1 Climate Action Plan 2020 Public Consultation March 14 – 27

UBC is committed to climate action to avoid and minimize the impacts of climate change, demonstrate its leadership in research, innovation and learning, reduce long-term operational costs, and create sustainable solutions for the University.

UBC Climate Action Targets

UBC has some of the most aggressive greenhouse gas (GHG) emission targets in North America:

33% below 2007 levels **by 2015**

67% below 2007 levels **by 2020**

100% below 2007 levels **by 2050**

Achievements Since 2010

UBC has achieved a 30% reduction in its greenhouse gas emissions by:

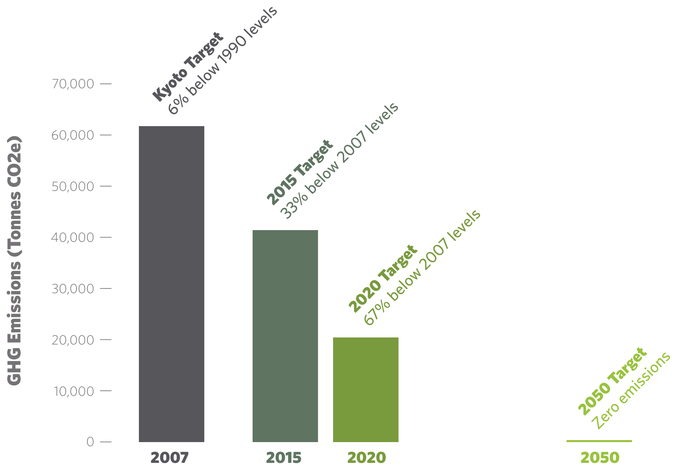
- **Converting** the District Energy System from steam to hot water to heat buildings on campus
- **Building** the Bioenergy Research and Demonstration Facility (BRDF)
- **Optimizing** academic building performance and improving behaviour change programs through the Building Tune-Up Program

Climate Action Plan 2020

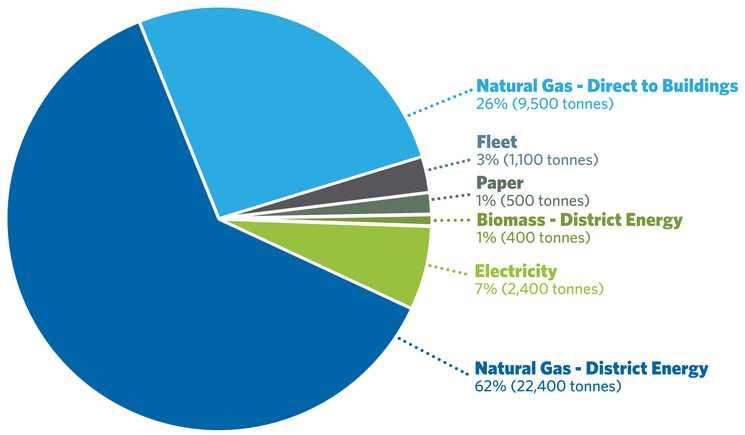
We are now developing the UBC Climate Action Plan 2020 (CAP 2020), which will outline a series of actions UBC could take towards achieving a 67 per cent GHG emissions reduction below 2007 levels.

If UBC takes no new actions to continue reducing GHG emissions, they will continue to rise as the campus grows.

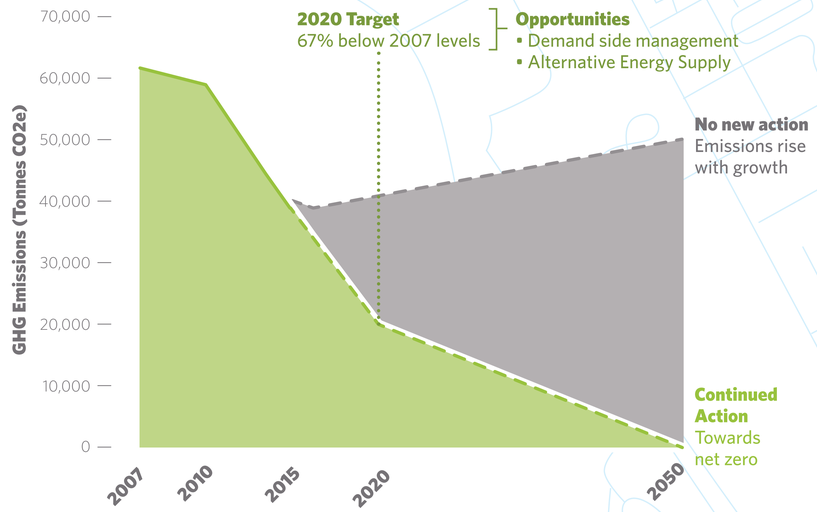
UBC Climate Action Targets



UBC Emissions Sources - 2016 Forecast



UBC CAP 2020 Challenge



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THE UNIVERSITY OF BRITISH COLUMBIA
Campus + Community Planning

2 Process and Evaluation Criteria

As a rapidly growing, research-intensive institution, UBC is working on finding innovative ways to reduce GHG emissions and conserve energy.

Opportunity Areas

The CAP 2020 planning process began in 2015, with a technical analysis of existing operations engagement of key staff, researchers and external collaborators and a call for ideas to UBC researchers and the broader campus community. After evaluating ideas received and doing further technical and feasibility analysis, five areas of opportunity were identified where further GHG emission reductions could be achieved:

- **New & Existing Buildings**
- **Energy Supply**
- **Behaviour Change**
- **UBC's Vehicle Fleet**
- **Other Complementary Opportunities** (such as staff and faculty travel, solid waste, commuting, building lifecycle and paper)

How we evaluated these opportunities

Ideas and proposals were assessed against the following evaluation criteria:

- Alignment with existing UBC plans, policies and guidelines
- Impact on GHG and energy reductions toward achieving the 2020 and 2050 targets
- Economic performance
- Acceptable level of risk (e.g. technically and for the University)
- Within UBC's jurisdiction and control
- Ease of implementation
- Research and innovation or partnership opportunities
- Other co-benefits (e.g. reducing water consumption or community building)

Further detailed financial modelling will be undertaken before recommending any capital investments on energy supply options.

we are here

2015 | 2016

Review May - June
- Meetings
- Technical Analysis

Innovate June - July
- Workshops + Online Engagement

Evaluate August - November
- Public Consultation
- Technical Analysis

Integrate December - May
- Final Analysis
- Develop Climate Action Plan
- Public Consultation

Adopt June
- Present to Board of Governors for Approval

What is a GHG?

A GHG is any gas in the atmosphere that absorbs infrared radiation, thereby trapping and holding heat in the atmosphere. By increasing the heat in the atmosphere, GHGs are responsible for the greenhouse effect, which ultimately leads to global warming.

3 Options: Energy Supply

Energy supply options involve finding alternatives to fossil fuels or non-renewable fuels used to supply our buildings and District Energy System on campus.

Images of the BRDF facility

A wide range of energy supply options including solar, geothermal, waste heat recovery, wind and others were considered, and two options have been selected as potentially, technically and financially viable for UBC to pursue:

❶ Renewable Natural Gas

Purchasing Renewable Natural Gas (RNG) would be sourced through an existing channel, however it would be dependent on the amount of RNG supply available, the contracted fuel price and future carbon pricing. No capital investment project would be required.

❷ Biomass Expansion

This option allows for a tripling of the thermal capacity of the existing Bioenergy Research and Demonstration Facility (BRDF), from 6 megawatts (MW) to 18MW. While requiring a capital investment, the project would build upon the existing infrastructure including the hot water district energy system, and also utilize the existing BRDF facility.

Next Steps

The primary opportunities identified for further GHG reductions are:

- substituting additional alternative energy sources for natural gas
- connecting more buildings that currently have direct gas connections to the district energy system in the longer term.

Immediate actions proposed for energy supply include:

- undertaking a more detailed study of the biomass expansion option;
- continuing to pursue RNG availability and pricing; and
- continuing to incorporate information on carbon pricing into options analysis as it becomes available.

Fuel and Carbon Pricing Considerations

Reducing campus energy consumption reduces GHG emissions but also reduces utility bills, and the amount of carbon offsets and carbon tax that UBC is required to pay.

Financial performance of options 1 and 2 depend heavily on the future of carbon pricing, in particular the BC Carbon Tax, which the Province of BC is in the process of considering through their climate action process.

With a heavy dependence on natural gas for heating, UBC is exposed to price fluctuations that have occurred in the past and have had impacts on UBC's energy budget. Diversification of energy supply is one strategy to mitigate the volatility of any one supply source.

4 Actions: Energy Use in Buildings

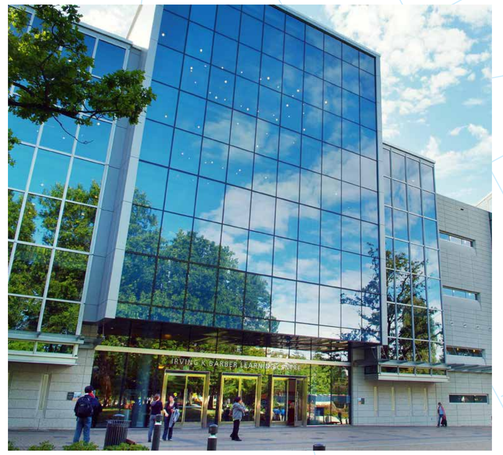
With nearly 400 institutional and residential buildings on campus, thermal energy for buildings is the largest component of UBC's carbon footprint.

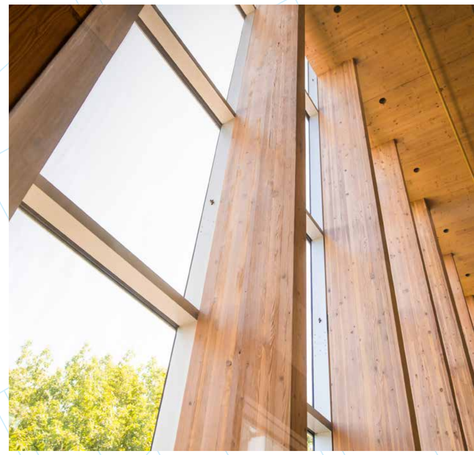
Opportunity Areas

The evaluation of existing building operations demonstrates that GHG reductions can be further achieved through existing programs and resources.

Renovations also provide significant opportunity to both save in operational costs and reduce GHGs.

The opportunities and proposed actions targeted at new buildings are also projected to result in a reduction in GHGs in the longer term and reduce the total cost of ownership.





Existing Buildings

Opportunities and Actions

- Use existing space more efficiently
- Optimize building management systems
- Focus on ways to reduce energy consumption within large and energy intensive buildings
- Reduce the amount of heat required for a building through envelope enhancements, low grade and waste heat recovery and utilization of high-efficiency mechanical equipment
- Continue with building tune-ups to make building systems function and perform more efficiently
- Update existing manuals, training and capacity building that improve building operational efficiency, reduce costs and GHG emissions
- Target energy management efforts in ancillary buildings outside the academic core of campus

New Buildings

Opportunities and Actions

- Develop a Green Building Plan that identifies ways to reduce energy and emissions
- Develop Net Positive Buildings Pathways using whole building energy modelling
- Address the Performance Gap between a new building's designed performance and the actual performance
- Enhance UBC's Technical Guidelines from a performance lens to ensure it aligns to sustainability policies

5 Actions: Fleet, Behaviour Change + Complementary Opportunities

Though UBC's fleet and individual behaviour have a relatively small impact on overall emissions, they are an important contributing factor in energy conservation and GHG reductions.

Fleet

More efficient fleet management has the potential to reduce costs and support innovation such as charging and fueling systems.

Actions

- Explore a low-emissions car sharing program for UBC-owned vehicles
- Explore a strategy to promote electric vehicles and/or generate revenue using distributed charging stations
- Explore a bicycle or e-bike share program for on-campus travel
- Develop a business case and implementation strategy for centralizing procurement and management of more UBC vehicles
- Continue to increase the efficiency of UBC's fleet through procurement of high efficiency and alternate fuel vehicles and motorized equipment

Behaviour Change

Behaviour change through engagement programs presents an opportunity to build on existing foundations of UBC research and programs with limited program costs and minimal capital costs.

Actions

- Leverage existing committees to help advance behavioural change, seek strategic guidance, develop materials, and provide implementation guidance
- Develop an incentive program
- Develop education programs to show building occupants how their actions can have an impact by shifting temperature adjustments and use of equipment and lighting

Complementary opportunities

Complementary opportunities are areas that impact the University's emissions, but which UBC has no direct control over, such as transportation to and from campus. In many cases, these opportunities allow students, staff and faculty to play a direct role in reducing emissions, and may involve activities that extend well beyond the boundaries of the campus.

Actions

- Continue to develop on-campus student, staff and faculty housing to reduce vehicle trips
- Explore and promote apps to facilitate car sharing
- Explore opportunities to reduce business travel emissions
- Reduce emissions associated with solid waste
- Explore opportunities to address carbon reduction related to food
- Research future options including carbon capture, storage and utilization

6 Public Consultation Process

We want to hear from you! Our campus community has great capacity for innovation and creativity, please share your ideas on how UBC could continue reducing its GHG emissions.

We are currently seeking input from the campus community on what actions and options UBC could pursue towards a 67% reduction in GHG emissions from 2007 levels, particularly around:

New & Existing Buildings

Energy Supply

UBC's Vehicle Fleet

Behaviour Change

Other Complementary Opportunities
(such as staff and faculty travel, solid waste, commuting, building lifecycle and paper)

There are two ways to participate:

Online between March 14 – 27 at planning.ubc.ca

In person at one of six open houses:

Tuesday, March 15, 11:00AM – 1:00PM, Martha Piper Plaza

Wednesday, March 16, 11:00AM – 1:00PM
I.K. Barber Learning Centre, 2nd Floor Lobby

Thursday, March 17, 11:00AM – 1:00PM,
AMS Student Nest, Upper Agora

Tuesday, March 22, 11:00AM – 1:00PM
Pharmaceutical Sciences Building, Atrium

Wednesday, March 23, 11:00AM – 1:00PM
Centre for Interactive Research on Sustainability, Lobby

Thursday, March 24, 11:00AM – 1:00PM, Fred Kaiser Building, Atrium

Feedback forms are available at the registration table.

The process to develop the Climate Action Plan 2020 is taking place with multiple opportunities for input from the campus community. Each phase of public consultation includes extensive notification and outreach to the campus community and stakeholders.

Campus + Community Planning Engagement Principles

The consultation process for CAP 2020 has been designed to uphold the Campus + Community Planning Engagement Principles. A copy of the Principles is available at the resource table.