



UVIC SYSTEM REVITALIZATION

Background

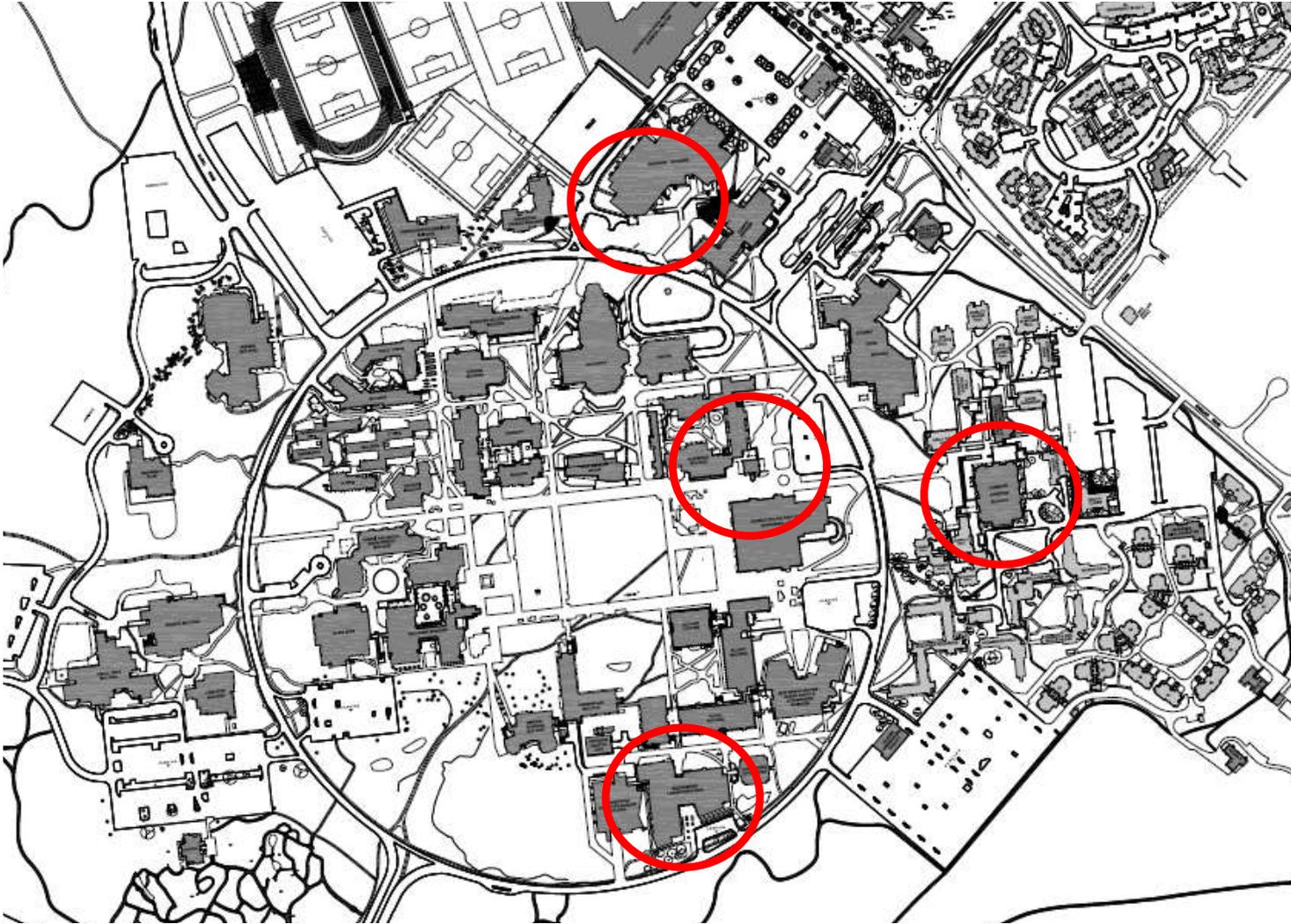
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Project Objectives:

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

UVic System Overview

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System Challenges

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

Existing ETS Configurations

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- Shell and tube exchangers
- DHW served from building hydronic loop
- District 3-way valves



Existing Building Process Loads

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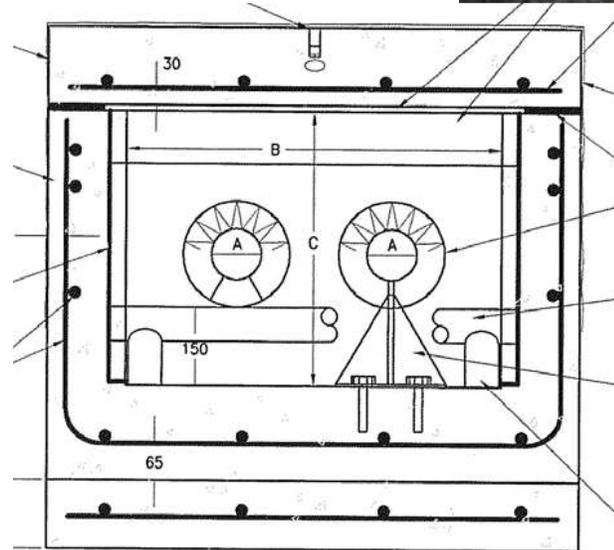
- Commercial / Cage washers
- Small quantity of loads, low energy demand
- Requiring $> 90^{\circ}\text{C}$ District supply temp year round



Existing Distribution System

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



Existing Plant Configuration

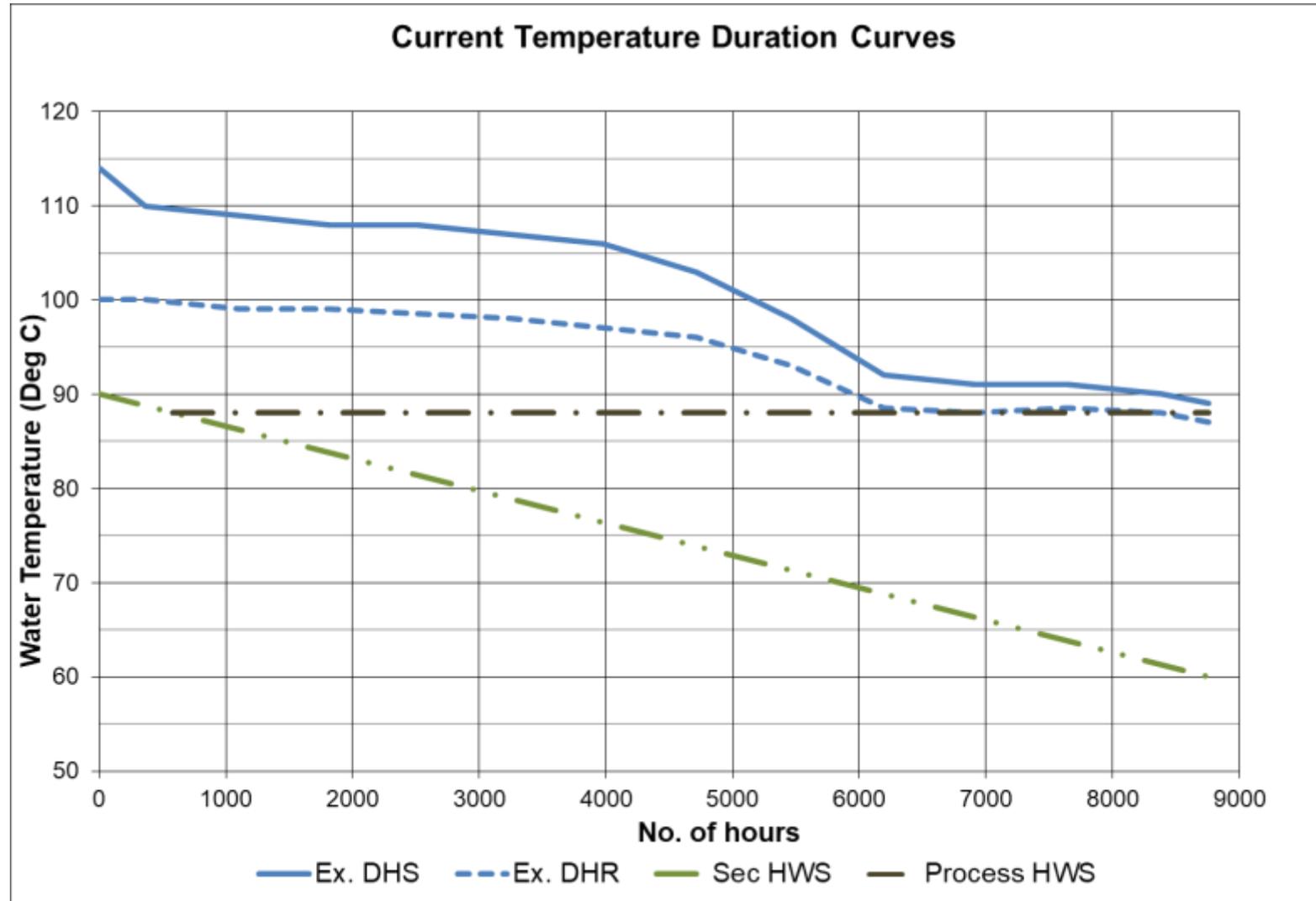
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- Four plants:
 - One decommissioned
 - One lead, two supplemental
- Primary only pumping
- Boilers near/at end of life



Existing System Temperatures

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Revitalization Plans

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

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ETS Upgrades

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

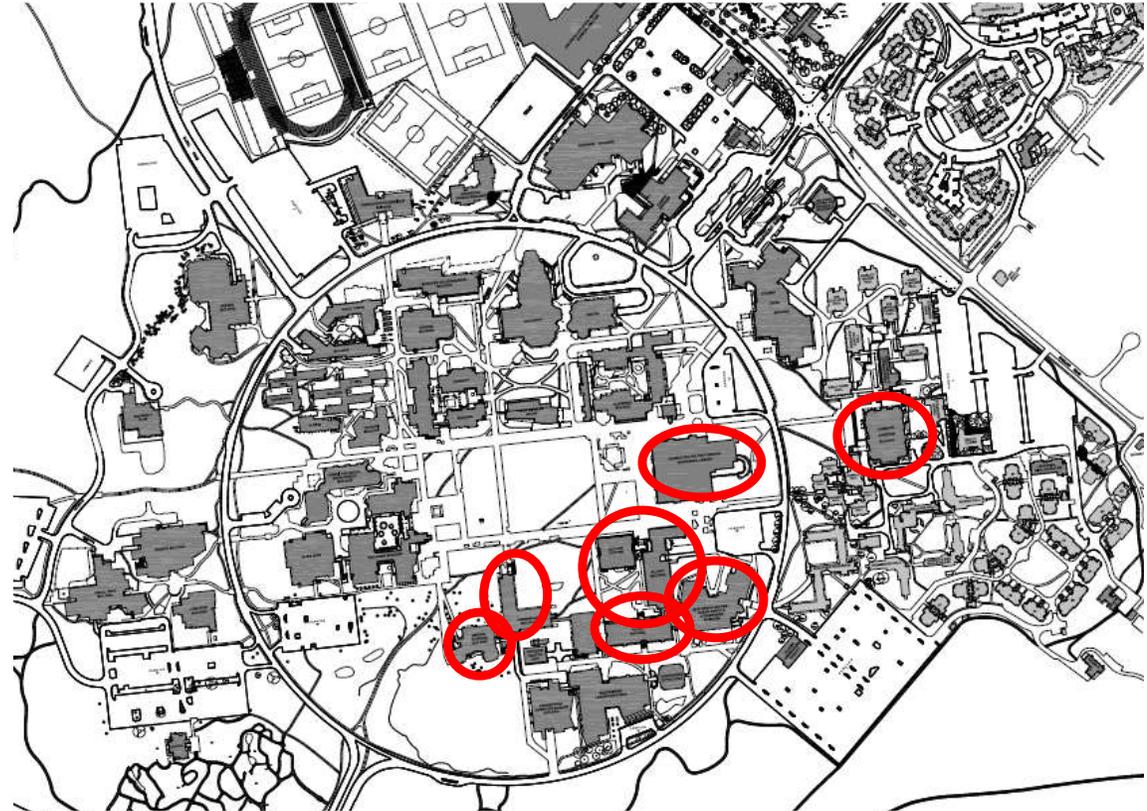


Sample typical ETS configuration

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ETS Upgrades

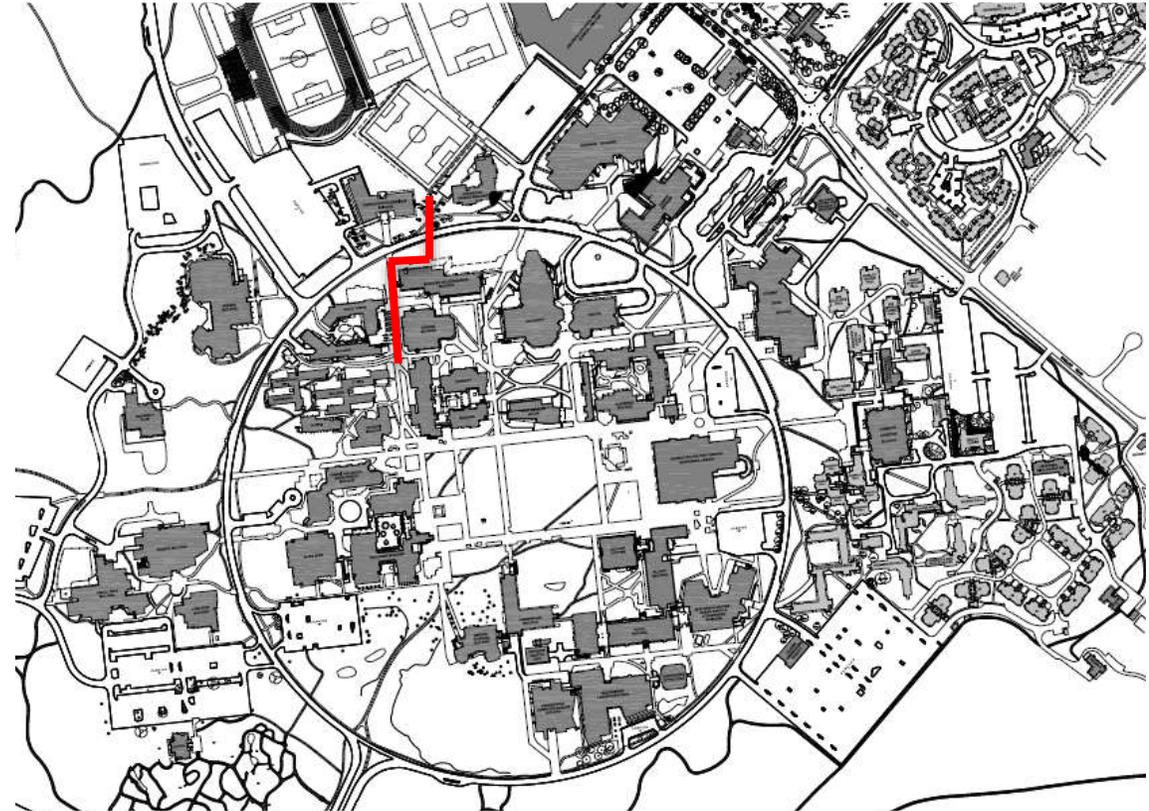
- Construction 2018
- ETS upgrades for 7 buildings



DPS Loop

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- Improve service reliability
- Tie into existing infrastructure
- Utilize new direct bury pre-insulated piping



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DPS Loop

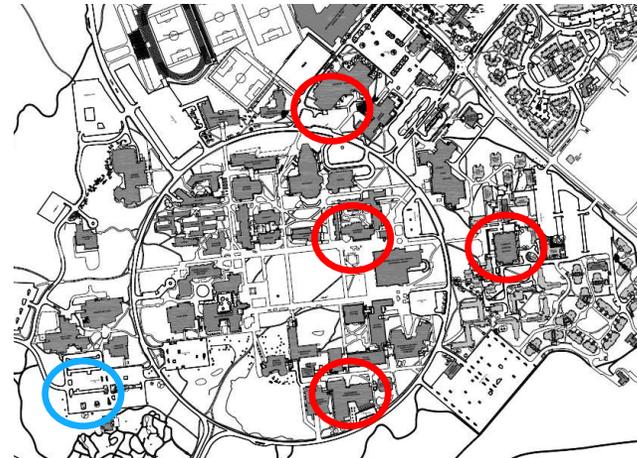


- 6" NPS Supply and Return Loop

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Energy Centre

- New plant located outside campus ring
- Serve current and future loads from one plant
- Primary – Secondary pumping
- Ability to integrate alternative energy



Energy Centre – Site Servicing

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



Energy Centre

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



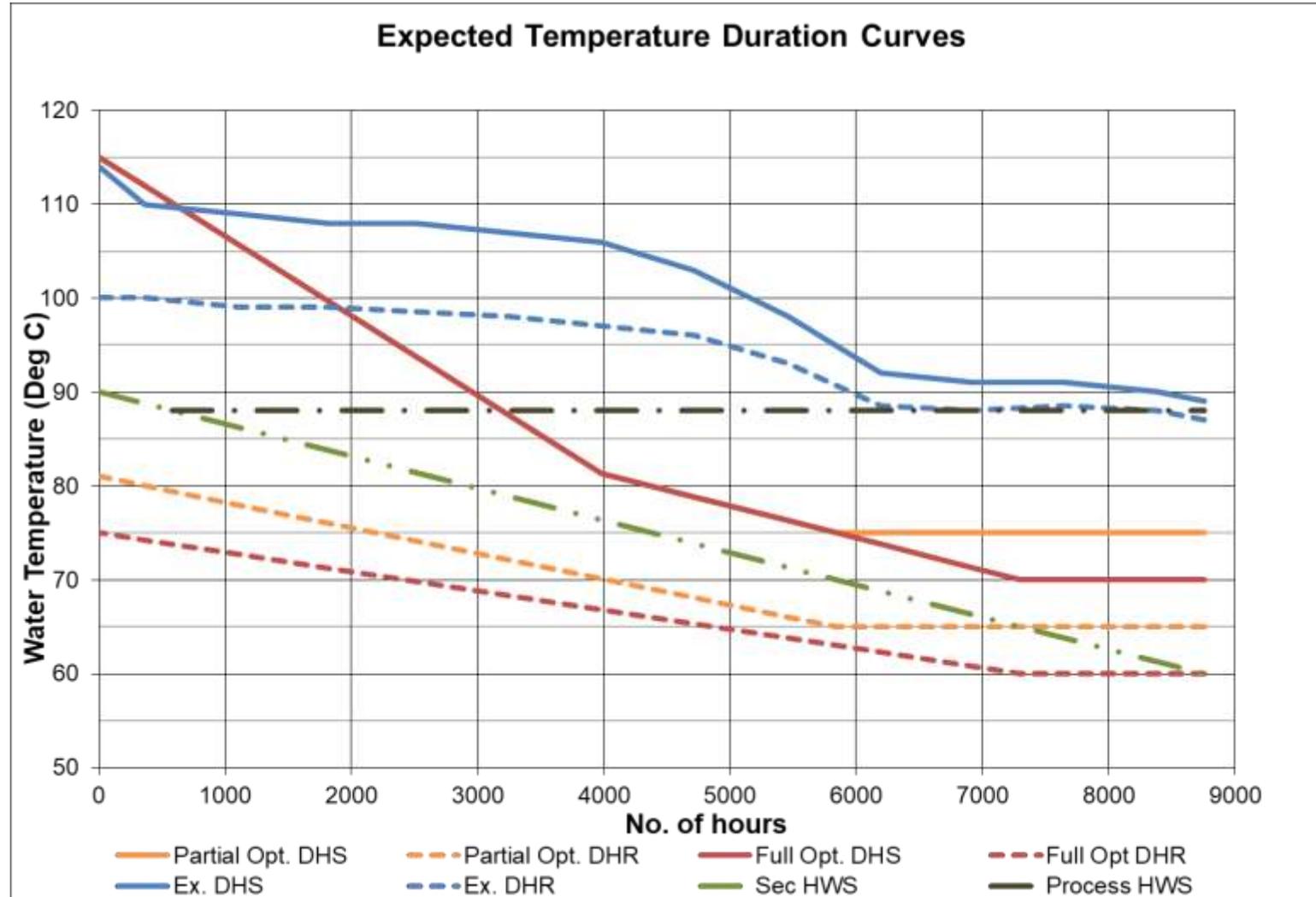
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Expected Impact

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

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Expected Impact



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Questions

