

NO: R120

COUNCIL DATE: May 28, 2018

REGULAR COUNCIL

TO: Mayor & Council **DATE: May 24, 2018**

**FROM: General Manager, Parks, Recreation & Culture
Manager, Sustainability** **FILE: 0512-02**

**SUBJECT: Climate Action Revenue Incentive Program (CARIP) 2017 Reporting
Requirements and 2017 Corporate Greenhouse Gas Emissions Inventory**

RECOMMENDATION

The Parks, Recreation & Culture Department recommends that Council receive this report for information.

INTENT

The purpose of this report is to:

- Fulfil the annual CARIP grant requirement to report publicly on the plan and progress toward the City's climate action goals; and
- Provide information on the City's 2017 Corporate Greenhouse Gas ("GHG") emissions inventory.

BACKGROUND

At the 2008 UBCM Convention, Premier Gordon Campbell announced the CARIP that would offset the carbon tax paid by local governments committed to the goal of becoming carbon neutral in their corporate operations under the BC Climate Action Charter. To be eligible for the CARIP conditional grant, local governments were required to:

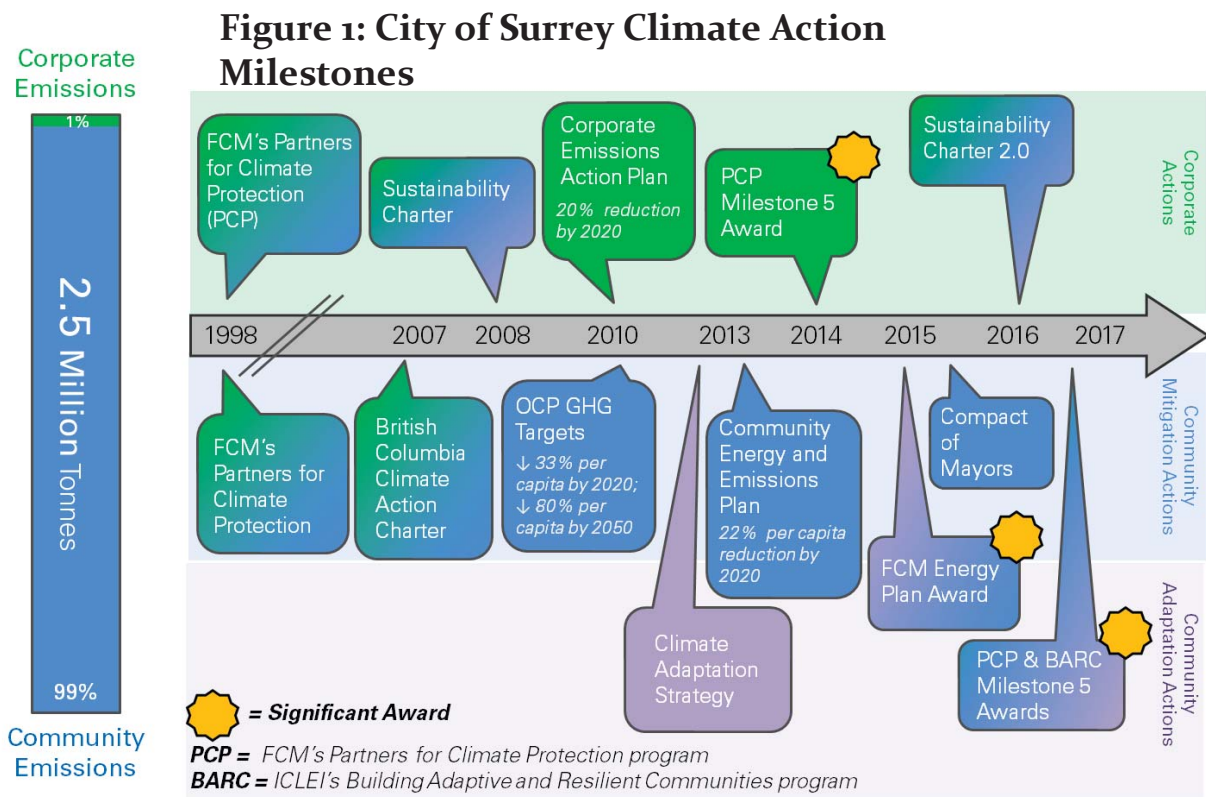
- Sign on to the BC Climate Action Charter and by doing so commit to the goal of becoming carbon neutral in corporate operations; and
- Report publicly on their plan and progress toward meeting their climate action goals using a set template.

The Carbon Neutral Local Government framework developed by the provincial government establishes a common approach for local governments to become carbon neutral in four steps:

measure emissions, reduce emissions, offset or balance those emissions through investments in local GHG reduction projects, and report to the public on actions taken. The requirement for carbon neutrality in corporate operations – originally required by 2012 - was subsequently modified by the Province to allow for a “making progress” designation whereby local governments can work towards carbon neutrality but are not required to achieve a zero carbon balance.

At its Regular meeting on October 14, 2010 Council considered Corporate Report No. R214; 2010 (Appendix “I”) titled “City of Surrey Corporate GHG Emissions Action Plan”, and approved the City’s *Corporate Emissions Action Plan* (“CEAP”). The CEAP includes a target to reduce corporate GHG emissions by 20% by 2020 and 13 actions to reduce emissions in the areas of buildings, fleet and infrastructure and with respect to leadership and public engagement. It was recognized that this target would be challenging in view of the City’s rapid population growth and the ensuing need to build new City facilities and expand the City fleet. Since 2010, the City has taken significant steps toward monitoring and reducing corporate emissions. To support the emissions reduction work, the City completes an annual inventory of corporate fuel use and emissions related to fleet and building operations.

For the 2017 reporting year, the Province requires that the 2017 CARIP Climate Action/Carbon Neutral Progress Survey be completed by June 1, 2018. This Survey, which includes corporate and community-level climate actions, has been completed and is attached as Appendix “II”. As context, Figure 1 illustrates Surrey’s significant commitments and achievements related to corporate and community climate action over the past decade.



DISCUSSION

Corporate Greenhouse Gas Emissions Inventory 2017

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

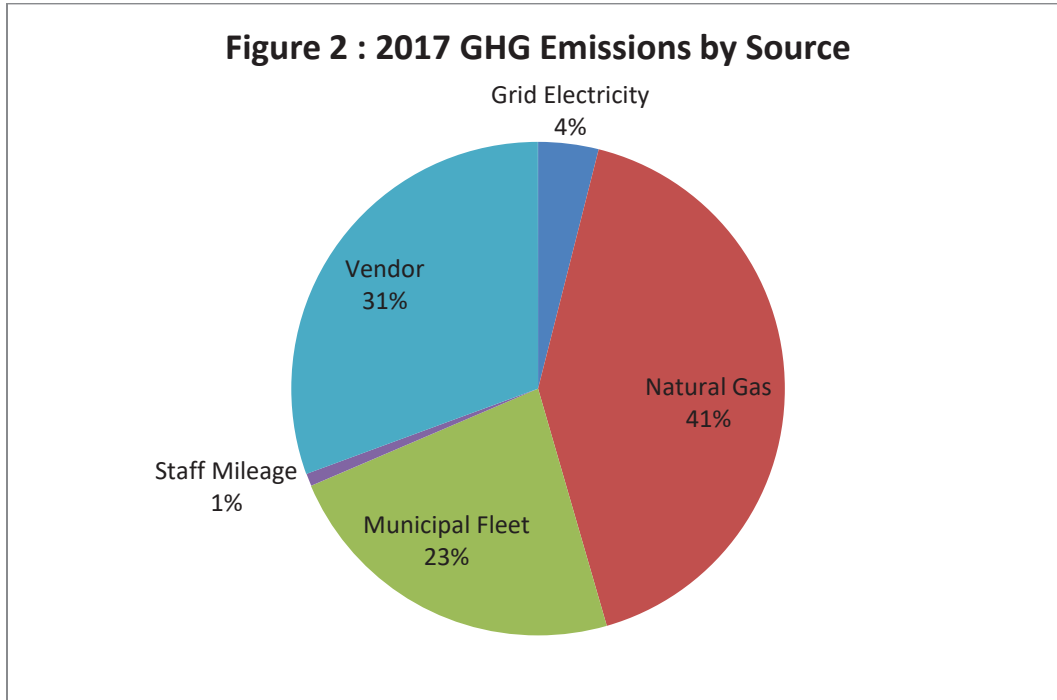
- Fire Protection;
- Solid Waste Collection, Transportation and Diversion;
- Arts, Recreation, Parks and Cultural Services;
- Road and Traffic Operations;
- Drinking, Storm and Waste Water; and
- Administration and Governance.

The City's emissions inventory includes fuel usage and resulting GHG emissions from vendors who are contracted to provide traditional services to the City, such as waste collection and streetlight maintenance. Over the past several years, efforts have been made to improve the reporting rate from these "in-scope" vendors, including adding a new functionality to the City's financial management system in 2016 to flag vendors that are required to report.

As a result of these improvements, 2016 saw a 93% reporting rate by contract value, as compared to 66% in 2015. It is important to note that 21 of these vendors held contracts with the City in previous years, but had not reported fuel use. In order to accurately reflect historic GHG emissions, the fuel use from these 21 vendors was backcast into prior year inventories, benchmarked to the annual percentage increase in total City expenditures related to vendor contracts to account for growth in services. The baseline GHG emissions (2005-2009 average) from vendor fuel use was then amended from 4,483 tonnes CO_{2e} to 5,088 tonnes CO_{2e}, increasing the total corporate baseline GHG emissions (at 2016) by 4%, to 16,954 tonnes CO_{2e}. This adjusted baseline remains consistent for the 2017 reporting.

Figure 2 below shows a breakdown of the 2017 corporate GHG emissions by source, with:

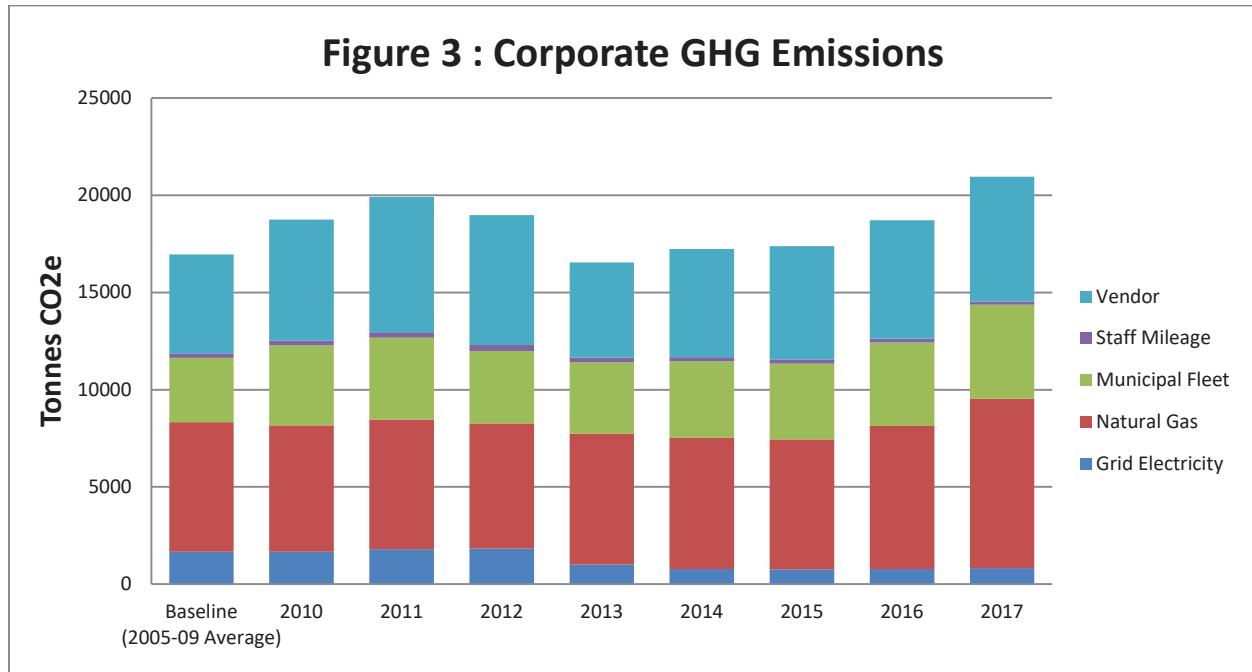
- 41% of City emissions coming from natural gas used to heat City buildings;
- 3% from electricity used in City buildings;
- 23% from fuels used in the municipal fleet;
- 32% from the fuels used by the City's in-scope vendors; and
- 1% from mileage claimed for staff travel.



In 2017, corporate GHG emissions were 20,956 tonnes CO₂e or tonnes of carbon dioxide equivalent. As shown in Figure 3 below, this represents increases of approximately 12% from 2016 and a 23% increase from the adjusted baseline (a 2005-2009 average). Importantly, analysis of facility emissions per square foot has shown a 19% reduction from the baseline, demonstrating the significant improvements in building performance over time.

The increase in corporate emissions in 2017 is a direct result of:

- The addition of new civic facilities, particularly the opening of the 6,000 ft² South Surrey Operations Centre. The Grandview Heights Aquatic Centre also operated for a full year, and the Newton Recreation Centre re-opened after the renovations; both of these facilities with pools have substantial natural gas usage despite being highly energy efficient buildings.
- Increasing fuel use as reported by City vendors, as additional vendors were retained by all departments to serve growing community needs;
- The growth in the City fleet, which while increasing overall vehicle efficiency and integrating a number of electric vehicle and dual fuel gasoline/Compressed Natural Gas (“CNG”) vehicles, continues to see an increase in overall fuel usage due to increased service demand; and
- Extreme winter weather conditions early in 2017 requiring longer operating hours for road clearing, as well as for space heating of buildings.



Emissions from City facilities (natural gas and grid electricity usage) in 2017 were 9,538 tonnes CO_{2e}, which is a 15% increase from the baseline and a 15% year over year increase from 2016. The rise in facility-related emissions is attributed to the opening of South Surrey Operations Centre, the first full year of operations for Grandview Heights Aquatic Centre, and the newly expanded Newton Wave Pool, which all combined added over 1,685 tonnes CO_{2e} in 2017. As noted above, analysis of facility emissions per square foot has shown a 19% reduction from the baseline, demonstrating the significant improvements in building performance over time.

Emissions from the City fleet in 2017 were 4,830 tonnes CO_{2e}, a 12% increase from 2016 and a 46% over the baseline, reflecting the growth of the fleet. While absolute emissions are increasing due to growth, efforts to improve efficiencies through the adoption of electric and CNG vehicles have shown a reduction in tonnes CO_{2e}/km since 2013, illustrating the increased energy performance of the City’s fleet vehicles overall.

Emissions from staff mileage claims are only 173 tonnes, but nevertheless have declined by 25% from the baseline due to the expanding and more convenient system of fleet vehicles available, as well as improvements to operational practices that have reduced travel distances for staff.

Total emissions from City vendors (contracted services) in 2017 were 6,415 tonnes, representing a 5% increase from 2016. The main source of these vendor emissions is the waste management contract, which generated 3,618 tonnes CO_{2e}, or 56% of all vendor emissions. As discussed above, the reporting rate for ‘in-scope’ vendors significantly increased in 2016, and fuel use was backcast for newly reporting vendors accordingly. The increase in vendor emissions over time is a result of increased vendor services, as well as higher reporting rates and improved data quality.

Next Steps & Planned Activities

It is challenging but not impossible for a fast growing city like Surrey to reduce its corporate GHG emissions. The City must continue to make efforts to reduce corporate emissions and increase efficiencies (such as in facility energy use intensity), so that it can demonstrate leadership to the community on climate action. A number of ongoing actions are moving the City towards reducing its carbon footprint:

- The recent opening of the Surrey Biofuel Facility and integration of that Renewable Natural Gas (“RNG”) into the City’s contracted waste collection fleet and the City’s own fleet vehicles is expected to significantly reduce the City’s carbon footprint. It is anticipated that this fuel switch from compressed natural gas (CNG) to RNG will help meet the Corporate Emissions Action Plan emissions reduction goal of 20% by 2020.
- New City facilities like the planned passive house-standard Clayton Community Centre building will ensure that new City facilities coming online have a very low to zero energy usage and emissions footprint.
- Surrey Fire Service has piloted the use of auxiliary power units (APUs) as alternative power sources for equipment instead of the battery, which require idling the fire truck engine with success, and in recent procurement, has opted for new fire trucks that include this technology. Surrey’s Fleet Department is also collaborating with Fire Services in rightsizing and will look to replace larger vans with smaller and more efficient vehicles.
- City of Surrey is a member of BC Hydro’s Energy Wise Network, previously known as Workplace Conservation Awareness program, since 2016. This program offers funding incentives and professional coaching to help develop behaviour change initiatives that promote energy conservation. The Surrey Energy Smart Team consists of five City staff representatives from various departments who meet monthly. The Team members distribute campaign instructions to a dedicated Energy Champion in each facility, who then shares information with their coworkers for a ground-level integration of energy conservation activities. Some of the past campaigns through the Surrey Energy Smart Team have included the Energy Cup Challenge, Random Acts of Greenness, and Look Good in Layers/Ugly Sweater Day.

All of these actions have a positive impact in reducing the City’s energy use and GHG emissions.

To further the corporate climate action work, the City has applied for funding under the Federation of Canadian Municipalities (FCM) Municipal Climate Innovation Program (MCIP) to support a review of technologies related to alternative fuel dump trucks and increasing RNG usage within the City fleet; a decision on this funding is pending review by FCM. Funding is also being explored for a behavioural change campaign that would support increasing staff usage of the CNG fueling options available at the Operations Centre. Additional funding opportunities through the Low Carbon Economy Challenge are currently being explored by staff.

Staff will assess the impact of all the above actions over 2018, and evaluate the need to revise the CEAP and/or the corporate GHG reduction targets in 2019 or 2020. Recommendations in this regard would be brought to Council. Future actions that might be considered by the City to reduce emissions include the following ideas:

- Continuing to right size fleet vehicles, and learning from best practices around right sizing of emergency response vehicles;
- Exploring additional opportunities for staff (such as building inspectors) to use electric vehicles, with supporting infrastructure in place for charging;
- Further electrification of the City fleet including the Fire Service fleet;
- Testing and accessing new technologies for heavy duty vehicles;
- Continuing to increase RNG usage within the fleet including switching existing dual fuel gasoline/CNG vehicles over to RNG;
- Ensuring that any new City facilities are built to extremely high energy efficiency, such as Passive House standard or similar;
- Reviewing retrofit opportunities for existing City facilities such as improving building envelope to prevent air leakage;
- Working through procurement processes and with City vendors to encourage their own GHG reduction activities, particularly around their fleets; and
- Implementing technologies that would lower energy usage in high energy use facilities such as pools and ice rinks.

Carbon Neutral Status 2017

The Survey (Appendix “II”) outlines the 2017 corporate emissions total, and identifies projects that have provided allowable GHG reductions against the corporate footprint. In this case, the City is receiving 1,105 tonnes of allowable GHG reductions from the City’s organics diversion in 2017 (yard waste only), as well as 4,795 tonnes from the protection of forest carbon through park creation for the years 2007 through to 2017. Both sets of credits are calculated using available provincial protocols.

These calculations indicate that the City’s 2017 footprint of 20,956 tonnes CO_{2e} is reduced by 5,900 tonnes CO_{2e}, leaving an emissions balance of 15,056 tonnes for the 2017 reporting year. Thus in 2017, the City will not achieve carbon neutral status. There are no financial implications to this status, as the City is not required to be carbon neutral by purchasing offsets, and will claim the available designation of “making progress towards carbon neutrality”. Additionally, the City in meeting all the BC Climate Action Charter requirements continues to receive the CARIP grant.

The City’s biofuel facility project includes provision to use a portion of the achieved GHG emission reductions as offsets towards corporate carbon neutrality each year, with the remainder of the GHG emission reductions being sold as offsets. The Surrey Biofuel Facility began full operations in 2018. Thus, the expectation is that for the 2018 reporting year and thereafter, the City will be able to claim carbon neutrality.

By completing the Survey and making it public through this Corporate Report, the City is fulfilling the annual CARIP grant requirement to report publicly on the City’s progress toward the City’s climate action goals. The Survey is to be made public on or before June 1, 2018.

SUSTAINABILITY CONSIDERATIONS

Completing the annual corporate emissions inventory and the required provincial reporting supports the following Desired Outcomes (DO) of the Sustainability Charter 2.0:

- Built Environment & Neighbourhoods (BEN) DO 9: All aspects of planning, design and construction include climate change impacts, GHG mitigation, adaptation, and resiliency strategies.
- Infrastructure DO 7: Per capita emissions are low and align with global, national and provincial GHG reduction targets.

The following Strategic Direction (SD) is also supported by the emissions reporting:

- Infrastructure SD 5: Work collaboratively with diverse stakeholders to lower GHGs and improve air quality.

Finally, the following corporate sustainability objective is addressed:

- # 12: Continue to implement the Corporate Emissions Action Plan.

CONCLUSION

The City continues to implement the Corporate Emissions Action Plan to meet the ambitious corporate GHG reduction target of 20% by the year 2020. The City's 2017 corporate carbon footprint of 20,956 tonnes CO_{2e}, less allowable GHG emissions calculations under the Carbon Neutral Local Government framework, leads to a carbon balance for 2017 of 15,056 tonnes CO_{2e}. Providing this public report on the City's climate action progress supports the CARIP grant application and related commitments under the Carbon Neutral Framework. It is recommended that Council receive this report as information.

Laurie Cavan
General Manager, Parks, Recreation &
Culture

Anna Mathewson, MCIP RPP
Sustainability Manager

Appendix "I": City of Surrey Corporate GHG Emissions Action Plan
Appendix "II": 2017 CARIP Climate Action/Carbon Neutral Progress Survey

CORPORATE REPORT

NO: *R214*

COUNCIL DATE: *Oct. 18, 2010*

REGULAR COUNCIL

TO: **Mayor & Council**

DATE: **October 14, 2010**

FROM: **Sustainability Manager
Deputy City Manager**

FILE: **0512-02**

SUBJECT **City of Surrey Corporate GHG Emissions Action Plan**

RECOMMENDATION

The City Manager's Department recommends that Council:

1. Receive this report as information; and
2. Approve the City of Surrey Corporate Emissions Action Plan, which is attached as Appendix A to this report.

INTENT

The purpose of this report is to obtain Council approval of the Surrey Corporate Emissions Action Plan.

BACKGROUND

In 2008, the City of Surrey signed the BC Climate Action Charter, which signified the City's intention to work with the Province and the Union of BC Municipalities to significantly cut greenhouse gas emissions by 2012. The Charter is a voluntary agreement, and states that local governments will agree to develop strategies and take actions to achieve the following goals:

- (i) **Being carbon neutral in respect of their operations by 2012**, recognizing that solid waste facilities regulated under the Environmental Management Act are not included in operations for the purposes of this Charter;
- (ii) **Measuring and reporting on their community's GHG emissions profile**; and
- (iii) **Creating complete, compact, more energy efficient rural and urban communities.**

Achieving “Carbon neutrality” involves measuring GHG emissions that come from operations such as buildings and fleet vehicles and then either eliminating those emissions, developing projects that offset GHG emissions and/or purchasing offsets for the emissions.

On September 29, 2008, Council received Corporate Report No. R175, titled “Surrey Sustainability Charter”, which introduced for Council’s approval the Surrey Sustainability Charter as the overarching policy document for the City. The Charter included under Action EN11, a commitment to the climate change action plan; particularly to:

1. Develop strategies and take action to achieve the goals of the BC’s Climate Action Charter, to which Surrey is a signatory; and
2. Expedite the completion of the five milestones in the FCM Partners for Climate Protection process, including an inventory of corporate greenhouse gases (GHGs) and setting targets and timelines for GHG reductions.

On March 22, 2010, Council received Corporate Report No. R046, which outlined 2009 accomplishments in relation to the City’s sustainability work plan and key elements of the 2010 work program; particularly the corporate emissions action plan, the sustainability indicators and targets dashboard and work related to community emissions.

DISCUSSION

Corporate Energy and Emissions Inventory

City staff has worked with the Pembina Institute to compile an inventory of the City’s energy use and GHG emissions for the years 2005 through 2008. Energy use focuses on the City’s fossil fuel consumption, particularly natural gas, electricity, propane, gasoline and diesel. A facilitated workshop that was conducted to prepare the inventory helped build internal capacity around GHG emissions tracking. The inventory work was completed using the Province’s guidance document on Carbon Neutral Government, in particular capturing the “traditional municipal service areas” as a means to categorize energy uses.

The emissions inventory was then updated for 2009 with the following results:

- In 2009, the City of Surrey consumed a total of 417,079 GJ of energy and emitted 15,225 tonnes of GHG emissions (expressed as tonnes of carbon dioxide equivalents, CO₂e) in the delivery of its services¹.
- Of this total energy consumption, electricity accounts for approximately 9%; natural gas accounts for approximately 47%, and fuel consumed to run the City’s fleet accounts for approximately 44%.
- The total expenditure on energy in 2009 was \$10,515,984.

¹ Reported GHG emissions are those applicable to the Climate Action Charter carbon neutrality commitment. Emissions resulting from solid waste decomposition are included in the community wide emissions inventory and not in the corporate inventory.

Corporate Emissions Action Plan

Building on the emissions inventory results, the Corporate Emissions Action Plan (CEAP) attached as Appendix A to this report, has been developed to establish targets, strategies and actions to assist the City in reducing the carbon footprint of its operations with a view to achieving carbon neutrality.

The CEAP identifies actions to reduce corporate GHG emissions over the next one to five years and outlines implementation requirements, including roles and responsibilities, monitoring requirements and reporting and financing approaches to assist with plan implementation.

The CEAP identifies actions for the City to take toward reducing its carbon footprint in each of the following areas:

- Buildings;
- Fleet;
- Infrastructure; and
- Leadership and Engagement.

The CEAP also identifies a target for the City's operations for the year 2021 in relation to GHG emissions reduction. This target recognizes that over the period 2005 through 2009, average annual energy consumption for the City of Surrey was approximately 445,000 GJ and average annual GHG emissions were approximately 14,500 tonnes CO₂e. These figures have been established as the baseline from which it is proposed that the City set its GHG emissions reduction targets relative to corporate operations.

GHG Emissions Reduction Target:

The Corporate Emissions Action Plan sets as a target a reduction in GHG emissions by the City's operations by the year 2020 of 20% below the above-referenced baseline levels.

The Plan documents that although this target is a "stretch" target (i.e., in view of the growth that the City will experience between the present and 2020), it is achievable if the City is faithful in implementing the actions identified in the Plan. The City will need to continue to dedicate resources to improve and adjust the City's operations in accordance with the actions outlined in the Plan and to monitor its energy and emissions footprint so that progress toward the target is well understood on an on-going basis.

There are a number of available funding programs (e.g., BC Hydro) outlined in the CEAP to which applications will be submitted for funding in support of the City's actions.

Schedule for CEAP Reviews and Updates

The Plan will be reviewed and updated every three to five years to ensure that it remains current to City priorities and initiatives.

Carbon Liabilities and Opportunities

In the context of the CEAP and in preparing for carbon neutrality, it is important to note that local governments in BC have carbon liabilities and opportunities. These are briefly described in the following paragraphs:

- The “**carbon tax**” associated with the purchase of fossil fuels (e.g. gasoline, diesel, natural gas, propane) was initiated at \$10 per tonne on July 1, 2008, and will reach \$30 per tonne by July 1, 2012. By signing the BC Climate Action Charter and committing to become carbon neutral, local governments are eligible for a rebate on the carbon taxes paid (called the Climate Action Rebate Incentive Program, or CARIP rebate). Based on the City’s 2009 levels of energy consumption, the CARIP rebate should be approximately \$416,200 in 2012.
- There is an opportunity to purchase **carbon offsets** to become carbon neutral. The City of Surrey will need to purchase some amount of carbon offsets to be carbon neutral in 2012 and beyond. The cost to purchase offsets in 2012 is widely expected to be \$25 per tonne. At this price, the cost to the City of Surrey for offsets in 2012 (based on 2009 emissions) would be approximately \$380,500. As such, it is important for the City to continue to review its operations with a view to cost effectively reducing energy consumption and GHG emissions.

The City will need to acquire carbon offsets in 2012 for any GHG emissions remaining after carbon reduction activities and the related results are taken into account. The Climate Action Charter does not specify the source of offsets for local governments. However, the Carbon Neutral Working Group of the Green Communities Committee (a joint initiative of the Union of BC Municipalities and the Climate Action Secretariat) is working to develop guidelines related to the purchase of suitable carbon offsets for local governments. A further report will be provided to Council on this matter as additional information becomes available.

The City has been exploring options related to offsets including establishing a reserve fund for the City’s carbon offset dollars that would be used by the City in investing in Surrey-based “carbon offset” projects. The work of the Carbon Neutral Working Group will provide direction on what constitutes a valid and appropriate “community project” for the purposes of offsetting corporate carbon emissions. Staff will continue to monitor the progress of the discussions of the Working Group and are scoping out Surrey-based carbon offset projects that might qualify under the new carbon offset framework.

SUSTAINABILITY CONSIDERATIONS

Through the Sustainability Office, staff continues to pursue sustainability initiatives that further the goals of the Surrey Sustainability Charter. Implementation of the goals of the Sustainability Charter will advance the City towards its 2058 sustainability vision. The Corporate Emissions Action Plan will assist in addressing several of the Actions identified in the Sustainability Charter as follows:

- EN 1: Energy Efficiency, including taking steps to achieve energy efficiency and demonstrate community sustainability leadership by: being carbon neutral by 2012; developing policies related to building energy use; and incorporating alternative energy systems where feasible.

- EN3: Vehicle Fleet Programs, including policies to right-size the City's vehicle fleet, look at the carbon footprint of its equipment, and analyze costs and benefits of alternative fuels.
- EN5: Green Procurement Policies and Practices.
- EN7: Implement and Publicize Green Infrastructure Pilot Projects.
- EN11: Surrey's Commitment to the Climate Change Action Plan.

CONCLUSION

The Sustainability Charter sets out a vision for sustainability in Surrey and acts as an overarching policy document for the City. A key Charter deliverable in 2010 is the Corporate Emissions Action Plan, attached to this report as Appendix A. It acts to establish the City's current state of being from the perspective of energy consumption and GHG emissions, defines corporate greenhouse gas emissions reduction targets and articulates a series of actions that the City should take to achieve the targets.

Based on the above discussion, it is recommended that Council approve the City of Surrey Corporate Emissions Action Plan, which is attached as Appendix A to this report.



Anna Mathewson
Sustainability Manager



Dan Bottrill
Deputy City Manager

AM/mc

q:\admin\managers\corporate reports\2010\corporate emissions action plan -oct 2010.doc
MC 10/15/10 1:39 PM

Appendix "A": Corporate Emissions Action Plan

Survey Template

For the *2017 CARIP Climate Action/Carbon Neutral Progress Survey*

Local governments are required to submit the *2017 CARIP Climate Action/Carbon Neutral Progress Survey* on or before June 1, 2018.

Use Template to Collect Information

In response to local government input, this Survey Template has been created to assist with collecting information for the *2017 CARIP Climate Action/Carbon Neutral Progress Survey*, and follows the same structure as the survey.

Responses entered into this Template can be cut and pasted into the online survey. The survey asks for up to five actions in each category, and there is a place in the survey to report additional actions if desired. In this Template, simply add more lines to the tables to report more than five actions.

Use Template to Assist with Reporting

Local governments are also required to publicly report the information submitted in the *2017 CARIP Climate Action/Carbon Neutral Progress Survey*. There is no ability for survey respondents to generate a report of survey responses, in turn:

- A PDF copy of your survey responses will be sent to you once your completed survey has been submitted.
- Given that it is challenging to edit the PDF document, you are encouraged to use your populated version of this Template, or your own, to report your CARIP results publicly.
- You may also choose to create a report in another format that contains the information submitted in the *2017 CARIP Climate Action/Carbon Neutral Progress Survey*.

Further information on CARIP can be found on the [Ministry of Municipal Affairs and Housing website](#).

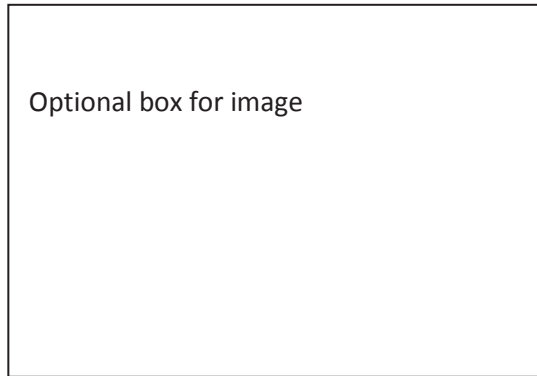
The Government of BC will not collect, use, or disclose personal information using SurveyMonkey®. Please be aware however that IP addresses are collected by SurveyMonkey® itself, and these IP addresses and other information collected will be stored on SurveyMonkey®'s servers located outside of Canada. Please do not provide any third-party information (i.e. refer to others) in your responses to the survey.

Climate Action Revenue Incentive (CARIP) Public Report for 2017

Local Government: City of Surrey

Name: Anna Mathewson
Role: Sustainability Manager
Email: amathewson@surrey.ca
Phone: 604-598-5833

Date: May 22, 2018



The City of Surrey has completed the 2017 Climate Action Revenue Incentive Program (CARIP) Public Report as required by the Province of BC. The CARIP report summarizes actions taken in 2017 and proposed for 2018 to reduce corporate and community-wide energy consumption and greenhouse gas emissions (GHG) and reports on progress towards achieving carbon neutrality.

2017 BROAD PLANNING ACTIONS

Broad Planning Actions

Broad Planning refers to high level planning that sets the stage for GHG emissions reductions, including plans such as Official Community Plans, Integrated Community Sustainability Plans, Climate Action Plans or Community Energy Emissions Plans. Land use planning that focuses on Smart Growth principles (compact, complete, connected, centred) plays an especially important role in energy and GHG reduction.

Community-Wide Actions Taken in 2017	
	Continued implementation of the Community Climate Action Strategy, which includes actions from both the Climate Adaptation Strategy and the Community Energy and Emissions Plan.
	Development of the Surrey Excels as Surrey's strategic corporate framework, with alignment to the Sustainability Charter 2.0's strategic directions and indicators.
	Surrey is in the process of re-certifying for Platinum Certification from the World Council on City Data under ISO 37120, the standard for Sustainable Development of Communities.
	Hired new Fortis BC-funded Energy Analyst staff position to explore opportunities to reduce emissions through ongoing energy conservation and management, renewable natural gas and vehicle fuel conversion.
Community-Wide Actions Proposed for 2018	
	Launch and implementation of Surrey Excels citywide; Sustainability Office to be involved in cascading "map" of priorities held by various departments to ensure alignment with Sustainability goals.
	Develop small grants program focused on community implementation of Sustainability Charter 2.0 desired outcomes.
	Complete the Newton Sustainability in Action neighbourhood sustainability plan.
	Complete ISO 37120 re-certification.
	Consider a health-focused mini update of the Climate Adaptation Strategy, in partnership with Fraser Health and others.
	Develop and seek Council approval for Surrey's approach to the BC Energy Step Code, and integrate into the City's Building Bylaw.

Corporate Actions Taken in 2017	
	Hired Corporate Energy Specialist to assist City in further reducing energy use and GHG emissions from corporate operations
	Conducted first Energy Management Assessment (EMA) session facilitated by BC Hydro and Segema Energy Consulting.
	Completed the first Sustainable Energy Management Plan (SEMP) with BC Hydro template to report on City of Surrey's past, present and future energy performance.
	Continued implementation of Corporate Sustainability Objectives as defined by Surrey Sustainability Charter 2.0.
	Continued implementation of the Corporate Emissions Action Plan, working toward achievement of 20% GHG reduction goals by 2020.
	Developed and delivered a "City Essentials" training program for over 2500 City of Surrey staff,

	with a module focussed on sustainability and increasing awareness, understanding embedment of the Surrey Sustainability Charter goals and desired outcomes.
Corporate Actions Proposed for 2018	
	Consider revisions to the 2010 Corporate Emissions Action Plan to assess the 2020 target for 20% GHG reductions.
	Update the SEMP and conduct a follow-up EMA session.

Broad Planning	
What is (are) your current GHG reduction target(s)?	<p>Community: 2020: 33% reduction in per capita emissions vs. 2007 2050: 80% reduction in per capita emissions vs. 2007</p> <p>Corporate: 20% below baseline (2005-09 average) by 2020</p>
Are you familiar with your community's community energy and emissions inventory (e.g. CEEI or another inventory)?	Yes
What plans, policies or guidelines govern the implementation of climate mitigation in your community?	<p>• Community Energy and Emissions (CEE) Plan</p> <p>• Community-Wide Climate Action Plan</p> <p>• Integrated Community Sustainability Plan</p> <p>• Official Community Plan (OCP)</p> <p>• Regional Growth Strategy (RGS)</p> <p>• Do not have a plan</p> <p>• Other:</p>
Does your local government have a corporate GHG reduction plan?	Yes

2017 BUILDING AND LIGHTING ACTIONS

Building and Lighting Actions

Low-carbon buildings use the minimum amount of energy needed to provide comfort and safety for their inhabitants and tap into renewable energy sources for heating, cooling and power. These buildings can save money, especially when calculated over the long term. This category also includes reductions realized from energy efficient street lights and lights in parks or other public spaces.

Community-Wide Actions Taken in 2017	
	The "Empower Me" program was delivered to 446 households, targeting behaviour change and energy retrofits for newcomers living in single family homes. Since the inception of the program in 2012, a total of 3,192 Surrey households have participated.
	Hired new Fortis BC-funded Energy Analyst staff position to explore opportunities to reduce emissions through ongoing energy conservation and management, renewable natural gas and vehicle fuel conversion.

	Initiated development of Surrey's BC Energy Step Code adoption approach and implementation plan, including planning for collaboration and engagement with industry stakeholders, the Province, other local governments, and internal staff.
	Began planning and design process for Clayton Community Hub, a new recreation centre to serve residents of East and West Clayton. The building is targeting passive house levels of energy performance, is intended to be a flagship municipal building for Surrey, and during construction may be used as an educational opportunities for other local Part 3 builders.
	Completed Energy Code Compliance review for Warehouse buildings (Part 3 of Building Code).
Community-Wide Actions Proposed for 2018	
	Adopt Step Code for all covered residential and commercial builders, as well as requirements to help ensure high performance outcomes and support industry transition. Surrey will communicate an estimated timeline for future steps. Enforcement is planned to begin on Jan 1 2019.
	Hire a UBC Sustainability Scholar to complete research on building data and GHG trends within Surrey's existing building stock. The research will shape understanding of retrofit policies to address emissions in existing buildings.
	Hire a second UBC Sustainability Scholar to conduct quantitative analyses of the Climate Zone 4 data generated for the BC Housing's 2017 Metrics Research Report. The intention of the analyses is to identify cost-effective solutions to achieve GHG reductions that industry stakeholders are more able and likely to adopt earlier. The results will be used to inform Step Code education and support, potentially including incentives.
	Introduce education and uptake of free residential energy conservation programs offered by utilities, FortisBC and BC Hydro, to reduce energy and emissions in Surrey.
	City of Surrey has partnered up with FortisBC to engage with residents in the Newton neighbourhood and educate them about energy efficiency at home. .

Corporate Actions Taken in 2017	
	Pursue funding and implementation of new Passive Design Clayton Community Centre. Design work completed to meet Passive House standards.
	Completed procurement and installation of first two phases of LED streetlight replacements. Phase 1 complete with 1.5 GWh savings within 9 months of project commencement (April – December) replacing 64,000 streetlights; Phase 2 currently in procurement stages to replace 6200 streetlights.
	Completed the second year of BC Hydro's Energy Wise Network program with implementation and reporting of three behaviour-change campaigns that opened participation to all City of Surrey staff.
	Building Energy Specialist reviewed building permits for warehouses, as well as permits for other building types (e.g., apartments) with specific revisions to improve energy efficiency.
	Lighting retrofit at City Hall loading bay, Newton Library, Fleetwood Library & Rec Centre during recladding project, Newton Senior Centre during interior renovation, North Surrey Recreation Centre, Surrey Sport & Leisure Complex, and Cloverdale Arena.
Corporate Actions Proposed for 2018	
	Pursue energy study reporting with BC Hydro funded programs. Submit applications for incentives to assist implementations of energy conservation measures.
	Resolve low power factor ratings at Surrey Arts Centre and Bear Creek Park to improve energy efficiency and reduce monthly energy costs.
	Participate in BC Hydro funded Energy Wise Network program to reduce energy consumption

	through staff behaviour for the third year.
	Retrain staff with design engineers and control system programmers to properly assess if buildings are operating as intended.
	Recommission key buildings to reduce high energy use intensity: Surrey Sport and Leisure Complex and City Centre Library.
	Continue with construction of the Passive Design Clayton Community Centre.
Building and Lighting	
The Province has committed to taking incremental steps to increase energy-efficiency requirements in the BC Building Code to make buildings net-zero energy ready by 2032. The BC Energy Step Code--a part of the BC Building Code--supports that effort	
Is your local government aware of the BC Energy Step Code?	Yes
Is your local government implementing the BC Energy Step Code?	Yes

2017 ENERGY GENERATION ACTIONS

Energy Generation Actions

A transition to renewable or low-emission energy sources for heating, cooling and power supports large, long-term GHG emissions reductions. Renewable energy including waste heat recovery (e.g. from biogas and biomass), geo-exchange, micro hydroelectric, solar thermal and solar photovoltaic, heat pumps, tidal, wave, and wind energy can be implemented at different scales, e.g. in individual homes, or integrated across neighbourhoods through district energy or co-generation systems.

Community-Wide Actions Taken in 2017	
	Completed the District Energy low-carbon generation feasibility study to evaluate technology costs and viability of biomass, sewer-heat recovery, and renewable natural gas as low-carbon options to reach Surrey's carbon intensity target of 0.07 T CO ₂ e/MWh.
	Expanded the District Energy network to a total of 179,943 m ² , brought on two buildings, Concord Phase 2 and 3 Civic Plaza, and connected the City's first renewable sources, geo-exchange field below New City Hall Plaza, to the district energy network. The network expanded to include two customer buildings in 2016 to a total of 7 buildings in the network in 2017.
Community-Wide Actions Proposed for 2018	
	Construction is underway for the first permanent gas fired peaking boiler plant to serve as back-up for the baseload renewable energy source for the District Energy system.
	Apply to Natural Resources Canada for funding to potentially accelerate and/or expand decarbonization of Surrey City Energy (District Energy System).

Corporate Actions Taken in 2017

	Completed construction of the City Biofuel Processing Facility. Commissioning and operation done in early 2018. This facility is anticipated to significantly reduce the City's corporate carbon footprint. The renewable natural gas (RNG) will fuel the City's waste collection fleet and contribute to the district energy system in City Centre.
	Commenced construction of West Village Park, which will house both a neighbourhood park and Surrey's first permanent District Energy Centre.
Corporate Actions Proposed for 2018	
	Commence decommissioning of the current CNG station at the Surrey Operation Centre and begin construction of a new CNG station with double the number of fueling pumps and backup power.
	Operate the Biofuel Processing Facility to divert organic waste emissions from the landfills and generate RNG for municipal fleet as well as contracted waste hauling trucks.

Energy Generation	
Is your local government developing, or constructing:	
<ul style="list-style-type: none"> • A district energy system • A renewable energy system 	Yes Yes
Is your local government operating:	
<ul style="list-style-type: none"> • A district energy system • A renewable energy system 	Yes Yes
Is your local government connected to a district energy system that is operated by another energy provider?	No
Are you aware of the Integrated Resource Recovery guidance page on the BC Climate Action Toolkit ?	Yes
Are you familiar with the 2017 " List of Funding Opportunities for Clean Energy Projects Led by First Nations and Local Governments? "	Yes

2017 GREENSPACE/NATURAL RESOURCE PROTECTION ACTIONS

Greenspace Actions

Greenspace/Natural Resource Protection refers to the creation of parks and greenways, boulevards, community forests, urban agriculture, riparian areas, gardens, recreation/school sites, and other green spaces, such as remediated brownfield/contaminated sites as well as the protection of wetlands, waterways and other naturally occurring features.

Community-Wide Actions Taken in 2017	
	35 acres of park land were added to the Biodiversity Conservation Strategy's Green Infrastructure Network (GIN) through land development applications (conveyance) and NCP implementation. Total GIN protected as park land is now 5,071 acres.

	Amendments to the City's Soil Conservation and Protection By-law were made and approved by Council, currently awaiting final approval by Ministry.
	Surrey's urban forest and habitat was enhanced with the planting of over 7,071 new shade trees; 17,582 shrubs; 24,653 plants, and the removal of invasive plants from 11.15 ha of park land and road allowance. In addition, over 10,500 m ² of passive or degraded park land was converted to natural area.
	The City-run Surrey Nature Centre continued to offer school programs, family events and children's day camps to increase appreciation and stewardship of the natural environment. The 20 th annual Environmental Extravaganza offered free environmental education programs across the City from Earth Day through World Ocean Day in partnership with community groups.
	Two long-standing ecosystem enhancement programs, Surrey's Natural Areas Partnership (SNAP) and the Salmon Habitat Restoration Program (SHaRP), employed post-secondary and high school students to complete riparian and natural areas habitat restoration and deliver public education messaging.
Community-Wide Actions Proposed for 2018	
	Continue implementation of the Biodiversity Conservation Strategy and acquisition of the Green Infrastructure Network (GIN) lands.
	Ongoing improvement and delivery of the City's suite of environmental education programs and activities.
	Deliver the 21 st annual Environmental Extravaganza over April-June 2018, offering free environmental education programs and events to the public in partnership with local community organizations.
	Undertake pilot project to collect information on replacement trees planted on private property to determine survival rates and other impacts affecting long-term tree health.
	Scoping of the possibility of collaboration between departments for education regarding public and private tree care.
	Reviewing the Action Plan items in the Shade Tree Management Plan.

Corporate Actions Taken in 2017	
	Continue efforts to improve effectiveness of City policies and practices to maximize tree and habitat protection.
Corporate Actions Proposed for 2018	
	Amendments to the City's Tree Protection By-law to be undertaken to align with the Biodiversity Conservation Strategy and Sensitive Ecosystems.
	Surrey to explore the development of an Urban Forest Strategy to assist the City in defining a sustainable urban forest with guidance for both public and private lands.
	Continued implementation of the Shade Tree Management Plan.

Greenspace	
Does your local government have urban forest policies, plans or programs?	Yes
Does your local government have policies, plans or programs to support local food production?	Yes

2017 SOLID WASTE ACTIONS

Solid Waste Actions

Reducing, reusing, recycling, recovering and managing the disposal of the residual solid waste minimizes environmental impacts and supports sustainable environmental management, greenhouse gas reductions, and improved air and water quality.

Community-Wide Actions Taken in 2017	
	Achieved significant progression towards completing construction of the Surrey Biofuel facility (operations commenced by December 31, 2017); The commissioning of the biofuel facility commenced in December 2017 with 100% of the City's residential organic waste being delivered to the facility for composting. The biofuel facility will reduce community-wide greenhouse gas (GHG) emissions by approximately 49,000 T/yr, the equivalent of taking 10,000 cars off the road annually.
	Secured property and Greater Vancouver Sewerage and Drainage District Development (GVS&DD Board) approval for the Surrey Residential Drop Off (RDO)/Eco-Centre
	Reduced costs by over 42% associated with managing illegal dumping through promotion and education of proper disposal options.
	Hosted four pilot Pop Up Junk Drop events between June and July 2017 with approximately 1,000 tonnes of waste and recycled materials collected, and 62% of this waste diverted from landfill. In addition, over 55 tonnes of reusable materials were recovered by non-profit agencies working with the City.
	Sustained high customer participation in the City's Large Item Pickup Program which has resulted in an illegal dumping decrease of 30%.
	Developed Demolition and New Construction Waste and Recyclables Materials bylaw to increase waste diversion.
	Develop and implemented a customer self-service portal (or app) for Enhanced Services for cart purchases and exchanges, and large item pickup requests
	Piloted an increase in the number of large item pick-ups from 4 to 8, and added new item categories (i.e. electronics, small appliances, and tires) to reduce illegal dumping instances.
	Completed the second year of an environmental education program in Surrey classrooms that focuses on waste, water and energy reductions. The Rethink Waste component of the program was targeted to grades 5, 9 and Adult ESL students and delivered to over 285 classrooms throughout the 2015/16 school year.
	Implemented customer waste diversion plan and achieved 72% diversion in 2017.
Community-Wide Actions Proposed for 2018	
	Complete public consultation, rezoning and commence construction of RDO/Eco-centre site.

	Biofuel Facility commenced generation of renewable natural gas in early 2018, and will increase output of RNG as the year progresses.
	Continue to develop measures and action plans to become the first city in Canada to achieve Zero Waste in the next seven years through a focus on reduction in waste generation and innovative diversion technologies.
	Continue to educate residents, leverage surveillance technologies and implement new disposal service options to achieve 50% reduction in illegal dumping incidents.
	Implement Surrey Disaster Debris Management Plan to ensure an operational framework to manage large volumes of debris after an emergency event.
	Host a pilot National Industrial Symbiosis Programme (NISP) workshop in early 2018. Implement NISP in Surrey over the next three years.
	Further expand the categories of waste items currently accepted under the Large Item Pick Up program and introduce the program at MURBs.
	Continue actions to increase customer waste diversion to over 80% in the next 3 years: Focus in 2018 will be to reach 74% waste diversion.
	Reduce recycling contamination to achieve a goal of having the lowest amount of non-targeted Packaging and Printed Paper material for a single-stream curbside program in BC.
	Continue implementation of demolition waste and recyclables materials bylaw.
	Continue delivery of the Environmental Education Program for the 2017/18 school year.

Corporate Actions Taken in 2017	
	Conducted a pilot project using default “Follow Me” print settings to reduce paper waste.
	Introduced Electronic Seals & e-Signatures program that increased staff productivity and efficiency, streamlined business processes, increased security, decreased printed paper, and eliminated delivery costs.
Corporate Actions Proposed for 2018	
	Re-introduce the “Follow Me” print setting accompanied by educational awareness campaign with support from BC Hydro’s Energy Wise Network.
	Pursue zero-waste goal for achievement by 2025 with focus on combustibles and recycling materials at the RDO/Eco Centre.

Solid Waste	
Does your local government have construction and demolition waste reduction policies, plans or programs?	Yes
Does your local government have organics reduction/diversion policies, plans or programs?	Yes

2017 TRANSPORTATION ACTIONS

Transportation Actions

Transportation actions that increase transportation system efficiency, emphasize the movement of people and goods, and give priority to more efficient modes, e.g. walking, cycling, ridesharing, and public transit, can contribute to reductions in greenhouse gas emissions and more livable communities.

Community-Wide Actions Taken in 2017	
	Over 3,000 children took part in the City's Safe and Active Schools Program in 2017.
	Conducted an electric vehicle (EV) survey with consumers to understand trends, needs for infrastructure for current and future EV owners.
	Added two new DC Faster Charging stations in Surrey.
	Initiated an EV curbside pilot project to evaluate technology accessibility and adaptability by EV users.
	Secured initial funding for Phase 1 of Surrey Light Rail Transit (LRT) which advanced design closer to procurement readiness.
	Continued the development of multi-modal urban transport within Surrey; bike lanes were increased by 5 km, greenways were increased by 2 km, sidewalks were increased by 25km, and 18 new accessible bus stops were established and 3 new bus routes were introduced.
	Approved two Early Works Agreements with TransLink for the advancement of the Surrey-Newton-Guildford Light Rail Transit project.
	Installed 20 solar powered flashing crosswalks in 2017, with an additional 10 planned.
Community-Wide Actions Proposed for 2018	
	Carry out study on Surrey's transportation system to meet demands of future population while minimizing GHG impacts with a team of students through UBC's Data Science for Social Good.
	Commission on-street electric vehicle charging network (12 charge points) in a 5-year pilot program with Natural Resources Canada.
	Develop Electric Vehicle policy for charging infrastructure in new commercial and residential development to ensure 100% EV charging requirements for all new buildings.
	Install 50 sensors to detect vehicle speeds on major routes and communicate the fastest route options to the public to improve efficient use of the road network
	Procurement for the Request-for-Proposal is scheduled for the SNG Line is scheduled for Fall 2018. Construction for the LRT is expected to start in 2019.
	In March 2018, regional funding was secured by an agreement between the Mayors' Council and the Province on the funding measures, thus achieving full funding level from all three levels of government for the Surrey-Newton-Guildford LRT project.
	Develop Surrey-specific community transportation model baseline and BAU projection with UBC Data Science for Social Good student team.

Corporate Actions Taken in 2017	
	Replaced vehicles as appropriate with dual fuel vehicles (CNG/gasoline).
	Completed installation of blended fuel (diesel/CNG) technology on one pilot vehicle.
	Hosted a Lunch and Learn info session at City Hall to familiarize staff with electric vehicles and incentives, including municipal developments for charging infrastructure. Follow-up survey

	showed keen interest to purchase EVs.
	Replaced non-networked 1st generation Level 2 chargers at City Hall with networked units with load balancing software.
	Fire services completed a pilot project of auxiliary powered units (APUs) to provide energy source to chassis equipment in lieu of idling the truck engine.
	Piloted a mini-pumper emergency truck to service the City Centre/Whalley district.
	Added additional EVs to fleet for inspectors. Added two charging stations at Ocean Park Library and four at City Hall (for inspectors' fleet vehicles). Updating charging infrastructure of first generation stations with new equipment, improved connectivity and specifications.
	Replace 1 gasoline vehicle with an EV. Added two charging stations at Ocean Park Library and four at City Hall (for inspectors' fleet vehicles). Updating charging infrastructure of first generation stations with new equipment, improved connectivity and specifications.
Corporate Actions Proposed for 2018	
	Plan and host more EV Info Sessions for staff to raise awareness, address concerns, and dispel myths about the vehicles and charging stations.
	Continue working on the Electric Vehicle Policy. Install 4-5 more charging stations and continue expanding based on new facility builds, upgrading the first generation units, and public demand.
	Transition all CNG-fueled vehicles, including contracted waste haulers, to use RNG generated from the City of Surrey's biofuel facility.
	Update corporate contracts requiring prospective vendors to consider low emission vehicles within their fleet.
	Replace large vans in Fire Service fleet with smaller and more efficient vehicles.
	Pursue conversion of heavy duty diesel dump trucks to 100% CNG fuel.
	Rebuild the CNG station at Surrey Operations Centre to improve redundancy and capacity of the fuel, and support the growing fleet of 100% CNG vehicles (instead of dual fuel).
	Implement electric vehicles where suitable and investigate potential charging infrastructures, with high interest at the Operations Centre.
	Continue development of Surrey Light Rail Transit (LRT) project.

Transportation	
Does your local government have policies, plans or programs to support:	
• Walking	Yes
• Cycling	Yes
• Transit Use	Yes
• Electric Vehicle Use	Yes
• Other (please specify)	Yes
Does your local government have a transportation demand management (TDM) strategy (e.g. to reduce single-vehicle occupancy trips, increase travel options, provide incentives to encourage individuals to modify travel behavior)?	No
Does your local government integrate its transportation and land use planning?	Yes

2017 WATER AND WASTEWATER ACTIONS

Managing and reducing water consumption and wastewater is an important aspect of developing a sustainable built environment that supports healthy communities, protects ecological integrity, and reduces greenhouse gas emissions.

Community-Wide Actions Taken in 2017	
	Completed the second year of an integrated environmental education program in Surrey classrooms that focuses on waste, water and energy reductions.
	Continued to offer the Voluntary Water Meter program, encouraging water conservation behaviour by having residents pay for the water they use.
	Deployed the Water Conservation Program to the Sunnyside neighbourhood. The program visited 9,268 single family properties to provide education around water conservation. The program resulted in peak flow rate reduction of 3% and seasonal flow reduction of 5% in the program area.
	Continued the Leak Detection Program to decrease water loss in the City's water network.
Community-Wide Actions Proposed for 2018	
	Continue the Water Conservation Program for the Cloverdale area and introduce co-benefits of energy savings with water savings. The campaign is expected to reach 10,000 households in this neighbourhood to educate residents about water and energy conservation.
	Continue to protect the City's water quality by conducting cross section control surveys at 300 industrial, commercial and institutionally zoned properties.
	Deliver a third year of the integrated environmental education program in Surrey classrooms that focuses on waste, water and energy reductions.

Corporate Actions Taken in 2017	
	Continue to ensure that new City facilities incorporate water saving features, such as the South Surrey Operation Centre opened in November 2017 with efficient plumbing fixtures, and landscaping that does not require irrigation.
Corporate Actions Proposed for 2018	
	Coordinate with Parks, Recreation & Culture staff to explore recycled grey water use for landscaping purposes.
	Pursue funding to explore waste heat recovery as a District Energy system low carbon energy source.

--	--

Water Conservation	
Does your local government have water conservation policies, plans or programs?	Yes

2017 CLIMATE CHANGE ADAPTATION ACTIONS

This section of the CARIP survey is designed to collect information related to the types of climate impacts local governments are experiencing and how they are being addressed.

Please identify the THREE climate impacts that are most relevant to your Local Government.	
<ul style="list-style-type: none"> • Warmer winter temperatures reducing snowpack • Changes to temperature and precipitation causing seasonal drought • Heatwaves impacting population health • Changing temperatures influencing species migration and ecosystem shifts • Extreme weather events contributing to urban and overland flooding • Sea level rise and storms causing coastal flooding and/or erosion 	
Other:	

In 2017 has your local government addressed the impacts of a changing climate using any of the following?	
Risk and Vulnerability Assessments	Yes
Risk Reduction Strategies	Yes
Emergency response planning	Yes
Asset management	Yes
Natural/Eco asset management strategies	Yes
Infrastructure upgrades (e.g. storm water system upgrades)	Yes
Beach Nourishment projects	No
Economic diversification initiatives	Yes
Strategic and financial planning	Yes
Cross-department working groups	Yes
OCP policy changes	Yes

Changes to zoning and other bylaws and regulations	Yes
Incentives for property owner (e.g. reducing storm water run-off)	Yes
Public education and awareness	Yes
Research	Yes
Mapping	Yes
Partnerships	Yes
Other:	

Climate Change Adaptation Actions Taken in 2017	
Please elaborate on key actions and/or partnerships your local government has engaged in to prepare for, and adapt to a changing climate. Add links to key documents and information where appropriate.	
	Continued work on the Coastal Flood Adaptation Strategy to explore options and preferred strategies to adapt to climate impacts, specifically sea level rise, in Surrey's coastal floodplain area. This work follows priority actions identified in the Community Climate Action Strategy. Technical sea level and flood risk studies previously conducted are being used to inform adaptation options and preferred options are being refined with stakeholder and partner input. A high level of stakeholder, community and partner engagement was established, having directly involved over 1,000 community members and 50 organizations in the project. The three-year process completed its second year and approached Phase 3 (of 5) at the close of 2017.
	Continued Surrey involvement in Phase 2 of the Lower Mainland Flood Management Strategy (LMFMS) and participates in the various committees of the LMFMS.
	Continued membership and participation in the Green Shores Local Government Working Group facilitated by the BC Stewardship Centre. A Green Shores Level 1 Training Course was hosted in Crescent Beach with environmental stakeholders. This training included conceptual design of beach nourishment approaches for Crescent Beach that were incorporated in the CFAS project.
	Participated in the Advisory Panel for Metro Vancouver's <i>Urban Forest Climate Adaptation Framework</i> , and the supporting <i>Design Guidebook for Maximizing Climate Adaptation Benefits with Trees</i> . The publications support decision making around species suitability and site design to maximize adaptation benefits and increase the urban forest's resilience to climate change.
	Collected data on Surrey's urban heat throughout the city during a high degree day to begin to better understand extreme heat trends and inform potential vulnerability mapping; in partnership with Portland State University.
	New and upgraded infrastructure is being designed to meet future climate conditions.
	In partnership with the Kingdom of the Netherlands and the UBC School of Architecture and Landscape Architecture, a team of Dutch adaptation experts visited Surrey for one week and provided conceptual design concepts to support CFAS in developing and evaluating adaptation approaches to sea level rise along the Nicomekl and Serpentine Rivers.
	A rainfall assessment was completed as part of developing a Rainfall Adaptation Strategy to better understand how changes in precipitation patterns may impact upland development to inform future servicing requirements and adaptation. ISMPs and NCPs continue to be used to enhance stormwater management practices.
Climate Change Adaptation Actions Proposed for 2018	
	Surrey to be involved in the National Floodplain Mapping project, as a case study to demonstrate

	how adaptation can be incorporated into floodplain mapping.
	Surrey to be involved in a Polytechnique Montréal Massive Open Online Course on Engineers Canada’s Sustainable Development Guidelines, as a case study on climate adaptation.
	Pursue partnerships and funding to continue work on additional heat mapping research in the summer and identify opportunities to proactively manage rising urban temperatures through planning, policy and operational practices.
	Continue participating in Phase 2 of the Lower Mainland Flood Management Strategy.
	Surrey to be involved in University of the Fraser Valley’s Geography and Environment Department to assist GEOG 304 (Climate Change and Coasts) that runs every two years with a focus on Crescent Beach in Surrey. City involvement includes a guest lecture, a day long field trip and review of final class projects.
For more information please contact:	
	Anna Mathewson

The following are key resources that may be helpful to your local government in identifying climate impacts, as well as, strategies, actions and funding to deal with them. For those resources that you have used, please indicate whether they were useful in advancing your work in climate change adaptation?	
Indicators of Climate Change for British Columbia, 2016 Plan2Adapt Climate Projections for Metro Vancouver Climate Projections for the Capital Region Climate Projections for the Cowichan Valley Regional District Province of BC’s BC Adapts Video Series Preparing for Climate Change: An Implementation Guide for Local Governments The Public Infrastructure and Engineering Vulnerability Committee’s (PIEVC) protocol Sea Level Rise Primer BC Regional Adaptation Collaborative Webinars www.ReTooling.ca Water Balance Model The Water Conservation Calculator	Useful Useful Haven’t Used (yet) Haven’t Used Haven’t Used Useful Useful Useful Useful Useful Useful Useful Useful Useful
Funding: National Disaster Mitigation Program (NDMP) Community Emergency Preparedness Fund (CEPF) Municipalities for Climate Innovation Program (MCIP) Climate Adaptation Partner Grants (FCM) Infrastructure Planning Grants (MAH) Federal Gas Tax Fund	Useful Useful Useful Haven’t Used Haven’t Used Useful
Other:	

2017 OTHER CLIMATE ACTIONS

Other Climate Actions

This section provides local governments the opportunity to report other climate actions that are not captured in the categories above.

Community-Wide Actions Taken in 2017	
	Completed the second year of an environmental education program in Surrey classrooms that focuses on waste, water and energy reductions. The Energy Shift Program reaches approximately 5,000 Surrey students from Grades 4 and 10, and encourages energy conservation through behaviour change. It is complemented by a Water Wise Program, and a Rethink Waste Program.
	Launched Newton Sustainability in Action, a pilot neighbourhood engagement and empowerment project to develop and implement a community –owned sustainability action plan to further advance the goals of the Surrey Sustainability Charter 2.0.
Community-Wide Actions Proposed for 2018	
	Implementation of the Newton Sustainability in Action Plan

Corporate Actions Taken in 2017	
Corporate Actions Proposed for 2018	

Other	
Are you familiar with the Community Lifecycle Infrastructure Costing Tool (CLIC)?	Yes
Have you used CLIC?	No

INNOVATION AND PEER-TO-PEER LEARNING

Innovation

This section provides the opportunity to showcase an innovative Corporate and/or Community-Wide GHG reduction and/or climate change adaptation activity that your local government has undertaken and that has had, or has the potential to have, a significant impact. You are welcome to repeat an action that has already been listed.

Projects included here may be featured as success stories on the B.C. Climate Action Toolkit and/or shared with other local governments to inspire further climate action. Please add links to additional information where possible.

Communities that have conducted innovative initiatives may want to consider raising their profile through applications to [CEA's Climate and Energy Action Awards](#), [UBCM Climate and Energy Action Award](#), [FCM Sustainable Communities Awards](#) or through submissions to [FCM's National Measures Report](#).

Community-Wide Action

The City of Surrey is leading on climate adaptation, particularly our work around sea level rise and coastal flood adaptation. We have continued to develop the Coastal Flood Adaptation Strategy (CFAS) to explore options and preferred strategies to adapt to climate impacts, including sea level rise, in Surrey's coastal floodplain area. Technical sea level and flood risk studies previously conducted are being used to inform adaptation options and preferred options are being refined with stakeholder and partner input. The three-year process completed its second year and approached Phase 3 (of 5) at the close of 2017.

To further engagement with other levels of government and public sector organizations, and to improve the coastal flood adaptation approaches developed in CFAS, two collaborative infrastructure vulnerability workshops were hosted to apply the Engineers Canada PIEVC Protocol for the highest risk area of Surrey's coastal floodplain. Critical national, regional and local infrastructure was assessed in the vicinity of Mud Bay. Over 30 organizations participated and was one of the broadest applications of the Protocol to-date and was an early application of the Protocol's Triple Bottom Line Module to evaluate economic, environment and social considerations for the preliminary adaptation options developed in CFAS.

For more information contact: Matt Osler (Engineering) or visit www.surrey.ca/coastal

Corporate Action

Surrey has recently opened the Surrey Biofuel facility (operations commenced by December 31, 2017); The commissioning of the biofuel facility commenced in December 2017 with 100% of the City's residential organic waste being delivered to the facility for composting. The biofuel facility will reduce community-wide greenhouse gas (GHG) emissions by approximately 49,000 T/yr, the equivalent of

taking 10,000 cars off the road annually.

For more information contact: Ela Lukowska (Engineering)

Programs, Partnerships and Funding Opportunities

Local governments often rely on programs, partnerships and funding opportunities to achieve their climate action goals. Please share the names of programs and organizations that have supported your local government's climate actions by listing each entry in the box below.

Mitigation

Programs and Funding

Federation of Canadian Municipalities (FCM) – Municipalities for Climate Innovation (MCIP) for Feasibility study of low carbon resources for District Energy System.

National Resources Canada (NRCan) – Clean Energy Innovation's Energy Innovation Program (EIP)

BC Hydro – Energy Wise Network, Energy Management Program, Building Energy Specialist Program, Corporate Energy Manager Program, Community Energy Manager Program, Energy Study funding.

FortisBC – Boiler Rebate program, Climate and Energy Analyst position

Adaptation

Programs and Funding

Federation of Canadian Municipalities (FCM) – Municipalities for Climate Innovation (MCIP) is providing financial support to develop Surrey's Coastal Flood Adaptation Strategy and two related projects:

- Prioritizing Infrastructure and Ecosystems Risks from coastal processes in Mud Bay,
- Improving Coastal Flood Adaptation Approaches in Mud Bay.

2017 CARBON NEUTRAL REPORTING

Local governments are required to report on their progress in achieving their carbon neutral goal under the Climate Action Charter. Working with B.C. local governments, the joint Provincial-UBCM Green Communities Committee (GCC) has established a common approach to determining carbon neutrality for the purposes of the Climate Action Charter, including a Carbon Neutral Framework and supporting guidance for local governments on how to become carbon neutral.

Prior to completing this portion of the survey, please ensure that you are familiar with guidance available on the B.C. Climate Action Toolkit website, especially the [Becoming Carbon Neutral: A Guide for Local Governments in British Columbia](#).

Please note: As a result of the BC Recycling Regulation, local governments are no longer required to account for greenhouse gas (GHG) emissions from vehicles, equipment and machinery required for the collection, transportation and diversion of packaging and printed paper, in their annual Climate Action Revenue Incentive Program (CARIP) reports.

Reporting Emissions

Did you measure your local government's corporate GHG emissions in 2017?	Yes
If your local government measured 2017 corporate GHG emissions, please report the number of corporate GHG emissions (in tonnes of carbon dioxide equivalent) from services delivered <u>directly</u> by your local government:	14,541 tCO ₂ e
If your local government measured 2017 corporate GHG emissions, please report the number of corporate GHG emissions (in tonnes of carbon dioxide equivalent) from <u>contracted</u> services:	6,415 tCO ₂ e
TOTAL A: CORPORATE GHG EMISSIONS FOR 2017	20,956 tCO₂e

Reporting Reductions and Offsets

To be carbon neutral, a local government must balance their TOTAL corporate GHG emissions generated in 2017 by one or a combination of the following actions:

- undertake GCC-supported Option 1 Project(s)
- undertake GCC-supported Option 2 Project(s)
- purchase carbon offsets from a credible offset provider

If applicable, please report the 2017 GHG emissions reductions (in tonnes of carbon dioxide equivalent (tCO₂e)) being claimed from Option 1 GHG Reduction Projects:

OPTION 1 PROJECTS	REDUCTIONS
Energy Efficient Retrofits	

Solar Thermal	
Household Organic Waste Composting	1,105
Low Emission Vehicles	
Avoided Forest Conversion	4,795
TOTAL B: REDUCTIONS FROM OPTION 1 PROJECTS FOR 2017	5,900 tCO₂e

If applicable, please report the names and 2017 GHG emissions reductions (in tonnes of carbon dioxide equivalent (tCO₂e)) being claimed from Option 2 GHG Reduction Projects:

OPTION 2 PROJECT NAME	REDUCTIONS
TOTAL C: REDUCTIONS FROM OPTION 2 PROJECTS FOR 2017	tCO₂e

If applicable, please report the name of the offset provider, type of project and number of offsets purchased (in tonnes of carbon dioxide equivalent (tCO₂e)) from an offset provider for the 2017 reporting year:

(NOTE: DO NOT INCLUDE ANY FUNDS THAT MAY BE SET ASIDE IN A CLIMATE ACTION RESERVE FUND)

OFFSET PROVIDER NAME	OFFSETS
TOTAL D: OFFSETS PURCHASED FOR 2017	tCO₂e

TOTAL REDUCTIONS AND OFFSETS FOR 2017 (Total B+C+D) = 5,900 tCO₂e

Corporate GHG Emissions Balance for 2017

Your local government's Corporate GHG Emissions Balance is the difference between total corporate GHG emissions (direct + contracted emissions) and the GHG emissions reduced through GCC Option 1 and Option 2 projects and/or the purchase of offsets.

CORPORATE GHG EMISSIONS BALANCE FOR 2017 = (A – (B+C+D)) = 15,056 tCO₂e

(20,956 – (Option 1 + Option 2 + Offsets)) = 15,056 tCO₂e

**If your Corporate GHG Emissions Balance is negative or zero,
your local government is carbon neutral.**

CONGRATULATIONS!

If applicable, please record any emissions reductions you will be carrying over for future years and the source of the emissions reductions, including the year they were earned (E.g., Organics diversion, 2016 100 tCO₂e).

SOURCE OF CARRY OVER EMISSION REDUCTIONS (and year earned)	REDUCTIONS
BALANCE OF REDUCTIONS ELIGIBLE FOR CARRY OVER TO NEXT YEAR	tCO₂e

Carbon Neutral Reporting	
Does your local government have a climate reserve fund or something similar?	Yes

GCC CLIMATE ACTION RECOGNITION PROGRAM

Green Communities Committee (GCC) Climate Action Recognition Program

The joint Provincial-UBCM Green Communities Committee (GCC) is pleased to be continuing the Climate Action Recognition Program again this year. This multi-level program provides the GCC with an

opportunity to review and publicly recognize the progress and achievements of each Climate Action Charter (Charter) signatory.

Recognition is provided on an annual basis to local governments who demonstrate progress on their Charter commitments, according to the following:

Level 1 – Demonstrating Progress on Charter Commitments: for local governments who demonstrate progress on fulfilling one or more of their Charter commitments

Level 2 – Measuring GHG Emissions: for local governments that achieve level 1, and who have measured their Corporate GHG Emissions for the reporting year and demonstrate that they are familiar with their community’s energy and emissions inventory (i.e. CEEI)

Level 3 – Accelerating Progress on Charter Commitments: for those local governments who have achieved level 1 and 2 and have demonstrated undertaking significant action (corporately or community wide) to reduce GHG emissions in the reporting year (i.e: through undertaking a GHG reduction project, purchasing offsets, establishing a reserve fund).

Level 4 - Achievement of Carbon Neutrality: for local governments who achieve carbon neutrality in the reporting year.

For purposes of Level 3 recognition, if applicable, please identify any new or ongoing corporate or community wide GHG reduction projects (other than an Option 1 or Option 2 project) undertaken by your local government that reflects a significant investment of time or financial resources and is intended to result in significant GHG reductions:

PROJECT NAME:
Surrey Biofuel Facility

Based on your local government's 2017 CARIP Climate Action/Carbon Neutral Progress Survey, please check the GCC Climate Action Recognition Program level that best applies:

<input type="checkbox"/>	Level 1 – Demonstrating Progress on Charter Commitments	
<input type="checkbox"/>	Level 2 – Measuring GHG Emissions	
<input checked="" type="checkbox"/>	Level 3 – Accelerating Progress on Charter Commitments	x
<input type="checkbox"/>	Level 4 - Achievement of Carbon Neutrality	
<input type="checkbox"/>	Not Sure	