Bay beach municipal washroom/shower facility; and
- SHW shower project featured on a CBC radio broadcast and in local media.



TOFINO SOLAR DAYS EVENT
Source: District of Tofino

“PEOPLE THINK THAT IN NORTH VANCOUVER THERE ISN’T A LOT OF SUN BUT THE PROVINCE GETS QUITE A BIT OF SUN AND EVEN IN THE WINTER THE TEMPERATURE ON MY SOLAR HOT WATER TANK WAS QUITE SIGNIFICANT.”
Mayor Darrell Mussatto,
City of North Vancouver



OLYMPIC VILLAGE INSTALLATION
Source: City of Vancouver

City of Vancouver

- Solar thermal absorption chillers in Southeast False Creek (SEFC);
- Installation of 480 m² of SHW panels on the SEFC Olympic Village;
- Following the Olympics, public tours of SHW installations are being offered;
- Excess energy collected by the solar panels used for water and space heating in neighbourhood;
- A Solar Homes Strategy which includes:
 - Promoting the technology and stimulating the market,
 - Exploring an installation on the roof of City Hall,
 - Secured funding from CMHC to host two open houses in 2010,
 - A unique pilot project between SolarBC, City of Vancouver, Terasen Gas and Offsetters to offer a \$3,500 incentive to 50 new homes installing SHW, through the SolarBC residential program; and
 - Monitoring program to track performance.
- Six schools scheduled to install SHW; and
- Photovoltaic (PV) installation at Admiral Seymour School.

West Moberly First Nation

- Five people have been trained by Northern Lights College as SHW installers;
- Two SHW systems were installed, one residential and one on a lodge;
- Adopted target of one SHW installation by 2010 and 25% of homes by 2020;
- Planning a community event celebrating the new installations in July; and
- Has now completed all their obligations as a Solar Community.



WHISTLER SOLAR DAYS
Source: Municipality of Whistler

Whistler

- Target setting underway;
- Ongoing media coverage and community engagement events ;
- Inclusion in OCP policies underway;
- Development permit area guidelines underway; and
- Implementation of Meadow Park Solar Installation underway.

4.3 LOCAL GOVERNMENT BUILDINGS

SolarBC provides an incentive for local governments to install SHW on their buildings. The incentive is funded as part of the Province of BC's \$5 million investment, and is delivered in cooperation with NRCan's ecoENERGY for Renewable Heat program. SolarBC matches the ecoENERGY for Renewable Heat incentive to a maximum of \$40,000 for each installation. The available incentive is calculated based on the type of collector installed, the incentive rate for the chosen collector, and the area of the collector. The SolarBC incentive will continue till March 31, 2011.

SolarBC provided funding to the Community Energy Association (CEA) to establish an outreach program aimed at securing 20 local government applications for SHW systems. CEA will promote the SolarBC program, guide governments through SolarBC's grant process and support them in acquiring local government commitments for the installation of SHW systems.

4.3.1. DISCUSSION AND ANALYSIS

In 2009-10, SHW systems were installed and commissioned on showers at Cox Bay Park in Tofino, the Delta municipal hall, Metro Vancouver head office in Burnaby, and on the recreation centre in Quesnel. In addition, funding was approved for SHW systems at recreation centres in Maple Ridge and Whistler, the Vancouver Island Conference Centre constructed by the City of Nanaimo and the transit building operated by the Regional District of Nanaimo. At the end of the fiscal year, another five local governments had funding applications for SHW under review. With the two SHW systems installed in Delta and Quesnel in 2008-09, the total number of completed or planned local government projects reached thirteen at the end of March 2010.



SUMMERLAND POOL
Source: Swiss Solar Tech

4.4 SOCIAL HOUSING

Similar to local government incentives, SolarBC provides incentives for SHW system installations on multi-unit social housing developments (See section 4.3). In addition, Vancity provides eco-efficiency loans with payments that are matched to the projected energy savings. This ensures that no net additional operating costs are incurred for the SHW installation.

4.4.1. DISCUSSION AND ANALYSIS

In 2009-10, SolarBC contributed funding towards the solar system on the Net-Zero Energy building at False Creek in Vancouver that was used to house athletes during the 2010 Winter Olympics. The building has now been converted to affordable housing.

In early 2010, a SHW system was installed on affordable housing for University of British Columbia (Okanagan) students, creating a demonstration project for other universities.

SolarBC and BC Housing are working together to encourage SHW system installations on BC Housing projects, and BC Housing has targeted a number of developments. In 2009-10 a SHW system was completed on the Maxxine Wright Centre in Surrey and applications were received for two more BC Housing projects. In addition, an application for SHW funding was received for a housing project developed by the Canadian Mental Health Association.



SKEENA TERRACE VANCOUVER, BC HOUSING
Source: Swiss Solar Tech

4.5 FIRST NATIONS' HOUSING

In the spring of 2010, an invitation was issued to all remote and off-grid First Nations to submit an application for SolarBC funding for SHW installations on residences. This application had the following mandatory criteria:

- Community is remote and off-grid;
- A plan for energy self-sufficiency has been formulated that includes energy efficiency measures and plans to create renewable energy projects;
- Solar hot water has been identified as a viable resource in the community's energy plan;
- Funding applications have already been submitted to other partners, e.g. INAC, First Nations Infrastructure Fund, Remote Communities Implementation Fund, or ecoENERGY for Aboriginal and Northern Communities.



CHIEF GORDON PLANES
Source: T'Sou-ke Nation

These applications will be evaluated on confirmation of project funding from other sources with SolarBC funding used specifically for the installation of SHW systems.

4.6 SCHOOLS

SolarBC implemented the Solar Schools project, and invited school districts to nominate schools to earn incentives for SHW system installations. The Solar Schools project will help schools in their quest to become carbon neutral in their operations by 2010, as required by the BC government. The project also provides an opportunity to demonstrate the practicality of SHW to students, families and surrounding communities. Educators also use the systems in lessons on renewable energy and employment opportunities in the renewable energy sector, one of the fastest growing sectors in the world.

In 2009 and early 2010, schools had two funding incentives for SHW projects:

1. SolarBC – funded by the Province of BC, subsidies of \$15,000 towards the installed cost were available upon installation and commissioning of the SHW system. This fund also contributed towards monitoring and a display in a high profile area.
2. ecoENERGY for Renewable Heat Program – funded by NRCan, subsidies of up to a maximum of \$400,000 towards the installed cost were available upon installation and commissioning.

In early February 2010, Solar BC increased the incentive for installing SHW systems on schools to 90% of the balance remaining after the ecoENERGY rebate was applied to the total project cost. This incentive was capped at \$20,000 per school. In addition, the requirement to allocate part of the budget to displays and monitoring was removed.

In 2009-10, a total of 37 schools were preapproved for SolarBC funding for SHW installations. In February 2010, the first SolarBC funded SHW systems were commissioned at 108 Mile Elementary School and 150 Mile Elementary School in the Cariboo-Chilcotin School District. On March 31, 2010, Rutland Secondary School in Kelowna launched their SHW system. At the end of the fiscal year, five more schools had received contribution agreements from the ecoENERGY program and had begun installation of their SHW systems.

Photovoltaics for Schools

SolarBC has not focused on PV for schools as the return on investment is much less than for SHW. However, SolarBC realizes that PV has great value for educating students about renewable power and so has provided funding for PV arrays installed at Oak Bay High School and Reynolds Secondary School in Victoria, Admiral Seymour Elementary School in Vancouver, and Dover Bay Secondary School in Nanaimo in the past



RUTLAND SECONDARY SCHOOL
Source: Swiss Solar Tech

year. A call for proposals for PV on 10 schools across BC is planned for September 2010.

Curriculum Development

SolarBC is working with WildBC to develop solar energy lesson plans that meet current Ministry of Education science learning outcomes. The lesson plans contain concepts on solar energy with a specific focus on photovoltaic (PV) cells and SHW. The lesson plans link, support and extend the lesson development for teachers and schools participating in the Solar for Schools program.



150 MILE HOUSE ELEMENTARY SCHOOL
Source: Swiss Solar Tech

5.0 Energy Savings and GHG Reductions

This section provides an overview of the estimated energy savings and greenhouse gas emission reductions expected to be achieved by each project sector of SolarBC, along with an overview for the whole program.

Estimated energy savings for the institutional projects in schools, local government buildings and social housing projects have been obtained from applications submitted to NRCan's ecoENERGY for Renewable Heat program. Savings are calculated using standard modeling tools such as TRYNSY² or RetSCREEN³.

The estimated energy savings for the residential sector have been obtained from TRYNSYS modeling carried out by CanmetENERGY as part of the CSA approval process for residential systems. The CanmetENERGY performance table⁴ is also used by NRCan to provide performance data for the ecoENERGY retrofit program. Where TRYNSYS modeling was not available, the estimates for a typical system in BC were modeled by the Pembina Institute.

Table 3 below provides an overview of the estimated annual energy savings, shown in GJ/ year and the equivalent kWh savings per year⁵, expected to be achieved from SHW installations, both by each sector and for the whole SolarBC program. Estimates have also been provided of the expected GHG emission reductions in tonnes of CO₂ equivalent per year.

TABLE 3. Summary of Energy and Greenhouse Gas Savings from SolarBC Projects to March 31, 2010.

PROJECT STATUS	SCHOOL SAVINGS			LOCAL GOVERNMENT SAVINGS			SOCIAL HOUSING SAVINGS			RESIDENTIAL SAVINGS		
	GJ/y	kW/h/y Equivalent	tonnes CO ₂ /y	GJ/y	kW/h/y Equivalent	tonnes CO ₂ /y	GJ/y	kW/h/y Equivalent	tonnes CO ₂ /y	GJ/y	kW/h/y Equivalent	tonnes CO ₂ /y
Completed to March 31, 2010	44	12,183	2.2	312	86,563	15.6	364	101,112	18.4	1,877	521,480	43.9
	SAVING PER YEAR						SAVINGS OVER LIFETIME OF SYSTEM (30 YEARS)					
Total GJ/y	2,597						77,900					
Total kWh/y	721,338						21,640,000					
Total Tonnes CO ₂ /y	80.2						2,400					

As shown in the table above, all SHW installations carried out with SolarBC funding to the end of March 2010 are expected to save approximately 2,597 GJ (721 MWh equivalent) every year. With an expected life span of approximately 30 years, the SolarBC installations should deliver lifetime saving of approximately 77,900 GJ (21,640MWh). This equates to an a GHG reduction of approximately 80 tonnes of CO₂ equivalent per year, or 2400 tonnes of CO₂ equivalent over the expected lifetime of the systems.

2 Transient Energy System Simulation Tool is designed to simulate the performance of thermal energy systems.

3 RetSCREEN International is a clean energy performance modeling tool

4 www.canmetenergy-canmetenergie.nrcanrncan.gc.ca/eng/renewables/solar_thermal/sdhw_directory.html

5 A conversion factor of 1 GJ = 277.78 kWh has been used to show a kWh equivalent of energy savings

Up to March 2010, the annual energy savings for the residential program are estimated at 1,877 GJ/year and approximately 72% of the total program energy savings. Estimated energy savings for the institutional program are approximately 720 GJ/year and 28% of the total program savings. As the institutional projects need a considerable amount of additional time for commencement and completion, it is anticipated that larger energy savings and greenhouse gas reductions will be seen at the end of the next fiscal year.

The distribution of Greenhouse Gas emission reductions between the institutional and residential sectors was almost equal, with 45% of the savings from the institutional sector and 55% from the residential sector. In the institutional sector, about 90% of installations will be displacing natural gas while almost 70% of residential installations will displace electricity. With the recent involvement of Terasen Gas, PSECA and City of Vancouver, an increase in the number of installations displacing natural gas is being seen.

RETSscreen modeling carried out by Pembina Institute on behalf of SolarBC estimates that residential installations will save customers almost \$4.5 million dollars in energy bills over the lifetime of the systems.⁶

TABLE 4. Summary of Energy and Greenhouse Gas Savings from SolarBC Projects completed by March 31, 2010 and committed to the end of the program.

PROJECT STATUS	SCHOOL SAVINGS			LOCAL GOVERNMENT SAVINGS			SOCIAL HOUSING SAVINGS			RESIDENTIAL SAVINGS		
	GJ/y	kW/h/y Equivalent	tonnes CO ₂ /y	GJ/y	kW/h/y Equivalent	tonnes CO ₂ /y	GJ/y	kW/h/y Equivalent	tonnes CO ₂ /y	GJ/y	kW/h/y Equivalent	tonnes CO ₂ /y
Completed to March 31, 2010	44	12,183	22	312	86,583	15.6	364	101,112	18.4	1,877	521,480	43.9
Completed & Committed March 31, 2010 to March 31, 2011	267	74,259	12.5	563	156,346	28.5	531	147,432	26.9	2,595	720,936	65.3
TOTAL PROGRAM SAVINGS			SAVING PER YEAR			SAVINGS OVER LIFETIME OF SYSTEM (30 YEARS)						
Total GJ/y			6,553			196,600						
Total kWh/y			1,820,311			54,600,000						
Total Tonnes CO ₂ /y			213.4			6,400						

Table 4 provides an estimate of the energy savings and greenhouse gas reduction to the end of the program based on completed projects post March 2010 and commitment of projects to March 31, 2011. As shown in the table above, all SHW installations carried out with SolarBC funding to the end of March 2011 are expected to save approximately 6,553 GJ (1820 MWh equivalent) every year. With an expected life span of approximately 30 years, the SolarBC installations should deliver lifetime savings of approximately 196,600 GJ (54,600MWh). This equates to an a GHG reduction of approximately 213 tonnes of CO₂ equivalent per year, or 6400 tonnes of CO₂ equivalent over the expected lifetime of the systems.

⁶ A RETScreen Analysis was completed by the Pembina Institute assuming typical fuel costs and solar resource for all installations across BC. Lifetime utility bill savings assumed a 2.5% annual increase in electricity prices and 0.5% annual increase for natural gas



SOLAR CAR RACES
Source: Grand Forks Solar Days



CITY OF VANCOUVER HOMES
Source: Terratek



SUNSET RANCH KELOWNA
Source: Acorn Homes

6.0 2010 and Beyond

6.1 SOLARBC FIRST SOLAR DAYS EVENT

To coincide with the European Solar Days, the first official BC Solar Days events took place on the weekend of May 28–30 and were a great success. A SolarBC luncheon kick-started the activities, with the Honourable John Yap Minister of State for Climate Action speaking in support of the program and presentation of the SolarBC annual awards.

Over the BC Solar Days weekend, people were engaged in over 30 different community events in schools and Solar Communities. Events included training workshops, solar games, and solar tours. Over 40 homeowners opened their homes for a unique province wide Open House Tour. Well over 2,000 people went along to touch, see and learn about installations.

6.2 RESIDENTIAL INSTALLATIONS

To help stabilize the incentives available, SolarBC committed to continue the provision of \$2,000 per installation, with the option of the Zero Interest loan, for the remainder of 2010. As a result, demand from the residential sector steadily increased and from April to September 2010, a further 160 applications were received with 131 completed installations. The residential program is expected to be fully subscribed by the end of 2010 when the NRCan incentives will end.

During the year a unique partnership with SolarBC, the City of Vancouver, Terasen Gas and Offsetters introduced a new pilot program to increase incentives to \$4,300 for 30 City of Vancouver residents.

The industry has seen significant growth and the SolarBC residential program now has a network of 32 Registered Contractors across the province. There are now over 50 CanSIA certified SHW installers in British Columbia, more than in any other province. A recent survey of SolarBC Registered Contractors demonstrated very positive industry support for SolarBC. Some highlights include

Installers employ an average of 3.6 employees per company (approx 115 jobs created);

- 50% of SHW installations are in the residential sector;
- 22% of SHW installations are in the industrial and commercial sectors;
- 83% said SolarBC is a valuable program and incentives helped them grow;
- Top 3 ranked support “tools”: Incentives, Marketing, and Regulations;
- 90% said installations in all sectors will decrease or stop without incentives; and
- Incentives of up to 50% provide the optimum level of support needed.

6.3 REGULATIONS

In one of the most significant developments during the year, the Province of BC developed a voluntary “Solar Hot Water Ready” Regulation in partnership with SolarBC and in consultation with the development industry. A solar ready home is one that has been designed and constructed to maximize the solar potential and to accommodate easy installation of the SHW system. Benefits of solar ready homes include: easier installation of SHW system, less cost to install systems down the road, added resale potential of homes and increased energy efficiency and reduction of GHGs.

This new regulation supports the province’s greenhouse gas reduction target of 33% by the year 2020. BC local governments were invited to “opt-in” to the Solar Hot Water Ready Regulation under the BC Building Code. This type of opt-in requirement is similar to the Adaptable Housing provisions introduced in January of this year, which give municipalities the option to require building features supporting aging-in-place and persons with disabilities. A total of 26 communities opted to introduce the Solar Ready Regulation into their community.

6.4 SOLAR COMMUNITIES

The response to the call for more Solar Communities has been phenomenal and during 2010 a further 25 communities were awarded SolarBC Solar Community status, bringing the total to 32 Solar Communities. Energy, Mines and Petroleum Resources Minister, The Honorable Bill Bennett, announced that each new Solar Community will be provided \$5,000 from SolarBC to help them implement their SHW initiatives. The funding will enable the new Solar Communities to further develop solar hot-water programs and other solar projects in an effort to promote clean energy, reduce GHGs and promote sustainable communities. The new Solar Communities in 2010 include:

City of Grand Forks adopted targets of SHW on six residential units by 2011, and on 5% of homes (75 residential units) by 2020. A SHW installation was completed on their Aquatic Centre prior to their becoming a Solar Community. The City plans to add SHW at the shower and washroom building in the municipal campground.

Village of Ashcroft is participating in the new provincial SHW Ready Regulation and will draft its own solar ready regulation bylaw. Ashcroft’s outdoor swimming pool will include SHW and their solar targets include 10 per cent of homes with SHW by 2020.

Village of Alert Bay will be installing SHW at the Alert Bay Campground on Cormorant Island, and they are partnering with BC Hydro to install SHW in the new Visitors’ Centre to be constructed in 2011.

City of Campbell River will promote SHW and SolarBC incentives to homeowners and developers through workshops, and displays at community events; install SHW on up to five municipal buildings; increase knowledge of SHW for City staff; provide training for inspectors; and facilitate SHW installer training at North Island College.

City of Castlegar will have solar targets for residential and commercial development, and staff members are working with the Regional District of Central Kootenay to explore the installation of SHW project for the Castlegar and District Recreation Complex.

THE SOLARBC 2009 AWARDS

Best Solar Community
2009:
T’Sou-ke First Nation

BEST SOLARBC INSTALLERS
2009:
TERRATEK ENERGY
SOLUTIONS
SWISS SOLAR TECH

BEST SOLAR UTILITY 2009:
FORTISBC



AQUATIC CENTRE
Source: City of Grand Forks

"WE'RE ONE OF THE LOCAL GOVERNMENTS IN BC THAT SIGNED ONTO THE CLIMATE ACTION CHARTER, AND ARE NOW WORKING TOWARD CARBON NEUTRAL OPERATIONS. IT'S A SMALL STEP BUT A GOOD STEP FOR US."
*Chris Midgley,
 Regional District of
 Nanaimo*

City of Colwood is participating in the provincial Solar Hot Water Ready Regulation. Currently, the city is working with Westshore Parks and Recreation to install SHW at the public pool building at the Juan De Fuca Recreation Centre. They are also looking at SHW training programs for engineering and planning staff and SHW for schools.

Cowichan Tribes will complete a SHW inventory of residential, industrial and Cowichan Tribes buildings on-reserve. They are working with Cowichan Energy Alternatives Society to apply for SHW incentives and will be assisting home owners to install SHW.

Corporation of Delta will use the SHW installation on their municipal hall as a demonstration project, hold an information session on building permits for builders and developers and present SolarBC rebates and related financial incentives on their website.

The City of Duncan will work with Cowichan Green Community and Carbon Busters to set targets and develop a community outreach plan. Duncan was a participant in the 2010 Solar Days, recently passed a bylaw to build solar-ready new homes and is planning at least one local government SHW installation.

Town of Ladysmith has a goal to generate 10 per cent of its energy needs from clean energy sources, including SHW by 2020. They have installed SHW at City Hall and have provided SHW training for staff and will continue to support alternative energy initiatives for residents.

Township of Esquimalt has installed SHW on its municipal hall and has passed the Solar Ready Regulation bylaw. They are planning a SHW installation for the recreation centre and solar lighting for designated park trails. Esquimalt's future plans include a target of 10 SHW installations by April 2011 and will include SHW in its Green Features Checklist for Developments, which will be distributed with development permits.

City of Fort St. John recently completed a Community Energy and Emissions Plan, which includes: guidelines for SHW in development permit areas, rebates for SHW installations, and a SHW information package. OCP amendments in 2010 and 2011 will include Development Permit guidelines for passive solar design, optimal orientation for solar benefits, and solar targets. The City plans to sign onto the BC Solar Ready Guidelines and to provide building permit rebates for SHW installations.

District of Invermere is amending its OCP to include 10 homes with SHW in 2010 and 10 per cent of homes by 2020. The District is also considering rebate programs for residences, commercial buildings and institutional buildings to encourage SHW installations. A proposed bylaw will require installation of SHW in all new construction starting in 2011.

City of Kimberley will target the installation of SHW systems on at least six homes by April 2011 and will install SHW system at its Aquatic Centre.



TOWN OF LADYSMITH CITY HALL
 Source: Town of Ladysmith

Lasqueti Island Clean Energy Working Group plans to install SHW on 80 homes and one school by April 2011 and on one community residential care facility by 2015. School District 69 already has a Solar for Schools project approved and they are the only major island within the Islands Trust that remains off the grid.

Village of Midway has passed the Solar Ready Regulation and plans include setting a target of two installations by April 2011 and 10 per cent of homes by 2020. They are planning a SHW installation at the Boundary Central Secondary School, training for public works employees and SHW installations on municipal buildings.

Nanaimo Regional District and member municipalities will target 20 residential SHW systems in the region by April 2011. As work proceeds on the Regional Community Energy and Emissions Plan, each jurisdiction will set its own target for SHW systems, relating the targets to emission reductions.

District of Peachland has opted into new Solar Hot Water Regulations, has installed SHW on the community centre and is planning to install SHW on a newly proposed senior's housing project.

City of Quesnel's District Arts and Recreation Centre has a SHW installation. They took part in the 2010 BC Solar Days events with an open house and tour of the installation. They are planning to install SHW within the school district.

City of Richmond is developing a comprehensive Community Energy and Emissions Plan (CEEP) to be completed by the end of 2010. The CEEP scope of work includes an examination of solar potential in the community. Also, new local government powers will be investigated to see how appropriate they are for encouraging solar installations (e.g. Development Permit Guidelines, Local Improvement Charges).

Salt Spring Island has a residential target of 20 SHW systems by 2011 and 10 per cent of homes by 2020 (500 systems). Salt Spring already has SHW in the Murakami Gardens affordable housing project and the Harbour House Hotel. School District 64 plans to consult with the Islands Trust regarding SWH for five schools.

District of Sechelt has a target of 10 home installations by 2011 with 10 per cent of new and existing homes by 2020. The district plans to engage with School District 46 and has already installed SHW on their Library and Municipal Offices. The installation was used to train local installers.

City of Surrey is installing SHW at one of their facilities and exploring the integration of solar-related policies into the official community plan update process currently underway. The city will promote and raise awareness about solar options and incentives at the residential level and for local commercial and institutional buildings.

T'Sou-ke First Nation installed SHW on 37 homes and 75kW of photovoltaics on their band buildings. The community has also trained nine community members as SHW and PV installers. T'Sou-ke was named SolarBC's Solar Community of the Year, for their "whole community" commitment to implementing solar technologies.



RECREATION CENTRE
Source: Quesnel District and Leisure Services



SECHELT LIBRARY AND MUNICIPAL OFFICES
Source: SolarBC



T'SOU-KE NATION, SOLAR COMMUNITY OF THE YEAR AWARD
Source: SolarBC

"TOMORROW IS OUR FIRST CAREER AND PERSONAL PLANNING DAVY FOR GRADE 8 AND 9 STUDENTS. WE NOW HAVE LOST OF CURIOUS STUDENTS ASKING FOR INFORMATION ABOUT OUR SYSTEM AND CAREERS IN THE SOLAR INDUSTRY. OUR ENVIRONMENT EDUCATION ON SOLAR BEGINS AND I CAN FEEL THE EXCITEMENT BUZZING AROUND THE SCHOOL!"

JESSIE MCGRAW,
SUSTAINABILITY COORDINATOR, SCHOOL DISTRICT 51

6.5 LOCAL GOVERNMENT AND SOCIAL HOUSING INSTALLATIONS

There was a strong surge in interest in these institutional installations post March 2010. By the end of 2010, SolarBC had applications for SHW projects for 44 local government buildings and 16 social housing installations. It is anticipated that the incentives for these sectors will be fully subscribed by March 2011.

6.6 SOLAR SCHOOLS

Over 60 schools are now in the application process for SolarBC incentives. This has been due in part to the additional incentives provided through the Public Sector Energy Conservation Agreement (PSECA) which provided 100% funding in partnership with Terasen Gas.

An invitation was sent to schools across BC to apply for funding for the installation of 2.5kW PV systems on their schools. It is anticipated that ten schools will be selected for funding to a maximum amount of \$20,000 per school.

The SolarBC lesson plans developed with WildBC were completed in September 2010 and are now available on the SolarBC website for all teachers in BC and across Canada. WildBC will also conduct 40 teacher workshops in regions across the province to increase awareness, answer questions and support teachers.

6.7 FIRST NATIONS

A mentorship program had been initiated towards finding mentors for First Nations interested in installing SHW or PV systems. The mentors are selected from First Nations communities who have already successfully installed these systems.

6.8 PUBLIC SECTOR ENERGY CONSERVATION AGREEMENT

SolarBC is working in partnership with the Public Sector Energy Conservation Agreement (PSECA), Terasen Gas and BC Hydro to provide 100% funding for SHW projects on schools, colleges, universities, hospitals and Crown Corporation buildings. A call for projects in all these sectors resulted in \$7M worth of solar projects. This partnership leveraged \$2M from PSECA and \$400k from Terasen Gas for the projects.



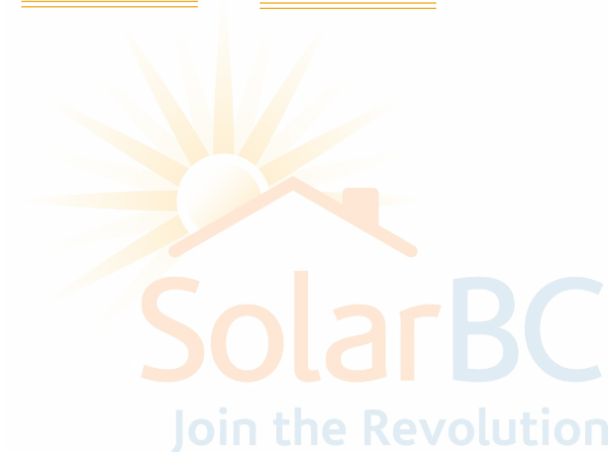
HIGHLAND SECONDARY SCHOOL IN COMOX.
Source: School District 71

7.0 Report on Financials

BC SUSTAINABLE ENERGY ASSOCIATION – SOLARBC PROGRAM

STATEMENT OF FINANCIAL POSITION: MARCH 31, 2010

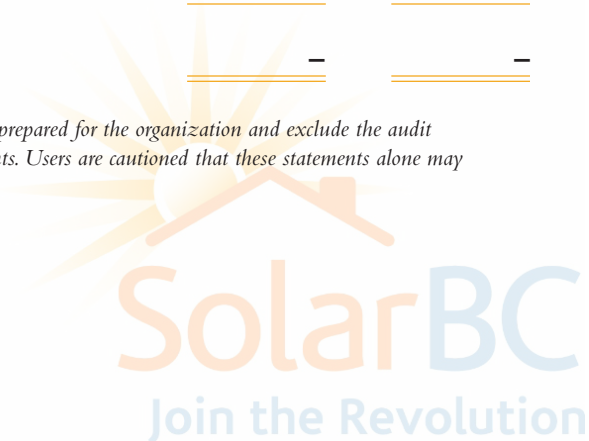
	2010	2009
ASSETS		
CURRENT		
Cash	\$ -	\$ 222,216
Short-term deposits	3,260,000	3,924,000
Due from Eaga Canada Services Inc.	130,500	-
Accrued interest receivable	49,773	127,000
GST receivable	20,656	16,847
Prepaid expenses	4,506	664
	<u>\$ 3,465,435</u>	<u>\$ 4,290,727</u>
LIABILITIES		
CURRENT		
Bank Overdraft	\$ 25,375	\$ -
Accounts payable and accrued liabilities	\$ 136,365	106,935
Due to BC Sustainable Energy Association	49,895	127,000
	<u>211,635</u>	<u>233,935</u>
DEFERRED GRANT REVENUE	3,253,800	4,056,792
	<u>3,465,435</u>	<u>\$ 4,290,727</u>
NET ASSETS		
NET ASSETS	-	-
	<u>\$ 3,465,435</u>	<u>\$ 4,290,727</u>



BC SUSTAINABLE ENERGY ASSOCIATION – SOLARBC PROGRAM
STATEMENT OF OPERATIONS FOR THE YEAR ENDED
MARCH 31, 2010

	2010	2009
REVENUES		
Grant revenue	\$ 802,992	\$ 903,208
Investment income	67,670	151,237
	<u>870,662</u>	<u>1,054,445</u>
EXPENSES		
Staffing and overhead	314,898	333,682
Incentives		
- First Nations Project (First Power)	187,475	317,262
- Residential Project	29,500	70,000
- Solar Communities	20,000	45,000
- Solar Schools (PV Projects)	79,839	10,000
- Local government	20,000	-
Project administration	17,191	21,587
Professional Fees	23,715	29,458
Marketing	39,333	37,862
Monitoring and verification	33,960	7,381
Solar communities	2,863	20,173
Training and awareness	34,174	10,672
Interest and bank charges	44	131
	<u>802,992</u>	<u>903,208</u>
EXCESS OF REVENUES OVER EXPENSES	<u>\$ 67,670</u>	<u>\$ 151,237</u>
NET ASSETS, beginning	-	-
Transfer to Provincial Body Fund	<u>(67,670)</u>	<u>(151,237)</u>
NET ASSETS, ending	<u><u>-</u></u>	<u><u>-</u></u>

These statements are excerpts from the audited financial statements prepared for the organization and exclude the audit report, other pertinent statements and notes to the financial statements. Users are cautioned that these statements alone may be inappropriate for their purposes.





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