City of Richmond **Agenda**

Public Works & Transportation Committee

Anderson Room, City Hall
6911 No. 3 Road

Wednesday, October 19, 2011
4:00 p.m.

Pg. # ITEM

MINUTES

PWT-5 ***Motion to adopt the minutes of the meeting of the Public Works & Transportation Committee held on Wednesday, September 21, 2011.***

NEXT COMMITTEE MEETING DATE

Wednesday, November 23, 2011 (tentative date) at 4:00 p.m. in the Anderson Room

ENGINEERING AND PUBLIC WORKS DEPARTMENT

PWT-11 1. **METRO VANCOUVER DRINKING WATER MANAGEMENT PLAN**
(File Ref. No. 10-6060-02-01) (REDMS No. 3372405)

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See Page **PWT-11** of the Public Works & Transportation agenda for full hardcopy report

Designated Speaker: Lloyd Bie

STAFF RECOMMENDATION

That the Metro Vancouver 2011 Drinking Water Management Plan be adopted.

PWT-41 2. **WIDENING OF WESTMINSTER HIGHWAY AND NELSON ROAD CN RAIL WORK PERMIT**
(File Ref. No. 10-6340-20-P.11203) (REDMS No. 3368967)

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See Page **PWT-41** of the Public Works & Transportation agenda for full hardcopy report

Designated Speaker: Milton Chan

STAFF RECOMMENDATION

That the Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to sign documents as required for a Work Permit from CN Rail for Contract 4230P – Design of Westminster Highway and Nelson Road Widening.

COMMUNITY SERVICES DEPARTMENT

PWT-45 3. **2011 CORPORATE ENERGY MANAGEMENT UPDATE**
(File Ref. No. 01-0103-65-20-06) (REDMS No. 3363751)

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Designated Speaker: Levi Higgs

STAFF RECOMMENDATION

That the staff report entitled "2011 Corporate Energy Management Program Update" from the Interim Director, Sustainability and District Energy, dated October 6, 2011 be received for information.

4. **MANAGER'S REPORT**

ADJOURNMENT

Public Works & Transportation Committee

Date: Wednesday, September 21, 2011

Place: Anderson Room
Richmond City Hall

Present: Councillor Linda Barnes, Chair
Councillor Sue Halsey-Brandt, Vice-Chair
Councillor Derek Dang
Councillor Ken Johnston
Councillor Harold Steves

Call to Order: The Chair called the meeting to order at 4:00 p.m.

MINUTES

It was moved and seconded
That the minutes of the meeting of the Public Works & Transportation Committee held on Wednesday, July 20, 2011, be adopted as circulated.

CARRIED

NEXT COMMITTEE MEETING DATE

Wednesday, October 19, 2011 (tentative date) at 4:00 p.m. in the Anderson Room

1. **PROVINCE OF BC 2010-2011 BIKEBC CYCLING INFRASTRUCTURE PARTNERSHIP PROGRAM – EXECUTION OF COST-SHARE AGREEMENTS**
(File Ref. No.: 01-0150-20-THIG1/2011-Vol 01) (REDMS No. 3307750)

It was moved and seconded
That the Chief Administrative Officer and the General Manager, Planning and Development, be authorized to execute any agreements necessary to receive cost-share funding under the Province of BC 2010-2011 BikeBC Cycling Infrastructure Partnership Program for the following two cycling facility projects as presented in the attached report:

(a) Minoru Boulevard Bike Route (Granville Avenue to Alderbridge Way); and

(b) Garden City Road-Granville Avenue Intersection Improvements.

CARRIED

ENGINEERING AND PUBLIC WORKS DEPARMENT

2. **AWARD OF CONTRACT T.4311 – RECYCLING DEPOT CONTAINER COLLECTION AND RECYCLING SERVICES**
(File Ref. No. 10-6370-04-01/2011-Vol 01) (REDMS No. 3295517)

In reply to queries from Committee, Suzanne Bycraft, Manager, Fleet & Environmental Programs, stated that Tender 4311 – Recycling Depot Container Collection and Recycling Services is a component-based contract. As such, she noted that bidders did not necessarily bid on all aspects of the work, but rather only on the portions of interest to them. Ms. Bycraft advised that bidding information on the individual recycling commodity would be provided to Council.

Discussion ensued regarding the net annual estimated revenue based on the tenders received and Ms. Bycraft advised that she would provide Council with precise figures of said revenue.

It was moved and seconded
That Contract T.4311, Recycling Depot Container Collection and Recycling Services, for the period November 1, 2011 – October 31, 2014, be awarded as follows:

(1) BFI Canada Inc. – the container collection and recycling services for the following commodities at the unit rates quoted: Mixed Waste Paper, Scrap Metal and Yard Waste;

(2) Super Save Disposal Inc. – the container collection and recycling services for the following commodities at the unit rates quoted: Magazines, Tin, Scrap Aluminium, and Glass; and

(3) Cascades Recovery Inc. – the container collection and recycling services for the following commodities at the unit rates quoted: Newspaper, Cardboard and Plastic.

CARRIED

3. **FAT, OIL AND GREASE (FOG) MANAGEMENT PROGRAM UPDATE**
(File Ref. No.: 10-6060-03-01/2011-Vol 01) (REDMS No. 3295278)

In reply to queries from Committee, Lloyd Bie, Manager, Engineering Planning, provided the following information:

- staff have identified the City Centre as having the highest amount of fat, oil and grease (FOG), with Hamilton and Shellmont areas as the second and third highest;
- the City primarily relies on education to mitigate FOG deposits in residential neighbourhoods; and
- although there are anecdotal reports that garburators contribute towards FOG, it is difficult to quantify the impact of garburators on the City's sanitary sewer collections systems.

Discussion ensued regarding increased communication with residents concerning FOG. It was noted that the City's Recycling Depot accepts cooking oil and animal grease from residents in an effort to discourage disposal of these items down sinks.

It was moved and seconded
That the five year Sanitary Pump Station and Forcemain Assessment and Upgrading Program (2012 to 2016) which includes forcemain pressure monitoring, forcemain access installation, forcemain inspection and FOG remediation, be endorsed for submission in the 2012 to 2016 Capital Plan for consideration.

CARRIED

PROJECT DEVELOPMENT & FACILITY MANAGEMENT DEPARTMENT

4. AGEING FACILITY INFRASTRUCTURE – UPDATE

(File Ref. No.:) (REDMS No. 3019796)

Greg Scott, Director, Project Development, distributed a revised Page 2 to the staff report entitled "Ageing Facility Infrastructure – Update", dated June 30, 2011 (attached to and forming part of these Minutes as Schedule 1). He stated that the revised page includes text that was inadvertently omitted due to a formatting error.

Discussion ensued regarding funding strategies and Mr. Scott spoke of enterprise funding solutions.

In reply to queries from Committee, Mr. Scott advised that the Facility Condition Index (FCI) is an industry standard designation of facility condition and City facilities currently have a fair rating of 0.07.

Discussion ensued regarding the potential to maintain City buildings at a 'good' level versus the current 'fair' level. Committee commented that information regarding the long-term benefits of 'good' rated buildings would be appreciated. Also, Committee requested that a complete list of City buildings, including their FCI ratings be provided to Council.

Discussion further ensued and Committee requested that information regarding the maintenance costs of individual buildings be provided to Council.

It was moved and seconded
That the report entitled "Ageing Facility Infrastructure – Update", dated June 30, 2011 from the Director of Project Development, be received for information.

CARRIED

5. MANAGER'S REPORT

(i) BC Small Appliance Recycling Program

Ms. Bycraft highlighted that the BC Small Appliance Recycling Program will begin October 1, 2011. She noted that four sites in Richmond will collect the items listed as part of the new program: (i) OK Bottle Depot on Capstan Way; (ii) Regional Recycling on Vulcan Way; (iii) Ironwood Bottle and Return-It Depot on Horseshoe Way; and (iv) the City's Recycling Depot on Lynas Lane.

Discussion ensued regarding the fees for small appliances and Robert Gonzalez, General Manager, Engineering and Public Works, advised that Metro Vancouver may fine municipalities for any unacceptable materials found in their solid waste, such as small appliances. Mr. Gonzalez remarked that staff are working with Metro Vancouver in an effort to direct any fines collected to public education programs and additional recycling facilities.

In reply to queries from Committee, Ms. Bycraft advised that information regarding the Small Appliance Recycling Program will be distributed to residents with the City's annual garbage and recycling materials.

(ii) No. 1 Road and Moncton Street Intersection

Victor Wei, Director, Transportation, provided background information and stated that traffic and pedestrian improvements at the No. 1 Road and Moncton Street intersection have commenced and are going well. He noted that staff anticipate that the project be completed by November 2011.

(iii) Toilet Rebate Program

John Irving, Director, Engineering, provided background information and noted that 85% of the funds recently allocated to extend the program have been apportioned.

(iv) Ditch Infill

Discussion ensued regarding the process for infilling a City ditch and Mr. Gonzalez advised that staff would provide Committee with said information.

(v) RV Sani Dump

It was noted that Richmond does not have a sani dump service location for RVs.

Tom Stewart, Director, Public Works Operations, advised that staff are aware of the issue and are working towards a solution.

ADJOURNMENT

It was moved and seconded
That the meeting adjourn (4:50 p.m.).

CARRIED

Certified a true and correct copy of the Minutes of the meeting of the Public Works & Transportation Committee of the Council of the City of Richmond held on Wednesday, September 21, 2011.

Councillor Linda Barnes
Chair

Hanieh Floujeh
Committee Clerk

Staff Report

Origin

On February 3, 2006 Facility Management provided a report to Council detailing City building conditions. The results were derived on physical audits undertaken by Vanderweil Facility Advisors (VFA) involving 140 buildings comprising 1,450,000 sq. ft of total building area. This report provides an update to the overall Facility Condition Index (FCI) of City facilities 5 years after the original report.

Background

Council Term Goals

One of the strategic focus areas outlined in the currently adopted Council Term Goals is Financial Management. The goal is to ensure the City has the capacity to meet the financial challenges of today and the future, while maintaining current levels of service. This report outlines the current and long-term financial requirements for maintaining and replacing the City's ageing building infrastructure.

Condition of Existing Building Inventory

The City of Richmond's General Buildings and Leased facilities inventory consists of 146 buildings representing notable financial worth with a current value of $284 million, excluding land costs and the Richmond Olympic Oval. The functional life of a facility is 45 years plus providing regular preventive maintenance is performed before a major refit is done. The average age of the facilities included in this report is 39.

FCI is an industry standard designation of facility condition where 0.00 to 0.05 is good, 0.06 – 0.10 is fair, and higher than 0.10 is considered poor. In 2006, the FCI of City facilities was 0.07 and has not changed due additional funding received in the past few years, as well as the replacement of some facilities. This has contributed to maintaining the overall FCI. However, a significant number of facilities will come due for major component renewal.

Analysis

Annual facility inspections based on twenty percent of total square footage are performed by a team comprised of an Architect, and an Electrical and Mechanical Engineer. Assessments currently estimate a $20 million backlog of infrastructure repairs/replacement requirements. Twenty-year projections of this backlog and anticipated average renewals indicate this backlog would increase an average of $5 million per year over the next 20 years to $120 million if the current level of funding continues.

The 2010 funding applied to facility infrastructure repairs, replacement, and renewal is $4,325,000. Increases in funding since 2006 have enabled the repair, replacement, and renewal of many high priority systems such as roofs and mechanical systems. However, funding projections show that the average annual funding requirement over the next 20 years is $8,321,214. A base level increase of $4.0M would address this annual shortfall and would allow the City to maintain facilities in their current condition. It is projected that given the current level of funding the FCI figure will go from 0.07 to 0.43 over the next 20 years.

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	October 4, 2011
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6060-02-01/2011- Vol 01
Re:	**Metro Vancouver Drinking Water Management Plan**		

Staff Recommendation

That the Metro Vancouver 2011 Drinking Water Management Plan be adopted.

John Irving, P.Eng. MPA
Director, Engineering
(604-276-4140)

Att. (2)

FOR ORIGINATING DEPARTMENT USE ONLY				
ROUTED TO:	CONCURRENCE		CONCURRENCE OF GENERAL MANAGER	
Water Services	Y ☑ N ☐			
REVIEWED BY TAG	YES ☑	NO ☐	REVIEWED BY CAO	YES ☑ NO ☐

3372405

Staff Report

Origin

Metro Vancouver's 2005 Drinking Water Management Plan (DWMP) for the Greater Vancouver Water District (GVWD) and member municipalities was adopted by the GVWD Board in September 2005 and issued to member municipalities for adoption or comment. A consultation process resulted in a revision to the 2005 DWMP and a staff report concerning the revised 2005 DWMP was presented to Council on February 26, 2007, and the revised plan was adopted by Council on this date.

On July 29, 2011, the GVWD Board adopted an updated 2011 DWMP (Attachment 1) and has requested that member municipalities adopt the updated plan in a letter dated August 18, 2011 (Attachment 2).

The purpose of this report is to have Council consider and adopt the 2011 DWMP as requested by the GVWD.

Analysis

The 2011 DWMP maintains the three primary goals of the 2005 DWMP:

Goal 1: Provide Clean, Safe Drinking Water

Goal 2: Ensure the Sustainable Use of Water

Goal 3: Ensure the Efficient Supply of Water

The plan outlines a number of actions and strategies for Metro Vancouver and member municipalities that will contribute to meeting these goals. While many of these strategies and actions are ongoing and unchanged from the 2005 DWMP, there are also some new commitments. New Metro Vancouver commitments include:

- Two new strategies with 10 new Metro Vancouver commitments centered around maintaining the water sheds as natural assets that provide clean, safe drinking water;
- Two new Metro Vancouver commitments to improve the energy efficiency of the water system and assess the feasibility of developing hydropower at the Cleveland and Seymour Falls dams;
- A new Metro Vancouver commitment to develop and implement an Asset Management Plan;
- A new Metro Vancouver commitment to meter all new municipal connections;
- A new Metro Vancouver commitment to deliver the Tap Water campaign;
- Three new Metro Vancouver water conservation commitments involving enhanced lawn sprinkling restrictions and water use in the industrial, commercial, institutional and agricultural sectors; and

- A new Metro Vancouver commitment to implement a cross-connection control program.

The 2011 DWMP also includes the following new actions for member municipalities:

- A new municipal commitment to implement a backflow prevention program;
- A new municipal commitment to work with the business sector on water conservation and water reuse;
- A new municipal commitment to update bylaws to enable and encourage on-site rainwater use for non-drinking water purposes;
- A new municipal commitment to implement pressure reduction where feasible and appropriate; and
- A new municipal commitment to further enhance lawn sprinkling restrictions.

Richmond has programs in place that largely address the municipal commitments in the 2011 DWMP, including the new commitments. The following is a list of 2011 DWMP municipal commitments with a brief description of the City's current status for each of these commitments.

Goal 1: Provide Clean, Safe Drinking Water

1.1.9 Complete the reassessment of the secondary disinfection system within the municipal distribution networks in coordination with Metro Vancouver after the completion of the Seymour-Capilano Filtration Project. 2016

Richmond will participate in this reassessment. The City has a rigorous water quality monitoring program in place that includes 39 dedicated water quality monitoring sites. Ongoing collection of this water quality information will be utilized to determine if there is any requirement for secondary disinfection within Richmond after the completion of the Seymour-Capilano Filtration Project.

1.1.10 Monitor water quality in the municipal distribution systems and use this information to optimize water quality through operation of the municipal water system.

As noted above, Richmond has a rigorous water quality monitoring program that meets the requirements of this action. Water quality information is shared with Metro Vancouver and utilized on an ongoing basis to operate the water system in a manner that provides the best possible quality of drinking water to the City's residents and businesses.

1.1.11 Preserve water quality in the distribution system through proactive maintenance programs that include water main flushing, cleaning of municipal reservoirs, and eliminating dead-ends wherever possible.

Richmond has a demand basis water main flushing program based on water quality and does not have any municipal reservoirs. Dead end watermains are eliminated as part of the watermain replacement program where water quality is an issue.

1.1.12 Implement, administer, and maintain backflow prevention and cross-connection control programs within the municipal distribution system to protect the public water system from hazards originating on customers' premises or from temporary connections.

The City has active backflow prevention and cross-connection control programs in place to protect the water system that meets regional requirements.

Goal 2: Ensure the Sustainable Use of Water

2.1.7 Reassess the merits of developing residential water metering programs and municipal rebate programs for water efficient fixtures and appliances. 2015

Richmond already has successful residential water metering and toilet rebate programs. To date, 17,827 (63%) of Richmond's single family homes and 20,633 (20%) of Richmond's multi-family units have been metered for water. The City has an active toilet rebate program that has issued approximately 900 rebates to date in 2011. The City also provides free low flow shower heads and faucet adapters to metered residential customers.

2.1.8 Develop, implement and enforce consistent bylaws to encourage water efficiency and implement Metro Vancouver's Water Shortage Response Plan.

The City has adopted Metro Vancouver's Water Shortage Response Plan.

2.1.9 Work with the business sector on water conservation and water reuse initiatives in partnership with Metro Vancouver.

Richmond utilizes untreated water from the Fraser River for agricultural uses and is currently working with Townline Gardens Inc. on a rainwater storage irrigation system at the Fantasy Gardens site.

2.1.10 Achieve a retail water rate structure that reflects the cost of regional water supply and, if practical, the regional seasonal price structure.

The City's water rate includes the Metro Vancouver water rate and supports a watermain replacement program that has been identified as sustainable in the City's Ageing Infrastructure staff report dated June 7, 2011. Seasonal pricing for water is difficult to implement in an equitable manner without universal water metering. To date, all commercial and industrial customers are metered as are over 43% of residential units.

2.1.11 Deliver educational programs promoting behaviour change and sustainable use of water.

The City's www.watermeter.ca web site includes information on water conservation for both metered and non-metered customers. The City also sponsors the annual "Project Wet", which introduces Richmond elementary students to how water gets to their tap and promotes water conservation in a "hands on" setting.

2.2.3 Update municipal bylaws, utility design standards and neighbourhood design guidelines to enable and encourage on-site rainwater management as appropriate, so that it can be used for non-potable purposes such as irrigation. 2014

The City does not have any bylaws that preclude the utilization of harvested rainwater on-site for non-drinking water uses. Richmond currently offers rain barrels to residents for harvesting rainwater for irrigation purposes.

Goal 3: Ensure the Efficient Supply of Water

3.1.8 Renew and replace aging infrastructure to maintain required levels of service based on risk analyses and cost-benefit priorities specific to the needs of each municipality.

The City has a long term infrastructure renewal program that has sustainable funding through its water rates and water utility. The long term water main replacement program is outlined in the City's Ageing Infrastructure staff report dated June 7, 2011.

3.1.9 Undertake cost-effective leak identification and repair programs targeting the municipal water system.

Staff has completed a preliminary leak audit through the Official Community Plan water modeling project. Within the next year, staff will conduct a water balance and determine the economic level of leakage for the City of Richmond. Subsequent leak detection work will be determined through the water balance.

3.1.10 Implement, where feasible and appropriate, pressure reduction or pressure management programs (including pressure transients) to reduce leakage and potentially extend the life of the infrastructure.

Staff will review the potential for pressure management in the City as part of the 2012 work program.

3.2.5 Further enhance lawn sprinkling regulations to address both seasonal and peak day consumption issues in partnership with other municipalities and Metro Vancouver.

The City adopted the latest Metro Vancouver water sprinkling restrictions at the Regular Council Meeting on June 27, 2011.

Financial Impact

No financial impact at this time.

Conclusion

The GVWD Board has adopted an updated 2011 DWMP and has requested that member municipalities consider adoption as well.

The 2011 DWMP maintains the same primary goals as the 2005 DWMP and many of the municipal commitments are similar to the earlier plan. As such, the City of Richmond is already in alignment with many of the municipal commitments and the outstanding municipal commitments are already included in existing City work programs.

Lloyd Bie, P.Eng.
Manager, Engineering Planning
(604-276-4075)

LLB:llb

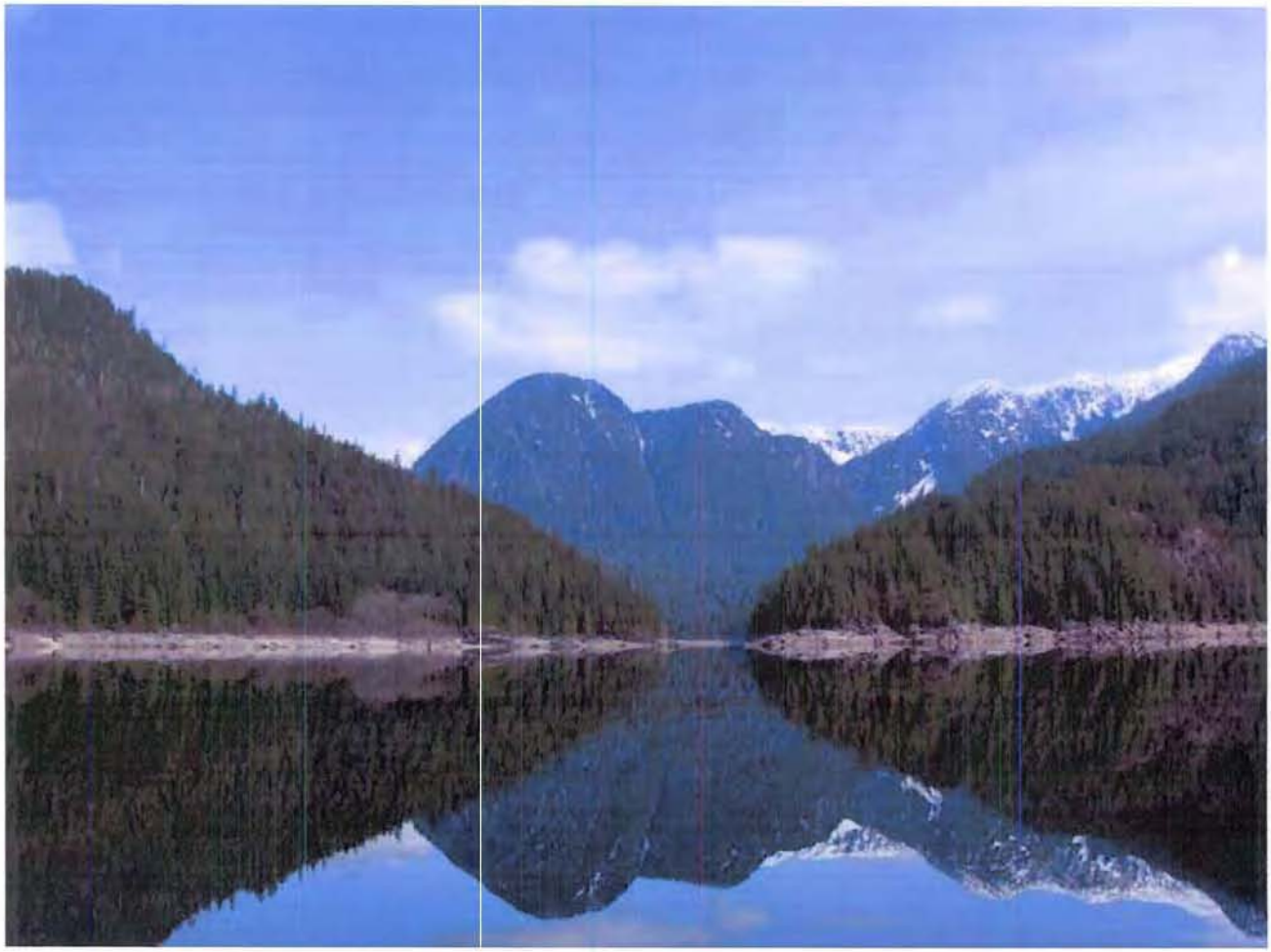
Metro Vancouver

Drinking Water Management Plan

JUNE 2011

metrovancouver

www.metrovancouver.org



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Figures and Tables

VISION

THE DRINKING WATER MANAGEMENT PLAN

Metro Vancouver and member municipalities work together to supply clean, safe drinking water to more than 2.3 million people and associated businesses in the Metro Vancouver region. The Drinking Water Management Plan (DWMP) ensures that our region's water needs will be met affordably and sustainably. This will be done by using water more efficiently so that the water supply stretches out into the future even as the region's population continues to grow and increasing supply from the Coquitlam Lake reservoir.

The investments in water treatment, supply and conservation programs included in this plan will increase the cost of drinking water but the benefits include consistently higher quality drinking water, improved supply reliability, and greater environmental protection.

Metro Vancouver commits to provide clean, safe drinking water and ensure its sustainable use.

PART ONE: PLAN OVERVIEW

Metro Vancouver Sustainability Framework

Since 2002 Metro Vancouver has formally put the concept of sustainability at the centre of its operating and planning philosophy and advanced its role as a leader in the attempt to make the region one which is explicitly committed to a sustainable future. This comprehensive endeavour became known as the Sustainable Region Initiative, or more familiarly as the 'SRI'. In 2008, Metro Vancouver's Board adopted a Sustainability Framework outlining its vision, mission, values, sustainability imperatives, and sustainability principles. Depicted in Figure 1, the Sustainability Framework provides the foundation for Metro Vancouver's suite of plans, including the Drinking Water Management Plan (DWMP).

Regional Vision

Metro Vancouver has an opportunity and a vision to achieve what humanity aspires to on a global basis – the highest quality of life embracing cultural vitality, economic prosperity, social justice and compassion, all nurtured in and by a beautiful and healthy natural environment.

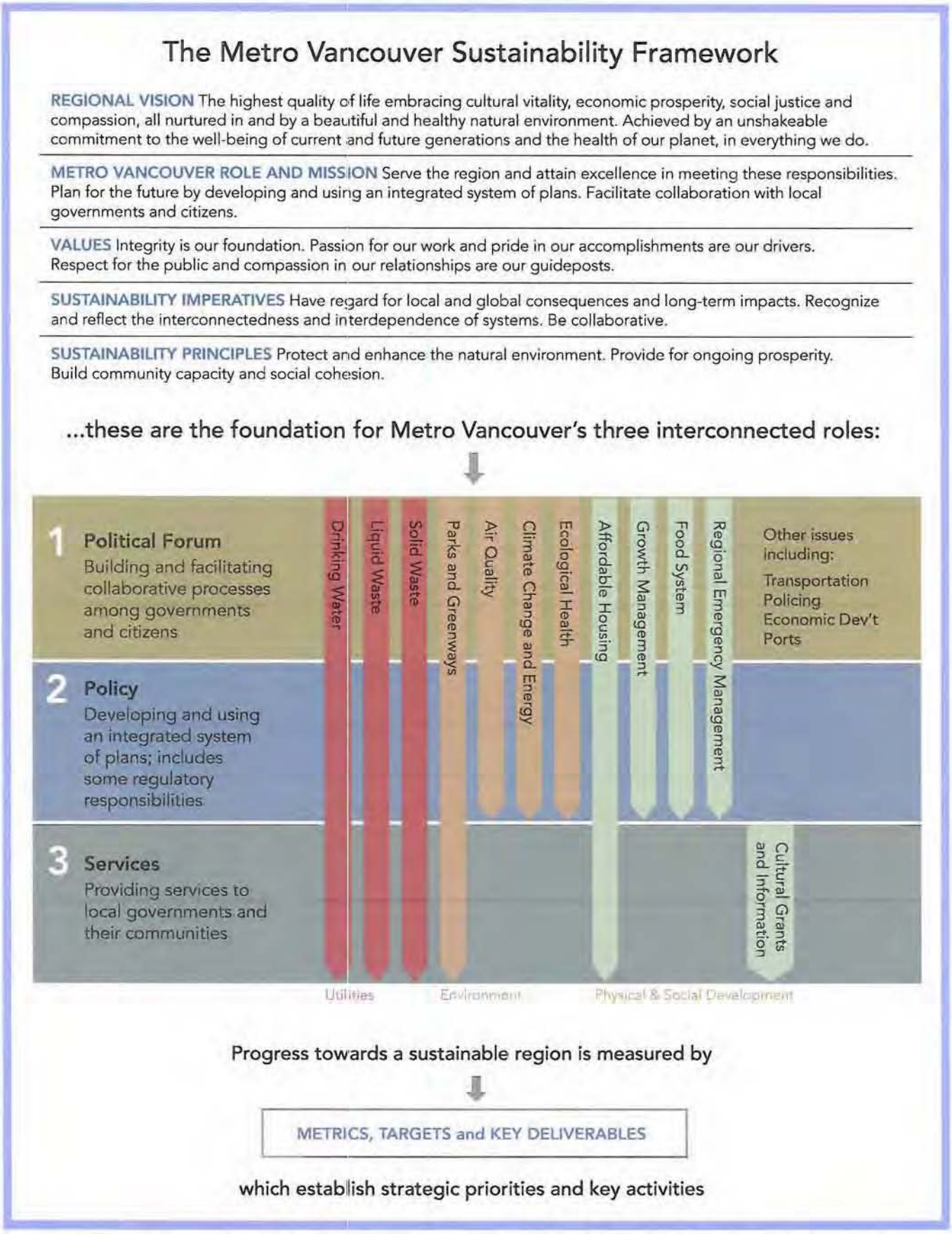
We will achieve this vision by embracing and applying the principles of sustainability, not least of which is an unshakeable commitment to the well-being of current and future generations and the health of our planet, in everything we do.

As we share our efforts in achieving this vision, we are confident that the inspiration and mutual learning we gain will become vital ingredients in our hopes for a sustainable common future.

Metro Vancouver is a political body and corporate entity operating under provincial legislation as a 'regional district' and 'greater boards' that delivers regional services, planning and political leadership on behalf of 24 local authorities. It comprises of:

CITY OF ABBOTSFORD
VILLAGE OF ANMORE
VILLAGE OF BELCARRA
BOWEN ISLAND MUNICIPALITY
CITY OF BURNABY
CITY OF COQUITLAM
CORPORATION OF DELTA
CITY OF LANGLEY
ELECTORAL AREA A (UNINCORPORATED AREA)
TOWNSHIP OF LANGLEY
VILLAGE OF LIONS BAY
DISTRICT OF MAPLE RIDGE
CITY OF NEW WESTMINSTER
CITY OF NORTH VANCOUVER
DISTRICT OF NORTH VANCOUVER
CITY OF PITT MEADOWS
CITY OF PORT COQUITLAM
CITY OF PORT MOODY
CITY OF RICHMOND
CITY OF SURREY
TSAWWASSEN FIRST NATION
CITY OF VANCOUVER
DISTRICT OF WEST VANCOUVER
CITY OF WHITE ROCK

Figure 1 Metro Vancouver's Sustainability Framework



Context for the Drinking Water Management Plan

History

The forested Capilano, Seymour, and Coquitlam Watersheds are the source of water supply for Metro Vancouver. Access to these mountainous watersheds is restricted and these protected watersheds have long been a key component in the region's water supply system. In 2005, the Board of the Greater Vancouver Water District approved the Drinking Water Management Plan (DWMP) for Metro Vancouver and its member municipalities. In 2007, the Plan was amended to fully incorporate management of the source watersheds. Since that time, a number of changes have occurred to improve the quantity and quality of water, the most notable being the commissioning of the Seymour-Capilano Filtration Plant.

Trends, Challenges, Opportunities

Metro Vancouver currently has sufficient quantities of water from its source watersheds to meet the region's needs until at least mid-century. Water continues to be a key economic, social, and environmental driver but demand for this resource will increase with time. The region is expected to grow by 35,000 people per year for the next few decades. Population growth will place demands not only on water supply, but also on water infrastructure if not carefully planned. While climate change predictions do not show a large shift in the amount of precipitation for the region, they do indicate that snow packs at lower elevations will decrease, springs will be earlier, and summers will be longer. These predicted changes in climate may place more stress on the drinking water supply system. In addition, predicted increases in storm activity during the rainy season may result in increased slope failures and river channel instability leading to increased turbidity in source reservoirs and increased treatment costs. Further opportunities can be identified to continue the trend of declining per-capita water use.

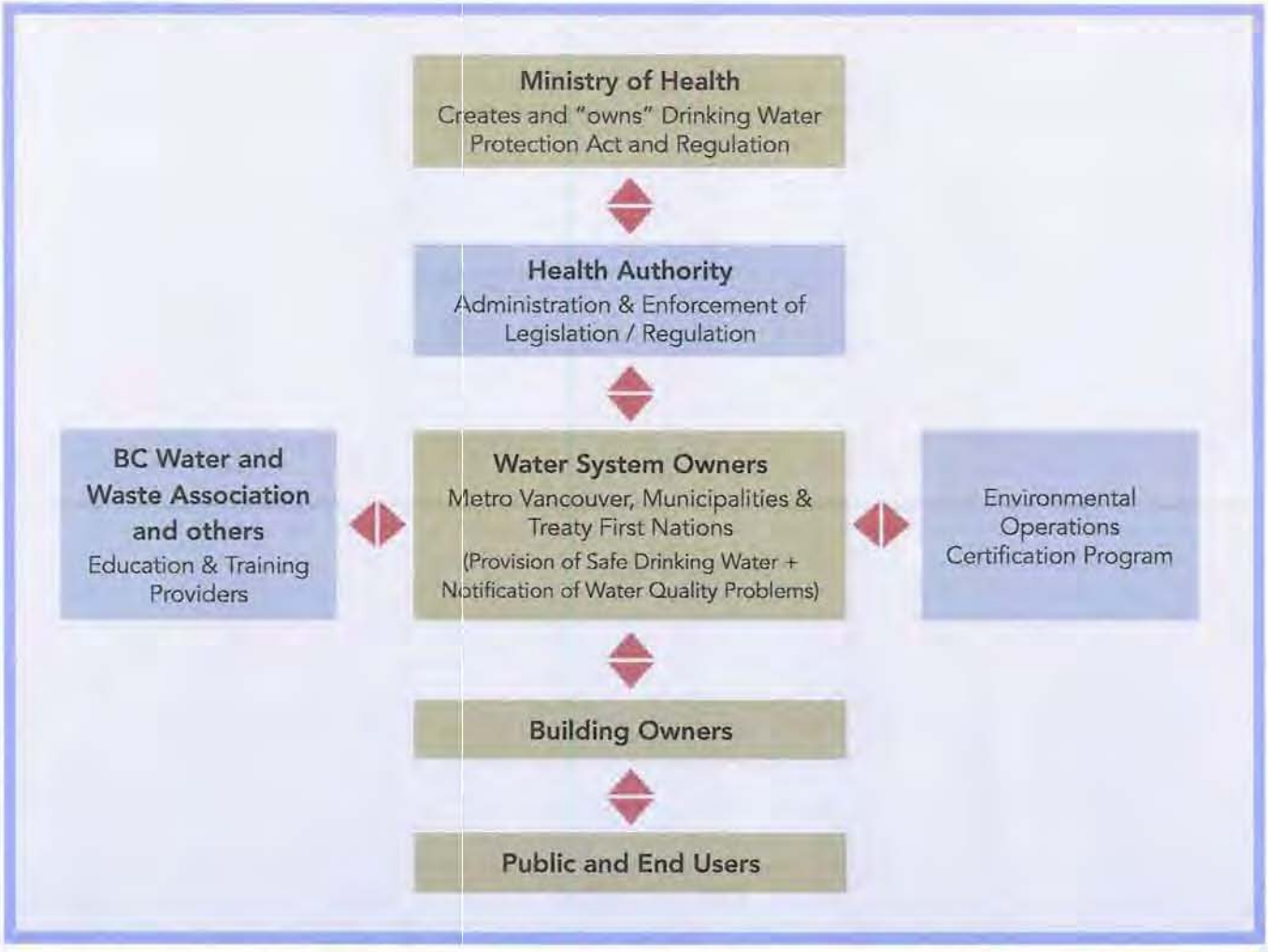
Roles and Responsibilities

Metro Vancouver and its municipalities work together to supply clean, safe drinking water to more than 2.3 million people and associated businesses in the Metro Vancouver region. In this Drinking Water Management Plan reference to Metro Vancouver usually means the Greater Vancouver Water District (GVWD) and reference to municipalities means GVWD member municipalities and member treaty first nation, Tsawwassen First Nation. Metro Vancouver owns and operates the water supply, treatment and regional water supply system while municipalities own and operate the local water distribution systems to supply water to residents and businesses. Homeowners, building owners, industry, commercial businesses, and institutions also have a role and responsibility in ensuring their piping systems are in good order once water enters their property. Metro Vancouver and its municipalities are taking steps to improve water monitoring and metering systems, to improve energy efficiency, and to implement what can be considered the 5Rs of resource management (reduce, reuse, reclaim, recover, and respect the use of water for other purposes). This updated DWMP provides the direction and priority for drinking water initiatives in a sustainable context.

Provincial Government Oversight of Drinking Water Systems

British Columbia's health authorities have a key role in providing provincial government oversight of drinking water systems. In particular, provincial government direction on provision of safe drinking water is administered locally by drinking water officers, public health engineers and medical health officers through issuance of an operating permit. The Metro Vancouver drinking water system is built and operated as one water system with portions of the system in the two Health Authorities that cover the Lower Mainland; Vancouver Coastal Health, and Fraser Health. The Vancouver Coastal Health drinking water officers provide surveillance and monitoring of those aspects of Metro Vancouver's drinking water systems that may affect public health. They also administer and enforce the Drinking Water Protection Act, the Drinking Water Protection Regulation and the Health Act (Figure 2).

Figure 2 Roles and responsibilities in the provision of safe drinking water sourced from Metro Vancouver's watersheds



Drinking water officers and public health engineers are contacted prior to the alteration of the drinking water system regarding construction permits and changes to operating permits. Water suppliers, such as Metro Vancouver and municipalities, have the water from their systems analyzed for the presence of microbiological pathogens and other indicator organisms by laboratories approved by the Provincial Health Officer.

From a water allocation or water quantity perspective, the *Provincial Water Act* is central to the water governance framework. The Provincial Water Act was last changed in 2004, driven primarily by growing concerns for the protection of drinking water quality. In addition to a new *Drinking Water Protection Act*, the 2004 Water Act amendments provided B.C. with its first mechanisms to protect groundwater and a process for watershed management planning to address or prevent conflicts among or between water users and the environment, and the protection of water quality.

Aligning with Provincial Initiatives

The strategies and actions identified in the Drinking Water Management Plan (DWMP) align with the following recent Provincial initiatives:

ACTION PLAN FOR SAFE DRINKING WATER IN BRITISH COLUMBIA

This plan includes comprehensive legislation and measures to protect drinking water from source to tap by improving monitoring, treatment, reporting, and accountability to the public. The Province's Action Plan sets out specific principles and actions to ensure British Columbians enjoy safe, clean, healthy drinking water as effectively, efficiently, and reliably as possible. The DWMP addresses all these concerns and continues to update them as required as best management practices evolve.

LIVING WATER SMART: BRITISH COLUMBIA'S WATER PLAN

Water Smart objectives supported by the DWMP include supporting rainwater harvesting and water reclamation actions, helping to address the impacts of climate change, and implementing actions that result in matching water quality to usage requirements.

WATER SUSTAINABILITY ACT (PROPOSED REVISION TO THE WATER ACT)

This proposed new act would revise the Water Act to lessen our water footprint and transition to a new way of managing water. This includes a number of water policies that propose to improve water use efficiency, conservation, protect stream health and aquatic environments, and regulate water during scarcity.

BC CLIMATE ACTION PLAN

This Plan sets a provincial target of 33 percent less greenhouse gas emissions by 2020 and 80 percent by 2050. The DWMP contributes to meeting these targets by prioritizing gravity systems where possible, assessing hydropower at existing reservoir dams, recovering energy where feasible and upgrading pump technologies.

INTEGRATED RESOURCE RECOVERY

Integrated Resource Recovery (IRR), formally defined by the Province in 2008 in a report titled Resources from Waste: A Guide to Integrated Resource Recovery, is a concept and approach that integrates the management of water, wastewater, energy, and solid waste services to recover resources and value to help increase resiliency.

Figure 3 Metro Vancouver's Interconnected Management Plans

Coordinating with other Metro Vancouver Plans

The Drinking Water Management Plan is one plan among a suite of interconnected management plans developed around Metro Vancouver's Sustainability Framework (Figure 3). The following section summarizes key links between Metro Vancouver's plans and outlines where actions identified in other Metro Vancouver plans affect the Drinking Water Management Plan, and conversely where actions in this DWMP make a contribution to the goals of other Metro Vancouver plans.

Table 1 Metro Vancouver Management Plan Linkages

Linkages Between Metro Vancouver Plans

INTEGRATED LIQUID WASTE AND RESOURCE MANAGEMENT PLAN

Support of on-site rainwater management and actions to reclaim water contribute to the sustainable use of water in the region.	DRINKING WATER MANAGEMENT PLAN	Support for using non-potable water for appropriate uses. Actions that support improvements in water conservation and reuse should reduce the amount of wastewater that has to be treated at wastewater treatment plants.

REGIONAL GROWTH STRATEGY

A compact urban area uses infrastructure more efficiently and places less demand on the overall system, specifically in terms of outdoor water use.	DRINKING WATER MANAGEMENT PLAN	Provision of clean, safe drinking water is integral to complete communities and a sustainable economy. Protected watersheds are a large portion of the region's conservation lands.

INTEGRATED SOLID WASTE AND RESOURCE MANAGEMENT PLAN

Programs that inform and educate the public of the benefits of waste reduction support the objectives of the Tap Water Campaign.	DRINKING WATER MANAGEMENT PLAN	Success in the Tap Water Campaign will reduce the amount of waste associated with bottle water use.

Linkages Between Metro Vancouver Plans

REGIONAL FOOD SYSTEMS STRATEGY

AIR QUALITY MANAGEMENT PLAN

REGIONAL PARKS AND GREENWAYS PLAN

PART TWO:
GOALS, STRATEGIES and ACTIONS

Goal 1:
Provide Clean, Safe Drinking Water

Metro Vancouver and its municipalities are committed to providing reliable access to adequate quantities of clean, safe drinking water to the citizens and businesses of Metro Vancouver.

Strategy 1.1 Use a risk management multi-barrier approach from source to tap

Beginning with protected source watersheds, the region's water supply system provides multiple barriers to contamination. Projects such as the Seymour-Capilano Filtration Plant and the addition of the ultraviolet treatment plant at Coquitlam will further reduce the risks to water quality.

METRO VANCOUVER WILL:

1.1.1 Complete the Seymour-Capilano Filtration Project. 2013
1.1.2 Improve the primary disinfection treatment of Coquitlam source water for Cryptosporidium by adding ultraviolet treatment. 2013
1.1.3 Complete the reassessment of the secondary disinfection system after completion of the Seymour-Capilano Filtration Project. 2016

ON-GOING ACTIONS

1.1.4 Preserve water quality in the Metro Vancouver system by utilizing best management practices that include urban reservoir cleaning and circulating water to maintain appropriate chlorine levels.
1.1.5 Monitor water supply and water quality and use this information to optimize source water treatment, operation of the Metro Vancouver water system and rechlorination programs, and communicate system changes to agencies and municipalities as appropriate.

1.1.6 Implement, administer, and maintain backflow prevention and cross-connection control programs within the Metro Vancouver system to protect the public water system from hazards originating on customers' premises or from temporary connections.

1.1.7 Ensure continuous improvement for the management and operation of the Metro Vancouver water system by ongoing application of Metro Vancouver's Management System for Drinking Water.

1.1.8 Present an annual Metro Vancouver Water Quality Report to the Board of Directors.

MUNICIPALITIES WILL:

1.1.9 Complete the reassessment of the secondary disinfection system within the municipal distribution network in coordination with Metro Vancouver after completion of the Seymour-Capilano Filtration Project. 2016

ON-GOING ACTIONS

1.1.10 Monitor water quality in the municipal distribution systems and use this information to optimize water quality through operation of the municipal water system.

1.1.11 Preserve water quality in the distribution system through proactive maintenance programs that include water main flushing, cleaning of municipal reservoirs, and eliminating dead-ends where possible.

1.1.12 Implement, administer, and maintain backflow prevention and cross-connection control programs within the municipal distribution system to protect the public water system from hazards originating on customers' premises or from temporary connections.

Strategy 1.2 Manage watersheds to provide clean, safe water

Metro Vancouver's closed and protected watersheds minimizes human access and human activity and significantly reduces the risk from microbiological or chemical contamination and fires.

METRO VANCOUVER WILL:

1.2.1 Where feasible and appropriate, restore disturbed areas and deactivate watershed roads that are no longer required to minimize the risk of landslides and erosion, and reduce long-term maintenance costs. 2013

ON-GOING ACTIONS

1.2.2 Provide reliable and timely information on source water quality, stream flow, and fire risk to minimize risks to water quality, manage source reservoirs and optimize water treatment.

1.2.3 Manage the watersheds with a minimum intervention approach. Intervention is only necessary for building infrastructure or if there are risks to water quality or human safety.

1.2.4 Work in cooperation with adjoining municipalities and other organizations with infrastructure on watershed lands to minimize risks to water quality.

1.2.5 Reduce the risk from microbiological or chemical contamination by restricting access to the source watersheds as specified in Metro Vancouver's Watershed Access Policy.

Strategy 1.3 Identify and secure additional water supplies for the region

By making greater use of the storage capacity of Coquitlam reservoir our present sources of water offer a secure water supply that will meet our needs until about mid-century.

METRO VANCOUVER WILL:

1.3.1 Complete the Seymour-Capilano Filtration Project and initiate conceptual design of the new Coquitlam intake facility to access additional water supplies. 2013

1.3.2 Provide for additional capacity by securing full access to the Coquitlam source under the Coquitlam Water Use Plan and the current forecast predicts expanding storage capacity in Seymour and Capilano Watersheds by 2050. The schedule for storage expansion will be monitored and storage expanded as needed.

ACTIONS REQUESTED OF OTHER GOVERNMENTS AND AGENCIES (ON-GOING ACTION)

1.3.3 That senior governments, universities, and research agencies continue to assess the potential impacts of climate change on the need for additional water supplies or storage capacity and advise Metro Vancouver on the results of this research.

Goal 2: Ensure the Sustainable Use of Water Resources

By ensuring the sustainable use of water resources, the region can continue to grow and prosper while sustaining our quality of life and our environment.

Strategy 2.1 Use drinking water sustainably

Metro Vancouver and its municipalities are committed to pursuing demand management strategies where using water more sustainably will contribute to economic prosperity, community well-being and environmental integrity.

METRO VANCOUVER WILL: (ON-GOING ACTIONS)

2.1.1 Deliver education programs promoting behaviour change by means of:

- sustainability education resources;
- watershed field trips;
- sustainability initiatives at schools;
- information outreach programs promoting behaviour change and sustainable use of water.

2.1.2 Implement a region wide water conservation program targeting the industrial, commercial, institutional and agricultural sectors in partnership with municipalities. Program elements include water audits, informative resources and case studies.

2.1.3 Deliver the Tap Water Campaign to educate people about Metro Vancouver's high quality drinking water and to reduce the environmental impact of bottled water.

2.1.4 Set the wholesale water rates and water rate structure to reflect the cost of regional water supply, and achieve water conservation and other sustainability objectives.

2.1.5 Work with the business sector on water conservation and water reuse initiatives in partnership with municipalities.

2.1.6 Develop the Seymour Water Treatment and Watershed Academy to support innovative research and demonstration projects.

MUNICIPALITIES WILL:

2.1.7 Reassess the merits of developing residential water metering programs and municipal rebate programs for water efficient fixtures and appliances. 2015

ON-GOING ACTIONS

2.1.8 Develop, implement and enforce consistent bylaws to encourage water efficiency and implement Metro Vancouver's Water Shortage Response Plan.

2.1.9 Work with the business sector on water conservation and water reuse initiatives in partnership with Metro Vancouver.

2.1.10 Achieve a retail water rate structure that reflects the cost of regional water supply and, if practical, the regional seasonal price structure.

2.1.11 Deliver education programs promoting behaviour change and sustainable use of water.

Strategy 2.2 Match water quality to usage requirements

Many of the purposes for which drinking water is currently used do not require use of water of potable quality.

METRO VANCOUVER WILL:

2.2.1 Install facilities for water reclamation at wastewater treatment plants to provide reclaimed water for use within and outside wastewater plants where feasible. 2011-2016

ON-GOING ACTION

2.2.2 Evaluate alternatives to potable water for specific purposes, including:

- rainwater harvesting for irrigation;
- greywater and reclaimed wastewater for residential, commercial, institutional, and agricultural use;
- groundwater for irrigation;
- river and sea water for waterfront businesses.

MUNICIPALITIES WILL:

2.2.3 Update municipal bylaws, utility design standards and neighbourhood design guidelines to enable and encourage on-site rainwater management as appropriate, so that it can be used for non-potable purposes such as irrigation. 2014

ACTIONS REQUESTED OF OTHER GOVERNMENTS, AGENCIES, AND ASSOCIATIONS: (ON-GOING ACTIONS)

2.2.4 Revise the provincial health regulations to allow specific residential and commercial uses of non-potable water (greywater and rainwater) after discussions with Metro Vancouver and municipalities.

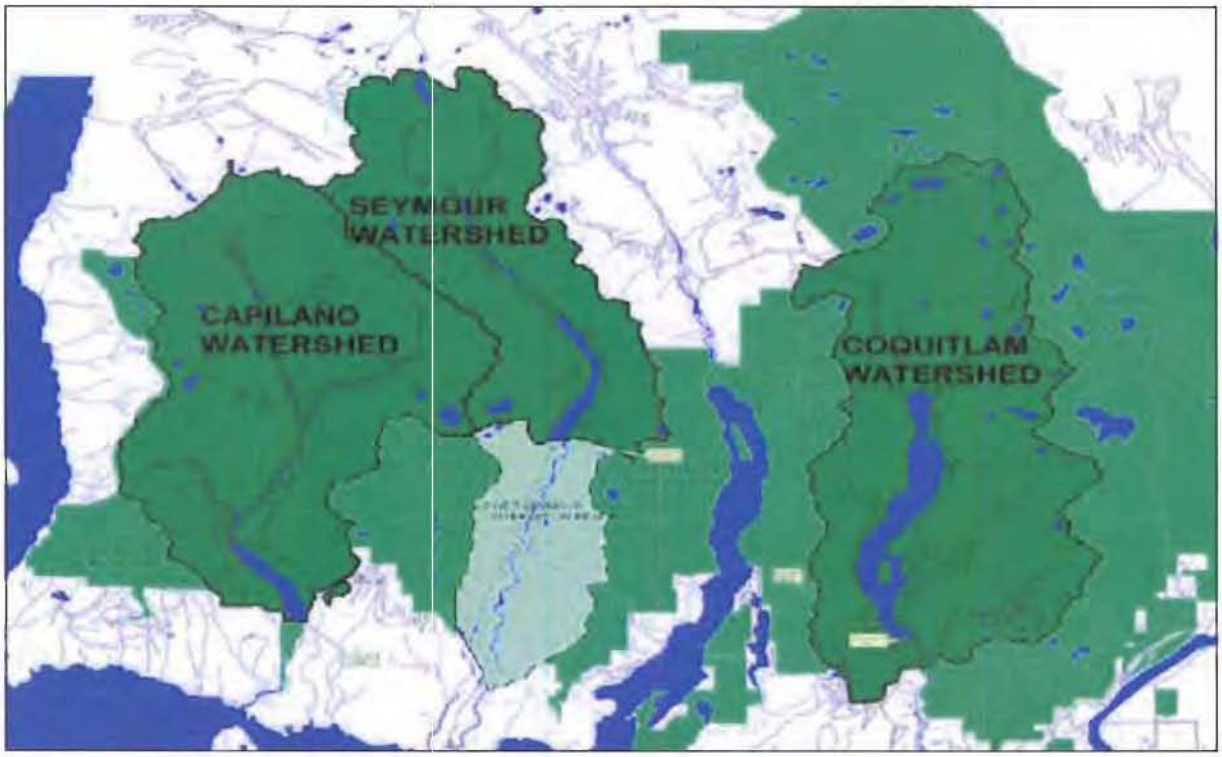
2.2.5 Facilitate networking for re-use of process wastewater with business associations, institutions, and non-governmental organizations.

Strategy 2.3 Manage and protect watersheds as natural assets

Managing and protecting watershed lands and their biological diversity as natural assets and as part of the region's conservation lands significantly advances regional sustainability

METRO VANCOUVER WILL: (ON-GOING ACTIONS)

2.3.1 Manage watershed lands and their biological diversity to advance regional sustainability.
2.3.2 Manage the on-drainage watershed lands with a minimum intervention approach.
2.3.3 Protect and conserve fish populations while continuing to provide clean, safe drinking water.
2.3.4 Provide non-motorized recreational opportunities on off-drainage watersheds lands where appropriate.
2.3.5 Develop and implement a Joint Water Use Plan for the Seymour and Capilano Watersheds.



Goal 3:
Ensure the Efficient Supply of Water

Efficient supply of water optimizes capacity and defers the need for new infrastructure and new water supply sources. Equally important is renewing and replacing the region's aging water transmission and distribution systems in an affordable way.

Strategy 3.1 Manage infrastructure proactively

Managing infrastructure proactively will ensure cost-effective, reliable and sustainable water supply.

METRO VANCOUVER WILL: (ON-GOING ACTIONS)

3.1.1 Develop and implement an Asset Management Plan targeted at maintaining delivery of reliable and cost-effective drinking water services to the region over the next 100 years.
3.1.2 Renew and replace aging infrastructure to maintain required levels of service based on risk analyses (including seismic risk) and cost-benefit priorities.
3.1.3 Undertake cost-effective leak identification and repair programs targeting water transmission mains with high breakage rates or that are older than 50 years.
3.1.4 Implement, where feasible and appropriate, pressure reduction or pressure management programs (including pressure transients) to reduce leakage and potentially extend the life of the infrastructure.
3.1.5 Conduct hazard assessments specific to trespassing, excavations over pipes and pressure loss and implement emergency and security programs to reduce risks.
3.1.6 Upgrade the energy efficiency of the system by prioritizing gravity systems and where possible recovering surplus energy and upgrading pump and motor efficiencies.
3.1.7 Upon completion of a Joint Water Use Plan for the Capilano and Seymour Watersheds, assess the feasibility of developing hydropower at the Cleveland and Seymour Falls dams.

MUNICIPALITIES WILL: (ON-GOING ACTIONS)

3.1.8 Renew and replace aging infrastructure to maintain required levels of service based on risk analyses and cost-benefit priorities specific to the needs of each municipality.
3.1.9 Undertake cost-effective leak identification and repair programs targeting the municipal water system.
3.1.10 Implement, where feasible and appropriate, pressure reduction or pressure management programs (including pressure transients) to reduce leakage and potentially extend the life of the infrastructure.

Strategy 3.2 Optimize capacity through effective partnerships

Gaining efficiency and optimizing capacity through more effective communications and partnerships enables more to be done with less.

METRO VANCOUVER WILL:

3.2.1 Maintain a system of seasonal pricing and confirm that the cost of providing water in the summer season continues to be 1.25 times the cost of providing water during the remainder of the year and make seasonal pricing adjustments accordingly. 2014

ON-GOING ACTIONS

3.2.2 Based on the projected growth in population and economic activity in Metro Vancouver's approved Regional Growth Strategy, plan and construct required Metro Vancouver facilities.

3.2.3 Install water meters on all new municipal system connections to Metro Vancouver's water mains.

3.2.4 Further enhance lawn sprinkling regulations to address both seasonal and peak day consumption issues in partnership with municipalities.

MUNICIPALITIES WILL: (ON-GOING ACTION)

3.2.5 Further enhance lawn sprinkling regulations to address both seasonal and peak day consumption issues in partnership with other municipalities and Metro Vancouver.

PERFORMANCE MEASURES

The following performance measures will monitor progress in achieving the goals of the Drinking Water Management Plan (DWMP). Performance should be considered in the context of industry standards and performance by other utilities in other jurisdictions.

Goal 1: Provide Clean, Safe Drinking Water

1. Treated water samples negative for E. coli bacteria (striving for 100%).
2. Treated water samples negative for total coli forms (striving for high percentages).
3. Percent of untreated source water samples exceeding 20 E. coli/100 ml (striving for low percentage).

Goal 2: Ensure the Sustainable Use of Water Resources

4. Per capita water use by residential customers (trend over time and compare to other jurisdictions).
5. Per capita water use by all customers (trend over time and compare to other jurisdictions).
6. Peak day per capita water use by all customers (trend over time and compare to other jurisdictions).
7. Greenhouse gases generated in treating and delivering water (per cubic meter of water delivered by Metro Vancouver and net of energy recovery).

Goal 3: Ensure the Efficient Supply of Water

8. Metro Vancouver's Water Rate (trend over time and compare changes in Metro Vancouver to changes in other jurisdictions).
9. Metro Vancouver's drinking water budget (trend over time and compare changes in Metro Vancouver to changes in other jurisdictions).
10. Kilowatt hours of energy used in treating and delivering water (per cubic meter of water delivered by Metro Vancouver and net of energy recovery).

Adaptive Management

As the region grows and changes, the science of water management improves, and public values evolve, the DWMP will be reviewed and revised. An adaptive management approach is proposed with a DWMP progress report every two years and a comprehensive review of the plan every five years.

ATTACHMENT 2

pc: R. Gonzalez
T. Stewart

For appropriate action noting the request for consideration + adoption of the Water Mgmt. Plan by Council

metrovancouver

Office of the Chair
Tel: 604 432 6215 Fax 604 451-6614

File: CR-13-01-WD
CP-19-01

CR7-30-DWPL1-

AUG 18 2011

Mayor Malcolm Brodie and Council
City of Richmond
Mayor's Office
6911 No. 3 Road
Richmond, BC V6Y 2C1

Dear Mayor Brodie and Council:

Re: Adoption of the 2011 Drinking Water Management Plan

At its meeting on July 29, 2011 the Greater Vancouver Water District Board adopted the *Drinking Water Management Plan for Metro Vancouver and Members* (Attachment 1) and referred the municipal actions in the plan to the councils of member municipalities for their adoption.

Attached for consideration and adoption by councils of member municipalities and Tsawwassen First Nation are the municipal actions in the plan (Attachment 2).

If you have any questions regarding the Plan, please contact Albert van Roodselaar, Utility Planning and Environmental Managernent Division Manager, Metro Vancouver at (604) 436-6772 or email Albert.vanRoodselaar@metrovancouver.org.

Thank you for your participation and support in this important Metro Vancouver and municipal management plan. The Plan will serve the region well and advance the management of drinking water in the region for the coming decade.

Respectfully I remain,

for Lois E. Jackson
Chair, Metro Vancouver Board

LEJ/TA/avr

cc: Regional Administrative Advisory Committee (RAAC)
Regional Engineers Advisory Committee (REAC)

Attachments:

1 Drinking Water Management Plan for Metro Vancouver and Members dated June 2011 (5340756)
2 Actions in the 2011 Drinking Water Management Plan for Member Municipalities and Tsawwassen First Nation (5225900)

5342440

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	September 27, 2011
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6340-20- P.11203/Vol 01
Re:	**Widening of Westminster Highway and Nelson Road CN Rail Work Permit**		

Staff Recommendation

That the Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to sign documents as required for a Work Permit from CN Rail for Contract 4230P - Design of Westminster Highway and Nelson Road Widening.

John Irving, P.Eng. MPA
Director, Engineering
(604-276-4140)

Att.

FOR ORIGINATING DEPARTMENT USE ONLY				
ROUTED TO:	**CONCURRENCE**		**CONCURRENCE OF GENERAL MANAGER**	
Law	Y ☑ N ☐			
REVIEWED BY TAG	YES ☑ (CVC)	NO ☐	**REVIEWED BY CAO**	YES ☑ NO ☐

3368967

Staff Report

Origin

The City has received grant funding to widen portions of Westminster Highway and Nelson Road. Since some of the proposed road widening will occur on the CN Rail Right of Way, the City will require a Work Permit from CN Rail to complete the survey work.

The purpose of this report is to seek authorization for the Chief Administrative Officer and the General Manager, Engineering and Public Works to sign the CN Rail Work Permit documents.

Analysis

Westminster Highway is currently two lanes wide between No. 6 Road and McMillan Road. Nelson Road south of Westminster Highway is also two lanes wide. As the amount of industrial activity has increased in the Port Metro Vancouver lands at the south ends of No. 8 Road and Nelson Road, there has been a corresponding increase in the amount of heavy vehicle traffic on Westminster Highway. To address this traffic, the following projects have been identified by the City of Richmond, Province of British Columbia, Port Metro Vancouver, and Translink:

a) Widening Westminster Highway from Nelson Road to McMillan Road from two lanes to four lanes (this project, approved in the 2011 Capital Budget).
b) Widening Nelson Road from Blundell Road to Westminster Highway from two lanes to four lanes (this project, approved in the 2011 Capital Budget).

Westminster Highway crosses the CN Rail tracks east of No. 9 Road. To design the new widened roadway, Staff will need to access the CN Rail Right of Way to perform survey services. Staff have contacted CN Rail to seek access to this Right of Way, and CN Rail has provided a Work Permit form that includes an indemnity clause. Due to the indemnity clause, Staff require Council approval to enter into this agreement.

The scope of work to be performed by Staff on the CN Rail Right of Way is of minimal risk and will be limited to survey services. Only handheld equipment will be used, and all survey work will be coordinated with CN Rail.

Financial Impact

There is no financial impact associated with this Work Permit.

Conclusion

The widening of Westminster Highway and Nelson Road is required to accommodate the heavy truck traffic generated by the industrial area located at the south end of Nelson Road. It will tie into the new Nelson Road Interchange and help remove the heavy truck traffic from Westminster Highway west of Nelson Road. To complete the design of this project, access to the CN Rail Right of Way is required.

Milton Chan, P.Eng.
Senior Project Engineer
(604-276-4377)

:

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	October 6, 2011
From:	Cecilia Achiam, MCIP, BCSLA Interim Director, Sustainability and District Energy	**File:**	01-0103-65-20-06/Vol 01
Re:	**2011 Corporate Energy Management Update**		

Staff Recommendation

That the staff report entitled "2011 Corporate Energy Management Program Update Report" from the Interim Director, Sustainability and District Energy, dated September 19, 2011 be received for information

Cecilia Achiam, MCIP, BCSLA
Interim Director, Sustainability and District Energy
(604-276-4122)

Att. 4

FOR ORIGINATING DEPARTMENT USE ONLY			
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**	
Project Development Engineering	Y ☑ N ☐ Y ☑ N ☐		
REVIEWED BY TAG	YES ☑ NA / NO ☐	**REVIEWED BY CAO**	YES ☑ GI / NO ☐

Staff Report

Origin

This Corporate Energy Management Program Update Report summarizes the City's most recent achievements in implementing the City of Richmond's Energy Management Program (EMP) and highlights upcoming corporate energy management initiatives. The City's EMP closely supports the Corporate Sustainability Framework-Energy Sustainability Strategic Program endorsed by Council on July 26, 2010 (**Attachment 1**).

The EMP also supports the following Council Term Goals

> Council Term Goal #2: "*Financial Responsibility and Levels of Service* – Ensure the City has the capacity to meet the financial challenges of today and in the future, while maintaining appropriate levels of service"; and
>
> 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".

Included with this Energy Management Program Update report as **Attachment 2,** is a summary brochure highlighting key City energy projects and initiatives.

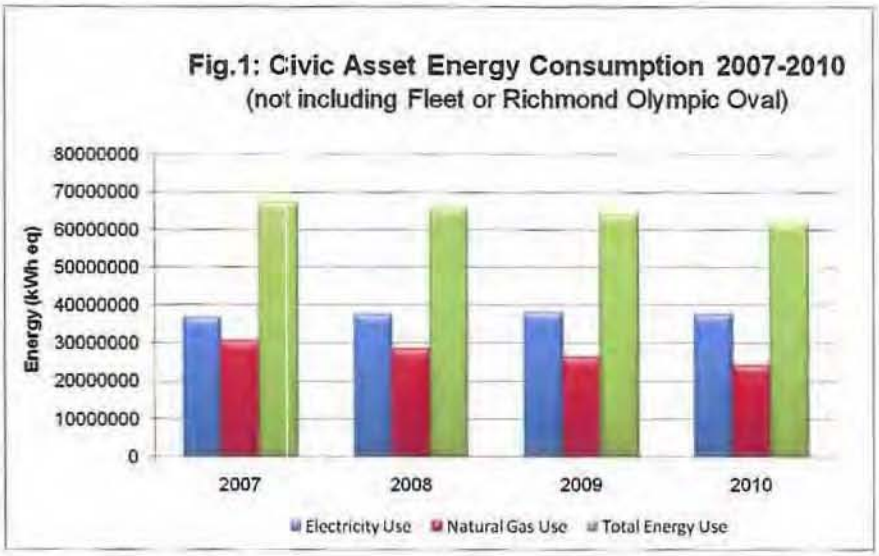
Background

Energy Use Overview

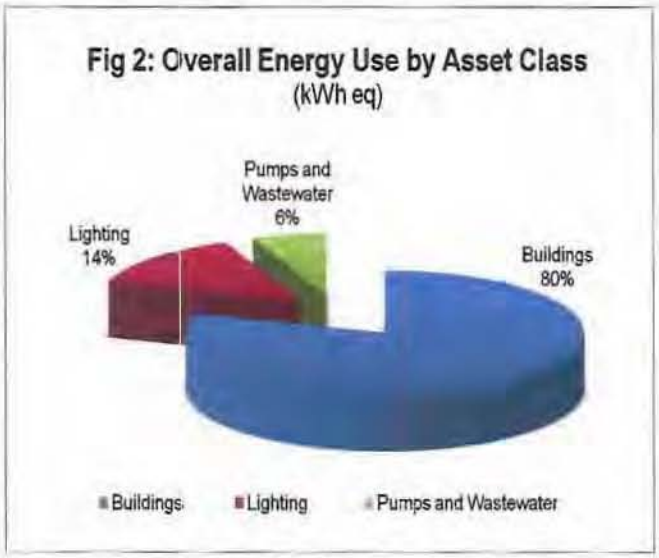
In 2010 the City of Richmond civic assets, which includes buildings, lighting, and pumps and wastewater (but excluding Fleet and the Richmond Olympic Oval) utilized approximately $4.4 million dollars of energy, or approximately 61,573,000 kWh (electricity and natural gas). The Oval has not been incorporated into the City's inventory for 2010 because of arrangements for the 2010 Games and the legacy conversion period after the Games. The Oval will be included from 2011 going forward. Excluding the Oval, Compared with 2009 the cost of our civic assets' energy use (excluding the Oval) increased from approximately $4.0 million dollars for that year; however, the amount of energy utilized decreased in 2010 by approximately 2,611,000 kWh - from 64,184,000 kWh used in 2009. The increased cost of energy was mostly due to increases in electricity rates.

	2009	2010	Variation
Energy Use (kilowatt hours)	64,184,000 kWh	61,573,000 kWh	2,611,000 kWh reduction
Energy Cost	$4.0 M	$4.4 M	approx. $400,000 increase

The following Figure 1 indicates the amount of energy used by the City for civic assets between 2007 and 2010, and includes a breakdown of natural gas and electricity use.



As is shown in the following Figure 2, energy use at civic buildings accounted for approximately 80%, lighting accounted for approximately 14%, and pumps and wastewater systems accounted for approximately 6% of the total energy utilized by civic assets, or approximately 48,676,000 kWh (electricity and natural gas), 8,792,000 kWh, and 3,901,000 kWh, respectively.



The City of Richmond is responsible for the utility costs at approximately 90 civic facilities. However of the 90 civic facilities under City stewardship, energy use in 2010 at only 11 facilities

accounted for over 80% of the overall civic building energy use – with our recreational pools and ice arenas being the highest energy consuming facilities[1].

This large percentage of civic energy used by a small number of facilities emphasizes the potential opportunity for excellent return on investment for energy management initiatives at these locations foremost. In addition, placing a high priority on efficient energy system design during the development phase of new facilities (specifically pools and ice arenas), will go a long way in ensuring that our corporate energy and GHG reduction targets can be met in the long term.

Although the City has been able to achieve excellent results in energy conservation, infrastructure has increase (e.g. The Olympic Oval). So while the unit cost of energy consumption has gone down, it is anticipated that total energy consumption and green house gas emissions will increase as the City add infrastructure to meet the growing needs of our residents. This, combined with increasing utility rates, will result in energy costs increases going forward.

Energy Management Policy and Program Development Overview

Energy conservation and its efficient use were first brought forward as a Council and corporate priority in 1991 with the Energy Conservation Policy. Some key points from that policy are still relevant for our current corporate energy management program. These points include; considering life cycle costing when purchasing new equipment, upgrading facilities to highest possible efficiency as budgets allow, monitoring civic energy consumption, maintaining equipment to energy efficient standards, and encouraging all employees to suggest and initiate projects that will save energy.

In order to expand on the initial energy conservation policy, and to set specific management objectives and evaluation criteria for the "sustainable" development of our buildings, Council rescinded the Energy Conservation Policy in 2004 and adopted the High Performance Building Policy in its place. This policy enabled the broadening of the City's commitment to efficient natural resource use in all areas of civic functions, established the Leadership in Energy and Environmental Design (LEED) rating system as the "sustainable" measurement tool for new buildings and major renovations, and set clear objectives for management in terms of project cost considerations and integrated building design practices. This policy also set the City apart from other municipalities at the time by adopting specific LEED standard objectives for new construction, with a minimum of LEED Gold or Silver accreditation[2] for all new buildings. Since adoption of the High Performance Building Policy by Council tangible results have been evident with exceptionally well designed new and renovated civic buildings, and high levels of incorporation of energy efficient technologies.

During the time that the High Performance Building Policy was being developed, energy management retrofit projects were being implemented at numerous existing civic buildings by Facilities Department in partnership with BC Hydro. These projects were highly successful in increasing building energy efficiency and leveraging external funding to support our energy management program. Based on Council's commitment to increased energy efficiency and the

[1] Watermania, Richmond Ice Centre, Minoru Pools and Minoru Arenas accounted for 43% of the overall civic building energy use in 2010.

[2] For new buildings under 2,000 m^2, the performance standards for LEED Silver accreditation were to be met without necessarily seeking formal accreditation. For buildings over 2,000 m^2, LEED Gold accreditation was to be required.

success of the implemented projects, the City has been recognized by BC Hydro as a Power Smart Leader on numerous occasions, beginning in 2003 and most recently in 2010; and remains the only Municipality to have achieved this level of recognition.

Findings Of Fact

Current State of the City' EMP

Although the continued reduction of electricity use is warranted and desired, it has been recognized by Council that to achieve the City's ambitious GHG and energy reduction targets, it will necessary to explore and implement other energy saving measures beyond those mandated by the BC Hydro Power Smart program. These measures potentially include reducing consumption of natural gas (which is a much more significant GHG contributor than hydro electricity), and shifting to alternative modes of energy production including solar, geothermal and other low GHG emitting alternatives.

As a result of the recognition of the necessity of a larger scope of work for the City Energy Manager, the continued successful development of the City of Richmond Energy Management Program, and the adoption of the City's Sustainability Framework – Energy Sustainability Strategic Program, Council approved the establishment of a full time Energy Manager position in February 2011. This resulted in the City devoting its full attention to achieving the City's energy reduction goals and targets.

The emphasis of the scope of work under the EMP has now shifted from being driven by the availability of external grant and incentive funding to focus more fully on the City's Sustainability Framework and operational needs. In addition, the EMP can now look to further develop internal systems to allow for the enhanced sharing of energy information between departments, the increased quality of energy data, and the increased quality of energy management project evaluation and implementation.

2010 and 2011 Achievements

Since 2010, the City's EMP has been busy with multiple projects, and strategic planning to align the program with the City's Sustainability Framework and to continue the program's development.

Select highlights of the City's EMP from 2010 and 2011 include;

- The securing of approximately $500,000 of external funding to support the Corporate Energy Management Program
- The installation of solar thermal hot water systems to pre-heat water at Steveston Outdoor pool[3], South Arm Outdoor Pool, and Minoru Pool – the project consisted of installing approximately 20 solar thermal panels at each location in conjunction with the upgrading of the facilities boilers

[3] Project under construction and scheduled to be completed by October 31, 2011.

- The facilitation of a ballast and lighting retrofit, in conjunction with the Oval Corporation, for the Richmond Olympic Oval, which is estimated to save approximately 500,000 kWh of electrical energy per year. Other lighting control measures that are being implemented by the Oval Corporation at the same time will increase the energy savings of this project to approximately 1,000,000 kWh, or approximately $70,000 annually in cost avoidance due to energy savings

- The development of a corporate energy awareness program, with support of BC Hydro, to promote energy conservation measures with staff, which the City has entitled Because Energy Awareness Matters (BEAM). Under this program Year 1 of the BC Hydro Workplace Conservation Awareness (WCA) program was recently completed with lots of support from our designated energy champions and staff. Initiatives and strategies for Year 2 will be developed this fall to further build on the WCA program's initial successes.

- Pilot project to use light-emitting diode (LED) street lighting instead of metal halide lighting along Lansdowne Road between Hollybridge Way and Gilbert Road to compare the performance and maintenance requirement. As a result of the positive results to date, the use of LED street lights will be extended into the adjacent River Green development.

- The increased development of the district energy utility (DEU) portfolio has been fully endorsed by Council and construction of the first DEU in West Cambie (Alexandra District Energy Utility) is underway, with several others under feasibility review, and

- The completion of three LEED certifiable Gold buildings that included energy saving measures such as; geothermal heating, solar hot water system, green roofs, installation of high efficiency heat pumps and mechanical systems, and passive design aspects to increase daylight within the building (to reduce lighting) and to allow for natural ventilation. The three buildings that achieved this LEED standard are Steveston Fire Hall No.2, Hamilton Community Centre, and the RCMP Safety Building renovation.

More detailed accounts of EMP projects completed in 2010 and 2011are provided in **Attachments 3 and 4.**

Future EMP Vision and Goals

Throughout the development of the City's Energy Management Program, the program has been extremely successful in implementing energy saving projects that have contributed to reduced corporate energy use, energy cost avoidance, and reduced GHG emissions. However, with the establishment of key strategies within the City's Sustainability Framework, which include not only the establishing and realizing of energy and GHG reduction targets, but also empowering the community and corporate organization, the City's program will need to be expanded to fully support the framework's objectives.

To allow for the EMP to develop further and to align it more closely with the Sustainability Framework (Sustainable Resource Use and Climate Prepared City), the following key energy

management strategies, in connection with the overriding Sustainability Framework strategies (**Attachment 1**), will be required;

- Increase energy use awareness within the organization and community
- Continue to seek out external funding and partnerships with outside agencies
- Maintain a leadership role in terms of municipal energy systems and policy
- Improve the "usability" of our energy use data at key facilities, to allow for more detailed analysis and the increased optimization of our energy use
- Incorporate a more systematic approach to building energy use performance analysis and benchmarking of our civic facilities, to allow for the continued improvement of our facilities, and the extension of their usefulness
- Continue to ensure that energy use and GHG emission accounting (in relation to reduction goals) is a high priority during the designing of new facilities and developments

The EMP 2011/2012 workplan was developed in order to fulfill the strategies listed above, and to continue the positive and successful development the Energy Manager's role. Key highlights of the workplan include the following action items to support the Sustainability Resource Use-Energy Smart City goal of the Corporate Sustainability Framework.

Sustainability Resource Use-Energy Smart City

Strategies	Empower	Reduce	Localize	Renew
Develop a pilot introduction presentation for City energy use stakeholders (community centres) and corporate partners (city departments), to better inform the organization about energy management best practices, our City energy use, and civic policies concerning energy and GHG emissions	✓			
Develop an energy reduction challenge pilot program to be run at our respective community centres, to encourage information sharing between the City and stakeholders, as well as promoting energy awareness	✓	✓		
Complete Year 2 of the workplace conservation awareness program	✓			
Facilitate partnership with the Richmond School Board to further build up energy awareness with students; investigate potential joint symposium with focus on youth	✓	✓	✓	
Continue to facilitate energy reduction projects through the BC Hydro Power Smart Program		✓		
Continue to seek out funding and support from Fortis BC, and the provincial and federal governments, for energy management projects and initiatives that are inline with City objectives		✓		
Initiate the BC Hydro Continuous Optimization program at four facilities[4] (mostly supported by BC Hydro), which will involve the upgrading of the electrical and gas meters to real-time monitoring enabled and the completion of a nine to twelve month study to determine energy use optimization measures – this program is expected to reduce electrical and gas use from between 5-20% at each of the facilities involved	✓	✓	✓	
Develop an energy auditing and study schedule and scope of work for City assets, most notably buildings, to be able to reliably and continually identify worthwhile (economically, environmentally, and socially) energy management projects, and independently evaluate projects after completion	✓	✓	✓	
Establish corporate energy and GHG emissions reduction targets for the City, to allow for benchmarks and goals to be set that will drive the Corporate Energy Management portfolio, and allow for energy use and GHG emission projections from new developments to be analyzed in the context of our overall reduction targets	✓	✓	✓	
Facilitate the acquiring of benchmarking energy use data from external local municipal sources for corporate facilities (based on size and usage), to be able to compare City facilities to similar regional examples and to be able to focus City of Richmond resources on under performing assets	✓	✓		

[4] The four facilities to be included are Watermania, Richmond Ice Centre, City Hall, and the Main Library and Cultural Centre.

The funding strategy for these programs will be brought forward as part of the operating budget process for consideration by Council.

Financial Impact

There is no financial as a result of this report. Capital projects related to energy management and district energy are reviewed through the capital budget process.

Conclusion

The Energy Management Program has been successful in implementing corporate energy saving projects and has lead to new civic buildings constructed to high energy efficiency standards. Under Council's guidance, the City has consistently shown leadership in this area, which has enabled the City to leverage a considerable amount of external funding to support and develop its Energy Management Program (EMP). To further develop the EMP so that it aligns more closely with the adopted Sustainability Framework, the future vision of the EMP includes the empowering of the organization and community, with a focus on energy awareness knowledge programs, as well as the realizing of energy and GHG reduction targets though continued energy saving projects, such as retrofits.

/FOR

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Corporate Energy Manager
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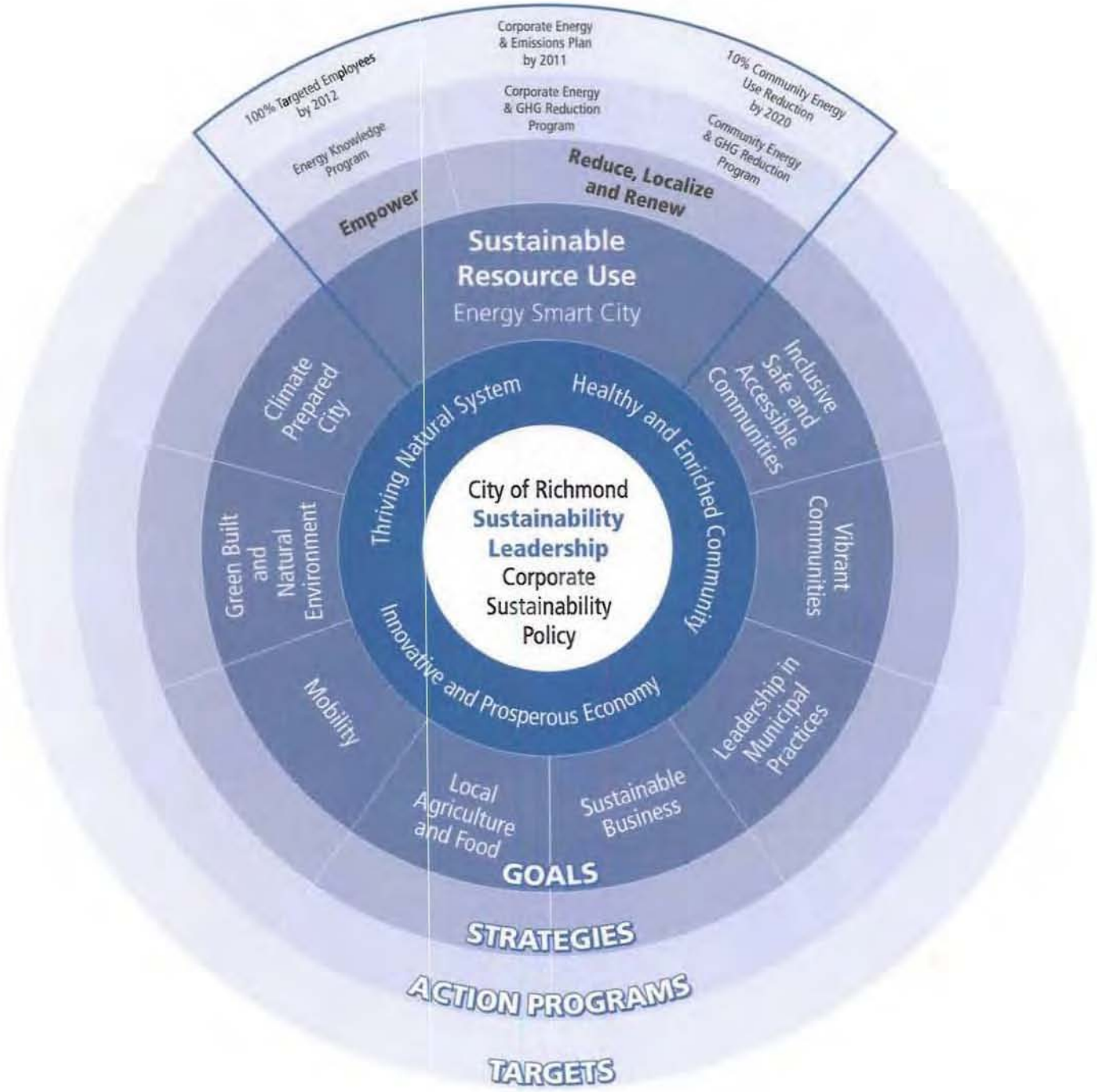
Attachment 1: City of Richmond's Corporate Sustainability Framework-Energy Strategic Program (REDMS 3372370)
Attachment 2: Energy Report Summary – 2011 (REDMS 3375664)
Attachment 3: City Energy Management Program –2010/2011 Key Initiatives (REDMS 3367517)
Attachment 4: Summary of 2011 Energy Management Projects (REDMS 3367517)

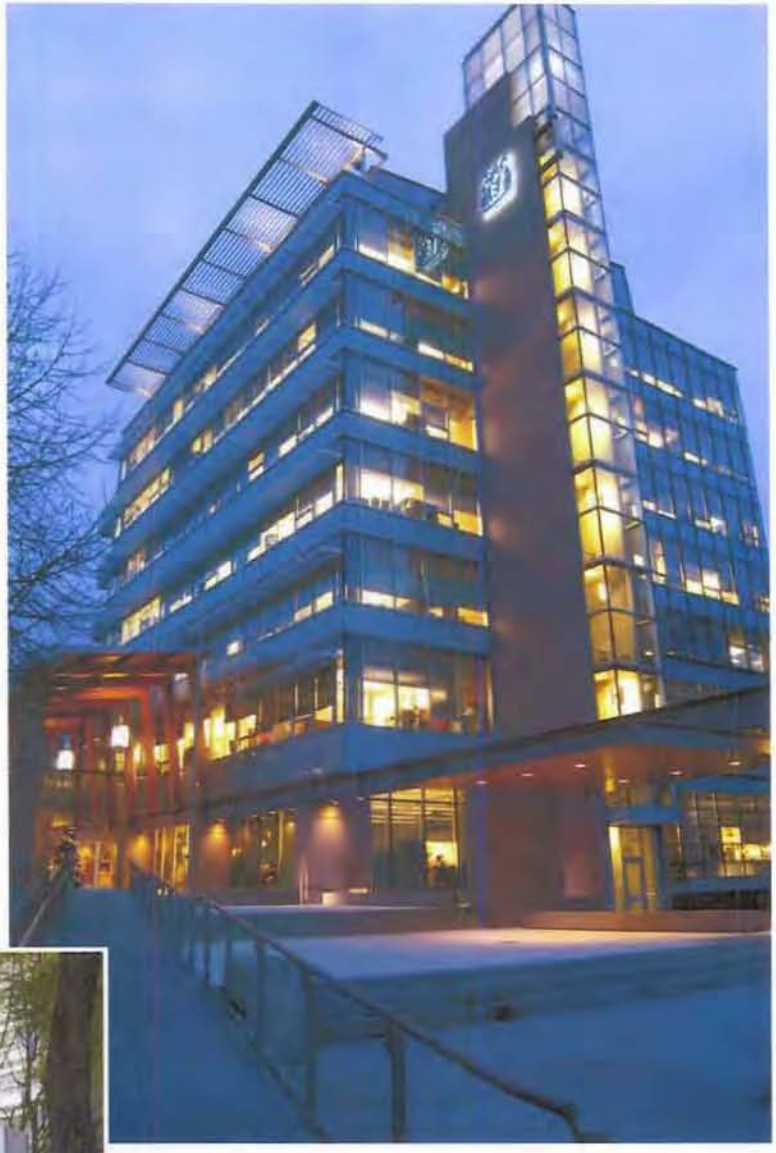
[5] The four facilities to be included are Watermania, Richmond Ice Centre, City Hall, and the Main Library and Cultural Centre.

City of Richmond's Corporate Sustainability Framework
– Energy Strategic Program –



Energy Update Report

Summary 2010/2011



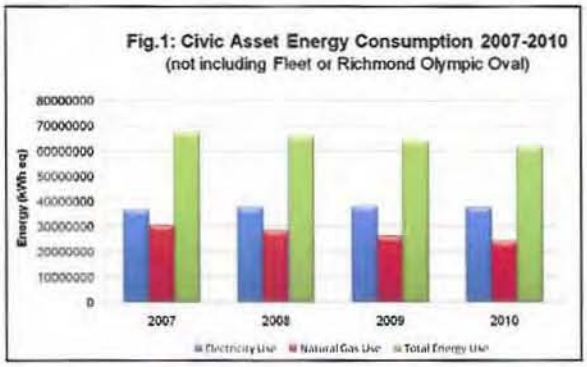
Richmond

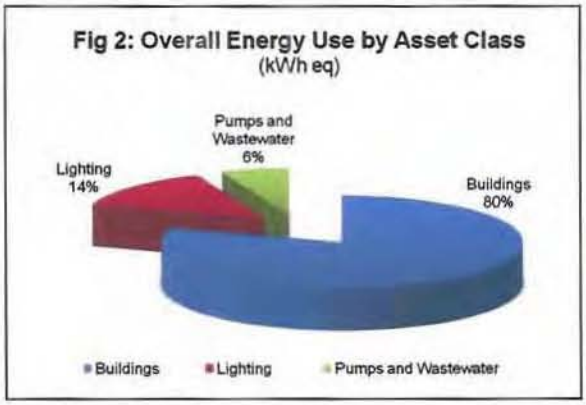
- Cost of energy in 2010 for the City of Richmond buildings (not including the Oval), lighting, pumps and wastewater systems =

  $4.4 million dollars or 61,573,000 kWh (electricity and natural gas).

- As compared with 2009 energy consumption for these services decreased by approximately **2,611,000 kWh** or enough energy to power approximately 300 homes in the Lower Mainland.

- Energy use at civic buildings accounted for **approximately 80%** of the total 61,573,000 kWh used in 2010 (48,676,000 kWh), which consists of approximately 90 facilities.





- Of the 90 civic facilities under City stewardship, energy use in 2010 at only **11** facilities accounted for over **80%** of the overall civic building energy use.
- Recreational pools and ice arenas were our highest energy consuming facilities - with **Watermania, Richmond Ice Centre, Minoru Pools and Minoru Arenas** accounted for 43% of the energy used by civic buildings in 2010.
- Given this large percentage of civic energy used by a small number of facilities, high priority should be placed on investment for energy management initiatives at these locations foremost.
- As well placing a high priority on efficient energy system design during the development phase of new facilities (specifically pools and ice arenas), will go a long way in ensuring that our corporate energy and GHG reduction targets can be met in the long term.

- Secured approximately **$500,000** of external funding to support the Energy Management Program.
- To reduce our civic natural gas use, solar thermal hot water systems, to pre-heat water, were installed at Steveston Outdoor pool, South Arm Outdoor Pool, and Minoru Pool.
- Helped facilitate a ballast and lighting retrofit at the Richmond Olympic Oval, which is estimated to save approximately **500,000 kWh** of electrical energy per year.
- Developed a corporate energy awareness program, with support of BC Hydro, to promote energy conservation measures, which the City has entitled Because Energy Awareness Matters (BEAM).
- Under this program Year 1 of the BC Hydro Workplace Conservation Awareness (WCA) program was recently completed with lots of support from our designated energy champions and staff. The WCA program included initiatives such as a monitor shutdown challenge and a workspace tune-up tutorial.
- Initiatives and strategies for Year 2 will be developed this fall to further build on the WCA program's initial successes.

South Arm Outdoor Pool - Solar thermal panels

Richmond Olympic Oval

- Three LEED certifiable Gold buildings will have been opened in 2011 – Hamilton Community Centre, Steveston Fire Hall (No.2), and the new Safety building.
- Numerous energy saving measures were included in these projects, to reduce energy use and green house gas emissions.


Hamilton Community Centre


Steveston Fire Hall (No.2)

Steveston Fire Hall (No.2)

- Energy saving measures at the new buildings included;
  - geothermal heating and cooling system at the Steveston Fire Hall – to reduce heating costs and natural gas use
  - solar hot water systems – to reduce domestic hot water heating costs and natural gas use
  - installation of high efficiency heat pumps and mechanical systems – to reduce heating and cooling costs and energy use
  - green living roofs – to reduce run off, urban heat island effect and heating and cooling costs
  - daylight harvesting where using skylights and large windows – to reduce lighting cost and electrical use
- These buildings continue the tradition of constructing "sustainable high performing buildings", such as Sea Island and Hamilton Fire Halls, which were built to LEED Silver and Gold standards, respectively in 2007.


Daylight [illegible] Steveston Fire Hall


Solar thermal panels – Hamilton Community Centre


Solar thermal panels – Hamilton Community Centre


Sea Island Fire Hall


Hamilton Fire Hall


Green roof – Steveston Fire Hall

- Continue leadership role of the Municipality in regards to energy management best practices
- Align the Energy Management Program so it is more connected with the Sustainability Framework
- Empower the organization and community, with a focus on energy awareness knowledge programs

Action Items include:

- Develop and deliver an introduction presentation for City energy use stakeholders (i.e. community centres) and corporate partners (i.e. city departments), to inform and empower
- Develop and deliver an energy reduction challenge pilot program to run at our respective community centres, that rewards community centres for energy reduction initiatives and awareness, and encourages information sharing between the City and stakeholders
- Continue to facilitate energy reduction projects through the BC Hydro Power Smart Program
- Real-time energy monitoring data collection - to reduce electrical and gas use from between 5-20% at each of the facilities involved
- Complete Year 2 of the workplace conservation awareness program
- Develop an energy auditing and study schedule and scope of work for City assets, to be able to reliably and continually identify worthwhile energy management projects, and independently evaluate projects after completion.
- Establish corporate energy and GHG emissions reduction targets for the City

BEAM
Because energy awareness matters

BC hydro
powersmart

City Energy Management Program –2010/2011 Key Initiatives

Management Areas	2010/2011 Key Initiatives
Plan	*Energy Strategic Planning:* • Secured over $500,000 in external grant applications in 3 years to support energy initiatives efficiency initiatives such as o Solar thermal panel installations at Steveston and South Arm Outdoor Pool, and Minoru Pool o Funding in 2010 and partly in 2011 for Energy Managers and Energy Specialist positions o Lighting retrofit projects • Concluded RFEOI for external energy audit consultants to complete on-going assessments of building energy performance and energy saving projects – decision is pending for energy consultants to be selected and scheduling to be determined • Developing RFP to completed an evaluation of Richmond's future corporate energy needs 2020 and beyond and to aid in the development of corporate energy and GHG reduction targets
Do	*Building Capacity* • Workplace conservation Awareness program Year 1 completed, Year 2 in planning stages. • Greater involvement and communication Energy Manager within different departments has been initiated, to ensure that energy management projects are conducted as efficiently and seamlessly as possible • Information sharing opportunities within the organization will be evaluated, including introduction presentation, to build corporate energy awareness *Reducing Energy Use* • Application of leading-edge technology energy efficiency and alternative energy initiatives o Steveston and South Arm Outdoor Pools, and Minoru Solar Thermal Panels – to pre-heat water o LED lighting technology for existing lighting upgrades, Watermania, Steveston Community Centre, and City Hall o Optimization of energy using systems at four key facilities, through the BC Hydro Continuous Optimization Program – with an aim to reduced energy use at each by 5-20%. *Increasing Financial Security & Stability* • over $60,000 in avoided cost escalation through energy and maintenance savings (not including the Richmond Olympic Oval reduction – est. to be approximately $75,000)
Monitor & Report	*Improving Energy Monitoring System* • Continue to improve and reconcile corporate-wide asset energy tracking inventory, which is web based • Upgrading of the energy monitoring capabilities at four facilities to real-time by the end of 2011 (City Hall, Watermania, Richmond Ice Centre, and Main Library/Cultural Centre) – in order to reduce usage. *Reporting Performance* • Annual Corporate-wide Energy update report to Council • In the process of developing monthly reporting system to stakeholders (i.e. community centres, recreation facilities, and fire halls)
Innovate & Improve	*Exploring New Approaches and Technologies* • The following projects and feasibility of further evaluation will be assessed in the coming months o Sewage heat recovery system at Gateway Theatre o Demo Wind and water Turbines o LED street and parking lot lighting *Energy Management System Evaluation* • Planning on participating in a energy management system assessment (third-party), through BC Hydro

Summary of 2011 Facilities Management Project Development
Energy Management Projects

	Project location	Description	Project capital Cost	Estimated Annual Energy and Maintenance Cost Avoidance	Secured Incentive (paid or signed agreement in place)	Source of External Funding	Notes
Projects							
1	Minoru Aquatic Centre	Solar thermal panel installation	$120,000	$3,500	$91,839	RInC	In Progress
2	Steveston Outdoor Pool	Solar thermal panel installation and boiler replacement	$144,399	$4,000	$43,320	RInC	In Progress
3	South Arm Outdoor Pool	Solar thermal panel installation and boiler replacement	$134,090	$4,500	$40,227	RInC	Competed
4	Steveston Community Centre	Lighting retrofit	$23,377	$5,000	$10,062	RInC	Completed
5	Japanese Cultural Centre	Lighting retrofit	$6,895	$1,400	$3,252	BC Hydro	Completed
6	Works Yard	Lighting retrofit	$31,329	$4,100	$13,864	BC Hydro	Completed
7	Steveston Pool	Lighting retrofit	$28,607	$3,000	$9,490	BC Hydro	Completed
8	Watermania	Lighting LED retrofit	$49,697	$10,000	$21,686	BC Hydro	In Progress
9	Steveston Community Policing Building	Lighting retrofit	$4,180	$750	$1,886	BC Hydro	Completed
10	Salmon Festival Building	Lighting retrofit	$26,614	$3,500	$11,338	BC Hydro	Completed
11	City Hall	Lighting LED retrofit completion	$31,560	$11,000	$15,780[1]	BC Hydro	In Progress
12	Richmond Olympic Oval	Ballast replacement and increased lighting control	$230,000	$75,000	$92,000[1]	BC Hydro	In Progress
Total Projects			**$830,748**	**$130,250**	**$338,964[2]**		

[1] Agreement for incentive yet to be signed, but discussions indicate that BC Hydro would fund approximately 40-50% of the project.
[2] Total secured funding does not include external funding received to support civic positions or funding received for completed studies