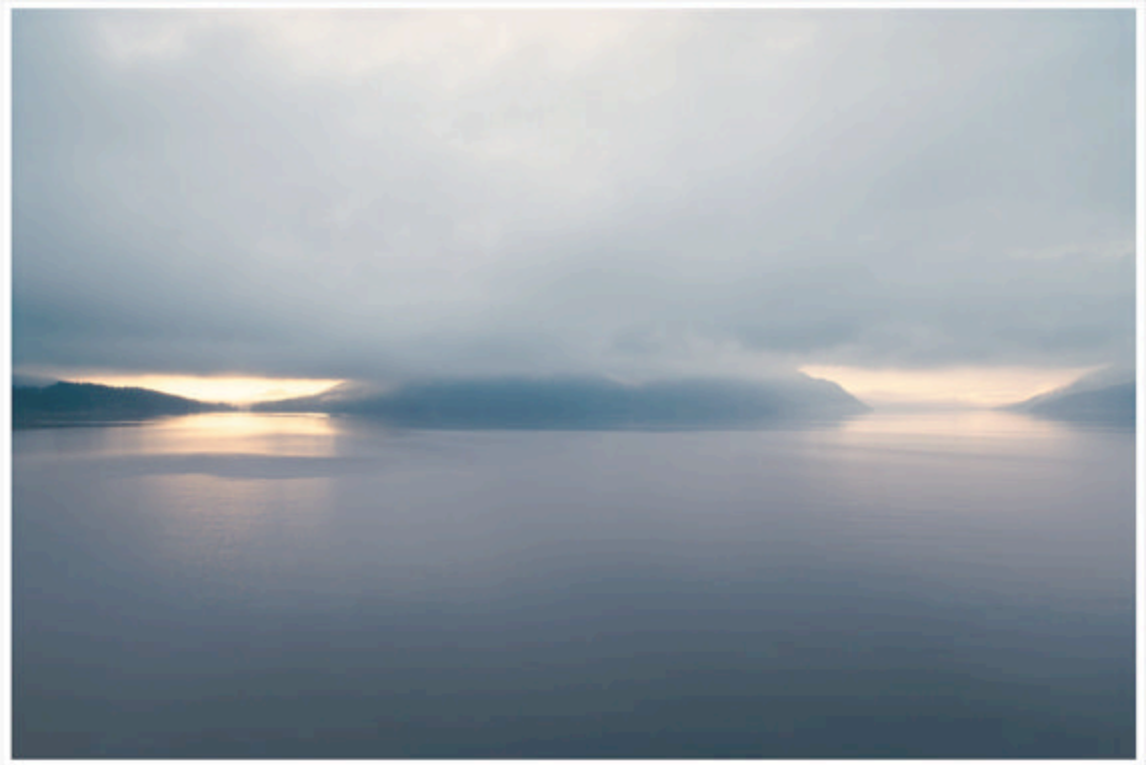
Climate Action Salt Spring

Salt Spring Island Climate Action Plan

Version 1.0



Salt Spring Island Climate Action Council

April 28, 2011

www.climateactionsaltspring.ca

Salt Spring Island Climate Action Council

The Salt Spring Island Climate Action Council was established in May 2010 to coordinate the development and implementation of a Climate Action Plan for Salt Spring Island. The council consists of representatives of the following agencies and organizations:

Capital Regional District
Islands Trust
Institute for Sustainability, Education and Action (I-SEA)
Island Pathways
Salt Spring Island Agricultural Alliance
Salt Spring Island Chamber of Commerce
Salt Spring Island Transportation Commission
Salt Spring Island Water Council
Salt Spring Island Conservancy
Transition Salt Spring
Earth Festival Society
Youth representative, Gulf Islands Secondary School
and up to four members at large with specific expertise and/or interests related to the Climate Action Council's mandate.

The Salt Spring Island Climate Action Council is in the process of incorporating as a British Columbia not-for-profit society.

Acknowledgements

cover photo: Mount Erskine © M.Levy/flatearthphoto.com

The Salt Spring Island Climate Action Council wishes to thank all those who contributed to the draft Climate Action Plan, including everyone who attended the 2010 February 6 workshop, Council members who contributed sections of the plan and reviewed and edited drafts, and our twelve outside technical reviewers.

After a period for public comment, the Climate Action Council issued version 1.0 of the Salt Spring Island Climate Action Plan in April 2011. Comments received on the draft are presented in Appendix E.

COMMENTS ON THE CLIMATE ACTION PLAN VERSION 1.0 MAY BE MADE AS FOLLOWS:

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Salt Spring Island, BC
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EXECUTIVE SUMMARY

Context

The Salt Spring Island Climate Action Plan is a call to action. The context for action is a planet already affected by a rapidly expanding human population, depletion of natural resources, and ecosystem disruption. Climate change underscores the fact that infinite growth is not possible on a finite planet. We face a very serious and sobering situation that is making unprecedented demands on the human species. We are all at different places in our awareness about the reality we are facing, and the conversation about the seriousness of the climate challenge is urgently required, not only on Salt Spring Island but throughout the world.

Global climate change poses special challenges for island communities, which are particularly vulnerable to wind storms, storm surges, wildfires, drought, and sea level rise. Islands are also heavily dependent upon food imports and on fossil fuels for transportation. The Salt Spring Island Draft Climate Action Plan provides guidance to help the community respond effectively to the challenges of climate change and to meet its greenhouse gas (GHG) reduction targets for 2015 and 2020. Measures to meet 2050 targets are not addressed in this version of the plan, but will be included in the future.

The plan has been developed in the context of the BC provincial government Climate Action Plan and provincial targets, including the objective that local governments, schools, universities, colleges, hospitals and other public sector institutions become carbon neutral. Local governments are required to include GHG reduction targets in their official community plans. Salt Spring is part of the Capital Regional District (CRD) and the Salt Spring plan fits within the broader CRD Climate Action Program.

"Climate change is a complex, multi-year challenge for our region. It is a wake-up call to a system in decline, and the future of the Capital Region—our economic structures, government policies, and culture— will be determined by how we deal with this challenge." — Climate Action in the Capital Region

The plan draws upon previous Salt Spring energy and GHG reduction reports, and includes input from many groups and individuals. The draft has been approved by the Climate Action Council and has undergone an outside review process by twelve reviewers with relevant expertise. The current draft will be finalized in April 2011, after the public consultation process is completed.

Suggested actions

The suggested actions to address climate change can also help meet objectives for food security, economic resilience, community health, and nature conservation. The plan encourages a shift from a highly consumptive lifestyle and its associated greenhouse gas emissions. Part of this shift will involve the growth of the local agricultural economy, the growth of the "green" tourism sector, and the sustainable redevelopment and densification over time of our village areas. Actions to be undertaken will be determined by community interest, available funding, technology developments and regulatory constraints.

In 2007, the baseline year for BC communities, Salt Spring's greenhouse gas emissions from transportation fuels, electricity use, heating fuel, firewood, propane, solid waste, food, and BC Ferries fuel were estimated to be about 70,000 tonnes. Most of these emissions were attributable to food and on-island transportation.

The target for 2015 is to reduce these emissions by at least 15% or about 10,500 tonnes below 2007 levels. These reductions may be achieved if islanders "tune up and drive smart", reduce the number of automobile trips we take and carpool, and if islanders adjust our diets to include more vegetarian and local and regional food.

The target for 2020 is to reduce emissions by at least 40% or about 28,000 tonnes below 2007 levels. In addition to the 2015 measures, other suggested actions to achieve this target include ongoing replacement of older vehicles with smaller, more efficient and electric vehicles, significant expansion of local food production, home energy conservation and retrofits, climate neutral measures by businesses and institutions, on-island composting of kitchen scraps, and BC Ferries replacement of the Queen of Nanaimo with a more efficient vessel.

Purchasing habits and lifestyle decisions of individuals can significantly minimize the personal carbon footprint beyond the limited range of emissions tracked by this plan. The plan provides suggestions for low-cost measures that individuals and families can make to reduce their carbon footprints.

The population of Salt Spring is projected to grow by 6.8% between 2007 and 2015 and by 12% by 2020. We need to be aware of the significant greenhouse gas emissions associated with population growth. The clearing of forested land for development to accommodate this growth can release a large quantity of carbon into the atmosphere, and the loss of forest to buildings and paved surfaces reduces the sequestration of carbon. Suggested planning measures to avoid or reduce future new emissions from population growth and development, and to support other aspects of the plan, include densification of built up areas, especially Ganges Village, and incentives to reduce land clearing for new development in forested areas.

Review and updates

The Salt Spring Island Climate Action Plan is a living document to be reviewed and updated regularly by the Salt Spring Island Climate Action Council to ensure that it remains current and relevant to local conditions.

This is the first edition of the plan and is intended as a reference document. A short, reader-friendly illustrated edition of the plan will also be prepared. Successful implementation will depend upon communicating the essential points of the plan to all islanders, because the suggested actions will need to involve the whole community—individuals, families, organizations, businesses and institutions, and local government.

The Salt Spring Island Climate Action Plan is for everyone.

Next Steps

1. All Salt Spring Island individuals, families, organizations, businesses and institutions are encouraged to comment on the Salt Spring Island Climate Action Plan, to share ideas for reducing carbon footprints, and contribute to meeting Salt Spring's greenhouse gas reduction targets. A summary brochure of the plan and information flyers are available, together with a slide presentation for community groups.
2. The Climate Action Council will seek endorsement of the plan by the Salt Spring Island Local Trust Committee, by Islands Trust Council, and by the CRD Board of Directors.
3. The Climate Action Council will work with its member organizations to complete a communications and community engagement strategy to enable broad participation in meeting Salt Spring's greenhouse gas reduction targets.
4. The Climate Action Council will seek and work with community partners to develop, where appropriate, detailed analysis of strategies, and to roll out actions. Priority actions to meet 2015 targets will be the focus. And, subject to availability of resources, we will also focus on long-term projects to meet 2020 targets that require short-term initiation.
5. The Climate Action Council will continue to seek funding and in-kind support from and with its community partners, including Islands Trust and CRD, and from provincial and federal agencies. Funding will be needed to support specific actions, to coordinate the ongoing evolution and implementation of the plan, and to track progress in meeting targets.
6. Please continue (or begin) to reduce your own greenhouse gas emissions. The Climate Action Council invites everyone to take ownership of the Salt Spring Island Climate Action Plan.

1.0 VISION STATEMENT

We accept that global climate change poses special challenges for island communities, which are heavily dependent on fossil fuels for transportation and are particularly vulnerable to sea level rise, and to severe weather events such as wind storms and storm surges.

We recognize the urgent need to take actions that support an orderly transition to a low carbon economy through lessening our demands on natural resources, fostering a strong and truly sustainable island economy, and increasing local resilience. As an island community dependent on ferries and with a lengthy network of roads, we recognize our responsibility to reduce our reliance on carbon-intensive transportation fuels. We appreciate the renewal of our island's agricultural heritage, because local organic food production systems are key to mitigating climate change worldwide, and because in a changing world a more secure food supply is important.

We are an active, engaged, vibrant community, geographically defined by our island boundaries and located within, and part of, a spectacularly rich ecosystem. We have the ability, initiative and willingness to proactively prepare for a century of profound change. We know that it is more important to leave a legacy than to leave an impact. In an age of climate change and limits to ecological footprints, we welcome the opportunity to learn to tread lightly for the sake of our children and all living beings.

NOTE: We are well aware of the need to work with the community to develop inspiring visions for each of the target years 2015, 2020 and 2050, and our public engagement processes will include this.

2.0 INTRODUCTION

This introductory section of the Salt Spring Island Climate Action Plan provides background information—why the plan is needed, what has already been done, the community's reduction targets and its greenhouse gas emissions.

The context for climate action is a planet that may have already reached limits to growth in terms of human population, depletion of natural resources, and ecosystem disruption. The impacts of climate change amplify these stresses. Infinite growth is not possible on a finite planet.

2.1 Purpose of the Plan

Many communities worldwide are working to mitigate climate change by lowering greenhouse gas (GHG) emissions and are developing adaptive responses to unavoidable climate change. The Salt Spring Island Climate Action Plan provides guidance for individuals, community groups, businesses, institutions, and local government seeking to respond effectively to the challenges of climate change, and to help the community meet its GHG reduction targets for 2015 and 2020. The Climate Action Plan is a living document to be reviewed and updated regularly by the Salt Spring Island Climate Action Council to ensure that it remains current and relevant to local conditions. Measures to meet 2050 targets are not addressed in this version of the plan, but will be included in the future.

The plan draws on previous Salt Spring energy and GHG reduction reports, and includes input from many groups and individuals. Suggested actions to address climate change can also help meet objectives for food security, economic resilience, community health, and nature conservation. Actual initiatives to be undertaken will be determined by community interest, available funding, technology developments and regulatory constraints.

The plan has been developed in the context of the BC provincial government Climate Action Plan[1] and provincial targets, including the objective that schools, universities, colleges, hospitals and other public sector institutions be carbon neutral by 2010, and that local governments become carbon neutral by 2012. Salt Spring is part of the Capital Regional District (CRD) and the Salt Spring plan fits within the broader CRD Climate Action Program[2].

2.2 Climate Change overview

Climate change refers to long-term changes in weather patterns and temperatures. Geologic records show that our planet's climate has changed many times in the past. The earth is currently experiencing rapid climate change, including global warming, caused by human activities—primarily the burning of fossil fuels and large-scale deforestation—that are increasing the concentration of heat-trapping greenhouse gases (GHGs) in the atmosphere.

As temperatures increase, natural responses or feedback mechanisms can influence the rate of warming. For example, warm temperatures may increase the risk of forest fires, which pump more GHG into the atmosphere, accelerating global warming. The melting of the summer arctic sea ice reduces the planet's reflectivity and increases the amount of heat absorbed by the Arctic Ocean, thus speeding the planet's warming. The rate of warming can be slowed by negative feedback, such as increased absorption by the oceans of carbon dioxide (CO2), the primary greenhouse gas.

A natural response of particular concern is the release of methane from the arctic tundra and continental shelves. Methane is a potent GHG, and large releases of the earth's methane stores would overwhelm any attempts to stabilize the climate at close to current temperatures. Global warming is already warming the ocean and melting the permafrost, releasing methane in the process. The planet may be very close to tipping points at which irreversible changes will occur. Recent research indicates that these changes may include a sea level rise of several metres per century—much greater than the rate predicted in the 2007 IPCC reports—for many centuries as the polar ice caps disintegrate. The consequences in terms of economic turmoil, humanitarian crises, geopolitical unrest and collapse of ecosystems are sufficiently severe that the risks of inaction far outweigh negative impacts of immediate actions to reduce carbon emissions and prevent "runaway" climate change.

The science

Recognition of the effects of greenhouse gases on the planet is not new. The insulating effect of atmospheric gases was proposed by Joseph Fourier in 1824, and the heat-absorbing and re-emitting capacity of these gases was demonstrated by John Tyndall in 1860. The progressive warming of the earth from the burning of fuels (coal, oil, natural gas) was forecast by Svante Arrhenius in 1896.

Carbon dioxide (CO2) and methane (CH4) are the chief atmospheric gases responsible for global warming. Carbon dioxide persists in the atmosphere for thousands of years whereas methane oxidises over decades to form carbon dioxide and water. Paleo-climatologists have found a close correlation between temperature, sea level and CO2 stretching back over four hundred thousand years, as shown in Figure 1. The graph also demonstrates that CO2 over the 400,000 years prior to the industrial revolution did not exceed 300 parts per million (ppm).

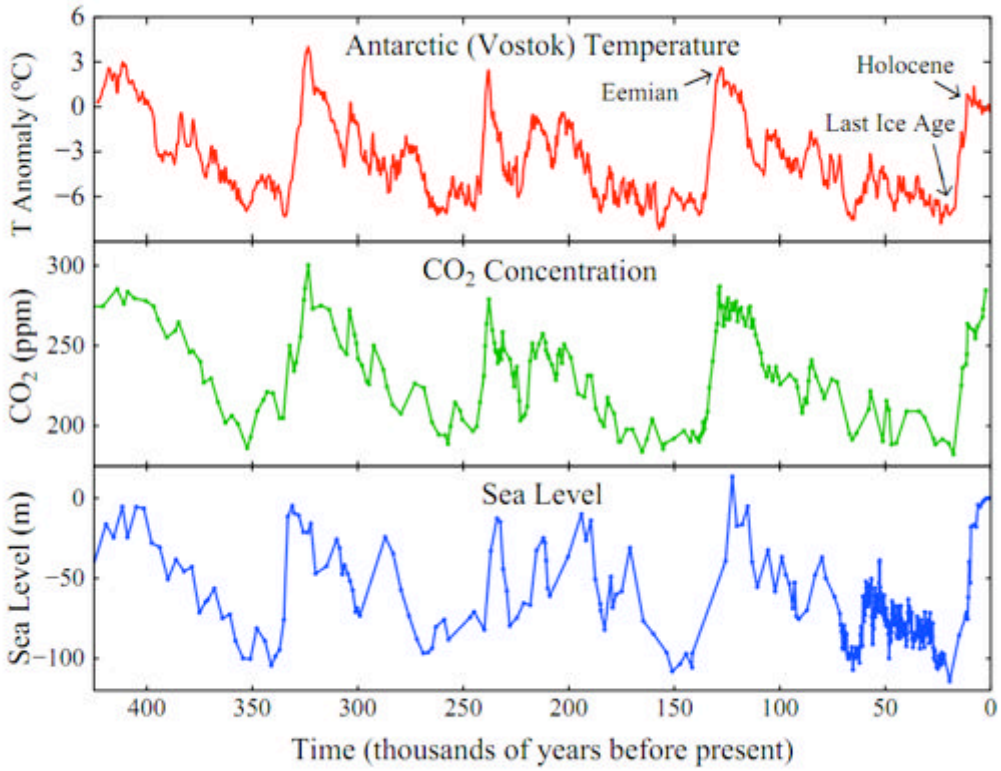

Figure 1: Temperature change, carbon dioxide amount, and sea level

"Temperature change, atmospheric carbon dioxide amount, and sea level as a function of time for the past 425,000 years. The horizontal axis shows time in thousands of years before present. Time zero ["present"] refers to the date 1750, just before the industrial revolution." (Figure with permission from Hansen, J. 2009 Storms of My Grandchildren. Bloomsbury Press. http://www.columbia.edu/~mhs119/Storms/*)*

The concentrations of CO2 in the atmosphere are increasing at an accelerating rate from decade to decade, as shown in Figure 2. In the past ten years, the average annual rate of increase was 1.91 parts per million (ppm). This rate of increase is more than double what it was during the first ten years of CO2 instrument measurements at the Mauna Loa Observatory. A 2007 report from the Intergovernmental Panel on Climate Change reveals that between 1970 and 2004, GHG emissions have increased by 70%. This dramatic rise in atmospheric GHG concentrations has in turn triggered an increase in the average temperatures of near-surface air and ocean water. Temperatures are now approximately 0.7C warmer than pre-industrial levels. This seemingly insignificant rise has already resulted in many obvious and measurable changes to the planet's climate. Because of these recent observations, coupled with information from fossil records, the upper safe limit for atmospheric CO2 has been revised downwards by some climate scientists from 450 ppm to 350 ppm. Atmospheric CO2 levels have stayed higher than 350 ppm since early 1988. In November, 2010, the global CO2 level is reported to have reached 388.59

ppm. Even if all emissions ceased today, the current 0.7C warming would roughly double as a result of the delayed effect of emissions already in the atmosphere.

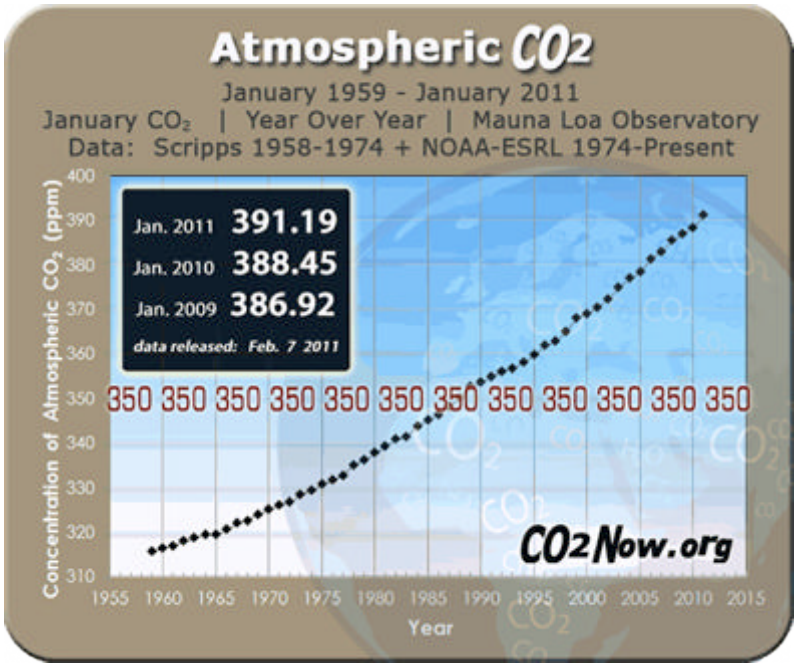

Figure 2: Increase in atmospheric CO2 between January 1959 and January 2011
Mauna Loa Observatory, Hawaii
Earth Systems Research Laboratory, National Oceanic and Atmospheric Administration
Source: CO2Now (CO2now.org)

Coastal Climate Change
Not surprisingly, coastal areas such as the Islands Trust Area are particularly vulnerable to the effects of climate change. A recent study[3] by the Capital Regional District describes the impacts projected for southern areas of coastal BC over the next 100 years, including:

- An increase of 6-7 mm in precipitation during December and January;
- An increase of 10-20% in average annual precipitation;
- Continued sea level rise (over the past century, the BC coast has experienced a 4-12 cm rise);
- An increase in average air temperatures of up to 3º C in winter and 5º C in summer;
- More extreme weather events (e.g. summer droughts, heavy rains, winter storms).

Impact on Islands Trust Communities[4]
Ecological changes resulting from climate change will challenge the social and economic systems on which Islands Trust communities depend. A few of the impacts expected in the Trust area include:

- Forced re-settlement from shoreline areas and relocation of transportation routes;
- An expanded food growing season, but a decrease in soil moisture levels;
- Changes to critical ecological services (e.g. groundwater supply);
- New human health concerns (e.g. heat wave stress and related illness, altered geographic range of vector-borne diseases);
- More frequent natural disturbances (e.g. forest fires and pest outbreaks);
- Disturbance to and loss of natural ecosystems and wildlife habitat.

2.3 Climate Action Plan process

Salt Spring has been tracking its energy use and GHG emissions since 2003. The 2005 Salt Spring Community Energy Strategy established baseline data for 2002 and energy and GHG reduction targets for 2012. Earth Festival Society (EFS) and other community groups and individuals, with the support of

Islands Trust and CRD, have been implementing the strategy, and its relatively modest targets are expected to be met. Work undertaken by the EFS and the Energy Strategy Task Force (a committee of Islands Trust and CRD elected officials, the EFS and interested individuals) included drafting a proposed climate section for inclusion in the Official Community Plan and the preparation of the Salt Spring Island Sustainability Checklist. Islands Trust and CRD, supported by provincial funds from Community Action on Energy and Emissions (CAEE), commissioned several studies to better understand policy options related to climate change planning. Two baseline updates have been prepared by the EFS, the latest in 2010. The Salt Spring climate action work was recognised by two provincial awards in 2007.[5]

Building on this earlier work, an informal climate action committee was convened by Islands Trust and CRD elected officials in the fall of 2009 to initiate the current climate action planning process. A community workshop in February 2010 was followed by the establishment of the Climate Action Council in May, and the provincially–mandated addition to the OCP of GHG reduction targets in August. After a peer review process and public input, this first edition of the Salt Spring Island Climate Action Plan is due to be released in spring 2011. The implementation of the plan will be undertaken by community agencies, organizations, businesses and individuals, with coordination and tracking provided by the Climate Action Council.

2.4 Salt Spring's GHG reduction targets

GHG emission reduction targets are included in Salt Spring's Official Community Plan as required by provincial legislation. The targets established by the SSI Local Trust Committee on August 5, 2010 are:

> "*To support a reduction of at least 15% in Greenhouse Gas emissions by 2015; at least 40% by 2020 and at least 85% by 2050 based upon 2007 data. Within the local trust area this reduction will be achieved by actions resulting from individual and community initiatives, the actions of other levels of government, technological changes, and changes to land use policies and regulations.*"

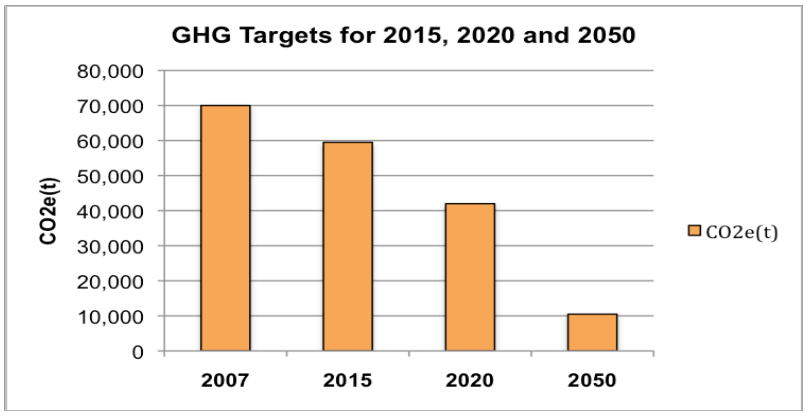

Figure 3: Salt Spring Island's greenhouse gas reduction targets[6]

CO2e(t) is short form for metric tonnes of carbon dioxide equivalents (greenhouse gas emissions expressed as the amount of carbon dioxide that would have the same warming effect).

2.5 Community Energy Use and Emissions

The common baseline year for BC communities, and adopted by Salt Spring in its OCP targets, is 2007. In 2010, BC communities were provided with 2007 Community Energy and Emissions Inventory (CEEI) reports.[7] Salt Spring has been collecting data on community energy and emissions since 2002 and has verified and supplemented the CEEI data with estimates from the Salt Spring Island Community Energy Strategy Baseline Report and 2007 and 2010 updates.[8] Figure 4 shows the sources and relative sizes of the emissions for which we have estimates, using CEEI data where available. On-island transportation emissions and indirect emissions from food are the two largest categories, followed by emissions from BC Ferries. The sources and details of the data are provided in Appendix A.

In 2007, Salt Spring's greenhouse gas emissions from transportation fuels, electricity use, heating fuel, firewood, propane, solid waste, food, and BC Ferries fuel were estimated to be about 70,000 tonnes. Most of these emissions were attributable to food (40%) and on-island transportation (36%).

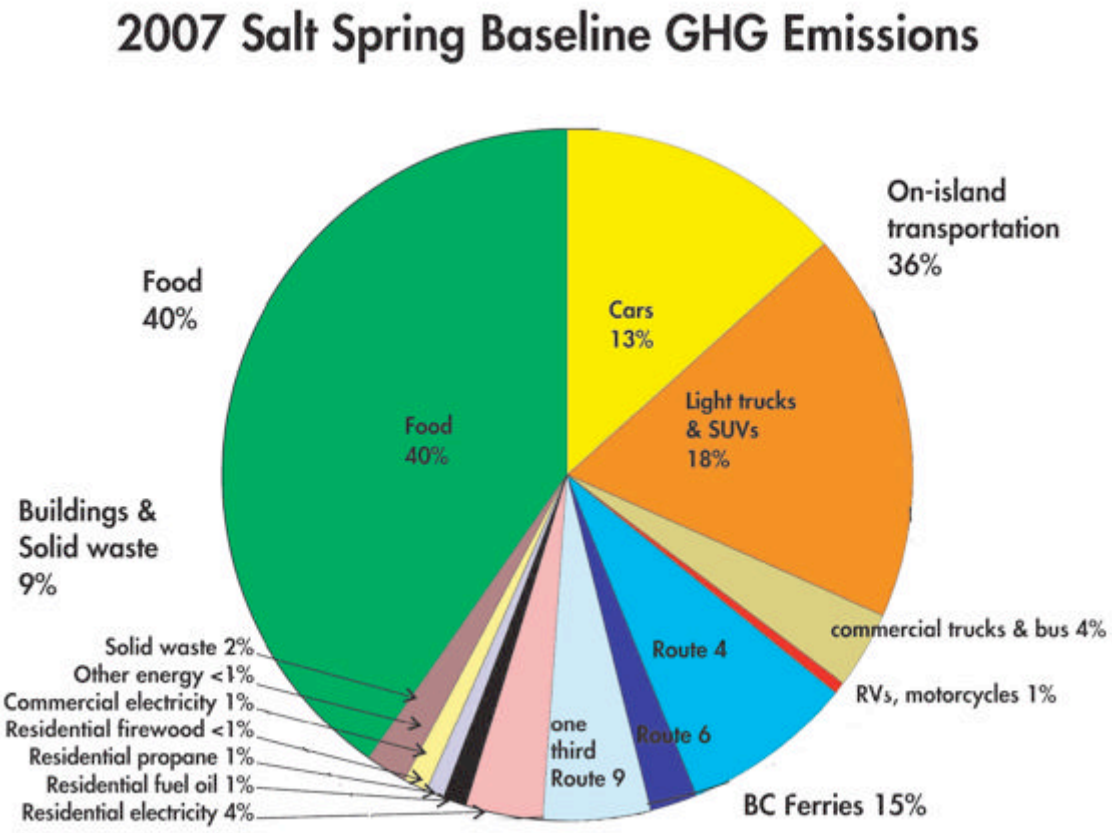

Figure 4: 2007 Salt Spring Island Baseline Emissions[9]

Data sources and details are provided in Appendix A. Not yet included: emissions from float planes and long distance flights, private marine traffic, land clearing, embedded energy associated with construction materials and purchases of manufactured goods, etc.

The high contribution of the food category might seem surprising, but it incorporates a number of sources including the fuel used to seed, till and harvest the crops, to process and transport the food, as well as the high energy inputs required to manufacture nitrogen fertilizers. There is more uncertainty with the energy and emissions estimates for food than for other categories, but energy and emissions associated with food are large.

2.6 Per Capita Energy Use and Emissions

Per capita annual energy consumption and emissions are obtained by dividing community emissions and energy totals by the population. The 2007 per capita emissions are estimated to be 6.7 tonnes. This is very much lower than the Canadian average of 22.6 tonnes reported by the Conference Board of Canada.[10] The national emissions footprint includes government and industry, including the energy sector and exports. In BC, average per capita emissions were 15.7 tonnes in 2008. By far the largest contributor was the energy sector.[11] Salt Spring has no heavy industry, and emissions are much lower than those generated in larger communities with industrial activities.

Individual emissions will generally be greater than the per capita number, depending on lifestyle choices. For example, the community emissions profile does not include emissions associated with the production of commodities such as clothing, appliances, tools, electronics, books, furniture, and building supplies, and recreational pursuits such as flights, vacations and cruises. Table 1 shows the breakdown

of average per capita energy and emissions for Salt Spring. The gigajoule (GJ) is the unit of energy used in this report. To give an example of the size of a GJ, one GJ is approximately 278 kWh. CO2e(t) is short form for metric tonnes of carbon dioxide equivalents, greenhouse gas emissions expressed as the amount of carbon dioxide that would have the same warming effect.

Table 1: Salt Spring Island per capita 2007 energy use and GHG emissions.
Source data same as Fig. 4, see Appendix A, divided by 2007 population of 9780 from CEEI.
Not included: emissions from float planes and long distance flights, private marine traffic, land clearing, embedded energy associated with construction materials and purchases of manufactured goods, etc.

Type	*Energy, GJ*	*Co2e(t)*
Personal vehicle	33	2.25
BC Ferries	10	1.09
Electricity	37	0.25
Heating oil	1	0.07
Residential propane	1	0.06
Fire wood	8	0.00
Solid waste	N/A	0.12
Food	41	2.88
Total	**130**	**6.74**

It is useful to track energy consumption along with emissions. Saving energy has a direct financial reward. Usually reduced energy consumption equates to reduced GHG emissions, however electricity and firewood have a significant impact on total energy use but very little impact on GHG emissions. Figure 5 compares per capita energy consumption and GHG emissions, using the same data presented in Table 1.

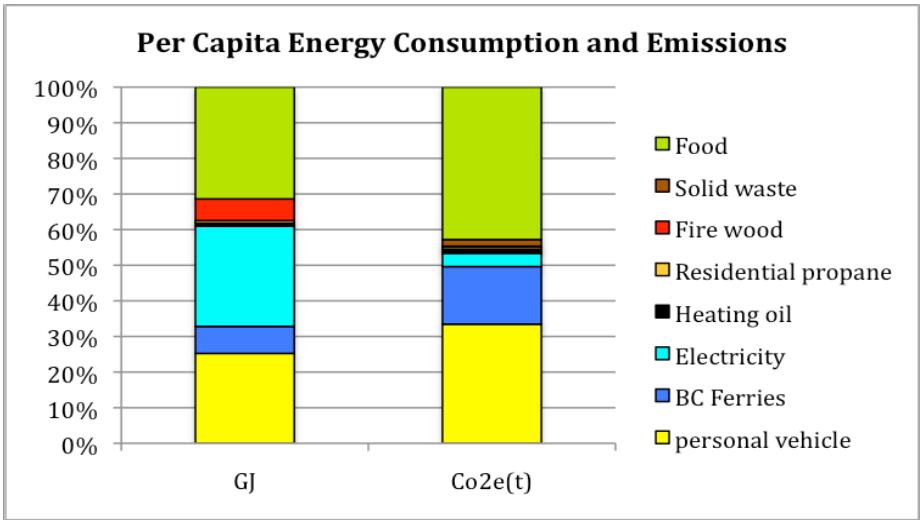

Figure 5: Comparison of per capita 2007 energy use and GHG emissions
From Table 1, expressed as percentages.

3.0 MEETING 2015 AND 2020 TARGETS

Meeting the 2015 target of at least 15% reduction (representing 10,500 tonnes) in emissions over 2007 and the 2020 target of at least 40% (representing 28,000 tonnes) will require actions in each sector, and particularly actions by individuals. Section 3.1 allocates proposed savings by sector. Section 3.2 provides examples of actions that would provide the proposed savings. The allocations and sample actions are by no means the only solution. They are offered to demonstrate that the targets can be met and to demonstrate a way to meet them.

3.1 Targets and proposed savings by sector

From Figure 4, it is clear that the biggest contributors to Salt Spring's estimated direct and indirect emissions are vehicles and food. These are therefore the most promising sectors to look for GHG reductions. They are also the sectors where significant reductions must occur in order to meet the targets. It is expected that savings from these two sectors will provide about 80% of the target reductions. BC Ferries is also a large contributor to Salt Spring's emissions. Supporting BC Ferries in reducing emissions will be important. Proposed savings by sector are provided below.

Table 2: ***Proposed savings by sector to meet 2015 target of at least 10,500 tonnes and 2020 target of at least 28,000 tonnes***[1]

Sector	*2015 Savings CO2e(t)*	*2015 Savings %*	*2020 Savings CO2e(t)*	*2020 Savings %*
Vehicles	5,000	47%	13,000	46%
Food	4,000	37%	9,000	32%
BC Ferries	1,000	9%	4,000	14%
Homes	500	5%	1,000	4%
Businesses and institutions	100	1%	200	1%
Solid waste	100	1%	400	1.5%
Local zero carbon renewable energy	0	0%	400	1.5%
TOTAL	10,700	100%	28,000	100%

3.2 Summary of savings by sector to meet 2015 and 2020 targets

Are the proposed targets and GHG reductions achievable? Section 3.2 provides some sample actions for which simple calculations have been made to estimate savings. These actions are not the only actions possible and in general require other supporting actions. Most of the savings proposed in this plan result from behavioural change. For individuals to adopt a specific action, supporting community actions are needed to ensure the change is well-accepted and easy to accomplish. Ideas for community and individual actions are included in sections 4 and 5.

On-island Transportation[2]

2007 baseline GHG emissions from island vehicles were about 25,000 tonnes or 36% of total island emissions. The Climate Action Plan calls for GHG emission reductions from island vehicles as follows:

5,000 tonnes or 47% of total 2015 required savings
13,000 tonnes or 46% of total 2020 required savings

The following actions from all islanders to meet these targets are suggested for illustrative purposes only:

SAMPLE ACTIONS TO MEET TARGETS	*Savings* CO2e(t)
1. If all islanders eliminate one trip in five	4,408
2. If all islanders increase vehicle occupancy by one, every fourth trip	5,511
3. If all islanders tune up and drive smart for 5% better performance	1,102
4. If islanders replace 1 in 5 pick-ups and SUVs with small cars	1,332
5. If islanders replace 1 in 10 light vehicles with electric vehicles	2,170
TOTAL (actual savings would be less, actions are not directly additive)	14,523

Food and Agriculture[3]

Indirect GHG emissions from food purchases were estimated to be about 28,000 tonnes or about 40% of total island emissions in 2007. There is much uncertainty about the exact size of food related GHG emissions, but we are certain that indirect GHG emissions from food represent a large proportion of Salt Spring's total GHG emissions. For simplicity, we have assumed that a diet consisting of either dairy-free vegetarian or local and regional organic food represents 75% fewer emissions than a diet of conventional imported food. The Climate Action Plan calls for GHG emission reductions from food and agriculture as follows:

4,000 tonnes or 37% of total 2015 required savings
9,000 tonnes or 32% of total 2020 required savings

The following actions from all islanders to meet these targets are suggested for illustrative purposes only; most of these actions require a significant expansion of local food production capacity:

SAMPLE ACTIONS TO MEET TARGETS	*Savings* CO2e(t)
1. If all islanders eat local 1 day / week	1,000
2. If all islanders eat 10% smaller portions	2,800
3. If all islanders eat dairy-free vegetarian 3 days / week	3,000
4. If all islanders eat only local and regional organic food	7,000
TOTAL (actual savings would be less, actions are not directly additive)	13,800

BC Ferries[4]

2007 GHG emissions from BC Ferries are estimated to be 10,700 tonnes, or 5.1% less than 2002 emissions, the last year for which we have data (EFS, 2004). The 2007 estimate will be revised when more accurate data are available. The Climate Action Plan suggests GHG emission reductions from BC Ferries as follows:

1,000 tonnes or 9% of total 2015 required savings
4,000 tonnes or 14% of total 2020 required savings

The following potential actions by BC Ferries to meet these targets are suggested for illustrative purposes only and highlight the difficulty of achieving the suggested GHG reduction targets without reducing ferry service:

SAMPLE ACTIONS TO MEET TARGETS	*Savings* CO2e(t)
1. If overall fleet fuel efficiency improved by 5%	533
2. If Queen of Nanaimo (Route 9) replaced with 25% more efficient ship	902
3. If 10% sailings from Route 4 (Fulford) shifted to Route 6 (Vesuvius)	395
4. If sailings on all routes reduced by 10%	1,070
5. If Queen of Nanaimo replaced with foot passenger ferry, est. 75% savings	2,705
TOTAL (actual savings would be less, actions are not directly additive)	5,605

Homes[5]

2007 baseline GHG emissions from residential energy use were 3,778 tonnes or only 5.4% of total island emissions. The amount is small because most of the energy used in island homes is electrical and BC Hydro emissions are very low due to the predominance of hydroelectric generation. However, as electricity increasingly replaces fossil fuel as an energy source in BC, it is important to use this limited green resource efficiently. New generation capacity comes at a cost; conserving electricity reduces the need for new power plants and helps to keep electricity rates low.

Wood is an important heat source for island homes; it is also a major source of local air pollution. The CEEI considers firewood to be almost carbon neutral. Whether or not heating with wood is carbon neutral is open to debate. There are many variables such as whether the wood was sustainably harvested from deadfalls, thinning and limbing, how much trucking was involved, the type of appliance and the temperature of the burn.

The Climate Action Plan calls for GHG emission reductions from island homes as follows:

500 tonnes or 5% of total 2015 required savings
1,000 tonnes or 4% of total 2020 required savings

The following actions to meet these targets are suggested for illustrative purposes only:

SAMPLE ACTIONS TO MEET TARGETS	*Savings* CO2e(t)
1. If islanders retrofit 1 in 5 homes for 20% savings / home	151
2. If all islanders conserve energy, average 5% savings / home	189
3. If islanders replace remaining oil furnaces with electric furnaces	671
4. If islanders retrofit 1 in 5 electrically heated homes with heat pump equipment	151
TOTAL (actual savings would be less, actions are not directly additive)	1,162

Businesses and institutions[6]

Included in this sector are small and large island businesses, schools, farms, churches, community centres, government buildings and ferry terminals. GHG emissions included here are from buildings and processing energy. 2007 baseline GHG emissions from electrical energy use were 660 tonnes or 1% of total island emissions. Heating oil and propane emissions for this sector are estimated to be about 106 Tonnes. Transportation emissions for this sector are included in the transportation section, above. The Climate Action Plan calls for GHG emission reductions from businesses and institutions as follows:

100 tonnes or 1% of total 2015 required savings
200 tonnes or 1% of total 2020 required savings

The following actions to meet these targets are suggested for illustrative purposes only:

SAMPLE ACTIONS TO MEET TARGETS	*Savings* CO2e(t)
1. If building and processing energy efficiency increased by 10% overall	77
2. If heating oil and propane equipment replaced with electric equipment	100
3. If electric heating and hot water replaced with heat pump equipment	77
TOTAL (actual savings would be less, actions are not directly additive)	254

Solid waste[7]

2007 baseline GHG emissions from solid waste (Hartland landfill) were 1,200 tonnes or 2% of total island emissions. These emissions are largely due to methane from anaerobic decomposition of food scraps. Backyard or central composting under aerobic conditions does not produce methane. The Climate Action Plan calls for GHG emission reductions from solid waste as follows:

100 tonnes or 1% of total 2015 required savings
400 tonnes or 1.5% of total 2020 required savings

The following actions to meet these targets are suggested for illustrative purposes only:

SAMPLE ACTIONS TO MEET TARGETS	*Savings* CO2e(t)
1. If 20% of remaining methane emissions collected at Hartland	240
2. If half of all compostables diverted to local compost	600
TOTAL (actual savings would be less, actions are not directly additive)	840

Local renewable energy[8]

Included in this sector are renewable energy projects of all sizes using sources such as solar thermal and solar electric, microhydro, tidal currents, wind power, co-generation using methane from waste treatment, and deep geothermal energy. District heating systems may be part of these projects. When local renewable energy displaces BC Hydro, emissions savings are small, but when it replaces fossil fuel, savings can be significant. The Climate Action Plan calls for GHG emission reductions from local renewable energy as follows:

400 tonnes or 1.5% of total 2020 required savings

The following actions to meet these targets are suggested for illustrative purposes only:

SAMPLE ACTIONS TO MEET TARGETS	*Savings* CO2e(t)
1. If biogas plant built for SSI solid or liquid waste, compressing and using the gas produced to fuel vehicles	480
2. If 100 solar water heaters installed @ 6 GJ ea	4
3. If 800 MWh/y produced from 70 microhydro sites	20
4. If solar district heating installed for 100 homes	39
5. If 500 @ 2 kW solar roofs installed, each producing 1000 kWh/y	12
TOTAL	555

Avoiding additional emissions

The previous paragraphs describe how existing emissions levels may be reduced. It is also necessary to consider how to avoid, or at least minimize, new emissions. New emissions on Salt Spring result primarily from population growth (see 3.3) and from land clearing for development. (see 4.9). Targets for avoided emissions have not yet been established, however one method would be to increase per capita target savings to accommodate anticipated growth. This was the approach taken in the 2005 Salt Spring Community Energy Strategy.

3.3 Impact of population growth

Assuming no change in settlement pattern trends, the population of Salt Spring Island is projected to grow over the next several decades. Relative to 2007, the population is expected to increase 6.8 percent by 2015, 12 percent by 2020, and 29 percent by 2036, the most distant year for which a forecast is made. These figures are extrapolations from BC Stats (Ministry of Citizens' Services) School District 64 projections.[9]

Population growth typically is accompanied by growth in consumption of resources and increased greenhouse gas emissions. Therefore climate action strategies designed to reduce overall emissions must also overcome the competing effects of population growth driving emissions upward. Worldwide each hour some 8,000 people are born in excess of those who die.

Salt Spring Island has a target of a 15 percent emissions reduction between 2007 and 2015, but this reduction must be achieved in the face of an expected 6.8 percent population increase, meaning that the per capita reduction target would need to be 20 percent, not 15 percent. Similarly, the 2020 community target of a 40 percent reduction translates to a 46 percent per capita reduction, and the 85 percent 2050 target to a 88 percent per capita reduction based upon a 2036 population forecast.

These discrepancies are magnified if targets are not met on time. For example, if the Salt Spring 2015 target were not met until 2020, a 24 percent per capita reduction would be required to achieve the 15 percent community emissions target. A 20 percent per capita reduction in 2020 would result in only a 10 percent total community emission reduction.

The challenge of reducing per capita emissions is exacerbated by several factors. First, there appears to be increasing gentrification of the island, with a 27 percent increase in average household income between the past two census reports.[9] Rising income levels are a strong predictor of increasing carbon footprints, including distance traveled.[10]

Gentrification may be somewhat offset by an aging population, as carbon footprint generally declines in older age groups although the in-house carbon budget of the elderly increases significantly.[11]

Also problematic is the projected growth in number of households (dwellings occupied as the usual place of residence) relative to population. The number of households per capita is expected to increase 13 percent over the 2007 level by 2015, that is, fewer people per occupied dwelling.[9] Consequently, inflation of housing infrastructure could add to the carbon burden that must be mitigated in reaching greenhouse gas targets. Also, a disproportionate increase is forecast for the 20 – 44 reproductive age-group, and the Canadian fertility rate has been rising.

3.4 Immediate priority actions for 2015

There is little time to achieve major infrastructural changes between now (2011) and 2015. The 2015 GHG reductions will therefore come primarily from behavioral changes at every level, from individual to institutional. Providing information and support for these changes will be essential.

Section 3.3 above identifies the target savings for each sector and shows how they might be achieved. Focusing only on those sectors where the greatest savings are required, and on those actions that provide the biggest savings and do not require major investment, the immediate priorities are as follows:

On-island Transportation

- Reduce vehicle kilometres travelled (VKT)
- Increase vehicle occupancy

Sample actions include:

- Islanders eliminate one trip in five;
- Islanders increase vehicle occupancy by one, every forth trip (assuming the extra passenger would have otherwise driven their own vehicle);
- Islanders increase vehicle performance through ”tune up and drive smart” measures.

Supporting measures for these actions (taken from 4.1) include expanded bus service, a Ride Share program, and promotion of web conferencing. Outreach to all sectors of the Salt Spring community will be needed to provide people with information about the ways and means to accomplish change. Examples might include promotion of the bus system, Car Stops and supporting fliers to augment the bus system, a Ride Share website to encourage ride sharing to island events and off-island destinations, and distribution of CRD Transportation Tune Up materials, which include “drive smart” tips such as proper tire inflation, no idling, and eliminating unnecessary cargo.

Food and Agriculture

- Dietary shift to less processed, more vegetarian food
- Dietary shift to more local and regional organic food

Sample actions include:

- Islanders eat local 1 day / week;
- Islanders eat 10% smaller portions;
- Islanders eat dairy-free vegetarian 3 days / week.

Supporting measures for these actions (taken from 4.2) include grocery store information and campaigns, actions to support local farmers, and actions to encourage backyard food production. Outreach to all sectors of the Salt Spring community will be needed to provide people with information about the ways and means to accomplish change. Examples might include the promotion of dairy-free vegetarian recipes through the food stores and in the local media, enhanced labelling of local and regional foods in the food stores, and promotion of local farmers’ markets.

Other Individual Actions

In addition to the above priorities are individual actions to reduce emissions not included in the community GHG emission targets.

- Reduce the number of long distance flights taken
- Reduce other high emission activities

Examples are given in Section 5; individual lifestyles vary considerably and determine specific high emission activities. An outreach initiative such as the revival of the “One Tonne Challenge”[12] in support of individual GHG reduction, including food and on-island transportation actions, will help raise community awareness and participation.

While the above actions are high priority for immediate implementation, it is important that work be undertaken on all sectors to achieve the targeted savings for 2015 and to lay the groundwork for the much larger challenge of meeting the 2020 targets.

4.0 CLIMATE ACTIONS BY SECTOR

The following pages present a summary list of measures organized by category as follows:

- on-island transportation;
- food and agriculture;
- homes;
- businesses and institutions;
- solid waste;
- water management, potable water and liquid waste;
- land use and conservation;
- BC Ferries;
- other marine traffic;
- local renewable energy;
- community outreach;
- governments and financing.

Target savings have been included for those sectors where GHG emission reductions have been allocated (see section 3).

The measures are a compilation of ideas from various sources, using the input from the community workshop held February 6, 2010 as a starting point. They also include items from the 2005 Salt Spring Energy Strategy, actions undertaken by other communities, consultants' recommendations, and comments received on the draft report. Most of the ideas were proposed by groups and individuals at Salt Spring workshops or in reports such as the Area Farm Plan. This community-led approach to climate action planning was pioneered on Salt Spring with the development of the 2005 Salt Spring Energy Strategy. The approach has since been adopted by other communities in the Islands Trust area.

The purpose of presenting these ideas is to illustrate the wide range of possible actions and to ensure that potential actions are recorded for future reference and possible implementation. Analysis to determine the effectiveness of a particular action will be needed prior to implementation. Some actions are less cost-effective and more difficult to implement than others. Major projects requiring much effort and capital expenditure should demonstrate equally significant GHG reductions. As the Climate Action Plan evolves, we anticipate this section will be revised to eliminate items already accomplished or found to be unviable, and to add new potential actions.

4.1 On-island Transportation

Gasoline and diesel vehicles are the largest direct source of GHG emissions on Salt Spring. In 2007 they were estimated to be responsible for 25,000 tonnes, or 36% of total island emissions. (Marine and flight emissions are described elsewhere). Reducing transportation emissions involves travelling less, carrying more people per vehicle, and substituting less polluting modes of transport such as electric vehicles and bicycles. A combination of these strategies will be key in reducing Salt Spring's greenhouse gas emissions.

On-island Transportation Actions *Target savings:*	5,000 tonnes or 47% of total 2015 required savings 13,000 tonnes or 46% of total 2020 required savings
Vehicle efficiency *Community ideas:* ➢ Drive less. ➢ Increase vehicle occupancy (ride-share, car stop, park'n ride). ➢ Encourage vehicle tune-ups and drive smart (no-idling, etc.). ➢ Encourage gas-guzzler vehicle replacement. ➢ Encourage motorcycle and scooter use. ➢ Encourage fuel switching to biodiesel. ➢ Establish car share cooperative. ➢ Explore pay-as-you-drive auto insurance.	*Electric vehicles* *Community ideas:* ➢ Raise awareness of plug-in hybrids options. ➢ Raise awareness of electric vehicle conversions. ➢ Establish a pilot electric vehicle fleet. ➢ Permit Neighbourhood Electric Vehicles (NEVs) in Ganges. ➢ Develop a charging infrastructure.
Salt Spring bus *Community ideas:* ➢ Establish a Sunday bus schedule. ➢ Establish a midday Fulford bus. ➢ Develop greater bicycle carrying capacity. ➢ Expand routes. ➢ Improve frequency of service. ➢ Provide more bus shelters. ➢ Post bus schedules at stops and elsewhere.	*Green fleets* *Community ideas:* ➢ Utilize Green Fleets BC program www.greenfleetsbc.com ➢ Utilize E3 Fleet Canada program (Energy, Environment, Excellence) www.e3fleet.com ➢ Improve School District 64 bus fleet as a model for others. ➢ Convert taxi fleets to electric or plug-in hybrids.
Bicycles *Community ideas:* ➢ Develop more bicycle lanes. ➢ Develop more off-road bicycle paths. ➢ Create more bicycle carrying capacity on Salt Spring bus. ➢ Develop bicycle sharing systems (white bicycles, etc.). ➢ Provide more bicycle racks.	*Pedestrian infrastructure* *Community ideas:* ➢ Complete Ganges Pathway network. ➢ Construct Ganges Hill pathway. ➢ Develop island network of pedestrian paths.
Parking *Community ideas:* ➢ Reduce parking spaces required for new projects. ➢ Establish parking lots on village perimeter. ➢ Develop a Park'n'ride system. ➢ Designate parking spaces for efficient small vehicles and provide incentives for use of Smart cars, NEVs etc. ➢ Consider parking fees to help fund transit and pathways.	*Business and educational travel* *Community ideas:* ➢ Develop ArtSpring videoconferencing facilities. ➢ Develop other videoconferencing venues. ➢ Encourage businesses to provide bus passes for employees and facilitate carpooling.
Settlement patterns *Community ideas:* ➢ Enable people to move closer to services, through densification of existing settled areas, especially existing villages.	*Vacation travel* *Community ideas:* ➢ Promote "Be a Tourist on SSI" for residents. ➢ Promote "Explore BC" for residents.

4.2 Food and Agriculture

Indirect GHG emissions from food are probably about 28,000 tonnes. A typical North American diet is responsible for energy and GHG emissions greater than operating a car. Energy is used to manufacture fertilizers, to operate farm machinery, and to transport, process and store food. Meat from intensive livestock operations has an especially high carbon footprint. Currently livestock consume one third of the world's grain crop, which might otherwise feed people directly. More climate-friendly animal products are those raised on feed unsuitable for human consumption and those, including wild fish and game, from ecosystems unsuitable for cropland. Replacing factory-farmed meat with other protein sources reduces the carbon footprint from food. A diet consisting of local and regional organically grown food, with an emphasis on vegetarian fare, contributes a fraction of the GHG emissions of a conventional diet. A simple change in eating habits can have a large impact on greenhouse gas emissions.

<table>
<tr><th colspan="2">Food and Agriculture Actions Target savings: 4,000 tonnes or 37% of total 2015 required savings
9,000 tonnes or 32% of total 2020 required savings</th></tr>
<tr><td colspan="2">Climate-friendly grocery shopping
Community ideas:
➢ Support the Tuesday and Saturday farmers' markets.
➢ Grocery store information campaigns to increase purchases of minimally-processed organic food and of local in-season and regional organic food.
➢ Encourage grocery stores to have a designated local and regional organic food section.
➢ Raise awareness about GHG impacts of conventional grain-fed beef and 'factory farm' animal products, imported processed and frozen foods, soft drinks and junk food.
➢ Promote transition to diets with increased vegetarian component, through celebrity community diet challenge and similar inspirational devices.
➢ Encourage bulk purchase of foods to reduce packaging.</td></tr>
<tr><td>Increase commercial local organic food production
Community ideas:
➢ Expand winter vegetable production.
➢ Expand production of high calorie crops (potatoes pulses, nuts, grains).
➢ Support small-scale poultry-rearing operations.
➢ Support ongoing professional development opportunities for commercial growers.
➢ Investigate biochar to increase soil fertility.</td><td>Increase non-commercial local organic food production
Community ideas:
➢ Encourage backyard food gardens.
➢ Back yard 'Victory Gardens' campaign and information.
➢ Provide community / allotment gardens.
➢ Develop a fruit harvest service for backyard orchards.
➢ Encourage edible public and private/strata landscaping.
➢ Promote compost education and backyard composting.
➢ Support efforts to encourage local, backyard chicken and egg production (Poultry Club)
➢ Expand school garden program for young gardeners.
➢ Develop permaculture education workshops.</td></tr>
<tr><td>Infrastructure for local growers
Community ideas:
➢ Develop a depot for expanded local organic produce distribution system.
➢ Develop a central composting facility to increase supply of local compost.
➢ Support a mobile abattoir to rebuild local livestock base for soil fertility and less GHG-intensive meat.
➢ Increase on-farm rainwater catchment and storage for summer irrigation.
➢ Support on-island food processing and storage.
➢ Create more agro-industrial zoning.
➢ Support a year-round local food indoor market.</td><td>Improve viability of local farms
Community ideas:
➢ Recognize carbon sequestration and storage value of small-scale organic and permaculture farming systems.
➢ Enable farmworkers to live on/adjacent to the land.
➢ Increase tenure options, create innovative zoning to allow several families to live on one farm
➢ Permit value-added farm uses (e.g. portable sawmill).
➢ Clarify/simplify permitting requirements for hoophouses/greenhouses.
➢ Link landowners with farmers without land.</td></tr>
<tr><td>Protect farmland
Community ideas:
➢ Increase agricultural land under community ownership (Farmland Trust).
➢ Ensure agricultural lands in provincial parks are protected for agriculture.
➢ Maintain policy of 'no net loss' of agricultural land.
➢ Discourage non-food uses of agricultural land.</td><td>Wild-harvesting from land and sea
Community ideas:
➢ Support the sustainable harvest of local fish and seafood.
➢ Support the harvest of feral rabbits to reduce damage to ecosystems and crops and to provide food.
➢ Support the sustainable harvest of deer to reduce damage to ecosystems and crops and to provide food.</td></tr>
</table>

4.3 Homes

Electrically-heated Salt Spring homes are responsible for fewer GHG emissions than homes in communities where natural gas is available for space heating and hot water. BC's electricity is largely hydro-generated and has far fewer GHG emissions than fossil-fuel-generated electricity. Home energy consumption can be reduced through lifestyle changes, appliance replacement, and energy retrofits. Older homes are far less energy efficient than homes built to current Building Code standards, but it is preferable in terms of embedded energy to retrofit rather than demolish an existing house. Where energy-efficient new construction is planned, small homes and attached homes have smaller carbon footprints than large homes and detached homes. Location is also important in determining overall carbon footprint; homes within walking distance of services are preferable to homes where the occupants must rely on automobiles.

Homes *Target savings:*	**500 tonnes or 5% of total 2015 required savings 1,000 tonnes or 4% of total 2020 required savings**
Existing homes—low cost changes *Community ideas:* ➢ Provide information, education, challenges, 'Switch it off'. ➢ Promote LED lighting, power bars to reduce phantom loads. ➢ Subsidize low-flow showerheads and faucet aerators. ➢ Promote thermostat set-backs. ➢ Raise awareness of shrink-wrap window film, draft proofing. ➢ Promote 3-Rs (reduce, reuse, recycle) and composting. ➢ Encourage cold water wash and other hot water saving measures. ➢ Encourage the use of clothes lines rather than dryers.	*Existing homes—energy retrofits* *Community ideas:* ➢ Promote EcoEnergy and LiveSmart BC home retrofit program. ➢ Encourage mandatory EGH labelling of resale homes. ➢ Promote the Sustainability Checklist. ➢ Increase occupancy of efficient, retrofitted dwellings by permitting secondary suites in efficient homes, subject to safety and site servicing requirements. ➢ Encourage building materials suppliers to explain correct use of retrofit products to homeowners. ➢ Encourage renovation over new construction. ➢ Encourage use of Air Source Heat Pumps and ductless Air Source Heat Pumps.
Cleaner wood-burning appliances *Community ideas:* ➢ Provide 'Burn it Smart' workshops and information. ➢ Promote and/or subsidize a woodstove and fireplace change-out program. ➢ Promote burning of dry wood. ➢ Request VIHA mobile nephelometer/GPS air quality scans during burning season.	*Existing low-income seniors' and supported living housing* *Community ideas:* ➢ Distribute Information to housing providers and building managers. ➢ Promote Affordable Warmth BC from City Green for landlords and tenants www.citygreen.ca ➢ Utilize BC Housing Endowment Fund.
New homes—clustered in or near villages *Community ideas:* ➢ Promote information, education on the benefits of attached dwellings close to services. ➢ Support energy efficient building strata applications. ➢ Support applications for seniors' and Abbeyfield attached building complexes. ➢ Support innovative clustered energy-efficient co-housing, co-op housing, and agricultural hamlets. ➢ Support an ecovillage model expanded to an existing neighbourhood—set up a prototype neighborhood based on fundamental permaculture principles.	*New homes—smaller and net zero (or near net zero)* *Community ideas:* ➢ Encourage use of labelling and voluntary green building standards. ➢ Promote information, education on the benefits of small, near-net-zero homes. ➢ Make the Sustainability Checklist mandatory. ➢ Distribute technical information for designers and builders.
Construction materials—reduce embodied energy *Community ideas:* ➢ Educate re: alternatives to Portland cement. ➢ Promote use of local and natural building materials. ➢ Promote use of products with recycled content, and recyclable products. ➢ Support a building materials Reuse Store.	*Gardens* *Community ideas:* ➢ Convert lawns to vegetable gardens. ➢ Replace gas lawn mowers with electric or push mowers. ➢ Allow lawn to grow longer.

4.4 Businesses and Institutions

Salt Spring's larger institutions are mandated under provincial legislation to be carbon neutral. They already have GHG reduction plans in place and can be role models for island businesses. Buildings can become climate-friendly through energy audits and retrofits, and businesses can assess all aspects of their operations, from purchasing decisions to transportation, for climate impact.

Ideas for the tourist industry are included as a subset because tourism impacts Salt Spring's energy use and emissions, along with its economy. A green, climate-friendly tourist industry can assist in meeting GHG reduction targets while creating a market for Salt Spring artisans and businesses.

<table>
<tr><th colspan="2">Businesses and Institutions Target savings: 100 tonnes or 1% of total 2015 required savings
200 tonnes or 0.5% of total 2020 required savings</th></tr>
<tr><td>Environmental awareness
Community ideas:
➢ Promote the Chamber of Commerce green accommodations program.
➢ Support the development of similar programs for island restaurants, retailers, realtors, etc.
➢ Use local business concerns such as recycling and waste management as opportunities to promote environmental awareness.
➢ Provide information about the Natural Step and other models for business.
➢ Encourage retailers to stock and promote climate-friendly products through bulk purchase, labelling, and customer rebates.</td><td>Information sharing
Community ideas:
➢ Encourage networking and information sharing, especially between large institutions under provincial mandate to be carbon-neutral and smaller businesses and institutions.
➢ Provide a forum for carbon-neutral local institutions to share information with local businesses.
➢ Promote local champions.
➢ Provide information about measures undertaken by similar organizations elsewhere.</td></tr>
<tr><td>Technical support
Community ideas:
➢ Provide technical support for energy audits and building retrofits.
➢ Provide technical support for transportation analysis.
➢ Provide information about BC Hydro, federal, provincial and regional technical support programs and incentives.
➢ Help churches and community halls develop energy and climate action plans.</td><td>Net-zero new buildings
Community ideas:
➢ Make net-zero or carbon-neutral a requirement for development approvals.
➢ Require publicly-funded buildings to meet recognized performance standards such as LEED Platinum.
➢ Use regulatory tools such as DPAs and amenity zoning to reward net-zero and carbon-neutral proposals.
➢ Introduce a Sustainability Checklist for non-residential buildings with a scoring system to assist developers in meeting high environmental standards.</td></tr>
<tr><td colspan="2">Tourism
Community ideas:
➢ Market Salt Spring as a green, climate-friendly tourist destination.
➢ Market primarily to people in BC and Washington State to reduce travel distance.
➢ Promote fossil-fuel-free tourist activities such as hiking, cycling, kayaking.
➢ Make it easier for tourists to "leave your car at home".
➢ Promote the Salt Spring bus, for example include bus tickets with hotel and B&B package.
➢ Promote local restaurants that feature local food in their menus.
➢ Promote low-impact agricultural tourism.
➢ Provide workshops and other educational opportunities on environmental topics catered to tourists.
➢ Encourage the Green Accommodations group and other accommodation providers to adopt a "continuous improvement" green performance model and reward high achievers.</td></tr>
</table>

4.5 Solid waste

Solid waste involves fossil fuel energy use for collection and transportation to landfill. Landfill sites generate significant quantities of methane, a potent GHG. Even when landfill gas is collected, as it is at Hartland, the collection system does not capture all methane. Reducing the amount of waste reduces GHG emissions. Outdoor burning produces particulate matter which contributes to global warming.

Solid waste *Target savings:*	**100 tonnes or 1% of total 2015 required savings** **400 tonnes or 1% of total 2020 required savings**
Organic waste diversion *Community ideas:* ➢ Educate the public in garden composting. ➢ Support a central community composting facility for both yard waste and food scraps. ➢ Provide information about organic waste diversion options to households and businesses. ➢ Encourage the use of alternatives to outdoor burning.	*Capture methane from solid waste* *Community ideas:* ➢ Generate biogas from biosolids, including human and animal waste and from other organic waste such as kitchen scraps. (see renewable energy, below) ➢ Increase collection of methane at Hartland landfill.
Waste reduction *Community ideas:* ➢ Promote reduction in packaging of commercial goods. ➢ Promote the use of reuseable shopping bags. ➢ Discourage advertising flyers and junk mail.	*Waste reuse* *Community ideas:* ➢ Create a reuse store for used building materials. ➢ Develop a glass-crushing facility. ➢ Encourage use of cardboard for garden mulch.
Household recycling *Community ideas:* ➢ Promote recycling. ➢ Increase types of materials accepted at Rainbow Road Recycling Centre. ➢ Encourage domestic recycling of soft plastics through the mobile recycling service.	*Business recycling services* *Community ideas:* ➢ Provide information about recycling services for businesses. ➢ Revisit business recycling of acceptable materials through the SSI recycling centre. ➢ Encourage business recycling of soft plastics through the mobile recycling service. ➢ Promote local champions.

4.6 Water management, potable water and liquid waste

Water supply in the Gulf Islands is expected to be negatively impacted by climate change. Decreased summer rainfall combined with increased temperatures will affect both water quantity and water quality. Expanding local food production will increase demands for irrigation water. Measures to reduce potable water use and the emissions associated with heating it are included elsewhere. This section includes those aspects of water and liquid waste management not included in other sections. Water management planning now may avoid future GHG emissions from large-scale and long-distance trucking and/or pumping of potable water.

Water management, potable water and liquid waste	
Water management *Community ideas:* ➢ Complete mapping of surface water streams and groundwater reserves. ➢ Prepare integrated rainwater management plan for the island. ➢ Require rainwater catchment for new construction. ➢ Encourage rainwater catchment for existing homes. ➢ Encourage the construction of irrigation ponds and reservoirs. ➢ Discourage excessive draw-down of groundwater.	*Potable water* *Community ideas:* ➢ Encourage each water district to adopt a comprehensive demand management program, including: - progressive rate structures to reward water conservation; - reduced losses from delivery infrastructure; - supply of water-conserving fixtures to customers at reduced cost; - upgraded pumping and water treatment for increased energy efficiency and decreased chemical use; - encouraging the use of greywater and other non-potable water for toilet flushing.
Liquid waste *Community ideas:* ➢ Treat and recycle biosolids from Burgoyne liquid waste facility on island. ➢ Investigate the feasibility of installing a biogas generator at Burgoyne ➢ Undertake the proposed composting pilot demonstration at Burgoyne. ➢ Encourage the use of composting toilets island-wide.	

4.7 Land use and conservation

Forests and other natural environments absorb carbon dioxide from the air, slowing climate change. When land is cleared and burned, huge amounts of stored carbon may be released back into the air. Conservation of trees and other wild species preserves the function of natural carbon sinks, but conservation of climate-stressed environments is a challenge. Yet another future challenge is preparation for rising sea levels caused by the melting of ice sheets.

A growing population can result in an increase in land clearing for development of housing, businesses, roads, driveways, parking areas, lawns, patios, septic fields, quarries, and other uses. Clearing of vegetation and soil not only releases stored carbon but also reduces the capacity of the land to store carbon, increasing greenhouse gas levels in the atmosphere.

Carbon stocks (stored carbon) within forested land typical of Salt Spring Island may amount to the equivalent of 100 or more kilograms of carbon dioxide per square metre, and old growth forests may store several times that amount. A portion of this carbon is in commercial stem wood of trees, but more than half may reside in soil, shrubs, herbs, moss, ferns, woody debris, roots, branches, etc. Some carbon stocks may survive logging in commercial wood products, but land clearing results in emissions from machinery, fuel, transport, wood processing, slash-burning, soil destruction, and replacement land uses. Also, the destruction of vegetation and soil impairs the ability of the land to continue to remove carbon from the atmosphere through photosynthesis. See Appendix D.

To illustrate the large immediate impact of forest land clearing, the stored CO2 released by the development of one house plus driveway and garage totalling 1,000 m2 on Salt Spring Island could be in the order of 50 tonnes or more if significant burning occurred. The additional annual loss in carbon sequestration, might amount to as much as a fifth of a tonne for as long as the house and driveway remain. Over one hundred years, the climate cost of the land clearing could be as much as 70 tonnes of CO2. This does not include the climate cost of operating the home, or of producing the materials used to build it.

<table>
<tr><th colspan="2">Land use and conservation</th></tr>
<tr><td>Educate landowners regarding ecosystem carbon sequestration
Community ideas:
➢ Promote and distribute Sustainability Checklist and Newcomers' Guide.
➢ Fund conservation outreach programs to landowners, developers, and realtors.
➢ Support SSI Conservancy Stewards-in-Training and other school programs.
➢ Develop a carbon cycle module as a priority in the Stewards-in-Training program.
➢ Support SSI Conservancy landowner stewardship visitation program.
➢ Use neighbourhood mapping to engage and inform.</td><td>Encourage densification of existing settled areas, especially in existing villages.
Community ideas:
➢ Encourage transfer of residential densities and permit secondary suites and cottages in villages and existing settled areas.
➢ Simplify and encourage density transfer.
➢ Encourage resource-efficient multifamily and three storey development in Ganges.
➢ Encourage resource-efficient infill in existing residential neighbourhoods.
➢ Encourage district energy systems as part of redevelopment and densification of existing neighbourhoods.
➢ Discourage low density subdivisions.</td></tr>
<tr><td>Provide tax incentives for conservation
Community ideas:
➢ Simplify and promote Islands Trust Natural Area Protection Tax Exemption Program (NAPTEP).
➢ Include carbon sequestration within NAPTEP.
➢ Fund incentives through offset purchases where appropriate.</td><td>Increase targets and monitoring for protected areas
Community ideas:
➢ Protect 50% of island as park, reserve, covenant, or stewardship agreement.
➢ Establish targets for "carbon buffer areas" and reforestation.
➢ Develop a monitoring/management plan for climate-stressed forests.</td></tr>
<tr><td>Use regulatory tools to manage tree-cutting and land-clearing
Community ideas:
➢ Establish environmental Development Permit Areas (DPAs) for ecological services, including carbon sequestration and storage.
➢ Develop tree-cutting bylaw.
➢ Enforce infractions and Natural Area Protection Tax Exemption Program (NAPTEP) covenants.
➢ Strengthen existing DPAs.</td><td>Increase resources for wildfire protection
Community ideas:
➢ Increase restrictions on outdoor burning.
➢ Promote awareness of alternatives to burning.
➢ Support enhanced Emergency Preparedness Program.
➢ Monitor and manage climate-stressed forests for fire suppression.
➢ Support controlled burns and mechanical thinning where appropriate to minimize net carbon emissions.</td></tr>
<tr><td colspan="2">Plan for sea level rise and flooding
Community ideas:
➢ Prohibit new building on areas most vulnerable to sea level rise and storm surges.
➢ Map vulnerable settlements and implement Green Shores principles in land use planning.
➢ Develop budgets for protective and remedial measures.
➢ Require timely preparation and decontamination of backshore for anticipated surges and flooding.</td></tr>
</table>

4.8 BC Ferries

2007 GHG emissions from BC Ferries are estimated to be 10,700 tonnes, 15% of total island emissions. This relatively high percentage points out the climate cost of our island lifestyle. Reducing these emissions without reducing service will be challenging.

BC Ferries	*Target savings:*	**1,000 tonnes or 9% of total 2015 required savings** **4,000 tonnes or 14% of total 2020 required savings**
Work with BC Ferries to reduce emissions *Community ideas:* ➢ Request BC Ferries provide fuel and emissions data for Salt Spring inventory. ➢ Encourage BC Ferries to adopt GHG reduction strategies. ➢ Negotiate generator shut-down and use of on-shore power during ferry layovers at Salt Spring. ➢ Consider foot passenger ferries to replace some car ferry sailings. ➢ Replace Queen of Nanaimo (Route 9) with more efficient ship (Ferry Advisory Committee Route 5 option). ➢ Consider lower-carbon-fuel (such as natural gas) mixing and substitution technologies.		

4.9 Other Marine Traffic

GHG emissions from float planes and pleasure craft have not yet been estimated.

Other marine traffic	
Float planes *Community ideas:* ➢ Evaluate and publicize GHG impact of float plane travel versus ferry travel.	*Pleasure boats* *Community ideas:* ➢ Encourage sailing, kayaking and rowing in preference to power boat use.

4.10 Local renewable energy

Included in this sector are renewable energy projects of all sizes using sources such as solar thermal and solar electric, micro hydro, tidal currents, wind power, co-generation using methane from waste treatment, and deep geothermal energy. District heating systems may be part of these projects. When local renewable energy displaces BC Hydro, emissions savings are small, but when it replaces fossil fuel, savings can be significant. The development of local energy systems also reduces community dependence on imported energy.

Local renewable energy	*Target savings:*	**400 tonnes or 1% of total 2020 required savings**
Solar hot water *Community ideas:* ➢ Provide information about SHW funding programs; target hotels, B&Bs and other high use applications. ➢ Organize buying circles for bulk discounts. ➢ Support Federal/Provincial financial incentives for SHW systems ➢ Assess potential of seasonal storage for district heating systems, in conjunction with heat pump technology.		*Solar electric (PV) systems, micro hydro and wind* *Community ideas:* ➢ Encourage energy conservation measures as a prerequisite to installing renewable energy systems. ➢ Promote local renewable energy systems through eco-tours and workshops. ➢ Provide information about renewable energy funding programs. ➢ Provide information about net metering.
Methane from waste *Community ideas:* ➢ Generate biogas from biosolids, including human and animal waste and from other organic waste such as kitchen scraps.		*Harness the tides and deep geothermal energy* *Community ideas:* ➢ Investigate the potential for tidal current power generation in Sansum Narrows, through partnership with U Vic or other institutions. ➢ Investigate the potential for deep geothermal energy, through partnership with U Vic or other institutions.

4.11 Community outreach

Community group initiatives, sustainability education, and personal lifestyle decisions are vital components of transition to a climate-friendly community. Strong community networks to spread information and provide support for GHG reduction projects are a necessary part of a successful climate action plan. There are other benefits to most GHG reduction measures. Depending on the measure, these benefits may include cost savings, local job opportunities and economic development, improved air quality, healthier lifestyles, protection of natural values and water resources, wildfire prevention, and tastier food. These side benefits will assist in obtaining community support.

Community outreach

Support Transition Salt Spring and other community outreach activities

Community ideas:

- Create 'Transition Island' or similar roadside signage, logo use and promotion at community events, 'branding'.
- Create slogans like "15% less by 2015".
- Network with all island groups, identify common goals.
- Bring back the Salt Spring "One Tonne Challenge".
- Develop more Energy Circles, Climate Action Circles, neighbourhood groups.
- Develop awareness raising projects: "SSI-Nut Capital of Canada".
- Promote climate action information and promotion at public events.
- Implement grass-roots actions.
- Support inner transition and elder wisdom circles.

Promote a culture of less is more

Community ideas:

- Encourage less overall consumption of resources.
- Encourage sharing of resources from those that have to those that need.
- Encourage interdependence and interaction.
- Encourage a re-localizing lifestyle generally and not just food.
- Provide information on how to reduce personal GHG footprint now and in the future.

Support climate action programs in schools

Community ideas:

- Request more nature immersion activities.
- Support Stewards in Training program of the SSI Conservancy.
- Use BC Greenschools teaching material.
- Support SD 64 Carbon Neutral Action Program.

4.12 Governments and financing

Government policies and the availability of public and private financing affect the ability of a community to implement many actions necessary to reduce GHG emissions.

Governments and financing

Encourage all levels of government to implement policies and programs that support GHG reductions

Community ideas:

- Encourage CRD and Islands Trust (IT), elected representatives and staff, to take an ongoing active role in implementing the Climate Action Plan.
- Use any available funds from CRD Parks levy to support SSI parks acquisition.
- Encourage CRD and IT new requisitions to support climate action.
- Make climate change action mandatory for new publicly funded projects supported by tax levy.
- Investigate use of local government green bonds or debentures to fund capital projects.
- Use any available gas tax funding for climate actions.
- Assist private and NGO sectors in accessing federal and provincial funds, e.g., EcoENERGY, infrastructure grants, etc.
- Encourage a Provincial plan to fund GHG reduction initiatives.

Develop community financing programs

Community ideas:

- Develop a local voluntary carbon offset fund to receive payments from individuals, businesses and institutions and use funds for local projects with measurable GHG benefits.
- Develop a local green business coop to provide loans to members.
- Utilize the Grameen Bank model to provide local farmers and green entrepreneurs with small loans.
- Create a Green investors club to share information about local green investment opportunities.
- Create a local green power utility and/or Energy Service Company to invest in conservation and renewable energy projects, financed from value of energy savings or power produced.
- Create a Green Bond fund, earmarked for local projects and administered by a Bank or Credit Union.

5.0 CLIMATE ACTION PLAN FOR INDIVIDUALS AND FAMILIES

5.1 Individual actions can extend beyond community targets

The choices made by individual citizens can collectively have a large influence on global climate change mitigation, and these choices can extend beyond Salt Spring community targets. In fact the community emissions inventory tracks only a limited range of emissions sources. Other purchasing habits and lifestyle decisions of individuals can also significantly minimize the personal carbon footprint.

5.2 Immediate action

The following examples include many low-cost personal choices that will benefit the climate and that can be implemented immediately by Salt Spring Island individuals and families.

Transportation

- ❑ Reducing recreational travel, vacation locally.
- ❑ Reducing travel overall.
- ❑ Teleconferencing and web conferencing in place of travel.
- ❑ Walking, cycling, and use of public transit in preference to use of cars.
- ❑ Combining trips and ride-sharing.

Food

- ❑ Including more vegetarian and local organic food in the diet.
- ❑ Selecting local and regional organic or grass-fed meat and dairy products.
- ❑ Raising vegetables organically at home.
- ❑ Reducing consumption of highly-processed and highly-packaged foods.

Home

- ❑ Using the recycling centre and recycle more items.
- ❑ Reducing consumption (and saving money) by eliminating some discretionary purchases.
- ❑ Minimizing outdoor wood burning.
- ❑ Conserving native plants and soils.
- ❑ Selecting the most energy-efficient appliances when purchasing.
- ❑ Retrofitting homes for energy savings when renovating.

Other

- ❑ Kayaking, rowing, and sailing in preference to power-boating.
- ❑ Choosing pets that eat low carbon diets (e.g. garden produce and/or table scraps).
- ❑ Planting trees on deforested lands.
- ❑ Recognizing the significant GHG emissions associated with large families.

5.3 Prioritizing actions

Personal climate actions should emphasize the greatest result within the particular life circumstances of the individual. It is pointless to engage in activities that are disruptive, expensive, and time consuming, yet that yield only a small benefit. The use of a carbon calculator and examination of the examples given below can assist in prioritizing personal climate actions.

5.4 Legacy of lifestyle choices

Some actions can have an immediate effect, such as altering driving habits. Other decisions involve long term commitments that may be difficult to reverse, such as buying a particular type of vehicle or building a large house. Long term decisions require careful reflection.

5.5 Integrated planning

Personal climate action should form an integrated annual plan rather than selection of a few arbitrary elements without regard to total lifestyle impact. Emissions from unplanned activities such as spur-of-the-moment overseas flights can quickly nullify the best intentions of other carbon-conserving attempts. Development of annual family goals can facilitate long term planning for climate action including expensive transitions such as appliance or insulation upgrades.

5.6 Setting personal targets and keeping on track

It is well worth developing a log of some family energy measures, such as annual kilowatt hour usage, annual gasoline purchases, kilometres driven, number of meals containing red meat from non-local sources, etc. This information provides a baseline from which to set targets and tally success. Targets should be achievable and creative, for example planning an increase in vegetarian meals, reducing the number of car trips to town, and exploration of local attractions in lieu of a distant vacation.

Table 3: Examples of the long-term carbon legacy of personal decisions
Notes to Table 3 are provided in Appendix A.

Decision	*Approximate carbon dioxide equivalent emissions savings (tonnes)*
Have one less child – emission savings calculated for 100 year period, assuming 85% GHG emission reductions by 2050 and 100% reduction by 2100. [1]	**550**
Preserve a 2.5 acre plot of forested land for ten years rather than burn/clear.[2]	**230**
Recycle magazines, newspaper, glass, plastic, aluminum, and steel cans for ten years (family of three).[3]	**7.8**
Replace 20 100-Watt incandescent bulbs with energy-efficient lights for ten years.[4]	**1.26**
Eliminate (conventional) red meat from the diet three days per week for ten years.[5]	**7.7**
Feed one less dog for ten years.[6]	**5.0**
Build 1000-square-foot house rather than 4000 square foot house.[7]	**69.7**
Renovate rather than build an average house.[8]	**35**
Cycle rather than drive a subcompact gasoline car ten km per day for ten years.[9]	**3**
Drive a subcompact gasoline car rather than a pickup truck 13,000 km/year for ten years.[9]	**15**
Drive an electric car rather than a subcompact gasoline car 13,000 km/year for ten years.[9]	**21**
Ride SSI buses rather than single occupancy subcompact gasoline car 13,000 km/year for ten years.[9]	**14**
Forgo five annual ferry trips (return) Salt Spring—Vancouver for ten years.[10]	**1**
Forgo cruising 200 sea miles/year for ten years in a 36-foot sailboat (motoring 25 percent of the time) (fuel costs only).[11]	**1**
Forgo cruising 200 sea miles/year for ten years in a 36-foot twin-engine power boat @10 knots (fuel costs only).[12]	**20**
Forgo making one economy class return trip Vancouver -- London annually for ten years.[13]	**10**
Avoid purchasing an extra vehicle.[14]	**4—6**

Table 4: Examples of Single-day Emissions Savings
Notes to Table 3 are provided in Appendix A.

Activity	*Emissions savings (Kilograms CO2e)*
Avoid one 30 km round trip into Ganges in subcompact car.[15]	**5**
Avoid one 30 km round trip into Ganges in a truck.[15]	**8.6**
Avoid one round trip on ferry to Vancouver.[16]	**20**
Hang clothes to dry rather than use electric dryer.[17]	**.07**
Eat vegetables, grains, nuts, and fruit rather than red meat.[18]	**7.5**
Avoid one way economy class flight Vancouver to Mexico.[19]	**300**
Avoid 10 sea mile motor yacht trip.[20]	**100**

6.0 IMPLEMENTATION AND EVOLUTION OF THE PLAN

The Salt Spring Island Climate Action Plan is not a static document but is intended to be a living framework and guide that adapts and evolves to meet changing conditions and new opportunities. The Salt Spring Island Climate Action Council (CAC) is the community body with the mandate to coordinate the implementation of the plan. The CAC is a non-profit society with membership consisting of representatives from a broad range of island organizations, including the Islands Trust and CRD, and interested members of the public. With legislated targets in place until 2050, the CAC clearly has a long-term mandate to ensure that the community fulfills its GHG reduction targets.

6.1 Timelines

It is anticipated that the Climate Action Plan will be reviewed and amended on a regular basis by the Climate Action Council as part of the process of implementing the plan. Experience with the Salt Spring Community Energy Strategy suggests that energy and emissions data be reviewed about every three years to provide feedback on trends. The Province has indicated that CEEIs will be updated every two years, beginning with 2010, with the first update available in 2011. The timelines below provide a framework for planning purposes.

2002 Salt Spring Community Energy Strategy baseline year

2005 Salt Spring Community Energy Strategy launched

2007 Climate Action Plan Baseline Energy and Emissions Inventory year

2010 Salt Spring Community Energy Strategy baseline update

2011 Climate Action Plan First Edition

2012 Salt Spring Community Energy Strategy completed

2013 Emissions Inventory and Climate Action Plan Updates

2015 First Target Year, 15% reduction over 2007

2016 Emissions Inventory and Climate Action Plan Updates (includes 2050 targets)

2019 Emissions Inventory and Climate Action Plan Updates

2020 Second Target Year, 40% reduction over 2007

2021 Emissions Inventory and Climate Action Plan Updates

… Emissions Inventory and Climate Action Plan Updates continue…

2050 Third Target Year, 85% reduction over 2007

6.2 Community interests

A large proportion of Salt Spring emissions result from choices made by individuals. Providing the information, motivation and tools to support and quicken the cultural shifts already underway is the challenge. Networking with existing community groups to identify common interests and areas for cooperation will be key to successful implementation. For example, Transition Salt Spring, the local embodiment of the international Transition Town movement, is already beginning this outreach. The Transition Salt Spring mandate, while broader than the CAC mandate, has a strong interest in implementing many of the proposed climate actions at a grass-roots level. The Transportation Commission and Island Pathways both share several Climate Action Plan objectives. The Salt Spring Island Agricultural Alliance is mandated to implement the local Area Farm Plan, which has as a key objective increased local food production, an essential part of the Climate Action Plan. Each of these organisations has representatives participating in the development of the Climate Action Plan and will be assisting with implementation.

Many climate actions meet other community objectives. For example, reduced use of fossil fuel for transportation improves local air quality and provides cost savings. The CEEI estimates about 8.9 million litres of gasoline were used on Salt Spring in 2007. If the average price per litre was $1.10, the cost of gasoline was about $9.8 million. Reducing this amount by one fifth would save islanders almost $2

million per year. More production and consumption of local organic food would improve food security and the local agricultural economy. Health benefits would likely result from better local air quality, coupled with less automobile reliance, safer pedestrian infrastructure and a healthier diet. An island with excellent walking and bicycling amenities with a wealth of local food and vibrant small farms will assist in building a climate-friendly tourist industry. The following local agencies and organizations, perhaps among others, have a direct interest in actions proposed in this plan:

Salt Spring Island Climate Action Council
Capital Regional District
Islands Trust
Salt Spring Island Agricultural Alliance
Salt Spring Island Chamber of Commerce
Salt Spring Island Conservancy
Salt Spring Island Fire Protection District
Salt Spring Island Transportation Commission
Salt Spring Island Water Council
Earth Festival Society
Institute for Sustainability, Education and Action (I-SEA)
Island Natural Growers
Island Pathways
Transition Salt Spring

6.3 Community Engagement

A fully engaged community is the key to success in dealing with climate change. The Climate Action Council will support a community-wide public engagement campaign to educate, inspire and offer some of the most cost-effective, healthy and easy solutions.

The Climate Action Council's objective for community engagement is to motivate Salt Spring residents and businesses to change their behaviour in ways that reduce carbon emissions. A successful community engagement campaign must tie together existing efforts, develop new initiatives and forge a partnership between government and the community. Reaching this objective will require cooperation among all levels of governments, neighbourhoods, schools, non-profit organizations, faith communities, businesses, and civic organizations, as well as many individual community members.

6.4 Implementation and funding

Salt Spring is well positioned to implement an ambitious Climate Action Plan with sizeable targets. The community has baseline data and several years of tracking for some key indicators. It has had a Community Energy Strategy, and energy and GHG reduction targets in place since 2005. Preliminary data suggest that 2012 emission reduction targets will be met. Salt Spring is ready to move forward to the next phase.

Public policy, particularly at a provincial level, supports GHG reduction measures. Mandated provincial requirements, such as the inclusion of GHG reduction targets in Official Community Plans and the carbon-neutral operation of public institutions, assist communities in meeting GHG reduction objectives. Resources to assist communities in meeting climate action objectives are available. While not certain, it seems likely that expectations, requirements and support for climate action at the community level from higher levels of government will continue to increase. However funding delays are to be expected, especially in a time of shrinking budgets and increased responsibilities for local levels of government. For example, the expansion of the Salt Spring bus system to include Sunday and holiday service is currently waiting for provincial funding. It will be essential to secure ongoing funding support for the Climate Action Council's crucial work to coordinate the ongoing implementation of the Climate Action Plan. Funding will also be needed from time to time for special community projects.

6.5 New technology

Deployment of new technology is unlikely to have much impact in terms of 2015 targets, but is anticipated to affect 2020 targets. The largest impact is expected to come from the introduction of

electric vehicles by the major manufacturers. Electric vehicle fleets are being introduced to the Lower Mainland and Vancouver Island in 2011, with cars scheduled for private purchase the following year.[1] It is possible that by 2020 the majority of late model light vehicles registered on Salt Spring will be electric. Replacement of one in ten light vehicles with electric vehicles would result in a 2,000 tonne reduction of GHG emissions (see section 3.2). This amount represents about 7% of the total savings required by 2020.

Communications technology is likely to assist in the reduction of transportation emissions by providing web conferencing and on-line learning facilities. Greater availability of unducted air source heat pumps for retrofit of electrically heated homes is expected, along with wider deployment of heat pump domestic water heaters. Solar electric systems and solar water heaters are expected to become more mainstream. Other technology developments are far more speculative.

All things considered, new technology is expected to contribute little to meeting 2015 targets. By 2020 new technology may be expected to contribute perhaps between 5% and 10% of the required savings. It is clear that the majority of savings must come from elsewhere.

6.6 Regulatory opportunities

The Salt Spring OCP, section *A.6 Climate Change and Energy Efficiency*, provides climate change policies. Climate change priorities for land use planning on Salt Spring include the densification of existing built up areas, especially Ganges Village, and the protection of forested land from development.[2] Providing more opportunities for people to live in Ganges enables reduced automobile use and more energy efficient building forms such as attached dwelling units. Compact development also opens the opportunity for district heating and energy systems such as solar assisted ground source heat pumps. Legalization of secondary suites to reduce the number of dwelling units occupied by a single person or couple enables per capita energy savings. Protection of forested land and minimizing the areas of forest cut for development is essential to prevent loss of existing ecosystem services of carbon capture and storage.

The ongoing revisions to Salt Spring's Land Use Bylaw and Development Permit Area provisions provide a good opportunity to make regulatory change to support the construction of more attached dwelling units, including apartments, in Ganges, and to discourage fragmentation of Salt Spring's forested rural areas.

7.0 TRACKING PROGRESS

How well are we doing? Knowing the answer to this question is essential to ensuring that targets are met. But the process of obtaining and analysing data can stretch limited resources. Finding the right balance between too much focus on data versus having insufficient information is the challenge. It will be helpful if the provincial CEEI (Community Energy and Emissions Inventory) community report is updated regularly and continues to be provided at no cost.[1] The CEEI report does not cover all the sectors included in the Salt Spring Island Climate Action Plan. For example, estimates of emissions from BC Ferries and other marine traffic, and indirect emissions from food have to be gathered from other sources. It is essential that the community find and dedicate funds to track and evaluate progress.

7.1 Existing data sources

For the Salt Spring Island Community Energy Strategy, annual aggregated electrical consumption information has been provided by BC Hydro. The number of registered vehicles by age and class as of June and December of each year has been provided by ICBC. Annual ferry traffic data has been provided by BC Ferries. The number and type of building permits issued has been provided by the CRD Salt Spring Building Inspections Office. Population figures are from Statistics Canada and the CRD website. The Salt Spring Transit operator provides ridership and fuel consumption information. CRD undertakes household travel surveys that provide information on driving habits.[2] The Natural Resources Canada website posts fuel efficiency data and provincial vehicle kilometres travelled data.

For the Climate Action Plan, previous data collected for the Community Energy Strategy has been compared to and combined with the CEEI data. There is good correlation between the two sets of emissions estimates. CEEI analysis of vehicle emissions is much more detailed than the Community Energy Strategy analysis, although the latter's approximations are close to the CEEI estimates.[3]

7.2 Other indicators

There are a number of available indicators that could be used to track progress in meeting targets and objectives. For example, the length of on-road and off-road pathways and bicycle lanes, the total size of protected areas, the area of arable land in food production, and so on. Food-related emissions are the most challenging to estimate and track. The considerable amount of research on this topic underway in B.C. and North America may make estimates more accurate in the future. Part of the role of the Climate Action Council will be to ensure that, where hard data is unavailable or too expensive to collect, that suitable indicators are available to track progress on specific actions or groups of actions.

7.3 Energy and GHG emissions trends

The 2010 Baseline Update report[4] provides energy and emissions trends between 2002 and 2009. The most positive finding is that emissions from light vehicles are declining, despite an increase in the number of insured light vehicles. Calculated GHG emissions for light vehicles for 2007 are close to the 2007 CEEI light vehicle estimates for Salt Spring, providing additional confidence that these projections are realistic.[5]

Light vehicles

When provincial trends for vehicle kilometres travelled (VKT) and fuel efficiency are applied to light vehicles insured on Salt Spring, projections for 2012 suggest that energy and emissions may both be 20% below target. Although these reductions are predicated on assumptions and caution is advised, there are indications that the provincial trends on which they are based are applicable to Salt Spring.

Increased fuel efficiency is indicated by the annual growth rate in the number of automobiles (2.1%) relative to SUVs and pickup trucks (1.6%), and by the increase in the number of Smart Cars and hybrids, which represented 5% of total late model vehicles in 2009, up from 0% in 2002. Decreased distance travelled is suggested by the decline in the number of underheight and overheight vehicles on BC Ferries (3.2% fewer trips in 2008 than in 2002), and by the Salt Spring Transit ride numbers (estimated avoided trip distance in 2009 was 0.6% of total km travelled). Therefore there is some confidence that the 2012 projections for light vehicles are realistic. An aging population and rising fuel costs are additional factors likely to result in lower VKT.

Vehicle replacement and reduced VKT resulted in an estimated 5% (1,000 tonnes) decline in GHG

emissions from light vehicles between 2002 and 2007. Between 2007 and 2012 the decline is projected to be about 11% (3,500 tonnes).

Salt Spring bus

The Salt Spring bus appears to be providing small direct annual GHG savings from avoided automobile trips. The bus also encourages walking and cycling, which is an important benefit but hard to quantify. As the bus service expands and ridership increases additional savings are expected.

Residential energy consumption

There is little indication of increased efficiency in the residential sector and electricity consumption is now projected to be higher than the business-as-usual base case by 2012. Annual residential electricity consumption per connection climbed from an average of about 17,000 kWh in 2002 to over 18,000 kWh in 2008. Part of the reason for the increase may be fuel switching from heating oil, propane and wood. This would have GHG emission reduction benefits. However there are no data to substantiate fuel switching.

New homes

The number of building permits issued for new dwelling units each year has been generally declining since 2002.[6] This trend is most marked for the single family dwelling category, which peaked in 2003 at 82 units and fell to 39 in 2009. A shift from single family to multi-unit dwellings would result in reduced per capita emissions, but that shift is not evident. Although new construction is more energy efficient than the existing housing stock, the inclusion of luxury features in larger homes may offset lower energy consumption for space heating.

Commercial energy consumption

Annual commercial consumption per electrical connection decreased from an average of over 40,000 kWh in 2002 to about 38,500 kWh in 2008, suggesting that businesses had become more energy efficient. However total electrical consumption over the same period increased due to the increase in the number of commercial connections.

BC Ferries

Traffic data showed a 3.1% decline for light vehicles (underheight and overheight) between 2001 and 2008, representing a decrease by 9,451 in one-way vehicle trips. Heavy vehicle (semis and trucks) traffic increased by about 20% over the same period, representing an increase by 2,117 in one-way heavy vehicle trips. The increase in heavy vehicle traffic is of concern because of the strong indication that emissions from this sector are increasing, along with the implication that consumption of imported goods and materials is also increasing.

Food

The Report on Salt Spring Island Livestock Production found that by 2008 the number of cattle, sheep, pigs and goats on Salt Spring farms had decreased by about 44% since 2004. The number of poultry raised for meat had decreased by about 52% since 2004.[7] This trend resulted from changes to provincial meat regulations and is likely to be reversed now that plans are underway for a mobile abattoir. The production of fruit and vegetables is increasing. The 2010 update to the 2005 Produce Study found that produce production increased by about 38% between 2004 and 2009. Produce production in 2009 was about 6.9% of the island's estimated annual consumption, up from 5% in 2004.[8]

APPENDICES

APPENDIX A: NOTES AND SOURCES

Explanatory notes and sources organized by section are provided below. Website addresses and contents may change. Citations were correct as of February, 2011.

SECTION 2. INTRODUCTION

2.1 Purpose of the Plan

1 BC Climate Action Plan, BC Provincial Government 2008 http://www.env.gov.bc.ca/cas/cap.html - cap

2 CRD Climate Action Program http://www.crd.bc.ca/climatechange/

2.2 Climate change

For this very short summary of extremely complex science we were guided by *Storms of my Grandchildren* by James Hansen, Bloomsbury, 2009. This is one of the most up-to-date and authoritative of several recent books on climate change written for the lay reader. For further reading on the science and impacts of climate change, please see the following websites:

- Intergovernmental Panel on Climate Change: www.ipcc.ch/
- Real Climate, climate science from climate scientists: http://www.realclimate.org/
- Updating the Climate Science: http://www.columbia.edu/~mhs119/
- CO2Now: http://CO2now.org
- BC Ministry of Environment: www.env.gov.bc.ca/epd/climate/about/index.htm
- Islands Trust: http://www.islandstrust.bc.ca/climatechange/pdf
- Capital Regional District: http://www.crd.bc.ca/climatechange/index.htm
- David Suzuki Foundation: http://www.davidsuzuki.org/issues/climate-change/
- Pembina Institute: http://www.pembina.org/climate/science
- Answers for skeptics: http://www.grist.org/article/series/skeptics/
- Skeptical Science: http://www.skepticalscience.com/

Coastal Climate Change

3 *Capital Region Climate Change Adaptation Study PHASE 1: PROJECT SCOPING*, The Sheltair Group, draft April 2007

Impact on Islands Trust Communities

4 *Reducing Greenhouse Gas Emissions in the Islands Trust Area*, Islands Trust, Sept 2009 http://www.islandstrust.bc.ca/climatechange/pdf/climatechangereportsep302009.pdf

2.3 Climate Action Plan process

5 Salt Spring (Islands Trust) tied for first place with the City of Vancouver for the Energy Savings Plan Community Challenge. Awarded in April, 2007, amount $30,000. Salt Spring also won one of the first Green Cities awards

from a field of 163 electoral areas across BC and was awarded $25,000 for local CRD projects and progressive land use initiatives. Awarded in October, 2007.

2.4 Salt Spring's GHG reduction targets

6 The following table gives the source data for Figure 3.

Table: Salt Spring Island GHG Emissions Reduction Targets

	2007 Baseline	*2015 Target*	*2020 Target*	*2020 Target*
Percentage	100%	15%	40%	85%
CO2e(t) saved, at least	0	10,500	28,000	59,500
Emissions remaining CO2e(t)	70,000	59,500	42,000	10,500

2.5 Community Energy Use and Emissions

7 Community Energy and Emissions Inventory (CEEI) reports may be downloaded from the CEEI website: http://www.env.gov.bc.ca/cas/mitigation/ceei/reports.html

8 Salt Spring Island Community Energy Strategy baseline report and updates may be downloaded from the Salt Spring Energy Strategy website: http://www.saltspringenergystrategy.org/

9 The following table gives the source data for Figure 4.

Table: Salt Spring Island 2007 Baseline Energy Consumption and GHG Emissions

Type	*Energy, GJ*	*Co2e(t)*	*% CO2e*	*Data source*
Cars	136,638	9,375	13%	CEEI
Light trucks and SUVs	184,815	12,667	18%	CEEI
Total light vehicles	**321,453**	**22,042**	**32%**	CEEI
Commercial trucks & bus	39,032	2,721	4%	CEEI
RVs, motorcycles	6,096	300	0.43%	CEEI
Total vehicles	**366,581**	**25,063**	**36%**	CEEI
BC Ferries Route 4 (Fulford)	49,706	5,497	8%	SSI 2002 data, less 5.1%
BC Ferries Route 6 (Vesuvius)	14,026	1,551	2%	SSI 2002 data, less 5.1%
BC Ferries 33% share of Route 9	32,613	3,607	5%	SSI 2002 data, less 5.1%
Total BC Ferries*	**91,431**	**10,655**	**15%**	SSI 2002 data, less 5.1%
Residential electricity	358,825	2,459	4%	CEEI
Residential oil	10,276	724	1%	CEEI
Residential propane	9,284	566	1%	CEEI
Residential wood	77,457	29	0.04%	CEEI
Total residential	**455,842**	**3,778**	**5.42%**	CEEI
Commercial electricity	96,734	663	1%	CEEI
Commercial other fuel	2,659	106	0.15%	CEEI
Total commercial	**99,393**	**769**	**1%**	CEEI
Solid waste	N/A	1,218	2%	CEEI
Food**	**399,386**	**28,195**	**40%**	SSI Community Energy Strategy, estimated @ 70% N American norm
Total	**1,417,546**	**69,678**	**100%**	

Not yet included: Emissions from float planes and long distance flights, private marine traffic, land clearing, embedded energy associated with construction materials and purchases of manufactured goods, etc.

* BC Ferries 2007 fuel data for routes 4, 6, and 9 were not available, therefore 2002 data were used, adjusted downwards by 5.1% based on fleet average information provided in the BC Ferries report: *Results of the Fuel Consumption Reduction Plan to March 31, 2008.* This figure will be updated. http://www.bcferries.com/files/AboutBCF/August_2008_FINAL_Fuel_Savings_Plan.pdf

** In the Salt Spring Island Community Energy Strategy baseline, indirect energy and emissions from food were assumed to be the N. American norm, based on the work of Pimentel et al. (Pimentel, D. and Pimentel, M. *'Food, Energy and Society'* published by University Press of Colorado, 1996. (363pp.) Pimentel, D. and Pimentel, M. 2003. *World Population, Food, Natural Resources, and Survival* in, *World Futures* 59: (3-4) 145-167, and personal communication). For the Climate Action Plan estimates have been reduced to 70% of the N. American norm in recognition that some of the emissions included in the Pimentel analysis have already been included in the Salt Spring transportation, residential and commercial emissions. Salt Spring's aging and health-conscious population is also considered likely to eat less, and less red meat in particular, than the N. American norm. There is considerable uncertainty surrounding the food-related emissions, although the numbers are known to be large. Estimates will be revised as more information becomes available.

2.6 Per Capita Energy Use and Emissions

10 Conference Board of Canada, 2005 data:
http://www.conferenceboard.ca/hcp/details/environment/greenhouse-gas-emissions.aspx

11 *British Columbia Greenhouse Gas Inventory Report 2008*, BC Ministry of Environment, Sep 2010

SECTION 3 MEETING 2015 AND 2020 TARGETS

3.1 Targets and proposed savings by sector

1 Table 2 proposed savings were developed by an iterative process, looking at potential savings of specific actions and overall contributions by sector.

3.2 Summary of savings by sector to meet 2015 and 2020 targets

2 ***On-island Transportation assumptions:***

1. If all islanders eliminate one trip in five.

   20% of 22,042 tonnes (total light vehicle emissions) = 4,408 tonnes.

   This assumes one trip in five to Ganges, one trip in five to Victoria and so on. In other words, a 20% reduction in annual VKT.

2. If all islanders increase vehicle occupancy by one, every fourth trip.

   25% of 22,042 tonnes (total light vehicle emissions) = 5,511 tonnes.

   This assumes that the additional occupant would otherwise have driven their own vehicle. Actual emissions saved will be perhaps 5% less than stated because the weight of the extra passenger will increase fuel consumption slightly.

3. If all islanders tune up and drive smart for 5% better performance

   5% of 22,042 tonnes (total light vehicle emissions) = 1,102 tonnes.

   Measures include those suggested in the CRD Transportation Tune Up workshops: no idling, proper tire inflation, remove extra weight, no rapid acceleration and braking, etc.

4. If islanders replace 1 in 5 pick-ups and SUVs with small cars

   20% of 12,667 tonnes (light truck and SUV emissions) minus 20% of 6,006 tonnes (small car emissions) = 1,332 tonnes.

   Estimate of small car emissions from CEEI report.

5. If islanders replace 1 in 10 light vehicles with electric vehicles

10% of 22,042 tonnes (total light-vehicle emissions) minus 339 tonnes (emissions from electric cars) = 1,332 tonnes.

Emissions from electric cars were estimated as follows:

Average kWh per km electric car	0.186
Annual kWh for SSI light vehicle @11,000 km	2,050
Annual emissions for SSI electric car, CO2e(t)	0.05
Total number of light vehicles (CEEI)	6,776
Annual emissions from 678 electric cars, CO2e(t)	339

3 ***Food and Agriculture assumptions:***

For simplicity, we have assumed that a diet consisting of either dairy-free vegetarian or local and regional organic food represents 75% fewer emissions than a diet of conventional imported food.

1. If all islanders eat local 1 day / week

   1/7 of 28,000 tonnes (total emissions from food) x 25% = 1,000 tonnes

2. If all islanders eat 10% smaller portions

   10% of 28,000 tonnes (total emissions from food) = 2,800 tonnes.

3. If all islanders eat dairy-free vegetarian 3 days / week

   3/7 of 28,000 tonnes (total emissions from food) x 25% = 3,000 tonnes

4. If all islanders eat only local and regional organic food

   25% of 28,000 tonnes (total emissions from food) = 7,000 tonnes

4 ***BC Ferries assumptions:***

The assumptions and calculations in this section will be updated after reviewing with BC Ferries and the BC Ferries Advisory Committee.

1. If overall fleet fuel efficiency is improved by 5%

   5% of 10,700 tonnes (total emissions from BC Ferries, SSI routes) = 533 tonnes

2. If Queen of Nanaimo (Route 9) is replaced with 25% more efficient ship

   25% of 3,607 tonnes (SSI share of Route 9 emissions) = 902 tonnes

The Salt Spring share of emissions from Route 9 (Long Harbour to Tssawwassen) is assumed to be 33% of total Route 9 emissions, or 3,607 tonnes. The 25% savings is a guess, and might be achieved by some combination of vessel replacement and/or changes to Route 9, possibly involving a hub at one of the outer islands.

3. If 10% sailings from Route 4 (Fulford) shift to Route 6 (Vesuvius)

   10% of 5,497 tonnes (Route 4 emissions) minus 10% of 1,551 tonnes (Route 6 emissions) = 395 tonnes

   This implies roughly one fewer sailing from Fulford and slightly more than one additional sailing daily from Vesuvius. Whether this could be accomplished given traffic volumes at both terminals is unclear.

4. If sailings on all routes reduced by 10%

   10% of 10,700 tonnes (total emissions from BC Ferries, SSI routes) = 1,070 tonnes

   This would significantly reduce ferry service to Salt Spring and would inconvenience many islanders. It is not recommended but included for information.

5. If Queen of Nanaimo is replaced with foot passenger ferry, est. 75% savings

   75% of 3,607 tonnes (SSI share of Route 9 emissions) = 2,705 tonnes

5 ***Assumptions for Homes:***

1. If islanders retrofit 1 in 5 island homes for 20% savings / home

   20% of 3,778 tonnes (total emissions from homes) times 20% = 151 tonnes.

   The average energy savings per retrofit for BC under the old EGH program was 27% of (calculated) post retrofit energy use.

2. If all islanders conserve energy, average 5% savings / home

   5% of 3,778 tonnes (total emissions from homes) = 189 tonnes.

   Assumes low-cost and no-cost measures such as thermostat set-backs, turning off lights, draft proofing, cold water wash, etc.

3. If islanders replace remaining oil furnaces with electric furnaces

   724 tonnes (residential heating oil) minus 175 x 0.3 tonnes (emissions from electric furnaces) = 671 tonnes

   Assumes 175 furnaces replaced by electric furnaces.

4. If islanders retrofit 1 in 5 electrically heated homes with heat pump equipment

   20% of 3,778 tonnes (total emissions from homes) times 60% divided by 3 = 151 tonnes.

   Assumes heat pump coefficient of performance of 3 and that 60% of electricity consumption is for space heating.

6 ***Assumptions for businesses and institutions:***

1. If building and processing energy efficiency increase by 10% overall

   10% of 766 tonnes (total emissions from businesses and institutions) = 77 tonnes.

2. If heating oil and propane equipment is replaced with electric equipment

   106 tonnes (emissions from heating oil and propane) minus 6 tonnes (emissions from electrical equipment) = 100 tonnes

3. If electric heating and hot water is replaced with heat pump equipment

   30% of 660 tonnes (electrical emissions) = 230 tonnes / 3 (coefficient of performance) = 77 tonnes

7 ***Assumptions for Solid waste:***

1. If 20% of remaining methane emissions are collected at Hartland

   20% of 1,200 tonnes (solid waste emissions at Hartland) = 240 tonnes

2. If half of all compostables are diverted to local compost

   50% of 1,200 tonnes (solid waste emissions at Hartland) = 600 tonnes

8 ***Assumptions for local renewable energy:***

1. If biogas plant built for SSI solid or liquid waste, compressing and using the gas produced to fuel vehicles.

   80% of 600 tonnes (50% of solid waste emissions) = 480 tonnes

   Assumes half the emissions produced from solid waste could be captured and used to displace transportation emissions with process efficiency losses of 20%.

2. If 100 solar water heaters installed @ 6 GJ ea

   600 GJ = 167 MWh x 0.02467 (emission factor CO2e(t)/MWh) = 4 tonnes

   Assumes lower efficiency and smaller SHW systems, 12 GJ systems are available.

3. If 800 MWh/y produced from 70 microhydro sites

   800 MWh/y x 0.02467 (emission factor CO2e(t)/MWh) = 20 tonnes

   See Microhydro Feasibility Study for Salt Spring Island for estimates of microhydro potential.

4. If solar district heating installed for 100 homes

   100 x 0.5 tonnes (average emissions per home) x 78% (percentage attributable to space heating and hot water) = 39 tonnes

5. If 500 @ 2 kW solar roofs installed, each producing 1000 kWh/y

   500 MWh/y x 0.02467 (emission factor CO2e(t)/MWh) = 12 tonnes

3.3 Impact of population growth

9 J.G. Consulting Services and Judi Stevenson. 2009. *Islands Trust Housing Needs Assessment*.

10 E.g., Druckman, A. and T. Jackson. 2008. The carbon footprint of UK households 1990-2004: a socio-economically disaggregated, quasi-multi-regional input-output model IIOMME 2008; Natural Resources Canada, *National Private Vehicle Use Survey - October 1994 to September 1996.*

11 Climate Talk http://50plus.climatetalk.org.uk/info?p_id=17

3.4 Immediate priority actions for 2015

12 Project coordinated by the Earth Festival Society, with help from the Salt Spring Island Conservancy and Island Natural Growers, to help islanders calculate and reduce their individual GHG emissions. The project was part of a national initiative, terminated in 2006 when the federal Conservative government cancelled the program and withdrew permission for communities to use the phrase "One Tonne Challenge".

SECTION 5 CLIMATE ACTION PLAN FOR INDIVIDUALS AND FAMILIES

Notes to Table 3: Examples of the long-term carbon legacy of personal decisions

1. See: Murtaugh, P.A. and M.G.Schlax. 2009. Reproduction and the carbon legacy of individuals. Global Environmental Change 19:14-20. Note that the birth of a child triggers a parental carbon legacy that accumulates for generations beyond the lifetime of the parents. This example assumes current lifetime per capita emissions of 1320 tons, lifespan of 81 years, generation cycle of 25 years, and fertility rate of 1.7. Emission savings estimate (500 tons) assumes linear GHG reduction of 85 percent by 2050 then linear decline to zero fossil fuel use by 2100. The Canadian birth rate is almost 60 percent higher than the death rate, therefore the population is growing and per capita GHG reductions for future years must decline disproportionately to offset the impact of the larger population. Also the fertility rate is rising. An additional contributor to population growth is immigration, which is currently approximately 0.72 x birth rate (Population Reference Bureau. 2010. World population Data Sheet) .

2. Deforestation example assumes fuel consumption of 140 tons biomass yielding 1.569 tons CO2 per ton = 220 tons, plus nine tons carbon dioxide per year in sequestration loss (90 tons for ten year period). (Wiedinmyer, C. et al. 2006. Estimating emissions from fires in North America for air quality monitoring. Atmospheric Environment 40:3419-3432.) Local old growth forest stores may amount to hundreds of tons of carbon dioxide per hectare. See also: Smithwick, E.A.H. et al. 2002. Potential upper bounds of carbon stores in forests of the Pacific northwest. Ecological applications 12:1303-1317. Humphreys, E.R, T.A. Black, K. Morgenstern, T. Cai, G.B. Drewitt, Z. Nesic, and J.A. Trofymow. 2006. Carbon dioxide fluxes in coastal Douglas-fir stands at different stages of development after clearcut harvesting. Agricultural and Forest Meteorology, 140:6-22. Lusaert, S. et al. 2008. Old growth forests as global carbon sinks. Nature 455:213-215.

3. US Environmental Protection Agency. Household Emissions Calculator. http://www.epa.gov/climatechange/emissions/ind_calculator.html

4. B.C. Hydro 2010 March 25 emission factor of 0.000028 tons of CO2 per KWh.

5. Example uses 22.1 kg CO2e/kg red meat with Caloric substitution @ 25 percent yield kg CO2e/kg food. (Weber, C.L. and H.S. Matthews. 2008. Food-miles and the relative climate impacts of food choices in the United States. Environmental Science and Technology 42:3508-3513.) Annual Canadian per capita meat consumption 108.1 kg (World Resources Institute. earthtrends.wri.org)

6. Using dog food equivalent to 90 grams of meat and 150 grams of cereal per day.

7. Example uses 250 kg carbon dioxide per square metre for wood frame house. (Suzuki, M., T. Oka, and K. Okada. 1995. The estimation of energy consumption and CO_2 emission due to housing construction in Japan. Energy and Buildings, 22: 165-169.)

8. Alter, L. The carbon footprint of renovation vs new construction. www.treehugger.com

9. Car, truck, bus bicycle calculations use Vehicle fuel consumption: Natural Resources Canada Fuel Consumption Ratings http://oee.nrcan.gc.ca/transportation/tools/fuelratings/ratings-search.cfm?attr=8. Gasoline car: assumes single occupancy subcompact @7 litres per 100 km, 2.4 kg per litre. GHG.Truck: assumes 12litres per 100 km, 2.4 kg per litre GHG. Electric car: assumes 24 kWh per 160 km @ B.C. Hydro 2010 March 25 emission factor of 0.000028 tons of CO2 per kWh. Bus: assumes average occupancy ten riders, 13000 km per passenger per year @ 22 litres per 100 km, 2.6 kg CO2 per litre. Cycling: Bike vs walk vs drive calculator http://bicycleuniverse.info/transpo/energy.html. Savings, if any, depend upon fuel efficiency of vehicle and diet of rider, and may well be negligible. (See: Ulrich, K.T. 2006. The environmental paradox of bicycling. Working Paper — Department of Operations and Information Management, The Wharton School.) Cycling assumes 70 kg person 16-19 kph.

10. Ferry assumes Queen of Nanaimo at 60 percent passenger capacity of 1163 using 4957 litres fuel per round trip. (British Columbia Ferry Services Inc. 2008. Fuel route consumption.) Mass transit (ferry, aircraft) emission savings are applicable only if a sufficient number of people avoided traveling such that flights and sailings were cancelled.

11. http://www.catalina34.com

12. http://www.yachtworks.info/en/motoryacht.html

13. International Civil Aviation Organization. Carbon emissions calculator. http://www2.icao.int/en/carbonoffset/Pages/default.aspx Fuel route consumption mass transit (ferry, aircraft) emission savings are applicable only if a sufficient number of people avoided traveling such that flights and sailings were cancelled.

14. (Emissions only from manufacturing, other emissions would occur from vehicle transport, mining, etc.) Automotive Engineer. Europe's automotive engineering magazine. Emissions web page, http://www.ae-plus.com/key%20topics/kt-emissions-news4.htm

Notes to Table 4: Examples of Single-day Emissions Savings

15. Car, truck, calculations use Vehicle fuel consumption: Natural Resources Canada Fuel Consumption Ratings http://oee.nrcan.gc.ca/transportation/tools/fuelratings/ratings-search.cfm?attr=8 Gasoline car: assumes single occupancy subcompact @7 litres per 100 km, 2.4 kg per litre. GHG. Truck: assumes 12liters per 100 km, 2.4 kg per litre GHG.

16. Ferry assumes Queen of Nanaimo at 60 percent passenger capacity of 1163 using 4957 litres fuel per round trip. (British Columbia Ferry Services Inc. 2008. Fuel route consumption.) Mass transit (ferry, aircraft)

emission savings are applicable only if a sufficient number of people avoided traveling such that flights and sailings were cancelled.

17. http://www.bchydro.com/guides_tips/green-your-ome/appliances_guide/drying_laundry.html

18. Example uses 22.1 kg CO2e/kg red meat with caloric substitution @ 25 percent yield kg CO2e/kg food. (Weber, C.L. and H.S. Matthews. 2008. Food-miles and the relative climate impacts of food choices in the United States. Environmental Science and Technology 42:3508-3513.) Annual Canadian per capita meat consumption 108.1 kg (World Resources Institute. earthtrends.wri.org)

19. International Civil Aviation Organization. Carbon emissions calculator. http://www2.icao.int/en/carbonoffset/Pages/default.aspx. Fuel route consumption mass transit (ferry, aircraft) emission savings are applicable only if a sufficient number of people avoided traveling such that flights and sailings were cancelled.

20. http://www.yachtworks.info/en/motoryacht.html

21. Reeb, J. 2009. Home Heating Fuels. Oregon State University Extension Service, EC 1628-E.

SECTION 6 IMPLEMENTATION AND EVOLUTION OF THE PLAN

6.5 New technology

1 Electric fleets: BC Hydro, Fraser Basin Council, City of Vancouver
http://vancouver.ca/greencapital/pdf/VGC_Electric_Vehicle.pdf

6.6 Regulatory opportunities

2 *The GHG Implications of Different Settlement Patterns on Saltspring Island*, Sustainability Solutions Group, Holland Barrs Planning Group, and *Policy Options to Reduce Energy Consumption and Greenhouse Gas Emissions in New Residential Buildings*, Deborah Curran & Company, Pembina Institute, Oct 2008

SECTION 7 TRACKING PROGRESS

7.1 Existing data sources

1 *Salt Spring Island Trust Area: updated 2007 Community Energy and Emissions Inventory*, BC Ministry of Environment, June 2010.

2 *Capital Regional District 2006 Origin Destination Household Travel Survey*, Halcrow Consulting Inc. March 2007

3 The following table compares CEEI with Community Energy Strategy emissions estimates for vehicles and electricity emissions in 2007. There are some discrepancies, e.g. vehicle counts, and number of BC Hydro connections, that need to be investigated.

Table comparing CEEI and Community Energy Strategy estimated emissions for 2007

Type	CEEI Co2e(t)	Energy Strategy Co2e(t)	difference Co2e(t)	difference percentage
Light vehicles	22,042	22,643	601	2.73%
Total vehicles	25,063	25,408	345	1.38%
Residential electricity	2,459	2,174	-285	-11.59%
Commercial electricity	663	511	-152	-22.93%
Total	**50,227**	**50,736**	**509**	**1.01%**

4 *Salt Spring Island Community Energy Strategy Baseline Report Second Update*, E. White, Earth Festival Society,

March 2010.

5 See *Salt Spring Island Trust Area: updated 2007 Community Energy and Emissions Inventory*, and Appendix A, p 35.

New homes

6 CRD building permit data and the Statistics Canada data regarding the growing number of smaller households provided in section 3.3 suggest the question: If the overall population of Salt Spring has been growing and the number of smaller households has been growing, where are the additional households living? One explanation may be that some former summer homes are now being occupied year round. Illegal, and therefore unreported, rental of secondary suites and seasonal cottages is another possible source of accommodation. The shortage of affordable housing on Salt Spring is well-documented.

Food

7 *Report on Salt Spring Island Livestock Production in 2008*, P. Reichert , M. Thomson, Salt Spring Island Agricultural Alliance, Dec 2009.

8 *Salt Spring Island Produce Study*, P. Reichert, Salt Spring Island Agricultural Alliance, March 2010.

APPENDIX B: REFERENCE DOCUMENTS

The following is a consolidated list of the principal documents that have informed the Salt Spring Island Climate Action Plan:

- BC Ministry of Environment*, Salt Spring Island Trust Area: updated 2007 Community Energy and Emissions Inventory,* June 2010
- BC Ministry of Environment, *Technical Methods and Guidance Document for 2007 CEEI Reports*, Draft May 2010
- BC Provincial Government, *Climate Action Plan,* 2008
- Community Energy Association, *Community Energy & Emissions Planning: a guide for B.C. local governments,* Sep 2008
- Community Energy Association, *Funding Your Community Energy and Climate Change Initiatives, a guide to funding and resources for British Columbia and local governments*, July 2010
- Deborah Curran & Company, Pembina Institute, *Policy Options to Reduce Energy Consumption and Greenhouse Gas Emissions in New Residential Buildings*, Oct 2008.
- Energy Strategy Task Force and Earth Festival Society, *Energy Priorities for the Salt Spring OCP, local government, and other agencies*, March 2007
- Earth Festival Society, *Salt Spring Island Community Energy Strategy*, March 2005
- Earth Festival Society, *Salt Spring Island Community Energy Strategy Baseline Report*, May 2004
- Fraser Basin Council, Community Energy Association, *Energy Efficiency & Buildings—A Resource for BC's Local Governments*, 2007
- James Hansen, *Storms of my Grandchildren*, Bloomsbury, 2009
- Islands Trust, *Reducing Greenhouse Gas Emissions in the Islands Trust Area,* Sept 2009
- ICLEI Local Governments for Sustainability, *Changing Climate, Changing Communities: guide and workbook for municipal climate adaptation,* 2010
- Islands Trust, *Salt Spring Island Official Community Plan Bylaw No. 434, 2008,* Oct 2008
- Masselink Environmental Design, *Salt Spring Island Area Farm Plan detailed report,* Jan 2008
- Pembina Institute and Community Energy Association, *Bowen Island Community Energy Planning Options Report*, April 2003
- G. A. Richardson, *Adapting to Climate Change: an introduction for Canadian municipalities*, Natural Resources Canada, 2010
- K. Scarfo et al, *Island Community Ridesharing: Resource Toolkit and Implementation Strategy*, Sept 2005
- The Sheltair Group, *Capital Region Climate Change Adaptation Study PHASE 1: PROJECT SCOPING*, draft April 2007
- Sustainability Solutions Group, Holland Barrs Planning Group *The GHG Implications of Different Settlement Patterns on Saltspring Island*, (undated)
- Peter Robinson, *BC Local Government Survey: District Energy, Renewable Energy and Energy Planning report on results,* Community Energy Association, March 2009
- S. Rutherford, *Bill 27: Opportunities and Strategies for Action by BC Local Government,* West Coast Environmental Law, 2009
- E. White, *Salt Spring Island Community Energy Strategy Baseline Report Second Update*, Earth Festival Society, March 2010
- E. White, *Potential Climate Actions for Salt Spring Island,* Earth Festival Society, March 2010
- E. White, S. Davis, P. Grange, J. Booth, *Microhydro Feasibility Study for Salt Spring Island*, May 2009

APPENDIX C: WEB AND OTHER RESOURCES

BC Climate Action Toolkit
www.toolkit.bc.ca/

Climate action tools for local government by local government in collaboration with UBCM, Smart Planning for Communities & the Province of BC

BC Climate Exchange
www.bcclimateexchange.ca/

Network for government, civil society and private sector organizations in BC engaged in public education and outreach on climate change, impacts and solutions.

BC Community Energy Association
www.communityenergy.bc.ca/

First stop for local governments connecting communities, energy, and sustainability.

BC Community Energy and Emissions Inventory
www.env.gov.bc.ca/cas/mitigation/ceei

The Province of B.C. has committed to reducing greenhouse gas (GHG) emissions by 33 per cent from 2007 levels by 2020. It is estimated that local governments have control or influence over approximately 45 per cent of these emissions.

BC Hydro Powersmart
www.bchydro.com/powersmart/

Help lead the way to a better B.C. by using less electricity.

Canada's Action on Climate Change

www.climatechange.gc.ca

Climate change is a global problem that requires real solutions.

City Green Solutions
http://www.citygreen.ca/city-green-solutions

City Green Solutions is an enterprising non-profit with a mission to excite, inspire and lead British Columbians in finding innovative home and building energy efficiency solutions. We are the only non-profit provider of the ecoENERGY and LiveSmart BC programs in BC.

CRD Climate Action
http://www.crd.bc.ca/climatechange

The CRD's Climate Action Program (CAP) acts as a regional hub and facilitator on climate change issues. We work with local governments, non-profit societies, public institutions and the private sector to help reduce emissions today and plan for climates of tomorrow.

Earth Festival Society
http://saltspringenergystrategy.org/

Salt Spring Energy Strategy, taking action on climate change.

Islands Trust, Climate Wise Islands
www.islandstrust.bc.ca/climatechange/

Climate change is a global problem that demands local action to reduce greenhouse gases.

Natural Resources Canada, Office of Energy Efficiency
http://oee.nrcan.gc.ca/

Take advantage of the ecoENERGY Efficiency Initiative to reduce energy use in buildings and houses, industry, personal vehicles and fleets.

Pacific Carbon Trust
www.pacificcarbontrust.com/

We are a Crown corporation of the Government of BC, created to deliver quality made-in-BC greenhouse gas offsets to help clients reduce their carbon footprint and drive the growth of BC's low-carbon economy.

Pacific Institute for Climate Solutions

http://www.pics.uvic.ca/

Building on the strengths of its partner universities, PICS will develop innovative climate change solutions, seek new opportunities for positive adaptation, and lead the way to a vibrant low-carbon economy.

Transition Salt Spring

http://transitionsaltspring.ning.com/

committed to working together with all existing groups to address the urgent and critical issues of global climate change and declining fossil fuel supplies.

APPENDIX D: ABBREVIATIONS

CEEI	Community Energy and Emissions Inventory
CH4	methane
CO2	carbon dioxide
CO2e	carbon dioxide equivalent
CO2e(t)	tonnes of carbon dioxide equivalent
CRD	Capital Regional District (of Victoria)
EFS	Earth Festival Society
Emissions	greenhouse gas emissions
GHG	greenhouse gas
GJ	gigajoule, unit of energy. One GJ is about 278 kWh.
IPCC	Intergovernmental Panel on Climate Change
IT	Islands Trust
kWh	kilowatt hour. The standard unit of measure for electrical energy use. One kWh will light a 100-watt bulb for 10 hours.
LUB	Land Use Bylaw
OCP	Official Community Plan
tonnes	tonnes of carbon dioxide equivalent (metric)
VKT	vehicle kilometres travelled

APPENDIX E
GREENHOUSE GAS IMPACTS ON LAND CLEARING

DRAFT 2010 12 22

Salt Spring Island

Greenhouse Gas Impacts of Land Clearing

Land clearing for buildings, roads, gravel pits, parking lots, and driveways can result in removal of vegetation and soils that sequester carbon.

If a carbon levy were to be imposed for land development projects, an estimate of the displaced carbon storage **potential** would be required. The amount of carbon stored per unit area can vary greatly among sites depending upon soil structure, plant species composition, site index, stem density, and vegetation age. (Fahey et al. 2009; Luyssaert et al. 2008).

Individualized estimates for each proposed development would be costly and time-consuming. Therefore it is proposed that a **nominal value** be employed that is anchored in field sampling of representative local environments.

Salt Spring Island forest cover is about 79 percent of land area, of which 76 percent is in the coastal Douglas-fir moist maritime ecological unit. Four percent of land area is sparsely vegetated and 17 percent is devoted to industrial/residential /agricultural use. Over 80 percent of forest cover sampled is classified as structural stages four and five, "reflecting logging over the past 50 – 80 years" (Zinovich 2008).

Pending availability of more data from Salt Spring Island, it is proposed that a value be adopted from forests of comparable age from the northern San Juan Islands Forest Inventory and Analysis plots (predominantly Douglas-fir forest). These carbon estimates qualify for reporting of greenhouse gas emissions in accordance with section 1605(b) of the US Energy Policy Act.

The San Juan carbon **stock** estimate for a 70-year-old forest is 262.62 tons per hectare, which translates to 963.82 tons of **carbon dioxide** storage, or 96.39 **kilograms per square metre** (COLE Development Group. 2010).

A nominal value for **annual carbon sequestration** can be estimated from the difference in the live tree carbon stock between 70 and 100 years divided by 30 years:

71.58 tons of carbon per hectare / 30 years = 2.38 tons sequestered per hectare per year.
= 8.73 tons of **carbon dioxide** per hectare per year.
= 0.873 kilograms of carbon dioxide per square metre per year.

Literature Cited:

COLE Development Group. 2010. COLE 1605(b) Report for Washington. USDA Forest Service and National Council for Air and Stream Improvement Inc.

Fahey, T.J. et al. 2009. Forest carbon storage: ecology management, and policy. Frontiers in Ecology and the Environment 8:245-252.

Luyssaert, S. et al. 2008. Old-growth forests as global carbon sinks. Nature 455:213-215.

Zinovich, B. 2008. Terrestrial Ecosystem Mapping of Salt Spring Island. Madrone Environmental Services, Ltd. 103 pp.

APPENDIX F
Comments received on consultation draft

RECEIVED AT THE DRAFT CLIMATE ACTION PLAN OPEN HOUSES ON FEB 26, 2011

From Comment sheets:
(each bullet point contributed by a different respondent for that question)

Given the extreme urgency of the global climate situation, the Salt Spring Climate Action Council is seeking everyone's assistance; this is the beginning of the process.

1. Transportation and food are priority areas for action to meet the 2015 targets. Do you have comments or suggestions about these priority areas?

- Lobby for speed limit reductions. This will save fuel, improve safety (vehicles, pedestrians, cyclists & animals). It could also position us to get approval for small electric vehicles.
- There is enormous public attention on these issues, but transforming that awareness into practice requires government legislation.
- Better safety for cyclists. Bike paths! More bike capacity on the bus. Year around farmers market.
- I think your ideas cover everything I could suggest.
- Promote / encourage people to get more fuel efficient vehicles, especially if they are going to change anyway. Lots of ads and articles for not very [fuel efficient vehicles] in the Driftwood every week. Why?
- A cycle path (off-road) crossing the island (like the Lochside Trail on the Saanich Peninsula).
- Focus on Food First because:

  (1) Food is a matter of basic survival, thus, both more urgent to immediately satisfy (we could survive without driving cars, but we can't survive without eating) and has direct local impact (we conserve fuel till the cows come home but it's a drop in the bucket compared to global fuel use).
  (2) as more people garden, they will drive less often to the supermarket because of (a) greater satisfaction and rewards of home-gardening and home-cooking compared to eating processed foods, and (b) less need to shop for packaged foods, instead get it from the garden; therefore local food production produces extra levels of greenhouse gas reduction.
  (3) transportation will soon solve itself as petroleum is about to become VERY expensive due to supply disruptions (Libya, etc.) and that economic mechanism will do far more than governmental exhortations to meet the targets.
  (4) Food is at the centre of community survival and its local production ties the community together in the most practical common purpose.
  As for transportation, No more studies and information and outside consultants and paid organizers to "tell us what everybody already knows". Focus exclusively on specific practical steps for which the government can take action (bike lanes, rideshare programs, public transport).
  The most effective single step to reduce greenhouse gas emissions was ignored in this report: over-population (not that exhortation by the government would do any good) – but we could cut emissions by two-thirds each and cancel that out by having so many children and grandchildren.

- Promote use of scooters and motorcycles. 50-200 mpg.
- Very important: Farmland Trust, and more transit routes, and Electric car options.
- Increase bus service and increase bike carrying capacity (always full). Build bike paths. Too dangerous as is.

- Start a cooperative farm with a paid manager who will involve community members as labour in exchange for food. Makes it easy to grow lots of food collectively.
- Dairy free vegetarianism? If the rise in sea level hinges on this we should all buy life jackets.
- I'm putting my vegetable garden back into production and inviting neighbours to participate.
- I carpool and ride share. Potatoes, and other veg. e.g. snow peas, greens, tomatoes and more will grow in 5 gal buckets of garden soil put in a sunny place, kept watered and drained, even on a balcony or porch.
- Become creative with food ideas. Share meals with others more often.
- car stops – cards for drivers windshields if willing to pick-up; bicycle lanes or wider shoulders on all roads; coop-neighbourhood gardening projects.
- Privately funded incremental bus service.
- I'd use the bus but it doesn't come to my area (end of Beddis), tho' the school bus does! Air travel is really the big culprit and relates to both these areas as so much food is flown in. Maybe a boycott of fruits and veggies not grown in BC that can be e.g. applies, lettuce would help.
- Grow food not grass.
- Campaign for carbon taxes. Increase taxation on gas guzzlers, give rebates on fuel efficient vehicles. Campaign against over-packaging. Grow more locally.
- expand bus routes. Bike lanes on major routes. More pathways around village centre (safer for walkers).
- year found farmers market would help.
- encourage grass/local grain feed beef. Encourage use of incorporating offal to farming use.
- Reduce speed limit –have sign(s) explaining we can't afford proper bike paths/roads so limit is being lowered to save fuel.

2. Are you willing to take the 15% by 2015 Pledge?

- Yes [fifteen respondents].
- YES, of course I am, and everybody in the room today has probably done that and will do 40% or 80% by 2015 anyway. This whole effort is a waste of OUR taxpayer money. I could cut 95% of my emissions, but if my neighbours have three kids, that's all the energy-savings down the drain.
- I want to go further if I can.
- I already do much of this.
- Where is the science? Yes.
- I'm doing as much as I can already.

3. What ways to reduce greenhouse gases strike you as particularly important and achievable?

- Expand bus service – very important.
- Transit, greater reliance on local agriculture, true cost accounting.
- Consume less. Teach children that they can make a difference. Reduce air travel.
- Not flying & reduce driving.
- Promotion of electric bikes.
- Publicizing what institutions are doing helps encourage the 'skeptics' to get involved.
- Concentrate future development in village areas.
- Expand the bus system.

- Encourage people to eat local, organic and more veggie meals.
- One difference the government could do is RAISE TAXES HUGELY on petroleum, on "large" homes and cars, and for every child after the first child in a family. Fat chance of any of those things happening. Another difference the government could make would be to allow cob and straw-bale housing, and composting toilets to replace regular ones, by relaxing needless building code requirements. In killing off green building practices, making them prohibitively expensive, govt. becomes a chief factor in GHG emissions.
- Continue preserve and protect. Support Islands Trust.
- Organic food production, local food production, reduced energy use, reduced driving, travelling off island.
- Create a campaign to make SSI a zero-waste island. Community kitchen, bulk food buying groups, reuse centre, etc.
- Use less long distance airplane flights.
- more bus service/ride sharing site.
- Drive to the store like islanders not like townies.
- Stop so much mindless driving. I've already started to do more walking but I live in town. More people should be encouraged (allowed?) to live in town.
- Use a clothes line and dry laundry outdoors and/or on clothes racks indoors.
- Ridesharing, walking, buying more local and less from Mexico, California, south America and China.
- Ride share pathways.
- more walking, biking, car sharing; maybe an electric car rental service? Eat locally. Info in stores re mileage travelled, of food stuffs.
- Improving public transit and bike lanes. Encouraging gardening and local agriculture. Helping people raise more food locally and promoting vegetarian recipes etc.
- Stop the highways department and private owners from burning their slash.
- Increased LEED building. Consume less industrial products. Fewer flights. Fewer kids. Carrots and sticks always.
- awareness of vehicle use / overuse. Promoting local food choices – have info @ Sat/Tues farmers markets.
- Legalizing secondary suites and allowing them throughout the island (with few exceptions, e.g. drinking water watersheds setbacks) is a very effective way to add housing for working people that does not lead to additional tree loss and other environmental impacts of development. Provided of course water supply and wastewater disposal are addressed.
- Non-use of vehicles mainly.
- Reduced ferry service – save $ and fuel/signs in stores about environmental effects of things like pesticides, factory farm meat, non-local/overpackaged food – eventually withdrawing from stores. Less lighting in stores? (Monbiot suggested this.)

4. Other comments regarding the ideas presented today?

- I think financial constraints play a big role in limiting implementation for many households. Need to explore lower-tech / less expensive options, e.g. financial incentives were provided for $6,000-$8,000 solar hot water systems – need to encourage / fund (e.g.) lower-tech passive black-pipe systems that could be installed less expensively and be attainable for more households.
- Great work!
- Thank you.

- I think they are very well thought out and useful. Please have printed copies of the plan available – not everyone has a computer. They could be sold - $5? At Salt Spring Books.
- Expand the bus system – increase hours and range.
- Connect people by their local farmers. Print a guide of island farms offering farm-gate sales.
- Make roads safe for cyclists.
- Engage community leaders from 'non-traditional sectors (i.e. the ones that will reach the skeptics), e.g. business community, grocery stores, car dealers.
- I see it as a feel-good exercise to give the impression that the government is listening to the people. (Well, it IS listening, I do compliment all of our current local officials on that point). But get a clue, INFORMATION like that presented today is USELESS. Fund pilot projects at a grass-roots level – cob housing, composting toilets, bike-sharing and bike trails. WISE ACTION, not academic studies. GRASS ROOTS, not top-down.
- Great job – so much work. Thank you.
- I have heard about several serious climate change activists who say that the main energy should be focused on making gov't change and regulate businesses.
- Just one comment from others – that many of the ideas are pie in the sky. My reply was that's ok as long as we create dialogue which can create the do-able ideas that were sparked by the pies in the skies.
- We need more action projects! People have been told to turn down the thermostat for 15 years – we need to be more ambitious and collective action oriented.
- Consider this: every person exhales CO2. How much CO2 is created for every million additional people?
- I agree that we should do what we can locally, but I am disappointed that there is not a more comprehensive view taken, e.g. the fundamental problem is world overpopulation and nobody seems prepared to acknowledge that. Beware also of solutions that involve buying something, hybrid cars, save fuel but how much energy and resources are consumed in building one?
- thank you for all your good work. I like and support the idea of a central place to convert property waste/slash into mulch to resell.
- Chickens eat household waste (weeds, lawn clippings, veg., fruit and left over food), they lay eggs and produce excellent fertilizer to grow organic veg.
- Shift to passenger ferry (R9) and increase bus service.
- The ideas sound good, but I think a concerted effort to influence senior levels of government and achieve more wide-spread change is as also desperately needed. I'm happy to my part but am frustrated that many wealthy, powerful people aren't doing theirs and making the problem worse.
- Someone at the gravel pit between Sleggs and Lees Hill burn their slash tires – let's stop
- Well done.
- excellent presentations
- Have a seasonal creek on property – is it legal to use? If so, how?

From General Comments board:

- To increase bicycle use, add bike lanes to medium and major roads, to Vesuvius, to Beddis.
- Outlaw titanium bike frames.
- Actions on transportation are too weak. Promote electric conversion. Park & ride.
- BC Hydro will give energy star grants to multi-plex/social housing to upgrade appliances.
- Discounts on outdoor folding/umbrella-type clothes lines. A big one from Home Hardware costs around $200.

- Walk the talk – be a role model.
- Need a pollution probe in Ganges area: 1) air. 2) noise.
- MOT (Ministry of Transport) reduce speed limits, village speed through Ganges up to Atkins.
- Establish buffer zones for pedestrians. Rammed earth walls, tree walls.
- CRD – enforce anti-idling bylaws.
- Reduce speed limit on Fulford-Ganges Road to 50-60 km/hour.
- Demonstration gardens fro unusual legumes, like lentils.
- Stir fry cooking classes for those who wish to use less meat.
- When increasing transit routes add Beddis to Cusheon Lake loop.
- Methane tax on cows.
- Add handidart to transit to provide customized pick-ups for seniors and handicapped.
- Pay for transit out of taxes, add another route and make buses free.
- We do need to consider the fuel cost of air travel to exotic places and stay home more.
- Our water is critically affected by the changing climate. How can we protect it for our 'needs' not 'wants'?
- BC Ferries as part of a coordinated public transportation system whose bottom line is community oriented – green solutions.
- A re-established south end convenience and gas outlet with viable parking.

From Sticky Notes:

- The examples of single-day emissions saving are very good. Graphic and accessible.
- What can we do – homes. Display says replace oil furnaces wit)h electric furnaces. Why not heat pumps? (including ductless?)
- Provide package deals on energy-efficient products (buy in bulk):
    - Folding 'umbrella clotheslines
    - LED lights
    - Coldframes
    - Greenhouses
    - Solar chargers for computers, etc.
    - Who? Gekko? Climate council? Transitions SSI? Etc.
- Support local farmers and protect farm land, wetlands and watersheds. Once destroyed they can't be replaced in less than many decades, if ever.
- Wool from local sheep largely goes to waste as people use synthetics made from ?? and transported here. Wood can be used instead of moss in hanging baskets.
- We should be able to use our gray water to irrigate/water fruit trees and ornamentals and some other crops.

From 2015 Vision flipchart:

- More accessible bus times
- Ride share/car stops are working well
- Action group dealing with Canada's military expansion (and its impact on global warming)
- Fewer off-island trips – people are driving less
- Lots more local produce to buy
- Occasional buses along Beddis Road
- Buses along the Beaver point Road
- Lots of pathways on the island and people walking everywhere
- Better, more bike lanes (Vesuvius & Ganges, Portlock)
- Year-round local food market
- Beginnings of cross island bike paths
- Ministry of Highways – allows rural character roads = less tree cutting, hedgerows protected

- A 'round the island' continuous bus loop with some sort of tracking that can be accessed by cell phone etc, stopping at beaches, trail heads, etc. 'in the season'
- Decrease in float plane traffic
- Tourists – be a tourist here instead of leaving. Enjoy our beautiful island. We can avoid air travel.
- More rural life agricultural land and use in multi-farm productions
- More parks for trees, trails and habitat
- Island wide network of paved cycling paths
- Rental space in green houses to start seeds, so people don't have to have their own green houses.
- Small store outlets in each major area so people don't have to drive to town to get milk.
- SS citizens lobbying government for immediate reduction of military industrial complex
- SS vocal about clean-up of military dump site off west coast
- Grocery stores will have started labelling food items with 'food miles'
- Bus along Rainbow Road
- Community garden spaces in all local neighbourhoods

From 2020 Vision flipchart:

- Permaculture is a way of life – 3 or 4 permaculture settlements on the island with co-housing]
- Not so much buzzing up and down the island to do things
- Most peoples' activities and entertainments are focused on neighbourhood hubs and connections
- All products in grocery stores are 'carbon-labelled'
- Our pool will have solar not water installed, and if ice rink, geothermal energy (check)
- More farmers
- All produce will be labelled with 'food miles' and list of ingredients and whether GMO or not
- More walking trails that don't run beside roads
- More bike lanes
- Cross island bike path!
- Our kids playgrounds and golf courses will be organic turfs
- Traffic circles/roundabouts at all major road intersections
- Draft animals instead of tractors on farms
- Island wide network of hiking trails

From 2050 Vision flipchart:

- Every house and housing with solar hot water system
- 70-80% of food consumed on SSI is locally produced
- A more independent and resilient community – 70% of materials and supplies are supplied locally
- Bike lanes and walking paths will crisscross the island
- Sunnier
- Community land available for community gardens
- Lots of small outdoor play spaces for kids to play street hockey
- Full grocer in Vesuvius (avoid trips to town)

COMMENTS RECEIVED BY EMAIL

- Perhaps scooters and motorcycles could be mentioned. Even though few of them are electric yet, they do get 50-100mpg, even the faster ones. I use mine instead of the car for light shopping trips whenever I can, and it sure cuts down on the gas per year and is easy to park and saves room and money on ferries. Pedal bikes are even better, but they're a hard sell for many folk with all our hills, distances, and aging population.

- Potentially important actions regarding lawns (e.g., replacing gas with electric mowers; letting lawn grow longer; replacing lawn with garden; etc.), could be put in several sections.

- A philosophical thought – the executive summary speaks of the carbon footprints of families and individuals and I notice that later in the report there is mention of replacing vehicles with newer ones (lighter or EVs). It makes me think of the difference between considering our 'local' GHGe's and our 'global' GHGe's and how easy it is for the average consumer to get caught up in buying their way out of this mess so to speak by focusing on the local only. For example, if I buy a new car, no matter what type, it's manufactured and transport to me from, say, Asia, and this means a whole lot of GHG's have been generated, as does the removal and dismantling of my old vehicle. All so that my continued driving emits fewer GHGs locally. In the meantime I am not sure if the planet is better off or not! All this to say that the concept of footprinting does typically attempt to measure out-of-boundary impacts of my lifestyle and purchasing choices whereas when we measure GHGe for a municipality, province or even a country, does not. I know many Salt Spring Islanders are more savvy about embodied energy etc. than the average BC resident but I am just wondering aloud about reflecting the local vs global question. I do notice in "Other Individual Actions" the report ventures into this area somewhat.

- Under Household Recycling—Add "Encourage adoption of white paper recycling program in which used white paper becomes feedstock to manufacture new white paper."

  Under Potable water & Community ideas—Under this category, you have included a few specific strategies that come under the general heading of what is known as "demand management" strategies. A more comprehensive statement would read thus: "Encourage each water districts to adopt a comprehensive demand management program".

  Under Land use and Conservation—Use regulatory tools to manage tree-cutting and land clearing Add "Strengthen existing DPAs so that they can be enforced and contain wording making them more effective at reducing land clearing and negative effects associated with land clearing."

- I would like you to withdraw the wording neighbourhood pods off this report on page 21. This is confusing. This is an emergency program for the island and the report has it attached to climate action groups. At this point we have had no serious discussion on how these programs do work together. Also the program is known as the POD - emergency neighbourhood preparedness program.

- "What an impressive draft! One thought is that the POD name perhaps should be called the EPP, Emergency Preparedness Program. (page 19)" Maybe we can get rid of the obscure POD term and just use a simple EPP which stands for something.

- The most important issue in my view is recognizing climate change isn't a local issue. Decisions we make on island have regional and global consequences. Best example, the coffee company's proposal would have very substantially improved their efficiency by capturing a great deal of waste heat for reuse in both heating the buildings and greenhouses and for growing organic food and accelerating organic compost production. None of this was given any recognition by trustees. We need intelligent policies and strategies that do more than simply reduce co2 production on island. This is particularly so if we simply punt the problem to the regional or global level by forcing green industry off island. Although the statistics will improve at the local level if we act this way, that counts for nought if we aggravate the situation regionally or locally as the Trust have with the coffee company.

  Some of the other decisions made on island recently fly in the face of climate mitigation policies. A notable example is the location of the library, for example, is perverse. The building needs heated. The location originally intended for it on Rainbow Road would have allowed the geothermal system under the school playing fields to substantially heat the building. As I understand it, this was one of the reasons for installing such a system. Clearly, someone isn't joining up the dots.

- Can you please add Green Shores program to page 19 re. shorelines/flooding?

COMMENTS RECEIVED ON WEBSITE

- Re: Densification of Ganges Village
  I support the draft Climate Action Plan, and commend you on your efforts.
  My hope is that densification will lesson the growth impact of non-built up areas. What efforts are being made to ensure this?
  With the aging population, densification is more likely. As I live in the Village (because I want to lessen my personal carbon foot print), I wish to share several observations:
  –walking paths into the downtown core need to be improved. Roads, such as Park Drive, are preferred by pedestrians, but there are no places specifically for pedestrians. With the advent of the ambulance service, pedestrians will be further adversely impacted.
  –industrial use must be limited in order for people and industry to get along in the Village. Noise pollution, air pollution, water use are among issues that may need to be addressed.
  –The downtown core needs to be an attractive and healthful place to live. Air pollution is one area that must be addressed, in order to improve the Village for human densification. There are many sources of air contaminants because of industry. For example, at present, some industries contaminate the air by burning toxic refuse. Many days, the pollution is severe, and seriously detrimental to human health. There seems to be minimal control on this air pollution at present. Many people move to Salt Spring for respiratory reasons. Until there are more controls on air pollutants,, living in the Village will be relatively unattractive.

- calculations for emissions regarding transportation are not inclusive enough
  if they were they would be much much higher
  failure to encompass all the spinoffs from operations of vehicles
  the overlap in all other areas from vehicle use is huge
  i have data to show more of this
  am submitting my observances to Dr Andrew Weaver for discussion

LETTERS RECEIVED (two)

Review of the Salt Spring Island Draft Climate Action Plan

Comments by the Salt Spring Island Conservancy, April 2011

We commend the Salt Spring Island Climate Action Council for their draft action plan, released in February 2011. In general, we found their estimates of the island's carbon emissions to be believable, and their recommendations for initial reductions seemed feasible. We were much impressed by the technical detail and completeness. The urgency of global warming was clearly shown.

The present sources of greenhouse gases on Salt Spring seemed to be estimated in a complete manner. For example the plan included ferries and food as well as obvious items like vehicles. It was surprising to see the huge proportion generated by the food sector, but the report's rationale is convincing. We were glad to see the recommendations for switching towards local food. Many of the estimates involved assumptions or indirect methods, but they were necessary and seemed well thought out. The plan contains a wealth of information on the carbon footprint of various everyday activities, and on methods of reducing those footprints.

The plan calls for a reduction of 15% in emissions by the year 2015. The suggested methods for reaching that goal seem effective and relatively easy to accomplish. In fact, we were encouraged to see the progress which might be made with some rather simple steps. Most of the action items were laid out in tables which made them easy to see and grasp.

The difficult part will be to convince everyone on the island to actually make the changes that are needed. Selling the ideas will be a major task. In that respect it will be crucial to produce an easily-understood, convincing, and very short report for the general public.

We have few negative comments on the draft plan. Some topics were not covered, perhaps because they would be unpopular. Human population growth is a huge factor in carbon emission, but there was no consideration of how Salt Spring should address that. (The impact of local forest-clearing for more houses was estimated, but no policy was put forward.) We commend the plan for not mentioning the common idea of "take an airplane ride, plant a tree", but some explanation could have been offered, why that is fallacious. We point out that it is not true, from a broad ecological viewpoint, that burning of firewood is emission-neutral.

In style and format, the report is long (some 39 pages). However its many sections were necessary and the wording was economical. The appendices were not well organized and references to them in the main text were not very effective. Citation of information sources (earlier reports, web-sites, etc.) was clumsy because several systems were used, and there were some missing references.

We close by again by commending the authors of the report. The rest of us must not just let it lie on a shelf.

ISLAND PATHWAYS
P.O. BOX 684 GANGES.
SALT SPRING ISLAND B.C. V8K 2W3
www.islandpathways.ca

April 12, 2011

Dear Climate Action Council:

The board of Island Pathways think the Climate Action Plan is detailed and comprehensive. Thank you for all your hard work. We know the many volunteer hours it takes to do this kind of research, writing, and community engagement work. You are to be commended.

Island Pathways has been supporting non-motorize methods of transportation (walking and cycling) for many years on the island. We were especially interested in the section of the Climate Action Plan about On-Island Transportation (section 4.1). We are the group on the island working for more bicycle lanes and pedestrian pathways. We know the biggest challenge is getting the necessary funding for our projects. We have learned by experience "if you build them, they will come." We know having more pathways and bike lane will get people out of cars.

- We would like to recommend and encourage the Climate Action Council to lobby our Provincial Government (especially – as they are the ones who mandated that every community must have Green House Gas Emission reduction targets and a plan for reaching those targets) and Federal Government asking for funding for infrastructure. We would like you to also encourage the Islands Trust to do the same. If local governments do not have funding for infrastructure it will be very difficult, probably impossible to reach our targets. There is everything to lose if we do not collectively reach our targets.
- We have done a survey of all bike racks on the island. We think, for the time being, we have enough bike racks in Ganges.
- The plan mentions "Construct Ganges Hill pathway." We think, sooner than later, the Transportation Commission should be encouraged to do the design plans for a pathway on Ganges Hill and be in a position to apply for grants. You can not apply for some grants for infrastructure until you have the design plans in place. This is a high priority on Salt Spring Island for safety as well.

We think there is no more important place to put our tax dollars than on solving the Climate Change Crisis we are now experiencing. Island Pathways is pleased to play our crucial part in being a part of the solution.

Thanks you

Margaretha Nordine (president) Island Pathways

Margaretha Nordine