



2013 Carbon Neutral Action Report

Vancouver Island Health Authority, May 30, 2014



Executive Summary – Island Health 2013

This is our fifth year of reporting greenhouse gas emissions using SmartTool, our fourth year of purchasing offsets to be carbon neutral and our third year for self-certifying the process to ensure the accuracy and quality of data reported. Being carbon neutral has become entrenched in the business of Island Health. To be carbon neutral in 2013, Island Health has purchased \$801,200 worth of carbon offsets - \$60,025 less than the previous year thanks in part to emissions reduction activities. With the quality and years of data adding up, Island Health has developed a Strategic Plan for Greenhouse Gas Emissions Reduction to ensure we are able to meet our target of reducing emissions by 33% below 2007 levels. This plan shows that Island Health will need to ensure any net new space does not add to the emissions level (Net Zero Emissions) and that the existing buildings will need, on average, an annual investment of \$5.5 million dollars.

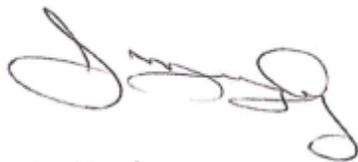
Given that 2013 was also the year that the atmospheric carbon dioxide levels surpassed 400ppm and



will likely reach 450ppm sooner than anticipated, the urgency to reduce emissions is greater than ever. Island Health has initiated fifteen energy studies in 2013 to create a road map for building emissions reductions in the next several years. Recently completed studies have also shown that a significant reduction to emissions levels can be achieved by using biomass for some of our largest boiler plant operations.

The clean energy feasibility studies indicate that there is a significant supply of waste wood on Vancouver Island; this wood can be gasified and burned cleanly in modern biomass boilers and greenhouse gas emissions can be lowered enough to meet Island Health's 33% reduction target while providing a good payback on investment. Significant challenges for implementing this change include the availability of capital and community response to these types of systems being incorporated into the hospitals' energy plants. These challenges are being addressed in 2014 as the urgency to replace aged boilers is also upon us and it would be unfortunate to miss out on this opportunity.

Island Health also continues to make efforts to reduce emissions from many areas of our organization and looks for ways to be sustainable and cost effective while still providing excellent health care. Many of the sustainability initiatives have co-benefits that improve health and employee satisfaction levels. The voluntary participation in Green Team activities continues and ideas for reducing waste range from simple to complex and thoughtfully considered. Reaching Island Health's 2020 greenhouse gas reduction target will not be enough to secure a healthy future and clean planet – we all need to join the Green Team and take steps for a greener health care system, community, and life style.



Joe Murphy
Vice President, Operations and Support Services

Overview

Island Health provides health care to residents on Vancouver Island, the islands of the Georgia Strait, and the mainland communities north of Powell River and south of Rivers Inlet. We are a diverse region serving a diverse population. Providing health care over this wide geographic area requires many buildings dispersed across the region. Facilities are the largest source of greenhouse gas emissions for the health authority. Some *quick facts* about Island Health:

ISLAND HEALTH QUICK FACTS...

FACILITIES = 233 Buildings

BUILDING AREA 2013= 550,560 m²

INCREASE IN AREA SINCE 2007 = 9%

LEED GOLD, FACILITIES = 3 Buildings

LEED GOLD , BUILDING AREA = 50,935 m²

PAID IN CARBON OFFSETS 2013 = \$841,260

GHG EMISSIONS OFFSET (2012) = 34,424 tCO₂e

GHG EMISSIONS OFFSET (2013) = 32,023 tCO₂e

ANNUAL GHG REDUCTION 2013 = 2,401 tCO₂e

GHG EMISSIONS per m²2007 = 0.06234

GHG EMISSIONS per m²2013 = 0.05816

EMISSIONS TARGET (2020)= 21,060 tCO₂e

Commitment

The Executive and the Board of Directors of Island Health (the Board) are fully supportive of energy conservation, carbon emissions reduction and sustainability. The *Greenhouse Gas Reduction Targets Act* states greenhouse gas emissions should be 33% below 2007 levels by 2020. In 2011, Island Health's emissions peaked at 35,266 tCO₂ due to the addition of the Patient Care Centre in Victoria, which added an additional 9.5% in floor area and 2,300 tCO₂e over the previous year.

Since this peak of 2011, Island Health's emission levels have decreased and the commitment remains to achieve a 33% reduction by 2020. That means Island Health's 2020 emissions will be 21,060 tCO₂e or close to 11,000 tCO₂e below 2013 levels. This will require Island Health to cut emissions each year by an average of 1,830 tCO₂e per year.

Challenges for Island Health Meeting GHG Reduction Commitment:

Cost – To date, costs to reduce emissions has been \$3,000/tCO₂e for Island Health.

- Average funding to date has been \$2,200,000/year investment.
- To meet target requires a \$5,500,000/year investment.

Technology - Alternate energies such as solar thermal, geothermal, and heat recovery do not provide high enough temperatures for hospitals though these options are still being pursued for low temperature needs. Biomass does provide the higher temps required.

- Biomass boilers at the 2 largest sites could reduce emissions by 11,700 tCO₂e.

Greenhouse Gas Emissions Reporting and Offset Purchase

Statement of 2013 Emissions and Previous Year Comparison

Internal data collection processes are in place to identify all sources of carbon emissions as defined by the *Greenhouse Gas Reduction Targets Act*. A methodology document is produced each year outlining the reporting and self-certification process. Island Health has reported on carbon emissions using the BC Government's SmartTool program and started offsetting emissions in 2010. This year is our third year of self-certification. Our total emissions from all sources are as follows:

Emission Source	tCO ₂ e 2010	tCO ₂ e 2011	tCO ₂ e 2012	tCO ₂ e 2013
Fleet	922	902	880	893
Office Paper	831	747	717	714
Buildings Owned & Leased	31,245	33,670	32,879	30,468
Total Emissions, Calendar Year	32,998	35,319	34,476	32,076
Carbon Neutral or Offset Exempt Emissions	61	59	52	53
Total Emissions to Offset Reported May 21, 2014 in SmartTool	32,937	35,260	34,424	32,023

Due to usage of BioDiesel 52 tCO₂e were offset exempt. Buildings are the primary source of green house gas emissions accounting for 95.0% of total emissions. Island Health has determined its consumption of fugitive gas (i.e. leaks from pressurized equipment) is less than 1% of the overall emissions and is disproportionately onerous to collect data. For this reason, these gasses have been deemed out of scope. Please see Appendix A for the Emissions Report from SmartTool.

Statement of Adjustments to Greenhouse Gas Emissions and Offsets Reporting from Previous Years

Following the public release of Island Health's 2012 Carbon Neutral Action Report, adjustments were made due to the end of calendar year billing and corrections to data. This resulted in a net increase with offset-able emissions changing from 34,365 tCO₂e to 34,424 tCO₂e for 2012. There was also a small adjustment downward for 2011. Reporting changes due to billing adjustments increased the reported load by less than 0.5%. The following table shows the changes as well as the total cost of offsets purchased.

Year	GHG Emissions tCO ₂ e	Description
2013	32,023	(05/21/14 SmartTool)
2012	59	34,424(05/21/14 ST) – 34,365 (total paid 05/2013 Island Health)
2011	-34	35,226(05/06/14 ST) – 35,260 (total paid 05/2013 Island Health)
Total	32,048	Island Health Emissions - May 15, 2014
Cost	\$842,260.00	\$801,200 (32,048 x \$25/tonne) + \$40,060 (5% GST)

Statement of Offset Purchases from Pacific Carbon Trust (PCT)

For 2013, Island Health purchased \$801,200 in offsets from Pacific Carbon Trust in order to be Carbon Neutral. The offset payments provide incentives to greenhouse gas reduction projects within British

Columbia that would otherwise not have been completed. These projects support British Columbia’s green economy. At \$25 per ton, this investment provides a cost effective means of reducing British Columbia’s greenhouse gas emissions.

In 2014, the provincial government announced that Pacific Carbon Trust would be closed and that the Climate Investment Branch within the Ministry of Environment’s Climate Action Secretariat will make offset purchases for 2014. Since 2010, the Pacific Carbon Trust has retired over 2.3 million tCO₂e. The government also announced the Carbon Neutral Capital Program would be extended to the Ministry of Health. The result has provided Island Health with capital intended to be spent directly on greenhouse gas emissions reduction projects.

Operational Changes in 2013

The following table tracks the net new space added to Island Health’s building inventory since 2007.

Net New Space Added or Removed Since 2007 as of December 2013	Year	Area square metres
Decommissioned – Bay Pavilion, Royal Jubilee Hospital Campus	2007	-2,232
Nanaimo Regional General Hospital Perinatal Department	2008	2,189
Victoria General Hospital Emergency Department	2009	1,660
Port Hardy Hospital Multilevel Care Beds	2009	499
Royal Jubilee Hospital Energy Centre	2009	218
Nanaimo Regional General Hospital Renal Department	2010	1,109
Cowichan District Hospital Pharmacy	2010	152
Cowichan District Hospital Island Medical Program	2011	219
Royal Jubilee Hospital (RJH) Patient Care Centre	2011	41,139
Decommissioned – South, East and Centre Block RJH Campus	2012	-9,130
Nanaimo Regional General Hospital Emergency Department	2012	6,179
Cowichan Lodge Psychogeriatric & Tertiary Care Facility	2012	603
Saanich Peninsula Hospital Operating Rooms	2012	827
Decommissioned - Campbell River Home and Community Care	2013	-517
Oceanside Health Centre	2013	3,436
	TOTAL NET NEW	46,351

Fleet and Paper

For the first year in several years, Island Health has increased the size of its fleet by 13 vehicles; however, the fleet is still smaller than it was in 2010. Paper consumption continues to decrease through device consolidation, double sided printing and going paperless for many processes.

Refer to Appendix A for Vancouver Island Health Authorities Greenhouse Gas Emission Source report from SmartTool for 2013.

In Scope Emission Reduction Activities 2013

Single Site Reduction

Our greatest emissions reduction for 2013 was at Cowichan Lodge in Duncan, British Columbia. As a result of replacing aged boilers with condensing boilers and decoupling the domestic hot water heating system, greenhouse gas emissions were reduced by 129 tCO₂e/yr. This project cost \$170,000 and received a \$12,530 incentive from FortisBC.



Cowichan Lodge - NRGH's new ER targeting LEED - Oceanside Health Centre targeting LEED

Summary of Reduction Measures for 2013

The following table is a summary of the various projects that were completed in 2013/14 fiscal year and the associated GHG emissions reduction, savings, cost and payback:

Project Summary	GHGs Avoided tCO ₂ e/yr	Total Utility Savings	Total Costs	Payback yrs
New Efficient Boilers	127.41	\$37,922	\$452,112	12
Lighting & Electrical Saving Projects	13.92	\$30,606	\$330,090	11
New Construction at Oceanside Health Centre	23.92	\$13,032	\$97,500	7
Purchasing Energy Saving Equipment	4.48	\$10,493	\$99,571	9
Domestic Hot Water Upgrades	91.65	\$27,278	\$200,363	7
Green Teams at 6 sites based on 2% of site gas, 2% of site electrical (verified at over 10% electrical from one site)	187.99	\$82,795	\$120,460	1
Continuous Optimization of Mechanical Systems at 6 Sites	137.15	\$56,177	\$212,414	4
Total for 2013/14	586.51	\$258,302	\$1,512,509	6

Energy Studies in 2013

In 2013, significant effort went into planning for future projects. Island Health undertook three BC Hydro and twelve FortisBC funded energy studies. The studies identify energy conservation and greenhouse gas reduction measures. Recommendations result in requests for capital and

implementation occurs once funding is obtained. These studies will provide the basis of energy conservation measures for the next three years.

Green Behavior Program for 2013

Island Health’s Green Program provides education and specific campaigns on conservation of energy, water, paper and other materials. The program started with five sites and in 2013 a sixth site was added, the second largest site in our portfolio, Nanaimo Regional General Hospital. The Energy program is evolving to a “champion” program based on self-directed toolkits implemented on a departmental level.

One of the toolkits developed in 2013 targeted reducing the consumption of laundry. Our commercial laundries are the fourth largest carbon emitters within our building portfolio. The “Laundry Wise” campaign goal was to reduce the volume of laundry used and thereby save several resources including; water, natural gas, transportation costs, and electricity. Of the pilot sites targeted, five laundry items make up 80% of linen use; they were able to achieve a 6.4% reduction through the efforts of the Green Teams promotion.



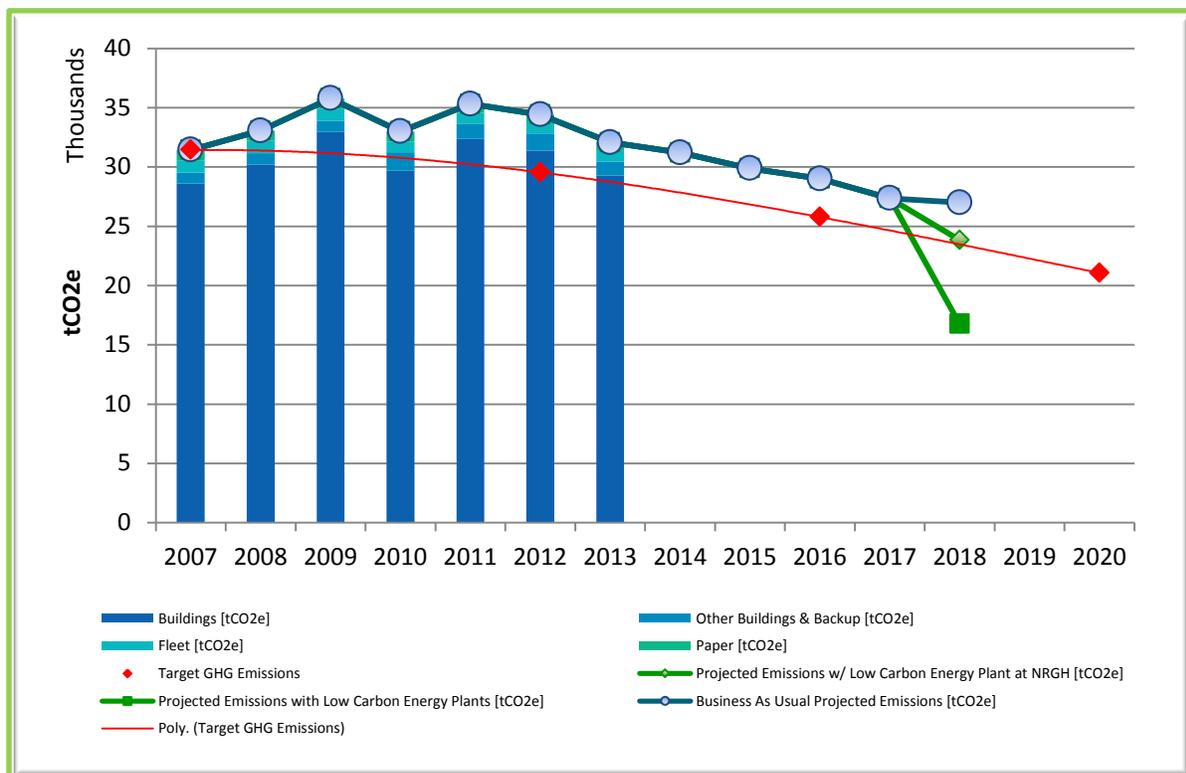
Green Champions in the Medical Device Reprocessing Department

In Scope Emission Reduction Activities- 5 Year Plan

Emission Reduction is Possible

The graph below is a graphical representation of Island Health's Five Year Plan. The red line represents Island Health's target emission to meet the 33% reductions by 2020, the blue line represents business as usual case (which includes energy conservation), and the green line represents the impact of low carbon energy plants at Nanaimo Regional General Hospital only (diamond green square) and both Royal Jubilee Hospital and Nanaimo Regional General Hospital (large green square).

Island Health Owned Buildings GHG Emission Targets vs Actual and Projected Emissions



The majority of our carbon emissions come from buildings. By replacing some or all of the natural gas boilers at our largest facilities with low carbon energy systems, or connecting to a district energy system with low carbon emissions, Island Health will ensure that targets are met. Low carbon energy systems can include biomass boilers and/or heat recovery chillers. Hospitals need steam for sterilization and the majority of the existing buildings have steam systems for heating. Conversion to hot water is being done where it is feasible and as funding becomes available.

Boilers, Steam and Biomass

As noted above, Island Health's main source of greenhouse gas emissions comes from existing buildings and their boiler systems. Many of these facilities and boiler plants were constructed in the 1950's and 1960's. Energy conservation was not a concern and massive steam boilers provided steam for laundry, sterilization, domestic hot water, food preparation and heating the facilities. Reducing the reliance on steam has been underway at various sites for several years but many buildings and sites will need to rely on steam for many more years and it is still necessary for sterilization of surgical instruments.



Victoria General Hospital's two old boilers were removed and replaced with four high efficiency boilers

To produce steam or high temperature hot water in the quantities required for the hospitals, combustion is required, mostly from natural gas. Lower temperature hot water systems can make use of waste heat and with heat recovery chillers, produce a significant source of low emission heat. Island Health is identifying every possible opportunity to utilize these clean sources of heat. Hot water boilers are still required to produce steam or high temperature water.

Since many boilers within Island Health facilities need replacement in the next several years, Island Health has been investigating the use of biomass from waste wood as a potential fuel source for sites that require steam and high temperature hot water. This provides an opportunity to significantly reduce greenhouse gas emissions and increase energy self sufficiency. The two sites with the greatest potential for emissions reduction are:

- Royal Jubilee Hospital (RJH) - A single biomass boiler providing base steam load at RJH would reduce Island Health's greenhouse gas emissions by as much as 25% per year and save the organization \$1.5 million a year in utility costs and offset payments. The cost for installation is estimated at \$11.1 million and has a payback of 7.4 years.
- Nanaimo Regional General Hospital (NRGH) - Similarly adding two biomass boilers to new boiler plant at NRGH would reduce the emissions of that plant by 3,100 tCO₂e and save the organization \$623,000 per year in utility costs and offset payments. The estimated premium for doing this is \$5.8 million and has a 9.3 year payback.

Although the economics look promising, Island Health would like to consult with all stakeholders including the neighbors and municipalities to ensure that they also agree with using biomass to reduce emissions for the two hospitals. Additionally availability of capital remains as a barrier to replacement of the boiler plants. Island Health has explored purchasing thermal energy from third party utilities but has found that provincial financing rules make this a very difficult, time consuming option to implement.

Alternative Energy

Island Health currently has solar thermal arrays on four health care sites reliably preheating domestic hot water, reducing emissions, and providing some energy independence for those sites. Island Health continues to look for opportunities to include solar – ideally when a domestic hot water system is being upgraded or renewed. We are also studying the viability for solar thermal or solar electric at isolated locations so they can become more resilient and self sufficient during storm outages.



Solar thermal installations at at Aberdeen, Saanich Peninsula and Victoria Regional Hospitals

The best source of energy for the hospitals is capturing waste heat with heat pumps or heat recovery chillers. Oceanside Health Centre has employed a Thermenex[®] system that optimizes the utilization of waste heat and waste cooling. The new Emergency Department in Nanaimo also uses a heat recovery chiller to provide most of the heat for that facility. As old chillers are replaced, the opportunities to utilize waste heat with a heat recovery chiller are investigated. For example NRGH has the most comprehensive system involving a replacement with a heat recovery chiller and has great potential for expansion. As a result of these systems, the size of new boiler plants will be decreased.

Energy Conservation Measures

Island Health has been implementing energy conservation measures for a number of years. Our program identifies energy conservation measures within the organization and systematically implements projects each year. Our average annual savings is typically 1,000 tCO₂e per year. To meet our 2020 target, we will need to reduce our emissions by 11,000 tCO₂e. To do this by 2020 we will need to increase our energy savings each year to 2,200 tCO₂e.

Past projects indicate that bundling energy and greenhouse gas reducing projects for existing buildings on average requires an investment of \$2,500 to \$3,000 per tCO₂e and includes retro-commissioning, heat recovery, domestic hot water system upgrades, boiler plant upgrades and control systems optimization. Based on this estimate, if Island Health is to meet its greenhouse gas reduction targets, an investment of \$5 to \$6 million per year is required for the next five years. This far exceeds our past annual investment levels.

The following table lists a summary of projects identified in our five year Strategic Energy Management Plan and the expected greenhouse gas reduction. The table illustrates that greenhouse gas emissions can be reduced and there is an economic payback for doing this. Many of these projects also update aged infrastructure and improve occupant comfort, environmental conditions within the facilities.

Project Summary	GHGs Avoided tCO2e/yr	Total Utility Savings \$	Total Costs \$	Payback yrs
Energy Efficient Boiler Plant Upgrades	274.20	80,758	900,483	11
Energy Efficient Lighting Upgrades	32.44	85,801	821,886	10
GHG Reduction for HVAC Systems - 2 sites	190.69	77,359	457,106	6
Continuous Optimize of HVAC Systems - 9 Sites	252.26	101,119	364,560	4
2014/15 Total	749.59	\$345,037	\$2,544,035	7
Energy Efficient Boiler Plant Upgrades	93.05	27,695	400,000	14
Energy Efficient Lighting Upgrades	2.70	7,116	122,473	17
GHG Reduction for HVAC Systems - 3 sites	744.99	227,769	1,673,400	7
Green Team 2% of site gas, 2% of site electrical	187.99	82,795	120,460	1
2015/16 Total	1,028.73	\$345,375	\$2,316,333	7
Lighting Upgrades	31	75,400	626,000	8
GHG Reduction Projects for HVAC Systems - 4 Sites	714.88	216,443	2,926,700	14
Continuous Optimization at Victoria General Hospital	154.34	68,156	200,000	3
2016/17 Total	900.22	\$359,999	\$3,126,700	9
Lighting Upgrades	31	75,400	626,000	8
GHG Reduction for HVAC Systems - 2 sites	1,029.53	306,436	,680,000	5
New North Island Hospitals	273.19	33,561	-	0
Green Team 2% of site gas, 2% of site electrical	187.99	82,795	120,460	1
Continuous Optimization at NRGH	154.34	68,156	200,000	3
2017/18 Total	1,676.04	\$566,348	\$2,626,460	5
Lighting Upgrades	31	75,400	626,000	8
GHG Reduction for HVAC Systems - 1 Site	200.00	59,529	750,000	13
Low-Carbon Energy Plant at RJH	7,136.00	1,500,000	11,140,000	7
Low-Carbon Energy Plant at NRGH	3,100.00	623,000	5,810,000	9
Continuous Optimization at Royal Jubilee Hospital	154.34	68,156	300,000	4
2018/19 Total	10,621.34	\$2,326,085	\$18,626,000	8
Grand Total 5 Years	14,975.93	\$3,942,844	\$29,239,528	7

New Construction

New construction provides a great opportunity to improve building's greenhouse gas emissions as well as include adaptive strategies for the changing climate. Island Health has found that it pays to go beyond constructing new building to LEED® Gold standards. The best way to do this is to enroll in BC Hydro's and FortisBC's New Construction Whole Building Program thereby receiving technical input/knowhow incentives for energy conservation measures. The new North Island hospitals will be constructed to very aggressive energy targets and will include a net reduction in greenhouse gas emissions. They will also be district energy ready should a low carbon district energy system become available in the life of the building.

Although each new building added to Island Health's stock is becoming successively more energy efficient than the last, if provincial targets are going to be met then all replacement construction must have emissions targets that are, at minimum, 33% below the 2007 emission levels for the building they are replacing. Net new space must be constructed with net zero emissions. This has yet to be achieved at Island Health.



Nanaimo Regional General Hospital's new ER is targeting LEED® Gold and won recognition from BC Hydro

Initiative to Reduce Provincial Emissions and Improve Sustainability

Island Health is incorporating sustainability into its practice and continues to implement various means to reduce emissions. In 2013, a collaborative effort between departments brought a “Dr PrintLESS” behavior campaign to staff via a series of short videos, newsletter stories and intranet info. See <https://vimeo.com/96948417>.

Island Health also continues to make strides towards reducing carbon emissions in various other ways such as encouraging low emission transportation, purchasing energy efficient products, increasing rates of recycling, expanding the Telehealth network and engaging with the public about greenhouse gas reductions.

Parking Services promotes alternative transportation such as walking or transit with subsidized annual bus passes. A shuttle bus transports employees (and packages) between the two largest hospitals in Victoria so that staff can shuttle to meetings, work or training without needing a car. Most sites provide access to bike racks and showers for employees. Employees that use RideShare and carpooling are offered reserved parking to encourage reduction in single driver car trips. IM/IT also supports reduced travel by providing video conferencing facilities at most sites; these facilities save travel time, costs and greenhouse gas emissions.



Island Health encourages participation in Bike to Work Week

Telehealth brings health care to remote areas by having patients visit with specialists via an audio visual connection saving time, costs and carbon emissions while avoiding travel discomfort. Telehealth service prevented the equivalent of 87 trips around the earth: <http://www.viha.ca/telehealth/>.

Island Health continues to engage with the public in regards to efforts made within the organization to reduce its reliance on fossil fuels. In August 2013, the Greater Victoria's Resilient Regional Breakfast was hosted at Victoria General Hospital where the public attending the breakfast were given a tour of the massive solar thermal installation. The solar panels serve as a public icon of our commitment to sustainability.



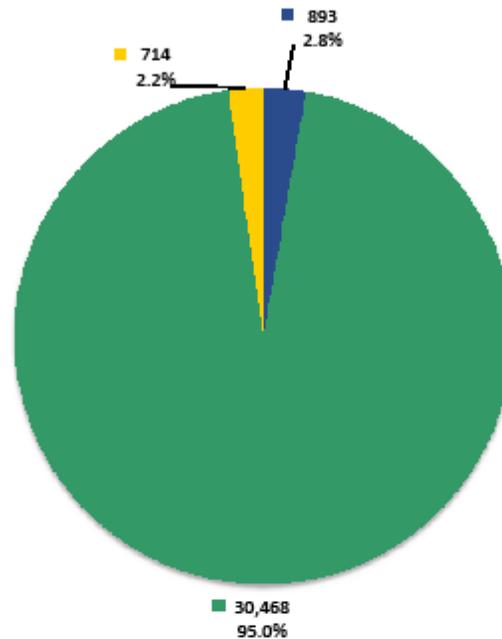
A public solar tour was hosted at Victoria General Hospital in collaboration with the Capital Regional District

Island Health believes that fostering sustainability will ensure a healthy environment and a healthy economy. At Island Health, we are all part of the Green Team as our planet is depending on us to make the important changes necessary to minimize the impacts of climate change. Starting the first day on the job, New Employee Training includes an introduction to sustainability and the green website. Employees are also incorporating green practices behind the scenes into their daily work – they are choosing double-sided printing, purchasing ENERGY STAR products, suggesting green tips and stories, recycling, and walking or riding to work. However, this is only a start. There are many more opportunities to improve and it is vitally important that we step up our effort significantly each year.



APPENDIX A

Vancouver Island Health Authority Greenhouse Gas Emissions by Source for the 2013 Calendar Year (tCO₂e*)



Total Emissions: 32,076

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2013 (Generated May 21, 2014 4:11 PM)

Total offsets required: 32,023. Total offset investment: \$800,575. Emissions which do not require offsets: 53 **

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** Under the *Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act*, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.

APPENDIX B

2013 Carbon Neutral Action Report (CNAR) Part 1 & 2 and Actions to Promote Sustainability and Conservation

PSO Name: Vancouver Island Health Authority (Island Health)

Primary Contact Person: Deanna Fourt, Director Energy Efficiency and Conservation

Part 1: PSO Data

Please fill in all variables. If there are no variables, please enter 0 (zero).

Variable	Response
Full Time Equivalent employees (FTEs) within your organization	11798.5
Small vehicles are in your fleet (gators, forklifts, snowmoblies)	20
Medium-sized vehicles are in your fleet (cars, trucks, SUVs, ambulances)	182
Large vehicles are in your fleet (school buses, buses, transport trucks)	33
How many buildings does your organization own?	87
How many buildings does your organization lease space in?	146
Floorspace in square meters in your organization (occupied & unoccupied)?	550,556.46
Schools, Universities & Colleges only - # of student FTEs as of Dec 31, 2013?	0

Green Buildings

Green Buildings refers to any buildings built to a higher level of energy efficiency than the standard building code including LEED, Boma Best, Living Building, Passive House or other designations

How many Green Buildings do you own?

Variable	Response
LEED Non-certified	0
LEED Silver	0
LEED Gold	3
LEED Platinum	0
Other - Boma Best, Living Building, etc.	0

Part 1: PSO Data – Continued

How many Green Buildings do you lease space in?

Variable	Response
LEED Non-certified	0
LEED Silver	0
LEED Gold	0
LEED Platinum	0
Other - Boma Best, Living Building, etc.	0

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How many Green Buildings do you have under construction (as of Dec 31, 2013)?

Variable	Response
LEED Non-certified	0
LEED Silver	0
LEED Gold	0
LEED Platinum	0
Other - Boma Best, Living Building, etc.	0

Describe the one action taken in 2013 that resulted in, or is expected to result in, the greatest emissions reductions for your organization (this may be considered your 2013 "success story"):

1	Cowichan Lodge	At a single site our greatest emissions reduction for 2013 was 129 tCO ₂ /yr at Cowichan Lodge in Duncan, British Columbia, as a result of replacing aged boilers with condensing boilers as well as decoupling the domestic hot water heating system. This project cost \$170,000 and received a \$12,530 incentive from FortisBC.
2	BC Hydro Continuous Optimization Program	At eleven sites across Vancouver Island, a low cost initiative was the Continuous Optimization Program that has resulted in 247 tCO ₂ e/yr reduction. The total project cost was \$387,000 and provided an incentive from BC Hydro and FortisBC of \$204,500. The great part about this project is that it appears, from initial reports that the savings are exceeding predictions.

Provide a "wish list" of reduction actions your organization would like to take, i.e. what are the priority projects your organization sees as being most effective in leading to substantive reductions of emissions and increased energy efficiency (regardless of cost or other limiting factors)?

1	Single Biomass Boiler	A single biomass boiler providing base steam load at Royal Jubilee Hospital would reduce Island Health's greenhouse gas emissions by as much as 25% per year and save the organization \$1.5 million a year in utility costs and offset payments. The cost for installation is estimated at \$11.1 million and has a payback of 7.4 years.
2	2 Biomass Boilers	Similarly adding two biomass boilers to the Nanaimo Regional General Hospital's new boiler plant would reduce the emissions of that plant by 3,100 tCO ₂ e and save the organization \$623,000 per year in utility costs and offset payments. The estimated premium for doing this is \$5.8 million and

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		has a 9.3 year payback.
3	Bundles of Energy Reduction Measures	Past projects indicate that bundling energy and greenhouse gas reducing projects for existing buildings require an investment of \$2,500 to \$3,000 per tCO ₂ e and will include for example retro-commissioning, heat recovery, and control systems upgrades. For Island Health to meet its greenhouse gas reduction targets an investment of \$6 million per year is required for the next 5 years.
4	Adaption Risk Assessment	As each building is energy retrofitted, an adaption risk assessment is also completed and these measures are considered as part of the mitigation measures. For example areas that have high incidence of power outages and may be susceptible to increased storm activity could have alternate methods of generating electricity that are also low greenhouse gas emitting such as photovoltaic solar collectors.
5	Net Zero	Any net new space added to the organization is required to be net zero greenhouse gas emissions and include adaption measures based on a risk assessment for the geographical area.

What are the barriers your organization faces when trying to implement emissions reduction initiatives? It is expected that funding is a major issue. If there are other barriers as well please describe those.

1	Public Perception	One of the measures that has been identified as having a significant impact on reducing greenhouse gas emissions for Island Health is the use of biomass from waste wood. There is concern about how the public will perceive or react to this type of technology.
2	Cost and Limitations of Alternates	Cost of alternate energies such as solar or geothermal as well as the low temperature of heat provided by these technologies is a barrier to these technologies being widely used in acute care hospitals. Hospitals have been built to utilize steam and need to convert to hot water where possible; even with this there will still be a demand for steam to sterilize surgical equipment, produce high temperature water and supply existing infrastructure that cannot be converted to hot water.

Does your organization have an emission reduction target? If yes, please describe.

	Yes	The Executive and the Board of Directors of Island Health (the Board) are fully supportive of energy conservation, carbon emissions reduction and sustainability. The <i>Greenhouse Gas Reduction Targets Act</i> (Bill 44) states
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		greenhouse gas emissions should be 33% below 2007 levels by 2020. In 2011 Island Health's emissions peaked at 35,226 tCO ₂ due to the addition of the Patient Care Centre in Victoria which added an additional 10% in floor area. As of 2013 Island Health's emission levels have continued to decrease and the commitment remains to achieve a 33% reduction by 2020.
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Does your organization have a strategic plan to implement emission reduction activities (e.g. a five year plan)? If yes, please describe.

	Yes	Island Health's Energy Efficiency and Conservation Department has a plan in place that will reduce emissions on average 1,000 tCO ₂ per year. The plan requires an investment of \$2,500,000 in capital each year and is based on current energy studies and programs with BC Hydro and FortisBC. The average annual savings is estimated to be just over \$200,000. By 2020 that means we will have saved 6,000 tCO ₂ e per year and spent \$15,000,000. Unfortunately this will not meet our target. We have estimated that we need to reduce emissions by 11,000 tCO ₂ e per year from current levels. It is likely that more savings can be found within our existing facilities with a larger investment of capital; however, we do not think we can meet the target with existing fuels. Our best opportunity is to change fuel type when we do a boiler replacement. As noted above replacing a single gas boiler at our largest site with a biomass boiler would reduce our emissions by 25% per year.
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Part 2: Actions Taken to Reduce Emissions

1) Stationary Fuel Combustion, Electricity (Buildings): Indicate which actions were taken in 2013:

Performed energy retrofits on existing buildings.	Yes	In 2013 Island Health completed 14 energy retrofits at nine sites and reduced greenhouse gas emissions by 245 tCO ₂ . The cost for the retrofits was \$1.1 million and will save \$115,000 per year in energy costs. The payback is 9.6 years. Energy conservation measures included six new high efficiency or condensing boilers, two domestic hot water upgrades, one high efficiency dishwasher, light and lighting control upgrades, and coil cleaning.
Built or are building new LEED Gold or	Yes	Island Health completed Oceanside Health Centre in Parksville, BC in 2013. This facility is targeting LEED Gold and was registered with BC Hydro's New Construction Program and FortisBC's High Efficiency Boiler Program. These

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other "Green" buildings.		programs help to ensure the building achieves a high level of energy efficiency. These efforts reduced the annual utilities cost for the facility by \$14,000.
Undertook an evaluation of overall building energy use.	Yes	In 2013 Island Health undertook three BC Hydro and twelve FortisBC funded energy studies. The studies identify energy conservation and greenhouse gas reduction measures. Recommendations result in requests for capital and implementation occurs once funding is obtained. These studies will provide the basis for energy conservation measures for the next three years.

Please list any other actions taken to reduce emissions from Buildings:

1	Green Teams	Island Health runs an organization wide awareness campaign and targets specific behaviour changes at six sites using Green Teams and Green Champions. At one of the Green Team sites, Trillium Lodge in Parksville, there have been measureable changes in the energy savings. The savings have continued since the inception of the Green Team in August 2011.
2	Continuous Optimization of HVAC Controls	Another very effective program for reducing greenhouse gases is BC Hydro and FortisBC's Continuous Optimization Program. This is a low cost program that takes a systematic look at all of the heating, ventilation and air conditioning systems controls to make sure they are optimized. Over time large facilities can end up with systems or components left in manual or schedules out of date for the activities that are going on in the spaces.
3	Fuel Polishing	Historically backup fuels for boiler systems and emergency generators were kept fresh by burning them in the boilers every year. These fuels produce more greenhouse gases than natural gas and are also expensive. Sites have installed fuel polishing systems to save money and reduce greenhouse gas emissions from burning off these fuels.
4	Heat Recovery Chillers	Island Health has been installing heat recovery chillers instead of regular chillers when there is an opportunity to utilize the waste heat from the cooling process. The waste heat is used to preheat domestic hot water and supply reheat coils. These systems can also be used to recover heat from exhaust air streams in the winter. This equipment has a coefficient of performance of three or greater – that means any heat recovered is increased by a factor of three or more. This heat is used to preheat incoming outside air.

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2) Mobile Fleet Combustion (Fleet and other vehicles): Indicate which actions were taken in 2013:

Do you have a fleet?	Yes	
Replaced existing vehicles with more fuel efficient vehicles (gas/diesel)	Yes	Island Health replaced nine existing vehicles in 2013/14 fiscal year. All were gas and the average age of replaced vehicles was twelve years old.
Replaced existing vehicles with hybrid or electric vehicles	No	
Reduced the overall number of fleet vehicles	Yes	Overall Fleet reduced by one vehicle. 182 remaining in Island Health.
Took steps to drive less than last year	No	Workload demands were up by 20% over 2012/13 fiscal.
Please list any other actions taken to reduce emission from fleet:	No	Other than vehicle replacement, no other actions taken due to increased workload demands.

3) Supplies (Paper): Indicate which actions were taken in 2013

Used less paper than previous year	Yes	Island Health reduced paper usage by approximately 5% from last year.
Used only 100% recycled paper	No	
Used some recycled paper	Yes	Use of paper with recycled content has increased to approximately 75% of paper used.
Used alternate source paper (Bamboo, hemp, etc.)	No	The IM/IT Department has confirmed that wheat paper works well in printer devices. Low carbon paper supplies will be considered if available and if cost is competitive.
Please list any other actions taken to reduce emissions from paper use:		Increased efficiency of new print devices results in less wastage. Implemented a "Dr PrintLESS" campaign and produced a video see. "Electronic Copy is Best!" https://vimeo.com/96948417

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4) Explain how you plan to continue minimizing emissions in 2014 and future years:

	<p>Island Health will implement its Five Year Plan for energy reduction measures and continues to investigate new technologies and alternate energy. With each new construction project the energy efficiency and greenhouse gas emissions are increased for the organization. Island Health has set requirements for the new North Island Hospitals to be LEED® Gold, registered in the New Construction –Whole Buildings Program with BC Hydro and FortisBC, and establish energy and greenhouse gas emission targets</p>
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Actions to Promote Sustainability and Conservation

The following are actions that fall outside the scope of the Carbon Neutral Government Regulation, but which many organizations still undertake and may wish to report on. This section is optional for reporting.

Business Travel		
Created a low-carbon travel policy or travel reduction goal (Low-carbon: Lowest emission of greenhouse gases per kilometre per passenger)	No	Preapproval form for travel is required in all departments.
Virtual Meeting Technology		
Installed web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Yes	All acute care hospitals and many extended care homes have a meeting room outfitted with large TV screens allowing for virtual meetings. These are free of charge and can be booked on-line like any other meeting room. They facilitate bringing together employees from all over the island without incurring travel costs or loss of time due to travelling.
Made desktop web-cameras available to staff	Yes	New computers have web cameras and software available for web meetings (LiveMeeting, Lync, etc.)

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Encourage alternative travel to meetings		
(e.g., bicycles, public transit, walking)	Yes	Parking Services promotes alternative transportation such as walking, biking and taking the bus. Discounts are available for annual bus passes.
Encourage carpooling to meetings	Yes	Encourages RideShare Program.
Education and Awareness		
Have created Green, Sustainability, Energy Conservation, or Climate Action Teams.	Yes	Our Energy Efficiency and Conservation team of seven people has been operating since 2011. We are continuing with a Green Team program at five sites and have added a sixth site, the second largest site in our portfolio (Nanaimo Regional General Hospital). The program is evolving to a “champion” program based on self-directed toolkits implemented on a departmental level.
Provided resources and/or dedicated staff to support these teams	Yes	Two Energy Team members coordinate the Green Program.
Provided behaviour change education/training for these teams (e.g., community-based social marketing)	Yes	Members of the Energy Team have taken community based social marketing (CBSM) workshops. Introductory CBSM is also provided to employees at Green Team meetings and new champion lunch and learns.
Established a sustainability/green awards or recognition program	Yes	One Certificate of Appreciation is awarded to each of the six sites participating in the green program each year in the fall along with a celebration lunch for the Green Team members.
Support green professional development (e.g., workshops, conferences,	Yes	Three Energy Team members attended McKenzie-Mohr’s Level 1 CVSM workshop and a fourth member attended a

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training)		Building Sustainable Communities conference.
Planning for Climate Change		
Have assessed whether extreme weather events and/or long term changes in climate will affect our organization's business areas	No	Federal research identifies increased frequency and severity of storms, water and food security as areas of concern. Island Health has not assessed how these impacts will affect our organization.
Long term changes in climate have been incorporated into our organization's decision making.	No	Island Health has not considered the long term impacts.
Staff Awareness and Education		
Provided education to staff about the science of climate change	Yes	Our Green intranet website redirects employees to provincial government website. Information is discussed and presented at different levels in the organization. The fact that the atmosphere CO ₂ went above 400ppm was shared up to the Executive.
Provided education to staff about the conservation of water, energy, and raw materials	Yes	Green Program provides education and campaigns on conservation of energy, water, paper and other materials. This year we piloted a “Laundry Wise” campaign with a goal of reducing the volume of laundry. Our commercial laundries account for the fourth largest amount of carbon emissions in our buildings portfolio. One pilot site, which targeted five items that make up 80% of the linen, saw a 6.4% reduction.
Provided green tips on staff website or in newsletters	Yes	In 2013, 19 Green Tips were published in staff newsletters and over 100 are found on the Green website.

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News and Events
VIHA Public and Intranet Sites [Advanced Search](#)

Administrative Resources
Clinical Resources
Departments
Directories
Policies & Procedures
Education
Lunchroom

[Intranet Home](#) > News and Events

Duplex Printing Is Up 17% Thanks To Employees Like You!

[Claudette Poirier@viha.ca](mailto:Claudette.Poirier@viha.ca) [Clarke, Owen](#) , Energy Specialist
Friday, April 12, 2013

When you must print, choose duplex and help save valuable resources!

"We now duplex over 32% of all print jobs, which is more than twice the industry standard," reports IMIT Device Services Manager **Owen Clarke**. "Using duplex printing saves health care dollars while reducing environmental impacts on water and energy while putting less demand on trees that moderate climate change. Take a moment to set your printer default to duplex and be part of the solution!"



Special thanks to VIHA's IM/IT department for doing a great job!

Visit [Green VIHA](#) for more [Green Tips](#) and to learn [What You Can Do to Go Green](#).

[Comments](#)

I need to ...

- Read the guidelines and tips
- Submit news
- Email the editor

Archive

[Year : 2013 \(131\)](#)

[Year : 2012 \(264\)](#)

Example of a Green Tip in staff newsletter

Alternate Work/Commuting Options

Allow for telework/working from home	Yes	Island Health has a policy that allows workers the option to work from home, upon qualification.
Staff have the option of a compressed work week	Yes	An alternate work week policy is in place.
Commuting by foot, bicycle, carpool or public transit is encouraged	Yes	Island Health increased the ProPass subsidies for staff. Staff participates in Bike to Work Week (BTWW).
Shower or locker facilities are provided for staff/students who commute by foot or by bicycle	Yes	Shower and locker facilities provided for staff/students – facilities vary by site. Island Health has increased promotion of employee BTWW.
Secure bicycle storage is provided	Yes	Continue to review and increase storage when able. New secure bike storage at Nanaimo Regional General Hospital in new ED was provided. Secure covered bicycle storage rooms are provided at the three largest sites with additional bike

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		parking in open air bike racks as well as metal enclosed bike lockers for a fee. At medium sized and smaller sites located in rural areas most of the bike parking is by outside bike racks, some covered.
<h3>Other Sustainability Actions</h3>		
<p>Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models</p>	Yes	For new construction and replacements, hands-free and low-flow toilets are used. Where appropriate auto shut off faucets are used.
<p>Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features</p>	Yes	Flow through cooling equipment is being upgraded/replaced. Older toilets and faucets are being replaced with low-flow as part of regular maintenance.
<p>Have put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities</p>	Yes	Recycling is available at virtually all owned sites and the contracts for the housekeeping service providers include collection and removal of recycling. We currently manage seven recycling streams plus recover organic compostable materials from our commercial kitchens where the service exists.
<p>Have implemented a hazardous waste reduction and disposal strategy (Hazardous Waste: E.g., electronics including computer parts and monitors, batteries, paints, fluorescent bulbs)</p>	Yes	<p>There are seven streams of recycling including batteries/cell phones. We have a contract with a refurbishing company that collects, cleans and resells certain surgical devices. Metal and other construction materials are recycled if possible. Old incubators, linen, beds, furniture and other equipment are donated to Compassionate Resource Warehouse who collects them for use in third world countries. Fluorescent bulbs are recycled as part of the provincial program.</p> <p>We are looking at creating new graphics to better educate staff regarding “non-contamination” of our regular waste to keep it out of the hazardous waste category.</p>
<p>Have incorporated minimum recycled content</p>	No	There is no policy in place.

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standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)		
Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)	No	There is no policy in place.
Incorporated lifecycle costing into new construction or renovations	Yes	Some lifecycle costing is done for energy conservation measures.
Please list any other sustainability actions you wish to report not included in the previous list.		
Aboriginal Health		Aboriginal Health works with First Nations communities to maintain and improve the health of Aboriginal people by designing health care facilities to meet their spiritual needs and providing liaison nurses, nutritionists and diabetes nurse educators.
Transportation		Several sites have “No Idling” signs posted and Nanaimo Regional Hospital and Oceanside have electric car charging stations.
Storm Water Management		Storm water management is considered when parking lot paving needs to be done and in some cases impermeable services are chosen. Courtyard gardens often include a rain garden or water feature to support animal and plant life and provide an oasis for spiritual renewal.

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<p>Telehealth</p>	<p>Our Telehealth program provides rural patients with access to medical specialists through virtual doctors meetings. It is about transmitting voice, data, images and information rather than moving patients, health practitioners or educators, thus saving the unwell patient the cost, time and effort of travelling small and large distances. In 2013 the mileage avoided due to Telehealth was 1,398,294 km – and subsequent carbon emissions avoided were 369 tCO₂e/km.</p>
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Telehealth

connects clients and providers over a distance



Programs using Telehealth include

Oncology Cardiology Thoracics Mental Health
 Renal Pharmacy Geriatrics Pediatrics Eating
 Home Health Monitoring Disorder
 Speech Pathology Genetics
 Cross Jurisdictional Stroke

The number of homes that could be provided electricity for an entire year due to prevented gas emissions

180



Telehealth has prevented the equivalent of



65,000
hours of travel



114
trips around the earth

"It's like having the patient next to you"
- Dr. Elizabeth Swiggum

Telehealth is very convenient for me. I received the same service and supports in my own community, without the hassle of traveling to Victoria"
- Client

600

people would not have traveled to see their provider if Telehealth was not available in their community.

Keeping people in their homes

Home Health Monitoring



67% reduction in hospital admissions
75% reduction in length of stay
65% reduction in ER visits

telehealth
@viha.ca

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Please list and other sustainability actions you wish to report not included in the previous list.

Greening Care

Green Survey Results: 2013

The goal of the green survey is to better understand staff awareness, behaviour and values around energy and materials conservation. Staff input helps direct programs and decision making. This year's survey was conducted in Nov/Dec 2013 at 6 green sites: CDH, CRH, TLLTC, SPH, WCGH & NRGH.

You're welcome to join the fun!

More and more people are going green, meeting friends, building community and choosing healthy lifestyles. You can be part of it too, all at your own pace. Learn what you can do at work and home to save energy and be more sustainable. Visit the green website to learn how to join the green program!

intranet.viha.ca/green

Green at Work at Five Green Sites

 **+7%** I turn off lights when possible. 88%. Up 7% from 2010.

 **+10%** I turn off computer monitor when away from my desk.* 41%. Up 10% from 2010.
*and when safe to do so, following Standard Operating Procedures. If unsure, ask your manager.

 **+11%** I unplug unused electrical equipment.* 42%. Up 11% from 2010.

 **51%** I take steps to use less laundry at work (2 laundry pilots held in 2013).

NRGH: First Year's Results Look Good!

 **+8%** Island Health encourages staff to participate in environmental initiatives. NRGH: 66% up from 58%.

 **+6%** I turn off computer monitor when away from my desk.* NRGH: 39%.

 **+8%** I use blinds to keep heat in or out. NRGH: 54%.

 **+2%** I use alternative transportation to get to work. NRGH: 24%.

With support from: Island Health's Energy Efficiency & Conservation team and...



Did you know?

Recycling is the number one environmental concern of staff. Because each municipality accepts different items, each site is special. For recycling info contact Housekeeping on your site or on the intranet under "H". Remember, the number one problem is contamination of waste streams so if in doubt...ask...or LEAVE IT OUT!

We are piloting a "Basic Recycling" toolkit so staff would be able to give their department a recycling tune-up starting in 2015.

How do you rate?

Do the...
"10 easy things YOU can do!"
checklist to see! It's fun!
Ask your friends to do it too!

Go under Departments to "G"
or: intranet.viha.ca/green



94% I believe reducing our carbon footprint at work is important.

Annual green survey

We participate in BC Hydro's Workplace Conservation Awareness Program – either Green Teams or individual Green champions – at six pilot sites. With a baseline of 2010, each year we conduct a survey to poll people's attitudes and behaviours. This information helps with program planning and shows an increase in both awareness and participation since conception. The results are shared with staff in the form of an "Infographic".

Piloting new behaviour campaigns

How can staff help reduce emissions caused by natural gas? Our commercial laundries are the fourth largest contributor so we developed a laundry campaign. By reducing laundry we can also save water, electricity, soaps and replace linens less often. The two pilot sites saw more than a 6.4% reduction in the targeted items.

