

# UBC ACADEMIC DES

Tour of UBC's Campus Energy Centre and  
Bioenergy Research and Demonstration Facility



## TOUR GUIDES

DAVID WOODSON, MANAGING DIRECTOR, ENERGY AND WATER SERVICES

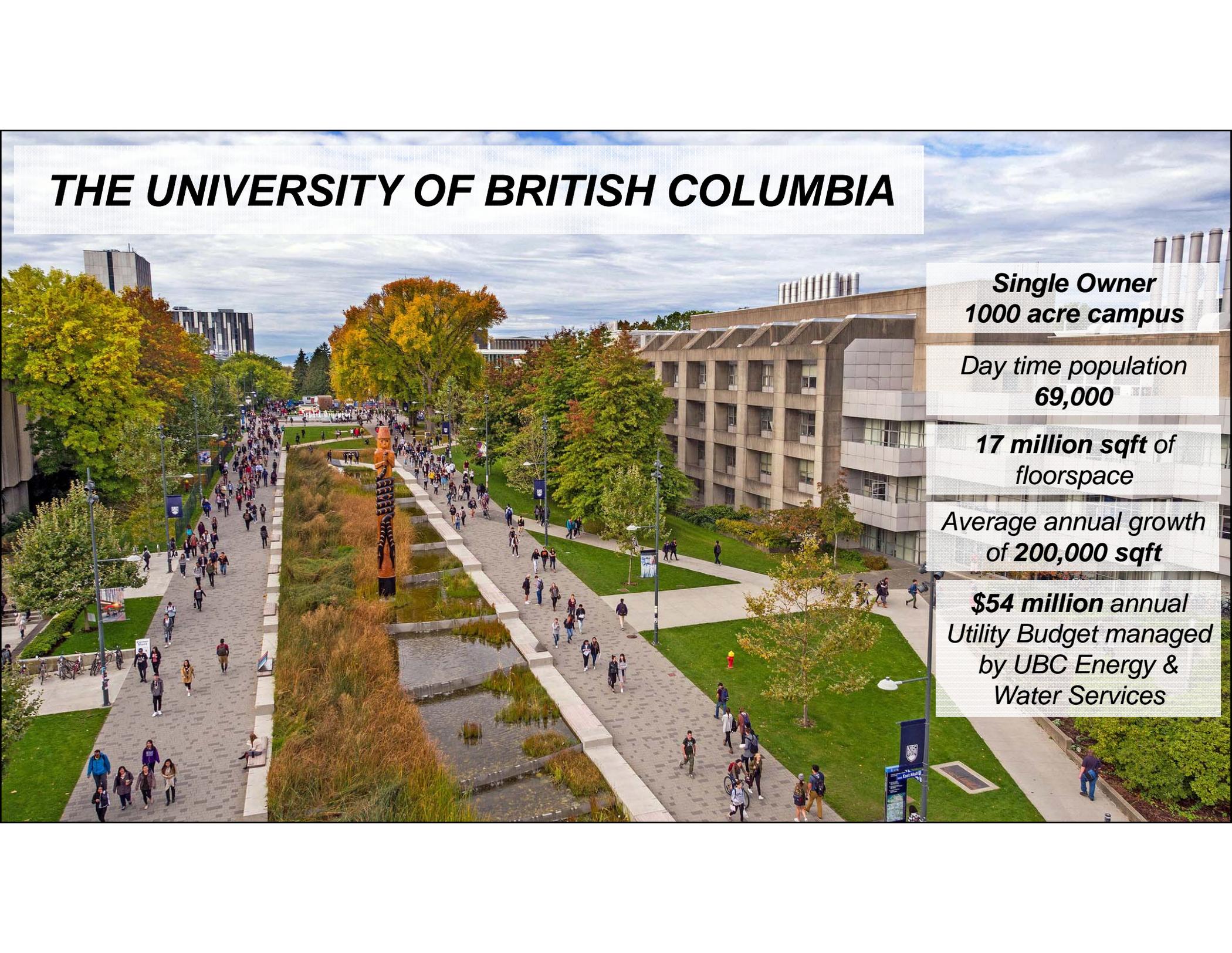
PAUL HOLT, DIRECTOR UTILITIES AND ENGINEERING, UBC

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IDEA MAIN CONFERENCE JUNE 11-14TH 2018 VANCOUVER

# ***THE UNIVERSITY OF BRITISH COLUMBIA***

An aerial photograph of a university campus. A wide, paved pedestrian walkway runs through the center, flanked by green lawns and trees with autumn foliage. A large, colorful totem pole stands in the middle of the walkway. In the background, modern university buildings and a cloudy sky are visible.

**Single Owner**  
**1000 acre campus**

**Day time population**  
**69,000**

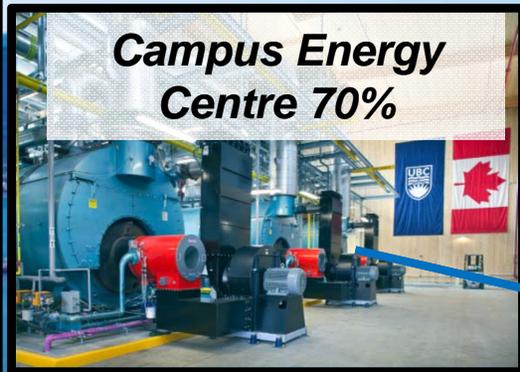
**17 million sqft of**  
**floorspace**

**Average annual growth**  
**of 200,000 sqft**

**\$54 million annual**  
**Utility Budget managed**  
**by UBC Energy &**  
**Water Services**

# Supply to UBC's DES

**Campus Energy Centre 70%**



**Bioenergy 25%**



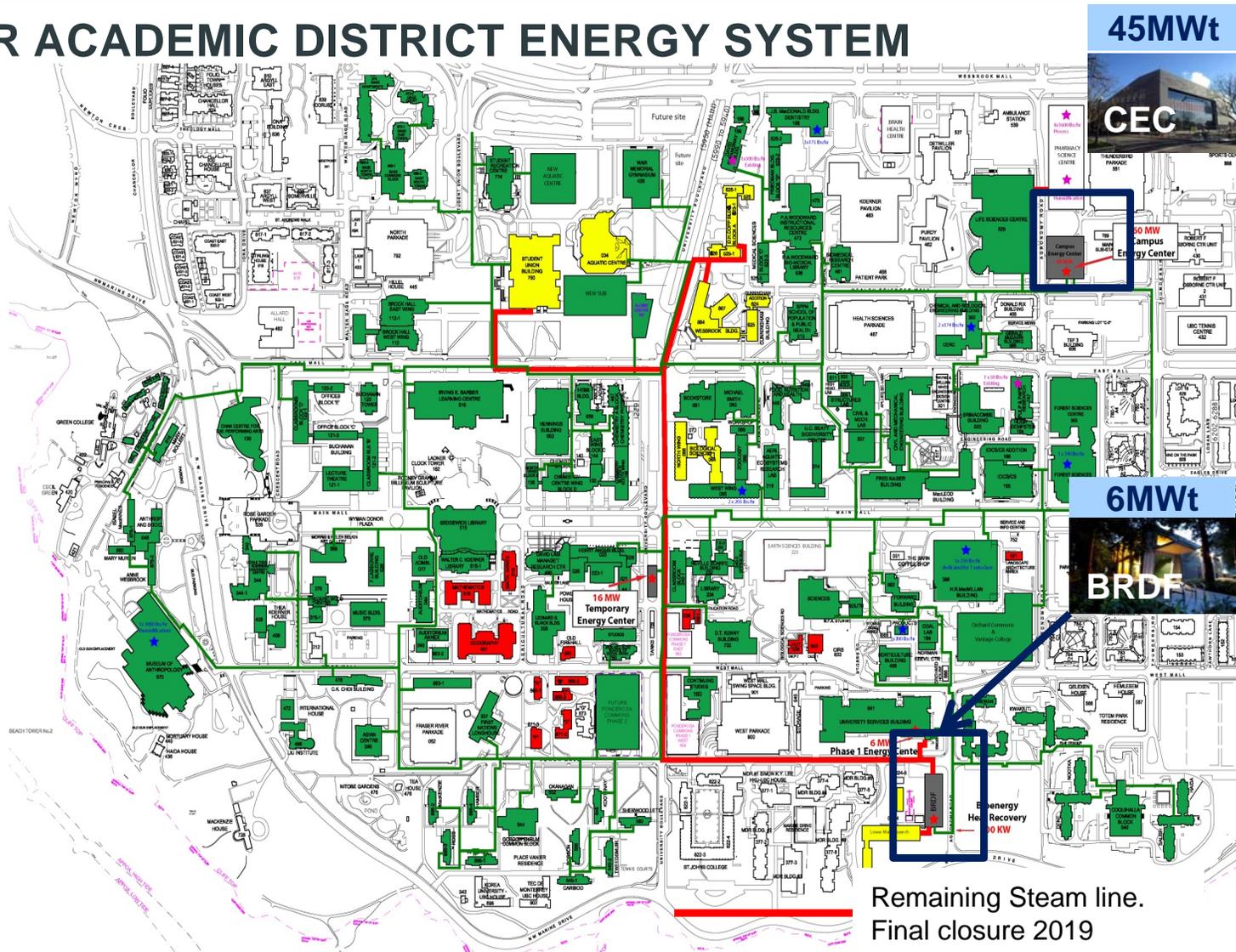
**Cogeneration 5%**



# HOT WATER ACADEMIC DISTRICT ENERGY SYSTEM

## Summary

- 22km supply and return piping laid
- CEC in service 45MW installed Capacity
- BRDF ~6MW installed thermal capacity on biomass, 2MWe Cogen with heat recovery, gas backup boiler



Remaining Steam line.  
Final closure 2019



# BIOENERGY RESEARCH AND DEMONSTRATION FACILITY



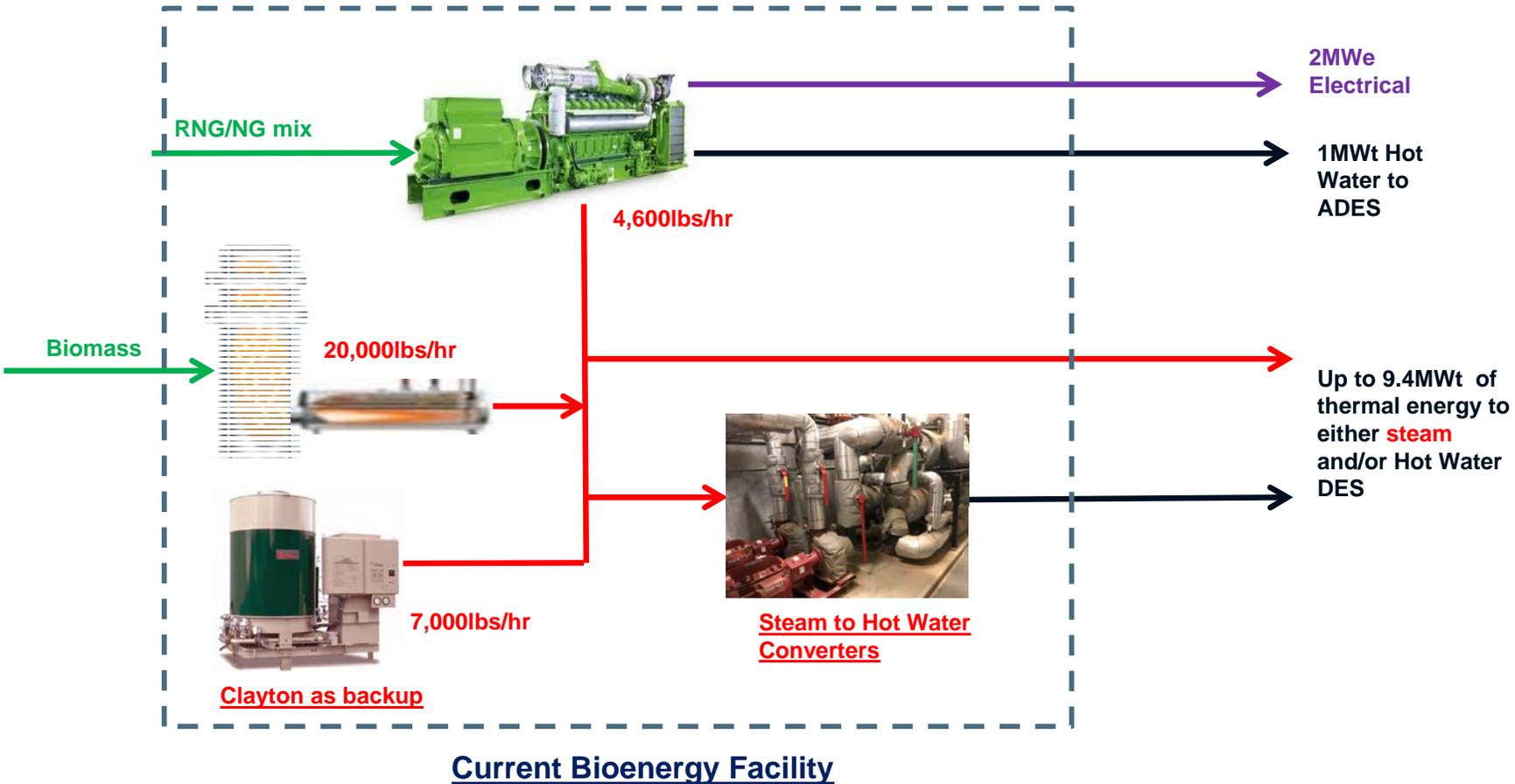








# BRDF OUTPUT: BIOMASS, RNG FUELLED COGEN, BACKUP GAS



# CAMPUS ENERGY CENTRE



# CAMPUS ENERGY CENTRE (CEC) IN SERVICE NOV. 20<sup>TH</sup>, 2015

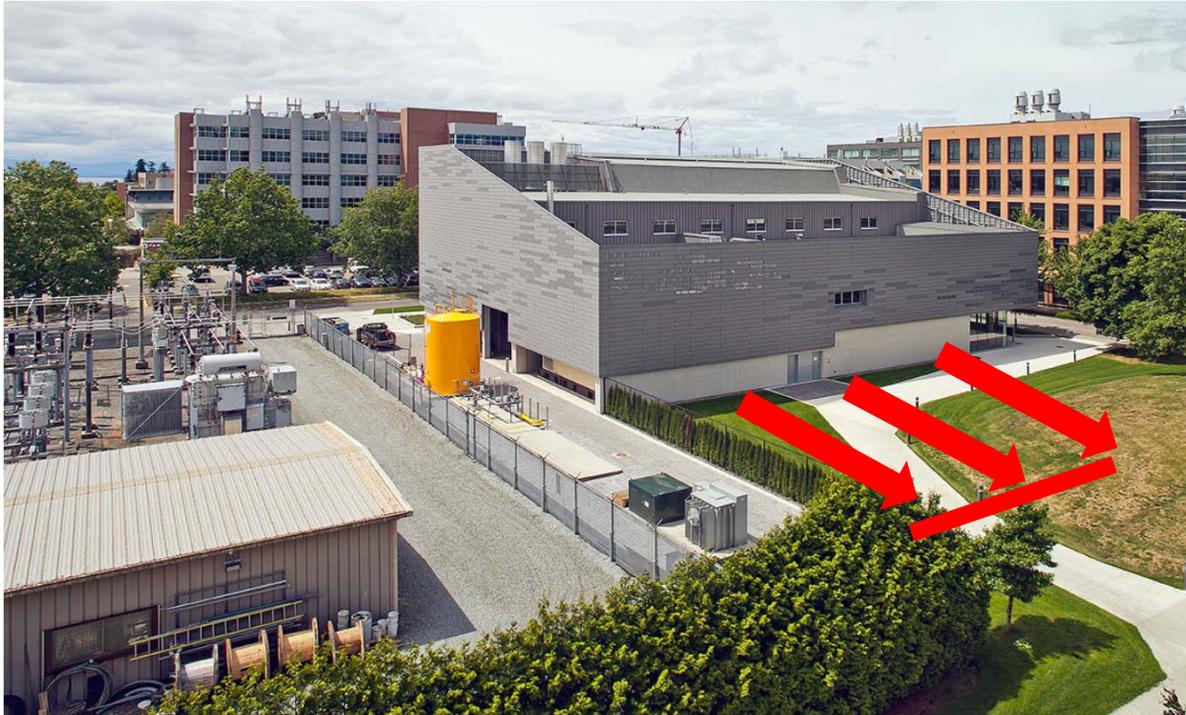
- LEED Gold Certified
- Constructed using Canadian cross laminated timber (CLT)
- \$24 million CAD



- Built for 4 boilers
- Initial Installation 3x15MWt natural gas boilers (45MWt)
  - Backup provided by #2 diesel
- To match UBC thermal load growth profile over next 20 years
  - Each boiler bay is sized for 4 x 22MW boilers (88MWt) ultimate expansion



# POTENTIAL FOR COGENERATION EXPANSION



## CEC Cogeneration Option

- CEC Site chosen to allow for a cogeneration expansion
- Total potential CEC capacity: CEC phase 1 + Cogeneration phase 2 at maximum build out will be 110MWt and 25MWe





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