

DRAFT Salt Spring Island Community Energy Strategy Baseline Report Update January 2007

*Prepared by the Earth Festival Society for the Salt Spring Island Local Trust Committee
and the Salt Spring Island Energy Strategy Task Force. This update is available online
at www.saltspringenergystrategy.org*

Acknowledgements

Financial sponsors of this report, and of the ongoing Community Energy Strategy work, include Environment Canada's EcoAction program, Ministry of Energy, Mines and Petroleum Resources' Community Action on Energy Efficiency program, CRD Director's Grant-in-aid, and the Islands Trust.

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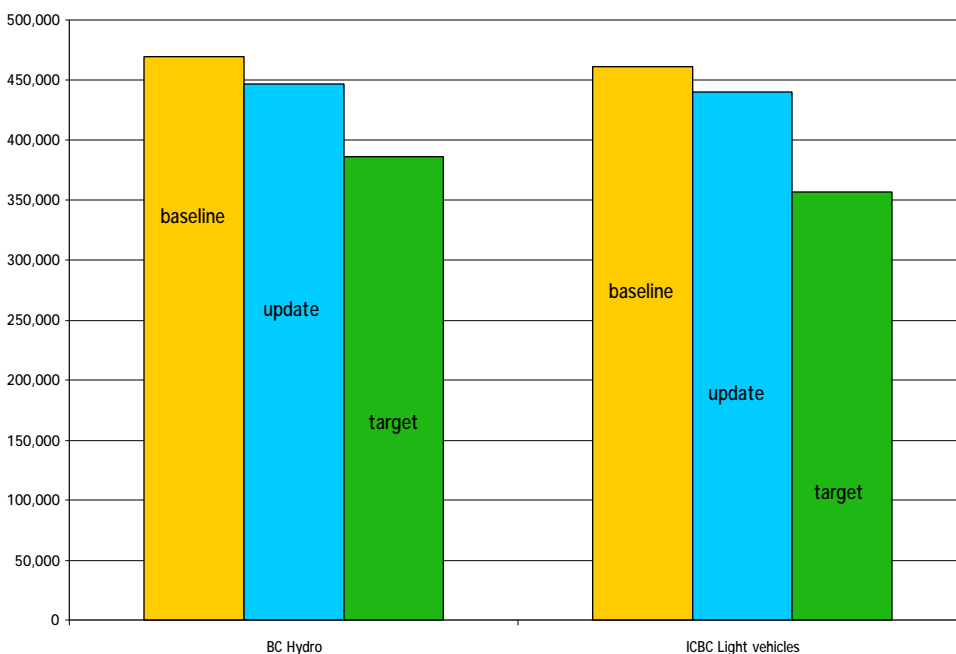
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Executive Summary

The Salt Spring Community Energy Strategy short-term targets are to reduce island energy consumption and greenhouse gas (GHG) emissions to 2002 levels by 2012. The purpose of this three-year update is to track progress in meeting these targets, and to identify areas where targets are clearly not going to be met. The update compares 2005 data from BC Hydro, ICBC, BC Ferries, and other sources where available, with the 2002 data and projections of the original Baseline Report. Changes in each Agency's reporting of the data made direct comparisons between 2002 and 2005 difficult.

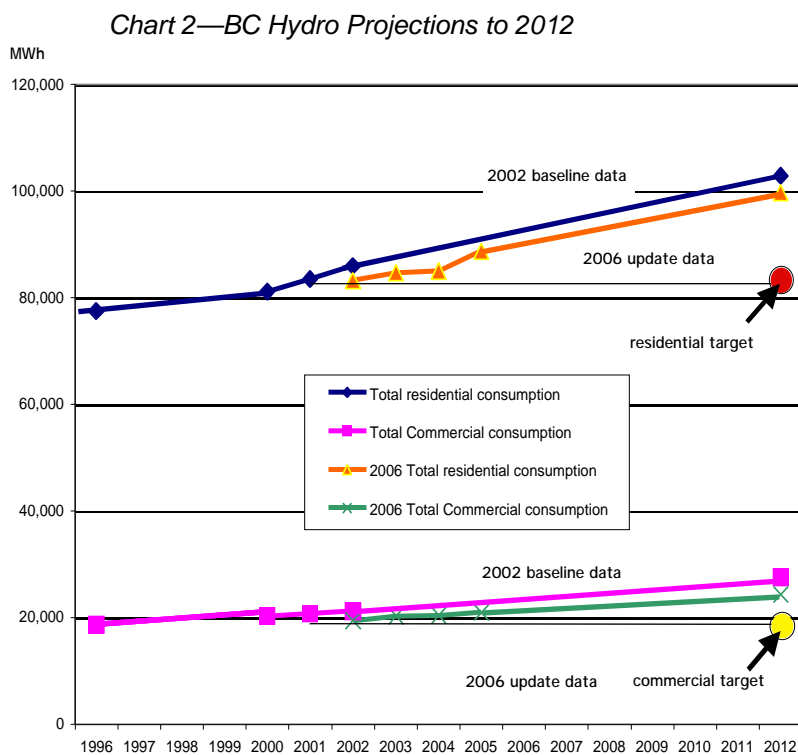
Chart 1—2012 Electricity and Gasoline Projections, GJ



Energy use and associated GHG emissions on Salt Spring continue to increase as the community grows. None of the new projections suggest that the targets for any sector will be met by 2012.

The rates of increase in general are declining, but the growth trend must be halted and reversed to bring consumption and emissions down to 2002 levels by 2012. Salt Spring has six years to make this shift. Action by all—individuals, businesses and institutions, and local, provincial, and federal governments—will be needed if Salt Spring is to achieve its targets.

Overall, BC Hydro consumption over the last three years increased at an average rate of 2.2% per year, slightly less than the previous two-year period of 2.8% per year. The average annual growth rate for residential consumption for the same periods declined from 2.91% to 2.16%. The commercial sector showed slightly increased rates in total consumption, but a significant decrease of 2.49% per year in average consumption per account, suggesting that the commercial sector may be actively working to reduce electrical consumption. This trend is not apparent in the much larger residential sector, which shows a small decline in average consumption per account of 0.44% per year.



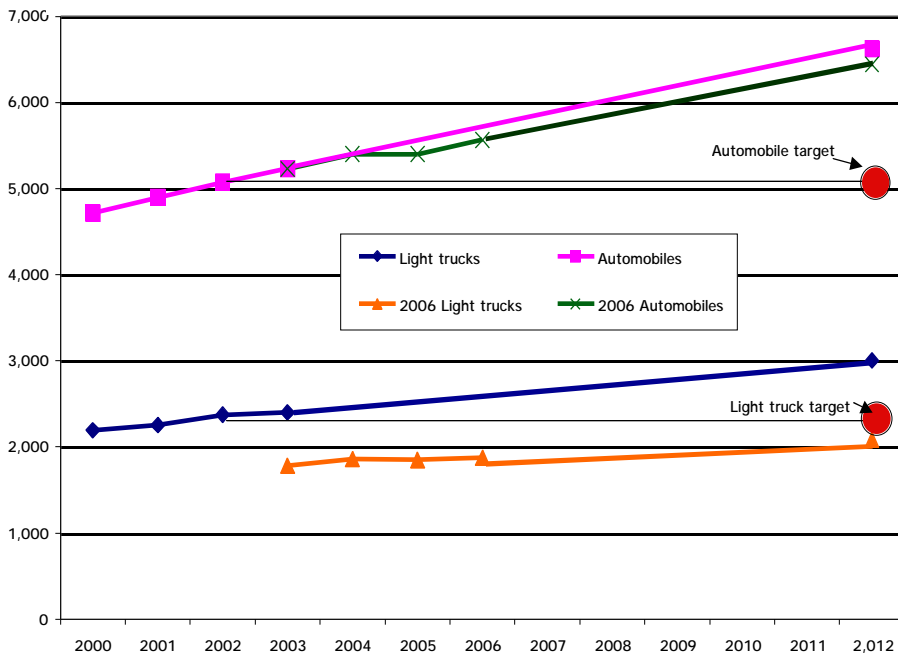
Few homeowners are using the EnerGuide for Houses (EGH) and Energy Savings Plan (ESP) residential retrofit programs. The Energy Strategy target is 20% of the existing housing stock retrofitted by 2012. To date six homes, or about one tenth of one percent of the existing housing stock, have been improved sufficiently to qualify for grants under the programs. The Energy Strategy target is 20% of existing homes, about 1,000 homes, retrofitted by 2012.

The number of insured ICBC vehicles registered on Salt Spring has increased. The largest increase was in the number of heavy commercial vehicles. There were 36 heavy commercial vehicles registered on Salt Spring in 2000; in June 2006, there were 74. The average annual growth rate was 17.6%. The number of ICBC insured light vehicles increased by an average of 2.8% per year between June 2000 and June 2006, when a total of 7,440 light vehicles were registered. Automobiles increased at a greater rate than light trucks—3% versus 2.1%—suggesting that light vehicle fleet efficiency has improved. The number of hybrid vehicles has risen from 1 in 2002 to 37 in 2006. It appears that at least 12% of new automobiles purchased in 2006 are very fuel-efficient (hybrids or Smart Cars).

To reduce vehicle consumption and emissions to 2002 levels will require a combination of:

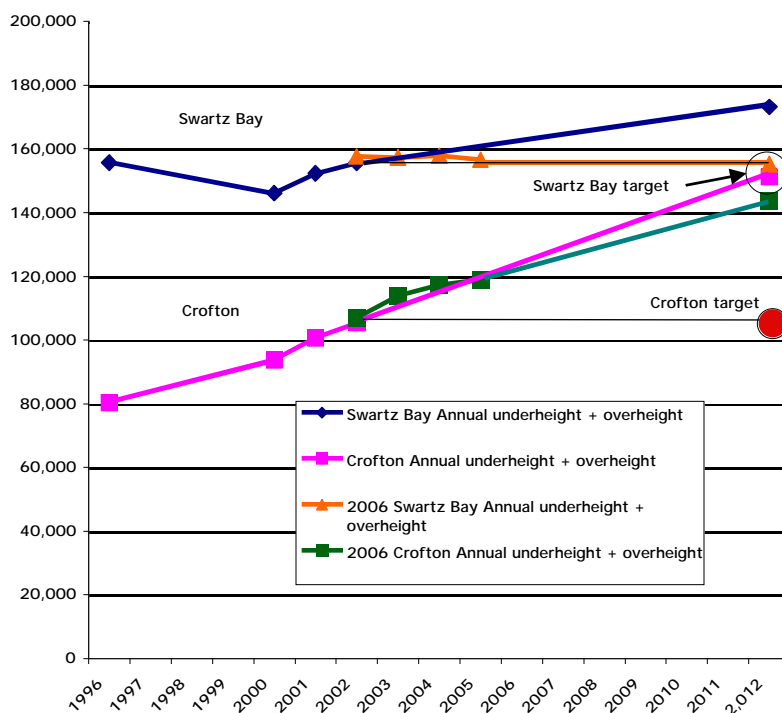
- increased fleet fuel efficiency;
- decreased number of vehicles;
- increased occupancy of passenger vehicles (trip reduction).

Chart 3—ICBC Registered Light Vehicles Projections to 2012



If the targets were to be met today through reduction of registered vehicles alone, 615 light vehicles and 23 heavy commercial vehicles would have to be removed from Salt Spring roads.

Chart 4—BC Ferries passenger vehicles, overheight and underheight



BC Ferries traffic data show a decline in growth rates. From fiscal 2002/3 to fiscal 2005/6 average annual growth rate was 3.7% for light vehicles on the Crofton route, balanced by a slight negative growth rate (-0.23%) on the Swartz Bay route. Commercial and semi traffic had higher growth rates on each route, 1.74% and 9.65% respectively. All growth rates are lower than the preceding (calendar) year. Projected to 2012, the Crofton route will be carrying almost as much traffic as the Swartz Bay route. While BC Ferries traffic data do not directly impact the Energy Strategy, they do provide information about the amount of traffic onto the island. BC Ferries' fuel consumption also contributes significantly to regional GHG emissions and air pollution.

The Energy Strategy target for food is to replace 10% of Salt Spring's imported food with local products by 2012 to provide about 23% of the total reductions needed. A 2005 study found that commercial fruit and vegetable production on Salt Spring was equivalent to about 5% of annual consumption. A study undertaken the previous year arrived at a similar percentage for meat production, however proposed changes to slaughter regulations have resulted in a decrease in the number of animals raised for meat on the island. It is not clear whether current initiatives underway to increase local food production will reverse the decline in meat production and boost other production sufficiently to meet the 10% target by 2012.

In summary

While the picture is not good, the projections indicate that Salt Spring is closer to meeting its energy targets than it was when the original baseline was prepared.

- The 2012 targets will not be met if current growth rates continue;
- Growth rates have declined since 2002;
- BC Hydro commercial customers appear to be reducing their energy consumption;
- ICBC registered vehicle data indicates fleet fuel consumption is declining;
- Action by all—individuals, businesses and institutions, and local, provincial, and federal governments—will be needed if Salt Spring is to achieve its targets.

The following reports are available at <http://www.saltspringenergystrategy.org>

Salt Spring Island Community Energy Strategy Baseline Report, May 2004

Salt Spring Island Community Energy Strategy, March 2005

Salt Spring Island Community Energy Strategy Baseline Report Update, January 2007

Introduction

This is the first three-year update and includes 2005 data from BC Hydro, ICBC, BC Ferries, and other sources where available. The Salt Spring Island Community Profile & Data Inventory provided the updated CRD building permit numbers (and also includes a summary of the Baseline Report). 2006 data has been included when provided. Little of the original Baseline Report is repeated in this update and readers wishing a more complete picture are referred to the May 2004 Baseline Report, available online at www.saltspringenergystrategy.org The next three-year update, to be prepared in 2009, will examine 2008 data.

Electrical Energy Consumption

Electrical energy use on Salt Spring continues to increase; however the rate of increase is declining. BC Hydro provided updated consumption data for 2002 through 2005. These data do not correspond exactly with the data provided for the original report¹ so both sets of figures are included in Chart 2 and in the table below. Total annual consumption in 2002 was either 386,035 GJ (107,232 MWh) or [new data] 369,702 GJ (102,695 MWh). Annual consumption in 2005 was 109,733 MWh. The residential sector uses 81% of that amount, with the bulk of the energy used during the heating season.

Table 1— Summary of Electrical Energy and associated GHG emissions

	2000	2001	2002	2003	2004	2005	2012
Total electricity consumption, MWh	101,548	104,266	107,232				130,458
As above, updated 2006			102,695	105,007	105,451	109,733	124,046
% annual increase		2.68	2.84	2.25	0.42	4.06	
Total Residential consumption, MWh	81,200	83,538	85,998				102,880
As above, updated 2006			83,243	84,709	85,052	88,730	99,717
% annual increase		2.88	2.94	1.76	0.40	4.32	
Total Commercial consumption, MWh	20,348	20,728	21,234				27,578
As above, updated 2006			19,452	20,298	20,399	21,003	24,329
% annual increase		1.87	2.44	4.35	0.50	2.96	
Total energy, GJ	365,573	375,358	386,035				469,649
As above, updated 2006			369,702	378,025	379,624	395,039	446,565
Energy, residential, GJ	292,320	300,737	309,593				370,368
As above, updated 2006			299,675	304,952	306,187	319,428	358,981
Energy, commercial, GJ	73,253	74,621	76,442				99,281
As above, updated 2006			70,027	73,073	73,436	75,611	87,584
GHG emission factor t CO ₂ / MWh (1)	0.042	0.042	0.042	0.042	0.042	0.042	0.074
Total GHG , t CO ₂ eq. (2)	4,265	4,379	4,504				9,654
As above, updated 2006			4,313	4,410	4,429	4,609	9,179
GHG emissions – residential, t CO ₂ eq. (2)	3,410	3,509	3,612				7,613
As above, updated 2006			3,496	3,558	3,572	3,727	7,379
GHG emissions – commercial, t CO ₂ eq. (2)	855	871	892				2,041
As above, updated 2006			817	853	857	882	1,153

1. from Bowen CEP—BC Hydro - VCR projection for 2005 used for 2012. 2000 factor used for 2001—2002
2. " consumption" times "GHG emission factor"

From 2000 through 2002 the average annual rate of increase, all sectors, was 2.8%. From 2002 through 2005 it was 2.2%. For the residential sector, the percentages for the same periods were 2.91% and 2.16%. For the commercial sector, the percentages were 2.18% and 2.66%.

BC Hydro emission factor projections continue to be a moving target. Greater use of “green” energy for power generation reduces the emission factor, greater use of fossil fuels increases the emission factor. See www.bchydro.com/rx_files/environment/environment4097.pdf for 2002 BC Hydro projections.

In 2002, there were either 545 [old data] or 491 [new data] open commercial accounts, and 5,244 [old data] or 4,893 [new data] residential accounts. About 80% of the accounts are residential. Overall, the number of new accounts from 2002 through 2005 grew at an average rate of 2.81% per year—2.57% for the residential sector and 5.02% for the commercial sector.

Table 2—Number of BC Hydro accounts with V8K postal code, 2006 data

	Dec2002 Accts (#)	Dec2003 Accts (#)	Dec2004 Accts (#)	Dec2005 Accts (#)	Dec2012 Accts (#)
RESIDENTIAL	4,893	5,077	5,149	5,285	6,162
# increase		184	72	136	877
% increase		3.76	1.42	2.64	
COMMERCIAL	491	545	556	573	760
# increase		54	11	17	187
% increase		11.00	2.02	3.06	
TOTAL	5,384	5,622	5,705	5,858	6,922
# increase		238	83	153	1,064
% increase		4.42	1.48	2.68	

In 2002, the average annual consumption per commercial account was 38,961 kWh [old data], or 39,617 kWh [new data]. The average annual consumption per residential account was 16,400 kWh [old data], or 17,013 kWh [new data]. In 2005, average consumption had declined to 36,654 kWh for commercial accounts and 16,789 kWh for residential accounts. Average commercial consumption decreased by 2.49% per year. Average residential consumption decreased by 0.44% per year. The decline in consumption in the average residential account is very small and may result from an increase in the number of vacation homes rather than greater energy efficiency of the housing stock.

Table 3—Changes in average annual electrical consumption by sector

	Dec2002 Accts (#)	Dec2003 Accts (#)	Dec2004 Accts (#)	Dec2005 Accts (#)	Dec2012 Accts (#)
# RES accounts	4893	5077	5,149	5,285	6,162
Avg. annual consumption	17,013	16,685	16,518	16,789	16,183
% increase		-1.93	-1.00	1.64	
# COM accounts	491	545	556	573	760
Avg. annual consumption	39,617	37,244	36,689	36,654	32,024
% increase		-5.99	-1.49	-0.09	

Dwelling Units

In 2003 we estimated that there were 5,278 dwelling units on island (including apartments and mobile homes). This figure was based on StatsCan 2001 census data, and was higher than the number of dwelling units estimated by the Salt Spring CRD Building Permit Office (4,623) and higher than the number of BC Hydro Residential Accounts for 2003 (5,077). Adding 214 residential building permits, the total number of dwelling units in 2005 was 5,492. Because there are an unknown number of illegal dwelling units on Salt Springⁱⁱ, the actual number of dwelling units will be higher than the reported number.

CRD Building Permit Office does not track the energy efficiency of new dwellings. Anecdotally, they do not recall any R-2000 homes built recently. The 2006 Eco-home tour showcased eight homes built within the last ten years each of which included some energy-efficiency and/or renewable energy features. None of these homes was an R-2000 home. Very few new homes (less than 5%) on Salt Spring are built to energy performance standards significantly higher than the BC Building Code.

Between 2003 and Dec 2006, fifty-one existing homes have received EnerGuide for Houses (EGH) energy audits [now called Energy Savings Plan (ESP) energy audits]. Six of these homes have been improved sufficiently to qualify for grants. Improved EGH houses represent about one tenth of one percent of the existing housing stock. The Energy Strategy target is 20%, about 1,000 units, of existing homes retrofitted by 2012. If EGH retrofits represent 10% of all home retrofits, 60 homes have been retrofitted, leaving 940 remaining, or about 160 per year.

Table 4: CRD Building Permits³

	Single-Family	2 Family	Multi Unit	Mobile Home	Move-In	Total	Commercial
1983	99			6	4	109	10
1984	46		22	7		75	17
1985	49			10		59	16
1986	53	1		14		68	19
1987	81			15		96	83
1988	75	14	21	22	2	134	21
1989	125	2	25	25	11	188	19
1990	125	5	3	43	2	178	32
1991	137	2	8	32	2	181	36
1992	130	1	15	8	4	158	22
1993	116		21	5	2	144	33
1994	121		13	3	5	142	21
1995	89		11	3	2	105	27
1996	65	1	5	3		74	101
1997	74			3	2	79	25
1998	53			4	1	58	13
1999	81		5	4	4	94	20
2000	54			1		55	14
2001	82	2	8	1	6	99	20
2002	66		38	5	0	109	26
2003	82		11	2	2	97	25
2004	73	5	25	2	3	108	10
2005	62	1	40	2	1	106	29
TOTAL	1938	34	271	220	53	2516	639

Island Vehicles

Because there were differences in reporting categories between the ICBC data sets provided in October, 2006 and the ICBC data provided in 2003, the 2006 data has been used as follows:

Table 5: ICBC insured vehicles as of June

	2000	2001	2002	2003	2004	2005	2006	2012
Heavy commercial vehicles	36	43	51	57	59	65	74	94
# increase HC vehicles		7	8	6	2	6	9	
% increase HC vehicles		19.4%	18.6%	11.8%	3.5%	10.2%	13.8%	
Medium Commercial vehicles	60	58	56	60	64	59	60	59
# increase MC vehicles		-2	-2	4	4	-5	1	
% increase MC vehicles		-3.3%	-3.4%	7.1%	6.7%	-7.8%	1.7%	
Automobiles	4707	4888	5068	5228	5400	5399	5563	6440
# increase automobiles		181	180	160	172	-1	164	
% increase automobiles		3.8%	3.7%	3.2%	3.3%	0.0%	3.0%	
Light trucks	1664	1701	1757	1785	1861	1850	1877	2082
# increase light trucks		37	56	28	76	-11	27	
% increase light trucks		2.2%	3.3%	1.6%	4.3%	-0.6%	1.5%	
TOTAL light vehicles	6371	6589	6825	7013	7261	7249	7440	8522
# increase light vehicles		218	236	188	248	-12	191	
% increase light vehicles		3.4%	3.5%	2.7%	3.4%	-0.2%	2.6%	
FUEL EFFICIENT VEHICLES								
Hybrids			1	6	11	20	37	84
Smart Cars-Three Point Motors*							22	
# customers registered to purchase biodiesel**							20	

* Smart Car data provided by Three Point Motors, Victoria

**Biodiesel data provided by Pretzel Motors

The total number of insured light vehicles increased from 6,825 in June 2002 to 7,249 in June 2005, an average increase of 141 vehicles per year. Overall, the average rate of increase has declined from 3.5% per year (2002 Baseline Report) to 2.8%. The number of automobiles increased by an average of 3.0% per year from 2000 through 2006; the equivalent percentage for light trucks was 2.1%. The higher growth rate for automobiles than light trucks suggests that light vehicle fleet efficiency has improved.

The number of hybrid vehicles has risen from 1 in 2002 to 37 in 2006. Three Point Motors reported selling a total of 22 Smart Cars to islanders by the end of September 2006. Based on these figures, it appears that at least 12% of new vehicles purchased in 2006 are fuel-efficient. (59 of 478 vehicles model year 2005—2007; hybrids and Smart Cars only.)

The number of medium commercial vehicles did not increase, but the number of heavy commercial vehicles increased by an average rate of 17.6% per year. There were 36 heavy commercial vehicles registered on Salt Spring in 2000; in June 2006, there were 74.

To meet the 2012 energy reduction and emissions targets, that is to reduce consumption and emissions to 2002 levels, will require a combination of increased fleet fuel efficiency, decreased number of vehicles, and increased occupancy of passenger vehicles (trip reduction). If the targets were to be met today through reduction of registered vehicles alone, 615 light vehicles and 23 heavy commercial vehicles would have to be removed from Salt Spring roads.

BC Ferries Vehicle Traffic

The following data were provided by BC Ferries and represent one-way traffic from the respective terminals. The data are for fiscal years, thus the 2005 data begin April 1, 2005 and end March 31, 2006. The data provided for the original baseline report were reported in calendar years, thus there are discrepancies between this data set and the earlier data set (2000 and 2001 figures below). The amount of ferry traffic provides an indication of the number of vehicles on Salt Spring roads.

Table 6: BC Ferries One-way Traffic Data

DEPARTURE TERMINAL	Calendar 2000	Calendar 2001	Fiscal 2002/3	Fiscal 2003/4	Fiscal 2004/5	Fiscal 2005/6	2012
#4 Swartz Bay Annual underheight + overheight	146,092	152,243	157,681	157,247	157,781	156,570	155,221
% increase		4.21%		-0.28%	0.34%	-0.77%	
#4 Swartz Bay Annual commercial + semi	4,552	4,873	5,987	5,872	6,136	6,299	6,974
% increase		7.05%		-1.92%	4.5%	2.66%	
# 6 Crofton Annual underheight + overheight	93,745	100,667	107,017	113,926	117,274	118,885	143,490
% increase		7.38%		6.46%	2.94%	1.37%	
# 6 Crofton Annual commercial + semi	3,568	4,034	4,079	5,514	5,384	5,260	7,619
% increase		13.06%		35.18%	-2.36%	-2.30%	
# 9 Long Harbour Annual underheight + overheight			32,066	32,116	31,285	30,304	26,855
% increase				0.16%	-2.59%	-3.14%	
#9 Long Harbour Annual commercial + semi			585	370	399	459	192
% increase				-36.75%	7.84%	15.04%	

Route 4 (Swartz Bay) underheight and overheight vehicles declined by an average of 0.23% a year between 2002/3 and 2005/6. During the same period, Route 4 commercial and semi grew by an average of 1.74% per year. For Route 6 (Crofton) the figures are 3.7% annual growth for underheight plus overheight and 9.65% annual growth for commercial and semi. For Route 9 (Long Harbour) the figures are 1.83% annual decline for underheight plus overheight and 7.18% annual decline for commercial and semi. If these trends continue, by 2012 Route 6 will be carrying almost as much ferry traffic as Route 4.

Food production

The baseline report used population and oil equivalency figures of 1,514 litres per person per year to calculate indirect GHG emissions from purchases of conventionally grown imported food. Indirect emissions from food were calculated to be 38% of total emissions. The Energy Strategy target for food is to replace 10% of Salt Spring's imported food with local products by 2012 to provide about 23% of the total reductions needed.

There were no data available for local food production for 2002. In 2005, a study by Island Natural Growers (Salt Spring Island Local Produce Study, Nov. 2005) found that commercial fruit and vegetable production on Salt Spring was equivalent to about 5% of annual consumption. A study by the Farmers' Institute the previous year arrived at a similar percentage for meat production, however proposed changes to slaughter regulations have resulted in a decrease in the number of animals raised for meat on the island.

In 2006 an Area Farm Plan and a Food Security project were started. Objectives of both are to increase the amount of food grown on Salt Spring.

ENDNOTES

ⁱⁱ For the BC Hydro update, all addresses with V8K postal codes, including those with city location elsewhere, e.g. Qualicum, were included. It is not clear how the 2002 data set was sorted as that information was not provided.

² Neddy Harris did an informal housing survey in 2005 that suggests that there may be about 440 suites and 320 cottages in (illegal) long-term rental.

³ Building Permit table from *Salt Spring Island Community Profile & Data Inventory*, November 2006