



2015/16

# Strategic Energy Management Plan



DISTRICT OF  
**OAK BAY**

District of Oak Bay

4/11/2016

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# 1. OUR ORGANIZATION

## 1.1 Purpose

The District of Oak Bay plans to continue the quest for energy efficiency and work toward a more sustainable future.

The Strategic Energy Management Plan (SEMP) is a living document that will act as a template and a realistic plan for a more sustainable future. It will also help track progress as the municipality moves toward the energy reduction goal of lowering our electrical consumption by 1,600,000 kWh by the year 2020 over our 2011 levels.

This SEMP provides a current picture of the energy consumption and GHG emissions and will also show where we want to be in the future, as well as a plan to get there.

Reviews will be done periodically to compare the plans with achievements and to determine if adjustments need to be made to the approach.

Through a stronger commitment to Energy Management, we hope to heighten awareness of sustainability issues and inspire the community to follow our lead. Energy Management is also seen as an important positive step towards our Green House Gas Reduction (GHG) targets and is a vital part in maintaining a high user pay ratio; this is seen as the Parks and Recreation department's key performance indicator.

For this to be successful we will need to engage the Oak Bay Council, Parks & Recreation Commission, Staff and the Community.

## 1.2 Key Performance Indicator

### Key Performance Indicator for Parks and Recreation

User Pay Ratio	Totals					Area m <sup>2</sup>	2014 Intensity ekWh/m <sup>2</sup>
	2011	2012	2013	2014	2015		
Recreation Center	86%	87%	85%	86%		8112	253
Monterey Centre	66%	69%	66%	71%		2091	163
Henderson Centre	92%	94%	92%	95%		1524	174

As Oak Bay is a relatively small municipality, it is crucial that the Parks and Recreation department continue to maintain a high User Pay Ratio (UPR) in order to minimize the tax burden on its residents. The key performance indicator for the Parks and Recreation department is our UPR. We see reducing energy consumption as a very important part of keeping our operational costs as low as possible and a huge part in maintaining our high UPR.

### 1.3 Organizational Profile

#### Organization Profile

P E O P L E	Sector	<input checked="" type="checkbox"/> Government <input type="checkbox"/> Commercial <input type="checkbox"/> Other							
	Number of Employees	187 Full Time		Number of Sites			9		
	Number of stakeholders	5		Energy Manager			Ken Olson		
	Executive Support	Council and Executive Management		Energy Committee			Ray Herman, Grant Brown, Mary Kucera, Caroline Lawrence, Barry Russell, Janette Sproston, Ken Olson		
	Energy Volunteers	Mandi Krieger, Bryon Ewart, Jim Pearson, Patricia Walker, Bill Cliff, Brian Gray							
O P E R A T I O N S	Energy Management Issues / Obstacles	<ul style="list-style-type: none"> <li>▪ Diversity of buildings</li> <li>▪ Aging Buildings                             <ul style="list-style-type: none"> <li>▪ Timing</li> <li>▪ Funding</li> </ul> </li> </ul>							
	Core Business Metrics	▪ Municipal, Parks and Recreation, Public Works							
	Business Year	January 1st			December 31st				
	Budget Cycle	January 1st			December 31st				
	Maintenance Cycle	January 1st			December 31st				
	Maintenance Budget	2013	\$2,039,220	2014	\$2,089,202	2015	\$2,202,498	2016	TBD
	<i>Energy Efficiency Projects Budget</i>	2013	\$84,113	2014	\$170,000	2015	\$92,370	2016	TBD
	Operations Budget	2013	\$3,676,528	2014	\$3,723,083	2015	\$4,050,319	2016	TBD
	<i>Utilities budget</i>	2013	\$540,425	2014	\$541,444	2015	\$558,431	2016	TBD
	Incentives	2013	\$76,734	2014	\$69,742	2015	TBD	2016	TBD
Capital Budget	2013	\$160,233	2014	\$202,500	2015	\$186,500	2016	TBD	

\* **Budget numbers** - are for the Parks and Recreation department only.

## 1.4 Facility Profile

Municipal buildings vary considerably in size, function, and occupancy. Generally, they are multi-use and have a broad range of operating hours and number of users depending on the function and activity. In a number of cases, buildings are not staffed but have energy consumption (e.g. tennis bubbles and the Windsor Pavilion). The Monterey Centre has a large square footage to employee metric. The Recreation Centre, our largest multi-use facility, has approximately 40 full time staff, a large number of auxiliary staff and averages over 2500 visitors per day.

A challenge in establishing meaningful metrics in terms of “employee” density is the fact that the facilities can be occupied by many different categories of users through a range of operating hours - volunteers, auxiliary employees, patrons and visitors. These all impact the density metric in an inconsistent, non-comparative manner.

<b>Facility Profile 2014 (Jan – Dec) Hydro and Natural Gas</b>						
<b>Site</b>	<b>Number of full time Employees</b>	<b>Area (M<sup>2</sup>)</b>	<b>2014 Energy Consumption ekWh</b>	<b>2014 Energy Cost</b>	<b>2014 Energy Intensity</b>	<b>Energy Intensity per Employee</b>
<b>Recreation Centre</b>	40	16556	4,181,376	\$249,723	253	104,534
<b>Monterey</b>	8	2091	345,629	\$32,275	165	43,204
<b>Henderson</b>	7	1524	265,379	\$25,435	174	37,911
<b>Tennis Bubbles</b>	0	4300	663,738	\$48,948	154	n/a
<b>Municipal Hall</b>	21	1370	311,081	\$29,090	227	14,813
<b>Public Works</b>	41	1215	163,031	\$16,044	134	3,976
<b>Police/Fire</b>	57	920	242,053	\$22,738	263	4,247
<b>Parks</b>	13	772	156,150	\$23,326	202	12,012
<b>TOTAL</b>	<b>187</b>	<b>28748</b>	<b>6,328,438</b>	<b>\$447,579</b>	<b>220</b>	<b>33,842</b>

**Note-** Carnarvon Park Centre and the Teen Centre have not been included as a separate item in the facility profile.

- Consumption numbers for the Carnarvon Centre and Windsor pavilion are included with Parks.
- Consumption numbers for the Teen Centre are included with Tennis Bubbles.

These facilities will be decommissioned in the fall of 2015 and their functions will be moved to the new Neighborhood Learning Centre, This Centre was built to LEEDS standards and is now in open.

## 2. Our Commitment

### 2.1 Energy Policy

**Purpose:**

To provide broad corporate guidance in the development, implementation and review of programs, procedures and initiatives for energy conservation and greenhouse gas emissions in Oak Bay.

**Policy:**

The District of Oak Bay is committed to using energy resources to their highest economic efficiency while reducing consumption through wise and cost-effective energy management and the introduction of appropriate energy efficiency and renewable energy procedures and technologies.

The District has been successful in achieving significant reductions in energy consumption over the last twenty years, laying the groundwork for further work in this regard.

The objective of this policy is to incorporate both efficient use of energy and a culture of energy conservation in the planning and operation of municipal facilities and infrastructure. In achieving this objective, the District will:

- Develop and implement strategies to reduce energy use and greenhouse gas emissions thereby lowering operating costs and demonstrating the District's responsible use of energy.
- Continually seek out new and innovative technologies for energy efficiency for consideration.
- Monitor patterns of energy use within the District and energy savings from conservation initiatives, with the intent to continually optimize efficiencies.
- Collaborate in cross-departmental efforts to establish, monitor and achieve energy conservation goals.
- Empower employees to suggest, initiate and take part in energy conservation practices. Employees will be provided with information to help them better understand energy consumption and the means by which they can influence reductions through prudent use of resources.
- Track and communicate energy conservation results.
- Strive to achieve energy use reductions while maintaining a comfortable environment for facility occupants and customers.

## 2.2 Sustainability

Although at this time the municipality does not have an official Sustainability Policy, we do have a new Official Community Plan (OCP). This plan is seen as a road map to the future for Oak Bay and addresses many issues related to sustainability.

The OCP includes a chapter entitled Climate Change and Energy. This chapter contains information relating to climate change adaptation and mitigation, along with energy objectives, policies and actions.

More information on the OCP can be found at - <https://www.oakbay.ca/municipal-hall/plans-reports/official-community-plan>

**From the Mayors welcome message;**

"Oak Bay will continue towards the goal to become a green and sustainable community. We will look at ways to further reduce our municipal carbon footprint. And we will strive to ensure that our infrastructure supports active transportation modes that reduce motor vehicle dependency, while promoting physical wellness and mobility."

## 2.3 Importance of Energy Management to the Municipality

As a municipality, Oak Bay has a long history of understanding the importance of energy management. The energy improvements that have been made over the last two decades have helped to reduce the energy consumption of the Recreation Centre to less than half of what was used in 1993. The entire municipality now uses less than what the Recreation Centre used in 1993.

Through conservation, the Recreation Centre is now paying \$365,000 per year less than what we would be paying if we had not been involved in energy management. For our Recreation department this is a crucial part in managing our bottom line and is a major key to keep taxes and our admission costs as low as possible.

In regards to GHG emissions, GHG output has been reduced by 10,492 tonnes since we started doing conservation initiatives and we are now saving 885 tonnes annually. This momentum has been a crucial step in working towards our municipal reduction targets of 33% over 2007 levels by 2020.

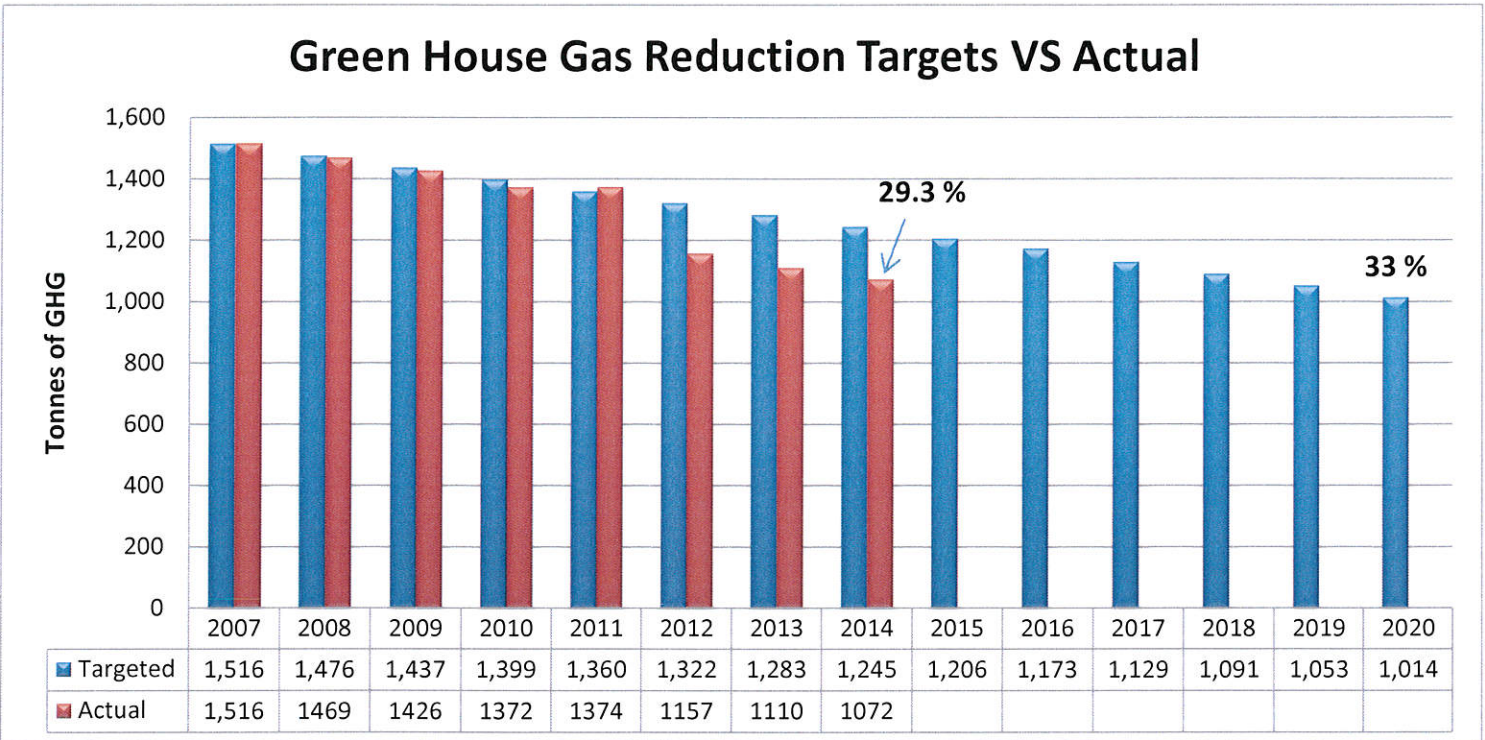
We believe that leading by example will have a positive impact on the community and help to develop a culture of change in regards to energy conservation and sustainability issues.



## 2.4 Green House Gas Reduction Targets

Oak Bay has signed on to the Climate Action Charter and has adopted an aspirational target of 33% for GHG reductions by 2020 from our 2007 levels.

The chart below shows the reduction levels needed to achieve this goal and compares that to actual year end levels.



- Emissions need to be reduced by 2.54% or 38.5 tonnes per year to make our municipal targets.
- Police department GHG emissions are exempt under the climate action charter.
- In 2014 an additional 41 tonnes of GHG emissions were added to the municipal totals with the implementation of curbside organics recycling.

## 2.5 GHG and Carbon Neutrality

There are two parts to what we are trying to achieve. The first part is to reduce carbon emissions (the chart above shows the positive results of Oak Bay’s conservation efforts over the last seven years) and the second is to become carbon neutral.

Oak Bay has now adopted a working towards approach with regards to being carbon neutral. This means instead of the municipality buying carbon offsets and being able to declare we are carbon neutral, the funds are kept by the municipality to work on their own carbon reduction projects.

We know that it is very unlikely that we will ever be able to get rid of every GHG producing process within the municipality, but what we can do is balance our emissions by taking part in projects that help reduce GHG elsewhere. This way we can eventually become carbon neutral or better, even though we may still emit some GHG.



This is where our household organic waste composting program comes into the GHG equation. When organic waste is placed in the land fill it decomposes gradually over decades and creates a significant amount of methane due to the absence of oxygen. Because methane is 21 times more potent than carbon dioxide on a 100-year global warming potential basis, composting can reduce GHG emissions by over 90% in contrast to sending the same waste to the landfill.

We have been involved in our pilot organics program for several years now and have removed an average of 200 tonnes of organics per year. After the conversion math, this equates to 104 tonnes less GHG per year since we started the program. This is credited against our emissions and towards becoming carbon neutral.

In 2014 Oak Bay expanded this program to include the entire municipality and removed 605 tonnes of organics. After calculating many factors, we can claim 449 tonnes against our GHG emission. The down side is we had to add the carbon released from the trucking to our GHG inventory. In 2014 that added 41 tonnes to our emissions.

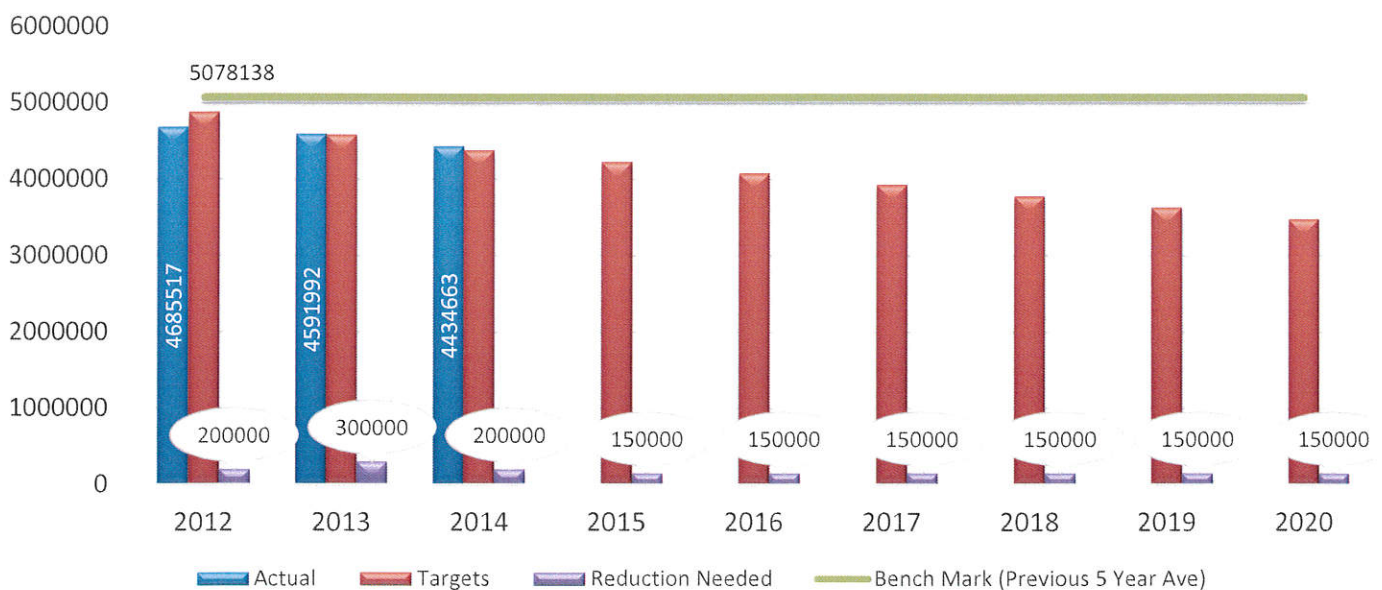
Although we added to our GHG emissions we have achieved a huge step forward in reducing Oak Bay’s environmental foot print. When we subtract the 449 tonnes we can claim from our organics program from our emission total, we end up with only 623 tonnes. That’s 41% of what we were responsible for in 2007 and we can say that we are 59% closer to being carbon neutral than in 2007.

## 2.6 Electrical Reduction Targets

In 2012 electrical reduction targets were established. The goal is to lower consumption by 1,600,000 kWh by 2020 and in doing so, protect the municipality from the burden of future hydro increases. Reducing electrical consumption also plays a key role in achieving our GHG reduction targets and together these targets will play an important role in Oak Bay’s path to shrinking its carbon footprint.

This graph shows municipal electrical reduction targets along with the progress made so far. The base line is the average for the five previous years.

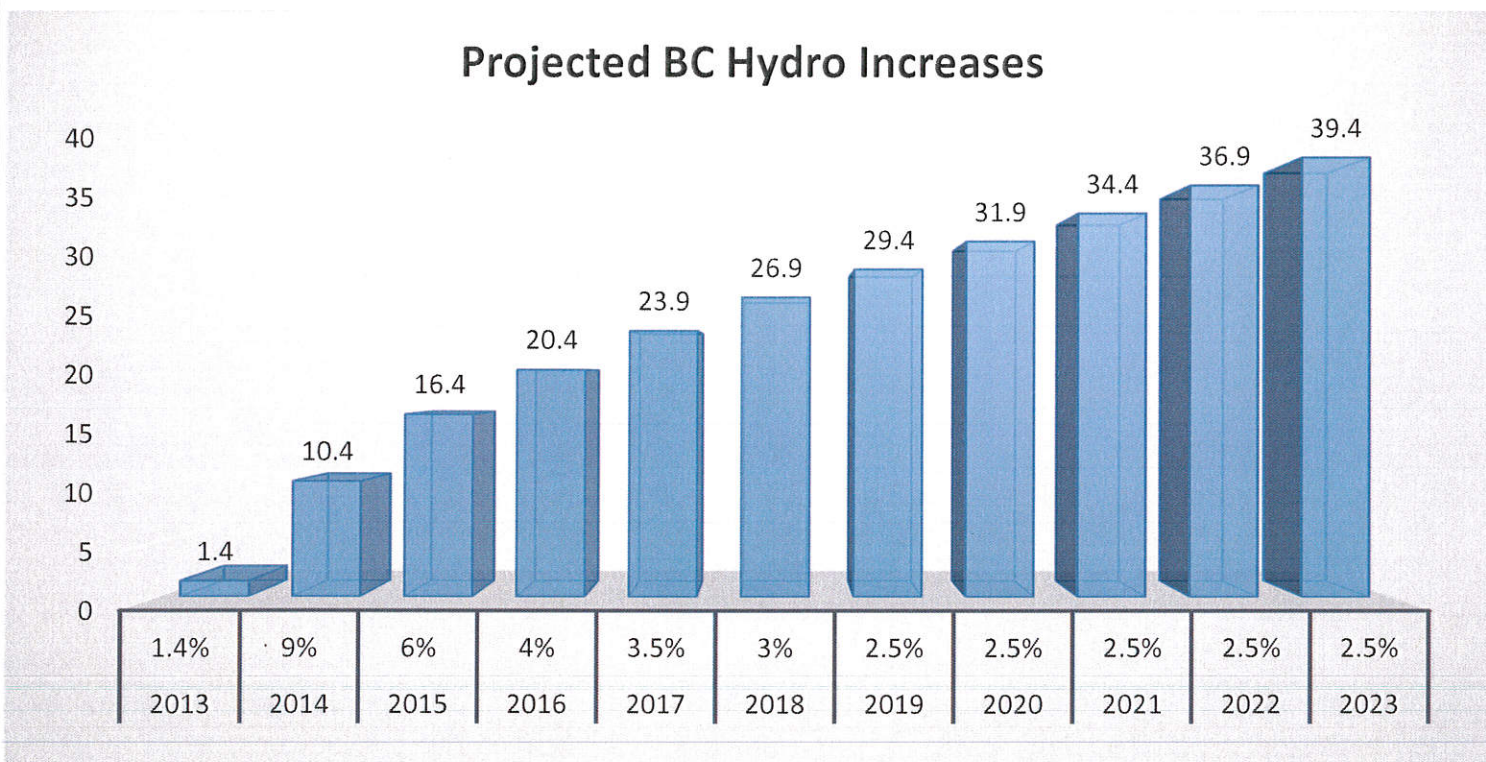
### Electrical Reduction Targets VS Actual



This strategy would serve to only keep our electrical bills at today’s levels. This was based on estimated increases from BC Hydro, shown below. These increase estimates underline the importance of taking action and ensuring that we continue to work towards these targets and goals.

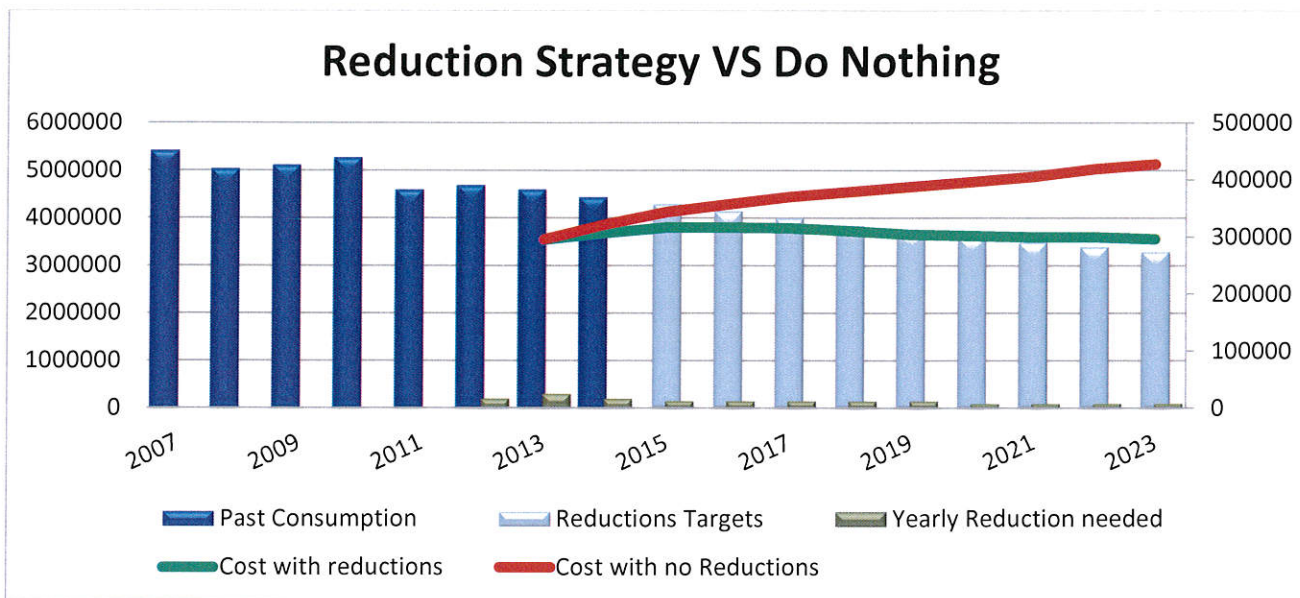
After 2014 Oak Bay was 56,525 kWh under the targeted 700,000 kWh goal. Projects planned for 2015 and 2016 will bring consumption goals back on target.

The following graph shows projected BC Hydro increases from 2013 to 2023 and underscores the importance of working towards our municipal goals to reduce electrical consumption.



The following graph shows Oak Bay’s progress since 2007 and shows where consumption will be in the future if the targets are achieved. The green line indicates the cost of hydro levelling out as targets are met (based on current estimates from BC Hydro as of April 2014). The red line shows how the cost will increase over the years if we abandon the pursuit of energy conservation. In fact when we added these estimated increases to our consumption levels in 2012, we saw that cumulatively it will cost the municipality 1.1 million dollars by 2023, if conservation measures are not taken.

Save now or Pay later



With this strategy, Oak Bay will save \$740,000 over the next 10 years and will reduce our yearly bill by \$131,000 by 2023.

It's important to note that in this scenario no plug load growth has been included, therefore future load growth will need to be controlled or balanced with additional savings for us to meet these targets.

- If we are able to achieve these goals by 2020 we will have saved \$740,000 or more in actual and avoided cost.
- \$740,000 represents the future saved dollar value. If we can achieve the reductions needed within that amount, we will have accomplished our goals using our future savings. This may seem too good to be true; however when you consider incentives, grants and credits/savings with the new conservation rates, this number will grow substantially and should give us all the funds needed to meet our goals.
- In the first three years (2012, 2013 and 2014) consumption was reduced by 250,854 kWh. As we move forward, work will continue on items identified on the projects list. The hope is that future savings will continue to reveal themselves as emerging technologies develop. What is clear is that we have captured savings from most of the “low hanging fruit” and in order to continue to lower consumption, projects with longer paybacks will need to be considered.
- By making energy conservation part of our business strategy, we can keep energy costs at a manageable level while playing a responsible role toward protecting the environment.

## 2.7 Budget

We have, to date, identified energy reducing projects and found funding as a capital project or with financing. The municipality has, in most cases, permitted the incentives received from these projects to be reinvested in other energy efficient projects. A portion of the funds we received from BC Hydro to help fund the energy manager position also goes to what we have to work with for conservation. As of Sept 2015 we have approximately \$85,000 from this funding source.

Council has approved the creation of a reserve account to fund future projects that will assist in reducing GHG throughout the District. Starting in 2013, the funds received from the annual CARIP grant have been added to this fund. Annually this grant comes in at about \$29,000.

Oak Bay has now adopted a working toward approach with regards to carbon neutrality. This now diverts the funds that would have gone towards being carbon neutral to our own GHG reduction projects. Since 2012 \$35,000 per year has been put into this reserve fund.

With these funds and other possible sources Oak Bay is presently looking at creating a Green Revolving Fund. If this does in fact happen, the municipality will put itself in a great position to turn energy conservation into the business as usual approach that it will need if we intend to reach our conservation goals and targets.

All together as of September 2015 we have just over \$290,000 set aside for conservation initiatives.



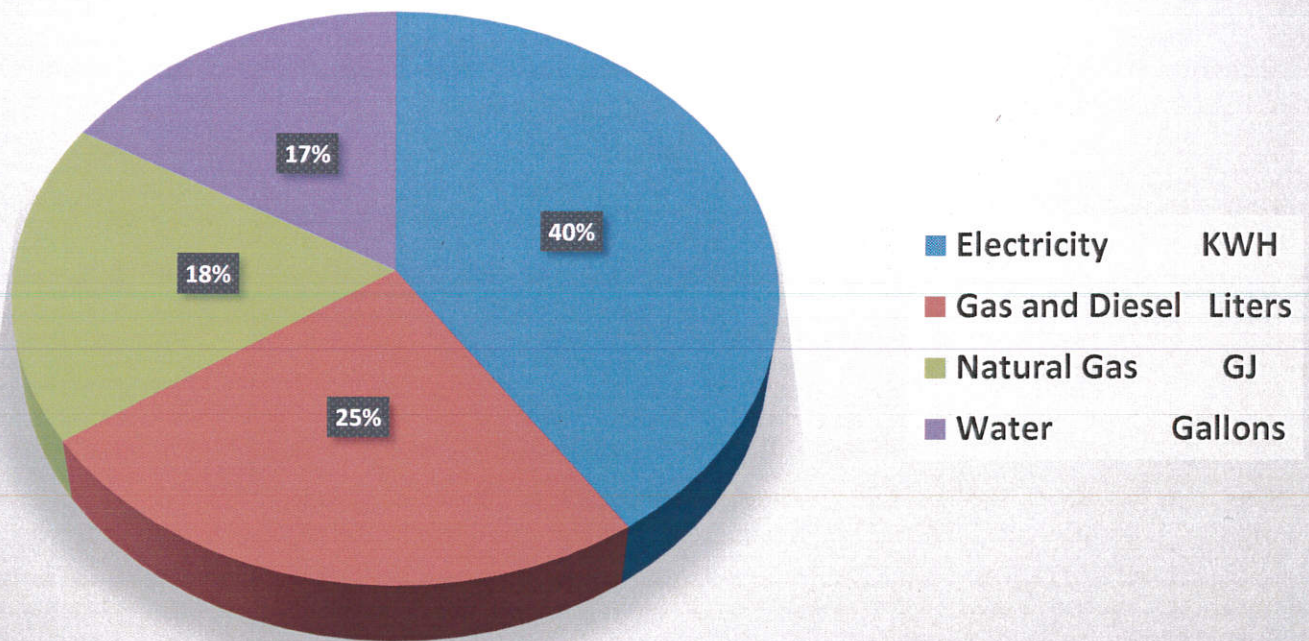
### 3. Understanding Our Situation

#### 3.1 Utility Consumption and Cost

Municipal Utilities (Jan – Dec 2014)		Consumption Unit	Costs \$	Percent %	GHG Tons
Electricity	KWH	4,435,829	\$ 385,495.00	40%	62.1
Gas and Diesel	Liters	192,736	\$ 236,613.00	25%	433.83
Natural Gas	GJ	10,838	\$ 171,978.00	18%	545.15
Water	Gallons		\$ 157,384.00	17%	
Total			\$ 951,470.00	100%	1041.08

- GHG totals include police department related emission. Does not include contractor trucking.

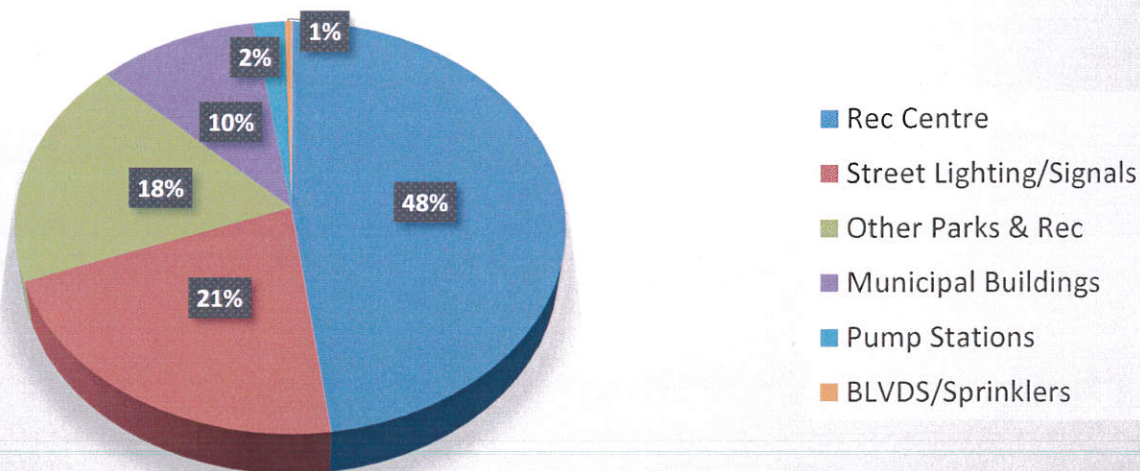
**Municipal Utility Cost 2014**



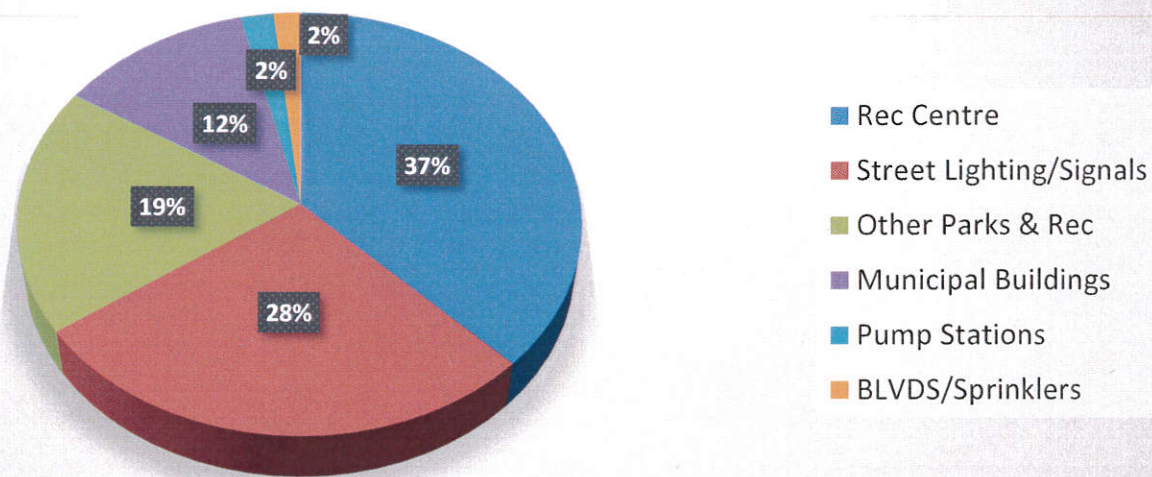
### 3.2 Electrical Consumption 2014

Municipal Electrical Usage					
Sites	Consumption kW/h	%	Cost 2014	%	
Rec Centre	2123515	48%	\$144,698.00	37%	
Street Lighting/Signals	951105	21%	\$106,777.00	28%	
Other Parks & Rec	793137	18%	\$72,747.00	19%	
Municipal Buildings	457944	10%	\$46,657.00	12%	
Pump Stations	90122	2%	\$7,913.00	2%	
BLVDS/Sprinklers	20006	1%	\$6,703.00	2%	
Totals	4435829	100%	\$385,495.00	100%	

#### Municipal Electrical Consumption 2014



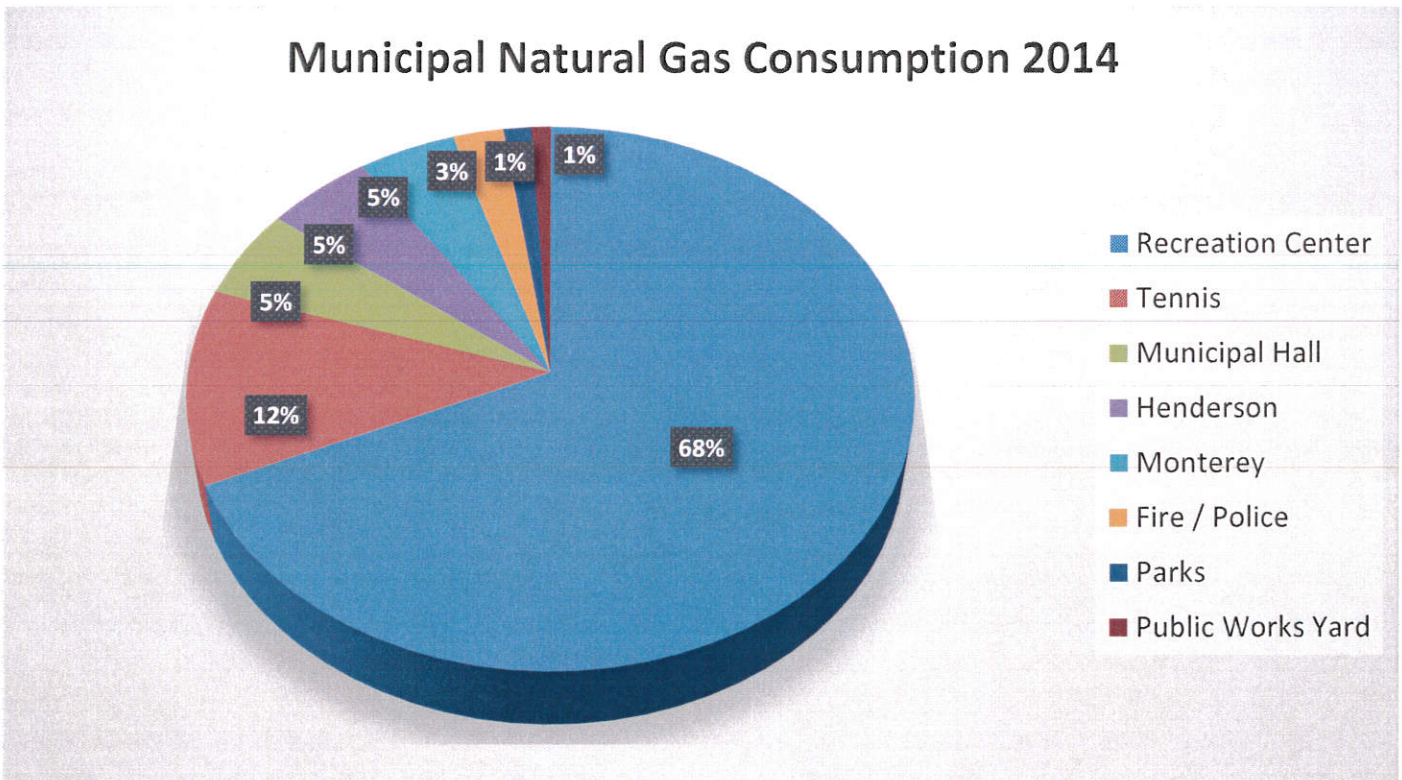
#### Municipal Electrical Cost 2014



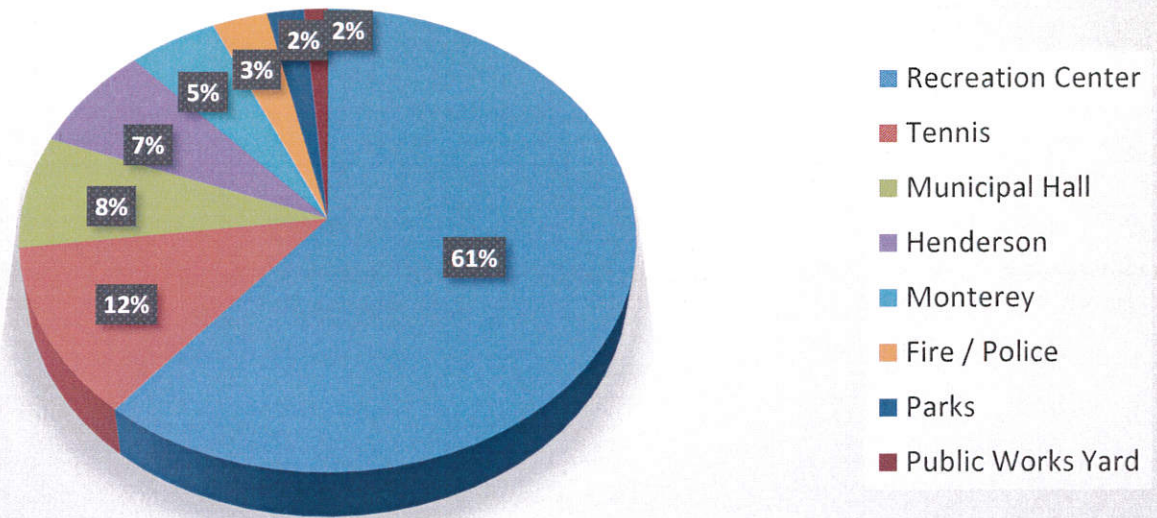
- 2014 conservation rate credits and being a large general service customer helped to reduce the overall cost per kWh for the Rec Centre.
- Monthly charges for the 49 accounts associated with the boulevard/sprinkler account for the high cost to consumption ratio.

### 3.3 Natural Gas Consumption & Cost 2014

Site	Consumption GJ	Cost 2014
Recreation Center	7408.3	\$105,025.00
Tennis	1255.6	\$20,525.00
Municipal Hall	577.3	\$13,410.00
Henderson	561.8	\$12,661.00
Monterey	516.2	\$8,858.00
Fire / Police	266.4	\$5,441.00
Parks	147.7	\$3,693.00
Public Works Yard	104.6	\$2,365.00
<b>Totals</b>	<b>10837.9</b>	<b>\$171,978.00</b>



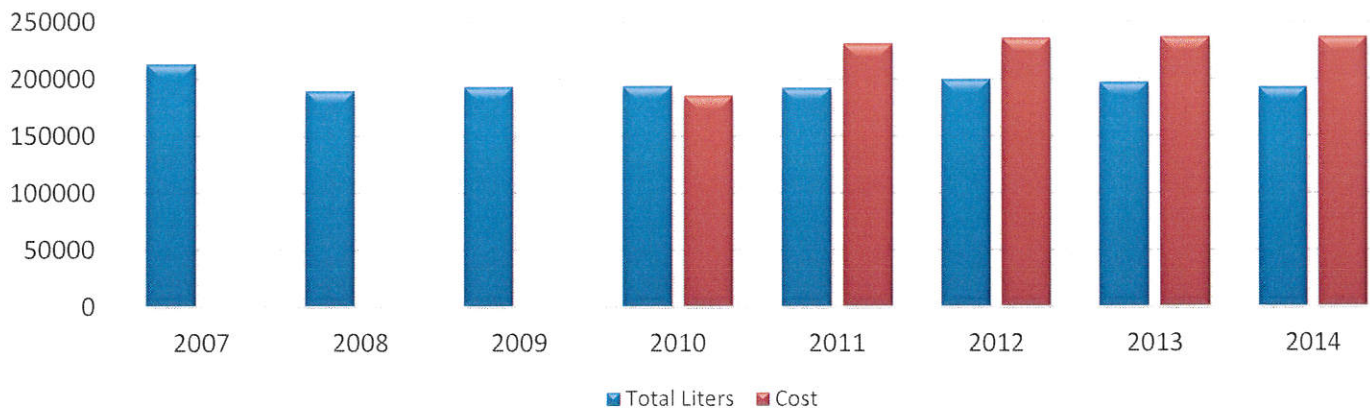
### Municipal Natural Gas Cost 2014



### 3.4 Gas and Diesel usage 2007 to 2014

Gas and Diesel				
Year	Gas Liters	Diesel Liters	Total Liters	Cost
2007	118858	94615	213472	
2008	114360	75294	189633	
2009	108278	85074	193352	
2010	111969	82333	194302	\$ 185,558
2011	102044	90401	192445	\$ 231,195
2012	103697	96146	199843	\$ 235,836
2013	99564	97653	197217	\$ 236,820
2014	95266	97470	192736	\$ 236,613

### Gas & Diesel





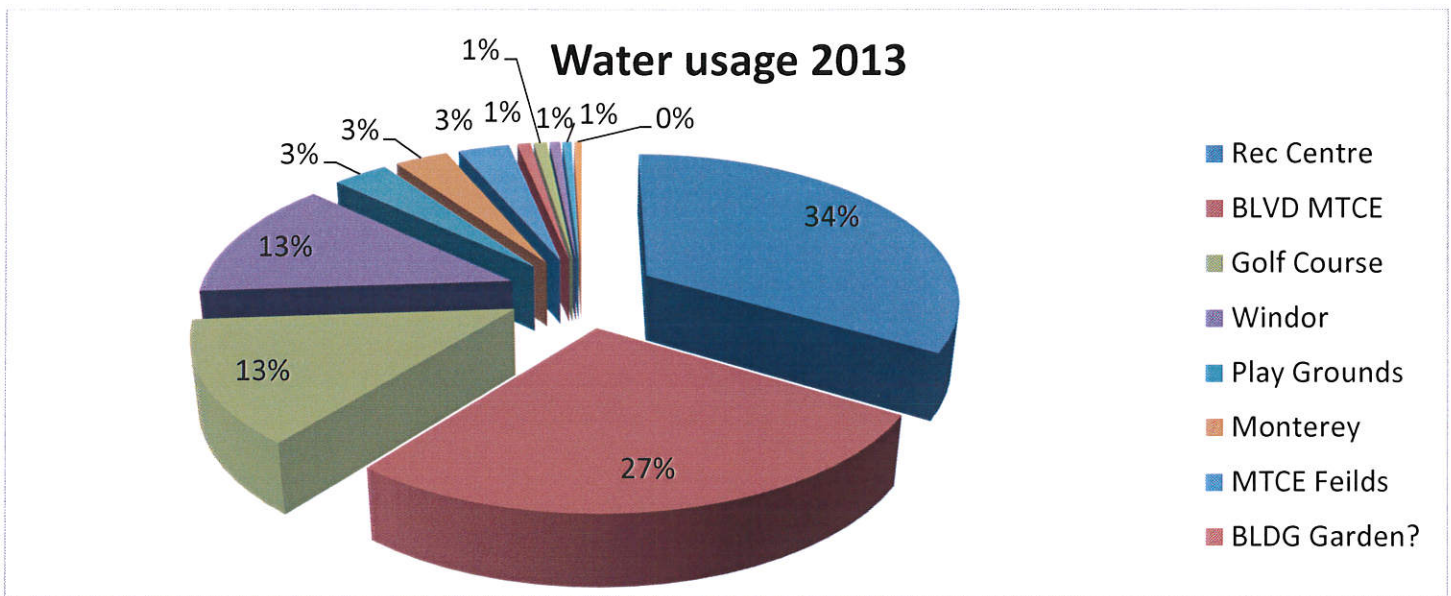
In 2011 we used 1857 less liters of fuel than in 2010 but with price increases the cost was \$45,637 more. This shows just how vulnerable we are to price fluctuations in this area.

The Carbon Tax was increased 20% in July 2012; this has again added a significant increase to the gas and diesel costs for 2012 and beyond.

The Carbon Tax that the Municipality pays during the year comes back to us in the form of a Carbon Credit. In 2013 the amount was \$29,290.

At this point we are still looking for a good long term plan to reduce our dependence in this area.

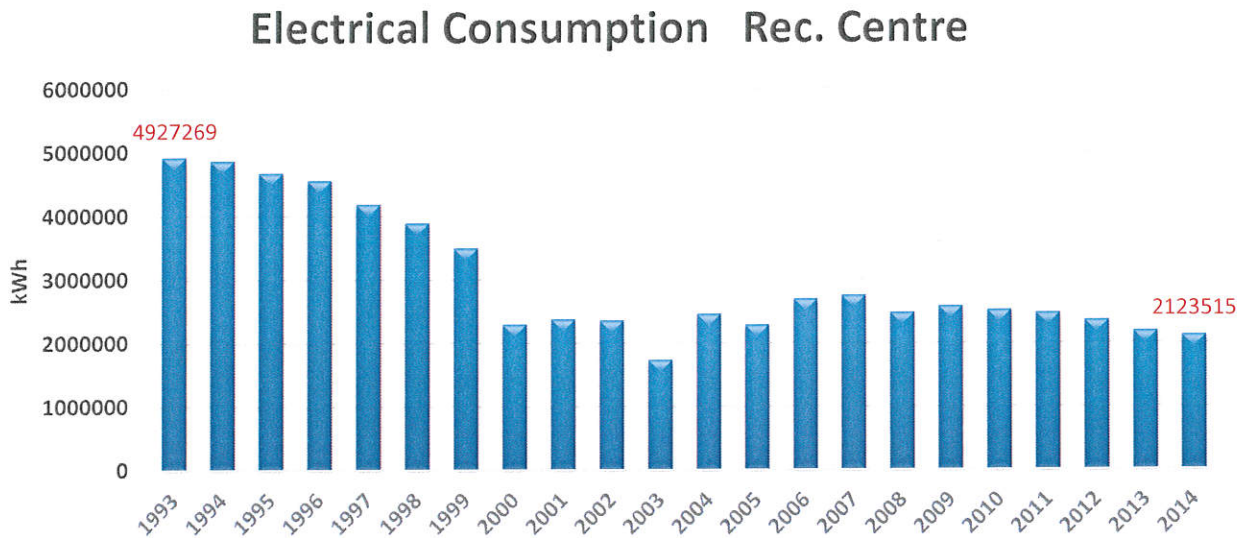
### 3.5 Water consumption



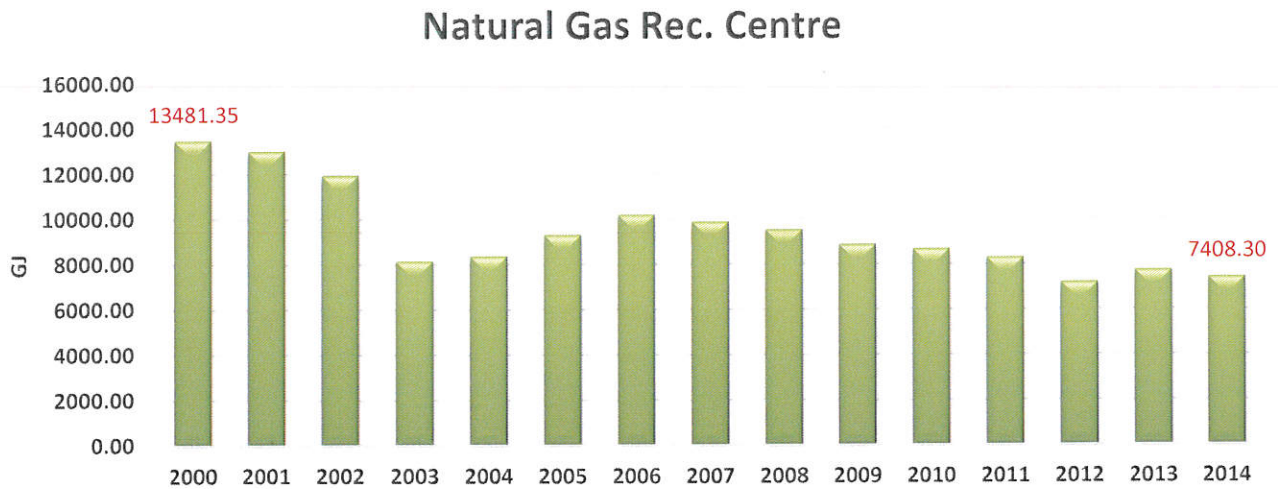
### 3.6 Recreation Centre Consumption History

The Recreation Centre represents the largest user of hydro and natural gas in the municipality.

The following chart shows the drop in electrical consumption over the last 21 years. The Recreation Centre now consumes **57% less** than what it did in 1993.



The Recreation Centre Natural Gas bill has been reduced by 45% over the last 14 years.



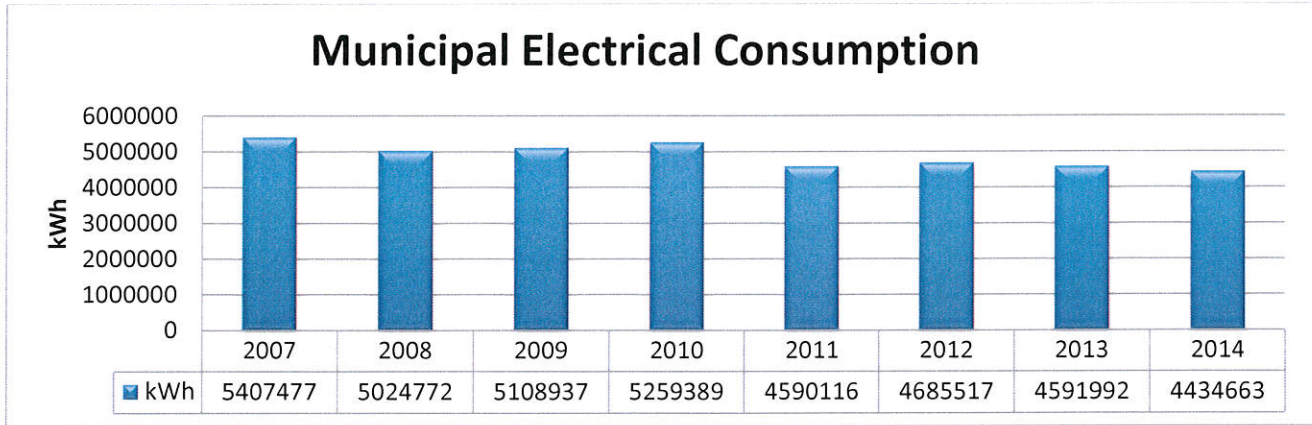
\* In 2003 the heat load for the main pool was changed from natural gas to an electrical process that uses waste heat from the new pool dehumidifier.

\* Recreation Centre renovations and no summer ice due to sub floor heating problems account for dip in consumption for 2000 to 2005.

❖ In 2013 the Oak Bay Recreation Centre hit the 50% reduction mark for energy savings.

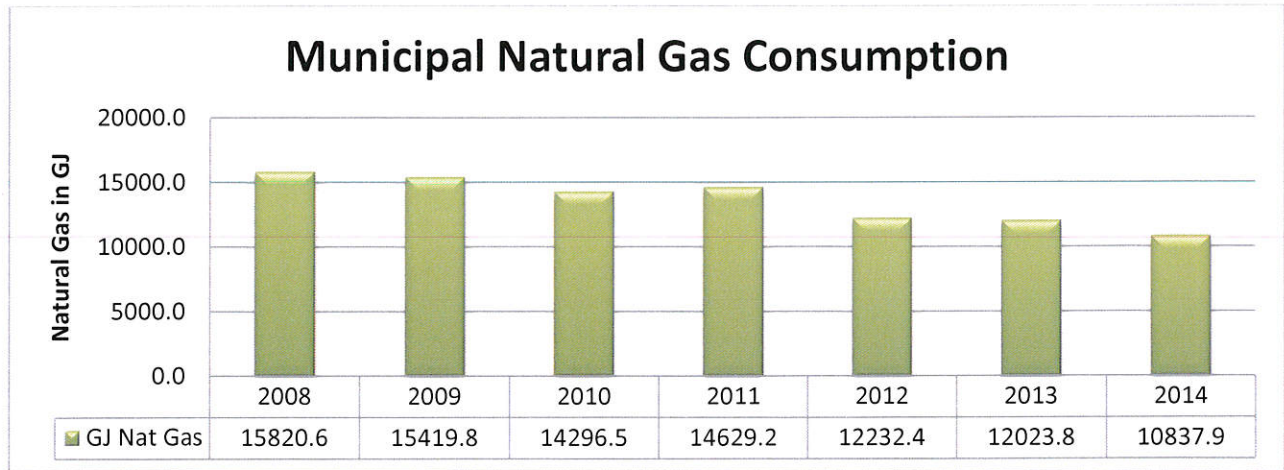
When we added the 57% electrical savings with the 43% Natural Gas savings, and convert to ekWh, we saw savings of more than 50% over our historical energy consumption levels. This does not include the \$10,000 propane bill we eliminated when we converted to an electric Zamboni.

### 3.7 Municipal Yearly Energy Consumption



The Municipality has reduced consumption by 972,814 kWh over the last 7 years, an 18 % drop.

The entire municipality now uses 492,606 kWh less electricity than what just the Rec Centre used in 1993.



In 2014 Oak Bay used 4982.7 GJ less than 2008, a 31.5% drop. This has been a huge help in lowering GHG emissions.

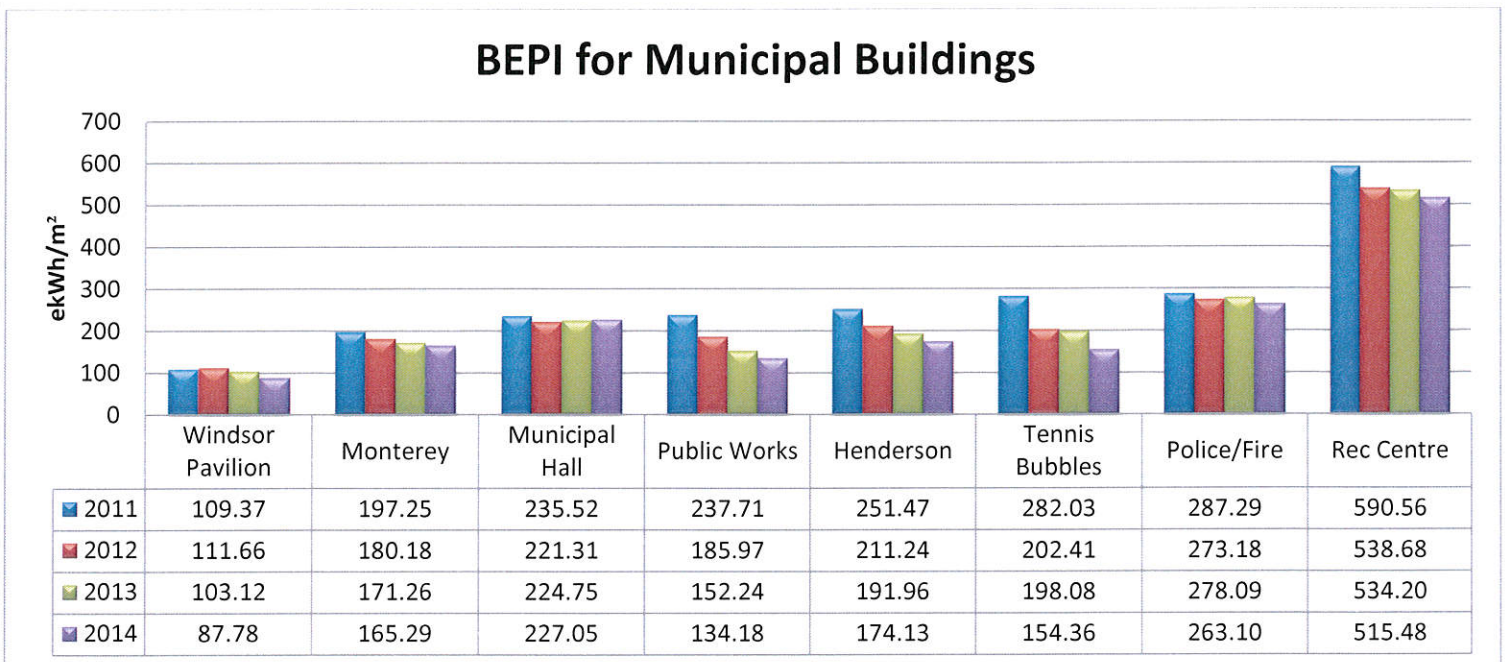
In November 2010 Henderson Centre changed its heating load from oil to natural gas by adding a new high efficient boiler. With this change and a colder than normal year, we see a spike in consumption for 2011.

In 2012 a tankless hot water system was installed at Henderson Centre, removing the need for the new boiler to run during the summer months.

2012 marks the beginning of our energy awareness campaign. Although the weather was slightly warmer and we did do a few capital projects, the savings were far beyond what can be attributed to just those items. The remaining savings were clearly from staff changes in attitudes towards energy usage.

### 3.8 Facility Energy Intensity

These charts show the Building Energy Performance Index (BEPI). The area of each of our buildings is compared to its energy consumption; we can then see how their performance compares to each other and how they compare to other similar buildings.



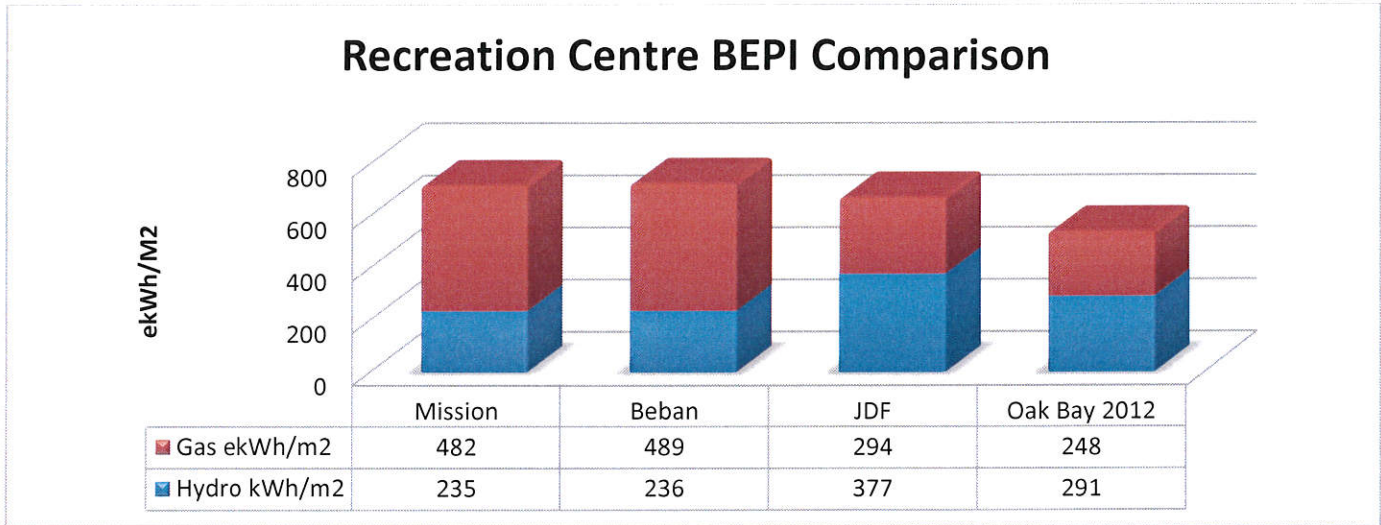
The unfortunate part is that all our buildings vary so much in when and how they were built, as well as how and what they are used for. Therefore in Oak Bay we need to look a lot harder at the variables before we can label a building a good or poor performer. For example, it’s easy to see that the Windsor Pavilion has the best BEPI, this is Oak Bay’s newest building and its function is not energy intensive.

The worst performing building is the Rec Centre, however it’s important to note that buildings with indoor pools are generally considered to be 5 times more energy intensive than conventional buildings. This along with the arena and other high energy intensive equipment tend to push recreation centers into a class of their own.

The significance of this BEPI chart is to show that most of the municipality’s buildings have greatly improved their energy performance over the last few years, with the exception being the Municipal Hall. This shows that we are definitely on the right path to lowering consumption. In fact, when comparing Oak Bay’s municipal buildings to a recent benchmarking exercise done by Prism Engineering, all of Oak Bay’s buildings rank below, or well below, the median line for similar municipal buildings around the province.

### 3.9 Recreation Centre Total Energy BEPI Comparison

The chart below identifies how the Oak Bay Recreation Centre compares to other multiplexes with similar functions in the region.



The chart indicates the positive results of energy conservation over the years. Data for other buildings is from 2011.

## 4. Our Actions

### 4.1 Previous Actions

Over the years Oak Bay has been involved in many energy saving projects resulting in impressive conservation numbers. The project list on the next page shows the projects, estimated savings, and an adjustment for the price increase to show actual savings.

From this project list we can account for the following in savings, as of yearend 2014:

- \$1,837,369 in actual savings and \$1,008,677 in avoided cost for a total savings of \$2,846,046.
- \$345,598 in yearly savings.
- 10,492 Tonnes of GHG reduced to date and 885 Tonnes of GHG per year.
- 2,208,395 kWh of electricity and 6,391 GJ of natural gas.

It is important to note that the actual savings are beyond what can be accounted for on the project list. The Recreation Centre alone has lowered its electrical consumption by 2,738,618 kWh over the last 20 years. The remaining savings can be attributed to behavioral and procedural changes; also many of these projects exceeded their estimated savings.

In 1993 the Rec Centre used 4,927,269 kWh of Hydro at a cost of \$157,645 and paid .032 cent per kWh. If no changes had been made, that consumption would cost us \$364,618 in 2014, instead of the actual \$144,698 paid, a yearly savings of \$219,920.

The electrical reduction at the Rec Centre over the last 20 years is equivalent to powering 261 homes each year.

The GHG emissions the municipality has reduced over its historical levels are equivalent to removing 186 average passenger cars from the road and you would need a 725 acres forest to sequester this amount of carbon each year.

## 4.2 Energy Projects to Date

Project	Year	Cost	Incentives	KWH Saved	GJ Saved	GHG Saved	Yearly Savings	Adjusted Savings in 2014 Cost	Comment	Savings to date	Savings with cost increases included	GHG saved to date
Solar Heating System	1985				795	40	\$4,000	\$11,217	Federal Grant	\$116,000	\$149,659	1160
Pool underwater Lights	1985			109,500		2.73	\$1,083	\$8,103	1000W to 500W	\$31,407	\$142,208	79.17
Natural Gas conversion	1994	\$53,700				350	\$25,952	\$73,824	From Oil at 4.96 GJ in 94	\$519,040	\$1,062,564	7000
Energy upgrade	1996	\$161,013	\$51,158	569,177	1,000	50.3	\$23,779	\$56,229	Inc. Mont & Hend	\$546,917	\$714,992	905.4
Low E ceiling Arena	2002	\$2,000		142,857		3.57	\$7,000	\$10,571	Used from Memorial Arena	\$84,000	\$99,428	42.8
Pony Pump	2002	\$2,700		91,836		2.3	\$4,555	\$6,797		\$54,660	\$63,918	27.6
Power Factor Correction	2004						\$1,524	\$1,524		\$15,240	\$15,240	
Subfloor Heat Project	2006			89,686		2.24	\$4,000	\$6,637	Electric to Waste	\$32,000	\$45,013	17.92
Lighting Fire/police	2009		\$3,637	52,344		1.3	\$2,690	\$5,653	Lighting retrofit	\$13,450	\$28,933	6.5
Condenser Project	2009			33,074		0.83	\$1,700	\$2,447		\$8,500	\$11,731	4.15
Work truck 4 cyl	2009					0.9	\$500	\$500		\$2,500	\$2,500	4.5
Lighting Public Works	2009		\$4,078	31,558		0.79	\$1,893	\$3,408	Mont, Hend, & Rec Centre	\$9,465	\$11,194	3.95
Energy Upgrade	2010	\$351,674	\$155,603	492,529	2,435	185.24	\$63,406	\$70,805		\$221,921	\$284,219	740.96
Boiler Henderson	2010	\$83,000	\$7,422		364	49.6	\$5,282	\$6,097		\$21,128	\$27,420	198.4
Electric Zamboni	2011	\$128,075				19.6	\$10,000	\$10,000	Include Trade in	\$30,000	\$30,000	58.8
Tennis Lights	2011	\$41,199	\$25,388	161,000		3.54	\$8,372	\$11,914	From 1000W to 575W	\$31,395	\$41,337	10.62
Lighting Municipal Hall	2011		\$6,109	43,970		1.1	\$3,737	\$4,749		\$13,081	\$16,159	3.3
Insulation 3 Court Bubble	2011	\$30,140			647	33	\$8,100	\$9,129	3 Court	\$28,350	\$34,365	99
LED Lights Bleachers	2011	\$2,100	\$1,263	10,687		0.23	\$556	\$791	Kitchen, washrooms etc.	\$1,946	\$2,581	0.69
Other lighting projects	2011	\$856	\$642	13,905		0.31	\$723	\$1,029	Boiler is now off all summer	\$2,530	\$3,358	0.78
DHW Henderson	2012	\$9,762			150	7.55	\$2,250	\$2,513		\$5,625	\$6,068	18.88
Energy Study	2012	\$5,000							Projects for 2013 and future			
Compressor upgrade	2012	\$35,740		83,300		1.8	\$5,498	\$6,164	M Series	\$13,745	\$14,827	2.7
Lighting Arena & ISF	2012	\$49,655	\$37,395	98,039		2.44	\$5,863	\$7,255	Lighting was increased	\$14,707	\$17,451	4.5

	2013	\$10,500	\$3,000	89,177	2.25	\$6,332	\$6,599	Jun-13	\$9,498	\$9,765	3.37
LED Pool Lights	2013	\$10,500	\$3,000	89,177	2.25	\$6,332	\$6,599	Jun-13	\$9,498	\$9,765	3.37
Occupancy & Mezz	2013	\$3,200	\$1,000	27,824	0.69	\$1,976	\$2,059	Jun-13	\$2,963	\$3,047	1.04
LED Windsor & Mont	2013	\$1,259		21,206	0.4	\$1,506	\$1,569	Nov-13	\$1,656	\$2,423	0.44
4 Court Insulation	2013	\$40,000		776	39.6	\$9,700	\$9,700	Sep-13	\$3,233	\$3,233	59.4
Rec Occupancy Sensors	2014	\$ 438		12,867		\$ 952	\$ 952		\$ 714.00	\$ 714.00	0.2
Hall Vent & Heat Opt	2014	\$ 5,750		18,213	38	\$ 2,604	\$ 2,604		\$ 1,302.00	\$ 1,302.00	36.5
Henderson DDC	2014	\$ 18,795		15,646	186	\$ 4,759	\$ 4,759		\$ 396.00	\$ 396.00	0.8
C.O.P. Rec. Centre	2014										
<b>Totals</b>		<b>\$1,036,556</b>	<b>\$296,695</b>	<b>2,208,395</b>	<b>884.81</b>	<b>\$220,313</b>	<b>\$345,598</b>		<b>\$1,837,369</b>	<b>\$2,846,046</b>	<b>10492.37</b>

### 4.3 Actions in 2014

**Projects** - In 2014, the following projects were completed saving \$9,130 dollars, 30,505 kWh of electricity, 307 GJ of natural gas and 16.64 tonnes of GHG per year.

Item	Projects Completed in 2014				Annual Savings			
	Description	Cost	Payback	\$	GJ	kWh	GHG	
❖ Rec Centre	Continuous Optimization Program (COP)	\$250	1.3	\$ 198		3,735	0.05	
Rec Centre	Occupancy Sensor (OS) skate lobby	\$5,750	3.1	\$ 1,860	60.4		3.568	
Municipal Hall	DDC upgrade	\$2,300	1.4	\$ 1,100	0	9,300	0.13	
Police & Fire	LED screw-in/snap-in lamps	\$700	2.6	\$ 269		3,685	0.09	
Public Works	Miscellaneous projects from Energy Study	\$2,000	2.9	\$ 303		2,810		
Henderson	Change Room Exhaust Fan Downsizing	\$125	10	\$ 55		756	0.02	
Monterey	Cedar Room Programmable Thermostat	\$200	3.7	\$ 22	247	306	0.01	
Monterey	Washroom OS	\$18,795	4.1	\$ 5,077		7,168	12.7	
Henderson	DDC System and upgrades	\$250	4.4	\$ 140		574	0.015	
Henderson	Hallway Photocell	\$620	6.25	\$ 64		1,300	0.033	
Henderson	OS Lighting Control	\$400				871	0.02	
Library	Lighting							
<b>Total</b>		<b>\$31,390</b>	<b>3.44</b>	<b>\$ 9,130</b>	<b>307</b>	<b>30,505</b>	<b>16.64</b>	

- ❖ **Continual Optimization Program (COP)** – The Recreation Centre is now in the COPs program. This program will search for improvements in efficiencies with our building management system. Buildings that are involved in this program normally see substantial savings in gas and hydro. The first part of this program involved a one year monitoring stage (April 2014 to April 2015), during this time we were unable to be involved in energy upgrades to this building. Now that this study period is completed, implementation of the findings are now being installed.

#### 4.4 Behavioral Changes

- **Energy Team** – Our 7 member energy team helps guide energy related decisions, motivates staff and are ambassadors for energy conservation.
- **Newsletters** – Staff are now informed of upcoming events, energy improvements, tips to save energy at work and home, links to energy related web sites and much more through newsletters.
- **Energy Reports** – Reports are sent out quarterly to building managers that compare each building's consumption with the previous years and shows how they are doing in relation to average temperature and the trends of the other buildings. Other energy related information is passed on in these reports.
- **Attitude** – It's clear from the energy reports that we are seeing the results of a changing attitude towards energy use. Almost all areas have seen improvement in their consumption.
- **Employee Awareness** – We continue to work on our employee awareness. In 2013 this was greatly assisted by the help of BC Hydro's Out Reach program. This program worked with us to help us with our awareness campaign.
- **Programming and controls** – There have been a long list of changes and improvements to controls and programming. Examples are refinements to heating controls, lighting timers and motion sensors in many areas, exhaust fans now on a timer in the pool area, humidity set point changes and many more.
- **Social Media Pilot** – In 2015 BC Hydro helped Oak Bay develop a social media strategy. Thanks to this, Oak Bay will now be passing along energy related information along with other recreational related information.

#### 4.5 Actions for 2015/2016

- **Continuous Optimization Program** - Implementation of findings from the COPs study period. The study portion of this program found opportunities to save 108,000 kWh and \$25,000
- **REALice** – This is a new ice making process, removing air from the ice making water to makes the ice denser and enables ice making with cold water. This saves the natural gas needed to heat the water. It also allows the arena slab temperature to be increased several degrees, greatly reducing the run times on the refrigeration system. This will save over \$20,000 per year and reduce GHG by 50 tonnes.
- **LED Street Lights Pilot** – A pilot project is planned for 2015. This will involve changing 100 residential street lights to energy saving LED units. This first step will help Oak Bay gauge public response as well as acquire a better understanding of the many facets of this new technology. With this gained knowledge we will be better prepared to move forward with a future larger scale adoption of this technology.
- **LED Street Lights, Phase One** – In early 2016 phase one will be implemented. This is the first step of a planned three phased approach to transforming all of Oak Bay's street lights to energy saving LED fixtures. This will involve replacing approximately 650 fixtures and will save 206,184 kWh and \$20,600 per year.
- **Other Lighting**- upgrades are planned at the Rec Centre and the Monterey underground parking lot and will all be conserving energy by moving to LED fixtures.



- **Totals** - In total Oak Bay should see an estimated savings of \$79,000 per year, lowering consumption by over 600,000 kWh and lowering our GHG emissions by another 92.5 tonnes each year. These projects will also bring Oak Bay back on track in working towards its conservation targets and goals and will lower municipal electrical consumption by 13.5%.

#### 4.6 Action for 2015/16 - Project List

Projects for 2015/16							
Projects for 2015				Annual Savings			
Item	Description	Cost	Payback	\$	GJ	kWh	GHG
Rec Centre	Continuing Optimization	\$67,750	2.6	\$25,151	730	108,245	38.00
	REALice	\$35,000	1.7	\$22,050	950	150,446	49.70
	Exterior LED Wall Packs	\$5,000	6.4	\$775		8,468	0.01
	LED Parking Lot Lighting	\$2,873	4.1	\$703		8,058	0.01
	Fitness Lighting	\$35,000	6	\$5,838		68,682	0.96
	Pole Lights	\$2,500	13.2	\$189		2,104	0.03
Municipal	Street light Pilot Project	\$22,000	9.1	\$2,944		36,800	0.60
	Street lights Phase 1	\$125,000	6	\$20,600		206,184	2.89
Monterey	Underground Parking Lights	\$4,500	5.5	\$822		11,266	0.30
	Estimated Incentives	-\$86,200					
	<b>Total</b>	<b>\$213,423</b>	<b>2.7</b>	<b>\$79,072</b>	<b>1680</b>	<b>600,253</b>	<b>92.51</b>

#### 4.7 Actions for 2015/16 and the Future- Project List

In 2009 an in-depth energy study was done on the Oak Bay Recreation Centre, Monterey Centre, Henderson Centre and the Municipal Hall. This study was funded 100% by BC Hydro as part of a Power Smart initiative. This study pointed out many of the energy saving projects that were to be completed over the next few years. In 2012 a walk through energy study was completed on all of Oak Bay's main buildings. This provided a list of projects for the remaining buildings and also revisited the progress made from the original study, while offering updated solutions. From those studies, these projects remain to be completed and we plan to work towards completing them as time and funding permit.

- From the 2012 energy study, these projects still remain and are being considered for 2016 and beyond.

Rec Centre				Annual Savings				
Item	Description	Cost	Payback	\$	GJ	kWh	KW	GHG
2.1.5	CT Heat Recovery	\$35,000	7.7	\$4,600	293	-10,351		14.7
2.1.7	Arena Glass Insulation	\$7,500	2.9	\$2,600	128	7,130		6.7
		<b>\$42,500</b>	<b>3.0</b>	<b>\$7,200</b>	<b>421</b>	<b>-3,221</b>		<b>21.4</b>

<b>Monterey</b>				Savings				
Item	Description	Cost	Payback	\$	GJ	kWh	kw	GHG
2.3.1	ASHP for AHU	\$ 18,000	11.46	\$ 1,570		23,500	40.0	0.0
2.3.2	High Efficiency Gas Furnace	\$20,000	8.7	\$2,290	131		0	6.7
<b>Mont</b>	<b>Total DDC</b>	<b>\$ 38,000</b>	<b>9.2</b>	<b>\$ 3,860</b>	<b>131</b>	<b>23,500</b>	<b>40.0</b>	<b>6.7</b>

<b>Public Works</b>				Savings				
Item	Description	Cost	Payback	\$	GJ	kWh	kw	GHG
2.1.1	Turn off HRV	\$200	0.3	\$500	10	2,100		0.7
2.1.2	Adjust compactor timing	\$600	6.8	\$100		800		
2.1.3	Locker room EF timer	\$500	1.6	\$300		2,700		0.1
2.1.4	Washroom EF timer	\$500	1.7	\$300		2,500		0.1
2.1.5	Sign shop furnace timer	\$500	1.3	\$400	20	100		0.9
2.1.6	Shop lighting upgrade	\$8,700	8.3	\$800		7,900	32	0.17
2.1.7	New lighting control	\$4,200	10.5	\$400		3,700		0.08
<b>PW</b>	<b>Total DDC</b>	<b>\$ 15,200</b>	<b>5.4</b>	<b>\$ 2,800</b>	<b>30.0</b>	<b>19,800</b>	<b>32.0</b>	<b>2.05</b>

<b>Windsor</b>				Savings				
Item	Description	Cost	Payback	\$	GJ	kWh	kw	GHG
2.2.1	Basement EF humidistat	\$500	4.3	\$110		1,000		
2.2.2	Vending miser	\$500	5.5	\$90		900		
2.2.3	Lobby programmable thermostats	\$700	2.6	\$280		2,600		0.1
2.2.4	Washroom programmable thermostats	\$1,200	2.3	\$510		4,800		0.1
2.2.5	Washroom exhaust fan timers	\$800	2.6	\$290		2,800		0.1
2.2.7	New lighting control	\$1,200	6	\$200		1,700		
<b>Wind</b>	<b>Total DDC</b>	<b>\$ 4,900</b>	<b>3.3</b>	<b>\$ 1,480</b>		<b>13,800</b>		<b>.3</b>

<b>Police and Fire</b>				Savings				
Item	Description	Cost	Payback	\$	GJ	kWh	kw	GHG
2.3.1	Thermostatic radiator valves	\$4,900	6.3	\$800	40			1.9
2.3.2	Turn off radiator in police reception	\$100	0.5	\$100				0.2
2.3.3	Programmable thermostats	\$1,600	3.8	\$400		4,000		0.1
2.3.4	Police programmable thermostat upgrade	\$700	6.3	\$100		1,000		
2.3.5	Police washroom EF Timer	\$500	3.3	\$200		700		0.2
2.3.6	Police holding cells EF lighting interlock	\$900	6.2	\$100		1,000		0.1
2.3.7	Building envelope weatherproofing	\$600	6.2	\$100		1,000		
2.3.8	Fire hall washroom EF installation	\$1,000	8.7	\$100	10	-300		0.4
2.3.9	T12 to T8 h/w retrofit	\$100	0.8	\$100		500	1	
2.3.11	New lighting control	\$700	3.6	\$200		1,900		
<b>Fire</b>	<b>Total DDC</b>	<b>\$ 11,100</b>	<b>4.1</b>	<b>\$ 2,200</b>	<b>50.0</b>	<b>9,800</b>	<b>1.0</b>	<b>2.9</b>

## 4.8 Future Project Totals

Site		Cost	Pay back	\$	GJ	kWh	kw	GHG
Rec	Total	\$42,500	3.0	\$7,200	421	-3,221		21.4
Mont	Total	\$ 38,000	9.2	\$ 3,860	131	23,500	40.0	6.7
PW	Total	\$ 15,200	5.4	\$ 2,800	30.0	19,800	32.0	2.05
Wind	Total	\$ 4,900	3.3	\$ 1,480		13,800		.3
Fire	Total	\$ 11,100	4.1	\$ 2,200	50.0	9,800	1.0	2.9
	Total	\$ 111,700	6.4	\$ 17,540	632	63,679	73.0	33.35

## 4.9 Looking to the Future

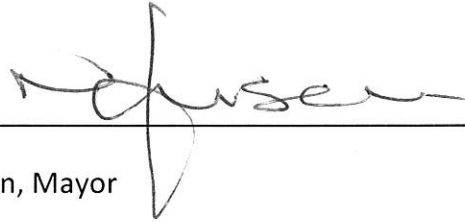
As we look for future energy saving, it's clear that the more you look the more you see. Since the 2012 walk through energy study many exciting energy saving opportunities have come to light. Some of these opportunities are listed below however cost and payback are not determined yet, as they require more investigation and some engineering will be required.

- **LED Street Lights, Phase 2 and 3**– With the pilot project and phase one behind us, the plan is to continue until the entire municipality has been retrofitted, providing the funding is made available. The strategy is to do one third each year, this way the work can be spread out over three years and be completed by municipal staff. When completed, it is estimated that this project should save Oak Bay over 614,000 kWh and \$65,000 per year. This will also lower GHG by another 8.5 tonnes. This future project is seen as the best electrical saving opportunity we presently have on the radar and these savings would be a big step towards our electrical reduction targets, helping with our GHG reduction goals.
- **LED Tennis Bubble Lights** – With the improvements in LED lighting, there is now an opportunity to lower consumption while at the same time improving the light quality. At this point the price is still very high but we hope to see that come down to the point that this will be a viable project.
- **Pool Heat** – Although we already use waste heat to heat our main pool, we are still using our natural gas boilers to heat our learners and swirl pools. Recently there has been a shift to much more energy efficient heat pumps for this purpose. A similar retrofit at another local pool is now seeing savings of 50% on their natural gas bills. This would be another great step to lowering our GHG emissions.
- **Heat Reclaim/Energy Loop** – A new way to reclaim heat from the refrigeration process at the Rec Centre is now being considered. The heat that is presently rejected to the atmosphere will be transferred to an energy loop, this loop then distributes the reclaimed heat to other heating purposes throughout the building. This would greatly reduce our dependence on natural gas and is seen as Oak Bay's best option to continue reducing GHG emissions. As this system would be phased in over several years it fits in well with our GHG reduction targets and goals.
- **Arena Dehumidification** – As our old dehumidifier reaches the end of its useful life, we are seeing a shift to a more energy efficient system. The new system uses a heat pump instead of natural gas; this will get rid of almost all the GHG associated with this function. The upfront cost is twice the price but the return on investment is much better with much lower operating costs and longer life expectancy. This system works in conjunction with the heat reclaim project.

- **Solar Voltaic Panels** – With the price of this technology coming down substantially over the last few years, we are currently exploring this as a future option. Currently a system that would deliver 110,000 kWh per year is about \$300,000. If funding became available for renewable energy sources or if we have captured most of our easy to obtain savings, this may well be a viable option for the future.
- **New Technology** - This is the big hope for the future, as technology improves, more and more opportunities become available. Two years ago LED underwater pool lights were not yet ready for the market and now they are installed in all three of our pools and saving us 90,000 kWh per year. LED street lights were a dream, then an expensive reality and now the cost is at a point where there is a very good business case to change over. The truth is we don't know what the future will bring, but we should make sure that we are in a good position to take advantage when future opportunities arise. We can do this by taking the time to look for these opportunities and by coming up with a funding plan to ensure we can move forward in a timely manner.

## 5. Senior Management Approvals

By signing below, Oak Bay's senior management acknowledges receipt and approval of the Strategic Energy Management Plan.



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Nils Jensen, Mayor



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Helen Koning, Chief Administrative Officer

## 6 Appendices

### 6.1 Appendix A

**Stakeholders** – The main stakeholders are;

- 18000 Residents and Taxpayers in Oak Bay.
- Oak Bay Council and the parks and Recreation Commission.
- BC Hydro.
- Fortis BC
- All Departments within the District of Oak Bay

#### List of Energy Team

<b>Stakeholders – Energy Team</b>			
Name	Title	Area	Contact Info
Mary Kucera	Marketing	Parks & Recreation	<a href="mailto:mkucera@oakbay.ca">mkucera@oakbay.ca</a>
Ray Herman	Director of Parks and Recreation	Parks & Recreation	<a href="mailto:rherman@oakbay.ca">rherman@oakbay.ca</a>
Janette Sproston	Monterey Programmer	Monterey Centre	<a href="mailto:jsproston@oakbay.ca">jsproston@oakbay.ca</a>
Grant Brown	Manager of Administrative Services	Parks & Recreation	<a href="mailto:gbrown@oakbay.ca">gbrown@oakbay.ca</a>
Caroline Lawrence	Sports (Arena) Programmer	Recreation Centre	<a href="mailto:clawrence@oakbay.ca">clawrence@oakbay.ca</a>
Barry Russell	Maintenance Henderson	Henderson Centre	<a href="mailto:brussell@oakbay.ca">brussell@oakbay.ca</a>
Ken Olson	Operations & Energy Coordinator	Parks & Recreation	<a href="mailto:kolson@oakbay.ca">kolson@oakbay.ca</a>

#### List of Energy Volunteers

<b>Stakeholders - Volunteers</b>			
Name	Title	Area	Contact Info
Patricia Walker	Municipal Treasurer	Municipal Hall	<a href="mailto:pwalker@oakbay.ca">pwalker@oakbay.ca</a>
Jim Pearson	Facility Operation Coordinator	Recreation Centre	<a href="mailto:jpearson@oakbay.ca">jpearson@oakbay.ca</a>
Mandi Krieger	Human Resources	Parks & Recreation	<a href="mailto:mkrieger@oakbay.ca">mkrieger@oakbay.ca</a>
Bill Cliff	Electrician	Public Works	<a href="mailto:bcliff@oakbay.ca">bcliff@oakbay.ca</a>
Bryon Ewart	Supervisor, Food Services/Catering	Recreation	<a href="mailto:bewart@oakbay.ca">bewart@oakbay.ca</a>
Brian Gray	Electrician	Parks & Recreation	<a href="mailto:bgray@oakbay.ca">bgray@oakbay.ca</a>

## 6.2 Appendix B

### Conservation Rate

In 2011 BC Hydro introduced its new conservation rate for their large general service customers. This rate is designed to stimulate conservation by charging a higher rate if your consumption grows and giving credits for reducing consumption. The catch is that this is a rolling base line and is set by averaging our last three years. When we implement energy saving projects and lower our consumption, we will receive credits on our bills for the next three years, at a diminishing rate, until our base line includes the upgrades. So if we wish to continue getting credits, we will need to have a plan for continual improvement. Without a plan, plug load growth will likely drive our consumption up. This will add penalty charges to our bills.



**Example** - LED underwater pool lights. The chart below indicates how the conservation rate greatly increases the return on investment for this project. This also shows that although the savings for reducing our kWh give us a return year after year, the rolling baseline makes the conservation rate credits disappear after three years. Savings from the conservation rate also reduced the payback for this project to one year.

Year	Cost kWh	kWh Saved	Savings	Year	Conservation Rate Credits	Totals
2013/14	0.071	89,176.8	\$ 6,331.55	Year 1	\$4,200	\$ 10,531.55
2014/15	0.074	89,176.8	\$ 6,599.08	Year 2	\$2,800	\$ 9,399.08
2015/16	0.0765	89,176.8	\$ 6,822.03	Year 3	\$1,400	\$ 8,222.03
2016/17	0.0795	89,176.8	\$ 7,089.56	Year 4 +	0	\$ 7,089.56
			\$ 26,842.22		\$8,400	\$ 35,242.22

**Note** – This chart only shows the simple payback and does not show the savings from taxes, maintenance savings, demand charges and the rate rider.



Conservation Rate Credits Rec Centre						
	2011	2012	2013	2014	2015	Total
Jan	255.31	396.39	1,446.16	\$2,695.44	\$24.66	
Feb	-143.35	-628.65	1,953.71	\$1,453.88	\$970.51	
Mar	239.75	59.92	2,663.39	\$2,994.27	\$1,163.03	
Apr	893.38	967.05	1,173.68	\$2,132.22	\$777.45	
May	751.23	987.88	2,068.21	-\$47.48	\$1,180.87	
June	1,617.56	366.34	2,532.83	\$853.22	\$64.45	
July	2,867.66	2,206.64	2,912.17	\$563.37	-\$1,352.24	
Aug	616.3	1,623.25	3,783.56	\$2,674.04	-755.47	
Sep	763.59	3,031.17	3,189.12	\$2,109.50		
Oct	767.47	2,700.90	2,914.37	\$1,875.97		
Nov	796.52	2,615.46	2594.39	\$1,929.47		
Dec	133.47	2,349.82	2722.31	\$974.50		
	\$9,558.89	\$16,676.17	\$29,953.90	\$20,208.40	\$2,073.26	\$78,470.62

Note: In 2011, a one Month pool shut down had a big effect on June and July. Also the jump July 2012 shows the impact of 2012 upgrades.

In June 2013 another round of upgrades were completed, this added to our monthly savings. If these projects had not been done, the credits would have dropped by about 1/3 due to the rolling baseline.

This new rate is now in effect for Tennis Bubbles, Monterey Centre, Windsor Pavilion and Police/Fire Hall.

Additional savings from the conservation rate credit comes from tax savings and rated rider savings.

Recent charges show how the rolling base line will catch up and start causing conservation charges. Continual improvement is necessary to stay on the good side of this rate structure.

6.3 Appendix C

1. BC Hydro: Energy Manager 4<sup>th</sup> Quarter Assessment form - SEMP Self - Evaluation

SEMP Evaluation

For BC Hydro to complete

Company Name		Energy Manager													
File Number															
Quarter															
PSE Signature:			Date:												
SEMP Completed															
Projects that used PS incentives:	<table border="1"> <thead> <tr> <th><u>PS Program Incentive</u></th> <th><u>kWh</u></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 style="text-align: center;"><b>Total</b></td> <td></td> </tr> <tr> <td>Behavioural Program (2%)</td> <td></td> </tr> </tbody> </table> <p style="text-align: center;">Turnaround time for 4<sup>th</sup> Q review: _____ days</p>			<u>PS Program Incentive</u>	<u>kWh</u>	PSP		PSP Express		New Construction		<b>Total</b>		Behavioural Program (2%)	
<u>PS Program Incentive</u>	<u>kWh</u>														
PSP															
PSP Express															
New Construction															
<b>Total</b>															
Behavioural Program (2%)															

**Energy Manager: Please complete appropriate year below**

❖ Note: All areas (in your contract Year) must be covered in order to receive 4<sup>th</sup> quarter payment



6.4 Appendix D

**Year 2 +: Strategic Energy Management Plan requirements**

<b>6</b> <u>Critical Elements must be included in the Strategic Energy Management Plan</u>	<u>Page number where the element is addressed in the SEMP</u>	<u>Energy Manager evaluation</u>	<u>PSE Agrees</u>
<p>1) <b>A purpose statement which answers the following questions:</b></p> <p><input checked="" type="checkbox"/> a) What is your kWh reduction target?</p> <p><input checked="" type="checkbox"/> b) What is the Key Performance Indicator for your organization?</p> <p><input checked="" type="checkbox"/> c) Who do you need to engage to make you plan successful?</p>	<p>9 &amp; 11</p> <p>3</p> <p>3 &amp; 29</p>	<p><input checked="" type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>2) <b>A table that compares all your building in your portfolio</b></p> <p><input checked="" type="checkbox"/> a) BEPI- updated to the current year</p> <p><input checked="" type="checkbox"/> b) Explanation of Top 10 worst performing buildings</p>	<p>20</p> <p>20</p>	<p><input checked="" type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>3) <b>Explain what the opportunities are to become more efficient.</b></p> <p><input checked="" type="checkbox"/> a) Project List</p> <p><input checked="" type="checkbox"/> b) Initiative List: Behavioural and Organisational</p> <p><input checked="" type="checkbox"/> c) Studies: Outline which buildings have had studies completed.</p>	<p>25, 26, &amp; 27</p> <p>24</p> <p>25</p>	<p><input checked="" type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>4) <b>Outline the budget to implement projects</b></p> <p><input checked="" type="checkbox"/> 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>	<p>12</p>	<p><input checked="" type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>5) <b>Conclusion: How is your plan doing?</b></p> <p><input checked="" type="checkbox"/> a) Outlined kWh saved</p> <p><input checked="" type="checkbox"/> b) Outlined GHG tons saved</p> <p><input checked="" type="checkbox"/> c) Outlined total dollars saved to the organisation</p> <p><input checked="" type="checkbox"/> d) Outlined avoided cost</p> <p><input checked="" type="checkbox"/> e) Outlined total dollars saved</p>	<p>18 &amp; 21</p> <p>8 &amp; 21</p> <p>21, 22, &amp; 23</p> <p>21, 22, &amp; 23</p> <p>21, 22, &amp; 23</p>	<p><input checked="" type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>6) <b>Senior Management Support</b></p> <p><input type="checkbox"/> a) Approval of the SEMP : Signature on the SEMP</p>	<p>29</p>	<p><input checked="" type="checkbox"/></p>	<p><input type="checkbox"/></p>



