



University of Utah Campus Energy Efficiency Project

How the University solved chiller plant capacity needs

Presented by: DJ Hubler & Erick Allen, McKinstry

University of Utah by the Numbers

32,760

Total University
Enrollment

>500

Buildings



1,535

Acres of
University-
Owned Land

5

Chilled Water
Plants

15MM

Square Feet

3

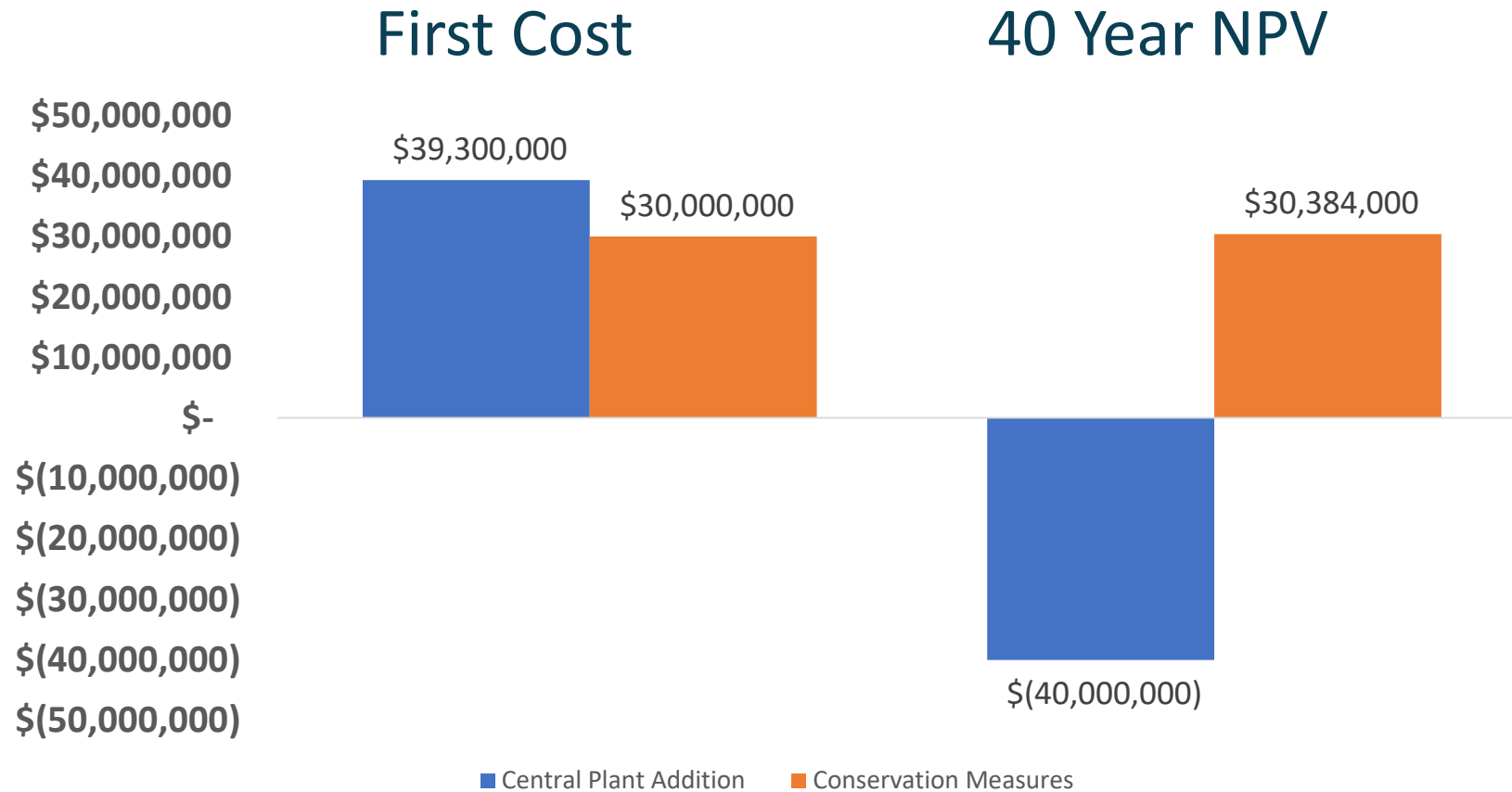
High-Temperature
Hot Water Plants

Utah Health Science Campus Transformation Project

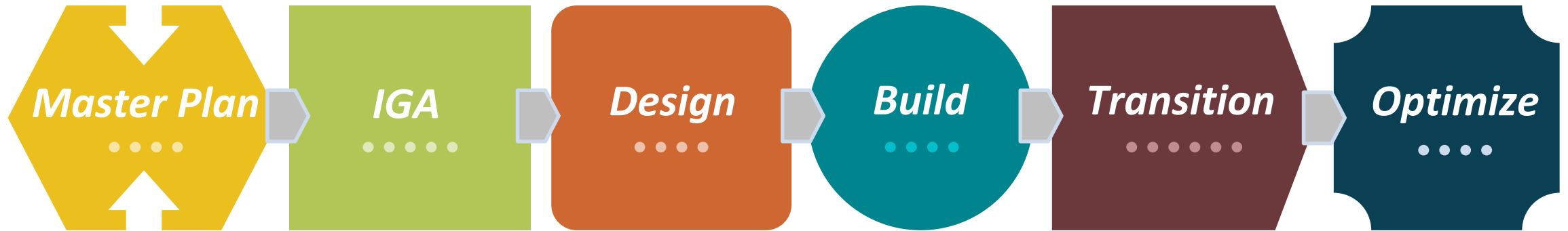


Master Plan

Long-Term Cost Difference

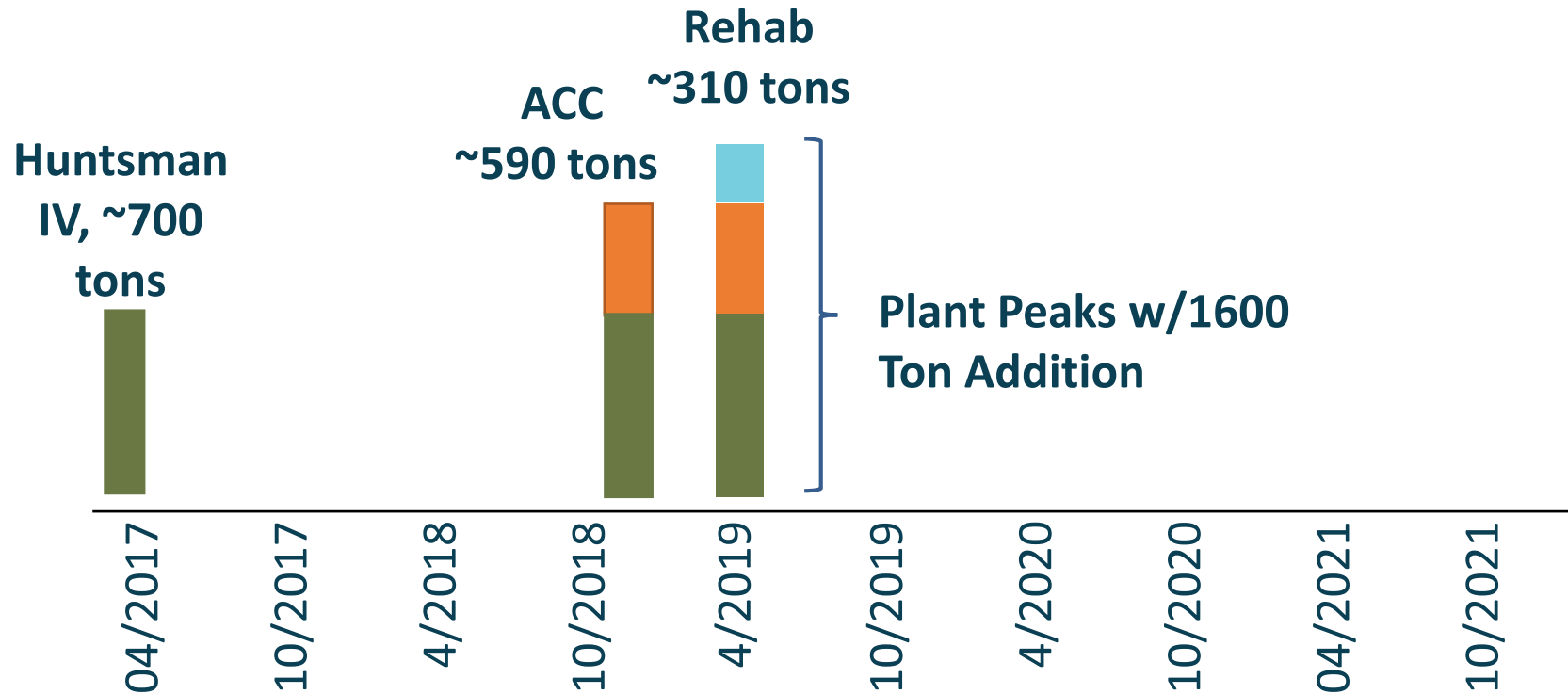


Scope of Work

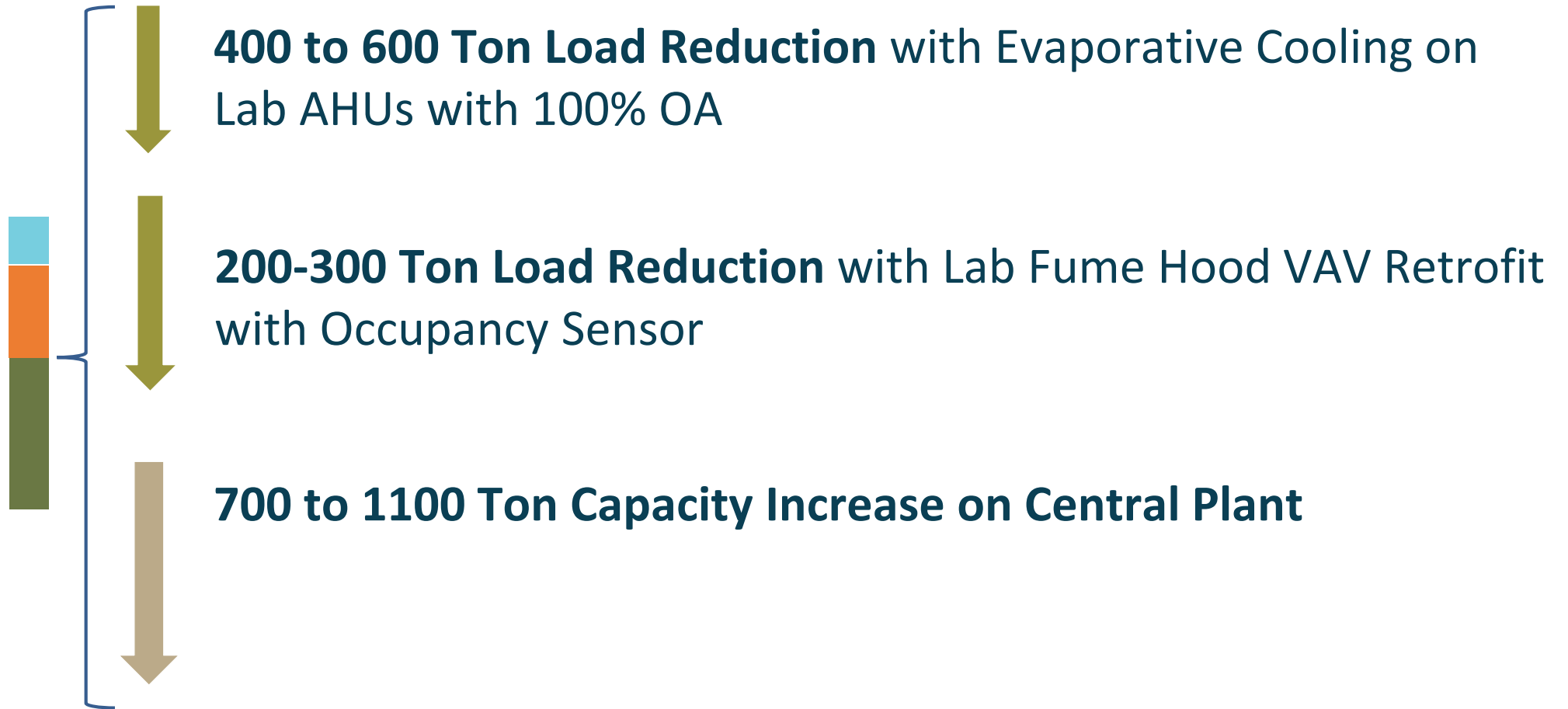


Solutions

Transformation Project Impact Timeline

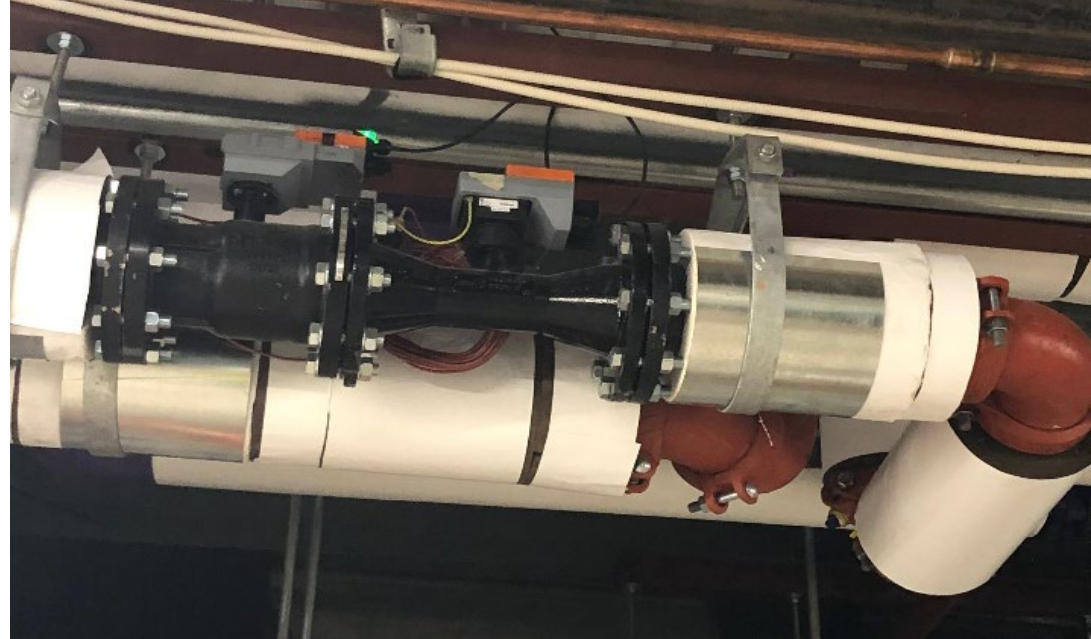


Conservation Strategies



Improving Plant Delta T

Installed 82 HW and CHW precision control valves that account for more than 85% of the design capacity of the East Plant

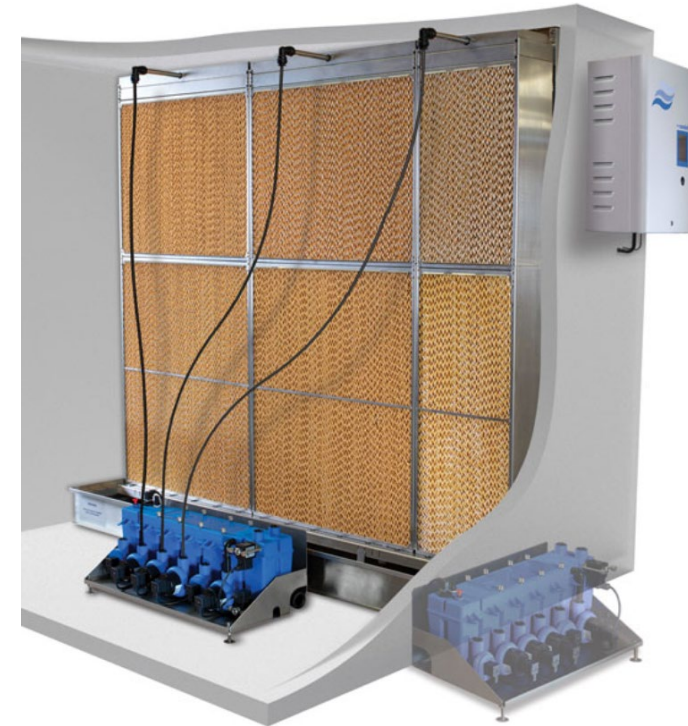


Valves will measure CHW delta T and flow at each coil providing valuable data for analytics

Direct Evaporative Cooling



12 Fan Arrays

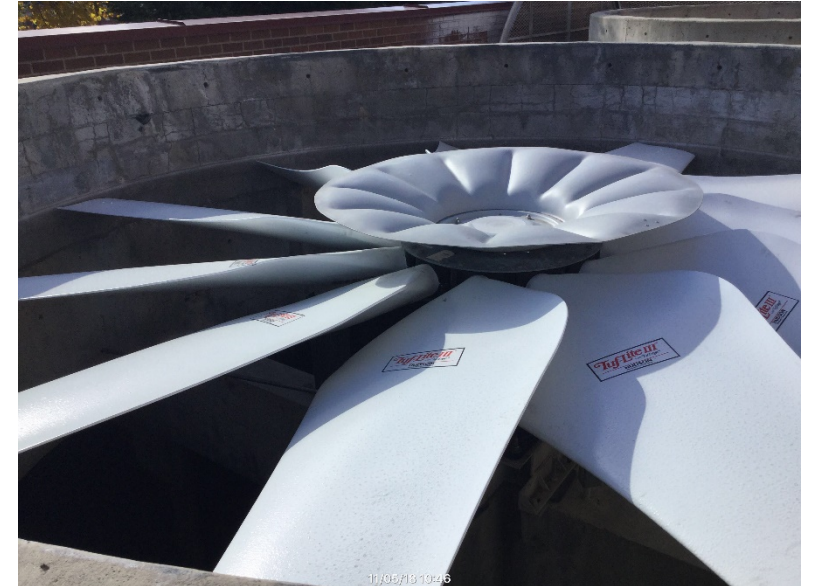


4 Evaporative Cooling Systems

Indirect Evaporative Cooling

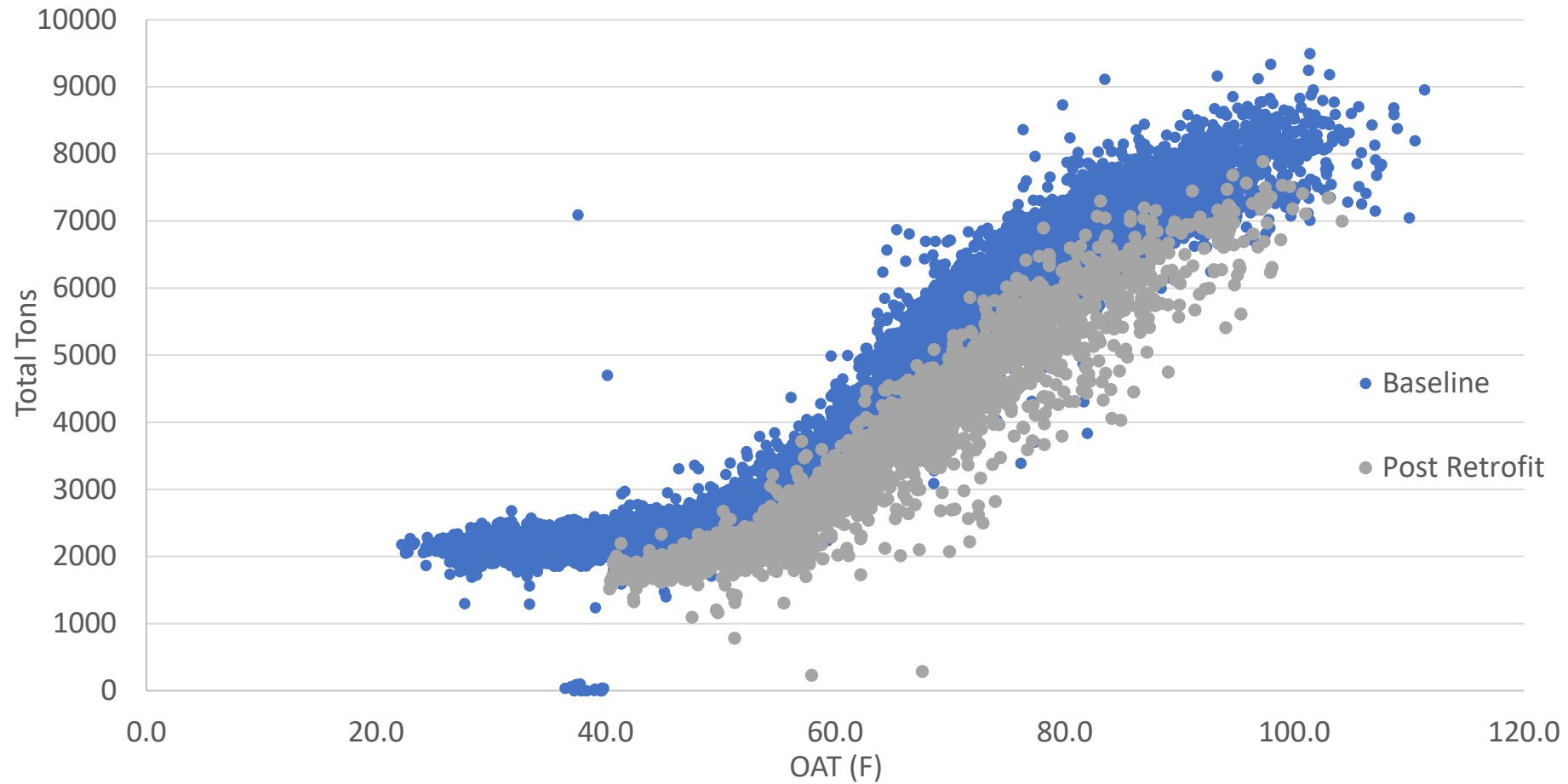


- Installed 1 new cooling tower
- Rebuilt 1 cooling tower
- Installed new indirect cooling coils

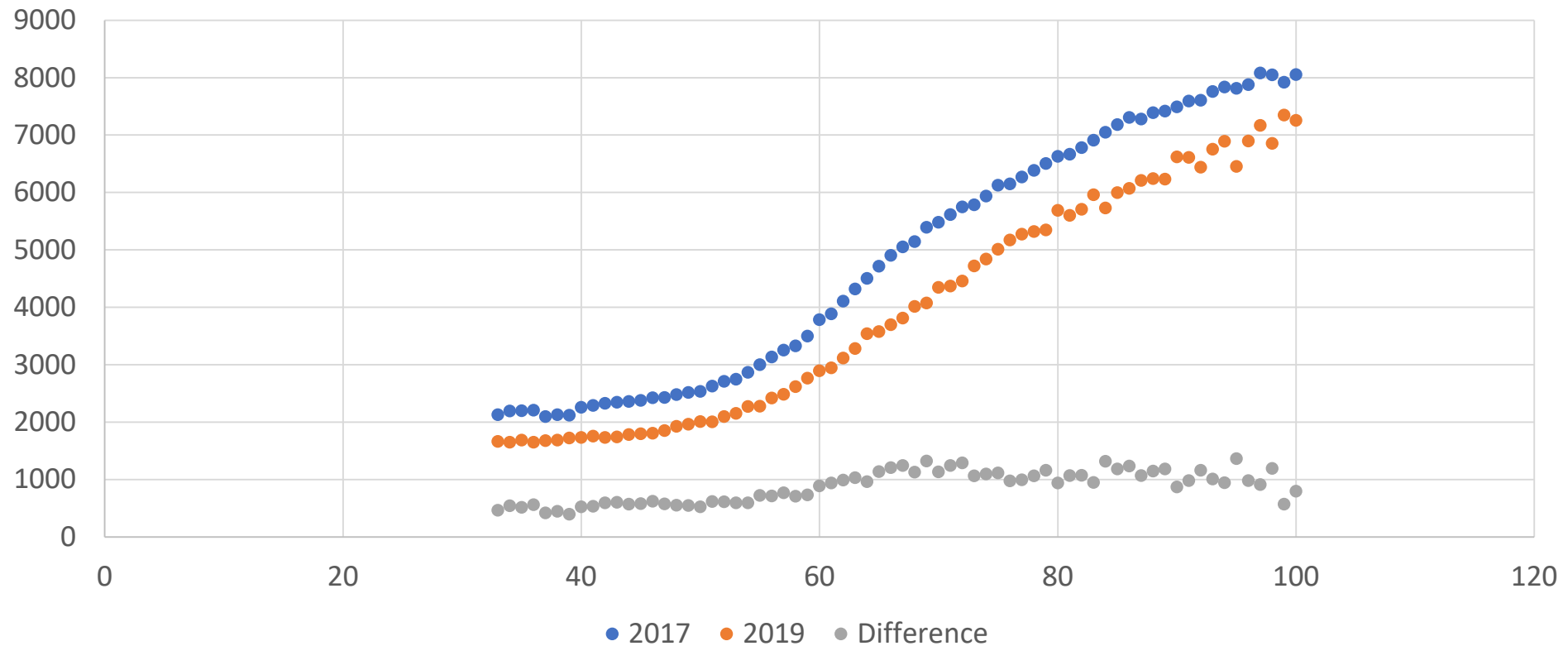


Results

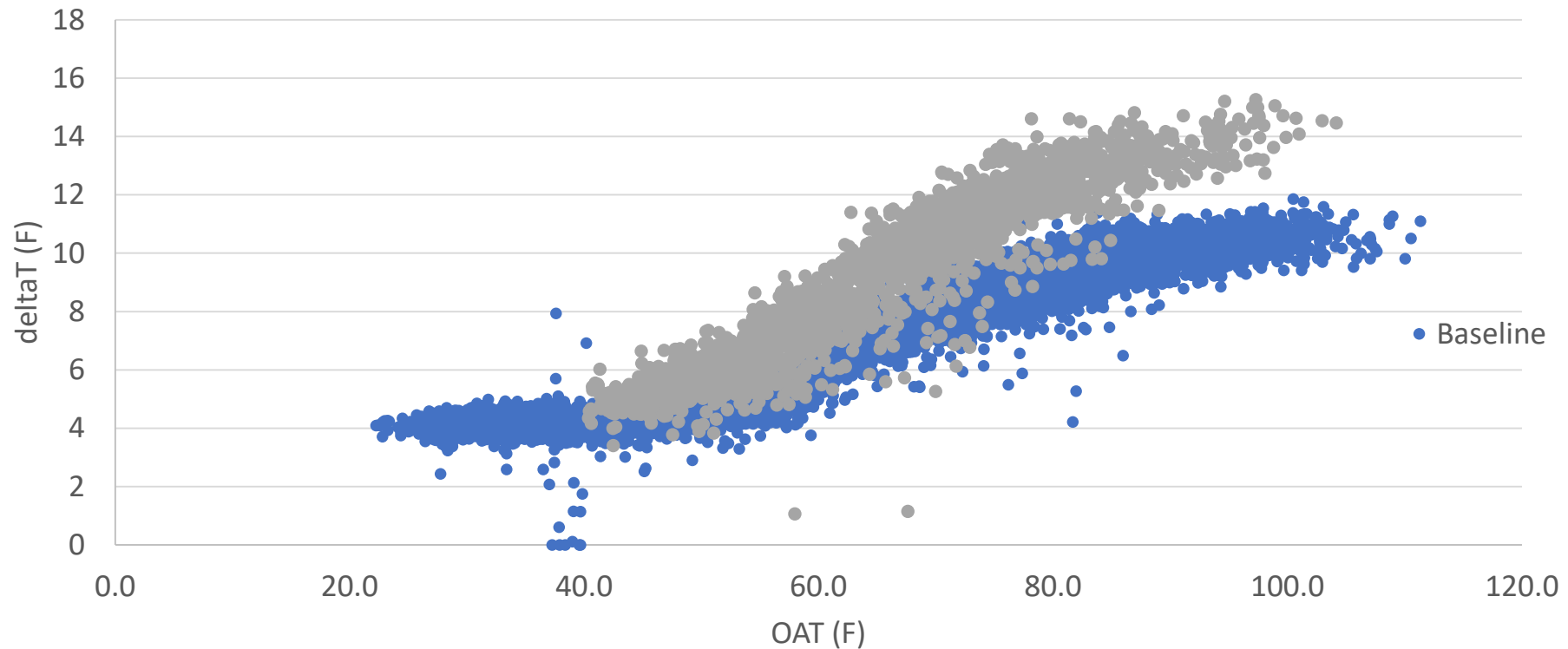
East Plant Load as a Function of OAT



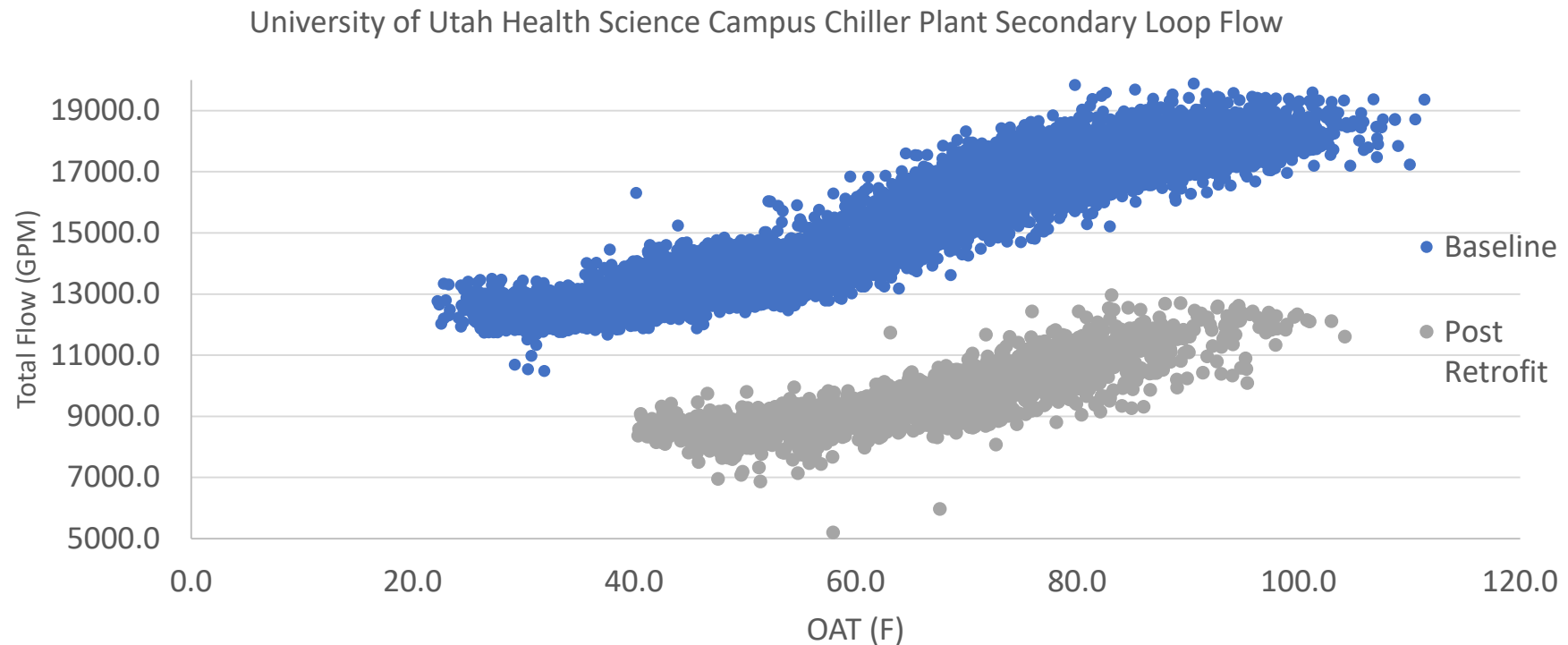
East Plant Load as a Function of OAT



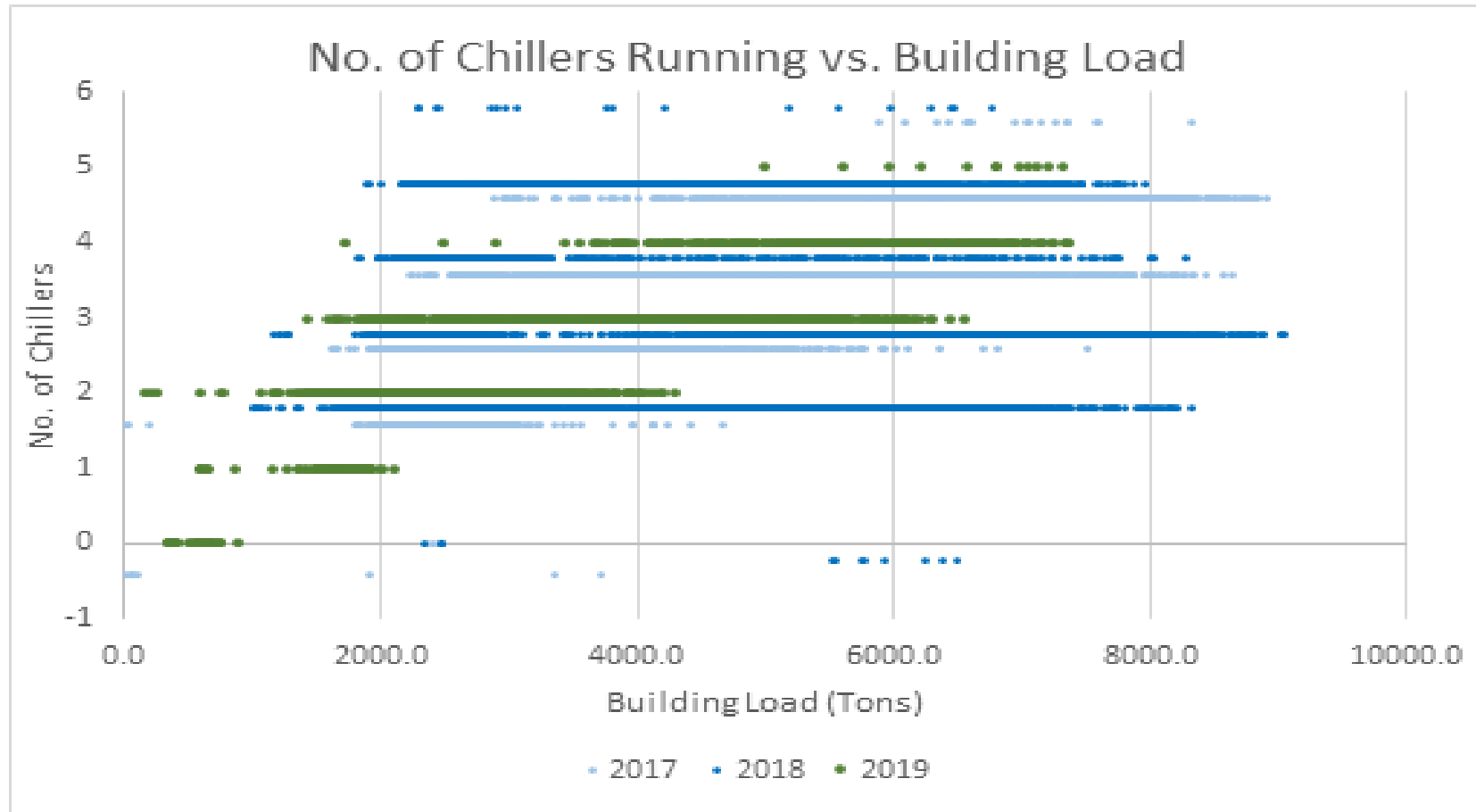
East Plant DeltaT as a Function of OAT



East Plant Flow as a Function of OAT



East Plant Chillers vs. Building Load



University of Utah Healthcare Campus



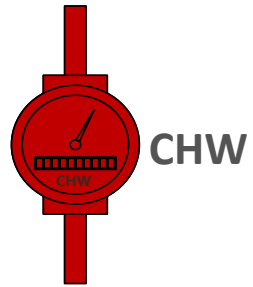
East CHW
Plant

Persistence

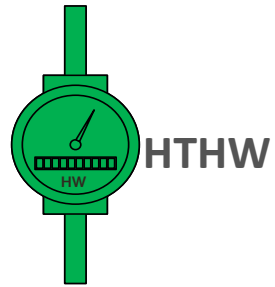
Campus Performance



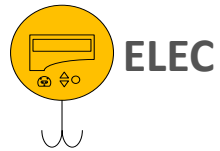
Building Performance



CHW

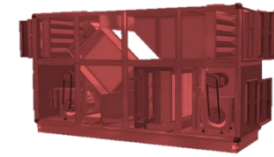


HTHW

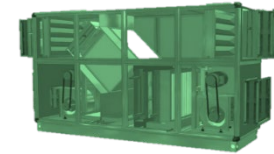


ELEC

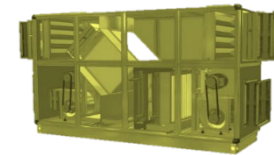
AHU 1



AHU 2



AHU 3

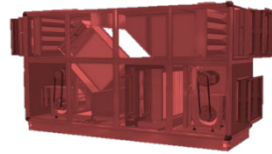


HX

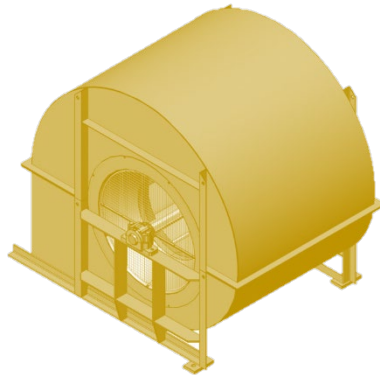


Equipment Performance

AHU 1



Supply Fan



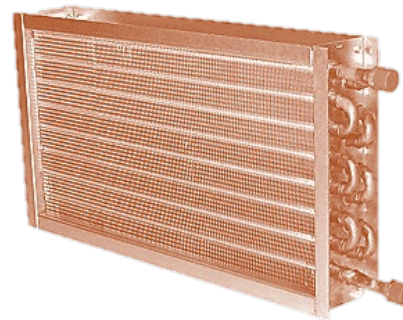
High KW /
RPM

Evaporative
Cooling

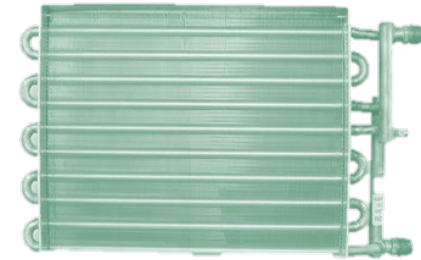


Very High BTUs / OAT
(Evap. Not Working)

Chilled Water
Coil



Heating
Coil



OK

Questions

Thank You!

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