UVIC SYSTEM REVITALIZATION
Project Objectives:

- Replace end of life boiler plants
- Achieve 10% energy savings
- Allow for future alternative energy integration
June 13, 2018

UVic System Overview
System Challenges

- High district loop temperatures
- High system flow rate
- Need to operate multiple plants
Existing ETS Configurations

- Shell and tube exchangers
- DHW served from building hydronic loop
- District 3-way valves
Existing Building Process Loads

- Commercial / Cage washers
- Small quantity of loads, low energy demand
- Requiring > 90°C District supply temp year round
Existing Distribution System

- Two-pipe system
- Concrete trench boxes and chambers
- Hydraulic restrictions identified
Existing Plant Configuration

- Four plants:
  - One decommissioned
  - One lead, two supplemental
- Primary only pumping
- Boilers near/at end of life
Existing System Temperatures

![Graph showing current temperature duration curves for Ex. DHS, Ex. DHR, Sec HWS, and Process HWS.](image_url)
Revitalization Plans

- ETS Upgrades & Modifications
- Distribution System Loop
- New Energy Centre
ETS Upgrades

- Process hot water reconfiguration
- Controls modifications
- Use of plate exchangers

Sample typical ETS configuration
ETS Upgrades

- Construction 2018
- ETS upgrades for 7 buildings
- Improve service reliability
- Tie into existing infrastructure
- Utilize new direct bury pre-insulated piping
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- 6” NPS Supply and Return Loop
- New plant located outside campus ring
- Serve current and future loads from one plant
- Primary – Secondary pumping
- Ability to integrate alternative energy
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Energy Centre – Site Servicing

- ~500 tm 12” NPS HW Supply and Return Piping
- ~500 tm Power and Comm Duct Banks
- Gas
- Water
- Sanitary
Energy Centre

- 2 @ 10 MWt & 1 @ 8 MWt Natural Gas Boilers
- Boiler economizer
- Decoupled Primary-Secondary
Expected Impact

- Reduced system temperatures
- Improved DeltaT
- 10% + energy savings