

NO: **R038**

COUNCIL DATE: **March 11, 2013**

REGULAR COUNCIL

TO: **Mayor & Council**

DATE **March 6, 2013**

FROM: **Sustainability Manager**

FILE: **0512-02**

SUBJECT: **Corporate Emissions Inventory 2011 and Progress Report on Corporate Emissions Action Plan Implementation**

RECOMMENDATION

The City Manager's Department recommends that Council receive this report as information.

INTENT

The purpose of this report is to provide an update on the City's corporate greenhouse gas emissions inventory for 2011, and progress made in 2012 on implementing the Corporate Emissions Action Plan.

BACKGROUND

In September 2008, Council approved the recommendations of Corporate Report No. R175; 2008, titled "Surrey Sustainability Charter", thereby approving the Surrey Sustainability Charter as the overarching policy document for the City. The Charter includes a commitment to develop a climate change action plan and to reduce energy use in corporate operations.

On October 14, 2010, Council considered Corporate Report No. R214; 2010 titled "City of Surrey Corporate GHG Emissions Action Plan", and approved the City's Corporate Emissions Action Plan (CEAP). Ambitious targets for reducing corporate GHG emissions by 20% by 2020 (from a baseline average using data from 2005-2009) are set in that Plan, and 13 actions are identified to reduce emissions in the areas of buildings, fleets and infrastructure and with respect to leadership and public engagement.

DISCUSSION

The City produces an annual inventory of corporate fuel usage and resulting greenhouse gas (GHG) emissions. Following provincial guidelines, fuel use is divided into six Service Areas, these being:

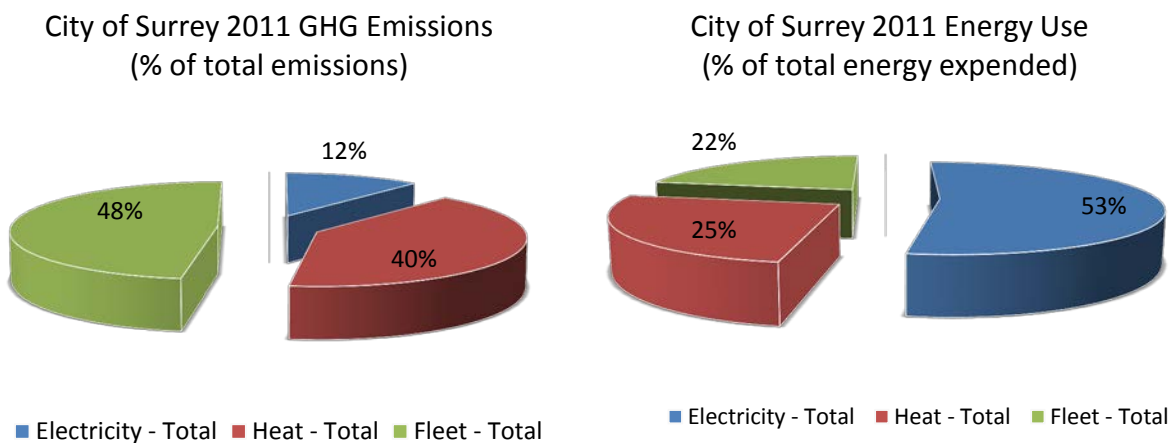
- Fire Protection;
- Solid Waste Collection, Transportation and Diversion;

- Arts, Recreational and Cultural Services; and
- Road and Traffic Operations;
- Drinking, Storm and Waste Water; and
- Administration and Governance.

A simple Excel tool (called the “Cool Tool”) from the Pembina Institute has been used since 2009 for tracking purposes. The City’s emissions inventory includes GHG emissions from vendors who are contracted to provide traditional services to the City, including waste collection and streetlight maintenance.

In 2011, the City of Surrey’s corporate GHG emissions were 15,540 t CO₂e (tonnes of carbon dioxide equivalent). As noted below in Figure 1, 48% of these emissions came from fleet vehicles, 40% from natural gas used for heating buildings and 12% from electricity. Total energy use was 492,128 GJ (gigajoules) with 53% coming from electricity, 25% from natural gas, and 22% from other fuels consumed by fleet vehicles. In 2011, contractor emissions made up 20% of the City’s total carbon footprint, with the remaining 80% emanating from municipal operations.

Figure 1: City of Surrey 2011 GHG Emissions and Energy Use



Total emissions decreased in 2011 to 15,540 t CO₂e from 15,613 t¹ of CO₂e in 2010 despite the City having grown by about 3% in population and several new civic facilities were opened to support this growth. Natural gas realized a 2% reduction in GHG emissions for City operations from 2010 to 2011, a result of retrofits to several key facilities. Fleet saw a 1% decrease in the same time period. The City’s electricity consumption rose by 8% between 2010 and 2011, mainly due to new facilities coming on stream including the Cloverdale Recreation Centre, Fire Hall #14, the RCMP Annex, and the new City Centre Library. However given that electricity produced in BC has relatively low GHG emissions, total corporate emissions did not change significantly.

The 2012 corporate emissions inventory will be prepared by June 2013.

¹ The emissions total noted here for 2010 differs slightly from the number presented in Corporate Report No. R056; this is due to minor refinements to the 2010 inventory that were completed after the April 2, 2012 Council meeting.

Future Improvements to Emissions Inventory

Quantification of corporate emissions will continue to be refined over time. Staff is working to integrate carbon accounting into the new Financial Management System that is being installed. This will reduce error and save time.

Staff are now using revised vehicle reimbursement and trip expense claim forms that include GHG data and increase employee awareness of the impact of different modes of travel on the City's carbon footprint. Further, based on direction from the Province in the Carbon Neutral Local Government framework, the City is working with its contractors to better integrate their fuel data into the corporate emissions inventory. While not required in the corporate inventory, GHGs have been calculated from current staff commuting patterns so that comparisons can be made going forward.

Corporate Emissions Action Plan Implementation

A number of initiatives are underway to further reduce corporate emissions; these projects are expected to have a positive effect on the City's energy and emissions performance. Of particular note is the ongoing greening of the City's vehicle and equipment fleet; workplace conservation awareness programs; boiler replacements and other upgrades at key facilities; opportunities to design low-energy buildings that incorporate renewable energy; and district energy systems. The new waste management collection system using Compressed Natural Gas trucks will also play a key role in reducing the corporate carbon footprint in 2013 and beyond.

The corporate emissions reduction target of 20% by 2020 is very ambitious and positions Surrey as a leader in taking action on climate change. While a number of initiatives are underway through the implementation of the Corporate Emissions Action Plan to move towards this target, it should be recognized that the City's growth- including the expansion of new facilities through the Build Surrey program - will make reaching the target in the proposed timeframe challenging.

The City was recently recognized by the Federation of Canadian Municipalities for having achieved the last two corporate milestones in its five-step Partners for Climate Protection program. These two milestones are:

- (4) Implementing a local action plan to reduce corporate emissions; and
- (5) Monitoring progress and reporting results.

Surrey is one of only 15 local governments across Canada to achieve corporate Milestone 5.

Attachment A to this report documents the actions that were completed in 2012 related to the implementation of the recommendations of the CEAP, and documents the priority actions for 2013.

SUSTAINABILITY CONSIDERATIONS

All City Departments continue to pursue sustainability initiatives that further the goals of the Surrey Sustainability Charter. The Corporate Emissions Action Plan addresses several of the Actions identified in the Sustainability Charter as follows:

- EC 8: Energy Security
- EC 16: Increased Transit and Transportation to Support a Sustainable Economy
- EN 1: Energy Efficiency
- EN 2: Waste Reduction
- EN 3: Vehicle Fleet Programs
- EN 4: Employee Trip Reduction Program
- EN 5: Green Procurement Policies and Practices
- EN 9: Sustainable Land Use Planning and Development Practices
- EN 10: Integrated Community Energy Master Plans
- EN11: Surrey's Commitment to the Climate Change Action Plan

CONCLUSION

The Surrey Corporate Emissions Action Plan is guiding City policy development and actions to reduce GHG emissions across civic buildings, the City's vehicle and equipment fleet and civic infrastructure. Actions that have been implemented to date are having a positive effect on the City's GHG emissions despite the City continuing to grow rapidly. Actions planned for 2013 will build on the successes that have been achieved to date.

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Attachment A: City of Surrey Corporate Emissions Action Plan – Progress on Implementation 2012-2013

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Corporate Emissions Action Plan Actions	CEAP Sub-Actions	General Description of 2012 Activities	2013 Priority Activities
1) Ensure high energy performance of new facilities (Facilities Division, Planning & Buildings Dept)	Continue its practice, for all new facilities and major expansions, of evaluating the capital cost requirements and operating energy and carbon savings from constructing to the most current energy standard in ASHRAE 90.1 (where applicable).	Design for New Facilities: Design for Grandview Aquatic Centre is targeting LEED Gold. Designs for Guildford and South Surrey Rec Centres are shadowing LEED. The new works yard is being designed to LEED Silver.	Design for New Facilities: Continue to design new facilities and major expansions for high energy and environmental performance when applicable.
	Consider the development of a corporate policy that would require all new buildings to go beyond the building code and achieve a certain level in the LEED rating system or meet the performance standards of the <i>most recent version</i> of ASHRAE 90.1 (currently 2007).	Performance Standards: All facility designs meet ASHRAE 90.1 energy standard, as per the new provincial Building Code. When feasible, designs aim to go beyond the Building Code.	
2) Conduct audit and retrofit activities in City facilities (Facilities Division, Planning & Buildings Dept)	Conduct audits on all identified facilities within 5 years (see Appendix B). Specifically, it is recommended that the City: <ul style="list-style-type: none"> • Conduct Level II audits on those buildings consuming more than 2,000 GJ per year (18 facilities) over 3 years. • Conduct Level I audits on all facilities consuming between 500 and 2,000 GJ annually (25 buildings) over 3 years. • Apply to BC Hydro's 	Energy Audits: Level 2 energy audits were completed for 56 civic buildings by AMERESCO. The review found that energy performance is high and had few recommendations for improvement. AMERESCO is interested in showcasing the City of Surrey in a white paper on best practices. Retrofits: Fleetwood hot-water tank and cooling tower replacement and the Newton Library Boiler was replaced.	2013 City Facility Retrofits: Lighting upgrade at Guildford Rec and Library Lighting upgrade at Surrey Sports and Leisure Complex Surrey Art Centre Boilers and Chiller replacement South Surrey Arena Boiler replacement Newton Library Chiller Replacement

Corporate Emissions Action Plan Actions	CEAP Sub-Actions	General Description of 2012 Activities	2013 Priority Activities
	Continuous Optimization Program to access funds for recommissioning of the 14 larger buildings.		Replace the windows and skylights at Fire Hall #1, Cloverdale Library and Cloverdale Curling Rink.
	Implement all activities identified that have a simple payback of 7 years or less.		
	Work to secure partner funding for all major retrofit activities.		
3. Include alternative energy evaluation in replacement, renovation, and maintenance activities (Facilities Division, Planning & Buildings Dept)	Continue its practice of purchasing the most energy efficient equipment available with a simple payback of seven years or less within available budgets	Energy Retrofits: Newton Library and Surrey Arts Centre are being retrofitted with more efficient boilers. Lighting in Bridgeview Community Centre is being replaced with LEDs and insulation will be upgraded.	Ongoing Evaluation: Continue to evaluate replacements, renovations and maintenance with consideration for energy and emissions savings. Two facilities that require upgrades, including Firehall #11, will be retrofitted with more efficient boilers.
4. Develop ongoing energy management activities (Facilities Division, Planning & Buildings Dept)	Evaluate opportunities for alternative energy or innovative technologies at the time of major equipment replacements		
	Increase the awareness of energy considerations in facility operations activities	Energy Monitoring Software: The vendor of existing Direct Digital Control systems is development software that will display energy use as a visual dashboard, for raising public awareness. The software is scheduled to be ready by end of 2012.	
	Partner with the Sustainability Office to identify opportunities related to energy management and	New Financial Management System: A new system that will report on GHG emissions and energy was developed and is being tested.	Implement New Financial Management System: The system will be implemented in 2013.

Corporate Emissions Action Plan Actions	CEAP Sub-Actions	General Description of 2012 Activities	2013 Priority Activities
	conservation.		
	Consider establishing a formal Energy Management Committee to provide input and resources to these issues	Potential to have quarterly check-in meetings with Facilities and Finance to review status and energy performance of buildings; Maggie to organize scoping meeting	
	Partner with BC Hydro, Terasen and others to pursue funding opportunities, including those sources outlined in Table 4	Funding Opportunities: Four of six funding applications made to Infrastructure Canada and Fortis BC were successful, covering up to 90% of equipment purchases for retrofit projects.	Funding: Continue to work with BC Hydro and others to pursue funding opportunities.
5. Continue implementation of green fleet management activities (Operations Division, Engineering Dept.)	Obtain E3 fleet certification by the end of 2010		
	Continue efforts to reduce fuel use and emissions from fleet vehicles	<p>Life Cycle Assessment: The City is beta-testing a tool that is being developed by the SFU School of Mechatronics that compares the economic and environmental performance of conventional and alternative fuel vehicles.</p> <p>Car-Sharing Program: A pilot of a program that pools City vehicles from all departments for use by all employees is underway.</p>	<p>Car-Sharing Program: A full car-sharing program will be rolled out with the move to the new City Hall.</p> <p>Staff Transportation Demand Management: A number of initiatives will encourage staff to choose alternative transportation for their commutes, include: lunch and learns, one-on-one training, end-of-trip cycling facilities, switch to paid parking at the new City Hall, and expansion of City fleet by partnering with a car-share service.</p>
6. Establish an alternative vehicle pilot program	Commit to pilot testing a small number of commercially available alternative vehicles as they	Green Fleet: The City continued its alternative fuel vehicle pilot, bringing the total of green vehicles to 2 electric vehicles, 5 hydrogen vehicles, and 3 compressed natural gas (CNG)	Green Fleet: The City will purchase four more electric vehicles for deployment at the new City Hall.

Corporate Emissions Action Plan Actions	CEAP Sub-Actions	General Description of 2012 Activities	2013 Priority Activities
<p>(Operations Division, Engineering Dept.)</p>	<p>are available.</p>	<p>trucks.</p> <p>Electric Vehicle Charging Stations Project: The City received funding for fourteen Level 2 charging stations that will be installed at 7 civic facilities (including 5 fleet charging stations at New City Hall). A procurement process is underway and stations are expected to be ready by Spring 2013.</p>	<p>Electric Vehicle Charging Stations Project: Most of the EV stations will be installed and available to the public by March 2013. Stations located at the new City Hall will be available when the facility opens.</p>
	<p>Consider branding the initiative as the “<i>Surrey Alternative Vehicle Pilot Program</i>” in an effort to showcase the City’s efforts, and innovative approaches and demonstrate leadership in the community. This could include a range of features – labeling of the vehicle, a GPS tracker connected to a website, etc</p>		
	<p>Document results – both favourable and unfavourable to ensure that lessons learned can be shared with others</p>		
<p>7. Investigate potential for alternative energy demonstration (Various depts.)</p>	<p>Identify and implement alternative energy demonstration projects over the next 2 years.</p>	<p>Organics Biofuel Facility: The City and the federal government announced a public-private partnership to build the facility.</p> <p>City Centre District Energy System: Construction of a geoexchange field for the system started. Council adopted the District Energy System Bylaw (No. 17667), which sets new requirements for in-building mechanical systems for development projects and includes</p>	<p>Organics Biofuel Facility: A private partner will be chosen through RFQ and RFP processes to design, build, finance, operate, and maintain the facility in a long-term agreement. The facility is expected to be online in 2014.</p> <p>City Centre District Energy</p>

Corporate Emissions Action Plan Actions	CEAP Sub-Actions	General Description of 2012 Activities	2013 Priority Activities
		<p>an Early Adopters Policy that provides repayable financial assistance to eligible proponents of residential projects to install hydronic heating and hot systems that are immediately connectable to the DE system.</p> <p>Combined Heat and Power (CHP) System: Surrey City Energy is building in a biomass CHP system into its utility planning. The City has applied for funding from P3 Canada to further study biomass CHP.</p>	<p>System: The geoexchange field is expected to begin operation when the new City Hall opens.</p>
<p>8. Evaluate and implement street-lighting alternatives (Various depts.)</p>	<p>Continue to study the feasibility of alternative street-lighting and, depending on the business case, look to implement solutions on a larger scale within the next 3 years</p>	<p>Ongoing Implementation: Testing of LED brands will be complete in December. LED Working Group: The City is participating in a consortium of municipalities around BC and BC Hydro to create design criteria and specifications around LED street lights, share experiences with pilot projects, and pursue group purchasing discounts.</p>	<p>Ongoing Implementation: Once decision is made on whether to switch to LED lights, Traffic Operations can consider implementing adaptive street lighting, since the adaptive system needs to be specifically compatible with the lighting system.</p>
<p>9. Implement user control lighting and artificial turf for major sports fields (Various depts.)</p>	<p>Continue to implement user control lighting and artificial turf at major sports fields as Appropriate</p>	<p>New Installations: A new field was installed at Newton Athletic Park. New user-control lighting was installed at Newton and South Surrey Athletic Park.</p> <p>User Control Lighting Upgrade: Lighting systems at five all-weather sports fields were upgraded.</p>	<p>New Installations: A new artificial turf field will be installed at South Surrey Athletic Park.</p>
<p>10. Establish a procurement policy that considers energy and GHG emissions (Sustainability Office, City)</p>	<p>Develop a sustainable procurement policy that considers energy and GHG emissions</p>	<p>Sustainable Purchasing Program: A program was developed based on interviews with managers across the City and a survey of municipalities and organizations across Canada.</p>	<p>Further Develop Sustainable Purchasing Program: Staff will continue to develop the Sustainable Purchasing Program.</p>

Corporate Emissions Action Plan Actions	CEAP Sub-Actions	General Description of 2012 Activities	2013 Priority Activities
Manager's Dept.)			
11. Encourage energy conservation behaviours in the workplace (Sustainability Office, City Manager's Dept.)	Develop a strategy to engage staff in energy conservation behaviours in the Workplace	Workplace Energy Conservation Awareness Program: The program with support from BC Hydro was launched at four aquatic centres and nine libraries. Monthly events were held to engage staff and two surveys were completed to assess employee awareness of and behaviours around energy conservation before and after the program.	Continue and possibly expand the Workplace Energy Conservation Program: If there is capacity, the program will be expanded to other town centres and recreation centres as well as to the new City Hall. SO will look at ways to support existing program including through staff recognition.
12. Consider expanding energy and emissions monitoring and reporting (Sustainability Office, City Manager's Dept.)	Explore its current capacity to track additional corporate GHG emissions (e.g., paper use, employee commuting, etc).	New Financial Management System: A new system that will report on GHG emissions and energy was developed and is being implemented.	Implement New Financial Management System: The system will be implemented in two phases. The first will be in January and the second will be in June.
	Put systems in place (where necessary) to allow for ongoing monitoring and reporting of these GHG emissions. This may include continuing use of the Cool Tool for inventory purposes, or adopting a new tool such as the provincial SMARTTool		
	Compile an annual report on the carbon footprint from the previous calendar year, including a brief discussion on energy management and GHG reduction activities.	Annual Corporate Reports: Corporate reports on the past year's actions and priorities for the following year are submitted to Council. The first was in April 2012.	Continue Annual Corporate Reports: Annual corporate reports on the progress of the CEAP will continue to be submitted to Council every year.
Make a decision on which additional GHG emissions will be tracked (and possibly	Tracking Vendor Emissions: As per the Province's requirements, the City will be collecting fuel consumption data from its	Continue Tracking Vendor Emissions: The City will add a clause to solicitation documents	

Corporate Emissions Action Plan Actions	CEAP Sub-Actions	General Description of 2012 Activities	2013 Priority Activities
	reported) in the future.	<p>vendors. Vendors were notified and provided with a fuel tracking form.</p> <p>Better Mileage Reporting: Vehicle mileage reporting forms now allow individuals to select vehicle type, which will enhance fuel consumption reporting.</p> <p>Carbon Accounting Feature in Employee Travel Form: Employee travel forms now integrate a feature that reports on transportation fuel use, for employee education and enhanced fuel consumption reporting.</p> <p>Employee Commuting Survey: A survey on employee commuting was completed. The collected information provides an emissions baseline for employee commuting.</p>	<p>and contracts that require vendors to provide fuel consumption data. The City will also provide subsidies for up to 20 interested Surrey-based businesses to undertake carbon accounting training with Climate Smart.</p> <p>Integrate Mileage and Carbon Accounting Data: These data will be integrated into the new Financial Management System.</p> <p>Update Employee Commuting Survey: A second survey will be completed once staff move to the new City Hall.</p>
<p>13. Continue to dedicate CARIP rebate to sustainability related activities (Sustainability Office, City Manager's Dept.)</p>	<p>Continue to direct the CARIP rebate to an operating budget (or reserve fund) specifically dedicated to promoting sustainability activities within its corporate operations, and throughout the community.</p>	<p>Carbon Neutral Strategy: The City adopted a "making progress" strategy for 2012, to invest in community-based projects that will reduce emissions.</p> <p>In 2012, Council approved using up to \$108,000 of the CARIP funds for the City's portion of Electric Vehicle (EV) charging station pilot project.</p>	