SFU

2020 PSO CLIMATE CHANGE ACCOUNTABILITY REPORT

SIMON FRASER UNIVERSITY

ACKNOWLEDGEMENTS

CONTRIBUTORS

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CONTENTS

DECLARATION STATEMENT

This Climate Change Accountability Report for the period January 1, 2020 to December 31, 2020 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2020 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2021 and beyond. By June 30, 2021 SFU's final 2020 Climate Change Accountability Report will be posted to our website at: sfu.ca/fs/projects-initiatives/sustainable-initiatives/ghg-emissions/carbon-neutral-action-reports

OVERVIEW

In 2020 SFU's total greenhouse gas (GHG) emissions were 12,519 tCO_2e, a 35 per cent per cent reduction in emissions from the 2007 baseline; despite the university's physical footprint having grown by approximately 23 per cent. This progress builds on the 22 per cent reduction reported in 2019. This is a significant achievement towards SFU's target to reduce its emissions by 50 per cent by 2025. The reduction in emissions realized in 2020 reflects – in part – the impact of the COVID-19 pandemic on campus operations. However, it is also a result of SFU's continued efforts to optimize energy consumption and transition to renewable sources of energy. Key milestones and actions taken in 2020 to minimize emissions include:

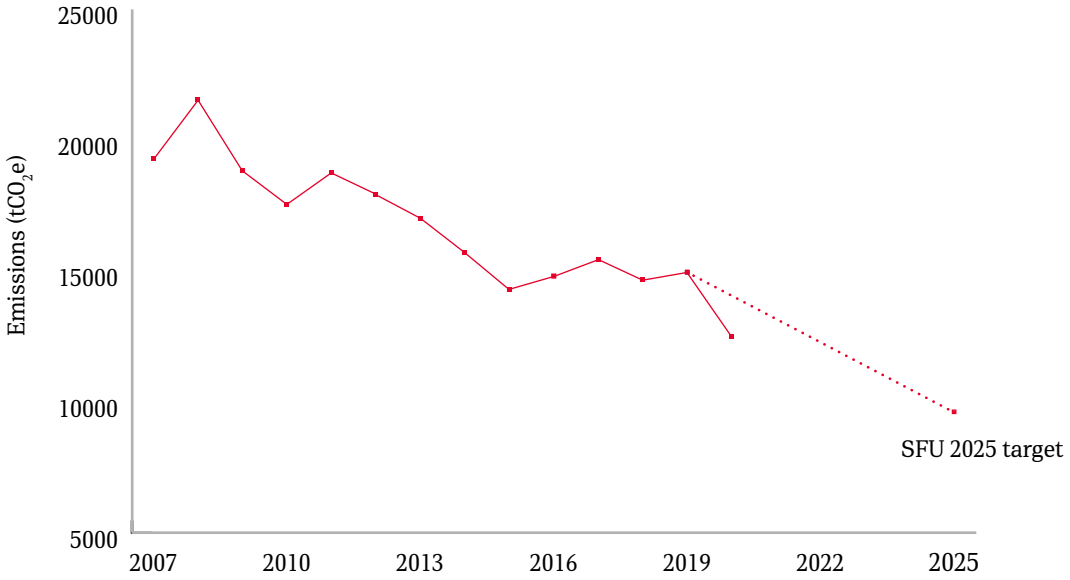
- The Corix Biomass project, a heating plant powered by wood waste, began operations on the Burnaby campus;
- Widespread efforts to upgrade equipment, lighting and building control systems to maximize efficient energy consumption in buildings; and
- Pushing ahead with the low carbon electrification initiative to reduce SFU's reliance on fossil fuel for heating.

In addition to these initiatives, SFU's plans to continue reducing emissions in 2021 and beyond include:

- Fleet electrification;
- Behaviour change campaigns, as the community returns to campuses; and
- Progressing SFU's climate resilience work, and aligning it to the university's mitigation actions.

SFU'S EMISSIONS REDUCTIONS PROGRESS TO DATE

SFU has reduced its GHG emissions significantly from the 2007 baseline, with a notable reduction in 2020 related to COVID-19. This trend must be maintained to reach SFU's 2025 Sustainability Plan target.



EMISSIONS AND OFFSET SUMMARY TABLE

SFU 2020 GHG Emissions and Offsets
GHG Emissions created in Calendar Year 2020

Total Emissions (tCO_2e)	12,519
Total $BioCO_2$	8.18
Total Offsets (tCO_2e)	12,512
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO_2e)	298
Grand Total Offsets for the 2020 Reporting Year	
Grand Total Offsets (tCO_2e) to be Retired for 2020 Reporting Year	12,810
Offset Investment ($25 per tCO_2e)	$320,250

RETIREMENT OF OFFSETS

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, Simon Fraser University (the Organization) is responsible for arranging for the retirement of the offsets obligation reported above for the 2020 calendar year, together with any adjustments reported for past calendar years (if applicable). The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy (the Ministry) ensuring that these offsets are retired on the Organization's behalf, the Organization will pay within 30 days, the associated invoice to be issued by the Ministry in an amount equal to $25 per tonne of offsets retired on its behalf plus GST.

EXECUTIVE SIGN-OFF

Signature	Date
	May 26, 2021

Name	Title
Martin Pochurko	Vice-President Finance & Administration

1.0 GHG EMISSIONS REDUCTIONS: BUILDINGS

Though the COVID-19 pandemic has created many challenges, SFU continued to lead campus-wide efforts to reduce its energy consumption and GHG emissions. These efforts include strategic planning, adhering to high performance building standards, investing in renewable energy and low carbon electrification and implementing innovative energy efficiency and conservation measures amongst the SFU community.

Planning for reductions

Building on the strong foundation of the 2016/17-2020/21 Strategic Energy Management Plan, SFU is in the planning stage of its next multi-year plan. The plan will continue to optimize energy usage and reduce GHG emissions, taking into account value for money and social responsibility.

SFU's five-year Strategic Sustainability Plan (SFU 2025) began implementation in January 2020. It consists of 16 targets focused on institution-wide climate action. They include: reducing SFU's Scope 1 and 2 GHG emissions by 50 per cent by 2025, and shifting 50 per cent of the university's fossil-fuel based energy to renewables by 2025. Other targets address the reduction of Scope 3 GHG emissions in areas such as waste and commuting. Progress towards SFU 2025 Sustainability Plan can be found on SFU's sustainability website.

In 2020, SFU completed a university-wide GHG emissions inventory, in order to establish baselines to monitor GHG emissions reductions. The GHG inventory went beyond the scope of the Carbon Neutral Government program, to include multiple sources of Scope 3 emissions for a comprehensive view of SFU's emissions, inclusive of its value chain. Stakeholders across the university contributed data on emissions sources including commuting, waste and procurement. The results will be published and inform action planning from 2021 onwards.

External view of the new Surrey Sustainable Energy and Engineering Building.

New buildings and major renewal of existing buildings

New buildings and building renovations on campus will continue to prioritize sustainability criteria and GHG emissions reduction. For example, SFU Surrey's School of Sustainable Energy and Engineering Building was completed in 2019 and awarded LEED Gold certification in 2020. Plans are underway for a 12,000 sq ft First People's Gathering House which will be a ceremonial space, serving as a cultural hub for the use and education of SFU community members and visitors. The First People's Gathering House is being designed to meet the LEED Gold standard. More details of renovation and construction projects can be found on the Facilities Services' Projects and Initiatives page.

ENERGY EFFICIENCY AND CONSERVATION PROJECTS

Lighting

SFU has a university-wide LED retrofit program. In 2020, a major lighting upgrade was completed in the West Gym Complex, home to SFU's NCAA basketball and volleyball teams. Not only does the new lighting system surpass NCAA standards, but it also uses 60 per cent less energy. In addition, all the lighting fixtures in the Technology and Science Complex 2 (TASC 2) and Maggie Benson Centre were upgraded to LEDs. Wireless control technology was applied to give the building occupants control of lighting levels.

SFU plans to continue its LED replacement strategy across the university, and recently completed an exterior lighting audit to support this. The target is for all campus lighting to be LED by 2025. SFU will continue to upgrade lighting in the following buildings/areas: Animal Care Facility, Blusson Hall, GoldCorp Centre, Saywell Hall, Shadbolt House and Shrum Courtyards.

Model of SFU's building control systems upgrade.

Boiler and chiller upgrades

SFU replaced the boilers in three residence townhouse complexes, the Discovery 2 building, and Greenhouse with high energy efficiency models, in order to reduce carbon emissions. The building control system was also upgraded as part of the project to make the heating system more efficient and controllable.

SFU will continue the ongoing boiler replacements throughout the Burnaby campus. Four boilers in the Residence are scheduled to be replaced with high energy efficiency models in 2021.

SFU will be moving forward with upgrading the chillers in a number of buildings. The new chillers will come with a refrigerant that has a lower global warming potential. A campus-wide assessment has been completed, and the construction required for the new chillers will begin in the West Mall Complex. The newer units will ensure more reliable and energy efficient operations.

Building control systems upgrade

SFU continued to replace obsolete pneumatic controls and heating valves, with new electronic controls systems to reduce heat leakage, therefore improving energy conservation. These efforts were focused on the Applied Sciences buildings, WAC Bennett Library, and Shrum Science buildings. Carbon dioxide sensors and occupancy sensors were also installed as part of the project, to enable demand-controlled ventilation to match occupancy need.

Variable speed drives were implemented in the chemistry department's energy intensive, high plume exhaust fans system, using wind tunnel modelling. This will allow SFU to realize electricity savings of more than 400,000 kWh, equivalent to power for 39 British Columbian households per year. The project will be scaled up and applied to other buildings.

2.0 GHG EMISSIONS REDUCTIONS: RENEWABLE ENERGY AND LOW CARBON ELECTRIFICATION

Corix Biomass project

The Corix Biomass project is a newly constructed high-efficiency heating plant, fueled by burning urban wood waste from Metro Vancouver to generate hot water. The hot water is transported via underground pipes to heat most of the SFU Burnaby campus. The plant began operating in October 2020, and is expected to reduce SFU's total GHG emissions by 69 per cent.

Low carbon electrification

Established in 2018, the low carbon electrification initiative has continued to allow SFU to switch from fossil fuels to low-carbon electricity. In 2020, SFU converted part of the fossil fuel heating system of the Facilities Services Building to electricity. The project reduced the GHG emissions of the building by more than 50 per cent.

Artistic rendering of the Corix Biomass facility.

An energy efficient heat pump system was also installed in a number of classrooms and labs in the Academic Quadrangle (2000 level) to displace natural gas heating with electricity. As a side benefit, cooling has become available when required.

The transition to renewable energy and low carbon electrification is the key strategy for SFU to achieve its GHG emissions target beyond 2020. The Corix Biomass project will allow SFU to further increase the share of renewable energy in the university's current energy mix. In addition, the university is planning to convert two fossil fuel heated buildings to low carbon electrification.

3.0 GHG EMISSIONS REDUCTIONS: FLEET

Fleet electrification is a priority for SFU. Facilities Services, Parking and Sustainable Mobility Services, Procurement Services and the newly formed Sustainable Transportation Working Group (aligned to SFU 2025 Sustainability Plan) are among the groups working on it. SFU's fleet in 2020 included a small number of electric and hybrid electric vehicles. One of SFU's Living Lab projects also began work on a life cycle assessment analysis for SFU fleet electrification. The research team, led by Kamaria Kuling, will investigate the benefits and challenges of replacing SFU's operational vehicle fleet with low or zero emission vehicles. Alongside this study, SFU is transitioning to a lease model to replace its older fleet vehicles and open up more opportunity to use electric vehicles, as they become available on the market. SFU is also expanding its electric vehicle charging infrastructure. In 2020 the university had 12 Level 2 charging ports (at 6 stations), between the Burnaby and Surrey campuses.

SFU researcher Kamaria Kuling stands beside two electric vehicle charging stations.

4.0 GHG EMISSIONS REDUCTIONS: PAPER

SFU's GHG emissions associated with paper consumption are relatively immaterial, as less than 1 per cent of the total reported emissions. However, SFU continued – and will continue - to reduce consumption of virgin paper and promote digital options where possible. For example, SFU consumes almost exclusively 20 per cent post-consumer recycled content paper, and alternative fibre papers are promoted internally, and at the Staples eWay checkout.

Document Solutions', SFU's print and digital services department, operations were significantly scaled back in 2020 owing to the pandemic. It is anticipated that SFU will not see a return to pre-pandemic levels of printing, as online delivery and sharing of materials is more readily accepted and feasible.

5.0 GHG EMISSIONS REDUCTIONS: BEHAVIOUR CHANGE INITIATIVES

Energy saving campaigns

SFU piloted a Safe & Sustainable Labs campaign from January to February 2020. The campaign centred on lab safety, energy conservation, and raising awareness on positive behaviour change such as: lowering the sash, turning off lights, powering down equipment and adjusting the lab temperature.

The BC Cool Campus Challenge ran for a second year in January 2020. The campaign called for students, faculty and staff to pledge to save energy through actions such as turning down their thermostats, layering up clothing, taking shorter showers and washing laundry in cold water. SFU also lowered the base temperature settings to 20˚C, at Burnaby and Vancouver, resulting in 9 tonnes of CO_2e avoided.

Sustainability Office staff posing behind the weekly BC Cool Campus booth.

Sustainable Spaces

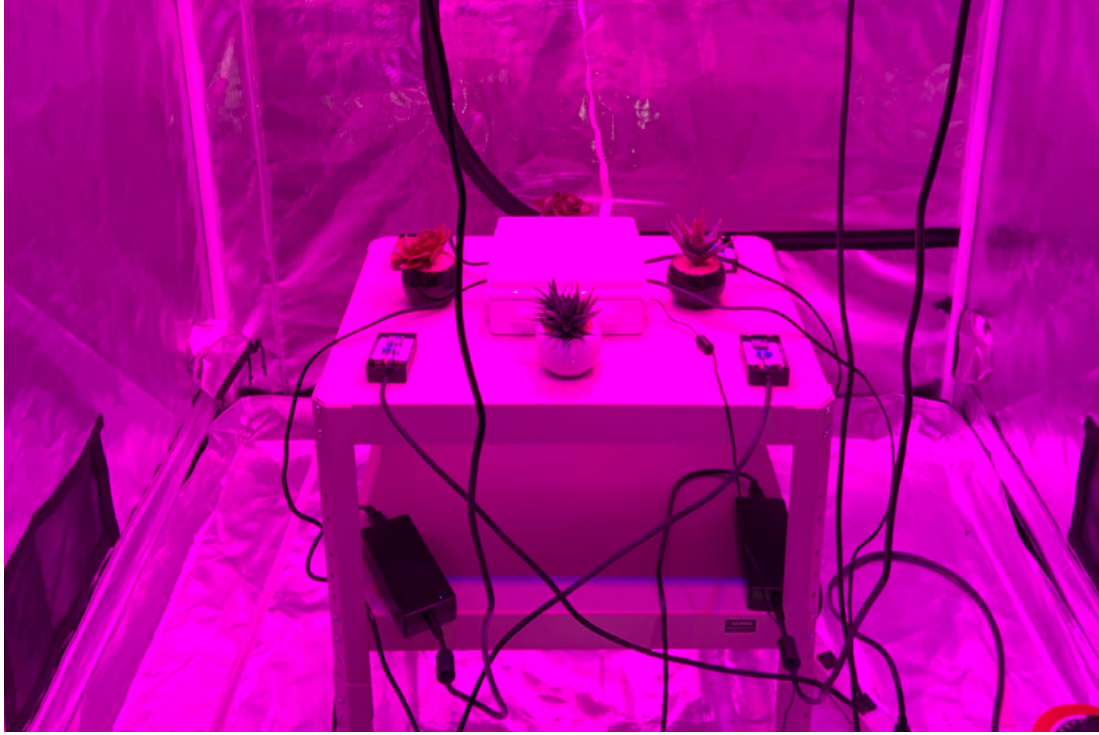
Sustainable Spaces has been running since 2017, as a program to engage staff in certifying their spaces and events according to sustainability criteria. To accommodate the mostly remote working conditions during the pandemic, the Sustainability Office launched an online Sustainable Spaces: Home Edition Checklist, to support the SFU community with ideas for a more sustainable lifestyle at home. The checklist includes sections focused on reducing energy consumption and paper usage.

Living Lab

SFU's Living Lab initiative facilitates sustainability-themed research by creating structured collaborations between staff, faculty and graduate students. The program aims to provide opportunities for applied research and experiential learning that improve the sustainability of SFU's three campus communities. The initiative launched in 2020 with the first cohort of Living Lab scholars. Their work includes emissions related projects:

- Examining the Carbon Impact of Streaming Media in University Teaching and Learning;
- LCA Analysis for SFU Fleet Electrification (as mentioned on page 5); and
- Sustainable Living Indoor Gardens Utilizing Energy-efficient and Renewable Energy Technology.

The projects will continue into 2021 and the initiative will expand into more areas of sustainability research.



SFU researcher Afagh Mohagheghi tests renewable energy and energy savings strategies.

6.0 ACTIONS TAKEN TO MANAGE RISK RELATED TO A CHANGING CLIMATE

SFU is developing a Climate Resilience Plan to protect its campuses from the impacts of climate change. The work has been led by a cross-portfolio Steering Committee with representation from the SFU Adaptation to Climate Change Team (ACT), Facilities Services, SFU Pacific Institute for Climate Solutions (PICS), Safety and Risk Services and the Sustainability Office, with additional support from external consultants.

SFU completed phase 1, a climate risk assessment, in 2020. The risk assessment followed the general steps set out in the BC Climate Risk Assessment Framework. More than thirty SFU staff, from a range of departments, were convened in three engagement sessions. They worked together to identify vulnerabilities and impacts to the university that could arise from hazardous events: extreme heat and drought, wildfire and smoke, and heavy rainfall, wind and snow. The participants proposed actions to reduce the risk and prepare for the impacts. These actions were considered alongside existing SFU plans, such as the Stormwater Management Strategy Implementation Plan, the SFU Burnaby 2065 Campus Master Plan and SFU 2025 Sustainability Plan.

A group of five individuals seated and smiling around a table.

The next phase of work in 2021 will focus on:

- Targeted engagements with key stakeholder groups (including Indigenous scholars and staff, highly impacted groups and faculty) to gather additional information on the expected impacts of climate change and the lived experience of past hazard events;
- Refining the proposed actions and corresponding implementation plans;
- Cross referencing the proposed actions with SFU's key climate mitigation actions; and
- Ultimately developing a low carbon Climate Resilience Plan for the university.