

The University of British Columbia

Climate Action Plan 2020

VANCOUVER CAMPUS



a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA

1 EXECUTIVE SUMMARY

With five years of experience implementing the 2010 Climate Action Plan, UBC's Climate Action Plan 2020 provides a major update, outlining the actions the University can take at the Vancouver campus to work towards the target of reducing greenhouse gas (GHG) emissions by 67% from 2007 levels by 2020.

Climate policy is changing

The evolution of climate policy from 2010 to 2015 at the international, national, provincial and university levels has changed the context in which UBC is taking further climate action. Recognizing the critical urgency in addressing GHG emissions globally, in December of 2015 the international community reached the Paris Agreement at the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21). The federal government has shown renewed interest in supporting climate action across Canada and is currently working with provincial governments to explore the possibility of national GHG emissions management strategies not considered to date, such as a national carbon tax or a national cap and trade system.

The provincial carbon tax affects the financial feasibility of UBC's climate actions. If carbon tax is increased in the future as per the provincial Climate Leadership Team recommendations (adding \$10 per tonne per year starting in 2018), UBC's annual carbon costs could increase by over \$1,000,000 by 2021, and \$5,000,000 by 2040, if UBC was to take no new climate action. In addition, as a public institution, UBC is committed to ensuring that our operations are run responsibly and in compliance with provincial climate legislation.

UBC is leading the way

UBC has reduced its GHG emissions 30% as of the end of 2015 below 2007 levels, and we expect to reach the 33% reduction target by the end of 2016 - a significant achievement given increases in campus floor space of 16 percent and student enrolment of 18 percent since 2007. Per full time student, we have reduced emissions approximately 40% percent since 2007. This result, along with other accomplishments in sustainability performance, have positioned UBC as a recognized global leader in sustainability in operations and academics amongst peer institutions. Key projects enabled by smart business decisions are largely responsible for the GHG reductions: the district energy steam to hot water conversion, the Bioenergy Research and Development Facility, and the Building Tune-Up program. Because of these projects, energy and carbon costs paid by UBC have decreased significantly. However if UBC takes no new actions to continue reducing GHG emissions, they will begin to rise steadily after 2016 as the campus continues to grow.

Heating buildings is the largest contributor

Approximately 88% of UBC's operational GHG emissions come from burning natural gas to heat buildings. It is clear that based on UBC's emissions profile, in order to make further substantial emissions reductions, we need to reduce the consumption of natural gas significantly.



Actions are in five main areas in two phases

- In order to structure the CAP 2020, climate actions to reduce emissions toward the targets are organized into the following action areas:
- Existing buildings (accounting for the bulk of current emissions)
- New buildings (future sources of emissions)
- Behaviour change (influencing energy use and emissions from buildings)
- Energy supply (serving the buildings on campus)
- Fleet (operations and departmental vehicles and motorized equipment)

The CAP 2020 is being developed in two phases. In the initial phase, the suite of proposed actions (which are primarily Demand Side Management or DSM actions) across existing and new buildings, behaviour change, and fleet areas, are expected to be able to reduce GHG emissions an additional 8% following 2015, resulting in emissions 38% below 2007 levels by 2020. The majority of these actions can be implemented by leveraging existing programs and resources; the CAP also seeks to strengthen some key programs in order to achieve the desired outcomes.

In order to achieve additional reductions and potentially meet the 67% reduction target, energy supply “heavy lift” projects will be required. Due to the number of additional variables in play, an additional phase of work (primarily energy supply financial and risk studies) will be conducted prior to proposing new energy supply solutions, the results of which are expected in early 2017.

A longer term perspective

Achieving the long-term GHG reduction targets will require a continued decrease in emissions after 2020, which will require additional actions. Evaluation of alternative energy supplies indicates that some options such as solar energy and waste heat recovery may become technically and financially viable in the near future. The CAP 2020 can also be a vehicle to stimulate innovation and research opportunities in new areas, such as carbon capture or development of new energy technology through ‘Campus as a Living Lab’. In assessing energy supply options, it is essential to consider the best investments in moving toward the 67% reduction target, and beyond to reach the 2050 target of zero emissions.

Making it happen

Resources required to implement the majority of actions outlined in this plan will be prioritized through existing budgets and staff. There are a few actions that will require additional resources for implementation for both hard (e.g. new energy supply infrastructure) and soft (e.g., behaviour change program staffing) costs. However, all actions requiring additional resources are proposed based on the opportunity to achieve a life cycle positive return on investment.

A unit-level strategic planning initiative led by Sustainability & Engineering is assisting major units such as Building Operations, Energy & Water Services and others in integrating climate action and other sustainability goals, actions, and reporting metrics within their own operational plans and activities.



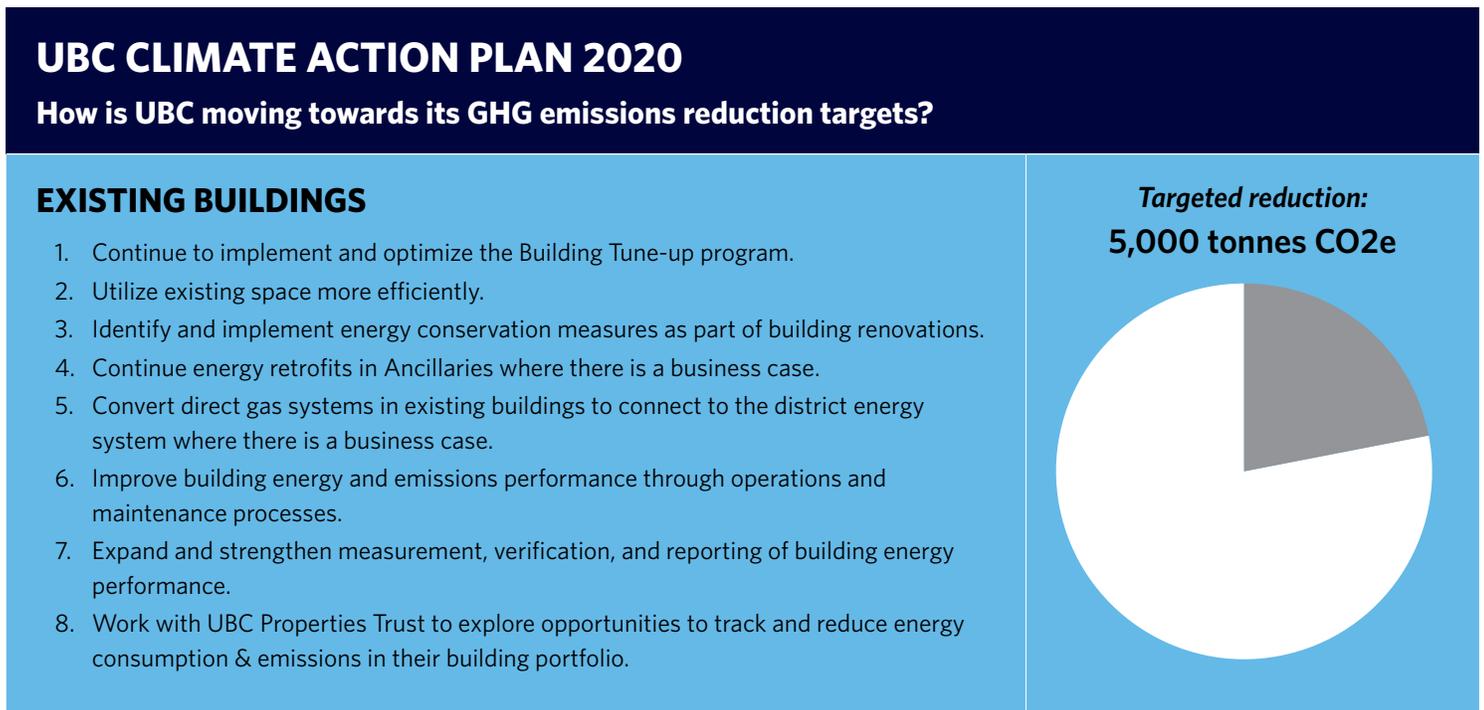
Moving forward, the actions and monitoring requirements developed in this plan will be regularly reassessed and refined. Monitoring includes two components: monitoring of plan actions via an Action Matrix and the unit level planning processes; and performance monitoring, primarily through the existing Carbon Neutral Action Reporting process.

UBC's Climate Action Plan 2020 sets out actions for the Point Grey campus to advance toward the adopted 2020 GHG reduction target. 2020 will mark another milestone in assessing progress, and is recommended as an appropriate timeframe to develop an update to the Climate Action Planning process.

In order to meet UBC's ambitious and challenging goals and targets for 2020 and beyond, many departments will need to continue to collaborate and develop innovative and effective solutions that can be integrated into operations in a financially responsible way. 2020 will mark another milestone in assessing progress, and is recommended as an appropriate timeframe to develop an update to the Climate Action Planning process, including developing interim GHG reduction targets for the period between 2020 and 2050.

1.1 ACTION SUMMARY

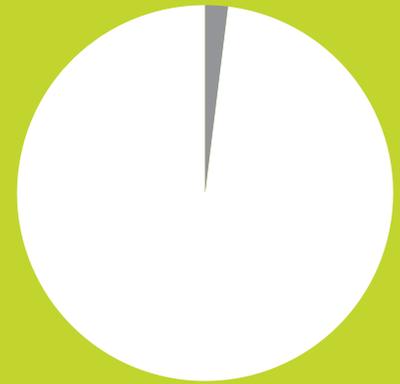
The following table summarizes the high-level CAP 2020 actions at a glance. Dark shaded portions of the pie chart indicate the target reduction for that reduction area – e.g., existing buildings, new buildings, etc.



NEW BUILDINGS

9. Develop a new Green Building Plan that identifies measures to reduce energy use, GHG emissions and total cost of building ownership through the operational life of buildings.
10. Develop Net Positive Buildings Pathways to inform and support building design teams in achieving the best possible performance and in providing directions on UBC's future performance targets.
11. Reduce the performance gap between modelled and actual building performance.
12. Enhance UBC's Technical Guidelines to better align energy, GHG emissions reductions, sustainability and cost objectives and achieve better project outcomes.
13. Explore a policy that requires new buildings to connect to the Academic District Energy System, or where connection is not feasible, require building design to result in comparable emissions intensity relative to ADES-connected buildings.

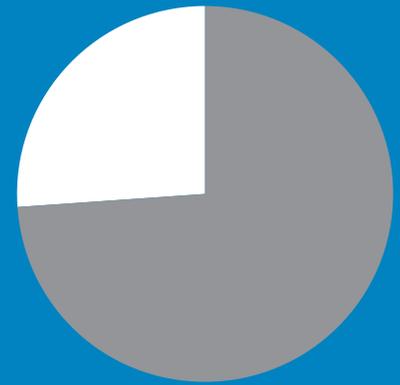
Targeted reduction:
340 tonnes CO₂e



ENERGY SUPPLY

14. Incorporate additional alternative, low-carbon energy supply sources including wood waste biomass and renewable natural gas to provide heat to the ADES, based on additional analysis of supply cost and risk.
15. Continue to explore and evaluate other energy supply research and partnership opportunities.

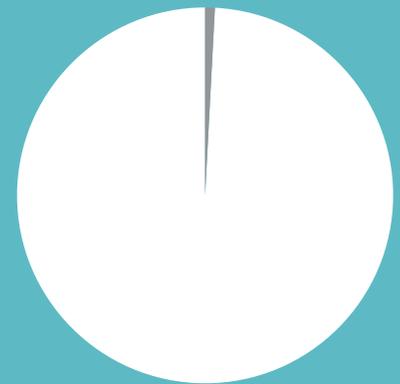
Targeted reduction:
16,600 tonnes CO₂e



BEHAVIOUR CHANGE

16. Strengthen and ensure adequate resourcing of the Green Labs program, which is the behaviour change program with the greatest potential impact on energy and GHG emissions.
17. Develop a plan and business case for an integrated, coordinated behaviour change program, with ongoing review and updating of program design focused on achieving targeted results.

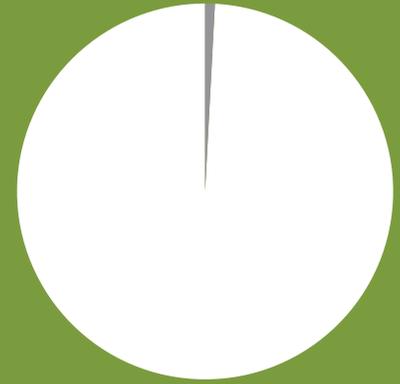
Targeted reduction:
300 tonnes CO₂e



FLEET

18. Continue to increase the efficiency of UBC's fleet through procurement of right sized, high efficiency, and alternate fuel (such as electric and compressed natural gas) vehicles and motorized equipment wherever possible.
19. Develop a business case and potential implementation strategy for centralizing procurement and management of more UBC vehicles.
20. Explore an enhanced bicycle or e-bike share program for on campus travel.

**Targeted reduction:
260 tonnes CO2e**



COMPLIMENTARY OPPORTUNITIES

21. Explore and potentially promote smartphone apps to facilitate car sharing & transportation mode shifting.
22. Research opportunities to reduce business travel emissions, including data collection and evaluation of potential solutions such as virtual meeting infrastructure and incentives.
23. Continue implementation of the Zero Waste Action Plan and the associated engagement program in order to further reduce emissions from waste management.
24. Develop and implement more rigorous Scope 3 emissions accounting methods where feasible.
25. The above actions represent a total potential CO2e reduction of approx. 23,000 tones to achieve a 67% emissions reduction from 2007 levels, subject to approval and implementation of key actions including alternative energy supply.
26. For a more detailed list of climate actions, please reference "Priority Actions" in the Climate Action Plan 2020.