

# Burnaby Mountain DEU



June 13, 2018

**CORIX**

### What is the Burnaby Mountain District Energy Utility Project?

The proposed project will provide cost-effective, low carbon energy to the SFU campus and all new buildings at UniverCity, creating an 80% reduction in greenhouse gas emissions when compared to fossil fuel and electricity use.



Proposed Biomass Facility

It is an extension of the regulated district energy utility that currently provides energy for space heating and hot water to existing buildings at UniverCity.

The project will capitalize on economies of scale to increase efficiency and lower customer rates when compared to individual systems. The existing systems will connect to a central energy plant in order to heat SFU's Burnaby campus buildings and all future developments at UniverCity.

After extensive evaluation of alternative energy sources, biomass (wood waste) was selected as the preferred alternative energy source to achieve greenhouse gas reduction targets, while meeting the thermal energy needs of the growing Burnaby Mountain community.

The goal of the Burnaby Mountain project is to deliver maximum benefits to the Burnaby Mountain community and the environment. The project will also help the City of Burnaby in meeting its municipal greenhouse gas reduction targets.

- GHG Reductions
- Flexible platform to incorporate best available technology at any point in time
- Reduce long term reliance on fossil fuels via renewable energy technologies

- Reduce the volatility of energy price from traditional sources
- Energy cost reductions to end users on life cycle basis
- Regulated Rates under BCUC oversight

Environmental Objectives

Energy Pricing Stability

Partner with Experienced Utility Provider

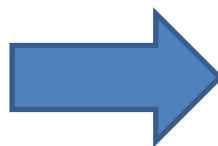
Increase Energy Efficiency

- Proven track record in financing, building and operating DE systems
- Regulation by an independent public body
- Experience with public/private partnerships
- Customer service and system reliability 24/7

- Enhance efficiency and resiliency by integrating existing energy systems with the district energy infrastructure
- Increase energy efficiency in existing buildings

## We are Here

- 2 interim central energy plant using NG (2.3 MWt + new 6.0 MWt)
- 1.8 km of piping installed
- 7 buildings connected



## Burnaby Mountain DEU

- Biomass based central energy plant - 13.5 MWt
- 10 MWt natural gas peaking and back-up for UniverCity
- 22 buildings and Campus connected
- 3.5 km of piping installed



## Why Biomass?

SFU, SFU Community Trust, and CORIX completed the screening of several different, proven alternative energy technologies for the Burnaby Mountain District Energy Utility based on criteria identified for the project.

### Project Evaluation Criteria

BENEFITS TO THE COMMUNITY	BENEFITS TO THE END-USER	VIABILITY OF SUSTAINABLE ENERGY PROJECT
<ul style="list-style-type: none"> <li>• Greenhouse Gas Reduction</li> <li>• Use of Alternative Energy Sources</li> <li>• Location and Land Use</li> <li>• Long-Term Durability and Reliability</li> </ul>	<ul style="list-style-type: none"> <li>• Competitive Rates</li> <li>• Reliability</li> <li>• Modularity and Flexibility</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel Availability Supply and Delivery</li> <li>• Appropriate Return on Investment</li> <li>• Regulatory Approval</li> </ul>

The following technologies were evaluated:

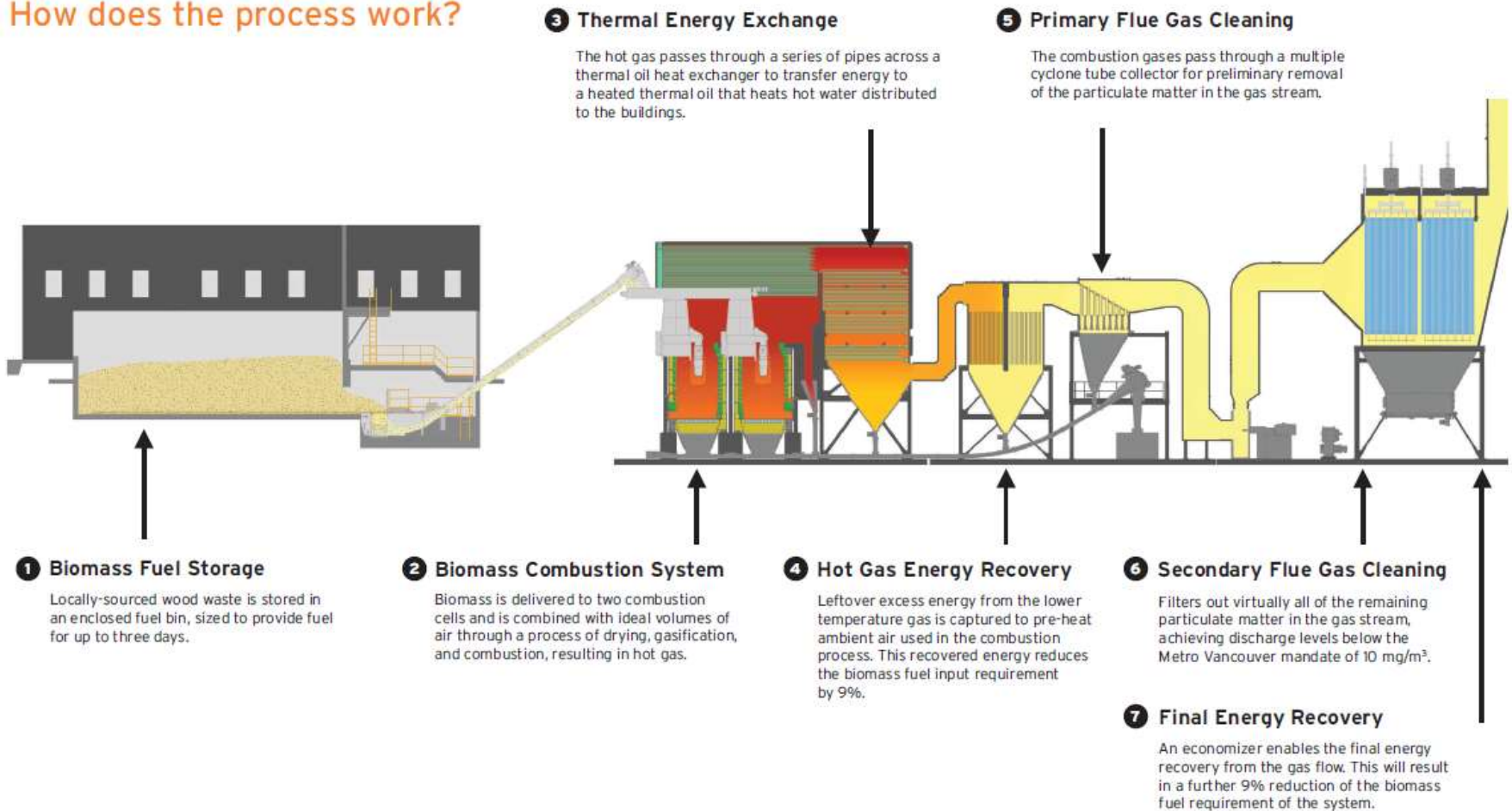
- High-efficiency natural gas boilers
- Sewer heat recovery and ground source heat pumps
- Biomass
- Waste heat recovery
- Combined heat and power based on natural gas and biogas
- Solar and wind applications

Biomass was ultimately chosen as the preferred technology to meet the energy demand requirements of both the SFU campus and UniverCity.

Biomass fuel for the project will be clean wood waste, such as wood chips, shavings, urban, and clean construction wood waste, and will be sourced locally and delivered to the site during off-peak traffic hours. The use of local wood waste supports Metro Vancouver's clean wood recycling policy by re-using clean construction and urban wood waste banned from Metro Vancouver landfills in 2015.

## Technology Process

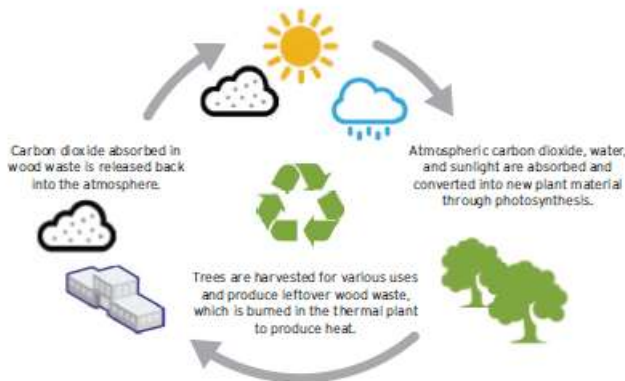
### How does the process work?



## Environment and Air Quality

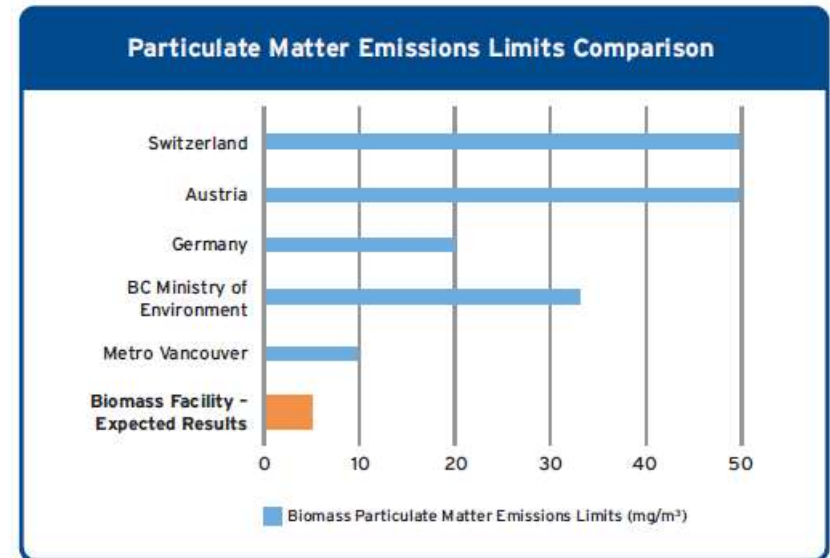
Once the project is fully implemented, the system will reduce an estimated 11,600 tonnes of CO<sub>2</sub> annually, representing an 80% reduction in greenhouse gas emissions when compared to fossil fuel and electricity use.

Using wood waste for energy has a positive impact on controlling climate change. While fossil fuel combustion takes carbon from underground and puts it into the atmosphere in the form of carbon dioxide (CO<sub>2</sub>), which is the primary cause of climate change, biomass combustion recycles the carbon that was already in the natural carbon cycle, not adding any additional CO<sub>2</sub> to the atmosphere.



Metro Vancouver has set some of the most stringent limits for particulate matter emissions in the world.

Air emissions from the biomass facility will meet or exceed Metro Vancouver's bylaw requirements and will be continuously monitored.



Source of Comparison Data: BC Ministry of Environment, 2008. Emissions from Wood-Fired Combustion Equipment: [http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/emissions\\_report\\_08.pdf](http://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/pulp-paper-wood/emissions_report_08.pdf)

## Timelines and Approval Process







# Questions and Answers