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COUNCIL DATE: **May 29, 2017**

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## REGULAR COUNCIL

TO: **Mayor & Council**

DATE: **May 25, 2017**

FROM: **General Manager, Planning & Development  
Manager, Sustainability**

FILE: **0512-02**

SUBJECT: **Update on Implementation of Community Climate Action Strategy**

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## RECOMMENDATION

The Planning & Development Department recommends that Council receive this report for information.

## INTENT

This report presents an update on the implementation of the Community Climate Action Strategy (the “Strategy”).

## BACKGROUND

In 1998, the City of Surrey became a member of the Partners for Climate Protection Program (PCP) of the Federation of Canadian Municipalities (FCM), a national program that brings Canadian municipal governments together to act on climate change and reduce the local production of greenhouse gas (GHG) emissions.

In May 2010, to meet the provincial requirements of Bill 27, the *Local Government (Green Communities) Statutes Amendment Act*, the City included the following aspirational GHG reduction targets in the City of Surrey Official Community Plan (OCP), modelled on provincial targets:

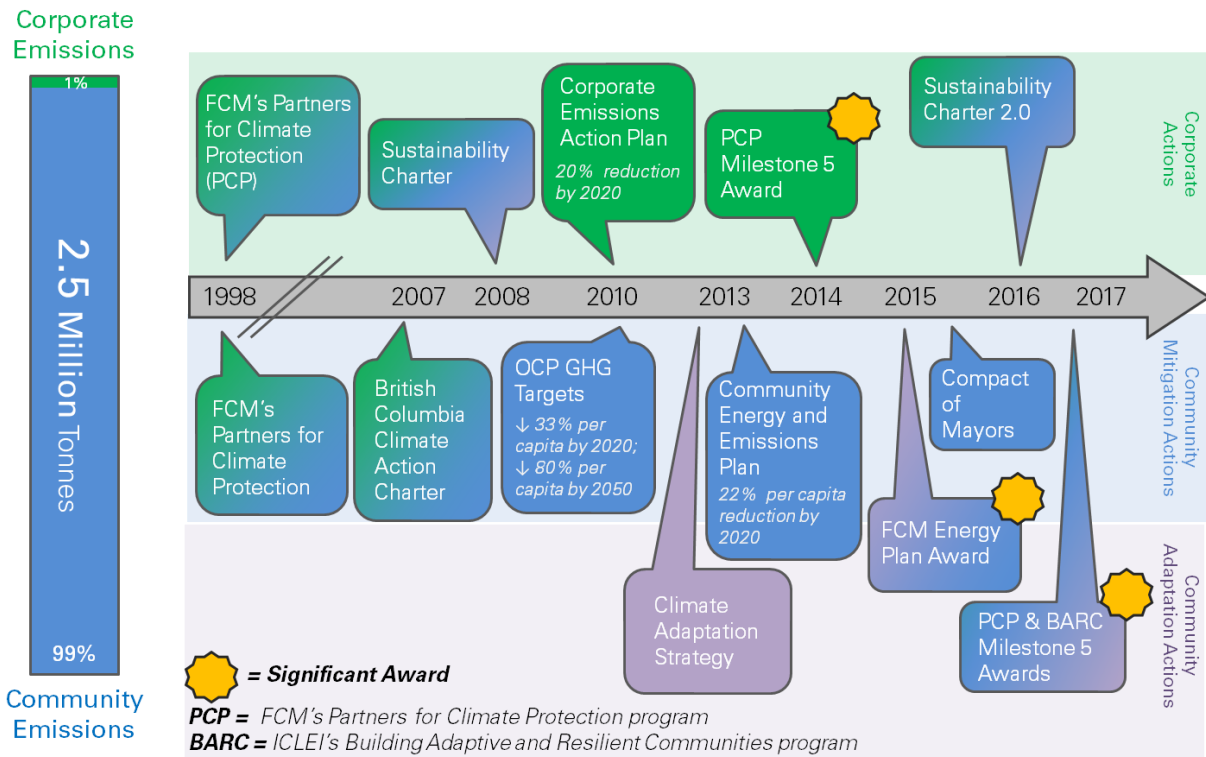
- 33% per capita GHG reduction by 2020, excluding agriculture and industry; and
- 80% per capita GHG reduction by 2050, excluding agriculture and industry.

On November 25, 2013, Council considered Corporate Report No. R233; 2013 titled “Community Climate Action Strategy” and approved the final Strategy. An update on the Climate Strategy implementation was last provided to Council in 2016, when Council considered Corporate Report No. R042; 2016 on February 22, 2016.

The City has moved through the milestones of the PCP Program under FCM (for climate mitigation), and the Building Adaptive and Resilient Communities (BARC) program under ICLEI-Canada (for climate adaptation). In September 2016, the City received the final Milestone 5 under the BARC program. At the upcoming FCM conference in June 2017, Surrey will receive the final Milestone 5 under the PCP Program for community-wide GHG reduction progress.

Both of these final milestone awards mark significant progress, and we are awaiting confirmation that Surrey is the first Canadian city to have achieved both Milestone 5 awards for mitigation and adaptation efforts. Figure 1 illustrates Surrey’s significant commitments and achievements related to corporate and community climate action over the past decade.

**Figure 1: City of Surrey Climate Action Milestones**



**DISCUSSION**

Local governments have a unique interest and opportunity in planning for a changing climate. Communities are vulnerable to climate change due to extensive infrastructure supporting high concentrations of people and economic activity. As the level of government closest to community-scale circumstances, municipalities are well-placed to proactively plan for and respond to affected services. Municipalities also have the ability to influence and lead GHG reductions through land use planning (e.g., densification along major transit corridors), energy supply (e.g., local district energy solutions), and buildings (e.g., through new construction and retrofits of existing buildings). In the long term, as rising energy costs act against local government efforts to maintain affordability in their communities, reducing energy use will become an increasing priority.

The City has developed two complementary climate action plans that make up the Community Climate Action Strategy:

1. The *Community Energy and Emissions Plan* (or CEEP) provides a guide to reduce community energy spending and greenhouse gas emissions; and

2. The *Climate Adaption Strategy (CAS)* identifies how the City may be vulnerable to climate change impacts and proposes actions to mitigate risk and cost.

Together, these two plans reinforce the City's broader efforts toward establishing Surrey as a prosperous and resilient 21<sup>st</sup> Century urban centre. **The City won a FCM 2015 Sustainable Communities Award in the Energy category, for the Community Climate Action Strategy.**

### **Community Energy and Emissions Plan (Mitigation)**

The CEEP includes policy tools that support desired energy outcomes, including a viable rapid transit network, improvements to new building energy performance, building retrofit opportunities, and district energy. Strategic directions in the CEEP include the following:

- Complete, compact, connected corridors supporting a high quality rapid transit network and low carbon district energy systems;
- A framework to meet steadily rising building energy standards through capacity building efforts, the exploration of local incentives, and connecting the development community with existing incentives available for energy efficiency;
- Rapid transit development, improved bus service, and walking and bike infrastructure around and between Town Centres and the City Centre;
- A suite of green car strategies; and
- Initiatives that build on the City's Rethink Waste program, including the development of an organic waste biofuel facility.

Strategies have been developed in the CEEP to redirect Surrey's energy and emission trajectory by 2020, achieving a 22% per capita GHG reduction, increasing to a 47% per capita reduction by 2040 with the largest reductions being made within the transportation sector. Annual community-wide energy savings are projected at \$832 million by 2040. These more refined CEEP targets complement the City's aspirational GHG targets as outlined in the OCP. The CEEP targets reflect the City's efforts to define an assertive and pragmatic low-carbon path that will slow emissions growth; they also move the City towards the aspirational GHG reduction targets in the OCP. Technological advances will accelerate further progress towards these targets.

Of particular note are the following initiatives in progress or completed over the past year:

### **District Energy**

- The addition of four new customer buildings to the district energy system, bringing the total floor area served to over 1.5 million ft<sup>2</sup>.
- Completion of the design of the West Village District Energy Centre which will allow the utility to grow beyond the capacity of the two existing temporary energy centres.
- A carbon intensity target of 0.07 T CO<sub>2e</sub>/MWh was established for the heat delivered by the district energy system as part of the Sustainability Charter update.

### **Buildings & Land Use**

- A new Building Energy Specialist position was created to help ensure compliance of energy sections of BC Building Code.

- The Sustainability Office secured funding from FortisBC to pilot a new Energy Analyst staff position to explore opportunities to reducing emissions through ongoing energy conservation and management, renewable natural gas and vehicle fuel conversion.
- The “Empower Me” program was delivered to 117 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 422 Surrey households have participated.
- The first applications were submitted in alignment with the West Clayton building energy efficiency density bonus policy, by Garcha Homes.
- Training sessions were delivered to over 125 builders on construction techniques for energy efficient buildings.
- Building energy design guidelines were prepared to help inform design considerations to reduce building operational energy requirements.
- The Sustainability Development Checklist was updated to reflect changes to technologies, codes and standards.
- Staff contributed to the development of BC Energy Step Code, which grants new authority to local governments to include building energy efficiency performance requirements in bylaws.

### Transportation

- Initial funding for Phase 1 of Surrey LRT was secured, which advanced design closer to procurement readiness.
- Bike lanes were increased by 35 km.
- Greenways were increased by 26 km.
- Sidewalks were increased by 20 km.
- 27 new accessible bus stops were established.

### Waste

- Construction commenced on the biofuel facility in 2016 and is scheduled for completion in 2017.

In 2016, a new community greenhouse gas inventory was prepared for year 2014 and in alignment with the requirements of the Global Protocol for Community-Scale GHG Emission Inventories (GPC). The GPC is best practices for community GHG inventories and facilitates comparison between cities and better alignment with national inventories. Previous inventories for the City of Surrey were prepared by the Province of British Columbia’s Climate Action Secretariat in the form of the Community Energy and Emissions Inventory (CEEI). The primary difference between the GPC and CEEI is the inclusion of additional emissions activity sources, notably industrial processing, agricultural activities, fugitive emissions from natural gas systems and rail and off-road vehicle emissions.

Compared to the City of Surrey’s baseline year of 2007, community-wide annual GHG emissions increased by 97,000 T CO<sub>2</sub>e, or 4%, in 2014. However, population has increased by approximately 75,000 people over this period and as a result **per capita emissions have dropped 11%**. The biggest reduction in GHG emissions has been associated with the building sector, which has reduced annual emissions by 61,000 T CO<sub>2</sub>e (8%) despite substantial growth in new construction. Transportation emissions increased by 158,000 T CO<sub>2</sub>e/year (10%) from 2007 to 2014. At the time the CEEP was developed, the projected reductions for transportation emissions assumed higher level government intervention on fuel standards, which have not been introduced.

Nevertheless, **the City is on track to meet the CEEP target of a 22% per capita reduction by 2020.** Changes in community GHGs are a result of various forces including changes in population, market conditions, federal and provincial policies and local initiatives. In 2016, an evaluation was conducted to estimate the projected direct impacts that the City of Surrey's major initiatives – including LRT and district energy - will have on community GHGs. Results of this evaluation suggest that actions taken or currently underway by the City of Surrey will reduce total emissions by approximately 125,000 T CO<sub>2</sub>e/year (5% of 2014 emissions levels) by 2025.

### **Climate Adaptation Strategy (Adaptation)**

Using ICLEI-Canada's five-milestone climate adaptation framework, staff assessed projected climate impacts to Surrey in terms of risk and then developed goals and actions for six sectors: Infrastructure; Flood Management and Drainage; Ecosystems; Urban Trees; Human Health and Safety; and Agriculture and Food Security. Priority actions identified in the *Climate Adaptation Strategy* include the following:

- Conducting detailed analysis on timelines and extent of sea level rise and related effects on flood construction levels and floodplain designations;
- Supporting the development of a Regional Flood Management Strategy;
- Enhancing data collection and monitoring specific to Surrey;
- Continuing to improve and protect the quality and quantity of habitat;
- Planting tree species for conditions of a future climate;
- Ensuring adequate tree canopy and root space;
- Encouraging passive building design features; and
- Continuing to build community capacity to reduce vulnerability and increase resilience.

Of particular note are the following initiatives in progress or completed in 2016:

- The Coastal Flood Adaptation Strategy was launched to prepare Surrey for a changing climate and to help our coastal communities become more resilient. Adaptation options will be explored to develop preferred strategies to adapt to sea level rise throughout Surrey's coastal floodplain area. Technical floodplain studies previously conducted are being used to build awareness and inform the adaptation options being explored. Phase 1 of the three-year process involves extensive engagement with residents, stakeholders and partners.
- The City continued involvement in the Lower Mainland Flood Management Strategy (LMFMS), which completed Phase 1 on analysis of future flood scenarios, a regional assessment of flood vulnerabilities, and an assessment of flood infrastructure, policies and practices. Phase 2 of LMFMS was initiated, which will deliver an action agenda, regional mitigation priorities, and agreements among partner organizations.
- A rainfall assessment is currently underway to better understand changes in precipitation patterns and inform future servicing requirements. ISMPs and NCPs continue to be used to enhance storm water management practices.
- New and upgraded infrastructure is being designed to meet future climate conditions; in 2016, three pump stations were upgraded to better control flooding with changing water

levels, and were designed so further modification can take place as conditions continue to change.

- High value habitats are better protected by the adoption of Streamside Setbacks through amendments to the General Provisions section of the Zoning Bylaw and amendments to the OCP with the incorporation of new Sensitive Ecosystem Development Permit Area Guidelines. Forthcoming amendments to the City's Tree Protection By-law and Soil Conservation and Protection By-law will enshrine Biodiversity Conservation Strategy definitions and maps, reference the Sensitive Ecosystem and Hazard Land DPAs, and modify penalties to better protect high value habitats.
- 29 acres of parkland were added to the BCS Green Infrastructure Network (GIN) through land development applications (conveyance) and NCP implementation. Total GIN protected as Parkland is now 5,036 acres.
- The Shade Tree Management Plan was adopted by Council and guides urban forestry management practices on public property. Early success includes design guidelines for new development in City Centre requiring sufficient soil volume to support growth of large trees. In addition, a standard of one street tree every 10 metres is being applied in new developments.
- The City participated in the Advisory Panel for Metro Vancouver's *Urban Forest Climate Adaptation Framework*, and the supporting *Design Guidebook for Maximizing Climate Adaptation Benefits with Trees*. 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.
- Surrey's urban forest and habitat was enhanced with the planting of over 4,500 new shade trees and the removal of invasive plants from 10.75 ha of park land and road allowance. In addition, over 10,500 m<sup>2</sup> of passive or degraded park land was converted to natural area.
- Published *Designing for Energy Efficient Buildings: A Reference for Planners and Designers*, to guide development in using more passive design elements in buildings. Passive design will protect health and mitigate rising energy costs as cooling demand increases with rising temperatures.
- An interdepartmental Neighbourhood Team continues to support resident-driven initiatives that build resilience through a greater sense of community and more neighbourhood connections.

Staff continue to monitor progress on both mitigation and adaptation using indicators from the City's Sustainability Dashboard. As specific projects are developed to advance this work, Council will be kept apprised of further progress.

## **SUSTAINABILITY CONSIDERATIONS**

The *Community Climate Action Strategy* supports many of the Desired Outcomes (DO) identified in the Sustainability Charter 2.0:

- Built Environment & Neighbourhoods DO 9: All aspects of planning, design and construction include climate change impacts, GHG mitigation, adaptation, and resiliency strategies.
- Built Environment & Neighbourhoods DO 13: Buildings are healthy and energy and resource efficient.
- Public Safety DO 8: The community's critical infrastructure and systems are designed to withstand climate change impacts and natural events and disasters, and include emergency response and reconstruction plans.
- Infrastructure DO 6: The City anticipates changing weather patterns and sea level rise as a result of climate change, and implements appropriate infrastructure, land use planning and emergency response solutions that will be resilient over the long term.
- Infrastructure DO 7: Per capita emissions are low, and align with global GHG reduction targets.
- Infrastructure DO 8: Neighborhood-scale district energy systems provide low-carbon energy in dense urban neighborhoods.
- Infrastructure DO 9: Energy is produced locally, using distributed and renewable sources when economically feasible.
- Infrastructure DO 10: Buildings in the community are energy-efficient and offset their own energy with onsite energy generation.
- Infrastructure DO 12: Surrey residents have access to sustainable and active transportation options, enabling them to participate fully in society without the use of a private automobile.
- Infrastructure DO 13: Low-emission vehicles predominate and are supported by the necessary fueling infrastructure.

## CONCLUSION

The *Community Climate Action Strategy* provides an integrated action plan to reduce community energy costs and GHG emissions, and effectively manage risk and increase the City's resilience to the effects of climate change. Surrey's innovative approach brings the two plans forward together and identifies the important cross-linkages between mitigation and adaptation actions. A number of key projects over 2016 and into 2017 have advanced the Climate Strategy's goals and actions.

It is recommended that Council receive this report for information.

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