



# City of Richmond

## Report to Committee

**To:** General Purposes Committee  
**From:** Cathryn Volkering Carlile  
General Manager - Community Services  
**Date:** July 14, 2010  
**File:** 01-0370-01/2009-  
Vol01  
**Re:** Corporate Sustainability Framework - Energy Sustainability Strategic Program

### Staff Recommendation

That the Energy Sustainability Strategic Program, as presented in Attachment 1 of the dated July 1, 2010 entitled "Corporate Sustainability Framework – Energy Sustainability Strategic Program" be endorsed.

Cathryn Volkering Carlile  
General Manager - Community Services  
(604-276-4068)

Att. 8

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<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>			
Engineering	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
Policy Planning	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
Project Development Unit	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
<b>REVIEWED BY TAG</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	<b>REVIEWED BY CAO</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

## Staff Report

### Origin

The City of Richmond is developing a Corporate Sustainability Framework in support of the following Council Term Goal:

*Council Term Goal #7: “ Sustainability and the Environment – Demonstrate leadership in and significant advancement of the City’s agenda for sustainability through the development and implementation of a comprehensive strategy that among other objectives includes incorporating sustainability into our City policies and bylaws”.*

The Sustainability Framework is being developed to establish Strategic Programs to address core sustainability focus areas. This report presents a recommended Energy Strategic Program, which proposes strategies, action programs and targets in support of the goal area of Sustainable Resource Use (**Attachment 1**). The proposed energy targets supports the achievement of Council adopted target for 33% reduction in greenhouse gas emissions community-wide by 2020 and 80% reduction in greenhouse gas emissions by 2050.

### Background

#### The City’s Sustainability Framework – Progress To-Date

The City is currently developing a Corporate Sustainability Framework to reach new levels of sustainability performance by establishing a strategic, well-managed approach to sustainability. A key focus of the Framework is to identify core sustainability priorities and establish clear goals and targets by which to focus resources.

The Sustainability Framework is being developed in phases, through the work of interdepartmental staff teams. To-date, Council has adopted an overarching guiding Sustainability Policy and a Climate Change Strategic Program inclusive of 5 targets. This report presents a proposed Energy Strategic Program in support of the second goal area of Sustainable Resource Use. An overview of the Framework, inclusive of the proposed Energy Strategic Program is provided in **Attachment 2**. The timeline for developing the Sustainability Framework development is provided in **Attachment 3**.

### Analysis

#### Rationale for Selecting Energy as a Sustainability Priority Focus Area

Sustainability is a very broad term that, depending on differing definitions and views, can encompass a wide range of interests and needs. The City’s Sustainability Framework is aimed at identifying and focussing resources on key sustainability areas for the City - those specific areas that pose the largest risk and/or opportunity for the City to advance sustainability within its own organization corporately and/or within the Richmond community. Energy management was identified as a key focus areas for the City’s Sustainability Framework based on the following two considerations:

##### 1. Strong Sustainability Imperative

Increasing energy demand, current dependencies on non-renewable energy sources and energy systems that are resulting in significant socio-economic and environmental impacts, demarcate energy use as an important sustainability issue worldwide. Key issues and trends include:

- About 90% of all energy being consumed worldwide is being supplied by non-renewable resources with finite supplies;



- Energy production and use are responsible for the vast majority of greenhouse gas (GHG) emissions which are resulting in climatic changes projected to result in significant social, economic and environmental impacts;
- Significant levels of energy are being wasted, unnecessarily increasing costs and resulting in other socio-economic and environmental impacts;
- Energy demand, due to both population increase and per capita energy demand increase, is forecast to result in a 50% increase in energy consumption by 2035.

Further details on issues and trends are provided in **Attachment 4**.

## **2. High Degree of Relevance for the Corporation and Community**

Energy was assessed to have a high degree of relevance for the City of Richmond as a corporation and for the Richmond Community based on the following:

- Canadians are among the most intensive energy users in the world. On a per capita basis, Canadians use 6 times more energy than the world average and more than 2 times the energy used by Europeans.
- Energy represents a significant expenditure for the City<sup>1</sup>:
- Energy is a core need and major investment for the Richmond community<sup>2</sup>.
- While energy management poses various challenges, it also presents opportunities for making wise choices today to significantly reduce costs and risk over the long-term. For example, according to the International Energy Association, one dollar invested in more efficient electrical equipment avoids more than two dollars in investment in electricity supply.

## **Development of the Energy Strategic Program**

The proposed Energy Strategic Program was developed by an interdepartmental staff team supported by expertise from the private sector. The team reviewed energy issues and opportunities, best practices, current city action and senior government action. Key findings are:

- Energy is generally not a major consideration in decision-making and individual choices,
- No one entity or collection of organizations is managing energy in a complete and comprehensive manner<sup>3</sup>,
- The City has undertaken a wide range of action towards increasing corporate energy efficiency, resulting in operational cost savings and recognition as an energy leader,
- Best practices are evolving quickly and the City has opportunities to incorporate leading-edge standards and address energy in a more comprehensive manner throughout the organization<sup>4</sup>,

<sup>1</sup> In 2007, the City spent close to \$3 million dollars on energy. The City has experienced a 50% increase in energy cost between the years 1995 to 2007. (Costs would have been even higher if the City had not implemented its corporate energy efficiencies projects). The City's commitment to carbon neutrality means that the City will need to pay for its GHG emissions each year, over 90% of which arise from corporate energy consumption.

<sup>2</sup> In 2007, Richmond businesses and residents consumed close to 22 million gig joules (GJ) for energy use in buildings (residential, commercial and industrial) and transportation (residential and commercial).

<sup>3</sup> The lack of a complete systems approach means that while specific energy improvement projects can be made on an individual basis, system-based improvements such as district energy systems are significantly more challenging to advance.

<sup>4</sup> Key opportunities exist to place greater focus at the community level where much more significant gains can be made through integration of energy considerations into the various aspects of community planning and development (e.g., land-use, transportation, infrastructure servicing, economic development, etc.).

- Improved energy use is the key strategy for meeting greenhouse gas reduction targets,
- There are three main strategies for transitioning towards a more sustainable energy and low GHG emissions future: *Reduce* energy consumption; *Use renewable* and clean energy sources; and *Increase self-reliance* to reduce costs and dependency on external systems, and
- Administratively, the City's energy initiatives are being advanced by temporary positions supported through external funding and operational cost savings realized through energy efficiency projects, and by efforts by other staff beyond their core duties.

### **Proposed Energy Strategic Program**

The proposed Energy Strategic Program is provided in **Attachment 1**. The purpose of the Program is to assist the City in taking a proactive and strategic response to energy resource management. Key features of the Program are as follows:

- It brings together the City's existing initiatives pertaining to energy management.
- It sets a direction of focus corporate-wide, proposing three core strategies:
  - **Empower** – building awareness and capacity
  - **Reduce** – reduce overall energy consumption through conservation and efficiency and
  - **Localize and Renew** - accelerate transition to locally supplied renewable and clean energy sources.
- It integrates of appropriate components of the Energy Strategic Program with the Climate Change Strategic Program adopted by Council in June 2010. This approach enables the City to achieve greater results and without added cost.
- It establishes specific energy targets at both the corporate and community level.

### **Proposed Targets**

The Strategic Program proposes 3 targets. Current baselines are provided in **Attachment 5**. Details on the rationale and financial implications are provided in **Attachment 6**. A summary of key information is provided below.

#### **1. To engage 100% of key staff in energy awareness and targeted training by 2012.**

Assessments have found that increased corporate engagement and resulting behavioral change can result in a 5-20% reduction in corporate energy use. The proposed corporate engagement target will be conducted through the City's existing energy awareness initiative, resulting in no additional fiscal or workload impact. The City's energy capacity program will be led by the City's corporate energy services and encompasses two initiatives:

- A general Energy Awareness Program fully funded through BC Hydro, and
- A targeted Energy Information Program aimed at providing customized information to key select staff funded through operational cost savings from resulting energy improvement action.

A community engagement target is not being proposed at this time. Some targeted community engagement has been undertaken (e.g., district energy utility discussions with developers and public consultation through the development of the Community Energy and Emissions Plan currently underway). Recommendations for any systematic community engagement initiative will be explored through the Community Energy and Emissions Plan.



**2. To develop a Corporate Energy and Emissions Plan by 2011.**

It is recommended that corporate energy targets be established in 2011 as part of the development of a strategic Corporate Energy and Emissions Plan. This approach will enable the City to conduct the necessary analysis to support the adoption of leadership yet achievable (technically feasible and fiscally responsible) targets.

The Corporate Energy and Emissions Plan will be developed based on funding approved through the 2009 one-time additional levels. Staff are exploring securing external funding to provide the necessary added support. Proposed financing mechanisms to support actions recommended in the plan needed to achieve the proposed targets will be developed as part of the Plan. Throughout the course of 2010 and 2011, the City's corporate energy services and staff throughout the organization will continue to deliver projects and other initiatives to increase corporate energy efficiency and use of renewable energy sources.

**3. To reduce energy consumption in the Richmond community by at least 10% by 2020 from 2007 levels.**

The proposed community energy reduction target is based on findings from the preliminary feasibility assessment conducted as part of the City's Community Energy and Emissions Plan and review of best practices of targets adopted by municipalities and other organizations. Staff are recommending that Council adopt a 10% reduction use target based on the following considerations:

- an energy target is necessary to support the achievement of Council's OCP Greenhouse Gas reduction targets;
- feasibility assessment has found that a 7-12% energy use reduction is achievable;
- the proposed 10% energy use reduction target is in alignment with targets adopted by other leading local governments and agencies (**Attachment 7**).

If adopted, the community energy use reduction target will guide the development of the Community Energy and Emissions Plan strategic action plan. Other potential targets, such as renewable energy source targets, will be considered during the development of the strategic action plan. Financing strategies for advancing identified action will be identified through the plan development. Ultimately, all target setting will be an iterative process, evolving over time with new knowledge and in response to changing conditions.

Through the course of the CEEP development, staff will continue to advance community-based energy improvement initiatives such as district energy systems and solar communities.

**Recommended Implementation Plan for the Energy Strategic Program***Implementation Action*

A proposed 5-year implementation plan and short-term deliverables are provided in **Attachment 8**. The implementation plan incorporates many of the same action tasks as those for implementing the City's Strategic Climate Change program.

*Administration*

An interdepartmental Climate Change and Energy Management team coordinated by the City's Sustainability Services consisting of staff from across the organization will oversee the Program implementation.

### *Resources*

Successful achievement of the energy and greenhouse gas emission reduction targets is anticipated to require additional expertise, dedicated resources and new investment. In particular, targets pertaining to energy use and greenhouse gas emission reduction will require that the City undertake initiatives and programs at new scales of impact. The City's district energy initiative is an example of the type of initiative that will need to be advanced. While such initiatives often require upfront investment, they are projected to result in significant cost savings over the mid to long-term. Various other actions, such as improved practices and community engagement, can be implemented at little to low cost.

It is noted, however, that due to the high level of integration between the energy and greenhouse gas emission targets, the addition of the proposed energy targets will not require additional resources beyond that already identified in the Climate Change Strategic Program.

Staff are examining resource options and will provide options and recommendations for Council consideration.

### **Financial Impact**

There is no immediate financial impact from Council adoption of the proposed Energy Strategy Program. Costs associated with any additional energy related action that extend beyond current resources will be considered in future annual budget processes.

### **Conclusion**

Both government and business are increasingly recognizing the importance of wise energy practices as an important way to save energy and money in light of growing energy demands, address climate change and energy security concerns, and support economic development and community well-being.

This report recommends that Council adopt the proposed Energy Strategic Program to help the City meet its GHG emissions reduction targets and strategically advance towards a more sustainable energy future for both the corporation and Richmond community.



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MD:cer

## City of Richmond's Corporate Sustainability Framework — Energy Strategic Program (Overview) —

The Energy Strategic Program consists of:

**Goal:** An EnergySmart City 2020 – “where energy needs are met through wise energy practices exercised throughout the community and supported by an affordable, efficient, reliant and environmentally responsible energy system”.

**Strategies:**

- Empower (build capacity)
- Reduce (reduce overall energy consumption)
- Localize and Renew (accelerate transition to renewable energy sources and increase use of local energy supplies)

**Action Programs:**

- Energy Knowledge Program
- Corporate Energy and GHG Reduction Program\*
- Community Energy and GHG Reduction Program\*

**Targets:**

- To engage 100% of key staff in energy awareness and targeted opportunities training by 2012.
- To develop a Corporate Energy and Emissions Plan by 2012.
- To reduce energy consumption in the Richmond community by at least 10% from 2007 levels by 2020.

**Current Baseline:**

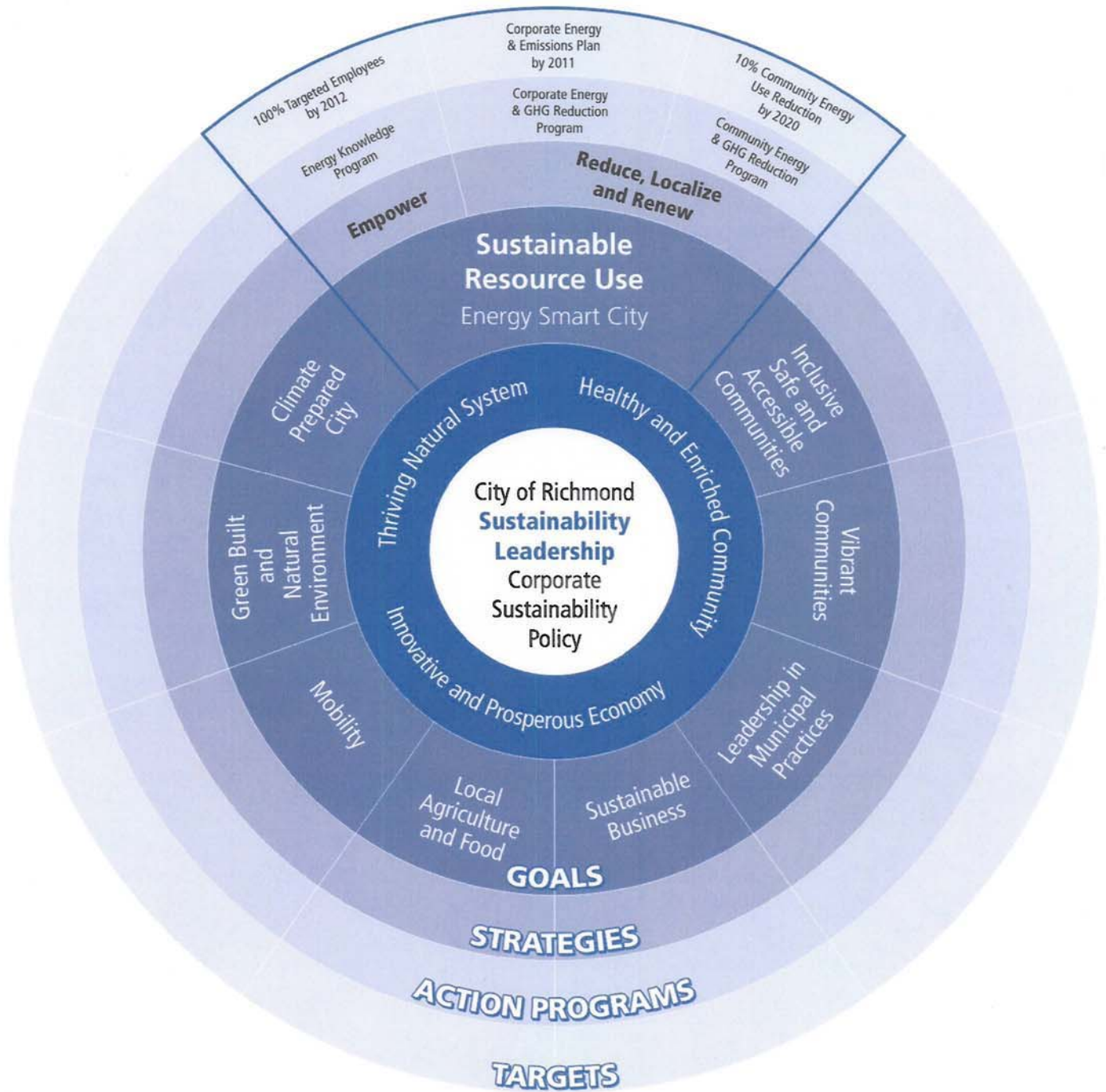
- Corporate energy consumption and cost (2007): 273,000 GJ / \$4.2 million
- Community energy consumption (2007): 21.9 million GJ



\* represent joint efforts with the City's Climate Change Strategic Program



# City of Richmond's Corporate Sustainability Framework — Energy Strategic Program —





## City of Richmond's Corporate Sustainability Framework - Development Timeline -

The City is currently developing an overarching Sustainability Framework to establish a comprehensive set of sustainability goals, action programs and targets for the City. The timeline for developing the Framework is provided in Table 1.

Table 1: Schedule for the Development of the City of Richmond's Sustainability Framework

Development Phase	Schedule	Progress*
<i>Phase 1 :- Conceptual Framework (adopted Jan. 25, 2010)</i>	Jan 2010	✓
<i>Phase 2: Sustainability Foundations – Corporate Sustainability Policy</i>	April 2010	✓
<i>Phase 3: Climate Change Strategic Program</i>	June 2010	✓
<i>Phase 4: Sustainable Resource Use Strategic Program - Energy Strategic Program</i>	July 2010	
<b>*Framework Launch*</b>		
<i>Phase 5: Sustainable Resource Use Strategic Program - Other Resources</i>	Nov. 2010	
<i>Phase 6: Local Agriculture and Food Strategic Program</i>	Dec. 2010	
<i>Phase 7: Mobility Strategic Program</i>	Feb. 2011	
<i>Phase 8: Municipal Leadership Governance**</i>	May 2011	
<i>Phase 9: Green Built &amp; Natural Environment Strategic Program</i>	June 2011	
<i>Phase 10: Social Inclusion, Safe Communities &amp; Accessibility Strategic Program</i>	Oct 2011	
<i>Phase 11: Vibrant Communities Strategic Program</i>	Nov. 2011	
<i>Phase 12: Sustainable Business Strategic Program</i>	Dec. 2011	

\*: ✓ denotes complete; shading denotes current phase

\*\* : this strategic program area will focus on reviewing city decision-making process and practices, and developing further tools for assisting the corporation in conducting triple bottom line decision-making.

## City's Sustainability Framework – Energy Strategic Program - Energy Backgrounder-

### Consumption

- World energy consumption is projected to increase by 50% by 2035<sup>1</sup> (Figure 1) (International Energy Agency)
- Canada has one of the largest per capita energy use rates worldwide (Figure 2) (World Bank).

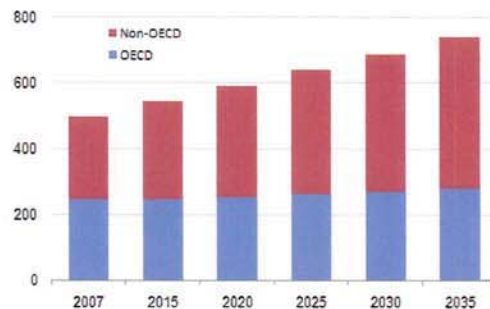


Figure 1: World Energy Consumption

### Source Supply

- About 90% of all energy is being supplied by non-renewable resources, 85% of which is being supplied by fossil fuels (US Energy Information Administration).
- Oil production is predicted to peak between 2005 and 2040, with majority of estimates indicating that peak oil has already occurred (MetroVancouver).
- Peak oil raises concerns of supply over the longer-term and increasing costs and price volatility over the near-term.

### Energy and Climate Change

- Energy production and use is responsible for the vast majority of Greenhouse Gas (GHG) emissions. In Canada, energy-related emissions contribute more than 80% of Canada's total GHG emissions (Environment Canada)<sup>2</sup>.
- World energy-related CO<sub>2</sub> emissions are increasing<sup>3</sup>, with over 16% growth in levels from 1990- 2004 (International Energy Agency).
- Transport accounts for about one quarter of global energy use and energy-related CO<sub>2</sub> emissions. In absence of new policies, transport energy use and related CO<sub>2</sub> emissions are projected to increase by nearly 50% by 2030 and by more than 80% by 2050

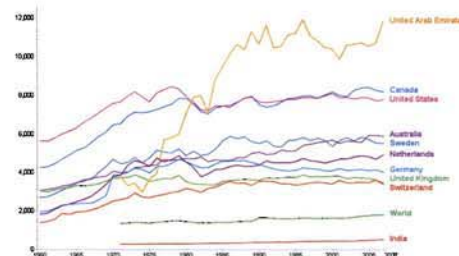


Figure 2: Per Capita Energy Use ( kilograms of oil equivalent, per capita)

<sup>1</sup> Consumption is expected to increase from 495 quadrillion British thermal units (Btu) in 2007 to 590 quadrillion Btu in 2020 and 739 quadrillion Btu in 2035. Total energy demand in the non-OECD countries is expected to increase by 84 percent, compared with an increase of 14 percent in the OECD countries. about 20% by 2020 and by 50% by 2035 from 2007 levels.

<sup>2</sup> In 2008, total GHG emissions in Canada were 734 megatonnes (Mt) of carbon dioxide equivalent(CO<sub>2</sub> eq). Non-energy related emissions are largely generated by agricultural sources and industrial processes, with smaller contributions from waste.

<sup>3</sup> From 1990- 2004, energy-related CO<sub>2</sub> emissions increased over 16%.



## Energy and the Economy

- Canada is one of the world's largest producers and exporters of energy. In 2006, Canada produced 19.3 quadrillion British Thermal Units (Btu) of total energy, the fifth-largest amount in the world. (US Energy Information Administration).
- Since 1980, Canada's total energy production has increased by 87 percent, while its total energy consumption has increased by 44 percent. (US Energy Information Administration).
- Almost all of Canada's energy exports go to the United States, making it the largest source of U.S. energy imports. Canada is consistently among the top sources for U.S. oil imports, and it is the largest source of U.S. natural gas and electricity imports (US Energy Information Administration).
- Sixty-five percent of all the energy consumed to generate electricity in the United States each year is lost (Carnegie Mellon University).
- One dollar invested in more efficient electrical equipment avoids more than two dollars in investment in electricity supply (International Energy Association).

## Additional Projections and Trends

- The world's car fleet is expected to triple by 2050 (International Energy Association).
- Information and communication technologies and consumer electronics now account for 15% of global residential electricity consumption. Energy use by these devices is projected to double by 2022 and increase threefold by 2030. Electricity consumption from electronic devices such as laptops and mobile phones could be cut by more than half through the use of the best available technology (International Energy Association).

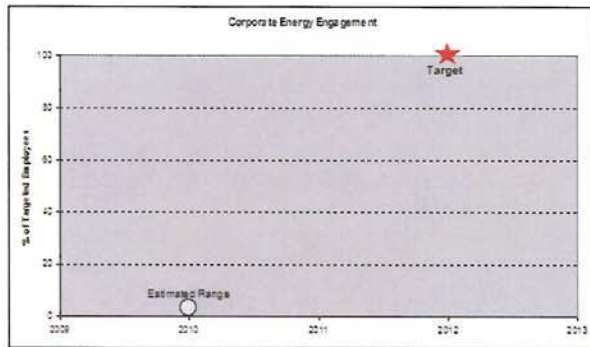
## Sustainable Energy System Characteristics

Sustainable energy systems are characterized by the following characteristics:

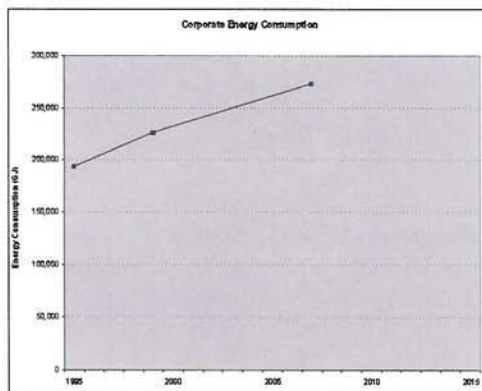
- they are affordable, cost-effective and provide for basic needs
- they use energy wisely (are efficient and minimize consumption)
- they use renewable resources
- they are reliant and flexible (e.g., minimize price volatility, incorporate localized systems to avoid being completely dependent on external centralized-controlled systems, incorporate flexibility enabling infrastructure to utilize different sources, incorporate redundancies to enable consumer choice, etc.)
- they do not result in unacceptable social, environmental or economic impacts (e.g., emit greenhouse gases, impair watersheds, result in a unjust distribution of resources, place economic development at risk).

## Our Performance – Energy

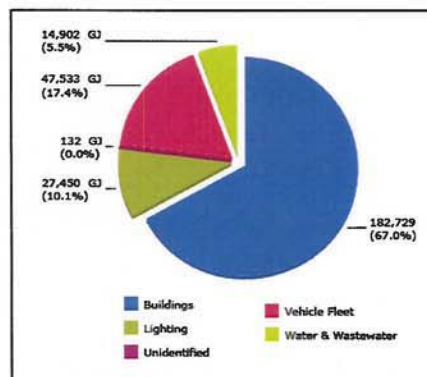
### Empower (Capacity-Building)



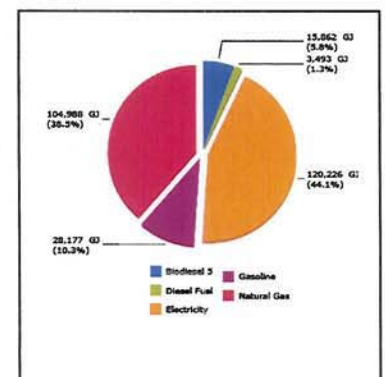
### Corporate Energy Consumption



Corporate Energy Consumption - 1995, 2000 and 2007

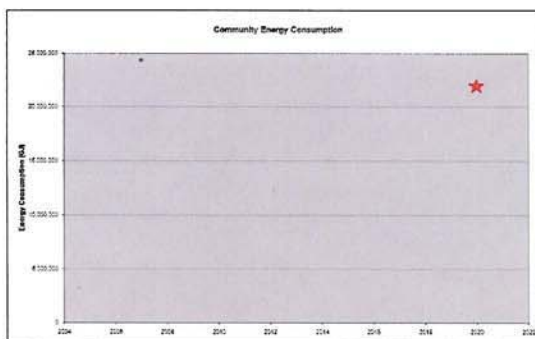


Corporate Energy Consumption (GJ) by Sector - 2007

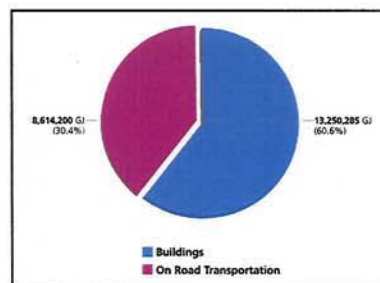


Corporate Energy Consumption (GJ) by Energy Type - 2007

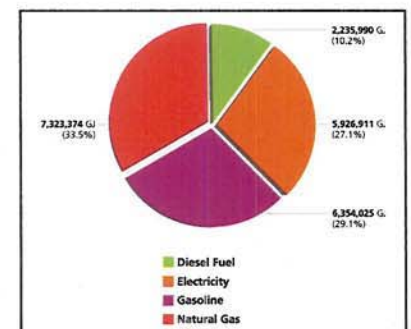
### Community Energy Consumption



Community Energy Consumption- 2007



Community Energy Consumption (GJ) by Sector - 2007



Community Energy Consumption (GJ) by Energy Type - 2007



## City's Sustainability Framework – Energy Strategic Program - Program Details -

### EMPOWER

Transitioning to more sustainable energy choices is challenging. With many opportunities available, wise decision-making is required to select those investments that make the best gains in a fiscally, socially and environmentally responsible manner. Success also depends on much greater collective action.

The City's Empower strategy aims to assist the City in understanding and managing energy risk and opportunity. A key focus of the strategy is to support city departments in taking action and integrate energy considerations into key plans, projects and other initiatives. Potential initiatives to support building capacity in the community in a more systematic and strategic manner will be explored through the City's Community Energy and Emissions Plan, currently being developed.

#### 1. Energy Knowledge Program

The Energy Knowledge Program formalizes existing city initiatives pertaining to building energy awareness and encouraging behavioural changes. It is anticipated that the establishment of a dedicated program will enable greater focus to be placed on engagement, thereby, achieving more results through greater collective efforts. The Energy Knowledge Program is currently proposing one target focused on raising awareness corporately. A community-based target may be considered following the completion of the Community Energy and Emissions Plan.

**Target:** To engage 100% of key staff in energy awareness and targeted training by 2012.

**Background:** The City has undertaken various activities which have raised corporate awareness about the need for and benefits of wise energy use. Example activities include corporate Earth Hour competition, bringing in speakers, establishing working teams, engaging external energy expertise and working with the development community.

The proposed corporate capacity target of having all key personnel undertake energy awareness education seeks to establish a widespread knowledge and understanding of energy and its potential impacts on corporate services and budgets. In this respect, the target is designed to empower departments to consider energy in decision-making, to reduce costs and realize sustainability benefits. The target includes both general awareness training for a large number of staff (@50%) as well as more in-depth specialized engagement to equip key personnel whose decisions have high impact on energy consumption (e.g., Facility Managers) with deeper knowledge and awareness of opportunities.

Departments will be responsible for identifying key personnel and meeting the target. The City's Corporate Energy Manager will coordinate training and engagement opportunities. Once this target is met, other options such as the development of an internal training module or collaboration with post-secondary education organizations will be reviewed and recommendation for next steps, if any, made.

**Financial Considerations:** The energy awareness target can be met within existing resources, resulting in no additional cost. General awareness training is been funded 100% through external sources. More in-depth engagement will be financed from operational cost savings realized through energy improvement projects. It is expected that engagement will result in a 5-20% reduction in energy use with corresponding operational savings. Engagement activities will be designed to have low to negligible impact on workload (e.g., lunch ' learns, incorporated into existing meetings and training opportunities, etc. ).



## REDUCE

The City's Reduce strategy is aimed at reducing overall energy demand both corporately and in the community. Like recycling and waste management, energy management has a hierarchy of strategies that varying based on their relative impact. reducing energy consumption, like reducing waste, is the most crucial element. While renewable energy sources reduce issues related with respect to supply availability and greenhouse gas emissions, they still demand use of fiscal and natural resources, emit some levels of greenhouse gas emissions and result in various other socio-environmental impacts. Reducing energy consumption means reducing costs. Energy demand can be reduced through a variety of means including behavioural change (wearing a sweater, grouping trips, etc.) , technology (automatic thermostats and lighting, etc.), design (solar orientation of buildings and natural ventilation systems, etc.) and improved efficiency such as the recapture and use of waste energy.

## LOCALIZE & RENEW

The City's Localize & Renew strategy is aimed at increasing local energy self-reliance and advancing the shift towards greater use renewable energy sources, both at the corporate and community-wide level.

### 2. Corporate Energy and Greenhouse Gas Emissions Reduction Program

**Target:** To prepare a strategic Corporate Energy and Emissions Plan by 2011.

**Background:** In 2007, the City as a corporation consumed 273,000 GJ at a cost of \$4.2 million. This level of consumption is anticipated to be greater today and to increase over time as the City develops more facilities and expands its services. The City has undertaken a wide range of initiatives to increase energy efficiency and reduce energy-related GHG emissions. Highlight action initiatives include the City's High Performance Building Policy, energy efficiency projects and smart car and hybrid fleet procurement.

The Corporate Energy and GHG Emissions Program broadens the City's current Corporate Energy program to encompass both energy and carbon management. As such, while the program will continue to advance the City's leadership in reducing corporate energy consumption and realize operational cost savings, it will also undertake leadership action to scale up the City's efforts in reducing corporate GHG emissions and incorporate the new actions needed to meet the City's carbon neutral commitment. The expanded Corporate Energy and GHG Reduction program will also add increased focus on advancing additional sustainable energy objectives such as increasing energy security and reducing corporate reliance on non-renewable energy sources. The Program will continue to advance energy initiatives and projects and now incorporate the development a strategic Corporate Energy and Emissions Plan. This Plan will develop recommended targets for corporate energy reduction and use of renewable energy and develop a strategic-based action plan for achieving the proposed targets.

**Financial Implications:** Energy use represents a significant expenditure by the City. Costs are expected to increase over time as a result of increasing demand and projected risks associated with fossil fuel dependence. City energy efficiency and renewable sourcing projects will continue to be advanced under existing operating budgets. The Corporate Energy and Emissions plan has been partially funded through the 2009 one-time additional levels. Staff are exploring securing external funding to match approved funding to provide sufficient resources for plan development. Proposed financing mechanisms to support action recommended in the plan to achieve proposed targets will be developed as part of the plan.



### 3. Community Energy and Greenhouse Gas Emissions Reduction Program

**Target:** To reduce Richmond community energy consumption by at least 10% from 2007 levels by 2020.

**Background:** In 2007, the Richmond community consumed close to 22 million GJ of energy and generated approximately 1.1 million tonnes of GHG emissions (excluding emissions arising from industrial processing), predominately from its energy use. Richmond City Council recently adopted the target of achieving a 33% reduction in community GHG emissions by 2020 and 80% reduction by 2050 from 2007 levels. The adoption of a community emissions GHG reduction target was a requirement under relatively new provincial legislation (i.e., Bill 27). Early feasibility analysis has found that significant action will need to be taken to achieve these targets.

The City is currently undertaking a Community Energy and Emissions Plan to identify the most strategic action that the City can take to contribute to the community achieving sustainable energy objectives and Council's recently adopted GHG emission reduction targets. The City is also actively encouraging the implementation of neighbourhood district energy utilities and recently committed to solar BC.

**Financial Implications:**

The City's Energy and Emissions Plan is being developed in partnership with BC Hydro who has provided partial funding for a temporary Community Energy Manager position and funding to support plan development. The Plan is to be completed in early 2011. The City does not have dedicated resources at this time to support implementation of the Plan. Staff are reviewing options for financing plan implementation and on-going management of this agenda.

Table 2: Energy Targets Adopted By Other Municipalities and Organizations

Jurisdiction	Target	Energy Focus Area
<b>BC Hydro</b>	66% of new demand to be met through conservation by 2020 (Clean Energy Act).	Energy reduction (conservation)
<b>City of Kristianstad, Sweden</b>	To become a fossil fuel free municipality through use of bio-fuels, and biomass for heat and electricity production, and biogas as fuel for local buses and other vehicles.	Fossil fuels reduction Increase reliance on renewable energy
<b>City of Malmö, Sweden</b>	Energy efficiency per person to increase by 20% until 2020 and another 20% by 2030 (compared with 2001 - 2005 levels) To run 100% reliant on renewable energy (solar, wind, water and biogas).	Energy use reduction (efficiency) Increase reliance on renewable energy
<b>City of Squamish, BC</b>	Generate 10% of energy needs from community based, clean energy sources, or renewable heating systems or fuels (e.g. bioenergy) by 2020.	Fossil fuel reduction Increase reliance on renewable energy sources Increase reliance on local sources
<b>City of Sudbury, Ontario</b>	Reduce community's energy dependence on outside marketplace by 50 % through local renewable energy.	Increasing reliance on local sources Increase reliance on renewable energy sources
<b>City of Stockholm, Sweden</b>	To be fossil fuel-free as a community by 2050.	Fossil fuels reduction
<b>City of Toronto, Ontario</b>	To achieve an individual and community-wide 20% reduction in vehicle and home energy use by 2020.	Energy reduction (conservation and efficiency)
<b>City of Trollhättan, Sweden</b>	Reduce overall use of fossil energy by 50 % between 1996 and 2010 Municipality to reduce its own fossil energy consumption in its own activities by 90 % or more by 2010.	Fossil fuel reduction
<b>City of Vancouver, BC</b>	To improve energy efficiency of existing buildings by 20% by 2020.	Energy reduction (efficiency)
<b>City of Växjö, Sweden</b>	To become a fossil fuel free city. A measurable target was set at 50% reduction per capita between 1993 and 2010	Fossil fuels reduction



Table 3: 5-Year Implementation Plan

Action		2010	2011	2012	2013	2014	2015
Empower	Energy Knowledge Program			Review			
	Corporate Capacity-Building - ???						
Reduce, Localize & Renew	Corporate Energy and Emissions Program						
	Management	Establish Carbon Neutral Staff Working Group to Develop Plan					
		Oversee Program through Climate Change & Energy Team					
	Inventory	Establish Corporate Inventory Reporting System					
		Manage Inventory System					
	Action Plan	Develop Carbon Neutrality Approach					
		Develop Corporate Energy & GHG Reduction Plan					
	Targets	Develop Corporate Energy & GHG Emission Reduction Targets					
	Reduction Action	Implement Corporate Energy & GHG Reduction Actions (ad-hoc)					
		Implement Corporate Plan (strategic action)					
	Report, Innovate & Improve	Research and Explore Innovations/Best Practices					
		Annual Report – Corporate Energy Use & GHG Emissions					Review
	Community Energy and Emissions Program						
	Management	Establish CEEP Working Group to Develop Plan					
		Oversee Program through Climate Change & Energy Team					
	Inventory	Collaborate with Province on Community Inventory					
	Action Plan	Develop Community Energy and Emissions Plan (CEEP)					
	Targets	Develop Community Energy and GHG Reduction Targets					
	Reduction Action	Implement Corporate Energy & GHG Reduction Actions (ad-hoc)					
		Implement Community Plan					
	Report, Innovate & Improve	Annual Report – Community Energy Use & GHG Emissions					Review
	Adaptation Action	Implement Actions (ad-hoc)					
		Implement Adaptation Strategic Plan					

Funded within current resources

Requires additional resources

**Table 4: Energy and Climate Change Strategic Programs - Short-Term Deliverables  
(July 2010 – February 2011)**

Deliverable	Action Program	Lead Department	Timeline	Progress*
Carbon Neutral Provisional Account	Corporate Energy & Emissions Program	Sustainability Services/Finance	June 2010	✓
Sustainability Framework – Strategic Energy Sustainability Program	Community Energy & Emissions Program	Sustainability Services	July 2010 (RTC)	
Corporate Energy Efficiency Projects Completion (including district energy utility at Steveston Community Centre)	Corporate Energy & Emissions Program	Sustainability Services – Corporate Energy Services	December 2010 (RTC)	
Complete Community Energy and Emissions Plan (CEEP) (via OCP update)	Community Energy & Emissions Program	Sustainability Services – Community Energy Services	January 2011	
Revised Corporate High Performance (Green) Building Policy	Corporate Energy & Emissions Program	Project Development & Sustainability Services	February 2011 (RTC)	
Implementation of Continuous Optimization Program for 5 Major Facilities	Corporate Energy & Emissions Program	Sustainability Services – Corporate Energy Services	February 2011	
Complete Transportation Forecasts for Alternative Land-Use Scenarios (inclusive of GHG emissions) (via OCP update)	Community Energy & Emissions Program	Transportation	February 2011	

\*: ✓ denotes complete; shading denotes current phase