

Biomass Energy Case Study

Simon Fraser University
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Net Zero on Campus Community Case Study

The [Net Zero on Campus](#) initiative, a collaborative effort between SDSN, the Climateworks Centre, and Monash University, aims to facilitate the sharing of lessons and resources to accelerate the decarbonization of university campuses around the world. The initiative consists of a “how-to” guide and accompanying online toolkit that will enable universities to accelerate the planning and implementation of net zero strategies, and act as living laboratories for testing solutions.



What is the case study trying to accomplish?

SFU has made commitments to reach net zero for scopes 1 and 2 by 2035. The Corix Biomass project began operating in October 2020. It is a newly constructed high-efficiency heating plant, fueled by burning urban wood waste from Metro Vancouver to generate hot water. This hot water is then transported via underground pipes to heat most of SFU’s Burnaby campus. SFU expects to reduce greenhouse gas emissions (GHGs) from heating by 80 percent now that the new \$33-million Corix biomass plant has begun operation. The GHGs saved is equal to about 11,600 tonnes CO₂e per year. By slashing direct emissions from operations and indirect emissions from energy purchased GHG emissions, SFU leads the way in sustainability with one of the smallest GHG footprints of any university in Canada. With the biomass energy centre’s help, SFU has exceeded its provincially-mandated goal – a 40 percent reduction of GHG emissions by

University Information

City: Burnaby
Country: Canada
Region: North America
Number of Staff: Large (between 6,000 - 10,000 staff)
Number of Students: Large (between 30,000-60,000 students)
Type of Institute: Public

Case Study Overview

Category: Energy
Initiative: Source renewable energy
Type of Net Zero Solution: Physical intervention
Funding Source: Public-private partnership
Emissions Scope: Scope 1
Impact on Net Zero: Very large positive impact
Scale: Greater than \$10 million
Timeframe: Very long (greater than 5 years)
Stakeholders: Utility service providers (Corix), SFU Facilities Services team, University Administration, University Board, local community

2025 – years ahead of schedule. That’s not all in terms of benefits – it also provides opportunities for applied research and experiential learning for SFU students and researchers.

It is important to note that biomass is one of the strategies SFU has implemented. At the same time, SFU is actively implement other solutions such as low carbon electrification, high performance building standard and energy efficiency. For this project, Biomass was chosen for several factors: (1) ability to utilize local urban wood waste, (2) compatible with existing district energy network, (3) competitive capital and operating costs, and (4) reliability of biomass energy (high winds can knock out our power). More details can be found here in SFU's Strategic Energy Management Plan linked below.

What were the key success factors in implementing the case study?

For SFU, the motivation behind switching from natural gas to biomass for heating and hot water was two-fold. One, SFU had an aging traditional natural gas heating plant that served the campus. Therefore, there was a desire to see what options we had to replace or extend its life. On the other hand, there was also a desire to try to become more sustainable and respond to the province’s targets for the public sector to reduce greenhouse gas emissions.

The biomass project is a unique partnership with a nearby residential community, UniverCity. The group that oversaw this project, the SFU Community Trust, wanted to make UniverCity a model sustainable community, and decided to implement a district energy system. A Request for Proposal (RFP) looking for private utilities to invest in and build such a system was put out by the trust. SFU also decided to participate in this process. Corix Utilities was the successful proponent of the RFP, coming up with the idea of a biomass heating facility that could serve both SFU and UniverCity. As a result, a unique partnership was born between SFU, UniverCity and Corix Utilities.

What were the challenges or barriers you had to overcome in implementing your initiative?

The unique partnership led to few logistical challenges. SFU negotiated the service contract directly with Corix, but since the biomass plant serves a private residential community as well, it has to be regulated by the B.C. Utilities Commission (BCUC). We have a very specific contract that lays out the performance requirements of Corix, including how rates are determined. There was another logistical bump in the road. The City of Burnaby requires building permits to have an architect’s seal. As the building was designed by an engineering company, an architectural firm needed to be retained. Not to mention the plant was built during the pandemic, and there is without doubt that the immense challenges during the pandemic are extraordinary. Despite these difficulties, once construction began in 2019, things went fairly smoothly. Construction took about 14-16 months.

What did you learn from the process and what are your recommendations to others?

Every university has their unique opportunity to reduce their carbon footprint. Biomass energy from wood waste was invested, as it is considered a renewable source that can be sourced locally. Our contract has very specific language regarding the type of material that can be used as fuel, including the requirement that timber cannot just be cut down and ground up for fuel.

What resources did you use to implement this initiative?

Resource	Why is this resource helpful?
Transforming Wood Waste into Energy: How SFU's New Biomass Plant Fuels our Community	
Corix Biomass Project: Frequently Asked Questions	
SFU Strategic Energy Plan	

SDSN and the Net Zero on Campus team recognize the importance of carefully considering the net impact of biomass and are not promoting specific decarbonization solutions. The case studies presented in this online toolkit only aim to facilitate shared learning and resources to accelerate campus climate action. SDSN remains technology agnostic and realizes that solutions should be curated to the resources and local context in which they are deployed.

Get Involved with Net Zero on Campus

Contribute to the Online Toolkit

- [Submit](#) your own case studies and decarbonization resources to be featured;
- Share your questions and/or feedback with us at info@unsdsn.org.

Join Our Community

- Join our global community of practice and Net Zero on Campus LinkedIn Group;
- Join global networks of academic institutions working on decarbonization: [SDSN](#), [Second Nature](#), and [EAUC](#). See our resource directory for more networks;
- Join the [Race to Zero for Universities and Colleges](#) campaign and make a net zero commitment;
- Empower your students and engage them in your campus decarbonization efforts: join [SDSN Youth](#) and see our guide for more information.

Learn More

- Explore [SDSN's free, open educational resources](#) from the world's leading sustainable development experts to use in your classrooms: MOOCs, educational videos and lectures, and global community of practice.

[Net Zero on Campus](#) is a collaboration between [SDSN](#), [the Climateworks Centre](#), and [Monash University](#), in partnership with [Second Nature](#) and the [EAUC](#) (Secretariat of the Race to Zero for Universities and Colleges).