

Strategic Energy Management Plan

School District No. 72 (Campbell River)

March 2013

Partnering with:



Senior Management Support:

Name: Kevin Patrick, CGA

Position: Secretary-Treasurer

Signature:

Original Signed by Kevin Patrick

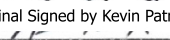


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1. BC HYDRO: ENERGY MANAGER 4TH QUARTER ASSESSMENT FORM - SEMP SELF-EVALUATION

For BC Hydro to complete

File Number	School District 72 Campbell River SUCH-11-868 Steve Woods													
Quarter	4													
PSE Signature: SEMP Completed	Tommy Yim	Date: 2012-04-19												
Projects that used PS incentives:	<table border="1"> <thead> <tr> <th>PS Program Incentive</th> <th>kWh</th> </tr> </thead> <tbody> <tr> <td>PSP</td> <td></td> </tr> <tr> <td>PSP Express</td> <td></td> </tr> <tr> <td>New Construction</td> <td></td> </tr> <tr> <td>Total</td> <td></td> </tr> <tr> <td>Behavioural Program (2%)</td> <td></td> </tr> </tbody> </table>		PS Program Incentive	kWh	PSP		PSP Express		New Construction		Total		Behavioural Program (2%)	
PS Program Incentive	kWh													
PSP														
PSP Express														
New Construction														
Total														
Behavioural Program (2%)														

Turn around time for 4th Q review: _____ days

Energy Manager: Please complete appropriate year below

- Note: All areas (in your contract Year) must be covered in order to receive 4th quarter payment

Year 1: Plan requirements

5 Critical Element must be included in the Strategic Energy Management Plan	Page number where the element is addressed in the SEMP	Energy Manager evaluation	PSE Agrees
1) A purpose statement which answers the following questions: ☐ a) What are you trying to do? ☐ b) What is the Key Performance Indicator for your organization? ☐ c) Who do you need to engage to make you plan successful?		☐	☐
2) A table that compares all your buildings in your portfolio ☐ a) BEPI		☐	☐
3) Explain what the opportunities are to become more efficient. ☐ a) Project List		☐	☐
4) Outline the budget to implement projects ☐ a) No Budget? Can't forecast your budget? You must explain why not and what you intend to do about getting a budget.		☐	☐
5) Conclusion: How is your plan doing? ☐ a) Outlined kWh saved ☐ b) Actual total dollars saved to the organisation ☐ c) Outlined avoided cost ☐ d) Total dollars saved = Actual + Avoided Cost		☐	☐

Year 2 +: Strategic Energy Management Plan requirements

6 Critical Elements must be included in the Strategic Energy Management Plan	Page number where the element is addressed in the SEMP	Energy Manager evaluation	PSE Agrees
1) A purpose statement which answers the following questions: ☐ a) What is your kWh reduction target? ☐ b) What is the Key Performance Indicator for your organization? ☐ c) Who do you need to engage to make you plan successful?	p9, 16, 18. Mar update - p22-23 sect 5.4 p. 6, 8, 20. Mar update - p8, sect 2.3 p. 28 (EMA). Mar update - p24 sect 6.2	☐	☐ P.16 Sec.5 (total energy intensity, not electric kWh target) P.8 Sec.2.3 Missing Stakeholder & Energy Volunteer list.
2) A table that compares all your building in your portfolio ☐ a) BEPI- updated to the current year ☐ b) Explanation of Top 10 worst performing buildings	p. 14,15. Mar update - p14 sect 4.2 p. 13, 14. Mar update - p15 sect 6.2	☐	☒ P.14 Sec.4.2 P.13,14 Sec.4.2
3) Explain what the opportunities are to become more efficient. ☐ a) Project List ☐ b) Initiative List: Behavioural and Organisational ☐ c) Studies: Outline which buildings have had studies completed.	p. 21, 28. Mar update - p23 sect 5.5 p. 21, 28. Mar update - p28 sect 6.6 p. 21, 28. Mar update - p29 sect 6.5	☐	☐ P.21 Sec.5.5, Separate spreadsheet, Potential Project savings mostly blank P.21 Sec.5.5, Separate spreadsheet EMA Missing list of completed Energy Studies with outstanding ECMs
4) Outline the budget to implement projects ☐ a) If No Budget? Can't forecast your budget? You must explain why not and what you intend to do about getting a budget.	p. 6. Mar update - p6 sect 2.1	☐	☐ P.6 Sec. 2.1 Budget is only up to current year, missing next 2-3 years
5) Conclusion: How is your plan doing? ☐ a) Outlined kWh saved ☐ b) Outlined GHG tons saved ☐ c) Outlined total dollars saved to the organisation ☐ d) Outlined avoided cost ☐ e) Outlined total dollars saved	p. 16-20, 24-25 p. 20-21 p. 16-20 p. 16-20 p. 16-20	☐	☒ P.19 Sec.5.2 P.20-21 Sec.5.4 P.19 Sec.5.2 P.19 Sec.5.2 P.19 Sec.5.2
6) Senior Management Support ☐ a) Approval of the SEMP : Signature on the SEMP	Mar update - signature encl	☐	☐ Not req'd at draft stage

	2 nd Q Draft SEMP Submitted Date	Date PSE Coaching Comments Returned to EM	4 th Q SEMP submitted date	Reviewed and Coaching comments returned to EM: Date	*If EM needed to resubmit :date	If PSE reviewed: Date
Energy Manager	2012-10-12					
PSE		2012-11-19				

Tracking:

PSE Coaching Comments For Improvements (Not required for sign-off)

	Date: Duration	Date: Duration	Date: Duration	Date: Duration
Energy Manager contacted PSE for assistance				

2. OUR ORGANIZATION

2.1 Organizational Profile

Organization Profile									
P E O P L E	Sector	☐ Government ☒ Education ☐ Health ☐ Commercial () ☐ Other ()							
	Number of Employees	563 FTE	Number of Students	5205 FTE	Number of Sites	23			
O P E R A T I O N S	Energy Management Issues / Obstacles	- North Island College and tenants not directly accountable for energy efficiency - Funding and resource limitations							
	Core Business Metrics	1. Per Square meter 2. Student FTE							
	Business Year	July 1 st		to		June 30 th			
	Budget Cycle	July 1 st		to		June 30 th			
	Maintenance Cycle	July 1 st		to		June 30 th			
	Maintenance Budget (\$ M)	2012/13	\$2.2	2013/14	\$2.2	2014/15	\$2.2	2015/16	\$2.2
	Energy Efficiency Projects Budget (\$ K)	2012/13	\$714	2013/14	\$202	2014/15	\$50	2015/16	\$50
	Utilities budget (\$ M)	2012/13	\$1.7	2013/14	\$1.6	2014/15	\$1.6	2015/16	\$1.6
	Other Incentives (\$ K)			2013/14	\$50	2014/15	\$50	2015/16	\$50
	AFG Capital Budget (\$ M)	2012/13	\$1.2	2013/14	\$1.2	2014/15	\$1.2	2015/16	\$1.2

Comments:

In recent years School District No. 72 has completed a significant number of energy conservation projects. As a result, the utilities budget has been reduced despite rate increases.

2.2 Facility Profile

Facility Profile						
Site	Size m ²	2012 Annual Energy Consumption GJ (e)	2012 Annual Energy Cost (\$)	2012 Energy Intensity GJ (e) per m ²	2011 Energy Intensity GJ (e) per m ²	2010 Energy Intensity GJ (e) per m ²
Carihi	10,533	7,781	139,585	0.74	0.75	0.82
Cortes	1,382	1,383	45,578	1.00	0.91	0.77
Cedar	2,389	2,110	45,269	0.88	1.00	0.89
Discovery Passage	1,602	1,304	25,869	0.81	0.87	0.83
EDM	2,409	1,652	33,361	0.69	0.71	0.70
Evergreen	1,330	458	10,577	0.34	0.03	NA
Georgia Park	3,375	2,480	51,680	0.73	0.92	0.88
Maintenance/Bus Garage (incl 3 portables)	2,031	1,333	37,242	0.66	0.68	0.74
Ocean Grove	2,525	2,186	45,492	0.87	0.85	0.91
Oyster River	2,106	2,477	52,525	1.18	1.14	1.09
Penfield	2,933	1,754	44,046	0.60	0.59	0.60
Phoenix	8,417	5,041	86,886	0.60	0.69	0.73
Pinecrest (incl 2 portables)	3,385	2,078	43,375	0.61	0.44	0.65
Quadra	2,647	1,228	35,552	0.46	0.49	0.50
Ripple Rock	2,725	1,863	39,330	0.68	0.65	0.66
Robron	7,154	4,776	85,330	0.67	0.65	0.62
Sandowne	3,581	2,687	54,327	0.75	0.73	0.76
Sayward	2,977	2,132	71,164	0.72	0.62	0.89
School Board Office (incl 1 portable)	1,824	1,729	40,847	0.95	1.03	1.05
Southgate (incl 1 portable)	7,546	4,679	85,674	0.62	0.63	0.59
Surge Narrows (incl Community Use)	530	415	16,010	0.78	0.59	1.00
Timberline/NIC (incl 4 portables and NIC)	16,192	17,457	317,724	1.08	1.20	1.24
Willow Point (incl 2 portables)	2,772	2,004	42,310	0.72	0.74	0.81
TOTAL	92,364	71,011	1,449,834	0.80	0.80	0.84

2.3 Key Performance Indicators

Key Performance Indicator (as of Dec in each year)				
Variable	Totals			
	3 years ago (2010)	2 years ago (2011)	Last year (2012)	Current year (2013)
Square Meters	88,086	91,220	84,070	92,364
Student FTE	5307	5388	5237	5205

3. OUR COMMITMENT

3.1 Energy Policy

As demonstrated by the incorporation of energy conservation initiatives into the School District No. 72 (Campbell River) Carbon Neutral Action Report and the District Strategic Plan Working Document, the Board of School Trustees recognizes the importance of energy conservation from both an economic and ecological point of view. Therefore, the District Energy Policy, written in 1984, was deemed redundant to the Environmental Responsibility Policy and rescinded in 2010.

In 2009 our organization established a long term (4 year) goal to obtain energy reduction of 5% by the year 2012 by implementing cost-effective energy management initiatives at all of our facilities. Progress towards this goal and School District No. 72 (Campbell River) is forecasting an energy reduction 13% by the end of 2012.

For 2013-2015, School District No. 72 (Campbell River) has established a new energy reduction target of an additional 5% savings relative to the average consumption from 2011-2012. The methodology used to establish this target is provided in Appendix 6.7.

3.2 Environment Responsibility Policy

School District No. 72 (Campbell River) adopted the following Environment Responsibility Policy B-15 on June 23, 2009.

The Board of Education has a responsibility towards sustainable environmental stewardship.

The Board of Education is committed to raising environmental awareness of all staff, students, trustees and the community by delivering effective environmental education and modeling environmentally responsible practices (with respect to wise water use, energy-use reduction and waste minimization). The Board will endeavour to:

- Provide teachers with environmental education resources
- Align what is taught in the classrooms with school operations (curriculum, transportation and facilities)
- Reduce its impact on the environment
- Recognize successful environmental initiatives and programs.

The Board of Education expects that:

- The School district will consistently consider the impact of the environment of decisions that are made in the delivery of curriculum and in daily operations
- Schools will integrate environmental education and environmentally responsible action within the school setting.

The Board of Education authorizes the establishment of an Environmental Awareness Focus Group, which will set goals in relations to

- Environmental education
- Effective implementation of sustainable environmental practices
- Ongoing measurement and evaluation of environmental performance.

Definitions

“Environment” is the surroundings in which an organization operates including air, water, land, natural resources, flora, fauna, humans and their inter-relations.

“Environmental Education” refers to organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behaviour and ecosystems in order to live sustainably. Although the term is often used to imply education within the school system, from primary to post-secondary, it is sometimes used more broadly to include all efforts to educate the public and other audiences, including the use of print materials, websites, media campaigns, etc. Related disciplines include outdoor education and experiential education.

“Impacts on the environment” are any changes to the environment whether adverse or beneficial, wholly or partially resulting from an organization’s products or services.

“Sustainable means practices that serve to meet the needs of the present without compromising the ability of future generations to meet their own needs.

“Stewardship” is the act of caring for something that one doesn’t own.

3.2.1 Environment Responsibility Regulation

Background

The District is committed to fostering policies, practices and educational programs which will protect and preserve the environment.

Procedures

1. The District will endeavour to purchase “environmentally friendly” products which will provide the highest possible level of performance.
2. The efficient use of energy and water will be guiding principles in all renovations, new construction and operations.
3. The District encourages and supports initiatives to reduce, recycle and recover waste materials in all schools and departments.
4. The District supports staff development initiatives designed to advance environmental awareness, environmental education and care for the environment within annual budget allocations for training and development.
5. Environmental education will continue to be incorporated into the content and methodology of the instructional program.

3.3 Why Energy Management is Important to Us?

Energy management is considered an integral component of sustainable environmental practices. The Campbell River School District Strategic Plan (2009-2012) articulates three

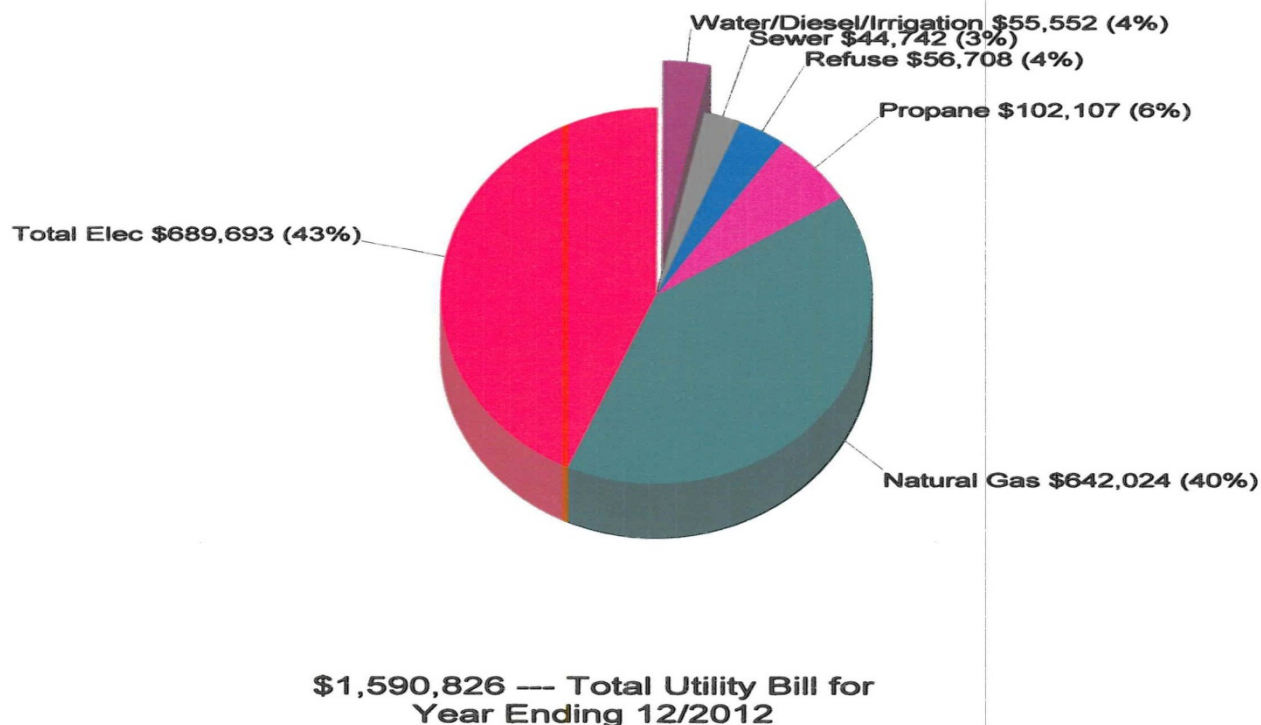
areas of strategic focus, including “An Expanded and Purposeful Environmental Ethic”. Therefore, energy management is an extension of our core organizational raison d'être.

A new District Strategic Plan is in development for 2013-215. This Strategic Energy Management Plan is intended to support goals and objectives articulated in the District Strategic Plan.

4. UNDERSTANDING OUR SITUATION

4.1 Energy Consumption and Costs

Utility 2012 Calendar Year	Normalized Consumption	Normalized Costs	
		\$	%
Electricity	27,849	689,693	45.0
Natural Gas	67,044	642,024	41.8
Propane	3552	102,107	6.7
Diesel (marked)	415	16,010	1.0
Water, incl irrigation	100,662 m3	39,542	2.6
Sewage	38,220 m3	44,742	2.9
Total	71,011 GJ	1,534,118	100



4.2 Savings Opportunity Assessment - Energy Consumption & Cost Intensity

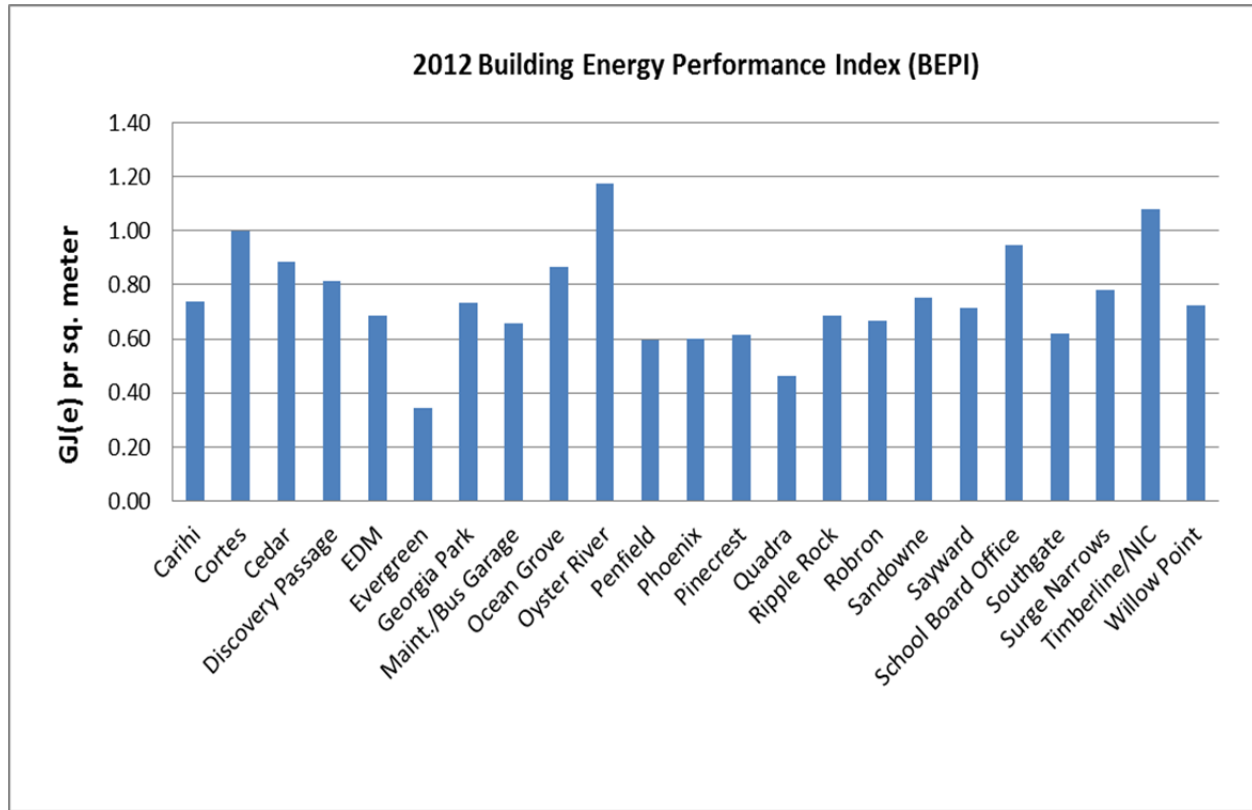
According to Natural Resources Canada, the Building Energy Performance Index (BEPI) for the Educational Sector is an average of 1.8 equivalent Gigajoules (GJ (e)) per square meter. The School District No. 72 BEPI baseline, representing the 2005-2008 four-year average, is 0.93 GJ (e) per square meter. Relative to this BEPI baseline, the 4-year target was to achieve a 5% reduction in energy intensity by the end of 2012.

School District No. 72 surpassed the 4-year target. For 2012, the energy intensity was 0.77 GJ (e) per square meter, compared to the target of 0.88 GJ (e) square meter. This represents an actual reduction of 26.7% since 2009, when School District No. 72 enrolled in the BC Hydro Energy Manager program. Adjusting total energy consumption for weather, the 2012 BEPI for School District No. 72 was higher than in 2011, but less than 2009 and 2010. Relative to the BEPI for the Educational Sector, the 2011 BPEI for School District No. 72 was less than one-half that the national average.

For 2012, three buildings in School District No. 72 with the highest BEPI are:

- a. Timberline/North Island College. The BEPI for this facility decreased from 1.20 in 2011 to 1.08 GJ(e) per square meter in 2012. Facility is jointly shared, with many educational programs that are not found elsewhere in the school district. Another unique feature (not found in School District No. 72 schools) is the air conditioning system. North Island College does not have an energy management program. The improved energy performance in 2012 is attributed to heating boiler and building control upgrades completed in late 2011/early 2012. Continued improvement is expected in 2013 as a result of domestic hot water boiler and lighting upgrades.
- b. Cortes Elementary/Middle School. The BEPI for this school has increased for the third consecutive year. The 10% increase (relative to 2011) is attributed to changes in occupancy. For examples include: leasing a portion of building to the Vancouver Island Library (more space in active use); and reconfiguration of office and computer labs (resulting in greater use of lighting). Some improvement is expected in 2013 as a result of a lighting upgrade for the entire school, completed in early 2013.
- c. Oyster River Elementary. The BEPI for is a small school has increased for the third consecutive year. No specific reasons have been identified for the 3.4% increase, compared to 2011. Going forward, a PowerSmart lighting of the entire school, completed in early 2013, should result in energy savings.

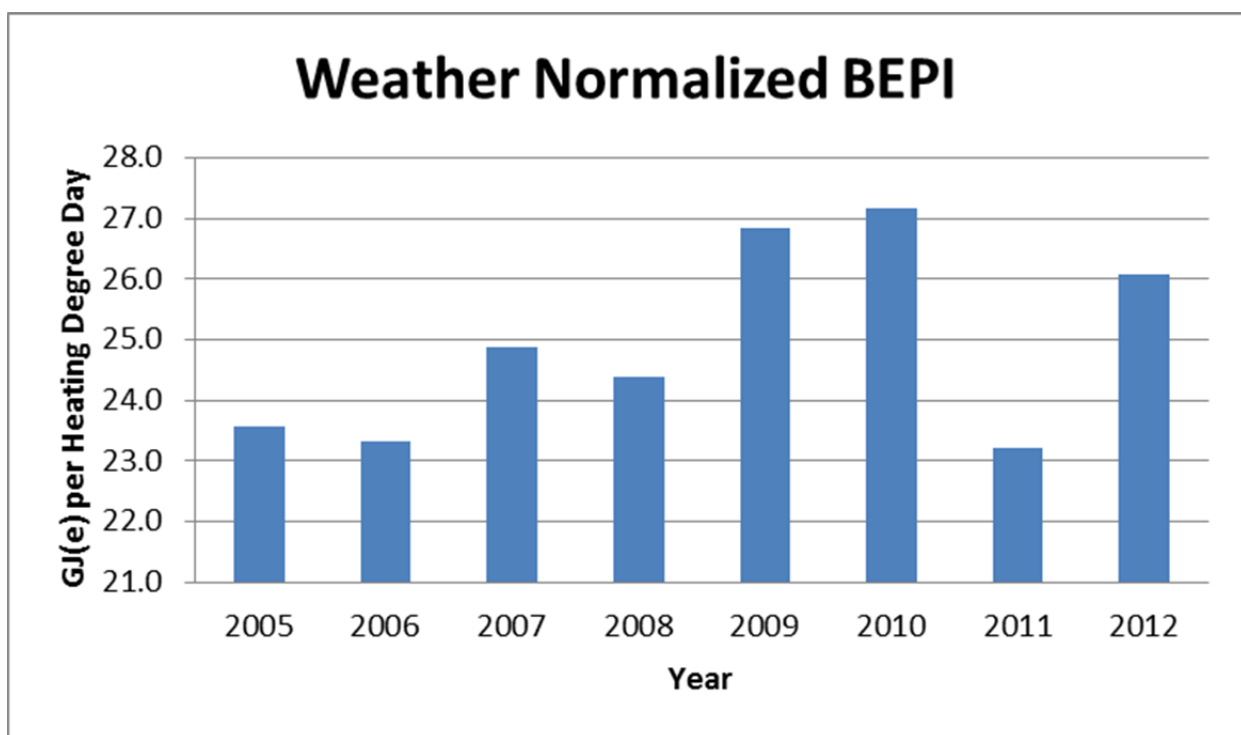
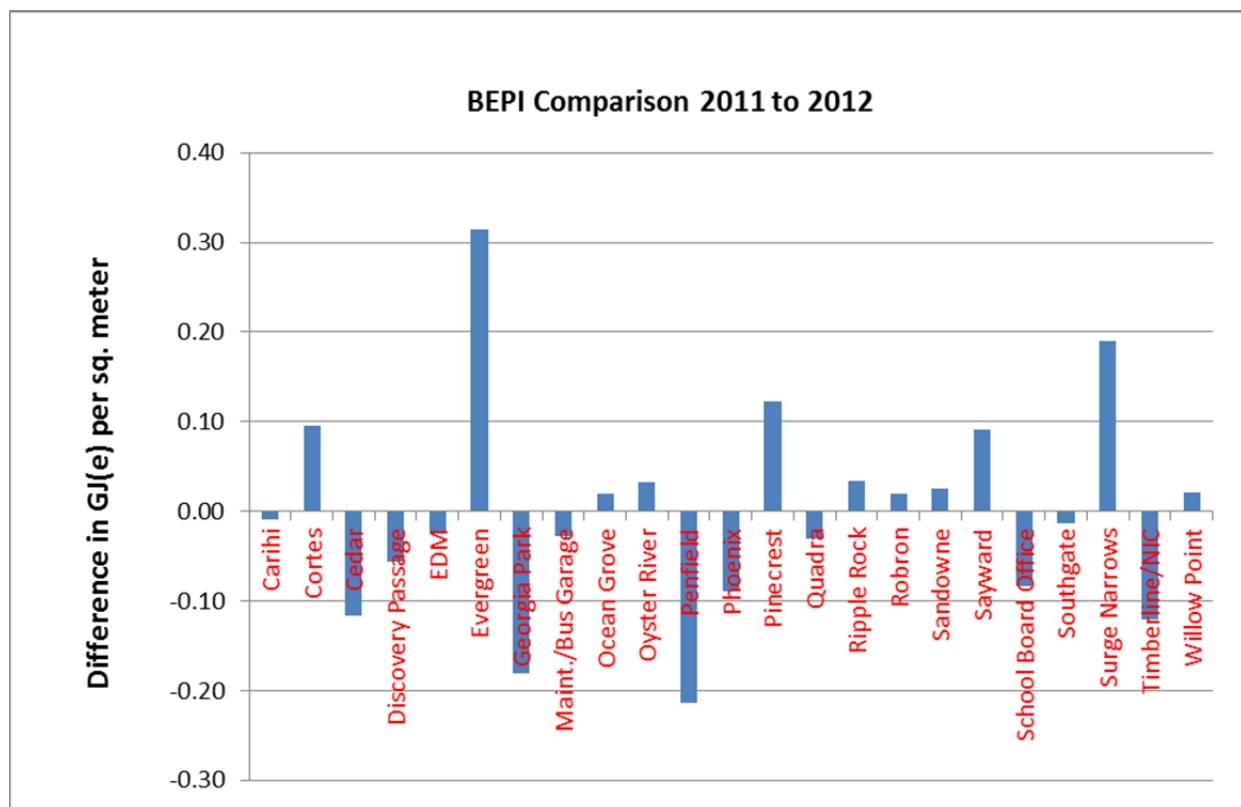
The School Board Office has had one of the highest energy intensities in the school district and was a “top three” priority in 2011. This is primarily attributed to the large server room, year round occupancy, and use of air conditioning. For the third consecutive year, the School Board Office BEPI has decreased. The 7.8% decrease between 2011 and 2012 is attributed to an increase in vacant office areas, repairs to weatherstripping around doors, computer workstation upgrades and a higher awareness of energy conservation by building occupants.



As shown in the following BEPI comparison of 2011 and 2012, the most significant improvements in energy intensity were achieved at Penfield Elementary, Georgia Park Elementary, and Timberline/North Island College:

- a. Penfield Elementary. Penfield Elementary uses electrical heating systems. Heating Degree Days in 2012 were the fewest in recent record. Additionally, extensive lighting upgrades were completed in 2011. Therefore, the decrease is primarily attributed to weather and facility improvements.
- b. Georgia Park Elementary. Boiler replacements in 2011, included the introduction of condensing boiler technology. Additionally, Grade Reconfiguration resulted in a large number of classrooms being relatively under utilized for the 2012/13 school year.
- c. Timberline/North Island College. The improved energy performance in 2012 is attributed to heating boiler and building control upgrades completed in late 2011/early 2012. Continued improvement is expected in 2013 as a result of domestic hot water boiler and lighting upgrades.

The BEPI increase for the Evergreen site is attributable to School District No. 72 assuming full responsibility for energy costs during the summer of 2011. Therefore, the 2012 BEPI reflects the first full year of energy data for the facility.



5. OUR ACTIONS

5.1 2012 Energy Reduction Target

In 2009, our organization established a long term goal to obtain a reduction of 5% in energy per square meter by the year 2012 (4 years) by implementing cost-effective energy management initiatives at all of our facilities. The baseline used to establish the 2012 target is a four-year average, from 2005-2008. The 2012 target year coincides with the School District No. 72 Strategic Plan, which includes a focus on environmental and energy conservation and awareness.

5.2 Energy Manager Program Results 2009-2012

The following tables demonstrate that School District No. 72 exceeded its 2012 energy reduction target. For 2012, the actual reduction was 17.7% compared to the baseline.

Energy Intensity Targets [GJ(e) per square meters]				
2012 Target	2009 Actual	2010 Actual	2011 Actual	2012 Actual
0.88	1.05	0.84	0.80	0.77

Electricity Consumption (KwHr)			
2009 Actual	2010 Actual	2011 Actual	2012 Actual
9,326,287	8,768,978	7,902,166	7,735,920

Fossil Fuel Consumption (GJ)			
2009 Actual	2010 Actual	2011 Actual	2012 Actual
50,105	43,533	45,858	43,161

Despite a significant reduction in energy consumption since enrolling in the Energy Manager program in April 2009, overall energy cost savings remains elusive because of rate increases. Nevertheless, cost avoidance is significant (the amount School District No. 72 would have paid without any reductions in energy consumption). For the period April, 2009 to December, 2012, total year-to-year cost avoidance is \$192,895. Of this amount, \$137,847 (or 71%) is attributable to electricity conservation.

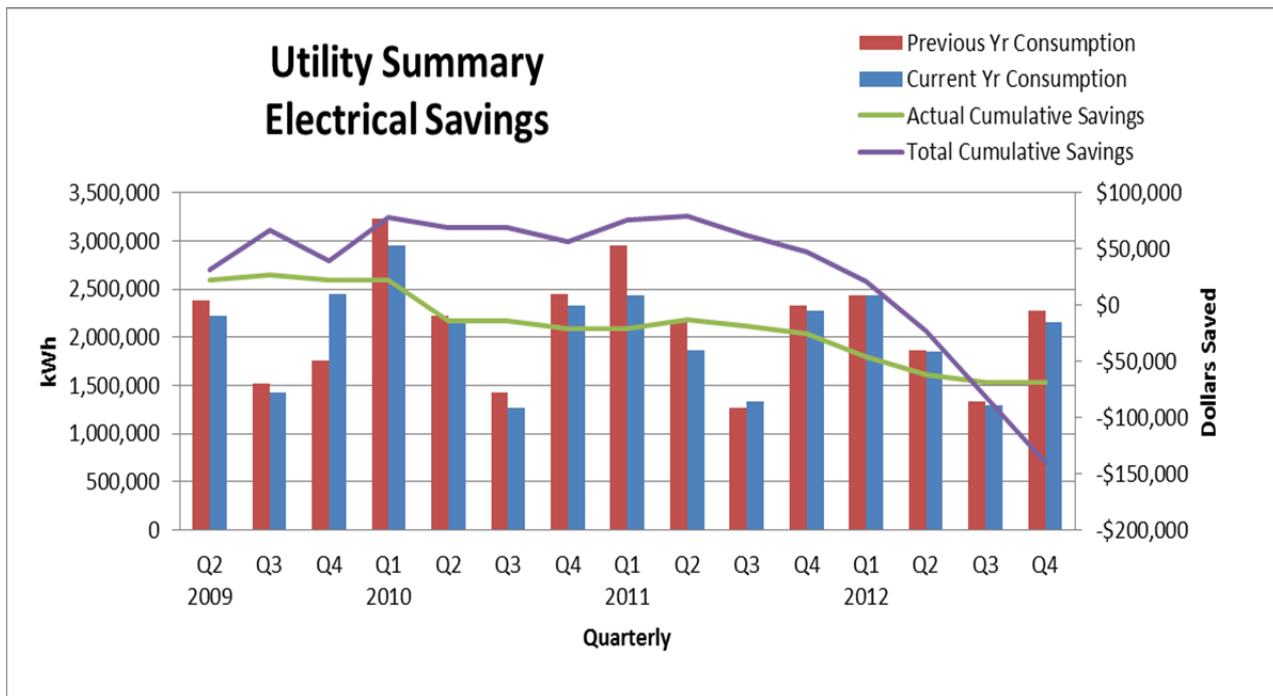
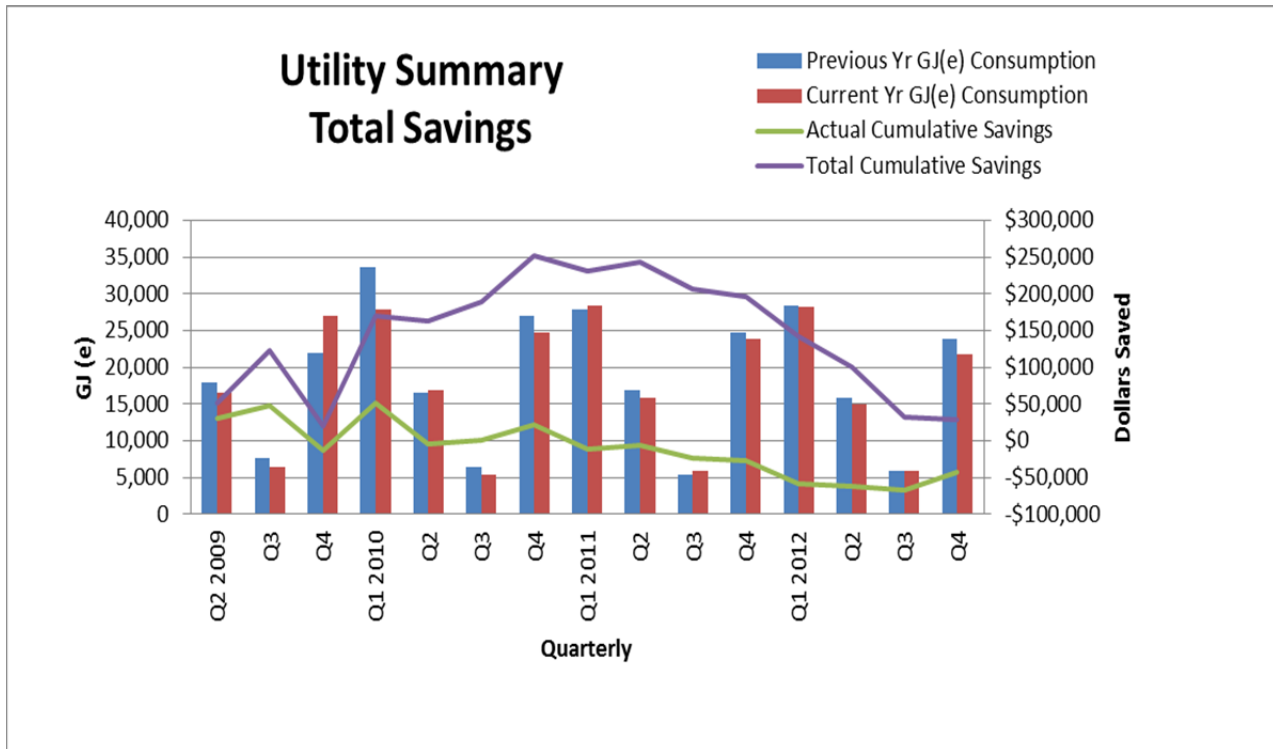
5.2.1 Quarterly

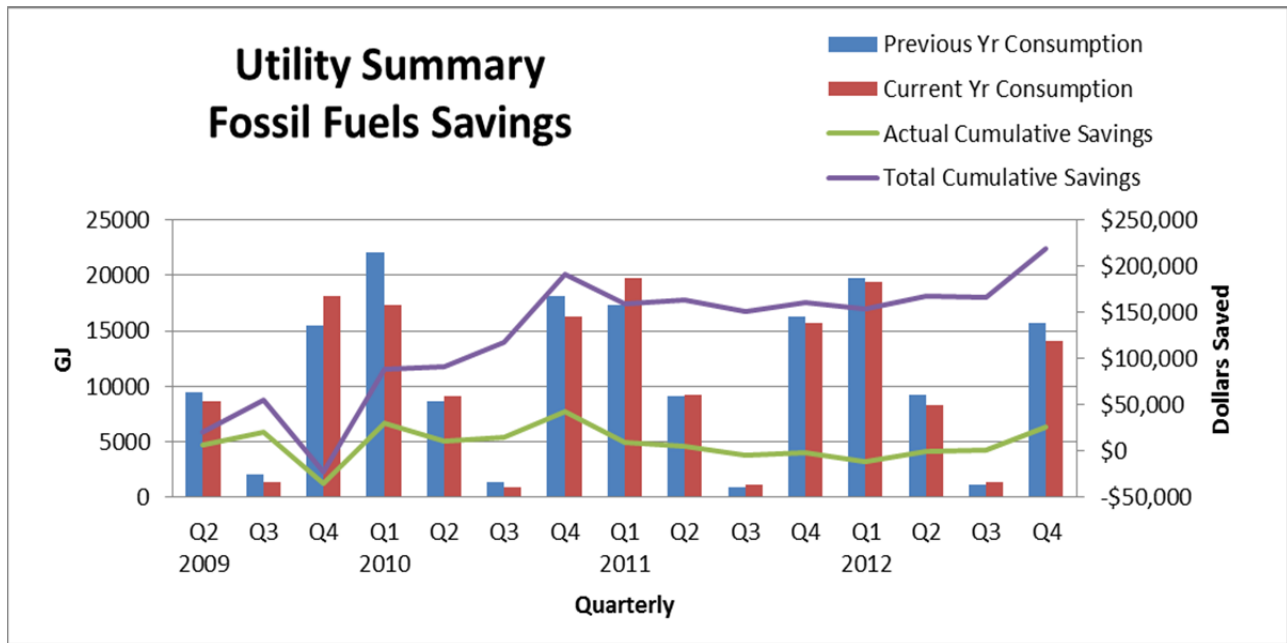
Total Energy Savings are summarized in the following graphs. Total cumulative savings includes both the actual cumulative savings and cost avoidance (the expense that would have occurred at current utility rates without reducing consumption).

Analysis shows a trend of slight increases in utility costs (i.e. declining cumulative savings) despite reductions in energy consumption. Nevertheless, School District No. 72 has achieved a cumulative cost avoidance of approximately \$193,000 since the April, 2009 enrollment in the BC Hydro Energy Manager program).

Year-to-year comparison of quarterly consumption shows less overall energy use in 11 of 15 quarters since April, 2009. Only twice did quarterly electricity consumption increase compared to

the previous year – Q4 2009 and Q3 2011. Conversely, over the same period, quarterly fossil fuel consumption increased 6 of 15 times.





5.2.2 Annual

Total Energy

Quarter	Total GJ(e) Consumption	Actual Savings				Total Savings		Notes
		GJ(e) Comparison savings from previous year	GJ(e) % Reduction	\$	Actual Cumulative \$ Savings	Avoided Costs	Total Cumulative Savings	
2007	76,315	(2,742)	-3.7%	\$ (82,976.00)	\$ (82,976.00)	\$ (43,876.00)	\$ (126,852.00)	
2008	82,051	(5,737)	-7.5%	\$ (124,718.00)	\$ (207,694.00)	\$ (94,093.00)	\$ (301,787.00)	
2009	83,679	(1,628)	-2.0%	\$ (74,711.00)	\$ (282,405.00)	\$ (27,633.00)	\$ (310,038.00)	Start EM Program April 2009
2010	75,101	8,578	10.3%	\$ 34,810.00	\$ (247,595.00)	\$ 160,107.00	\$ (87,488.00)	
2011	74,183	918	1.2%	\$ (37,122.00)	\$ (284,717.00)	\$ 11,758.00	\$ (272,959.00)	
2012	71,011	3,172	4.3%	\$ (6,989.00)	\$ (291,706.00)	\$ 64,194.00	\$ (227,512.00)	

Electricity

Quarter	Total KwHr Consumption	Actual Savings				Total Savings		Notes
		KwHr Comparison savings from previous year	KwHr % Reduction	\$	Actual Cumulative \$ Savings	Avoided Costs	Total Cumulative Savings	
2007	8,567,852	(68,527)	-0.8%	\$ (16,675.00)	\$ (16,675.00)	\$ (4,654.00)	\$ (21,329.00)	
2008	9,496,898	(929,046)	-10.8%	\$ (30,531.00)	\$ (47,206.00)	\$ (59,913.00)	\$ (107,119.00)	
2009	9,326,287	170,611	1.8%	\$ 12,867.00	\$ (34,339.00)	\$ 10,968.00	\$ (23,371.00)	Start EM Program April 2009
2010	8,768,978	557,309	6.0%	\$ (43,119.00)	\$ (77,458.00)	\$ 44,981.00	\$ (32,477.00)	
2011	7,902,166	866,812	9.9%	\$ (3,666.00)	\$ (81,124.00)	\$ 67,040.00	\$ (14,084.00)	
2012	7,735,920	166,246	2.1%	\$ 43,330.00	\$ (37,794.00)	\$ 58,276.00	\$ 20,482.00	

Fossil Fuels

Quarter	Total GJ Consumption	Actual Savings				Total Savings		Notes
		GJ Comparison savings from previous year	GJ % Reduction	\$	Actual Cumulative \$ Savings	Avoided Costs	Total Cumulative Savings	
2007	45,471	(2,496)	-5.8%	\$ (66,302.00)	\$ (66,302.00)	\$ (35,080.00)	\$ (101,382.00)	
2008	47,863	(2,392)	-5.3%	\$ (94,185.00)	\$ (160,487.00)	\$ (36,652.00)	\$ (197,139.00)	
2009	50,105	(2,242)	-4.7%	\$ (87,579.00)	\$ (248,066.00)	\$ (36,735.00)	\$ (284,801.00)	Start EM Program April 2009
2010	43,533	6,572	13.1%	\$ 77,929.00	\$ (170,137.00)	\$ 115,137.00	\$ (55,000.00)	
2011	45,858	(2,325)	-5.3%	\$ (53,456.00)	\$ (223,593.00)	\$ (39,992.00)	\$ (263,585.00)	
2012	43,161	2,697	5.9%	\$ 36,341.00	\$ (187,252.00)	\$ 43,992.00	\$ (143,260.00)	

5.2.3 Annual Electricity by Key Performance Indicators

Analysis shows that electrical consumption was increasing significantly in the years immediately prior to School District No. 72 adopting the BC Hydro Energy Manager Program in April 2009. This trend has now been reversed.

Energy Intensity by Student Enrollment

Decreasing energy consumption and relatively static student enrollment has resulting in reduced energy intensity.

Year	Annual Normalized Electricity Consumption (kWh(e))	# FTE Students (as of Sep 30 th)	Energy Intensity (kWh(e)/ FTE Students)	Percent Change in Energy Intensity (%)
2006	8,499,325	5927	1434	
2007	8,567,852	5714	1499	+4.3
2008	9,496,898	5538	1714	+12.5
2009	9,326,287	5440	1701	-0.8
2010	8,768,978	5278	1661	-2.4
2011	7,902,166	5312	1488	-10.4
2012	7,735,920	5472	1414	-5.0
Total (Current Year to 3 years prior to Energy Manager Program)				-1.4

Energy Intensity by Heating Degree Days (HDD)

Only two elementary schools rely on electric heat. Therefore, weather has relatively has relatively little impact on electrical consumption.

Year	Annual Normalized Electricity Consumption (kWh(e))	HDD	Energy Intensity (kWh(e)/HDD)	Percent Change in Energy Intensity (%)
2006	8,499,325	3153	2696	
2007	8,567,852	3066	2794	+3.6
2008	9,496,898	3363	2824	+10.7
2009	9,326,287	3116	2993	+6.0
2010	8,768,978	2761	3176	+6.1
2011	7,902,166	3192	2476	-22.0
2012	7,735,920	2723	2841	+14.7
Total (Current Year to 3 years prior to Energy Manager Program)				+5.7

Energy Intensity by Building Area

The Campbellton property and portable buildings have been disposed in recent years. Increases to building area have included an expansion to Ripple Rock Elementary, acquisition of modular buildings and assumption of property management costs for the Evergreen property. The net impact of transfers has been increased utility consumption: little energy was being used to support the disposed assets, while the acquisitions are being heated and in greater use. Nevertheless, School District No. 72 has achieved a significant reduction in this Key Performance Indicator.

Year	Annual Normalized Electricity Consumption (kWh(e))	Sq. M	Energy Intensity (kWh(e)/Sq M.)	Percent Change in Energy Intensity (%)
2009	9,326,287	80,402	116.0	
2010	8,768,978	88,086	99.6	-14.1
2011	7,902,166	91,220	96.6	-3.0
2012	7,735,920	84,070	92.0	-4.8
Total (Current Year to start of Energy Manager Program)				-20.7

5.3 Greenhouse Gas Emissions

As a public sector organization, School District No. 72 is required to report annually on steps taken to reduce Greenhouse Gas Emissions. A copy of the School District No. 72 Carbon Neutral Action Report is available from the LiveSmart BC web site (http://www.livesmartbc.ca/government/neutral_action_reports.html). Pursuant to the Greenhouse Gas Reduction Targets Act, School District No. 72 is carbon-neutral through the purchase of carbon offsets from the Pacific Carbon Trust at current rate of \$25 per tonne of CO₂ (e). Cost avoidance achieved through reduced greenhouse gas emissions.

Reportable Greenhouse Gases in Tonnes CO₂(e)

Calendar Year	Direct Emissions		Indirect Emissions		Total non-exempt Emissions	Savings
	Buildings	Fleet	Buildings	Office Supplies		
2008	2103	449	194	108	2853	NA
2009	2151	355	226	124	2856	(\$75)
2010	1933	450	202	75	2690	\$4150
2011	1997	465	176	41	2695	(\$125)
2012	1976	454	174	60	2300	\$9875

5.4 Energy Conservation Target 2013-2015

School District 72 has aligned the timeframe of the Strategic Energy Management Plan with the District Strategic Plan. Therefore, firm energy savings targets should be established for 2013-2015 (3 years).

Intuitively, the significant investment in energy savings projects since joining the BC Hydro Energy Management program in 2009 has lowered the energy baseline over the past four years. Therefore, a new energy baseline based on the average energy consumption of 2011 and 2012 has been adopted. This baseline is summarized in the follow table.

Metric	Annual Baseline Energy Consumption
Total Energy	
<i>Total Consumption</i>	72,658 GJ
<i>Energy Intensity (based on Oct 2012 building area)</i>	0.87 GJ _e per sq m
<i>Energy Intensity (based on Oct 2012 student FTE)</i>	13.61 GJ _e per student FTE
Fuel Type	
<i>Electrical Consumption</i>	7,819,043 KwHr (or 28,148 GJ _e)
<i>Fossil Fuel Consumption</i>	44,510 GJ

Given that electricity and natural gas are the two primary sources of the School District 72 carbon footprint, a secondary metric is available by using the LiveSmartBC SmartTool carbon footprint information. The information is normalized for weather and building area each year, therefore the most recent reporting period (2012) is an appropriate baseline. Using the 2012 SmartTool report, the baseline carbon footprint is 2151 tCO₂e ; the equivalent of 25.62 kg CO₂e per square meter or 403 kg CO₂e per student FTE.

Based on anticipated energy savings opportunities, School District 72 Energy Consumption targets are summarized in the following table. Note that these targets are not normalized for future changes such as weather, building use, hours of operation, etc.

	Baseline (2011-2012 Ave)	2013	2014	2015
Energy				
<i>Electricity (KwHr)</i>	7,819,043	7,771,943	7,621,943	7,621,943
<i>Fossil Fuel (GJ)</i>	44,510	44,255	43,855	43,455
<i>Totals (GJ_e)</i>	72,658	70,706	69,766	69,366
Energy Intensity				
<i>Energy (GJ_e per sq m)</i>	0.87	0.84	0.83	0.83
<i>Energy (GJ_e per Student FTE)</i>	13.61	13.23	13.05	12.98

Based on carbon footprint information available from LiveSmartBC, the energy conservation targets can be expressed as CO_{2e} emissions targets¹.

Metric	Baseline (2012)	2012	2013	2014
Building GHG (tCO _{2e})	2151	2004	1971	1954
Energy Intensity				
<i>Weather Normalized Building KgCO_{2e} per sq m</i>	25.62	24.57	24.34	24.22
<i>Weather Normalized Building kgCO_{2e} per Student FTE</i>	403	375	369	366

5.5 Planned Actions (Project List)

A listing of technical projects, organizational/behavioural initiatives, and completed studies is available at the following:

http://www.sd72.bc.ca/downloads/SD72_S4_Timeline_Q4.zip

Projects completed in 2011/12 resulted in reduced annual electrical consumption of approximately 475,000 KwH and \$51,000 per year in utility costs.

Approved 2012/13 projects are expected to result in reduced annual electrical consumption of approximately 429,000 KwH

¹ LiveSmartBC data is published approximately 6-8 months after the end of the reporting period. Therefore, reporting progress towards reducing carbon footprint in 2015 is not possible within the 3-year target setting timeframe of the SEMP.

6. APPENDIX

Number of stakeholders	2	Energy Manager	Steve Woods
Executive Support	Tom Longridge, Kevin Patrick, Nevenka Fair	Energy Committee	Jeanne Stoppard, Steve Woods
Energy Volunteers	0		

6.1 List of Stakeholders:

Groups			
<u>Name</u>	<u>Title</u>	<u>Organization</u>	<u>Contact Info</u>
Steve Woods	Manager of Operations	Operations	Steve.woods@sd72.bc.ca
Jeanne Stoppard	Secretary	Operations	Jeanne.stoppard@sd72.bc.ca

6.2 List of Energy Volunteers

Between 2009 and 2011, School District 72 had an active Environmental Awareness Focus Group (EAFG). This group met several times a year to discuss progress on energy conservation and environmental stewardship projects, and review proposals for new activities. However, the EAFG has become inactive as a result of the labour disruption during the 2011/12 school year, a lack of new proposals, and upcoming reviews of the School District 72 policies and District Strategic Plan.

Several options for re-activating the EAFG have been identified, however, a decision on the which option to adopt has been deferred pending development of planning process for renewal of the School District 72 Strategic Plan.

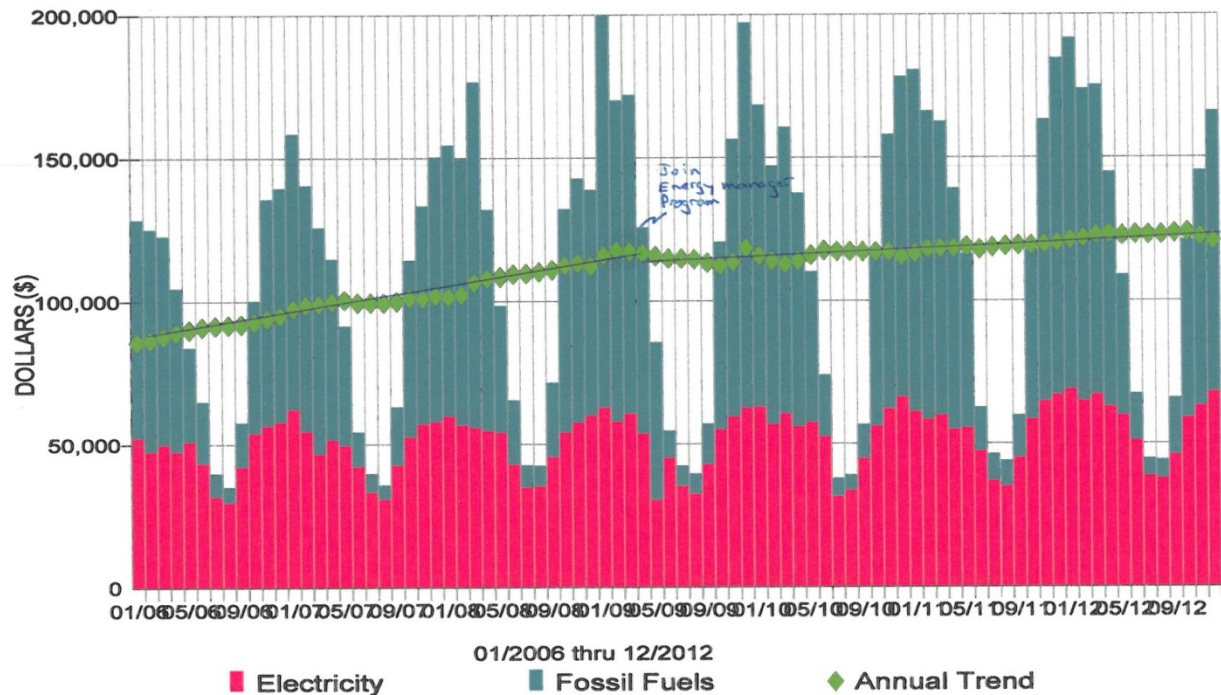
6.3 Baseline Energy Use: Account Histories

The following table summarizes baseline energy costs using the 2011 and 2012 average. Electrical Demand Charges are included in the Energy Charges.

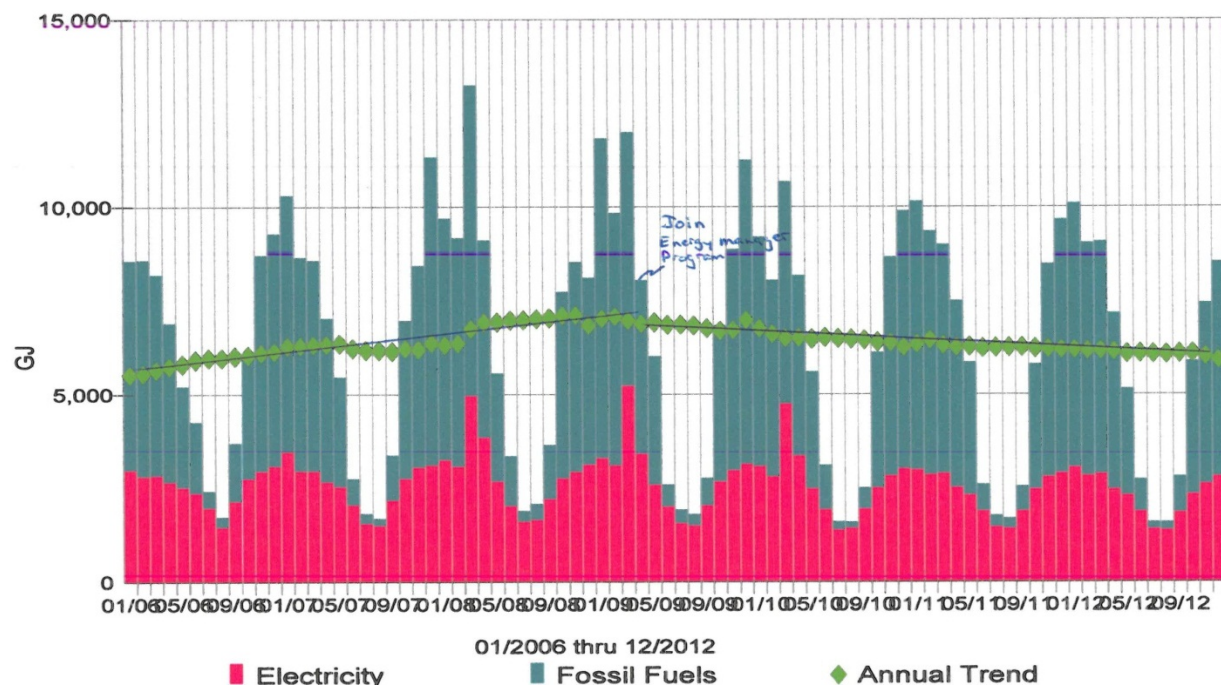
Month	Electricity (Normalized)			Fossil Fuels (Normalized)	Overall
	Energy Charge \$	Power Factor Charge \$	Total Electricity Cost \$	Total Charges \$	Total Charges \$
Jan	65,155	12	65,167	120,947	186,114
Feb	61,778	9	61,787	108,224	170,011
Mar	63,641	10	63,650	105,228	168,879
Apr	58,870	24	58,995	83,022	142,016
May	57,782	51	57,833	54,782	112,614
Jun	49,290	84	49,374	15,605	64,979
Jul	37,925	222	38,147	7,503	45,650
Aug	36,570	258	36,828	7,460	44,287
Sep	45,644	79	45,723	17,141	62,863
Oct	58,814	6	58,820	60,577	119,397
Nov	64,091	0	64,091	90,128	154,218
Dec	67,616	0	67,616	107,698	175,314
TOTAL	\$667,176	\$755	\$667,931	\$778,315	\$1,446,246
2011-2012 Percentage	46.2%	0.0%	46.2%	53.8%	100%
2005-2008 Percentage	48.5%	0.0%	48.5%	51.5%	100.0%

The following graphs show a gradual reduction in energy consumption since joining the BC Hydro Energy Manager program, resulting in cost avoidance from utility rate increases.

Energy Cost Graph – Monthly and Annual Trend



Energy Use Graph – Monthly and Annual Trend



6.4 Asset Registry

School District No. 72 does not have an Asset Registry. One school, Surge Narrows, relies on a diesel generator for heat and electrical power. Two schools, Cortes and Sayward, use propane boilers for heat and domestic hot water. Two schools, Quadra and Penfield, rely on electrical heating systems. No information is available on equipment owned by North Island College, North Island College enrolment or staff occupancy, or tenants of School District No. 72 facilities.

6.5 Studies: Energy Breakdown

In 2012, normalized electrical consumption for School District No. 72 was approximately 7.7 million Kilowatt-hours, compared to 7.9 million Kilowatt-hours in 2011. Normalized fossil fuel consumption in 2012 was approximately 43,161 gigajoules, compared to 45,858 in 2011. Comparing 2012 and 2011, the 4.4% reduction in total energy consumption attributed to lighting and mechanical system upgrades and few Heating Degree Days during 2012.

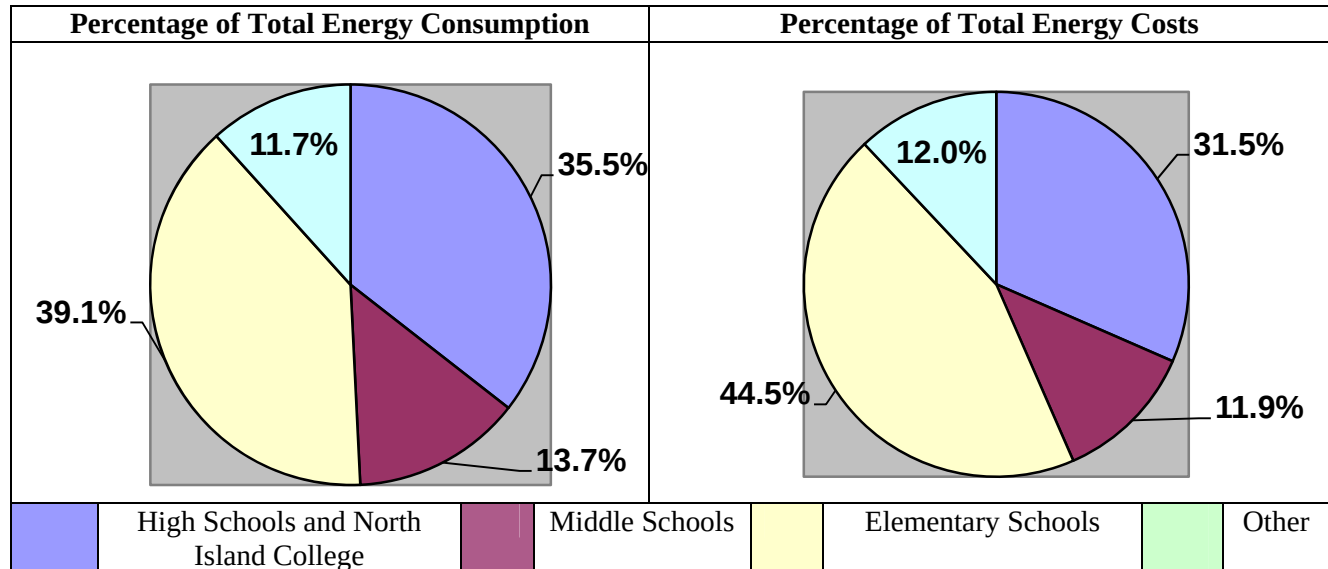
In 2012, normalized electrical consumption costs for School District No. 72 were \$689,693, an increase of approximately \$43,624 from 2011. Normalized fossil fuel costs for 2012 were \$760,141, a decrease of approximately \$36,341 from 2011.

A breakdown of 2012 energy consumption and costs is provided in section 4.1.

Based on average household consumption of about 10,000 kilowatt-hours of electricity per year², School District No. 72 annual electrical consumption in 2012 is the equivalent of approximately 774 homes.

As indicated in the follow chart, total energy consumption and costs are mainly attributable to school operations. Other facilities include Robron Centre, the School Board Office, the Maintenance Building and Bus Garage. Of these other facilities, Robron Centre accounts for most of the energy consumption.

² The BC Energy Plan (<http://www.energyplan.gov.bc.ca/bcep/default.aspx?hash=4>)



Energy studies have been completed on all buildings in School District No. 72. Unless otherwise noted below, all recommendations from energy studies have been implemented.

Studies in progress for 2013: PowerSmart Opportunity Assessment for interior re-lamping of 4 buildings and exterior re-lamping of 21 sites. Preliminary information indicates potential annual energy savings of 372,000 KwHr.

Studies completed in 2012:

- Mechanical upgrades for Pinecrest Elementary. Project proposal included as #2 priority on School District Capital Plan and only proposal for funding under the Carbon Neutral Capital Program. Savings are primarily related to fossil fuel consumption.
- Air leakage assessments for 6 schools. Minor repairs completed in 2012. Four projects included on AFG for future funding consideration. Savings are primarily related to fossil fuel consumption.

Studies completed prior to 2012:

- Mechanical upgrades to Timberline/NIC facility. Climate Action Secretariat approved funding for 50% of recommended scope, and work has been completed. Remaining scope has been referred to North Island College (co-owners of the facility) for funding consideration. Savings are primarily related to fossil fuel consumption.
- Green IT Energy Upgrades. Potential annual electricity savings are less than 50,000 KwHr. Due to relatively long payback period, project is being implement as part of ongoing "evergreening" program.
- Fortis BC Opportunity Assessment. Eight projects are included in the AFG, pertaining to two Middle Schools, two High Schools and Robron Centre. Savings are primarily related to fossil fuel consumption.

6.6 Current Business Practice Gaps

The 2011 and 2012 Energy Management Assessments are available at the following: http://www.sd72.bc.ca/downloads/SD72_EMA_Action_Plan.zip

A comparison of these two assessments indicates an improvement of 5.8% in the Level of Rigour was achieved during the 2011/12 Energy Management contract. The 4.3% increase in the Total Balance Rating, however, indicates that improvement was focussed in specific areas rather than achieving some improvement in all areas.

The Energy Management Assessment Gantt chart (Action Timeline) and journal notes is available at the following:

http://www.sd72.bc.ca/downloads/SD72_S4_Timeline_Q4.zip

6.7 Energy Conservation Targets 2013-2015

A discussion paper used to develop 2013-15 energy conservation targets is available at the following:

http://www.sd72.bc.ca/downloads/SD72_3year_energy_target_analysis.zip

The paper includes a brief business environment scan from a School District No. 72 and BC Hydro perspective. A description is provided of progress between 2009-2012 in energy consumption and carbon footprint. Minimum recommended targets (subsequently approved) are provided. Finally, a synopsis of other energy savings opportunities is described.