

APWA WA 😂 💩 觉 OCT 9-10, KENNEWICK WA 2024 FALL CONFERENCE

# Turning Sewer Thermal Energy into a Valuable Resource



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### LEARNING OBJECTIVES

Objective 1- Identifying a potential district energy site

Objective 2 – Key partners: Public/Private/NFP

**Objective 3 – Existing Programs and Business Models** 





#### WHR System Details:

- 90% of campus heating and cooling loads
- 72 inch diameter WW infrastructure pipe
- 25-foot- deep wet will
- 8,790-sq ft Central Utility Plant (CUP)
- Clean Water Ambient loop
- 7 connected buildings
- Ability to expand

#### National Western Center, Denver, Colorado (youtube.com)



### Celebrate PUBLIC WORKS! AFWAWA

### Alexandria Center for Life Science

Public+private partnership accelerating net zero



Details:

- Reduce carbon emissions by 99& for the thermal loads
- Provide 70% of the heating needs
- Will serve the 1.6 million sq ft life science mega campus

<u>Alexandria Center for Life Sciences - Oct 17 2023</u> <u>HIGHLIGHTS (youtube.com)</u>



# **DA TORONTO**

The Toronto Western Hospital WET™ Project World's Largest Raw Wastewater Energy Project



### Details:

- 1.8 billion kilowatt-hours of energy over the life of the project
- 19 MW of thermal energy capacity
- 2,400+ tons of cooling capacity
- 33,000+ MBTU of heating capacity

HUBER Solution ThermWin® for heat recovery from sewers (youtube.com)

# Identifying a potential pilot site

#### **Denver**

- Sewer line, above ground required upgrades
- Benefit to community, creation of waterfront park
- Anchor user with planned future density

#### <u>Seattle</u>

- Depth
- Flowrate
- Composition of line
- Overlaying utilities surrounding sewer line

#### <u>Toronto</u>



- City planned upgrade to campus
- Massive energy source
- Expansion plans as city upgrades occur



## Finding your Partners



# Existing Programs & Business Models



- Case-by-case
- No transfer fee
- Simple web site <u>Thermal Energy</u> <u>Recovery – Metro</u> <u>Water Recovery</u>





- Standardized contract
- Several projects in design
- Transfer fee of \$0.005/ ton hour of energy
- 50% of TREC's shared
- Fully developed program
- Site review map

Potential users - King County, Washington



- Case-by-case through city council
- Creating standardized contract
- Advanced mapping
- No transfer fee

<u>Wastewater Energy</u> <u>Map – City of Toronto</u>

### What the future holds

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#### **NEAR-TERM PROGRAM IMPLEMENTATION**

Active Projects	Regional GHG Reduction (tonnes/year)
1) Lonsdale Energy Corporation	6,700 + 7,600
2) <u>Sen'ákw</u>	4,600
3) Lulu Island Energy Company	6,800
4) <u>Sapperton</u> District	5,700
5) Surrey City Centre (Phase 1)	9,700
Total	34,300



- 1. North Shore: 5 MW
- 2. Senakw: 3 5 MW
- 3. Lulu Island: 3 10 MW
- 4. Sapperton: 4 12 MW
- 5. Surrey: 4 12 MW

At Full Capacity: 44MW of Energy

### **Municipal Sewer Thermal Energy**

### Value of Sewer as a thermal resource:

- Transfer per ton hour of energy
- Sharing of TREC's
- Upgrades to infrastructure by private entities
- Potential joint ownership of energy production facilities
- Reduced electrical loads 25% to 35%
- Stabilization and security for thermal energy costs
- Consistent, localized energy source

The sun doesn't always shine, the wind won't always blow, but the sewers always flow!



Next steps? Jodi.Guthrie@SewerEnergyTapped.com

Supporting widespread adoption of district WET systems and the Public / Private partnerships that make them possible