



UNIVERSITY ENDOWMENT LANDS

COMMUNITY RESILIENCE

Our community and region will be affected by climate change and will require significant leadership, planning and collaboration, to reduce our emissions that contribute to climate change and to adapt to changing conditions.

Energy management is an important part of planning for a resilient future. To support more sustainable energy use, we can aim to reduce energy use and shift to lower emission energy sources, such as renewables, in buildings, vehicles, facilities and infrastructure.

Our transportation-related emissions may also increase as we grow and continue to commute by vehicle, but we can reduce our emissions through compact, efficient land use, active transportation and low emission vehicles.

Increasing the resilience of our community and its natural systems involves enhancing the health of our environments and investing in resilient amenities, assets and infrastructure.

HOW CAN WE SUPPORT A MORE SUSTAINABLE AND RESILIENT COMMUNITY, REDUCE OUR EMISSIONS AND ADAPT TO CLIMATE CHANGE?

TRENDS & ISSUES

- **Most of our emissions come from buildings and transportation.** Buildings generate greenhouse gas emissions from burning fossil fuels for space and water heating. 30% of people in this area also use cars, with many commuting to and from the area daily.
- **We are already affected by climate change.** The region warmed by 1.4°C over the last century. By the 2050's, the average annual temperature is projected by Metro Vancouver to increase by another 2.9 - 3.4°C (from the 1961 to 1990 average temperature baseline).¹
- **We are at risk from future climatic changes.** Climate change will likely increase extreme weather events which increase health and safety risks from heat, wildfire smoke, smog, flooding, drought, and more. More intense wind and rainstorms will increase damage to our buildings and infrastructure. Reduced snowpack and hotter, drier summers also strain our water supply. We will need to mitigate these and other natural disaster risks and increase our resilience.
- **Ecological resilience is a challenge and opportunity.** Nature provides many ecological services including storm water management, pollination, cooling, capture of carbon emissions and purifying our air and water. Our natural areas are vulnerable to impacts caused by trail use, erosion, sedimentation, development, invasive species and climate change. We will need to conserve and enhance our ecosystems to ensure we retain these natural ecological services.
- **We are reducing our energy use.** The UEL has been building on long-standing greenhouse gas mitigation efforts such as planning for a compact community, transit-oriented development, energy efficient buildings, and energy conservation. Area D is a mixed-use neighbourhood with residential, retail and commercial amenities in close proximity, which is walkable. Employment close to residences, access to transit and a good cycling network support sustainable transportation choices.

¹ Metro Vancouver. Climate Projections for Metro Vancouver. <http://www.metrovancouver.org/services/air-quality/AirQualityPublications/ClimateProjectionsForMetroVancouver.pdf>

KEY FACTS

- GHG emissions come primarily from cars and light trucks (31%) and buildings (29%).
- By the 2050s, the region is projected to experience¹:
 - Warmer temperatures (average increase of 3°C).
 - Hotter and drier summers (average increase of 25°C days from 22 to 55 days per year).
 - Warmer winters (60% decrease in frost days).
 - Wetter falls and winters (5% increase in annual rainfall).
 - Decreasing snowpack in mountain watersheds.
 - Rising sea levels (they have risen 4 to 12 cm along most of the coast since the 1900's)
 - More extreme weather events.

KEY DEFINITIONS

Greenhouse Gas (GHG) emissions contribute to climate change and include Carbon dioxide (CO₂), Methane (CH₄) and Nitrous oxide (N₂O).

Climate Change: Climate is defined as the “average weather” in a location, over a period of time. Climate change is a change in the mean state of the climate that persists for decades or longer. The global climate has changed very slowly as a result of natural causes but more recent rapid change is attributed to human activities.

Mitigation: Climate change mitigation is about reducing GHG emissions to slow human-caused climate change.

Adaptation: Climate change adaptation is about helping communities deal with the consequences of climate change that cannot be avoided. Climate resilience is the ability to bounce back from shocks and stresses that result from climate change.

Resilience is the ability of a system and its parts to anticipate, absorb, accommodate, or recover from the effects of an event or change in a timely manner, including ensuring the preservation, restoration, or improvement of its essential basic structures and functions.

RELATED POLICIES & PLANS

- University Endowment Land Act
- Official Community Plan
- Land Use, Building and Community Administration Bylaw
- Works and Services Bylaw
- Bunt and Associates Area D Transportation Review
- UEL Parking Policy
- BC Building Code
- BC Local Government (Green Communities) Act
- Metro Vancouver 2040 Regional Growth Strategy
- Metro Vancouver Integrated Air Quality and Greenhouse Gas Management Plan
- Metro Vancouver Ecological Health Plan

GOALS

The UEL can work towards the following goals and objectives:

Goal 1: Reduce greenhouse gas emissions

- Encourage the transition to low energy use and sustainable sources of energy
- Achieve zero emissions in new buildings
- Continue to shift to sustainable modes of transportation
- Reduce waste production and water consumption

Goal 2: Increase the communities' resilience to climate change

- Increase our capacity to respond to extreme weather events and disasters and to recover effectively
- Increase the capacity of our built environment to respond to future change
- Sustain and enhance our natural assets, including the watershed and its streams, urban forests, wildlife habitat, parks and green spaces
- Reduce safety and health risks for vulnerable populations
- Incorporate climate adaptation into UEL business

IDEAS

All UEL residents play a role in improving community resilience. The UEL can help support these efforts through policies, regulations, and programs. The following provides options to spark discussion about the best way forward for Area D. It is not a complete list of options and no decisions have been made.

Create An Energy Action Plan.

Develop an action plan for conserving energy, increasing energy efficiency, fostering renewable energy, and reducing GHG emissions.

WE WANT TO KNOW WHAT YOU THINK!

Share your thoughts on the future of Area D by:

- Visiting us at AreaDPlan.ca
- Telling us what you think in an online survey
- Coming to one of our events

Explore Renewable Sources Of Energy. Partner with developers and others to explore options for new developments to use low carbon sources of energy to power and heat buildings.

Prepare For Climate Change. Collaborate with Metro Vancouver, Musqueam First Nation and others to develop a climate change action plan that assesses our vulnerability and risks and prioritizes actions.

Support Emergency Preparedness. Foster individuals' ability to develop response plans to climate-related changes and natural disasters (such as an extreme heat event or earthquake).

Increase Water Conservation And Reuse. Water conservation will become more important as summers become hotter and drier. We can continue efforts to limit non-essential use of treated drinking water (including lawn watering), to reuse greywater and rainwater and to support public drinking water conservation campaigns like "We Love Water".

Enhance Parks And Green Space. Trees and green spaces help reduce our contributions to and ability to adapt to climate change. Trees absorb carbon, keep us cool in the summer and increase groundwater recharge, lowering flood risk from heavy rainfall. Structures like asphalt and buildings absorb more solar energy than greenspace, creating “heat islands”. We can increase our trees, green roofs, lawns, gardens, and alternative surfaces and plant waterwise, biodiverse plants.

Explore Development Policies. Incorporate sustainable development principles into land use policies to determine the right densities, mixed uses, transportation options, and energy-efficient developments.

Improve New Buildings. The BC Energy Step Code is a voluntary provincial standard for energy-efficient buildings beyond the base BC Building Code. We can adopt “better than code” building performance standards or other third party verification programs such as EnerGuide, R-2000, LEED, and Passive House for new construction.

Upgrade Existing Buildings. Encourage existing property owners to reduce GHG emissions and adopt other sustainable practices. For example, Strata councils can access services such as free energy assessments through the Metro Vancouver’s strata energy advisor program as they undertake energy upgrades to their buildings.

Support Active Transportation. Reducing emissions requires making walking, biking and transit easier and more attractive, and transitioning the remaining distance to zero emission vehicles. Explore development options that encourage transit use and work with TransLink and the City of Vancouver on the Millennium Line extension.

Support Fuel Efficient and Electric Vehicles. Increase awareness of electric vehicles, support building owners and residents with EV charging in multi-family buildings and support local businesses to use electric vehicles. We can also require new developments to have electric vehicle charging infrastructure.

Support Car Share Parking. Require in certain areas or under certain zoning the use of car share in new developments or encourage car share stalls with incentives.

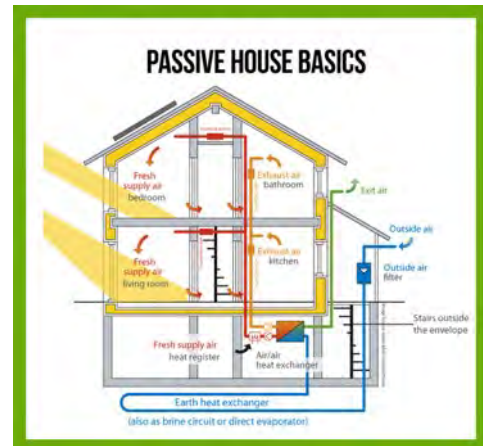
Support Zero Waste. Work with Metro Vancouver and the community to reduce, reuse, and recycle waste and divert organics from landfills. Also explore the next level waste strategy of a transition to a take-make-reuse ‘circular economy’ model.

CASE STUDIES

FREIBURG, GERMANY

Freiburg, Germany is reducing its energy use. The City's energy policy is based on the principles of saving energy through efficient design, creating energy efficiently, and harnessing renewable energy sources².

In Freiburg, the Vauban and Rieselfeld district require homes to follow low-energy standards. Many homes are built to Passive House standards, and the district has limits on car traffic to encourage active forms of transportation.



Within the Vauban district, where [The Solar Settlement](#) was the first housing community in the world to have all of its homes built to be PlusEnergy, they produce more energy than they use through solar panels³. This energy is sold back to the grid, and profits are split between households.



Image Credit: Passive House, Equitable Green Group, The Solar Settlement, Rolf Disch (Solar Architektur)

² Gregory, Regina. 2011. Germany – Freiburg – Green City. Available: <http://www.ecotippingpoints.org/our-stories/indepth/germany-freiburg-sustainability-transportation-energy-green-economy.html> Last accessed: April 9, 2018.

³ Thorpe, David. The World's Most Successful Model for Sustainable Development? Available: <https://www.smartcitiesdive.com/ex/sustainablecitiescollective/words-most-successful-model-sustainable-urban-development/229316/> Last accessed: April 9, 2018

BOULDER, COLORADO

Boulder, Colorado has taken steps to transition to clean, local and renewable energy sources, and to improve the energy efficiency of their buildings⁴. Their goal is to have all buildings be high performance by 2050, and all new buildings to achieve net zero emissions by 2031. This includes providing incentives and support for deep efficiency retrofits, through programs like EnergySmart and Partners for a Clean Environment, and adopting a Net Zero Energy Building Code for all building types.

In 2015, Boulder City Council adopted the [Boulder Building Performance Ordinance](#)⁵, which requires existing commercial and industrial buildings to reduce energy, including thorough tune-ups every ten years. Boulder also plans to work with the county and other public institutions to launch a group solar acquisition program, which will help to lower the cost of ownership for on-site solar through collective purchase agreements.

MORE INFORMATION

[Metro Vancouver Emission Inventories and Forecasts](#)

[Preparing for Climate Change: An Implementation Guide for Local Governments in British Columbia.](#)

[BC Energy Step Code: A Best Practices Guide for Local Governments](#)

⁴ City of Boulder. Boulder Building Performance Ordinance. Available: <https://bouldercolorado.gov/sustainability/boulder-building-performance-home> Last accessed: April 9, 2018.

⁵ <https://bouldercolorado.gov/sustainability/boulder-building-performance-home>