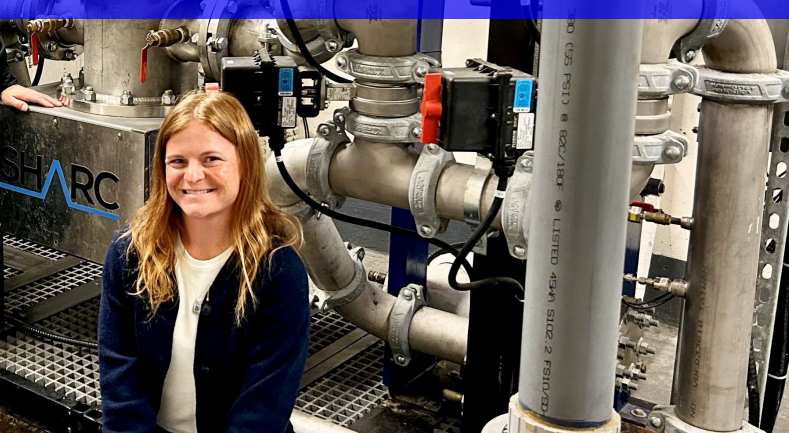


Join NY-GEO's  
*Let's Talk* on  
9/22/2023 @ 3PM



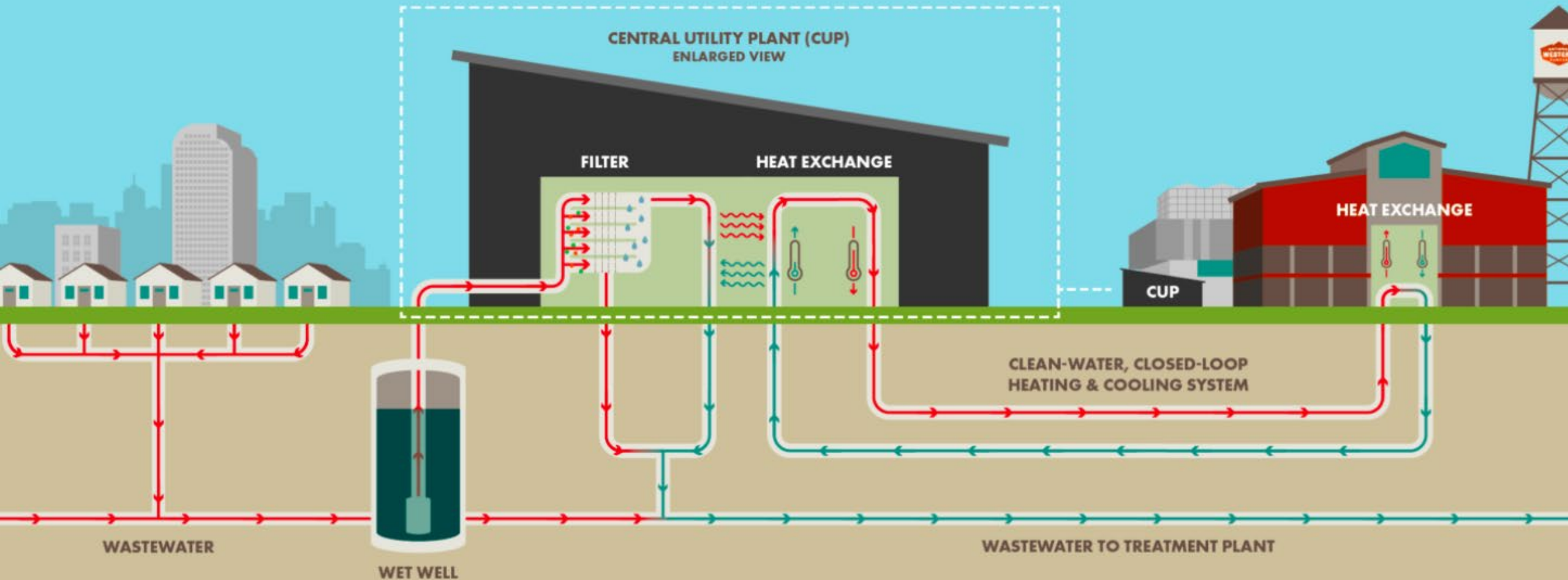
John's Trip to Colorado & Vancouver



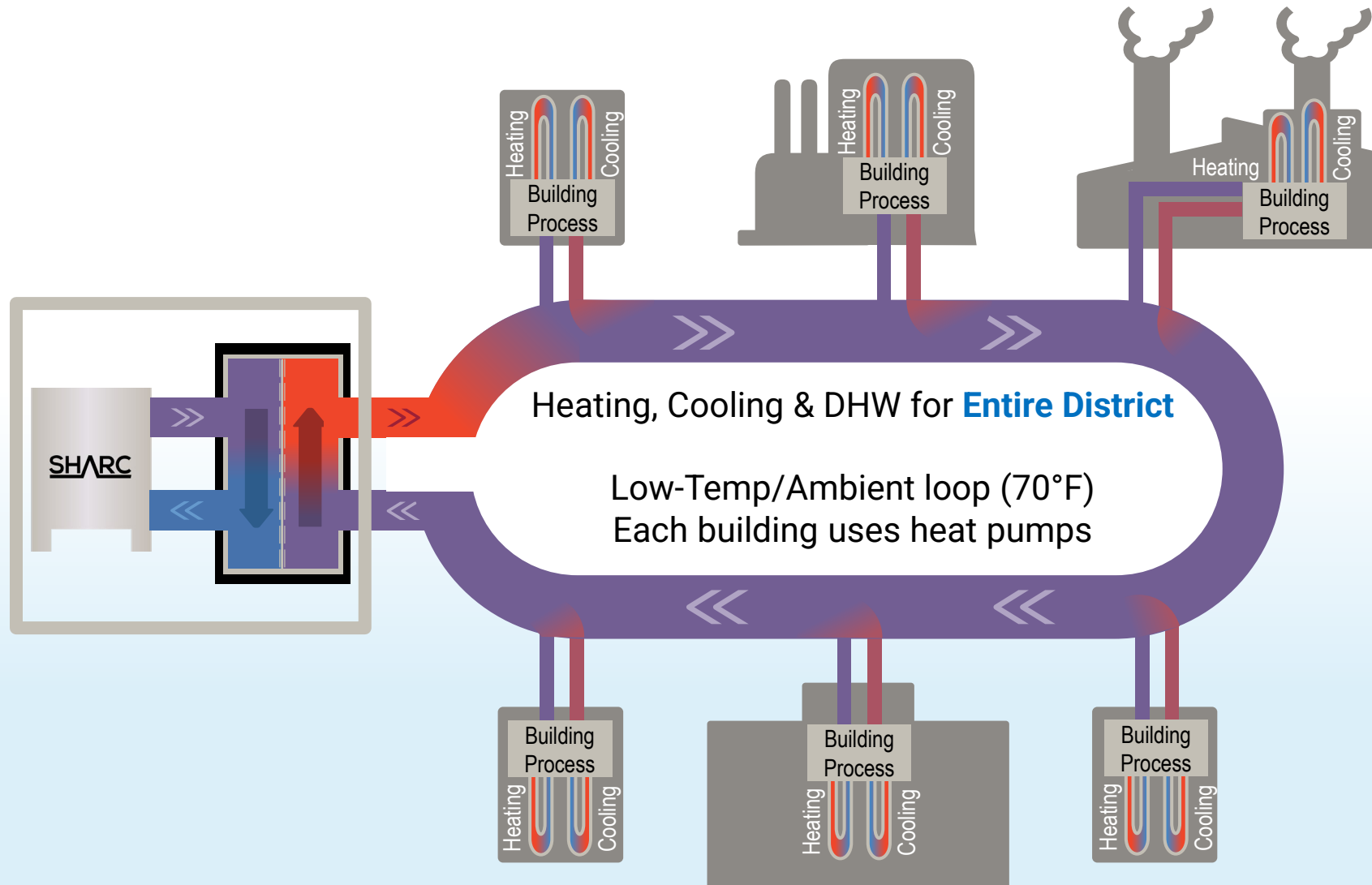
# DISTRICT ENERGY SYSTEM

HEATING AND COOLING USING A RECYCLED SOURCE OF THERMAL ENERGY — WASTEWATER

Denver, Colorado



# District Energy – SHARC

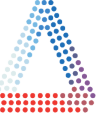


## National Western Center

- (2) SHARC 880 provide 3.8MW of thermal transfer
- 90% of total heating & cooling load for 1M sq ft of indoor space
- ~2600 mt CO<sub>2</sub>e/yr offset
- Plans to expand plant to 10MW

# SHARC

## SYSTEM

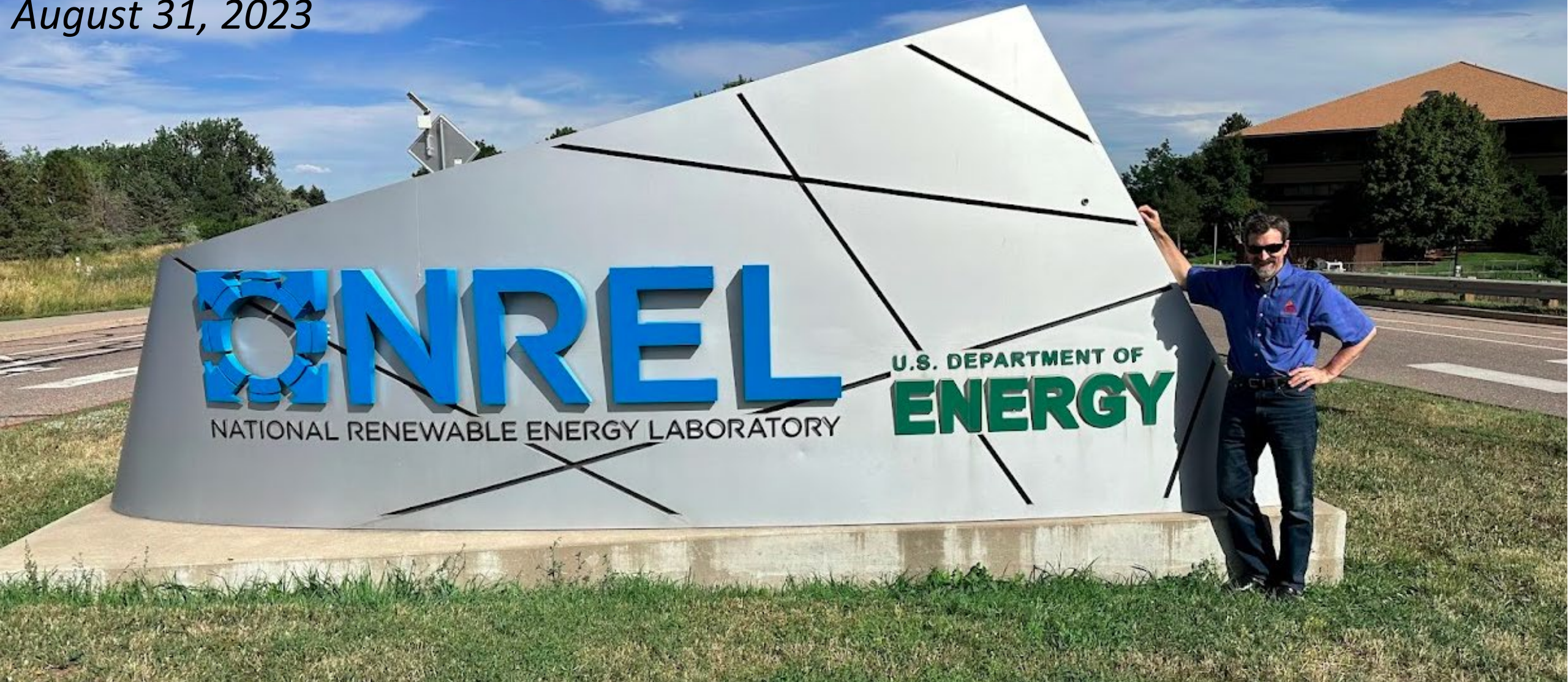


- SHARC Filter Unit
  - Support Frames/Skids
  - Control Panel
  - Macerator/Grinder
  - Piping/Valve Assembly
  - Plate & Frame Heat Exchanger
    - Wide Gap
- 
- Wastewater Holding Tank
  - Solids Handling Lift Pumps
  - Heat Pump(s)



# Decarbonizing Heating and Cooling with District Geothermal Systems: State of the Art, Challenges, and Opportunities

*National Renewable Energy Laboratory (NREL)*  
*August 31, 2023*



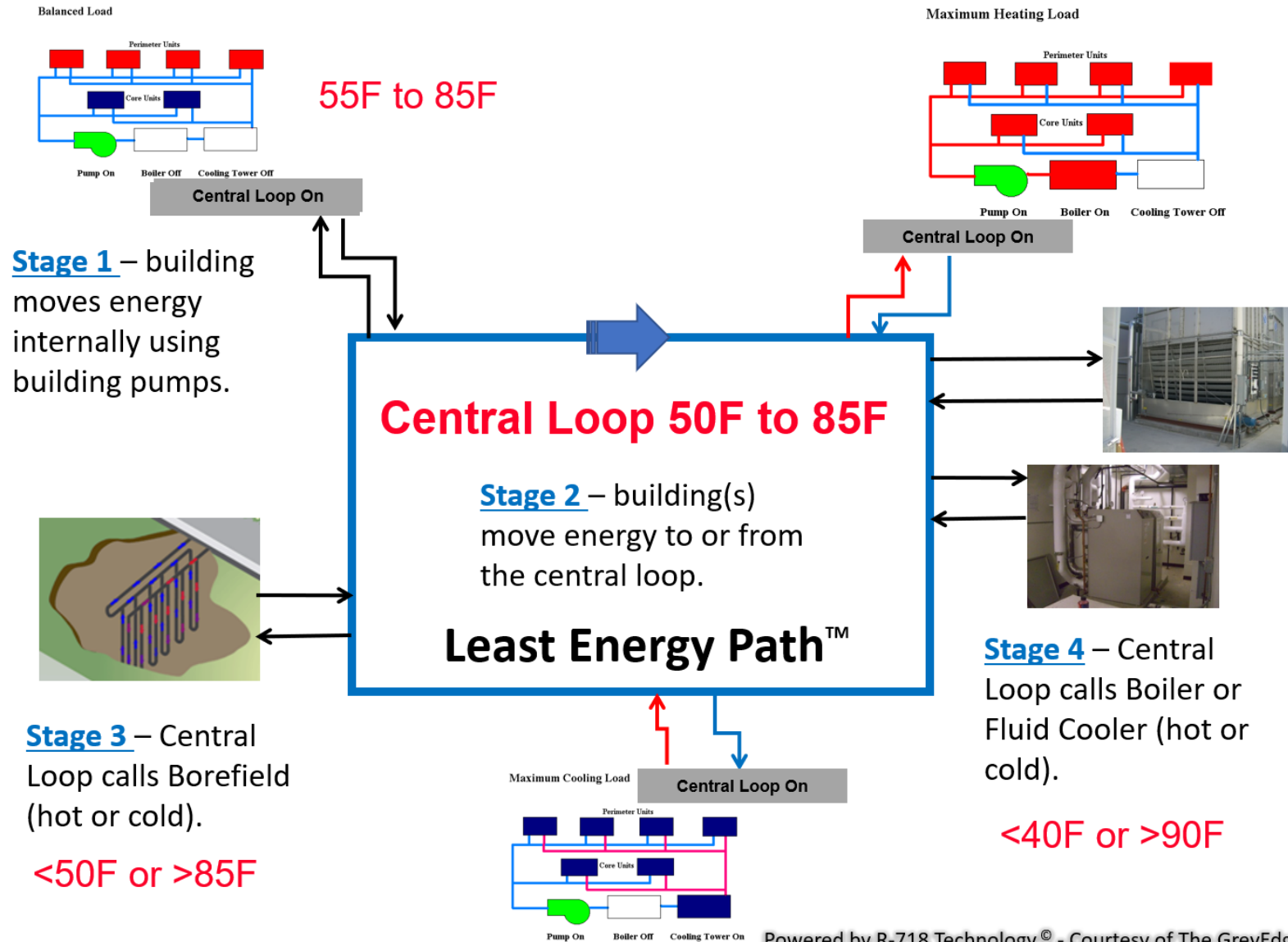


# Colorado Mesa University Living Lab



- ~ 10-year payback
- ~ \$1.6 M per year energy savings
- ~ 7.9 MMt CO<sub>2</sub> per year reduction
- 100% of heating covered
- Water use cut by 60%
- Average COP of 5.7, peak 8.9

# Colorado Mesa University – One Pipe Ambient



# ADEU - Distribution Piping

- Two-pipe distribution system
- Transfers energy from the geo fields to the customer's buildings
- Combines customer's loads providing diversity benefit
- No additional insulation required
- More than 3.4 km of HDPE 22" mains and 8-12" service lines

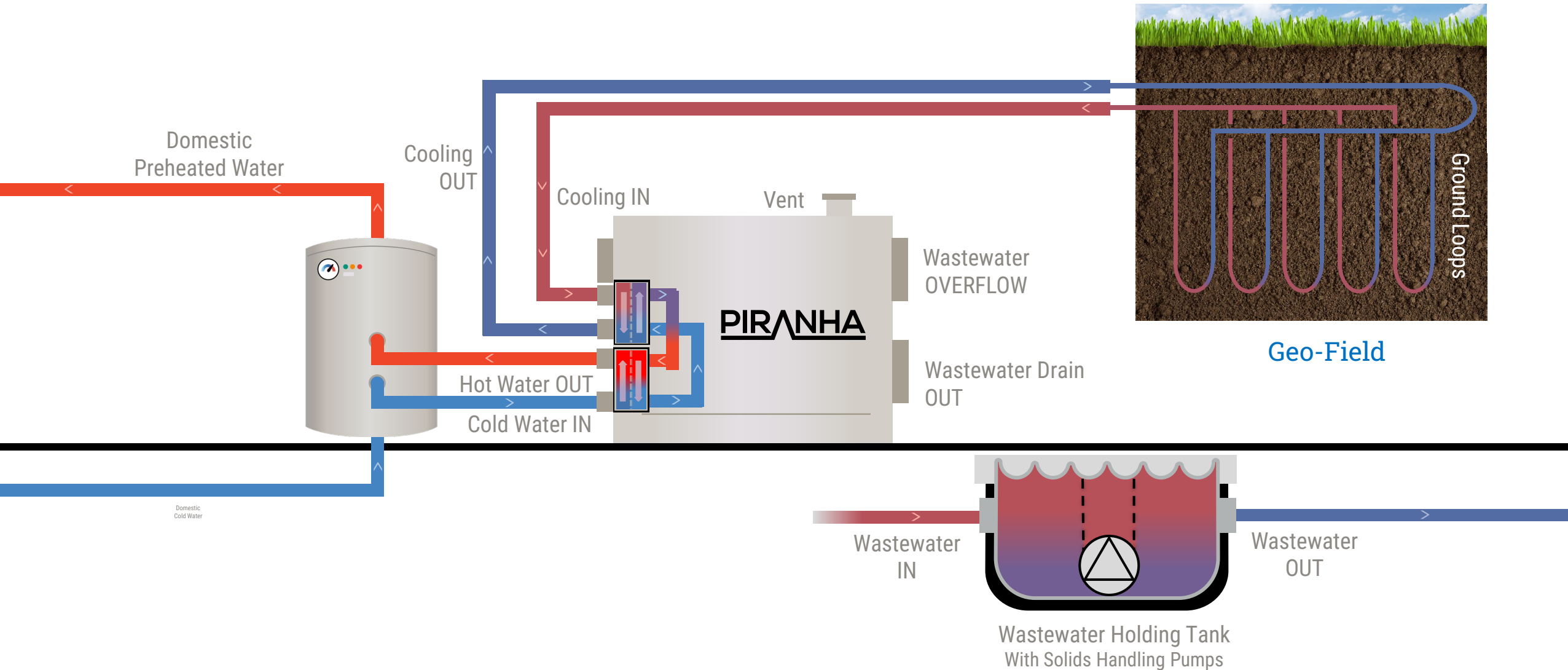


**\*\*\*Link to Bylaws that include  
Rate Structure on Last Page\*\*\*  
ALEXANDRA DISTRICT ENERGY  
UTILITY BYLAW NO. 8641**



# PIRANHA paired with Geothermal

## Simultaneous Heating + Cooling





# District Energy – SHARC

**\*\*\*Take a Virtual Tour!\*\*\***



SHARC project highlight



## Ielam' living

- 22-acre mixed-use
- 1.3M sq ft indoor space
- 30,000 sq ft retail, including grocery
- 1,300 residences
- 15,000 sq ft community center

[CUSTOMERS.sharcenergy.com](https://CUSTOMERS.sharcenergy.com)



# Southeast False Creek Neighborhood Energy Utility (NEU)

Vancouver, BC



**SHARC**

## CASE STUDY

- NEU currently serves 5 Million ft<sup>2</sup> of residential, commercial, and institutional space, planned expansion to 20 Million ft<sup>2</sup>
- 3.2 MW plant capacity output, planned expansion to 10MW.
- Qty-2 SHARC 880





# Photo Links to Tours



2023-08-30 National Western Heat Recovery – Denver, CO

2023-08-31 NREL Workshop – Golden, CO

2023-09-01 Colorado Mesa University – Grand Junction, CO

2023-09-05 Alexandra District Energy Utility – Richmond BC

2023-09-06 SHARC Visits – Vancouver Area

John Ciovacco [jciovacco@aztechgeo.com](mailto:jciovacco@aztechgeo.com)