CITY OF KELOWNA

MEMORANDUM

Date: August 11, 2008

File No.: 0360-20

To: City Manager

From: Don Degen, Water and Drainage Manager

Subject: **Participation in the Solar BC Program**

RECOMMENDATION:

THAT Council support the city's participation in the Solar BC program that will recognize Kelowna as a Solar Community;

AND THAT Council direct the Energy Management Committee (EMC) to undertake this initiative corporately;

AND THAT Council direct the EMC to collaborate with the "solar community" to develop a communication and education program that supports and promotes the use of solar technology where applicable.

BACKGROUND:

Local governments have been invited to submit a proposal to become a Solar Community under the Solar BC Program. Solar BC has received funding from the Province and additional funding is currently being negotiated from Natural Resources Canada (NRCan).

The goal of this invitation is to

- establish five communities in BC that will act as solar flagships and provide leadership to community members
- help remove barriers to solar hot water heating installations
- promote and raise awareness of Solar BC to community members
- provide visible demonstration projects

Solar BC will provide $10-$20000 in funding to five communities to be used for solar hot water related initiatives. Solar communities are expected to adopt targets for a percentage of solar hot water roofs in the community as well as help to develop infrastructure and capacity for the installation of solar hot water systems. In addition communities will engage with Solar BC to promote and raise awareness of the various solar projects within the community as well as assist in the delivery of educational programs on solar hot water to municipal staff, building inspectors and the general public. A commitment to the installation of solar hot water heating systems on public buildings is also a part of the program.

The city's EMC has submitted a proposal to become one of five Solar City's in BC. To meet the Solar BC criteria and to assist in achieving a 20% reduction in energy use corporately by 2012 solar retrofits are planned for the Athens pool as part of a major energy retrofit. Other facilities will continue to be evaluated as the EMC continues to work through its Corporate Energy Plan. This specific project will serve as a demonstration project and will also meet the Solar BC's criteria. In addition the EMC has

had recent discussion with community groups such as the OEIA to look for mutual benefit on energy related projects and believes there is a great opportunity to assist in the development of solar educational and promotional material for the community. This approach also satisfies Solar City criteria for the Solar BC proposal.

The EMC believes the Solar City initiative is a good opportunity to bring corporate and community groups together to collaborate in a way that continues to fulfill individual mandates while at the same time demonstrates a working relationship on corporate and community energy reduction.

EXTERNAL CIRCULATION TO:

- EMC Committee
- OEIA Chair

Considerations that were not applicable to this report:

EXISTING POLICY
PERSONNEL IMPLICATIONS
TECHNICAL REQUIREMENTS
INTERNAL CIRCULATION
ALTERNATE RECOMMENDATION
LEGAL/STATUTORY AUTHORITY
LEGAL/STATUTORY PROCEDURAL REQUIREMENTS
FINANCIAL/BUDGETARY CONSIDERATIONS

Submitted by:

D. Degen, Water and Drainage Manager

Approved for Inclusion: *John Vos, P. Eng., Director of Works & Utilities*

cc: *EMC Committee*
OEIA Chair

Okanagan Shuswap Solar Project
MARKETING PLAN

Local and provincial outreach efforts will take place in order to maximize the visibility of the Project and promote uptake. The Okanagan-Shuswap Solar Project will partner and liaise with BCSEA to market the Project so as to ensure consistent messaging and deployment throughout the province. The BCSEA Solar BC website will provide a key web presence. In addition, each of the property developers involved in the Project will provide high quality information about the solar hot water systems on their respective websites, detailing how the systems work and giving the consumer an opportunity to understand the associated value and benefits.

Within the Okanagan and Shuswap areas specifically, existing relationships maintained by Ms. Reid of Tigress Ventures, with municipal and regional governments, utilities, developers and local chapters of the BCSEA, will be nurtured to further promote the program.

Press releases regarding the Project including funding, key milestones and show home descriptions will be distributed to local media for further promotion and public awareness-building. The key community social, environmental and economic benefits of the Project will also be communicated.

Once local case studies have been developed around these large new-home developments, infrastructure for a local solar hot water cooperative will be established by Tigress Ventures in partnership with the local chapter of the BCSEA, and launched in the spring of 2009 to encourage consumers to purchase solar hot water systems as part of a buying club in order to reduce costs. This buying club will be developed so as to remain in existence long after NRCan Project, leaving a lasting solar hot water legacy in BC.

All publicly released documents, signage and websites promoting the Okanagan-Shuswap Solar Project will credit the Government of Canada for its contribution to the Project.

SolarBC – APPLICATION FORM

Please submit by 17:00 on Friday, July 11, 2008 to:
SolarBC
Attention: Nitya Harris
nharris@solarbc.ca
Electronic Submission only unless special permission received for hard copy

City of Kelowna
Name of Local Government or First Nation

1435 Water Street, Kelowna, BC V1Y 1J4
Address

Don Degen, Water Drainage Manager
Contact Name & Title

Phone: (250) 469-8726, E-mail: ddegen@kelowna.ca
Phone Number & Email Address

Keith Grayston
CAO/Manager (print name) Signature Date

Please check the boxes that apply:

○ **Yes, a Council/Board/Band resolution supporting this application is included with the application**

✓ **A Council/Board/Band resolution supporting this application will be sent separately by August 22, 2008.**

○ **Yes, the applicant is applying for other grants to use for solar hot water initiatives (name the grants).**

✓ **Yes, the applicant is or will be a CAEE Participant.**

A. Initiatives and Actions

	Please identify the initiatives that you will implement	**Brief description (2 to 3 lines each) of your plans for this initiative. On a separate page, outline in detail the actions you will undertake to achieve these initiatives. Include timelines, staff lead responsible, links to plans (community energy, greenhouse gas, air quality and integrated sustainability plans), and funding or budgeted resources. Please limit the details to a maximum one page per initiative.**
1.	Adopt Solar Roofs Targets for the community (targets should be based on % of homes in the community to have solar hot water (SHW) systems by 2010 and 2020)	The outcome of the pilot solar water heating project at Athans Aquatic Centre will assist the City in developing solar retrofit targets for all facilities. In addition, a Solar Working Group consisting of Fortis BC, Terasen Gas, and the Okanagan Environmental Industry Alliance (OEIA) (1) will work collaboratively to establish community solar targets.
2.	Help to increase awareness of and participation in the SolarBC Residential project, both of householders and the buildings industry.	The City's Energy Management Committee, Fortis BC, Terasen Gas and the OEIA (and its members) are collaborating on a marketing and communications plan in conjunction with the Okanagan Shuswap Solar Project (2). This marketing and communications plan (3) promotes the use of the Solar BC website as a key presence in this endeavor.
3.	Encourage the installation of SHW systems on commercial/institutional buildings.	Promotion of the Athans Aquatic Centre solar hot water project (and its ultimate results) will encourage other commercial/institutional buildings within the community to consider SHW systems as a viable retrofit or new design option.
4.	Facilitate SHW Training programs for municipal staff and inspectors	Upon completion, solar hot water training programs for municipal staff and inspectors will be implemented using the Athans Aquatic Centre project as a demonstration.
5.	Commit to install a SHW demonstration project on at least one municipal building	The City has committed to retrofit the Athans Aquatic Center with solar water heating. Parkinson Recreation Centre and Mission Aquatic Centre have also been identified as excellent opportunities for solar because of high domestic water loads and/or pool heating demands. Future work on these projects will be considered following the completion of the Aquatic Centre project.
6.	Develop policy, planning, bylaws and/or other legal tools to facilitate SHW systems	The City's Official Community Plan is undergoing a major review (4) using a sustainability filter to assess and update the policy. The updated OCP will provide the policy to change other bylaws (such as plumbing and inspection bylaws) to facilitate SHW systems.
7.	Develop financial tools to facilitate SHW installations i.e. local improvement charges, municipal grants	As part of the OCP review, incentives are being considered to encourage applicants to undertake sustainability measures.

	Please identify the initiatives that you will implement	Brief description (2 to 3 lines each) of your plans for this initiative. On a separate page, outline in detail the actions you will undertake to achieve these initiatives. Include timelines, staff lead responsible, links to plans (community energy, greenhouse gas, air quality and integrated sustainability plans), and funding or budgeted resources. Please limit the details to a maximum one page per initiative.
8.	Include measures in OCP that facilitate SHW installations	Kelowna 2030: Greening Our Future (4) will update OCP policies to reflect current challenges related to climate change, growth, affordability concerns and planning for sustainability. While the OCP will not be specific to SHW installations, it will provide the foundation to generate detailed policies and bylaws.
9.	Facilitate the permitting of residential SHW installations	The City will be working closely with the OEIA to facilitate the permitting of residential SHW installations as the Okanagan Shuswap Solar Project (2) will support the installation of solar heating systems in 470 new homes in the Central Okanagan.
10.	Dedicate resources to implement the community's SHW initiatives	Collaborating with the OEIA, Terasen and Fortis BC, the City has committed to providing communication and education resources on SHW initiatives.

A.11 DETAILED ACTIONS AND INITIATIVES

The following pages provide detailed descriptions, actions and initiatives for the following projects:

- Solar Water Heating at Athans Aquatic Centre
- Solar Working Group
- Kelowna 2030: Greening Our Future (OCP Review and Update)

PROJECT: SOLAR WATER HEATING AT ATHANS AQUATIC CENTRE

Meets Initiatives: 1, 3, 4, 5

Project Lead Martin Johansen, City of Kelowna Project Supervisor
Phone: (250) 469-8997 E-mail: mjohansen@kelowna.ca

Location: 375 Hartman Road. Kelowna, BC V1X 2M9

Description:

As part of the City's Energy Management Plan (5), Building Energy Performance Indices (BEPI) values were calculated to identify in-efficient energy users. Athans Aquatic Centre, opened in 1981, was identified as one municipal building having the greatest potential for utility consumption savings.

The City is developing a preliminary design for a pool dehumidification system coupled with a solar water heating component. Solar water heating is expected to work well at this site due to the high domestic water load and/or pool heating. The retrofit will require 25 to 30 solar panels (2.2 m^2 each) along the top roof panel. The solar hot water will provide preheating of shower water and will assist with pool heating. The overall greenhouse gas (GHG) reduction is estimated to be 293.7 tonnes, with 35.7 tonnes attributed to the solar component of the project.

The results of the Athans Aquatic Centre retrofit will:

- Aid in development of future solar roof targets.
- Be publicly promoted to encourage other commercial / institutional buildings to consider SHW designs as a viable option.
- Be used as a demonstration to train municipal staff and inspectors.
- Influence further SHW municipal projects. Parkinson Recreation Centre and Mission Aquatic Centre have already been identified as excellent solar opportunities with potential GHG reductions of over 200 tonnes.

In addition to meeting Energy Management Plan goals, this project also meets several other policies' goals and objectives including: the Climate Change and Energy Conservation policies outlined in the Official Community Plan (6); the City's Strategic Plan (7) goal to "maintain, respect and enhance our natural environment;" and the Regional Growth Management Strategy (8) objective to "promote development that sustains and enhances the environment."

Project Timeline:

- Summer/Fall 2008 Preliminary Design
- Spring 2009 Final Design
- September 2009 Installation during regularly scheduled maintenance shut down
- October 2009 Solar water heating operational

Project Budget:

Solar Water Heating:	$120,000
Pool Dehumidifcation System	$350,000
TOTAL	$470,000

The project will be funded through 2008/2009 City of Kelowna Budgets. Funding options are being explored such as directing utility savings towards project costs.

PROJECT: SOLAR WORKING GROUP

Meets Initiatives: 1, 2, 9, 10

Project Lead:

Don Degen
City of Kelowna
Phone: (250) 469-8726

Martin Johansen
City of Kelowna
Phone: (250) 469-8997

Ruth Sulentich
Terasen Gas
Phone: (250) 868-4517

Kelly Hewson
Fortis BC
Phone: (250) 717-0809

Angela Reid
Tigress Ventures and OEIA
Phone: (250) 861-4976

Description:

The City of Kelowna, Fortis BC, Terasen Gas, and the OEIA have agreed to form a Solar Working Group to explore mutually beneficial opportunities related to solar initiatives both corporately and within the community.

The Okanagan Shuswap Solar Project (overseen by OEIA members Tigress Ventures and Thermo Matrix) is supporting the installation of solar water heating systems in 470 new homes in the Central Okanagan (2). The Solar Working Group has agreed to piggy back on the projects marketing, communications and education plan (3) in an effort to raise the solar profile within the community. The plan includes the use of the Solar BC website as a key web presence and to ensure consistent messaging.

The City will also be work closely with the OEIA to facilitate the permitting of the Okanagan Shuswap Solar residential SHW installations in Kelowna.

Like the Athans Aquatic Center Solar Heating Project, the Solar Working Group meets policies and objectives outlined in the OCP (6), the Strategic Plan (7) and the Regional Growth Management Strategy (8).

Project Timeline

- June 2008 Funding Announced
- October 31, 2010 Project Completion

Project Budget

Okanagan Shuswap Solar Project	$470,000
Solar Working Group Marketing Contribution	$ to be determined
TOTAL	$ to be determined

Funding for this project was provided by the Government of Canada ecoENERGY for Renewable Heat program. The Solar Working Group's contribution will be determined in the near future as marketing and communication plans are finalized.

PROJECT: KELOWNA 2030: GREENING OUR FUTURE (OCP REVIEW UPDATE)

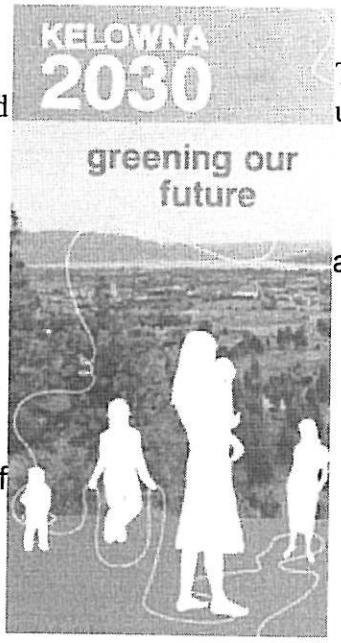
Meets Initiatives: 6, 7, 8,

Project Lead:

Gary Stephen
City of Kelowna Planner Specialist
Phone: (250) 469-8609
E-mail: gstephen@kelowna.ca

Description:

The City of Kelowna is now reviewing its OCP (4), looking forward to 2030, to update policies to reflect current challenges related to climate change, growth, affordability concerns and planning for sustainability. The end result will be a revised Official Community Plan that will guide land use, development, transportation and infrastructure decisions for the next twenty years.



Phase 1, of the two phase process, will clarify community goals and will review policies related to land use and development, using a sustainability filter to assess and update that policy. Phase 2 will generate detailed policies to ensure that land use, development, transportation patterns are shaped to help achieve the goals and objectives identified in Phase 1. As part of this process, incentives will be considered as a method to encourage the use of sustainable options.

While the OCP update will not be detailed enough to specifically mention solar hot water installations, it will provide the policy to update other bylaws including subdivision, zoning, plumbing and inspection to make solar hot water installations a viable sustainable option.

Project Timelines:

Phase 1: April – October 2008
Phase 2: November 2008 – Early 2010

Budget:

Phase 1: $140,000
Phase 2: undetermined (anticipated to be similar to Phase 1)

The project is being funded from existing City budgets and the above does not include City staff time associated with the project.

B. Past solar hot water and other solar initiatives

Provide a summary of solar initiatives implemented by the community within the last 5 years (maximum 1 page).

Known as a sunshine city, Kelowna receives more than 2000 hours of sunshine a year, making it a great location for solar technology. The City has embarked on several solar projects in recent years including:

- ***Solar-Powered Area Lights***. Most recently, the City partnered with Carmanah Technologies Corporation and the Government of Canada on a project that will see 100 Carmanah EverGEN™ solar-powered area lights installed over the coming year (9). Installation will occur at a variety of locations including buildings, parks, landfill and transit facilities and will be monitored to evaluate performance and to determine power savings and reduction in carbon footprint.
- ***Solar-Powered Parking Kiosks***. In an effort to dramatically reduce the 10,000 AA batteries consumed annually by parking meters, the City has installed 22 solar-powered parking kiosks. Over the next five years, the City will continue to replace individual meters with solar powered kiosks in heavy use areas.
- ***Solar-Powered Pedestrian Signals***. The installation of 51 solar-powered pedestrian signal heads at 19 crossings over the past five years have reduced the need for running electrical service to remote sites, not to mention a near 50% savings. These lights are 90% more efficient, and brighter than their traditional counterparts. Three additional solar-powered pedestrian crossings will be installed later this year.

The City of Kelowna continues to invest substantial resources to create a green and healthy community. Other recent projects, related to solar initiatives include:

- ***City's Sustainability Working Group*** (10). In 2007 Council established a City Sustainability Working Group with pertinent mandate to reduce water consumption by a further 15% in buildings by 2012; develop an Action Plan for achieving a 20% reduction in corporate GHG emissions by 2011; and to support the work of the BC Solar Roofs Roadmap project.
- ***Energy/Carbon Management Plan*** (5). In response to the GHG reduction mandate, the City recently unveiled its Energy Management Plan. The plan examines several solar retrofits, including that for the Athan's Aquatic Centre, which has already proceeded to the preliminary design stage.
- ***Community Action on Energy Efficiency (CAEE)***. The City of Kelowna completed CAEE Phase 1 and Phase 3 projects. The projects resulted in the implementation of a Sustainability Checklist (11), a voluntary checklist which developers are given to evaluate their own developments using the "triple bottom line" approach. Also as part of the CAEE program, Council endorsed the Ministry of Energy, Mines and Petroleum Resources (MEMPR) energy improvement target to reduce energy consumption in 20% of existing buildings by an average of 14% by 2010.
- ***Sustainable Approach to Capital Projects***. The City has adopted a two-phased approach to future capital projects. The first phase undertakes an integrated design process with the purpose of identifying opportunities to make the project low energy, LEED certifiable, and low carbon. The second phase would involve a budget submission for construction. This approach allows staff to advise how and at what cost, the city's objectives could be achieved.

SUPPORTING DOCUMENTS

1. Okanagan Environmental Industry Alliance – view at www.oeia.ca

2. Okanagan Shuswap Solar Project – view at www.nrcan.gc.ca/media/newcom/2008/200845-eng.php

3. Okanagan Shuswap Solar Project Marketing Plan – see attach OSSP Marketing Plan.pdf

4. Kelowna 2030: Greening Our Future – view at www.kelowna2030.ca

5. Energy/Carbon Management Plan for Civic Properties – view at www.kelowna.ca / City Hall / Council / Meetings / 2008-04-07 / Item 5.3 Energy/Carbon Management Plan for Civic Properties.pdf

6. Official Community Plan – view at www.kelowna.ca / City Hall / Official Community Plan / Chapter 7: Environment.pdf

7. Strategic Plan – view at www.kelowna.ca / City Hall / City Managers Office / Strategic Plan

8. Regional Growth Management Strategy – view at www.regionaldistrict.com / Quick Links / Bylaws / Planning Bylaws / GMS Bylaw – public format.pdf

9. Solar Powered Lighting Project – view at www.kelowna.ca / Residents / Environment / Energy Management / Solar Powered Lighting Project.

10. City of Kelowna Sustainability Working Group – view at www.kelowna.ca / City Hall / City Manager's Office / Sustainability / Report to Council.

11. Sustainability Checklist – view at www.kelowna.ca / City Hall / City Manager's Office / Sustainability / Sustainable Checklist.

July 11, 2008
File No.: 0360-20

Attention: Nitya Harris
Solar BC
nharris@solarbc.ca

Dear Ms. Harris:

Re: Solar Community Application

Attached is a proposal for the City of Kelowna to work in conjunction with the private sector toward becoming a Solar Community under the Solar BC Program.

Receiving more than 2000 hours of sunshine annually, the City of Kelowna recognizes the opportunities for sustainable solar projects in our area. In fact, the City has already embarked on numerous solar projects and is working to establish policies supporting solar alternatives.

The City of Kelowna would be a valuable addition to the Solar Community network. Recognized as a leader in many environmental initiatives, it is our intention to continue our focus on solar opportunities corporately as part of our recently adopted Energy Management Plan and to collaborate with local agencies and solar industry leaders on education and marketing of solar technology within the community. The city's Solar Water Heating project at Athans Aquatic Centre will showcase SHW technology to the community and will provide training and direction for future municipal projects. Further, the implementation of the Okanagan Shuswap Solar Project through the private sector will require the City's facilitation to permit residential SHW installations within the private sector.
If you have any questions or require any additional information, please contact the undersigned at (250) 469-8726 or e-mail ddegen@kelowna.ca.

Yours truly,

Don Degen
Water Drainage Manager
City of Kelowna Energy Management Committee Chair

Encl.

PROJECT: SOLAR WATER HEATING AT ATHANS AQUATIC CENTRE

Project Lead: Martin Johansen
City of Kelowna Project Supervisor
Phone: (250) 469-8997 E-mail: mjohansen@kelowna.ca

Location: 375 Hartman Road
Kelowna, BC V1X 2M9

Description:

The City's Energy Management Plan (B.1) outlines a strategy to achieve a 20% reduction in greenhouse gas emissions in all existing and planned City facilities by 2011. As part of the plan, Building Energy Performance Indices (BEPI) values were calculated to identify in-efficient energy users. Athans Aquatic Centre, opened in 1981, was identified as one municipal building having the greatest potential for utility consumption savings.

Currently, the City is developing a preliminary design for a pool dehumidification system coupled with a solar water heating component. Solar water heating is expected to work well at this site due to the high domestic water load and/or pool heating. The retrofit will require 25 to 30 solar panels (2.2 m^2 each) along the top roof panel. The solar hot water will provide for preheating of shower water and also assist with pool heating.

The overall greenhouse gas (GHG) reduction is estimated to be 293.7 tonnes, with 35.7 tonnes attributed to the solar component of the project.

In addition to directly fulfilling the goals of the Energy Management Plan, this project also meets Climate Change and Energy Conservation policies outlined in the Official Community Plan (x.2). It also meets the Regional Growth Management Strategy (x.3) objective to promote development that sustains and enhances the environment.

Project Timeline:

Summer/Fall 2008:	Preliminary Design
Spring 2009:	Final Design
September 2009:	Installation during maintenance shutdown period
October 2009:	Solar water heating operational

Project Budget:

Solar Water Heating:	$120,000
Pool Dehumidification System	$350,000
TOTAL	$470,000