

## Corporate Operations

### **City of Abbotsford – Green Fleet Strategy**

The City of Abbotsford currently has a fleet of over 600 vehicles, ranging from light to heavy duty. Both the City's Council Strategic Plan and Official Community Plan (OCP) set clear community-wide greenhouse gas (GHG) reduction targets: 20% by the year 2025 and 40% by the year 2040 against 2007 emission levels. The City's fleet emissions alone account for 52% of all corporate emissions. The City wishes to lead by example and reduce corporate GHG emissions by aligning with these OCP targets.

To do this, a consulting firm was hired to develop a Green Fleet Strategy for guiding fleet renewal and replacement planning to reduce GHG emissions. This study aimed to recommend alternative fuel technology and environmentally conscious practices to reduce corporate emissions. This included the recommendation of alternative fuel vehicles for different vehicle user groups, operations and maintenance impact assessment, and emissions/cost comparison relative to conventional fossil fuel vehicles. An in-depth analysis was done for CNG fuelling and electric vehicle technology. Apart from a facility gap analysis for CNG refuelling, the consultant also performed research on required electric vehicle charging infrastructure for different types of electric vehicles. Five scenarios of green fleet configurations were considered to assess the impact of various alternative fuel technologies. The best option for the conversion of fleet vehicles was Option 5, which is a mix of CNG and Hybrid Electric Vehicles (HEV), with bio-diesel for fire department van and fire trucks and the garbage truck fleet converted from diesel to battery electric.

### **District of Central Saanich – Central Saanich Solar Fire Hall #1**

Central Saanich's Fire Station 1 is a shining example of cost-effective renewable energy. By harnessing the sun's free energy, the Fire Station can generate up to 80% of current energy consumption through its solar photovoltaic (PV) system consisting of 360 panels. The capacity of the PV system is 138.15 kW and is expected to generate 144,600 kWh annually, which is equivalent to the energy consumed in about 12 households. Fire Station 1 is built to LEED (Leadership in Energy Efficiency and Design) Silver standard and includes geothermal heating. The Fire Station intends to achieve a net-zero energy certification through additional conservation measures and will be one of the first net-zero Fire Stations in the province.

The project was funded from the District's Climate Leadership Reserve Fund, which will recoup the investment through savings from reduced hydro costs without any impact on property taxes. The PV system is expected to completely recover the installed cost in 11.4 years. Net earnings are estimated to be over \$500,000 after 25 years.

### **District of Elkford – Elkford Energy Efficient Municipal Office**

With a commitment to require new homes in Elkford to be built to the BC Energy Step Code, the District of Elkford chose to lead by example and made GHG emission reduction a priority in the design and construction of a new Municipal Office. The new 6,000 square foot Municipal Office was constructed to Commercial Step 3 of the Energy Step Code. The building should use 20% less energy than a

conventional commercial building. The District also chose to promote the solar capability of Elkford, which is recognized as being in the top five locations in Canada for solar production. Solar panels have also been installed, which have the potential to provide up to 60% of the electrical needs of the building. The project includes 72,385 watt panels, with the potential to provide 27 kWdc or 42,000 Kwh per year of solar power. The District thanks the contributing sponsors towards the solar panels: Solar Now and Columbia Basin Trust.

### **Village of Granisle – Biomass District Heating System**

The Granisle Bio-energy District Heating System was a significant undertaking for the Village of Granisle and we are very pleased with the results. The project allowed the municipality to install bioheat (using wood chips) to the Village Office, Granisle Public Library, Doug Matheson Memorial Arena, Granisle Curling Rink, Granisle Fire Hall, Granisle Tourist Information Centre, and Granisle Public Works shop and office. In addition, the Village generates heat, which is sold to School District 91 to heat Babine Elementary Secondary School.

### **City of Vernon – Climate Action Revolving Fund for Electric Bicycle Fleet**

In September 2018, Council endorsed the Climate Action Revolving Fund and related policy. This allows Council to utilize the carbon tax reserve funds designated for climate action to support corporate and community projects that can demonstrate GHG emission reduction (and "pay back" the reserve using the energy savings of the project). At the same time, Council designated up to \$5,000 for a composting pilot and \$20,000 for the purchase of electric bicycles to be used by staff for business purposes. In May 2019, the City purchased six electric bikes, which are used by staff performing a variety of duties including inspections, site visits, meetings and errands.

## **Community Design and Development**

### **Regional District Central Kootenay – Regional Energy Efficiency Program – New Home and Home Renovation**

The Regional Energy and Efficiency Program (REEP) is a 2-year integrated, innovative and multi-sectoral approach to reducing greenhouse gas emissions in residential housing stock of the RDCK. Launched in April 2019, REEP is a collaboration of the Community Energy Association (CEA), Nelson EcoSave/Nelson Hydro, FortisBC, BC Hydro, and RDCK and member municipalities.

REEP has 2 programs:

1. *New Home*: high performance/energy efficient construction training and education, integration with BC Energy Step Code, policy development and coordination, and region wide communication with member municipalities and rural areas. REEP New Home will produce 80% penetration to affect 76 homes per year. Over 2 years, it will result in 152 homes with improved energy efficiency, and an estimated total reduction of 392 tonnes of GHGs per year.

2. *Home Renovation*: subsidized energy assessments, free energy efficiency equipment, and coaching/coordination for energy efficient improvements such as the following:

- Improving insulation (attic, basement/crawlspace, exterior walls)
- Reducing air leakage/increasing air sealing
- Converting to more efficient space and water heating systems (e.g. ductless air source heat pumps)

Over 2 years, REEP is designed to penetrate 3% of the residential housing stock or 774 homes with successful retrofits in 65% of them for a total of 503 energy retrofits. It is conservatively estimated to save 309 tonnes of CO<sub>2</sub>e/yr.

### **Regional Districts of East Kootenay, Central Kootenay and Kootenay Boundary**

#### **– Accelerate Kootenays**

Accelerate Kootenays is the result of an unprecedented collaboration around the design, implementation and funding of a community-led electric vehicle charging network. The Regional Districts of East Kootenay, Central Kootenay and Kootenay Boundary identified the opportunity to address a significant charging infrastructure gap in the Kootenays early in 2016. The majority of community-wide emissions originate from the transportation sector. The rural nature of the region, and the reliance on personal vehicles to travel between dispersed communities results in a higher contribution of the transportation sector toward community-wide emissions. Establishing a regional network of charging infrastructure provides an opportunity for residents to consider the purchase of a low emission electric vehicle. Furthermore, addressing the charging infrastructure gap in the Kootenays allows for electric vehicle tourism. EV drivers tend to determine their travel plans based on access to charging infrastructure.

Accelerate Kootenays has demonstrated a unique and successful approach to EV charging network development. The results of the project are 13 DC Fast Charging stations owned and operated by BC Hydro and FortisBC (in their respective electrical service area) and 42 Level 2 stations. The number of EVs in the Kootenays has more than tripled over the course of the project, and thousands of charging events have supported regional travel by locals and tourists. The project established a base network that is now being expanded upon further by investments in more infrastructure from FortisBC, Petro Canada and Electrify Canada.

#### **Fraser Valley Regional District - Fraser Valley Food Recovery Project**

The Fraser Valley Food Recovery project with FoodMesh has delivered in 12 months a food recovery project that has diverted over 100,000 KG of surplus food at a value of \$400,000, creating over 165,000 meals in the process and preventing waste going to landfill. The government supported program with industry has led to a pilot project with Save On Foods, who is now rolling it out in 100 of its 170 stores across BC and is aiming to replicate it across Western Canada. The project supports over 60 companies in finding alternative options for surplus food and provides the food banks and charities with a plethora of food, which if not eaten, is taken by the farming community as feed.

### **Fraser Valley Regional District - Love Our Air Education Program**

The lessons within the new 'Love Our Air' teacher workshop introduces students to issues regarding air quality and climate change in the region. Designed for grades 5 and 10 classrooms, the lessons are linked to the new BC Curriculum. The main objectives of teaching air quality and climate change are to develop students' personal and social awareness of their roles and responsibilities with respect to the environment, and their ability to make decisions about ways to reduce pollution through their everyday actions. The workshop includes hands-on activities while teaching students the relevance of air quality in their own lives, in their community and in the wider world. Students learn to identify types of air pollutants, their sources and impacts, as well as possible actions and solutions that they can take as individuals or with their community.

Electric vehicles are a highlight of the program, and students learn why electric vehicles are so clean in BC. To wrap up the workshop, students build a toy electric car to demonstrate how they work in real life.

Based on teacher feedback and the high waitlist, the Love Our Air education program has been successful to date. Inclusion of air quality and climate education in the school curriculum will further promote place-based knowledge of the natural world and the local areas. Through this program, students will understand the relevance of air quality and climate change in their own lives, in their community and in the wider world.

### **City of New Westminster – Energy Save New West – A Leading Community-driven Energy Efficiency and Renewable Energy Program**

Energy Save New West (ESNW) is one of the longest running and most comprehensive community energy efficiency and GHG emission reduction programs in Canada. Since launching in July 2013, ESNW has grown into a trusted engagement platform for local residents, businesses, nonprofit organizations and the design and construction community. It provides support services, program incentives and training resources to help drive improved building performance and uptake of renewable energy in New Westminster.

ESNW is designed and mobilized by City of New Westminster staff, with a collaborative network of program partners and supporters including BC Hydro, FortisBC, Metro Vancouver and the Province of BC. The focus of the program is to deliver a better experience that makes it easier for participants to access and engage in areas of direct interest, whether they are homeowners, business owners, or builders and developers.

Key program elements include:

1. High-impact, visible and locally-focused training, incentive and outreach initiatives targeting energy conservation and energy efficiency improvements for new (e.g. BC Energy Step Code) and existing homes, multi-unit residential buildings and local businesses.

2. A comprehensive multi-year approach that provides a recognizable program brand for the community, bridging the inevitable shifts and changes in provincial and national energy efficiency incentives and rebates.
3. A full continuum of program supports and guidance to local homeowners and businesses for a straightforward and enjoyable customer journey from initial energy assessment to implementation.

Since launching in July 2013, ESNW has recruited over eight hundred participants into five program streams, which include programs for Existing Homes, New Homes, Multi-Unit Residential Buildings, Small Business and our Urban Solar Garden.

### **City of Powell River – Edgehill Crescent Comprehensive Development Zone Reduces Standard Lot Size by Half and Brings Sustainable, Low-Carbon, Affordable Housing Options to Powell River**

The creation of the new Edgehill Crescent Comprehensive Development Zone signified a dramatic shift in Powell River to more compact, sustainable and walkable development.

The newly established zone transformed the Edgehill Crescent area from two-hectare rural parcel zoning to dense urban development. This new comprehensive development zone, which was created specifically for Edgehill Crescent area, dramatically reduced the typical Powell River lot size from 730 square meters for the smallest single family residential lots to as little as 300 square meters. This shift promotes smart community growth, creates a walkable neighbourhood close to commercial amenities, promotes infill development rather than sprawl, increases housing diversity, promotes affordability, and grows the supply of rental housing.

In addition to new zoning, development in Edgehill Crescent will be guided by a new Development Permit Area (DPA), which requires solar and EV ready construction, encourages the use of local and natural building materials, water wise landscaping, and other sustainable features such as rain barrels, green roofs, rain gardens, and recycled materials. Sheltered and secure bicycle and/or scooter parking is also required and will promote active transportation.

### **City of Prince George – Aligning Climate Change Mitigation and Adaptation Processes at the City of Prince George**

The City of Prince George has a long history of climate change mitigation and adaptation leadership. The City joined the FCM PCP program in 2001 and became one of the first five communities in Canada to complete the five-milestone program for mitigation in 2011. The City is in the process of producing an updated mitigation plan with the assistance of CEA, which includes a modernized emissions inventory, targets that align with provincial and federal commitments, and action items that reflect current City initiatives and goals.

Additionally, the City of Prince George was also one of the first municipalities in Canada to develop a Climate Change Adaptation Strategy in 2009 and is undergoing an update through the ICLEI Adaptation Changemakers Program. The City is in the process of linking the updated Climate Change Mitigation Plan

work with climate change adaptation planning processes that are occurring conjunctively to streamline planning and resources and embed climate action priorities.

Stakeholder consultation has been integral to this innovative planning process, including workshops with internal City staff and external industrial, commercial and institutional partners plus public participation sessions. Overlap between the two planning processes has involved collaborating with similar stakeholders and exchanges between both consulting partners to align action items to advance low carbon resilience in Prince George.

The City of Prince George has a strong and well-defined vision for a sustainable future and is poised to be a leader as it moves forward on strategically integrating climate adaptation and emissions reduction action items.

### **City of Richmond – EV Ready Charging Infrastructure Requirements Leadership**

The City of Richmond is proud to be a leader in climate action and to support its community members in adopting electric vehicles (EVs). On December 18, 2017, Richmond City Council made history, becoming the first jurisdiction in North America to require that all residential parking spaces in new developments feature an energized electrical outlet capable of providing Level 2 EV charging. This policy is critical to enabling widespread EV adoption.

Richmond developed this requirement through a rigorous multi-stakeholder consultation process and ground-breaking costing analysis. The City built consensus around a solution to the “EV readiness” problem, ultimately garnering the support of the development and homebuilding community, EV advocates, and members of the public. The City subsequently developed resources to help new and existing multifamily buildings implement EV charging, and to guide other local governments in making similar requirements.

Richmond’s EV charging infrastructure requirement is viewed as one of the single most important actions a local government can take to support adoption of EVs and pursue climate targets. Multiple local governments in BC have replicated the requirement, and it is being considered by other communities across Canada and North America.

### **Town of Smithers – From Plan to Action: GHG Reducing Infrastructure and Initiatives in the Town of Smithers**

The Town of Smithers created a sustainability plan consisting of 1) the 2012 Community Energy and Greenhouse Gas Emissions Plan, 2) the 2012 Corporate Energy and Emissions Plan, and 3) the 2012 Sustainable Resiliency Plan. With the Town's sustainability plan in place, Smithers has moved towards increased promotion of active and accessible transportation, EV infrastructure and literacy, and upgraded community facilities. These have included the development of an active transportation plan, increased accessibility on walkways, investment in level 2 charging stations, the use of geothermal heating and related upgrades at the Smithers Regional Airport, increased use of solar panels, and plans for greater energy efficiency during phase 1 of the proposed cultural centre.

## Climate Adaptation

### City of Campbell River – Campbell River Rising Seas

The Sea Level Rise planning project at the City of Campbell River is in its concluding stages with preparation of a city-wide strategy underway. This project sought to take a broad and proactive view of flood risk posed by future rises in mean sea level, and set out to engage the public in selecting appropriate future responses that also serve to promote shoreline values such as ecology, access and views. Public outreach, youth engagement and dialogue with First Nations have been key project components.

The City engaged Northwest Hydraulic Consultants to perform technical analyses, modelling local wind and wave conditions under 1:200 year storm conditions at present day and then with future sea level rises factored in. These base analyses resulted in a set of flood construction levels being defined for the entirety of the urbanized coastline, on which a future flood bylaw can be based. However, analysis then went further and included proposing and testing different flood mitigation measures in various locations.

Landscape architecture firm Lanarc was engaged to produce colourful, locally-branded public engagement materials, including a series of primers, 3D models, draft development permit guidelines, and videos. The City and its consulting team worked to present options to the community and evaluate future approaches according to public shoreline values. A package of options, ideas and approaches, evaluated for technical feasibility and indicative costs, and informed by public input, is now available for staff and Council to craft the City's first Sea Level Rise Strategy.

### City of Richmond – Flood Protection Program

As part of the Resilient Economy, Climate Change Response, and Sustainable Infrastructure and Resources objectives of its Official Community Plan, the City of Richmond's Flood Protection Program (RFPP) is investing in major disaster mitigation infrastructure to contribute to the Province's economic growth and citizen safety as well as build a stronger community.

Over \$50 million is expected to be spent in the next 5 years on proactively upgrading the City's flood protection infrastructure. This work includes perimeter dike raising, drainage pump station upgrades and innovative research into nature-based solutions. The City is a leader in advancing climate change resilience and works closely with regional authorities and senior government to collaboratively identify risks and mitigation strategies.

Current initiatives include:

- Establishing the Flood Protection Management Strategy 2019, a guiding document on flood protection for the City based on current climate change science and best practices;
- Upgrading the City's perimeter dike to a minimum of 4.7m geodetic, a world-class standard in advance of the Province's sea level rise projections for the year 2100;

- Completing the construction for multiple drainage pump stations to increase citywide resilience to flooding; and
- Pioneering the investigation into nature-based solutions for soil stabilization and flood protection.

The City of Richmond is proactively preparing for climate change through advance planning, structural upgrades and updates to policy to establish a world-class flood protection program.

### **City of Surrey – Coastal Flood Adaptation Strategy**

The City of Surrey is a coastal community which has actively managed flooding since the 19th century. About 20% of Surrey land is located within coastal floodplains, including residential communities, agricultural lands, valued natural habitats, and significant critical infrastructure such as highways, water, sewer, power and rail lines.

To tackle the hard questions about sea level rise, the City of Surrey embarked on an innovative public planning process that incorporates engineering analysis, including extensive coastal, riverine and hydrologic modeling, flood mapping, and risk modeling. Residents, stakeholders and partners were involved in the identification, screening and prioritization of long-term coastal adaptation options, by employing a structured, values-based decision-making approach to compare the multiple benefits and trade-offs of potential flood-management strategies. Various creative visual communication tools were used to convey the complex messages to a diverse set of stakeholders with different levels of technical understanding. Through this integrated, participatory, adaptive and transparent process, stakeholders helped to co-develop solutions that stretched the conversation beyond the traditional way of thinking, with adaptation approaches such as coastal realignment and managed retreat being shortlisted. Over 30 workshops, focus groups, surveys and meetings to support the project have been critical in working towards a broadly supported decision on how best to adapt to sea level rise by year 2100.

Concurrently, priority, short-term infrastructure investments were developed that were consistent with long-term coastal adaptation needs and strategies. The process positioned Surrey well for securing external funding to increase the resilience of critical infrastructure, while providing additional community and environmental benefits.