

# **Salt Spring Island Community Energy Strategy**

*prepared by*

*The Earth Festival Society*

*for*

*the community of Salt Spring Island,  
the Islands Trust Local Trust Committee,  
and the Capital Regional District*

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*Any errors and omissions remain the responsibility of the authors and the Earth Festival Society.*

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## **1.0 Summary**

The Salt Spring Community Energy Strategy is intended to provide a framework for future energy planning and energy and GHG reduction initiatives to the year 2012. It is a living document, a work-in-progress. Specific measures to achieve a series of targets for 2012 are suggested for illustrative purposes, but the actual initiatives to be undertaken over the next eight years will be determined by community interest, available funding, technology developments, and regulatory constraints.

The energy strategy process is driven by the rapid onset of global climate change that is already having an impact on our average temperatures, precipitation, and regional eco-systems. The problems and issues are global in their implications but local solutions are crucial, and can be a positive force for economic development and environmental sustainability within the community. While the reduction of GHG emissions may be the primary objective, these measures also provide benefits such as reduced energy costs, increased availability of local food, and new economic development opportunities.

The Salt Spring Community Energy Strategy process began in 2003 with the formation of a multi-stakeholder steering committee and the preparation of a baseline energy report (see [www.islandtrust.bc.ca](http://www.islandtrust.bc.ca) under "Stewardship Programs"). In May, 2004, fifty community activists and thinkers from different sectors attended a one day workshop, reviewed the Baseline Report and identified a large range of possible measures to reduce energy use and GHG emissions. The results of that meeting are documented in the May 5 Workshop Report (see [www.saltspring-onetonnechallenge.org](http://www.saltspring-onetonnechallenge.org)) and formed the basis of the October 17, 2004 Energy Fair presentation, 'Community Energy Options'. The Energy Strategy builds on the previous work and includes input received since Oct 17.

Salt Spring Island's direct (on-island) use of energy is fairly evenly divided between buildings (including appliances and electronic equipment) and transportation. The total direct energy used in 2002 was estimated to be 1,047,277 Gigajoules (GJ). With no interventions, this energy consumption would be expected to increase 28% to 1.3 million GJ by 2012, while the SSI population is expected to increase by about 15% during the same period.

The majority of the island's purchased energy is in the form of electricity. 80% of this energy is used in the residential sector. The average BC Hydro SSI residential account used 16,400 kWh with consumption expected to increase by 22% between 2002 and 2012.

The indirect energy associated with conventional food purchases – the fossil fuel content of the SSI annual shopping cart – is estimated at 556,510 GJ in 2002. This is expected to increase by 15% to a total of 638,965 GJ in 2012.

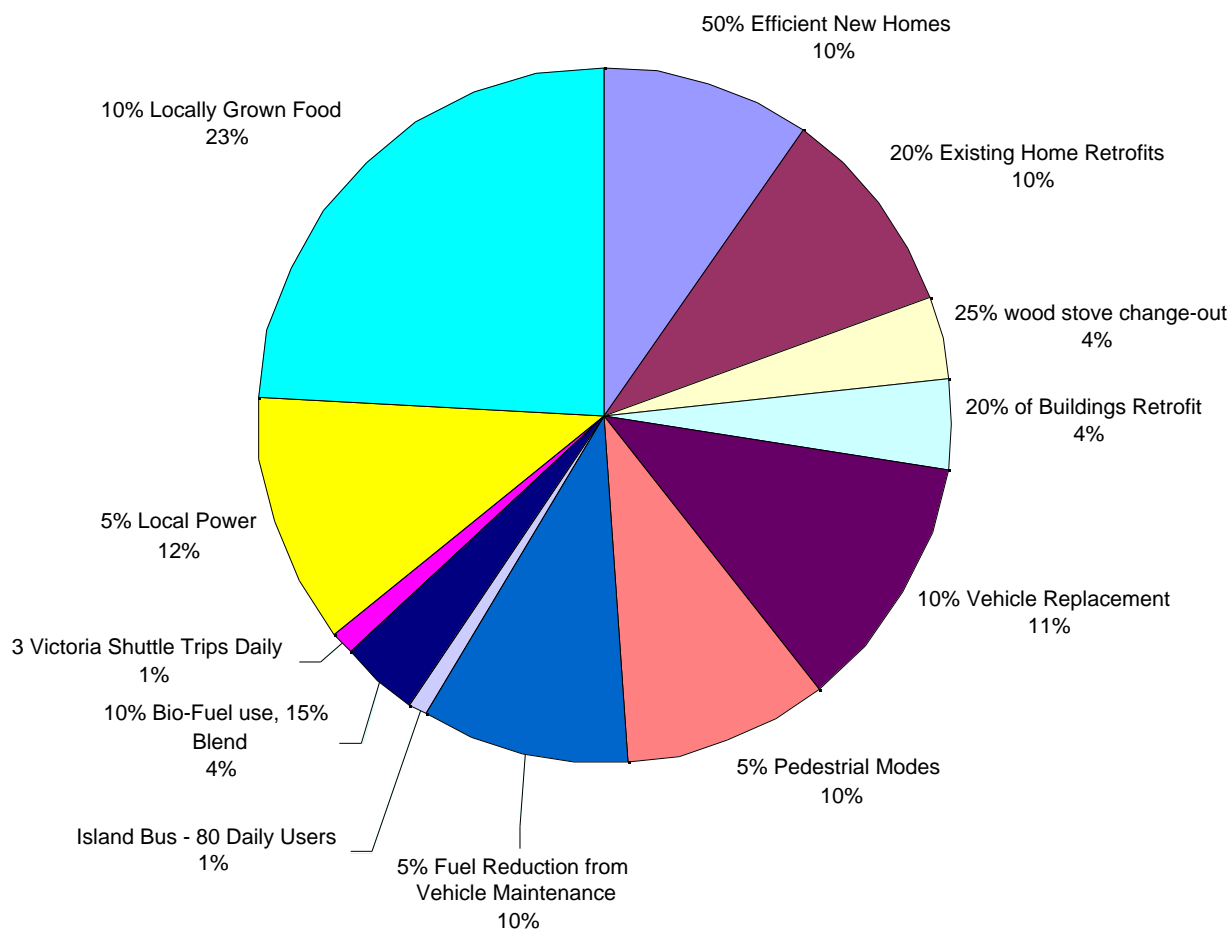
The total greenhouse gas emissions in 2002 were estimated at 67,723 tonnes of carbon dioxide (CO<sub>2</sub>) equivalent emissions. Emissions are expected to increase by 33% in 2012, to a total of 90,148 tonnes per year. These figures exclude the GHG associated with food production.

### **1.1 Targets For 2012**

- Stabilize GHG emissions at 2002 levels (56,500 tonnes) by 2012, a reduction of 23% (16,700 tonnes) below projections (73,000 tonnes), excluding BC Ferries' emissions.
- Reduce toxic emissions by 25% below 2002 levels by 2012.
- Reduce energy expenditures by approximately 20% below projections (\$22 million) as an indirect result of GHGs reductions.

These targets exclude BC Ferries emissions. About 14% of the direct energy consumption and 17% of the greenhouse gas emissions on Salt Spring Island in 2002 are attributable to the three BC Ferries routes. The targets also exclude indirect, food-related emissions. However, the chart below includes reduced food-related emissions as an "offset". An offset means that emissions on Salt Spring Island can be displaced by reduced emissions somewhere else. The food related emissions reductions are about 4,000 tonnes.

### **1.2 Summary of GHG Emissions Reduction Actions to Meet Targets**



## **2.0 Recommendations**

### **2.1 General**

- 2.1.1 Communicate information about the Energy Strategy, promote energy initiatives, and assist island interest groups to develop and deliver relevant actions.
- 2.1.2 Continue the One Tonne Challenge initiative to motivate more people to make a personal commitment to GHG reduction; and in particular take the One Tonne Challenge into the schools to involve island youth and their families.
- 2.1.3 Compile energy and emissions performance data, from the sources used for the baseline report plus project-specific indicators to measure progress at three to five year intervals, and review and adjust the Energy Strategy accordingly.
- 2.1.4 Seek federal and provincial funding to implement the Energy Strategy actions.

### **2.2 Local Government**

- 2.2.1 Seek official endorsement of the Salt Spring Island (SSI) Community Energy Strategy from CRD and Islands Trust.
- 2.2.2 Coordinate energy-related planning functions between Islands Trust, CRD and non-governmental organizations to maximize capability by making the group a formal committee of Islands Trust and CRD.
- 2.2.3 Include energy planning goals and policies and recommendations as part of the five year review of the Official Community Plan (OCP). The five-year review of the OCP provides an opportunity to reference the SSI Community Energy Strategy and to consider the inclusion of energy goals and policies in Parts A, B, C, D, E, and G. Specific additions include:
  - 2.2.3.1 Support and strengthen the existing OCP references to energy conserving measures.
  - 2.2.3.2 Include energy performance criteria as a requirement for all rezoning applications, and for all applications requiring a Housing Agreement.
  - 2.2.3.3 Include energy conservation provisions such as pedestrian and bicycle infrastructure as required amenities for rezoning applications.
- 2.2.4 Establish energy performance standards for new and existing CRD buildings.

### **2.3 Transportation**

- 2.3.1 Support the establishment of a SSI Transportation Commission to act as a coordinating body to facilitate projects, programs and services to reduce reliance on the automobile on SSI with particular reference to reducing automobile congestion in Fulford, Ganges and Vesuvius.
- 2.3.2 Facilitate the development of an SSI pedestrian and bicycle network, including the SSI portion of the CRD Regional Trail Network in the following ways:
  - 3.2.1 Initiate a planning and development process for the Regional Trail Network with CRD Parks Committee

## *Salt Spring Island Community Energy Strategy*

- 3.2.2 Support the development and completion of the Ganges, Fulford and Vesuvius urban pedestrian and bicycle trail network in coordination with the Regional Trails Network and the proposed SS Transportation Commission.
- 3.2.3 Include provisions for pedestrian and bicycle infrastructure as required amenities for rezoning applications.
- 2.3.3 Encourage increased automobile efficiency reduced fossil fuel use and trip reduction measures for SSI through the following:
  - 3.3.2 Promote the replacement of 10% of island high-consumption automobiles with energy-efficient models.
  - 3.3.3 Undertake a vehicle maintenance and eco-driver fuel saver awareness program.
  - 3.3.4 Support the use of bio-fuels, including an SSI vehicle fuelling station.
- 2.3.4 Introduce a 'Car-free Day in Ganges' to demonstrate automobile alternatives, and investigate the implications of reduced automobile access in the village core.
- 2.3.5 Encourage BC Ferries to establish possible energy saving and emission reduction activities for their SSI fleet and revise the Energy Strategy accordingly.
- 2.3.6 Support the establishment of Salt Spring bus and shuttle services

### **2.4 *Housing***

- 2.4.1 Establish and promote a voluntary EnerGuide for Houses 80 standard for new housing.
- 2.4.2 Promote the EnerGuide for Houses incentive program for existing houses to island homeowners, the renovation industry, and the real estate industry.
- 2.4.3 Promote energy-efficient wood stoves and launch a wood stove change-out program.
- 2.4.4 Create a set of tools and a communications process for islanders and potential islanders to encourage energy and water conservation, and clean wood-burning practices.

### **2.5 *Food & Agriculture***

- 2.5.1 Support the development and implementation of a Salt Spring Food Strategy, including an assessment of current and potential capacity.
- 2.5.2 Support and / or initiate "Grow your own", "Buy Local" and "Buy BC Organic" public awareness campaigns.
- 2.5.3 Support the increased production and consumption of local organic food by working with existing organizations such as Island Natural Growers, the Farmers' Institute and the Salt Spring Garden Club on initiatives such as community gardens and gardening, composting and seed saving workshops.

### **2.6 *Business***

- 2.6.1 Encourage commercial sector building retrofits for energy efficiency. The NRCan Energy Innovators Initiative is available for building energy audits and retrofits.
- 2.6.2 Develop an Energy Reduction toolkit for small business to provide guidance for cost-effective energy conservation projects.

## **2.7 Institutions**

- 2.7.1 Encourage institutions to prepare or update and implement energy management plans for buildings and operations. Funding from BC Hydro and the NRCan Energy Innovators Initiative is available for building energy audits and retrofits.
- 2.7.2 Establish communications between the SSI institutions (i.e., water districts, liquid and solid waste management, hospital, school district, Art Spring, BC Ferries, local government) to share information about energy management activities.
- 2.7.3 Seek a resolution from CRD and Islands Trust that all new and reconstructed institutional buildings on SSI will demonstrate energy performance at least 25% better than Model National Energy Code. Ensure that the new indoor pool facility meets this standard, and / or the LEED standard. Federal CBIP funds may be available.

## **2.8 Energy Supply**

- 2.8.1 Promote independent power generation on SSI.
- 2.8.2 Research micro-hydro generating potential.
- 2.8.3 Promote net metering by hosting a BC Hydro net metering seminar on island.
- 2.8.4 Promote use of solar domestic hot water systems.
- 2.8.5 *Support the development of a 1 megawatt renewable energy project.*

## **3.0 Background**

*The purpose of the Community Energy Strategy is to articulate a role for Salt Spring Island (SSI) residents, businesses, and local governments to influence the use and supplies of energy for the Island over the next eight years.*

*This document will serve as a the basis for consultations with the community-at-large, building on existing input from a number of concerned citizens, the Islands Trust, the Capital Regional District, and local business.*

*The energy strategy process is driven by the rapid onset of global climate change that is already having an impact on our average temperature, precipitation, and regional eco-system. The problems and issues are global in their implications but local solutions are crucial, and can be a positive force for economic development and environmental sustainability within the community. While the reduction of GHG emissions may be the primary objective, these measures also provide benefits such as reduced energy costs, and new economic development opportunities. Small communities like SSI have much to offer as a model of what can be accomplished with minimum resources but with solid community support.*

*This report is intended to provide a framework for future energy planning and energy and GHG reduction initiatives to the year 2012. It is a living document, a work-in-progress. Specific measures to achieve a series of targets for 2012 are suggested for illustrative purposes, but the actual initiatives to be undertaken over the next eight years will be determined by community interest, available funding, technology developments, and regulatory constraints.*

*It is hoped that this document, and the ongoing process that it represents, will eventually form part of a broader SSI sustainability initiative. Such an initiative would integrate the energy strategy with other major environmental concerns, such as transportation planning, water*

*management, food production, solid and liquid waste management, ecosystem protection, tourism management, and development issues. The end result, we hope, would be the emergence of SSI as a model “Green Community”, with attendant environmental, economic and community benefits.*

### **3.1 Salt Spring Island**

*Salt Spring Island (SSI) lies off the east coast of Vancouver Island, between Victoria and Vancouver BC. It is the largest and most populated, at about 10,000, of the Southern Gulf Islands. The island is about 27 kilometers long by 13 kilometers wide, with hilly and mountainous forested terrain. Economic activities include the social services sector (health and education), construction, tourism, retail businesses, arts and crafts, and farming. Salt Spring Island is accessible by three ferry routes, and scheduled floatplane services from Vancouver.*

*The island is currently experiencing development pressures evidenced by escalating real estate prices and rapid growth. SSI is not an incorporated municipality; the Islands Trust administers land use planning; the Capital Regional District (CRD) administers transportation, public works, waste disposal and recreation. Both of these local governments have supported the development of the Salt Spring Community Energy Strategy. The strategy has been coordinated by The Earth Festival Society, a local non-profit society that focuses on community adoption of environmentally sustainable practices and technologies.*

### **3.2 Local and Regional Government Planning**

*The Islands Trust SSI Official Community Plan (OCP), adopted June 10, 1998, was the end product of a series of community consultations and is highly regarded for its incorporation of sustainability goals and policies. The OCP is currently due for its first five-year review. While the OCP covers many aspects of sustainability and environmental protection, energy issues are not given any prominence. There are only two direct references to energy in Volume 1.*

*D.1.1.2.21 states:*

*“The Capital Regional District is urged to continue supporting and encouraging alternate building construction and waste management techniques that conserve water and energy or sustain the environment.”*

*B.2.2.2.8 reads, in part:*

*“Affordable housing projects for families and seniors could be allowed in or near island villages. Preference should be given to projects that:*

- would create durable, energy efficient housing*
- provide walking or cycling links to village services*
- provide safe walking or cycling links to a school, if the project is designed for families.*
- include appropriate site and building designs, such as those outlined in Development Permit Area 1. (village core areas)*

*Volume 2 of the OCP has one direct reference to energy as follows:*

*E.1.4.8 Where possible, buildings should be sited and designed in a way that maximizes solar gain and reduces energy loss. Obstruction of solar gain on surrounding properties should be minimized.*

*Some OCP goals, such as concentrating development in the village core areas and encouraging walking and cycling, represent appropriate energy strategies, but nowhere is it stated that reduction of fossil-fuel energy use and GHG reduction are goals of the OCP.*

*Land Use Bylaw (LUB) 355, adopted June 28, 2001, was intended to reflect and implement the OCP. There are no references to energy in the LUB.*

*The five-year review of the OCP provides an opportunity to reference the SSI Community Energy Strategy and / or to consider the inclusion of energy goals and policies in Parts A, B, C, D, E, and G.*

### ***3.3 Community Energy Strategy Committee***

*The Salt Spring Community Energy strategy began in 2003 with the formation of a multi-stakeholder steering committee and the preparation of a baseline energy report, summarized in Section 5. In May, 2004 a full day workshop attended by over fifty community activists and thinkers from many different sectors reviewed the Baseline Report and identified a large range of possible measures to reduce energy use and GHG emissions. The results of that meeting are documented in the May 5 Workshop Report, available at <http://www.islandtrust.bc.ca> (see Stewardship Programs). Many of the measures suggested in this report are adopted from the workshop.*

### ***3.4 Salt Spring One Tonne Challenge***

*In September 2004 the Salt Spring One Tonne Challenge was launched to raise awareness about their individual energy use and to encourage islanders to reduce their GHG emissions by an average of one tonne per person. The Salt Spring One Tonne Challenge kit is available at [www.saltspring-onetonnechallenge.org](http://www.saltspring-onetonnechallenge.org). Several summary articles representing energy use issues in the various sectors under study are also posted on the website.*

*The first Salt Spring Energy Fair was held October 17, 2004 and was attended by about 200 people. This event included presentations, displays and discussions for a dozen or so ongoing and potential energy initiatives. A summary presentation, 'SSI Community Energy Options' outlined the cumulative impact of selected measures in the residential sector, the ICI sector, the transportation sector and the food and agriculture sector. Feedback from the Energy Fair has guided the preparation of this draft report.*

## 4.0 Energy Strategy Objectives

The guiding objectives for the Salt Spring Community Energy Strategy have been developed in consultation with a number of individuals and organizations.

Table 1—Summary of Drivers, Goals, Objectives, and Targets

<b>DRIVERS</b>	<i>GHG emissions contribute to global climate change, including local impacts.</i>	<i>Products of combustion include toxic emissions damaging to human health and the environment.</i>	<i>Energy expenditures were about \$18 million in 2002 and are expected to rise to \$22 million by 2012, a 25% increase.</i>	<i>Traffic congestion is increasing in Fulford and Ganges, and road safety has deteriorated, particularly for pedestrians and cyclists.</i>
<b>GOALS</b>	<i>Reduce greenhouse gas emissions (GHGs), excluding emissions from BC Ferries.</i>	<i>Reduce toxic emissions, such as fine particulate matter (PM 2.5<sup>1</sup>), CO, and VOCs, that can cause health and environmental impacts.</i>	<i>Reduce energy costs through cost-effective investments.</i>	<i>Reduce traffic volume during peak periods and increase use of pedestrian transportation, including cycling.</i>
<b>OBJECTIVES</b>	<p><i>Information and Education</i></p> <ul style="list-style-type: none"> <li>• <i>Provide information to community members, businesses, and institutions to improve their awareness of the need to reduce GHG and toxic emissions, and about opportunities to reduce energy use, and sustainable energy options.</i></li> </ul> <p><i>Capacity Building</i></p> <ul style="list-style-type: none"> <li>• <i>Support community members to take voluntary action to reduce energy use and emissions in their homes and workplaces.</i></li> <li>• <i>Provide transportation alternatives to single-occupancy motor vehicles.</i></li> <li>• <i>Work with building developers to increase the energy performance of new buildings to minimize life-cycle energy costs, including initial investments.</i></li> <li>• <i>Increase Salt Spring's capacity to produce its own food.</i></li> <li>• <i>Identify and develop local, sustainable energy resources.</i></li> </ul> <p><i>Local Governance and Municipal Operations</i></p> <ul style="list-style-type: none"> <li>• <i>Establish sustainable energy and emission reduction objectives within local government planning procedures, including the Islands Trust's 2005 Official Community Plan Review.</i></li> <li>• <i>Promote investments in community infrastructure that minimize emissions.</i></li> <li>• <i>Address safety concerns for pedestrians on the transportation network.</i></li> </ul> <p><i>Community Development</i></p> <ul style="list-style-type: none"> <li>• <i>Enhance the quality of life by improving air quality and residents' health.</i></li> <li>• <i>Increase local investment and employment through the energy sector.</i></li> <li>• <i>Improve convenience of transportation options for residents and visitors.</i></li> </ul>			
<b>TARGETS FOR 2012</b>	<i>Stabilize GHGs (including electricity emissions) at 2002 levels by 2012, a reduction of 23% below projections.</i>	<i>Reduce toxic emissions by 25% below 2002 levels by 2012.</i>	<i>Reduce energy expenditures by approximately 20% below projections as an indirect result of GHGs reductions.</i>	<i>Provide several transportation alternatives to private vehicles on SSI.</i>

<sup>1</sup> Particulates with a diameter of less than 2.5 microns or one-millionth of a meter.

## 4.1 Vision

Salt Spring Island (SSI) will become a model “green” community for managing the environmental impacts of energy, maximizing public awareness of energy issues, promoting efficient energy use, and stewarding the development of on-island, sustainable energy supplies.

## 4.2 Community Energy Strategy Parameters

Table 1 highlights the principle parameters under which this Strategy has been developed. “Drivers” refer to those current conditions that are the basis for a need to implement the Strategy. “Goals” refer to specific outcomes from the Strategy. “Objectives” refer to general actions that can be taken to support the goals. Sections 6 through 11 provide some examples of specific actions that can be taken to meet the objectives. “Targets” provide milestones for the actions.

A number of support mechanisms are already in place for the Island to meet the aforementioned goals and targets. These include the following:

- Federal government programs under Canada’s Climate Change Plan<sup>2</sup>, including the activities of Natural Resources Canada’s Office of Energy Efficiency<sup>3</sup>.
- Transport Canada’s Moving on Sustainable Transportation (MOST) Program<sup>4</sup>
- BC Hydro’s Power Smart program<sup>5</sup> and environmental policies.
- Provincial Government’s 2002 Energy Plan<sup>6</sup> and 2004 Climate Change Plan<sup>7</sup>.
- Capital Regional District energy planning and infrastructure development initiatives.
- Regional and national networks and non-governmental organizations (NGOs), including the BC Climate Exchange<sup>8</sup>, BC Sustainable Energy Association<sup>9</sup>, Canadian Organic Growers<sup>10</sup>, City Green Victoria<sup>11</sup>, and Pembina Institute<sup>12</sup>, among others.
- The Island Agri-Food Initiative, and other federal-provincial programs supporting increased capacity for local agricultural producers<sup>13</sup>.
- Islands Trust sustainability planning functions.
- Local Commissions and advisory bodies such as the Transportation Commission (see Appendix A).
- Local NGOs such as Island Natural Growers<sup>14</sup>, and the Island Conservancy<sup>15</sup>.

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<sup>2</sup> <http://www.climatechange.gc.ca/>

<sup>3</sup> <http://www.oee.nrcan.gc.ca/>

<sup>4</sup> <http://www.tc.gc.ca/programs/environment/most/fundedprojects.htm>

<sup>5</sup> <http://www.bchydro.com/powersmart/>

<sup>6</sup> <http://www.gov.bc.ca/em/popt/energyplan.htm>

<sup>7</sup> <http://wlapwww.gov.bc.ca/air/climate/index.html>

<sup>8</sup> <http://www.bcclimateexchange.ca/>

<sup>9</sup> <http://www.bcsea.org/>

<sup>10</sup> <http://www.cog.ca/>

<sup>11</sup> <http://www.citygreen.ca/>

<sup>12</sup> <http://www.onelesstonne.ca/home.cfm>

<sup>13</sup> <http://www.iafbc.ca/iafi/>

<sup>14</sup> [http://www.saltspring-onetonnechallenge.org/ING\\_flyer.pdf](http://www.saltspring-onetonnechallenge.org/ING_flyer.pdf)

<sup>15</sup> <http://saltspring.gulfislands.com/conservancy/>

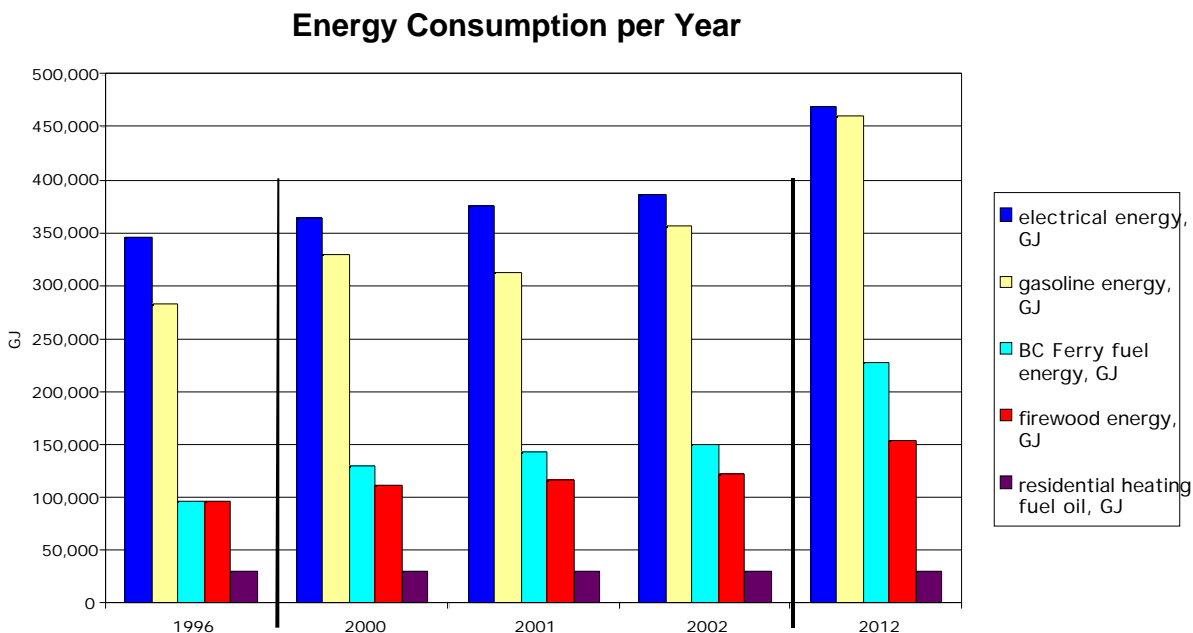
## 5.0 Energy and Emissions Baseline

A detailed energy and emission baseline report was completed in 2004, available at [www.islandtrust.bc.ca](http://www.islandtrust.bc.ca) (under “Stewardship Programs”)<sup>16</sup>. The baseline included estimates and actual data for the years 1996, 2000, 2001, 2002, and 2012.

Salt Spring Island’s direct (on-island) use of energy is fairly evenly divided between buildings (including appliances and electronic equipment) and transportation. The total direct energy used in 2002 was estimated to be 1,047,277 Gigajoules (GJ). Energy consumption is expected to increase to 1.3 million GJ by 2012, a 28% increase.

One GJ is equivalent to 277 kilowatt-hours (kWh), the unit commonly used for electricity purchases. This will power a 14 Watt compact fluorescent light bulb (equivalent to 60 Watt incandescent) for 2 years and three months, run an “Energy Star” propane furnace (96% efficient) for 18 hours, or operate a new compact vehicle for city driving for 428 kilometers (6.7 litres/100kms or 42 miles per gallon).

The following chart highlights the energy use on Salt Spring Island (SSI).



Electricity is the most used form of energy on SSI. 80% of this energy is used in the residential sector. The average BC Hydro SSI residential account used 16,400 kWh, compared to a provincial average of about 10,000 kWh. This is likely due to the high use of electricity for space heating, given the lack of natural gas on SSI. Electricity consumption is expected to increase by 22% between 2002 and 2012. In contrast, the SSI population is expected to increase by about 15% during the same period.

Other observations include the following:

- Gasoline use is expected to increase 29% by 2012 compared to 2002 consumption levels.

<sup>16</sup> <http://www.islandtrust.bc.ca/stewardshipprograms/energyplanning/energyplanning.htm>

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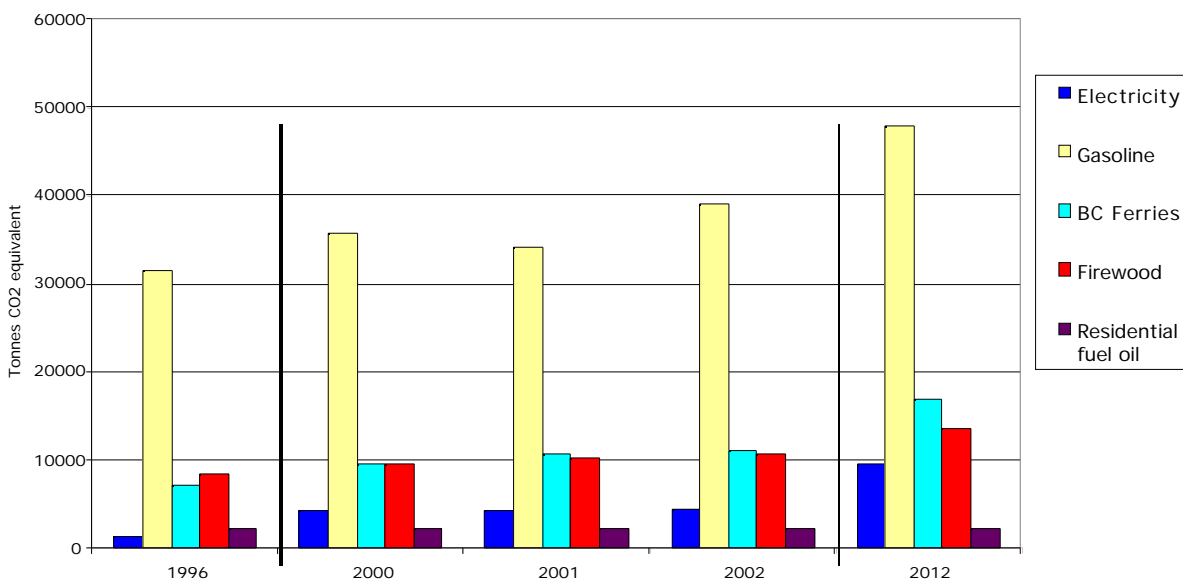
- Firewood energy use is expected to increase by 26%.
- Per capita annual direct energy use on SSI increased by about 3% per year between 2000 and 2002. In 2002, the average consumption was 107 GJ. This is expected to increase to 120 GJ in 2012, a 12.5% increase above 2002.

The indirect energy associated with conventional food purchases – the fossil fuel content of the SSI annual shopping cart – is estimated at 556,510 GJ in 2002, or about 59 GJ per person. This is expected to increase by 15% to a total of 638,965 in 2012.

The total greenhouse gas emissions in 2002 were estimated at 67,723 tonnes of carbon dioxide (CO<sub>2</sub>) equivalent emissions. One tonne of GHGs has the same volume as a large house of 4,000 square feet in size. Emissions are expected to increase by 33% in 2012, to a total of 90,148 tonnes per year.

The following illustrates GHG emissions.

### Greenhouse Gas Emissions per Year



The GHG emissions associated with electricity use are relatively low due to the predominant use of zero-direct-emission hydroelectricity in the BC Hydro system. However, given that BC Hydro is increasing its reliance on fossil fuel generation (e.g., Elk Falls cogeneration in Campbell River), any changes in future electrical consumption may be assumed to be supplied by, or offset, fossil fuel generation. This will result in a four-fold increase in emissions per person from electricity use between 1996 and 2012.

The per-capita GHG emissions are as follows:

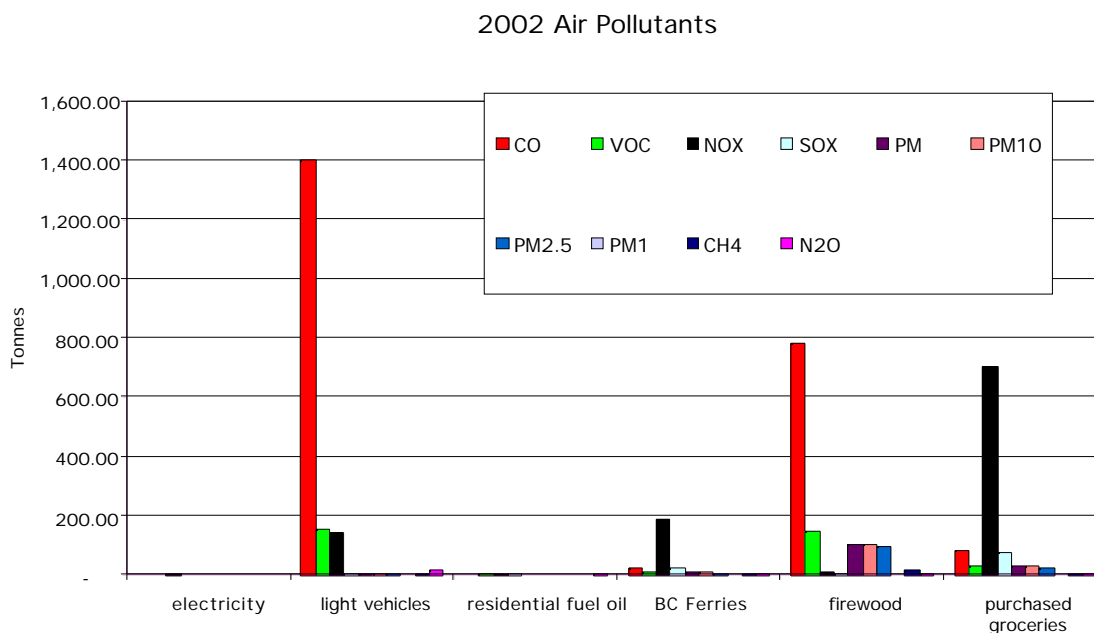
- 7.1 tonnes per person in 2002, increasing by 16% to 8.3 tonnes in 2012.
- An additional 4.3 tonnes per person in 2002 and 2012 for indirect, food related emissions, increasing the total to 11.5 and 12.6 tonnes per person in 2002 and 2012.

Other observations include the following:

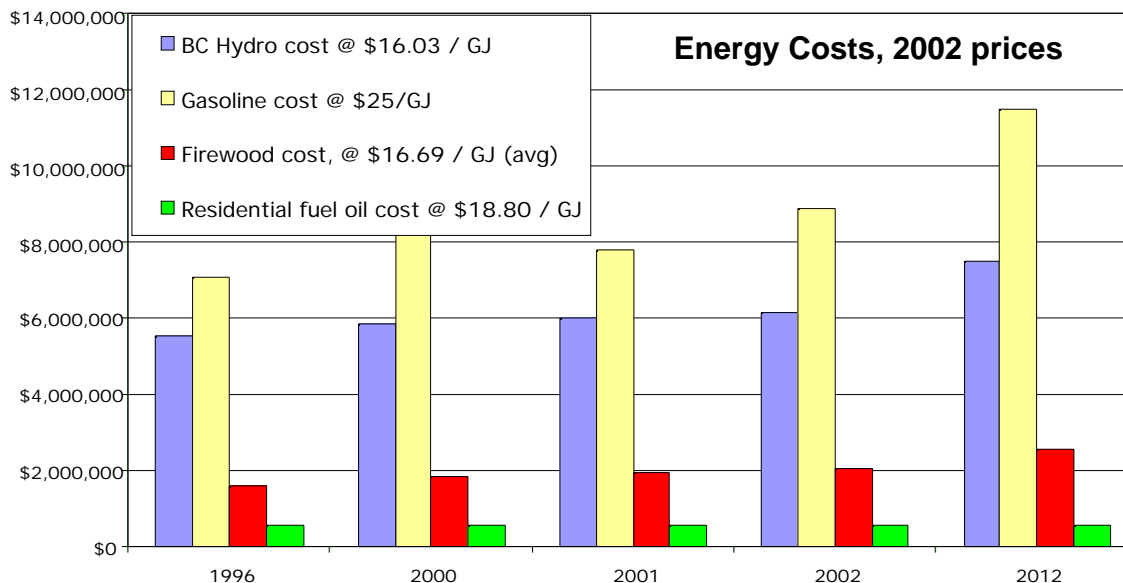
## Salt Spring Island Community Energy Strategy

- Gasoline and transportation fuel consumption accounted for 4.1 tonnes per person in 2002 and will increase by 7% to 4.4 tonnes in 2012.
- BC Ferries fuel use accounted for 1.2 tonnes per person in 2002 and will increase by 31% to 1.5 tonnes in 2012.
- Electricity use accounted for 0.5 tonnes per person in 2002 and will increase by 87% to 0.9 tonnes in 2012.

The following chart highlights the direct toxic emissions from SSI sources in 2002, including Carbon Monoxide (CO), volatile organic compounds (VOCs), Nitrogen Oxides (NO), Sulphur Oxides (SO<sub>x</sub>), Particulate Matter (PM) of different diameters (e.g., 2.5 microns), methane (CH<sub>4</sub>), and Nitrous Oxide (N<sub>2</sub>O).



SSI residents spent about \$17.7 million in 2002 on direct energy purchases with the majority on gasoline and electricity. Most of that money left the community. Future energy use reductions would provide an opportunity to retain dollars on-island, with the associated multiplier benefits. The chart below highlights those costs. Note that the chart assumes no change in the unit price of fuel or electricity. Actual energy costs in 2012 are therefore likely to be considerably higher than shown.



## 6.0 Transportation Sector Options

The transportation sector provides significant opportunities for energy savings, alternative fuel options, and emissions reductions. The use of gasoline and diesel oil accounted for about 58% of the SSI's total direct (i.e., not including food) greenhouse gas emissions in 2002. Emissions are expected to increase by 23% between 2002 and 2012. As such, this sector is the highest priority for taking action.

### Goals

- Reduce the number of single-occupancy automobile trips taken by residents.
- Improve the efficiency of transportation options.
- Reduce transportation congestion and safety concerns.
- Retain dollars in community through transportation fuel savings.

### Strategies

- Educate residents on ways to lower transportation energy use and emissions, increase pedestrian modes, and utilize alternative fuels such as bio-ethanol and bio-diesel.
- Support the development of an Island Transportation Strategy by a newly formed Transportation Commission.
- Develop safe networks for pedestrian transportation modes such as walking and cycling, particularly in the central core of Ganges and other village centres.
- Support the development of a SS public transit system to support pedestrian modes for long distances (e.g., bike racks on buses) and reduce automobile use.
- Support a variety of businesses and non-profit organizations to establish transportation alternatives to single-occupancy, gasoline/diesel vehicle use, including bio-fuel supplies, ride-sharing, car pooling and car sharing.
- Provide incentives for voluntary citizen actions that reduce transportation emissions.

## Examples of Potential Actions

### 6.1 Improve the Efficiency of Existing Vehicles

*This action would aim to reduce the total energy demand for vehicles by 5%, through reduced vehicle idling, regular vehicle tune-ups, and maintaining appropriate tire pressures. This could be achieved by having 50% of all vehicles reduce their energy demand by 10%.*

*The approach would primarily focus on education initiatives. These could include the following:*

- Provide anti-idling information sessions and brochures such as those currently offered by the Natural Resources Canada Office of Energy Efficiency - OEE<sup>17</sup>.*
- Provide information on improving vehicle efficiency through tune-ups, driving habits, and other factors, building on materials offered by OEE<sup>18</sup>.*
- Offer a time-limited program with local vehicle service companies for a free tune-up.*

### 6.2 Energy Efficient New Vehicle Promotion

*This action would aim to retire 10% of the 2002 vehicle stock by 2012, focusing on inefficient and large vehicles (e.g., vans, trucks, SUVs), and replacing them with new, energy efficient vehicles. The vehicle stock in 2002 and 2012 are estimated at 7,449 and 9,628 vehicles respectively. This action would replace about 745 vehicles.*

*The targeted fuel economy improvement would be to replace vehicles that use 14 litres per 100kms or more for city driving (e.g., lots of starting and stopping with brakes) with those that use an average of 7 l/100kms. Note that a Toyota Prius electric/gasoline hybrid vehicle uses 4 l/100kms in the city<sup>19</sup>.*

*It is expected that many people will consider replacing their existing vehicles before 2012, so the predominant action will be to encourage voluntary purchase of high efficiency vehicles.*

*A number of support programs are in place, including the following:*

- A partial BC Government exemption on Provincial Sales Tax for alternative fuel vehicles, including those using electricity, ethanol, methanol, natural gas, and propane<sup>20</sup>.*
- A low-interest loan from VanCity Credit Union (Victoria/Lower Mainland) for the purchase of electric and natural gas vehicles, offered at a prime interest rate<sup>21</sup>.*

*A new incentive could be offered to people who retire an inefficient vehicle and replace it with an efficient one. In return for the incentive, retired vehicles would be*

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<sup>17</sup> <http://www.oeenrcan.gc.ca/transportation/personal/idling.cfm?attr=8>

<sup>18</sup> <http://www.oeenrcan.gc.ca/transportation/personal/driving/autosmart-methods.cfm?attr=8>

<sup>19</sup> See [http://www.oeenrcan.gc.ca/transportation/personal/choose\\_vehicle.cfm?attr=8](http://www.oeenrcan.gc.ca/transportation/personal/choose_vehicle.cfm?attr=8) for more information.

<sup>20</sup> [http://www.rev.gov.bc.ca/ctb/publications/bulletins/sst\\_085.pdf](http://www.rev.gov.bc.ca/ctb/publications/bulletins/sst_085.pdf)

<sup>21</sup> <http://www.vancity.com/Personal/Borrowing/EnvironmentalOptions/CleanAirAutoLoan>

decommissioned to take them out of circulation, and parts would be recycled. For example, see a description of the “Car Heaven Program” below.

### 6.3 Increase Pedestrian Transportation

This action would aim to increase the percentage of transportation trips with pedestrian modes to 5% of the total. Pedestrian modes include walking, cycling, and other human-powered modes not requiring gasoline, diesel, or other transportation fuels. There is also the potential for improved health from exercise.

The walking mode share in the Capital Regional District (CRD) region averaged 12% of all transportation trips in a 2003 report, with a share of 19% in the City of Victoria, and 15% in Sidney. Rural areas had a share of 3%, likely comparable to the current Salt Spring Island share. The average distance of a walking trip in the CRD was 1.4 kms<sup>22</sup>. The bicycle mode share in the CRD was 2.4% in a 2003 report, the highest in Canada<sup>23</sup>.

An increase in the use of bicycle and walking modes could be facilitated with the following actions:

- Improve the sidewalk and cross-walk network in downtown Ganges.
- Offer bicycle safety and maintenance courses.
- Establish pedestrian-oriented facilities in workplaces (e.g., lock-up areas, showers).
- Designate a “Car Free Day” once or twice per year, where downtown Ganges would be closed to non-pedestrian transportation modes and shuttle buses would bring people into the downtown core. It would demonstrate that motor vehicles are not required to maintain normal business in the downtown core and cause people to adjust their transportation habits on that one day per year.
- Construct, or improve and repair bicycle lanes and road shoulders on main routes to improve safety.
- Introduce bus service between ferries and community centres (including a north-Island loop) with bicycle racks to facilitate pedestrian modes for long distance travel and reduce automobile use.
- Establish a Transportation Commission to collect statistics on pedestrian modes and address barriers to the achievement of the a pedestrian mode share target.

### 6.4 Introduce Island Transit System

This action would establish a transit bus system on SSI, providing service between ferry terminals and Ganges, along with some other possible routes. A preliminary business case has been developed for the CRD by the Salt Spring Island Public Transportation Society. The investment required would be substantial, most certainly requiring an annual property tax levy, along with fares for riders. The transit system could be managed by a private operator under the “BC Transit” banner<sup>24</sup>.

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<sup>22</sup> For full report, see:

<http://www.crd.bc.ca/regplan/rgs/travelchoices/papers/documents/WP803August7pedestrianforWeb.pdf>

<sup>23</sup> <http://www.crd.bc.ca/regplan/rtp/cycling/documents/WP203Aug7forWebBikesv2.pdf>

<sup>24</sup> <http://www.bctransit.com/>

*A transit system would substantially support an increased use of pedestrian and cycling modes on SSI, as buses would have bike racks. For example, riders could ride a bike or walk from their homes to the nearest bus stop to access the business districts or ferries.*

*A transit system would also provide substantial social benefits – increasing transportation options for youth, disabled, and elderly people, and those who do not have access to a personal vehicle.*

*The energy savings of a transit system are difficult to predict, given the uncertainty around ridership and the personal vehicles displaced. The results calculated are conservatively based on an assumption that about 80 riders take a bus per day, displacing about 40 return personal vehicle trips of about 20 kms each way. However, the transit system would provide an important foundation for promoting pedestrian transportation modes, profiled as a separate action with substantial energy savings and emissions reductions.*

## **6.5 Introduce Direct Shuttle Van to Victoria and Victoria Airport**

*This action would support a private-sector or non-profit transportation operator to provide a regular shuttle service between SSI and destinations off-island, including Victoria airport (on-demand), downtown Victoria, hospitals, University of Victoria, Camosun College, and/or other destinations. This would expand upon the existing daily commuting service offered through the Jack Bell Foundation, leaving Ganges at 6:00am for downtown Victoria and returning by 6:00pm.*

*The purpose of this service would be to provide a low-cost, direct service to common destinations in Victoria. It would save considerable time compared to walking onto the ferry and taking BC Transit service from Swartz Bay to Victoria. It is estimated that this could displace at least five private vehicle trips per trip, saving about 45kms in each direction. A bio-fuel option is also possible for the van.*

## **6.6 Increase the Use of Bio-Fuels to 10% of Existing Vehicles**

*Bio-fuels include bio-ethanol used directly or blended with 90% gasoline, and bio-diesel, often found in blends of 80% of diesel oil or less<sup>25</sup>. All motor vehicles are capable of using these bio-fuel blends.*

*This action would establish commercial sales of bio-fuels on Salt Spring Island, with an aim to gain a market share of 10% of fuel sales and achieve an average blend of 15% bio-fuel with 85% conventional fuels (e.g., gasoline and diesel oil). It is assumed that the bio-fuels offered for sale displace 70% of the greenhouse gas emissions compared to fossil fuels, considering the life-cycle emissions of producing and transporting the bio-fuels.*

*The action would work with a private-sector or non-profit partner to establish a fuelling station and promote the use of bio-fuels.*

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<sup>25</sup> See: <http://www.greenfuels.org/> for more information.

*Bio-ethanol is currently sold at Husky and Mohawk stations across the province. They derive their ethanol from agricultural crops in the Canadian prairies. Okanagan BioFuels is developing BC's first bio-ethanol plant<sup>26</sup>, derived initially from grains. However, advanced processes under development at University of British Columbia and by the private sector aim to produce ethanol from waste biomass products such as straw or wood wastes. These "cellulosic ethanol" resources have about double the impact on reducing greenhouse gas emissions than grain-derived ethanol, due to the energy inputs to produce the grain.*

*Bio-diesel is not commercially available in British Columbia at this time. However, the WISE Energy Coop<sup>27</sup>, based on the Saanich Peninsula, aims to produce bio-diesel in the region. In addition, a number of individuals and a non-profit organization on SSI are promoting the use of bio-diesel and vegetable oils as a transportation fuel.*

*The BC Government currently exempts bio-ethanol and bio-diesel from the provincial motor fuel tax<sup>28</sup>. As a result, bio-energy blends can be offered at a similar price as conventional fuels, despite higher commodity costs.*

## 6.7 Short-term Transportation Actions

*The Earth Festival Society has identified several short-term alternative transportation initiatives, including the following, largely based on the work for this Energy Strategy:*

- 6.7.1 *Car Heaven Vehicle retirement campaign: Investigate and develop a program, if feasible, with Clean Air Foundation<sup>29</sup>, a private sector auto recycler and other partners who would provide incentives (tax Receipts, discount in Car Share Co-op etc) for removing inefficient vehicles from Salt Spring roads. Cars 13 years or older can emit up to 30 times more air pollutants and 10% more greenhouse gas than new cars. In tandem with this program, work with Car Heaven Angels program to raise awareness about driving in a cleaner, less polluting manner.*
- 6.7.2 *Develop a bicycle information clearing house to prioritize needs and identify organizations to work on a long-term strategy. Primary area of investigation will include increasing bicycle lanes within and to the central community of Ganges.*
- 6.7.3 *Building on the success of the current Jack Bell Foundation vanpool<sup>30</sup>, investigate the feasibility of an off island transportation shuttle bus offering service to Victoria airport, hospitals, medical clinics and downtown Victoria. Investigate the viability of such a service, potential private and Foundation partners, frequency of service, and how it would operate. This initiative could be combined, in part, with the Car Angels interview program to help drivers become aware of the vanpool program and how it would reduce air pollution, GHG emissions, and # of vehicles on the ferry.*

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<sup>26</sup> <http://www.okanaganbiofuels.com/>

<sup>27</sup> <http://www.wiseenergy.ca/>

<sup>28</sup> [http://www2.news.gov.bc.ca/nrm\\_news\\_releases/2004FIN0026-000497.htm](http://www2.news.gov.bc.ca/nrm_news_releases/2004FIN0026-000497.htm)

<sup>29</sup> <http://www.cleanairfoundation.org/>

<sup>30</sup> <http://www.ride-share.com/>

- 6.7.4 *Using the experience of the Victoria Car Share Co-op<sup>31</sup>, conduct a feasibility study, market analysis and implementation plan to establish a car and/or truck share co-op on Salt Spring Island. Coordinate with the Car Heaven program to provide possible incentives in reduced membership fees in the car share co-op to those who donate their “island beater” to the Car Heaven program.*
- 6.7.5 *Building on the report and methodology set up by the Ride-Share group of the SSI Transportation Society, and working with Capital Regional District, set up a CRD Commission that could fund coordination and offer liability insurance to establish a Ride Share Club of riders and drivers similar to hitchhiking except with the built-in safeguards of this community program.*
- 6.7.6 *In coordination with Chamber of Commerce, downtown Ganges business owners, Farmers Market and other interested parties, pilot a car free Market Day in Ganges on Saturday, Sept 24 - the closest Saturday to International Car Free Day, September 22, 2005<sup>32</sup>. This will involve interviews with business owners, residents and island visitors. George Washington University Students doing a Masters’ Program in Sustainable Communities on SSI will develop the survey tools, administer and analyze the results as well as conduct the necessary research for a professional report on this program.*
- 6.7.8 *With Island Natural Growers, develop a produce delivery system to transport local produce to on-island markets.*

## **7.0 New Residential Construction Options**

*Actions affecting the new residential construction sector provide low-cost opportunities to influence energy use and emissions for many decades, given the longevity of homes and the energy-using equipment within them. The use of electricity and wood for new residential construction will account for about 29% of the growth in total, direct greenhouse gas emissions between 2002 and 2012. Thus, reducing energy demands and emissions for new construction is a high priority.*

*The cost of reducing energy consumption and emissions at the time of construction is lower than retrofitting existing homes. Also, energy efficiency improvements can be incorporated into low-interest mortgages that amortize such costs over the mortgage term, sometimes 25 years. In the end, an investment in energy efficiency for a new home may cost a home-owner nothing, as energy savings would exceed the additional mortgage costs.*

### **Goals**

- *Achieve energy performance equivalent to an EnerGuide for Houses rating of 80 for new residential buildings on SSI. This is consistent with the target set in the Climate Change Plan for Canada<sup>33</sup>.*
- *Incorporate cost-effective energy efficiency features into new residential homes:*

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<sup>31</sup> <http://www.victoriacarshare.ca/>

<sup>32</sup> <http://www.carfreeday.ca/>

<sup>33</sup> [http://www.climatechange.gc.ca/plan\\_for\\_canada/plan/index.html](http://www.climatechange.gc.ca/plan_for_canada/plan/index.html)

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- minimize building envelope heat losses;
  - install “Energy Star”, high performance windows and doors;
  - maximize solar gains to provide heat and light;
  - provide adequate ventilation, and if appropriate, heat recovery ventilation systems;
  - provide appropriately sized, efficient heating systems;
  - use renewable energy technologies, such as solar water heaters or ground, water or air-source heat pumps; and/or specifying Energy Star, high efficiency appliances.
- Locate new homes in a way that maximizes pedestrian transportation modes. For example, housing projects that are near common amenities or core village areas minimise automobile use. Also, walkways, trails, and access to bus service (if introduced) promote alternatives to private automobiles.
  - Identify a variety of options for builders and consumers to incorporate energy efficiency into homes to minimize the cost of doing so.
  - Provide affordable, energy efficient housing options.
  - Establish financing mechanisms for energy efficiency, similar to the Canada Mortgage and Housing Corporation’s (CMHC) new refund on their loan insurance for energy efficient homes<sup>34</sup> and VanCity Credit Union’s “Bright Ideas Home Financing Program”<sup>35</sup>.
  - Maximize the collaboration with existing providers of energy efficiency services, including BC Hydro’s Power Smart program.

### Strategies

- Provide information and education materials to consumers on energy efficiency and associated support programs (e.g., NRCan Office of Energy Efficiency, BC Hydro, and BC Ministry of Energy and Mines literature).
- Build awareness within, and provide information to, the real estate, developer, and construction communities about energy-efficient residential projects. Encourage builders and owners to meet or exceed EnerGuide for Houses rating of 80 for their projects.
- Host a seminar for residential builders on energy efficiency with local Building Officials.
- Possibly introduce an energy efficiency mortgage with local financial institutions that is similar to the VanCity Credit Union program and complements the CMHC and other programs.
- Support the inclusion of energy-efficiency objectives within the Official Community Plan and Land-Use Bylaw for new residential construction.
- Consider a procedure that would fast-track building and development permit approvals if they incorporate energy efficiency features.
- Encourage planning approval bodies to accept bicycle storage and related amenities in lieu of parking spaces for new residential developments.

### Example of a Potential Action

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<sup>34</sup> [http://www.cmhc-schl.gc.ca/en/moinin/moinbuho/moinbuho\\_022.cfm](http://www.cmhc-schl.gc.ca/en/moinin/moinbuho/moinbuho_022.cfm)

<sup>35</sup> <http://www.vancity.com/Personal/Borrowing/EnvironmentalOptions/BrightIdeasHomeFinancing>

## 7.1 Voluntary Energy Efficiency Standard for new Residential Construction

*This action would establish a voluntary energy performance standard for new residential construction on SSI. This standard could be proclaimed by the Capital Regional District as an objective for new construction, citing the community and individual benefits of energy efficiency. This standard could be published in guidebooks such as, “Obtaining a Building Permit in the Electoral Areas of the Capital Regional District” or others. An incentive could be provided for those builders that adopt the standard. For example, permit applications that comply could be prioritized – jumping the queue for approval. The time saving for approval would provide a incentive.*

*The proposed energy performance standard could be based on the EnerGuide for New Houses rating of 80<sup>36</sup>. This rating system includes a computer evaluation of the house plans and the energy system design, assigning a rating of between 0 and 100 to illustrate the energy performance of the home. After the new house is constructed, a physical energy audit is completed to verify the energy performance of the home, including a “door-blower” test that evaluates the air leakage of the home. A label is provided for permanent display in the home (see Appendix B), similar to the new home warranty label.*

*A recent study by the Ministry of Energy and Mines (MEM) shows that the typical Vancouver Island (and Salt Spring Island), electrically-heated house with a central ventilation system (i.e., not limited to a bathroom and stove-top fan) has an EnerGuide rating of 76. The following additions would be required to reach EnerGuide 80:*

- low-emissivity and argon filled “Energy Star” windows<sup>37</sup>;*
- 2x6 framing, with R22 insulation in the walls;*
- Full height, R12 insulation in the basement;*
- “Energy Star” lights throughout the house<sup>38</sup>;*
- 25% reduction in air leakage to 3 air changes per hour; and*
- a heat-recovery ventilator (HRV).*

*In a mature market, the incremental costs of meeting EnerGuide 80 are estimated at \$3,400 over the cost of a standard house. The electricity savings are estimated to be about 18.3%, worth about \$330 per year. The payback on investment is about 10 years, assuming no support rebates (see below). However, electricity savings would accrue for the life of the house.*

*BC Hydro currently offers a \$1000 rebate for SSI home-builders that meet the R-2000 home standard, demonstrating energy performance of EnerGuide 80<sup>39</sup>. They also offer rebates for:*

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<sup>36</sup> <http://www.oeec.nrcan.gc.ca/houses-maisons/english/NewHouses/NewHouses.cfm?PrintView=N&Text=N>

<sup>37</sup> <http://www.oeec.nrcan.gc.ca/energystar/english/consumers/window.cfm?Text=N&PrintView=N> (note that SSI is in the Energy Star Zone A, which does not require argon-fill. However, this investment is cost-effective, as per the MEM study).

<sup>38</sup> <http://www.oeec.nrcan.gc.ca/energystar/english/consumers/light.cfm?Text=N&PrintView=N#cfl>

<sup>39</sup> <http://www.bchydro.com/business/b2b/b2b9654.html>

- Energy Star appliances: \$200;
- Energy efficient lighting: \$100;
- Energy Star bathroom fan: \$25/each; and
- Low-emissivity, argon-filled windows: \$1.25/ft window area.

Finally, the BC Government has a provincial sales tax (i.e., 7%) exemption on insulation and double-glazed windows, both intended to promote energy efficiency.

## 8.0 Residential Retrofit Options

The existing 5,100 residential homes account for about 21% of SSI's total, direct greenhouse gas emissions, and 44% of its energy demand. The opportunities for improving the energy efficiency of homes and achieving associated emissions reductions are extensive. Existing homes generally use more energy than new homes and therefore, offer greater opportunities for energy savings – as high as 30% or more.

The EnerGuide for Houses system is also offered for existing homes<sup>40</sup>. SSI has a trained home energy advisor that is licensed for EnerGuide home assessments<sup>41</sup>. Homeowners currently pay \$150 to partially cover the cost of a comprehensive assessment, while the Office of Energy Efficiency and a third-party delivery agent cover the remaining cost. This audit includes an air leakage test with a “door blower” that reports on the average heat loss from the house – through walls, windows, doors, and the roof. In addition, the heating, hot water, and ventilation systems are rated. An “A Visit” score is provided, along with a computer simulation of prospective energy efficiency improvements. The typical range of EnerGuide ratings is from close to zero to as high as 70, depending on the age and design of the house.

After the homeowner has completed home renovations to improve energy performance, a second “B Visit” is performed to demonstrate the improved EnerGuide rating, costing an additional \$75 to the consumer. Existing homes can be improved to EnerGuide 80 or more if significant retrofits are completed.

Several financial support mechanisms are in place for energy efficiency retrofits, including the following:

- EnerGuide for Houses program, with subsidized energy audits.
- Office of Energy Efficiency's Home Energy Efficiency Grants, paid for documented improvements after an EnerGuide “B Visit” is completed<sup>42</sup>, worth \$118 to \$3,348, depending on the number of points improved. For example, the grant for improving the EnerGuide rating from 45 to 60 is \$735.
- BC Hydro Power Smart renovation rebates for electrically-heated homes, or homes with wood stoves and electric baseboards that use at least 15,000 kWh per year, such as<sup>43</sup>:
  - \$50 toward the EnerGuide for Houses assessment;

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<sup>40</sup> <http://www.oeenrcan.gc.ca/houses-maisons/english/homeowners/whyenergguide/whyenergguide.cfm?PrintView=N&Text=N>

<sup>41</sup> [http://www.citygreen.ca/progs\\_energguide.html](http://www.citygreen.ca/progs_energguide.html)

<sup>42</sup> <http://www.oeenrcan.gc.ca/houses-maisons/english/homeowners/grant/grant.cfm?PrintView=N&Text=N>

<sup>43</sup> <http://www.bchydro.com/powersmart/reno/reno8626.html>

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- \$1.25/ft<sup>2</sup> for low-emissivity, argon-filled windows; and
- rebates for basement, crawl space, and attic insulation, worth \$0.10 to \$0.20 per ft<sup>2</sup> of insulation installed.
- CMHC loan insurance refund for energy efficient homes, worth \$324 for a \$105,000 mortgage with a 5% down payment<sup>44</sup>.
- VanCity Credit Union (Victoria/Lower Mainland) “Bright Ideas” loan for home energy efficiency retrofits, offered at the prime interest rate or as a cash-rebate of \$150 toward the cost of the EnerGuide audit, provided that a rating increase of 5 or more is achieved.

### Goals

- Improve the energy efficiency of about 20% of existing homes on SSI. This is consistent with the target set in the Climate Change Plan for Canada.
- Retrofit existing homes with cost-effective energy efficiency features<sup>45</sup>, including:
  - draft proofing leaky parts of the house with foam, caulking, and weatherstripping materials (i.e., around doors and windows, electrical outlets, fireplaces, attic hatch);
  - adding window coverings for night-time use, replacing windows with low-emissivity, argon-filled windows, or installing shrink plastic inside windows in the winter;
  - installing an insulation blanket around the water heater;
  - installing a programmable thermostat that turns-down the heating during working and sleeping hours<sup>46</sup>;
  - installing low-flow shower- and faucet aerators to conserve water;
  - installing Energy Star lights, including compact fluorescent bulbs;
  - adding insulation to walls, attic, and foundation;
  - replacing the heating system with a new, EPA-certified wood stove, an Energy Star propane furnace, a mid-efficiency oil-furnace, an air-, water-, or ground-source heat pump;
  - installing a solar water heater that can pre-heat water before the hot water tank; and/or
  - purchasing Energy Star, high efficiency appliances.
- Provide affordable, energy efficient housing options.
- Establish financing mechanisms for energy efficiency.
- Maximize the collaboration with existing providers of energy efficiency services, including BC Hydro’s Power Smart program.

### Strategies

- Provide information and education materials to consumers on energy efficiency and associated support programs (e.g., Office of Energy Efficiency, BC Hydro, and BC Ministry of Energy and Mines literature).
- Build awareness within, and provide information to real estate agents and building trades (e.g., plumbers, carpenters, electricians) about energy efficiency.

<sup>44</sup> <http://www.cmhc.ca/en/News/nere/2004/2004-11-18-0800.cfm>

<sup>45</sup> See <https://ewb.bchydro.com/hea/> and [http://www.oeo.nrcan.gc.ca/english/p\\_residential/index.cfm?attr=0](http://www.oeo.nrcan.gc.ca/english/p_residential/index.cfm?attr=0) for more information.

<sup>46</sup> <http://www.bchydro.com/powersmart/elibrary/elibrary650.html>

- *Support the introduction of an energy efficiency mortgage and renovation loan with local financial institutions that is similar to the VanCity Credit Union program and complements the CMHC and other programs.*
- *Support the inclusion of energy-efficiency objectives within the Official Community Plan and Land-Use Bylaw for existing residential buildings.*
- *Consider a procedure that would fast-track renovation building permit approvals if they incorporate energy efficiency features.*
- *Link to the SSI One Tonne Challenge, and promote retrofit actions in local papers.*

## *Examples of Potential Actions*

### *8.1 Home Energy Efficiency Improvement Campaign*

*This action would target homes undergoing renovation, through the EGH homeowner incentive program, with the objective of achieving average energy use reductions of 24% at an estimated average incremental cost of \$1,500.*

*A target of 20% of all homes (i.e., about 1000 homes, or 125 renovations per year) could be pursued, with a campaign “thermometer” displayed at a public building, illustrating the achievements to that date and the targeted level.*

*One possible focal-point for a campaign could be Bed and Breakfast establishments, given their larger energy demand than other residential homes. Water and lighting conservation and efficiency features could be installed, including compact-fluorescent bulbs, low-flow showerheads, solar water heating, and others. B&B’s could display their EnerGuide certificates and other recognition symbols to show their environmental stewardship through energy conservation. For example, the community energy committee could devise a “Green B&B” designation for those that have met a certain level of energy and water conservation performance (e.g., EnerGuide 80 rating).*

### *8.2 Wood Stove Change-out Program*

*Residential wood burning is responsible for about 36% of the carbon monoxide emissions in 2002, along with 48% of the volatile organic compounds, and 90% of particulate matter emissions on SSI. This action would tackle local air emissions by encouraging homeowners who use wood as their primary source of heating fuel to switch to a new, certified wood stove.*

*One, Duncan-based wood stove manufacturer has a product that is nearly 70% efficient in converting the energy in the wood to heat within the home. In addition, new wood stoves meet United States Environmental Protection Agency standards for local emissions such as particulate matter. It is assumed that these stoves use about 25% less wood than an older wood stove and reduce local air emissions such as particulate matter by 75%<sup>47</sup>.*

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<sup>47</sup> *This assumption is not substantiated with data. However, the following footnote reference suggests that new wood stoves can reduce consumption by 33% and reduce emissions by up to 90%.*

*This action could be modeled after the successful Wood Stove Changeout program that is offered in the Quesnel and Williams Lake areas<sup>48</sup>. This program offers a 15% discount on a new wood stove (i.e., \$100-\$500), when the old stove is traded in and recycled. The program also applies to residents installing high-efficiency gas stoves, pellet stoves, fireplaces and fireplace inserts.*

*To offer this sort of program on SSI would require a fund raising effort to identify a source of funds for the conversion rebate. Local dealers and/or wood stove manufacturers could match any public sources of funds as a means of promoting their products.*

## **9.0 Commercial and Institutional Sector Options**

*The commercial and institutional sectors include small and large businesses, schools, farms, churches, community centres, local and provincial government buildings, ferry terminals, and other non-residential buildings. These sectors rely extensively on electricity, for lighting, equipment, hot water, and sometimes heating.*

*For example, the Gulf Islands Secondary School uses a ground-source heat pump for its heating needs, deriving heat from thermal energy in the ground (and from the sun), powered by electricity equivalent to about one third of the heat provided. Other heating fuels include oil, propane, and in some cases wood. These other heating fuels were not captured in the energy baseline due to a lack of data.*

*While the electricity consumption of these sectors only accounts for about 1.3% of the total greenhouse gas emissions on SSI, the opportunities to improve energy efficiency and to reduce operating costs for each individual building are large. In addition, leadership from these sectors is critical for raising the credibility of energy efficiency by providing highly-visible demonstration projects for efficient technologies.*

*Energy performance is generally expressed in terms of Gigajoules (GJ) per square foot or square meter of usable floor space in a building. The Model National Energy Code for Buildings (MNECB) was published in 1997 as a tool to evaluate and achieve energy performance for new buildings<sup>49</sup>. This standard is now out of date due to evolutions in technologies and building designs. Many energy efficiency programs now point to energy performance that is 25% better than MNECB as being a cost-effective level to achieve.*

*Significant support mechanisms are already in place for new and existing buildings in this sector, including the following:*

- The Office of Energy Efficiency's (OEE) Commercial Building Incentive Program (CBIP) that provides an incentive equal to twice the first year of energy savings, up to a maximum of \$60,000, for buildings that demonstrate 25% better energy performance than the MNECB<sup>50</sup>.*

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<sup>48</sup> [http://wlapwww.gov.bc.ca/car/env\\_protection/woodstove/woodstove.html](http://wlapwww.gov.bc.ca/car/env_protection/woodstove/woodstove.html)

<sup>49</sup> <http://www.oeenrcan.gc.ca/newbuildings/mneecb.cfm?PrintView=N&Text=N>

<sup>50</sup> <http://www.oeenrcan.gc.ca/newbuildings/cbip.cfm?PrintView=N&Text=N>

## Salt Spring Island Community Energy Strategy

- OEE's Energy Innovators Initiative that provides incentives for up to 50% of the cost of doing an energy audit (maximum \$25,000) and up to 25% of the costs of doing an energy efficiency retrofit (maximum \$250,000)<sup>51</sup>.
- BC Hydro's Power Smart Product Incentive Program that provides information and rebates for the installation of energy efficient lighting, ventilation, heating, and air conditioning products, along with energy system controls and sensors<sup>52</sup>. The program also provides a number of tools for evaluating energy use and efficiency options.
- BC Hydro's Green Power Certificates<sup>53</sup> that allow businesses and institutions to designate a proportion of their power use from renewable energy facilities such as the China Creek run-of-river hydropower project in Port Alberni that is under construction<sup>54</sup>.
- BC Hydro's Power Smart Partners Program for large organizations such as the Health Authority or School District<sup>55</sup>.
- Natural Resources Canada's Renewable Energy Deployment Initiative that provides information and incentives for solar air and water heaters and biomass heaters to a maximum of 25% of the cost, or \$80,000 per building<sup>56</sup>.
- The Leadership for Energy and Environmental Design (LEED) designation for buildings that have superior environmental performance, managed by the Canada Green Building Council<sup>57</sup>.

The following chart<sup>58</sup> documents the typical energy performance of new buildings in the Vancouver region, illustrating the % improvement over MNECB in blue, and the cost-effective potential for exceeding it by 25% or more, along with the payback period achieved from energy savings on the initial investment. Buildings of relevance to SSI include small office, school, hotel, and strip mall.

For example, a typical small office that is constructed today demonstrates energy performance that is 13.3% better than the MNECB. However, if an additional "CBIP Bundle"<sup>59</sup> investment is made that has a payback of 2.4 years, the energy performance can be improved to 26.8% better than the MNECB (13.3 + 13.5).

The chart also illustrates that high-rise, multi-unit residential buildings (MURB) typically demonstrate energy performance that is almost 20% lower than the MNECB. Although this may not be relevant to SSI, MURBs can be improved to 26.5% better than the MNECB with an investment that has a 5.5 year payback.

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<sup>51</sup> <http://www.oeenrcan.gc.ca/eii/home.cfm?PrintView=N&Text=N>

<sup>52</sup> <http://www.bchydro.com/business/incentive/incentive8821.html>

<sup>53</sup> <http://www.bchydro.com/business/gpcerts/gpcerts3621.html>

<sup>54</sup> <http://www.bchydro.com/info/ipp/ipp958.html>

<sup>55</sup> <http://www.bchydro.com/business/pspartner/pspartner1009.html>

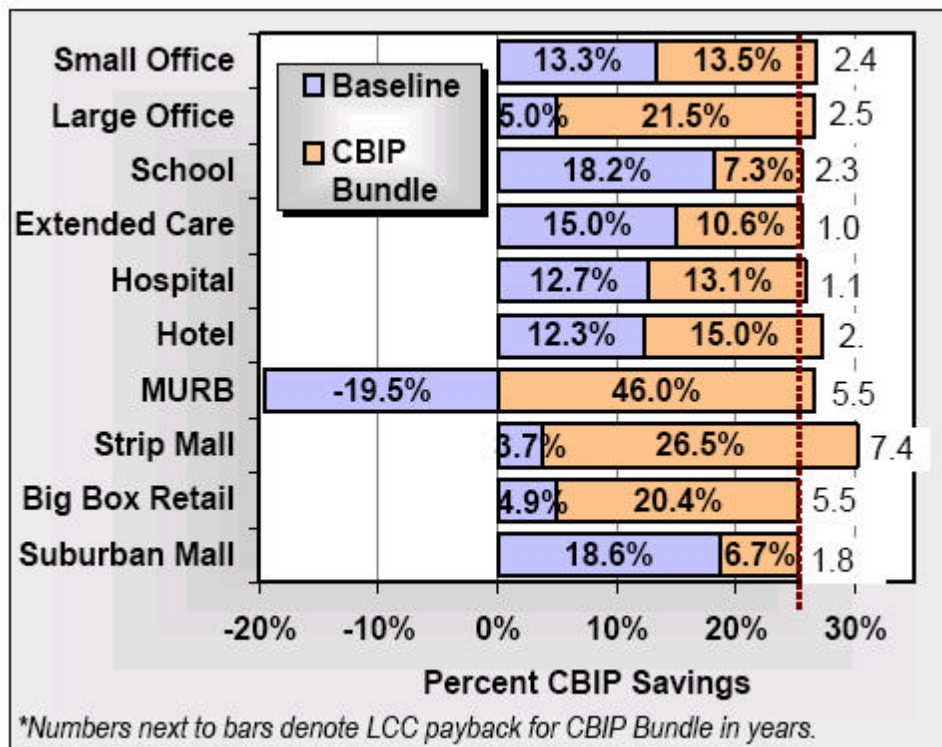
<sup>56</sup> <http://www.canren.gc.ca/programs/index.asp?CaId=83&PgId=543>

<sup>57</sup> <http://www.cagbc.org/>

<sup>58</sup> Reference: Ministry of Energy and Mines. Life-Cycle Economic Assessment of Energy Performance Standards Applied to British Columbia. Phase II: Cost Effectiveness of Achieving CBIP in Vancouver. April, 2004.

<sup>59</sup> A series of additional investments that improve the energy performance and are eligible for the federal CBIP incentive program.

### Energy Performance of New Commercial and Institutional Buildings



### Goals and Strategies

- Improve the energy efficiency of about 10% of existing buildings on SSI.
- Achieve energy performance that is 25% better than the MNECB for new buildings constructed on SSI.
- These are consistent with the targets set in the Climate Change Plan for Canada.
- Incorporate cost-effective energy efficiency features into new and existing buildings such as<sup>60</sup>:
  - Energy Star equipment<sup>61</sup>
  - efficient building envelope with insulation and high performance windows;
  - passive solar design features to maximize natural light;
  - high efficiency lighting, such as T5 or T8 fluorescent tubes with electronic ballasts, and LED exit signs;
  - energy system controls that turn off lights, equipment, heating and cooling when it is not needed (e.g., occupancy sensors that reduce electrical consumption of beverage vending machines by up to 50%);
  - high efficiency boiler, furnace or heat pump (see below) for heating;
  - high efficiency fans for ventilation; and/or
  - heat recovery on ventilation systems and gray water.
- Incorporate renewable and alternative energy supply technologies into buildings, including:

<sup>60</sup> See <http://www.bchydro.com/business/investigate/investigate744.html> for more information.

<sup>61</sup> <http://www.oeenrcan.gc.ca/energystar/english/consumers/office.cfm?Text=N&PrintView=N>

- ground-, air-, or water-source heat pump similar to the school<sup>62</sup>;
- biomass technologies<sup>63</sup>;
- solar water heaters;
- solar air heaters<sup>64</sup>; and/or
- purchase green power from BC Hydro.
- Provide public recognition for investments in energy efficiency, such as “LEED”.
- Develop capacity on SSI among building professionals and trades to incorporate energy efficiency, possibly offering a training course on energy efficiency with local building inspectors and other organizations.

## Example of a Possible Action

### 9.1 Commercial, Institutional and Agricultural Energy Efficiency Campaign

*This action would see the community energy committee or other organization challenge businesses, farms, and institutions of Salt Spring Island to reduce their energy demand by an average of 25%. Specific improvements would vary by sector, but could include the following:*

- *changing lights and ballasts to energy efficient ones, particularly exit signs that normally use up to 40 Watts, but can use as little as 5W using LED technologies<sup>65</sup>, also saving on maintenance costs and enhancing fire response safety;*
- *installing programmable controls that shut-off lights and heating/ventilation systems automatically when they are not needed;*
- *installing Energy Star equipment such as computer monitors, printers, copiers, fridges, and drinking water coolers; and/or*
- *replacing heating systems and hot water tanks with more efficient ones.*

*A target of 20% of all buildings could be pursued, with a campaign “thermometer” displayed at a public building, illustrating the achievements to that date and the targeted level. Businesses and farms that meet the standard could be acknowledged in a public announcement.*

*An energy reduction toolkit could be developed for business that would provide guidance for cost-effective energy conservation projects. The toolkit service could also include an additional energy audit for interested parties. A partner “energy service company” could make the visits, similar to the EnerGuide for Houses program. The generic toolkit would be adapted to the specific circumstances of the business. It should be educational, easy to use, and provide easy to implement recommendations.*

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<sup>62</sup> See <http://www.canren.gc.ca/earth/index.asp> for more information on ground- and water-source heat pumps.

<sup>63</sup> See [http://www.canren.gc.ca/tech\\_appl/index.asp?CaId=2&PgId=62](http://www.canren.gc.ca/tech_appl/index.asp?CaId=2&PgId=62) for more information.

<sup>64</sup> See [http://www.canren.gc.ca/tech\\_appl/index.asp?CaId=5&PgId=121](http://www.canren.gc.ca/tech_appl/index.asp?CaId=5&PgId=121) for more information.

<sup>65</sup> See <http://www.bchydro.com/business/investigate/investigate748.html> for more information

## 10.0 Electricity Supply Options

Electricity is provided by BC Hydro to all residents of SSI. BC Hydro derives the majority of its supply from low-emission, hydropower systems, predominantly from the Mica and Revelstoke power plants on the Columbia River (SE British Columbia) and the G.M. Shrum and Peace Canyon plants on the Peace River (NE BC). The greenhouse gas emissions (GHG) produced are among the lowest in Canada, averaging about 41 tonnes of emissions per Gigawatt-hour (GWh - million kilowatt-hours) of electricity<sup>66</sup>, compared to the Canadian average of over 200 t/GWh, the U.S. average of over 600 t/GWh, and the Alberta average of about 900 t/GWh<sup>67</sup>. In addition, BC Hydro aims to establish a “resource acquisition program” that is the most economic and environmentally friendly in North America in the next five years<sup>68</sup>. For example, BC Hydro aims to reduce its customers’ growth in electricity demand by one-third through Power Smart, energy efficiency initiatives<sup>69</sup> and by building “BC Clean Electricity” power plants for 50% of its new supply<sup>70</sup>.

Electricity is responsible for about 7% of SSI’s direct, GHG emissions, albeit 23% of SSI’s growth in emissions, because of the planned development of natural gas fired power plants, such as the Elk Falls Cogeneration plant in Campbell River. Emissions are expected to increase to 77 t/GWh by 2010.

The electricity demand of SSI was about 107 GWh in 2002 and is expected to grow by 22% to 130 GWh in 2012 due to population growth and the increased use of electricity for heating buildings. The 2002 electricity demand is equivalent to the output of a 24.5 Megawatt (MW) hydropower plant<sup>71</sup>. The nearest power plants to SSI are the 27 MW Ash River hydropower plant near Port Alberni, 170 MW Jordan River near Sooke, and the 900 MW Burrard (natural gas) Thermal plant in Port Moody. One of the electricity transmission lines that services Vancouver Island (and SSI) is scheduled to be retired by 2007, necessitating new supplies on Vancouver Island and/or additional transmission capacity from the mainland.

There is no better time than now for SSI to consider developing on-island power supplies to meet a proportion of its electricity needs. This could include “micro” scale power plants at farms or buildings, or small scale generators on public lands. Possible power supply options include the following:

- Micro-hydropower plants of 1 kilowatt (kW) to 50kW, generating electricity equivalent to about 30-70% of their maximum power capacity over the year. Ideal sites are on streams with an average slope of about 5%, at least 100 feet (30.5 meter) of vertical drop that can be captured in a pipeline, and an average of 100 U.S. gallons per minute of year-round flow or more, or 0.2 cubic meters per second but power can also be generated from much smaller streams. A water license must be acquired from Land and

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<sup>66</sup> Reference: [http://www.bchydro.com/rx\\_files/environment/environment9777.pdf](http://www.bchydro.com/rx_files/environment/environment9777.pdf)

<sup>67</sup> Reference: Canadian GHG Voluntary Challenge and Registry, average of EPCOR, TransAlta and ATCO-Electric emissions for 2001 and 2002.

<sup>68</sup> <http://www.bchydro.com/policies/demandgrowth/demandgrowth771.html>

<sup>69</sup> <http://www.bchydro.com/policies/demandgrowth/demandgrowth776.html>

<sup>70</sup> <http://www.bchydro.com/info/reports/reports12074.html>

<sup>71</sup> Assuming a 50% capacity factor.

Water BC<sup>72</sup>, even if the stream runs through private land. BC Hydro has produced a free “Handbook for Developing Micro Hydro in British Columbia”, available on the internet<sup>73</sup>. A new book entitled, “Clean Power from Water”<sup>74</sup> outlines a step by step process for developing a plant. Finally, a Central Saanich based company offers an internet course on micro-hydro<sup>75</sup>. It is recommended that prospective investors measure the flow of their stream for at least one year before pursuing a project.

- Small-scale wind plants that produce approximately 1kW to 10kW of power<sup>76</sup>. These turbines sit on top of a 30-100 foot high tower, generating electricity equivalent to about 20-30% of their maximum power capacity over the year. They require average wind speeds over 4 m/s (9 miles per hour) year round, preferably with conditions of 7 m/s (15.7 Mph) on a monthly basis.
- Solar-photovoltaic modules and inverters that range in size from 100 Watts to several kW, installed on the southern-face of a roof or other structure, generating electricity equivalent to about 10-20% of their maximum power capacity over the year<sup>77</sup>.
- Large-scale wind turbines, hydropower plants, tidal and wave generators, or biomass combined heat and power plants to sell to BC Hydro<sup>78</sup>.

For the micro-scale generation options, BC Hydro has one of the most generous “net metering” programs in north America, allowing BC Hydro customers to generate their own power from clean electricity sources and bank up to 50 kW of electricity they don’t need in the grid<sup>79</sup>. The power plant could partially or fully serve all the customer demands. When the customer can’t use all of the electricity being produced, excess generation is placed on the BC Hydro grid, serving other SSI consumers. BC Hydro only bills the customer for their “net-consumption”, equivalent to total consumption of BC Hydro electricity during the two month period, minus the total electricity exported onto the grid. If the customer’s bill is zero, resulting from more electricity being produced than consumed, then BC Hydro will bank the power for up to 12 months, reducing successive bills. At the end of the period, BC Hydro will purchase the electricity at 5.4 cents per kWh.

## Goals and Strategies

- Generate part of SSI’s electricity supply on-island, particularly through BC Hydro’s Net Metering program.

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<sup>72</sup> <http://www.lwbc.bc.ca/02land/tenuring/waterpower/index.html>

<sup>73</sup> [http://www.bchydro.com/rx\\_files/environment/environment1834.pdf](http://www.bchydro.com/rx_files/environment/environment1834.pdf)

<sup>74</sup> <http://www.newsociety.com/bookid/3835>

<sup>75</sup> <http://www.energyalternatives.ca/HydroCourse/default.htm>

<sup>76</sup> For more information, see: <http://www.canwea.ca/en/SmallScaleWind.html>

<sup>77</sup> For more information, see: <http://www.cansia.ca/overelectricity.htm> and [http://www.canren.gc.ca/tech\\_appl/index.asp?CaID=5&PgID=266](http://www.canren.gc.ca/tech_appl/index.asp?CaID=5&PgID=266)

<sup>78</sup> For more information, see: <http://www.bchydro.com/environment/greenpower/greenpower1729.html>, [http://www.canren.gc.ca/default\\_en.asp](http://www.canren.gc.ca/default_en.asp), <http://www.canbio.ca/>, and the “Fact Sheets” at: <http://cleanairrenewableenergycoalition.com/docs.htm>

<sup>79</sup> <http://www.bchydro.com/info/ipp/ipp8842.html>

- *Offer seminars on net metering, power supply technologies that could be used on SSI, and the business and regulatory considerations to develop a plant.*
- *Establish a renewable energy resource library on SSI.*
- *Fund-raise for a non-profit, micro-hydropower or wind power demonstration project that would participate in BC Hydro's net metering program.*
- *Develop a larger-scale power supply, potentially from the Mount Maxwell water supply system that services Ganges. A feasibility study could be funded by the Salt Spring Monetary fund with matching federal funds through the Federation of Canadian Municipalities' Green Municipal Enabling Fund<sup>80</sup>. Financing could be partially covered by the Green Municipal Investment Fund.*
- *Provide public recognition for investments in renewable energy.*

## *Example of a Possible Action*

### *10.1 Generate 5% of Salt Spring Island's Power Supply*

*This action would see the development of about 1.5 Megawatts (MW) of power supply capacity on SSI, largely through micro-scale, hydropower and solar systems on farms, homes, municipal infrastructure and businesses. The annual electricity generation would need to be about 5,400 Megawatt-hours (MWh) per year to meet 5% of the 2002 electricity demand.*

*At least one hydropower plant of about 1 MW could be developed on a large SSI stream, following the identification of a project developer and the monitoring of stream flow for at least one year. In addition, some 10-30 private systems of less than 50 kilowatts (kW) could be developed to take advantage of BC Hydro's net metering program, with an aim to total about 500kW in total.*

*The investment required is anticipated to be about \$2,000 to \$10,000 per kW of power supply capacity, with micro-hydro at the lower price, solar power at the high end, and wind power in the middle. Paybacks on electricity rates would be about 10 years for the most cost-effective technologies (i.e., micro-hydro).*

*The first step would be to launch a meeting of interested parties, including at least one prospective financial investor, to discuss the target of generating 5% of SSI's power supply, and to design a campaign to convince up to 30 people, businesses, institutions, and farms to invest in micro-scale technologies. Further steps would include evaluating streamflow and wind resources, investigating permitting requirements, and identifying technical experts.*

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<sup>80</sup>

[http://kn.fcm.ca/ev.php?URL\\_ID=2825&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201&reload=1043178382](http://kn.fcm.ca/ev.php?URL_ID=2825&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1043178382)

## **11.0 Food and Agriculture Options**

*The food and agriculture sector provides significant opportunities for indirect energy savings and emissions reductions. Based on North American norms, diesel oil equivalents used to produce and transport SSI's groceries was estimated to be responsible for about 41,000 tonnes of indirect greenhouse gas emissions in 2002. This is equivalent to 38% of SSI's combined emissions from the direct consumption of energy and indirect emissions from food. Emissions are expected to increase with population growth between 2002 and 2012. Local food production using organic techniques is estimated to use about one-tenth of the energy used to produce and transport conventional food.*

*The following initiatives and support organizations could be engaged as partners in actions:*

- Island Agri-Food Initiative, a joint federal and provincial funding program to increase agricultural capacity on Vancouver Island.*
- Certified Organic Associations of BC, the provincial organic certification body.*
- LifeCycles, a Victoria non-profit working on local food issues.*
- Environment Canada's EcoAction funding program*
- Island Natural Growers—the Gulf Islands' chapter of Canadian Organic Growers*
- SSI Farmers' Institute*

### **Goals**

- Increase the percentage of locally-grown, organic food to 10% of SSI's total consumption.*
- Increase the capacity of local organic food producers and processors.*
- Retain dollars in community through an enhanced local agricultural economy.*

### **Strategies**

- Educate residents on the benefits of buying locally produced organic food.*
- Support the development of a SSI "Food Strategy".*
- Support the provision of on-island food storage and handling facilities.*
- Support the development of a farmer-owned wholesale organisation to supply retailers with local food.*
- Support the development of community gardens, central composting facility, and education and training programs.*
- Support local organizations (e.g., Island Natural Growers, the SSI Garden Club) providing how-to information for home gardeners.*

## **Examples of Potential Actions**

### **11.1 Improve the Capacity of the Salt Spring Fruit and Vegetable Industry**

*This action would aim to replace 25% of Salt Spring's imported fruit and vegetables with local products by 2012 thereby reducing indirect GHG emissions from food by about 6%, or 2% of total GHG emissions.*

*The approach would involve a broad series of initiatives. These could include the following:*

- *Development of a Salt Spring producers' wholesale coop to coordinate the distribution of local produce to retail outlets; this initiative is part of a feasibility study proposed by Island Natural Growers.*
- *Develop central cold storage facilities to permit the winter storage of local apples and root vegetables; this initiative is part of a feasibility study proposed by Island Natural Growers.*
- *Provide central facilities for fruit pressing to enable greater utilization of apples and other fruit crops; this initiative has been proposed by island apple producers.*
- *Provide local slaughter facilities; a feasibility study is underway, coordinated by the Salt Spring Farmers Institute.*

### **11.2 Simply Saltspring Organic Campaign**

*This action would aim to increase the percentage of local organic food consumed to 5% of the total by 2012 thereby reducing indirect GHG emissions from food by about 4% or almost 2% of total GHG emissions.*

*The approach would primarily focus on information and education initiatives. These could include the following:*

- *A series of "Grow your own organic food" workshops and talks, working in conjunction with Island Natural Growers, and the Salt Spring Garden Club.*
- *Creation of community gardens, working in conjunction with Island Natural Growers, and the Salt Spring Garden Club.*
- *Promotion of the 'Simply Saltspring' logo, in conjunction with the Chamber of Commerce and the CED project.*
- *Promotion of the Tuesday Salt Spring Farmers' Market, working in conjunction with Island Natural Growers and the Salt Spring Farmers Institute.*
- *Assist local food retailers in developing 'Simply Saltspring' food sections within each store.*
- *Promotion of gourmet island foods such as fresh fruits and vegetables, flour, breads, wines and cheeses to local restaurants and tourists.*

### **11.3 Buy BC Organic Campaign**

*This action would aim to replace 10% of Salt Spring's imported conventional dairy, eggs, meat, fruit and vegetables with BC organic products (including local products) by 2012. reducing indirect GHG emissions from food by up to 9%, or 3% of total GHG emissions, depending on distance travelled.*

*The approach would primarily focus on education initiatives. These could include the following:*

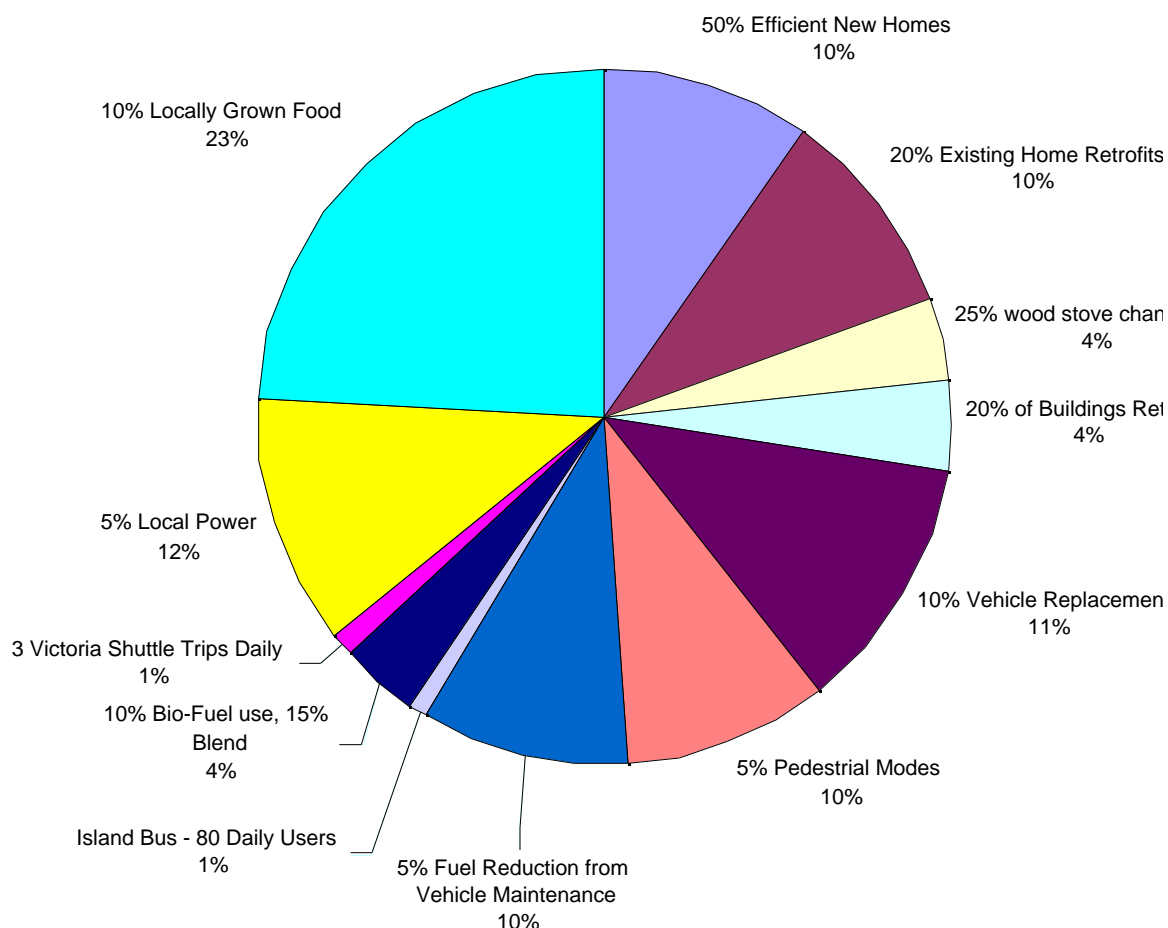
- *Initiate a dialogue with Salt Spring food retailers regarding opportunities and barriers associated with the purchase of BC organic food.*
- *Provide information sessions and brochures, working in conjunction with COABC, COG and TLC.*
- *Provide Food Miles labelling and information at retail outlets, building on materials prepared by LifeCycles in Victoria.*

*Note: The percentage reductions from the actions in the food sector are not directly additive, but are expected to result in an estimated 10% of the current out-of-province food imports being replaced by local and BC organic food.*

## 12.0 Impact of Options

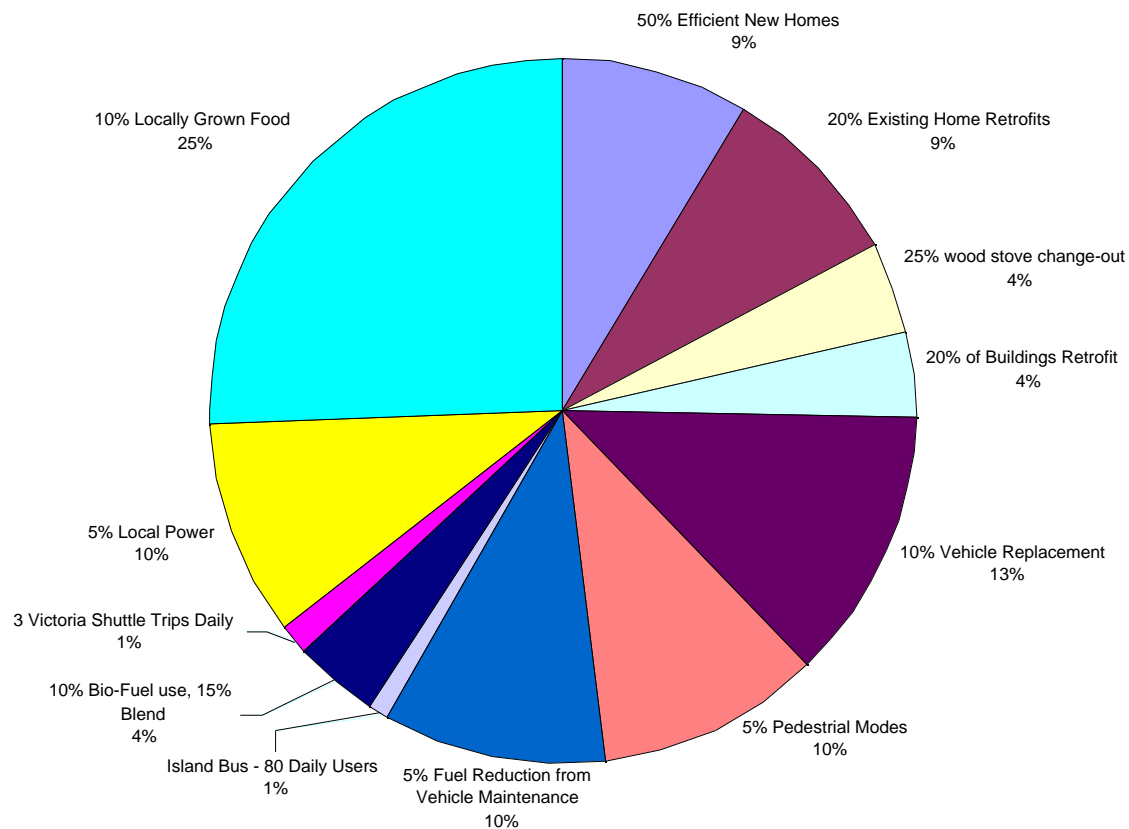
The following tables and charts highlight the preliminary estimates of energy and emissions impacts of undertaking all of the prospective energy and emissions actions outlined above. Tables display the estimates savings in Gigajoules (GJ) of energy, tonnes of greenhouse gas emissions reductions, and kilograms of Particulate Matter (PM-2.5).

### Total Greenhouse Gas Emission Impact



# Salt Spring Island Community Energy Strategy

## Total Energy Impact



### Energy Savings

		Electricity	Wood	Oil	Fuel
50% Efficient New Homes	GJ	12,527	4,253	-	-
20% Existing Home Retrofits	GJ	9,672	5,880	1,472	-
25% wood stove change-out	GJ	-	7,657	-	-
20% of Buildings Retrofit	GJ	3,822	-	3,822	-
10% Vehicle Replacement	GJ	-	-	-	24,828
5% Pedestrial Modes	GJ	-	-	-	19,994
5% Fuel Reduction from Vehicle Maintenance	GJ	-	-	-	19,994
Island Bus - 80 Daily Users	GJ	-	-	-	1,581
3 Victoria Shuttle Trips Daily	GJ	-	-	-	2,767
10% Bio-Fuel use, 15% Blend	GJ	-	-	-	7,336
5% Local Power	GJ	19,302	-	-	-
10% Locally Grown Food	GJ	-	-	-	50,086
<b>Total</b>	<b>GJ</b>	<b>45,323</b>	<b>17,790</b>	<b>5,294</b>	<b>126,586</b>
<b>for all fuels</b>	<b>GJ</b>	<b>194,994</b>	17.5% of total energy in 2012		

## Greenhouse Gas Emissions Reductions

Emissions Factors	tonnes per GJ	0.1000	0.0876	0.0733	0.0798
50% Efficient New Homes	tonnes	1,253	372	-	-
20% Existing Home Retrofits	tonnes	967	515	108	-
25% wood stove change-out	tonnes	-	670	-	-
20% of Buildings Retrofit	tonnes	382	-	280	-
10% Vehicle Replacement	tonnes	-	-	-	1,982
5% Pedestrian Modes	tonnes	-	-	-	1,596
5% Fuel Reduction from Vehicle Maintenance	tonnes	-	-	-	1,596
Island Bus - 80 Daily Users	tonnes	-	-	-	126
3 Victoria Shuttle Trips Daily	tonnes	-	-	-	221
10% Bio-Fuel use, 15% Blend	tonnes	-	-	-	586
5% Local Power	tonnes	1,930	-	-	-
10% Locally Grown Food	tonnes	-	-	-	3,999
<b>Total</b>	<b>tonnes</b>	<b>4,532</b>	<b>1,558</b>	<b>388</b>	<b>10,107</b>
<b>for all fuels</b>	<b>tonnes</b>	<b>16,585</b>	21.0% of total emissions in 2012		

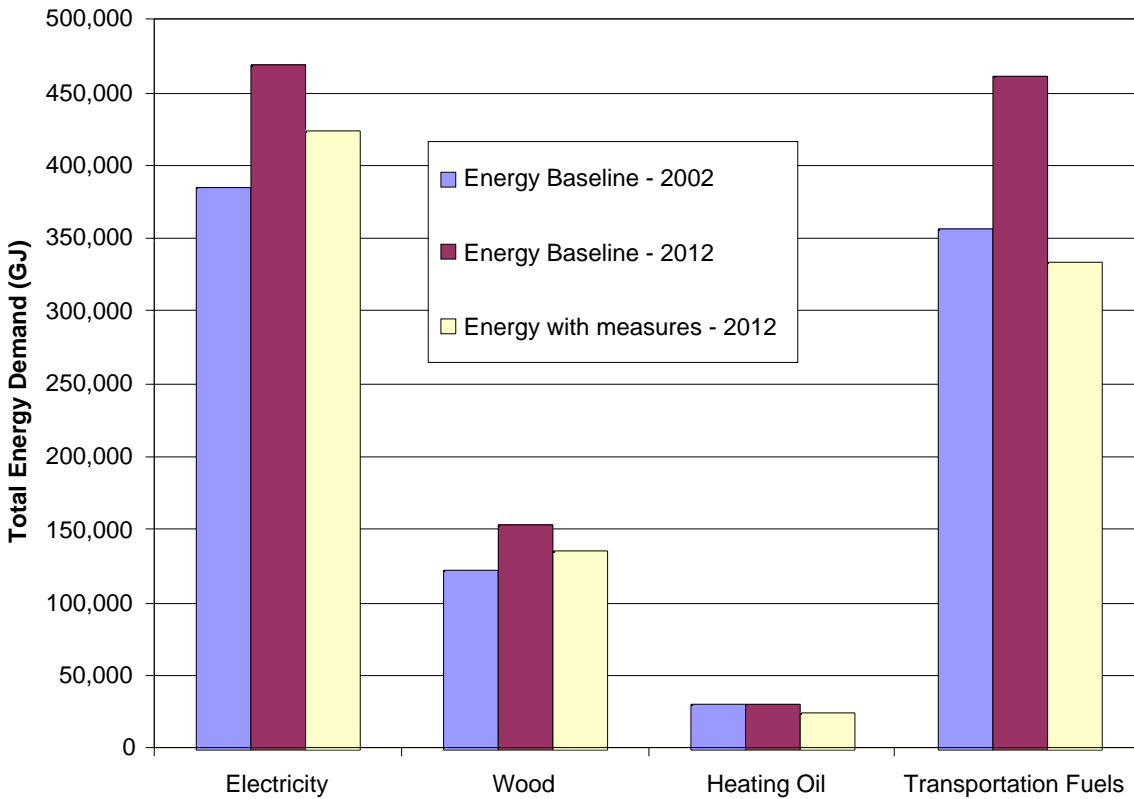
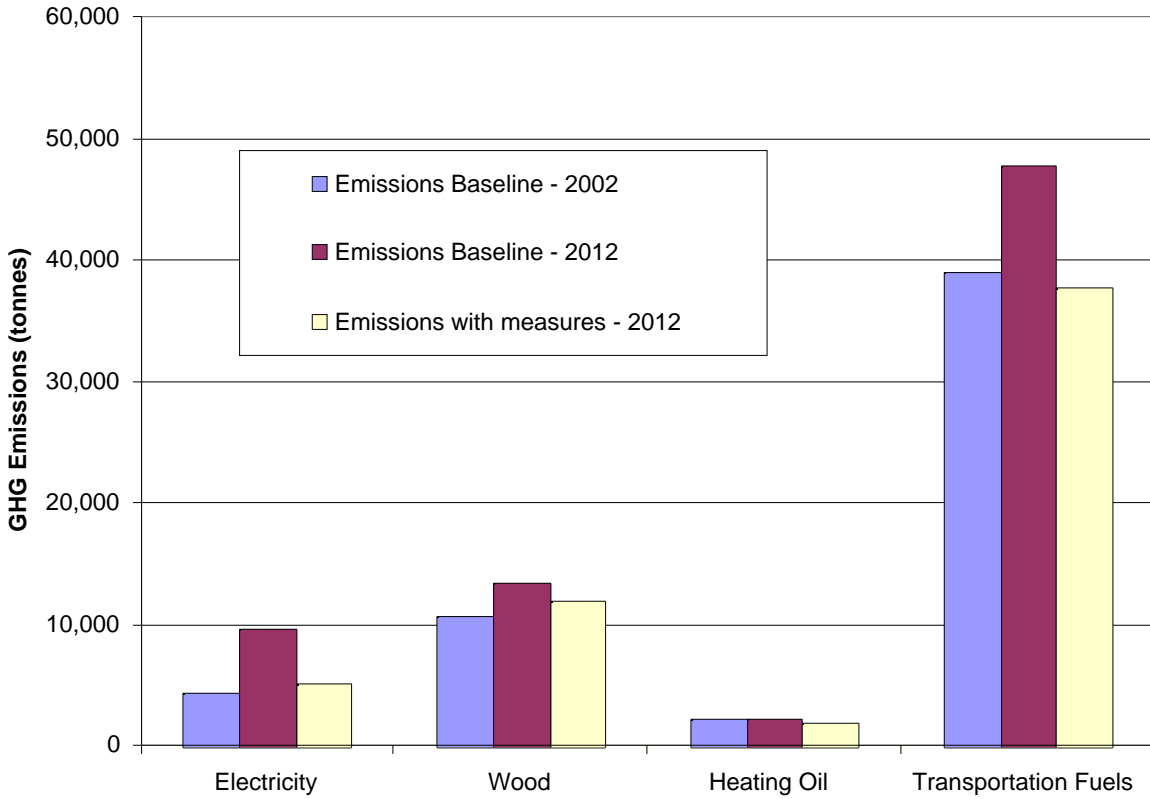
## Air Pollutant Reductions (PM2.5)

Emissions Factors	kg/GJ	-	0.7906	0.0026	0.0062
50% Efficient New Homes	kilograms	-	3,363	-	-
20% Existing Home Retrofits	kilograms	-	4,649	4	-
25% wood stove change-out	kilograms	-	18,160	-	-
20% of Buildings Retrofit	kilograms	-	-	10	-
10% Vehicle Replacement	kilograms	-	-	-	154
5% Pedestrian Modes	kilograms	-	-	-	124
5% Fuel Reduction from Vehicle Maintenance	kilograms	-	-	-	124
Island Bus - 80 Daily Users	kilograms	-	-	-	10
3 Victoria Shuttle Trips Daily	kilograms	-	-	-	17
10% Bio-Fuel use, 15% Blend	kilograms	-	-	-	46
5% Local Power	kilograms	-	-	-	-
10% Locally Grown Food	kilograms	-	-	-	312
<b>Total</b>	<b>kilograms</b>	<b>-</b>	<b>26,172</b>	<b>14</b>	<b>787</b>
<b>for all fuels</b>	<b>kilograms</b>	<b>26,973</b>	25.4% of total emissions in 2002		

*Note that the PM2.5 emissions reductions from reduced wood use are nearly 0.8 kg per GJ of wood, but changing the wood burning appliances delivers three-times that saving.*

*The two charts on the following page illustrate the total SSI energy use and emissions in 2002 and 2012. The third bar for each plot illustrates the impacts of the actions, if implemented. The "Transportation Fuels" bars include gasoline and diesel for vehicle use but not BC Ferries related emissions.*

*Salt Spring Island Community Energy Strategy*



## **Appendix A – Transportation Commission**

*Establish a CRD-Based SSI Transportation Commission  
May 2005—March 31, 2007*

### **Purpose**

*To act as a coordinating body to facilitate projects, programs and services to reduce reliance on the automobile on Salt Spring and reduce automobile congestion in Ganges and Fulford.*

### **Specific activities of the Commission**

*Specific activities of the Commission can include, but not be restricted to, public transit; ride share and car co-operatives; parking facilities, recycling old cars (car heaven program) regulation and demand management initiatives; bike lanes / paths; walking trails (\*have to sort out overlap with PARC) sidewalks, parking facilities, regulation and demand management initiatives (like parking meters);*

*Note: The Commission should be designated as a body that can assume jurisdiction over sidewalks on public roads. Ministry Of Transportation and Highways has notified the Trust of a new policy whereby a public entity or NGO must take responsibility for sidewalks on a public ROW before MOTH will grant an easement. The Commission could play this role.*

**Commission membership** *to be recommended by the CRD Director to the CRD Board, based on public advertising and appropriate qualifications.*

**Commission to be governed** *by CRD procedural bylaws.*

### **Commission establishment and operations**

- *Write up Terms of Reference (ToR) for a SSI Transportation and Parking Commission*
- *Sort out overlap with PARC*
- *Engage legal authority to review ToR*
- *Obtain CRD approval*
- *Establish Commission membership*
- *Determine appropriate location and contract personnel to operationalize services*

### **Financing:**

*The Commission should have a modest requisition (e.g., \$1-\$2 per household), either through grant-in-aid from Director's budget or approved by referendum or alternative approval process, sufficient to hire a coordinator and undertake public education / information programs. The Commission should also be designated as the entity envisioned in SSI's Land Use Bylaw (sections 7.7.2 and 7.7.3) as the entity that can purchase and operate parking facilities and can receive cash in lieu of parking facilities required by the LUB for new developments.*

*However, funding for the purchase of land or construction of parking facilities, public transit, bike lanes / paths, and sidewalks and the hiring of parking commissioners will require separate taxpayer approval and/or other funding sources (e.g., development permit / rezoning requirements, amenity zoning, NGO fundraising, parking fee revenues).*

## Appendix B – EnerGuide for Houses Label

**ENERGUIDE**

**FOR HOUSES • POUR LES MAISONS**  
123 Knowhere Street, Ottawa, Ontario K10 X0X

**78**

Level of energy efficiency / Niveau d'efficacité énergétique

Basic / Base	Improved / Amélioré	High / Haut
70-74	75-79	80+

Energy Efficiency Target / Objectif d'efficacité énergétique

**Estimated annual energy consumption**  
**Estimation de la consommation annuelle d'énergie**

electricity / électricité:	<b>9,493 kWh</b>	gas / gaz:	<b>4,182 cu.m</b>	oil / mazout:	
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File number / N° de dossier: **9901P00001**

Year built / Année de construction: **2004**

Builder / Constructeur: **ACME Construction**

Energy evaluation performed by / Évaluation énergétique effectuée par:  
**[Name of energy advisor and company]**

An energy report has been provided to the homeowner.  
Un rapport d'évaluation énergétique a été fourni au propriétaire. Date: **January 20, 2004**

[nrcan.gc.ca](http://nrcan.gc.ca) / [rncan.gc.ca](http://rncan.gc.ca) **1 800 O-Canada**

Natural Resources Canada / Ressources naturelles Canada **Canada**

## **Appendix C: Sustainable Communities and Organizations**

### *George Washington University Sustainability Study*

*Several students from George Washington University in Washington, DC, supervised by Professor Mark Starik spent two weeks in 2004 on Salt Spring Island conducting research on community sustainability. The resulting report “Sustainable Communities and Organizations; A Study of Sustainability on Salt Spring Island” has informed the transportation strategy in this report.*

*Excerpts from “Sustainable Communities and Organizations; A Study of Sustainability on Salt Spring Island” ; a composite study by Masters Degree students from George Washington University, Washington , DC.*

*“Salt Spring Island is a rapidly growing island community and tourist destination. With no form of public transit, limited roadways and limited parking, Salt Spring Island faces a number of transportation problems. These include parking congestion in the island’s towns, busy roadways, residents with no reliable means of transportation and a rapid increase in the local and global environmental problems that arrive with such an increase in automobile use. For Salt Spring Island to be a sustainable community, people’s needs must be met without compromising environmental health or depleting natural resources.*

*Developing a sustainable transportation system would contribute to Salt Spring Island’s community sustainability in the following ways:*

- Tourists could travel around the island without increasing traffic, parking, or environmental problems, while enhancing the income of a diverse set of vendors located outside of the pedestrian commerce areas.*
- Employees would be empowered by having control over and choices for their commute to work.*
- Those with no transportation of their own would have an easier time taking part in Salt Spring Island’s cultural and economic community.*
- Minimize impact to the island’s ecosystems (conservation is also a large part of the Salt Spring Island culture).*
- Engaging residents and visitors in transportation strategy decision-making to cultivate and maximize usage.”*

*Given that a sustainable transportation strategy can lead to so many social, economic and environmental benefits, the question remains of what type of transportation to implement. An examination of this topic began with the development of a number of transportation options which were then assessed by logistical feasibility, social acceptance and rough cost. The entire report is posted at [www.islandstrust.bc.ca](http://www.islandstrust.bc.ca), under “Stewardship Programs”.*