

LEADING THE WAY **CampusEnergy**2022

Feb. 15-18 | Westin Boston Seaport District Hotel | Boston, Mass.



Evaluating Viability for Reclamation and Reuse

Bob Salvatelli, NextEra Distributed Water



NEXTERA ENERGY HAS TWO PRIMARY BUSINESSES, SUPPORTED BY SEVERAL KEY SUBSIDIARIES



NextEra Energy, Inc. (NYSE: NEE)

Fortune 200 company

- ▶ 95+ year track record
- ▶ 55 GW generating capacity
- ▶ ~\$175B market capitalization
- ▶ \$128B total assets
- ▶ \$18B operating revenue
- ▶ ~15,000 employees

NextEra Energy Resources, LLC

World leader in renewable generation

- ▶ 158 operating assets in 37 states and four Canadian provinces
- ▶ ~26 GW in operation



Florida Power & Light and Gulf Power

One of the largest U.S. electric utilities

- ▶ 5.6 MM customer accounts
- ▶ ~31 GW in operation
- ▶ 30 percent lower bills than the national average



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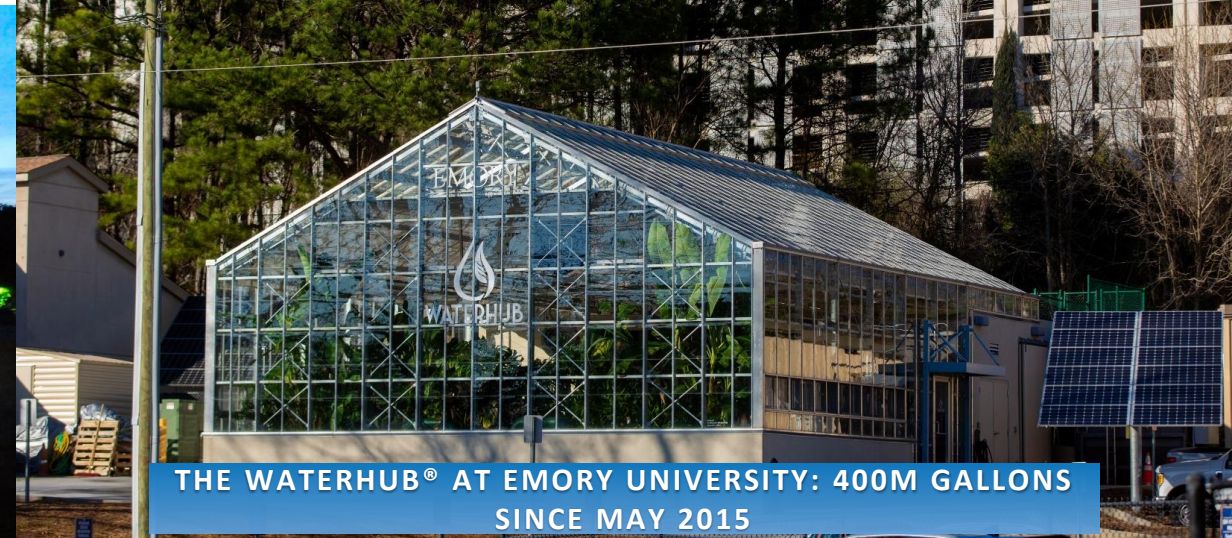
SUSTAINABLE WATER/NEXTERA ENERGY: THE WATERHUB®

WHAT WE DO:

Turn-Key Developer - Water as a Service
for
Decentralized Reclamation and Reuse



THE WATERHUB® AT PMUSA: 300M GALLONS SINCE
AUGUST 2019



THE WATERHUB® AT EMORY UNIVERSITY: 400M GALLONS
SINCE MAY 2015

Problems We Solve For:



Capacity Constraints

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Resiliency Against Aging
Infrastructure



Mitigate Rising Rates



Conservation
Goal / KPI
Attainment



OUR SOLUTION: THE WATERHUB®



Decentralized Systems for Blackwater Capture, Treatment, and Beneficial Reuse



Eco-Engineered Reuse Systems Designed for Various Market Sectors

WATER PROCESSING AGREEMENT

NEXTERA'S INTEGRATED DEVELOPMENT AND SERVICE PERFORMANCE COMMITMENT

Customer Benefits

- No upfront capital costs
- No operational oversight obligations
- Utility plant operational resiliency
 - (N+1 water supply)
- Facility sustainability and corporate ESG goals
- Typical savings over business-as-usual
 - 5%-10% typical savings will provide millions over contract term

Customer Responsibilities

- Minimum annual purchase of compliant reclaimed water
- Access to land for WaterHub footprint (~6,000 sf) and pipeline easement
- 30-year water processing agreement

ZERO
CAPITAL EXPENSE
—AND—
DEVELOPMENT RISK
TO THE END USER

NextEra Energy Responsibilities

- Proper system engineering & design
- Construction and development costs
- Facility operational & maintenance cost
- Production of compliant reclaimed water
- Long-term upkeep of the system

Project Qualification

NEXTERA WILL EVALUATE OPPORTUNITIES RISK-FREE

Historical Water Use

- Total inbound water
- Non-potable demand: chiller/cooling tower make-up, boiler make-up
- Any supplemental sub-metering data

Historical Economics

- Cost paid for water and sewer (\$/kgal)
- A copy of recent water & sewer bills
- Wastewater surcharge history, if applicable

Waste Quality & Pre-treatment Systems

- Water-related permits
- On-site wastewater treatment and/or reuse systems



1. FEASIBILITY & PLANNING



2. ENGINEERING & DESIGN



3. CONSTRUCTION

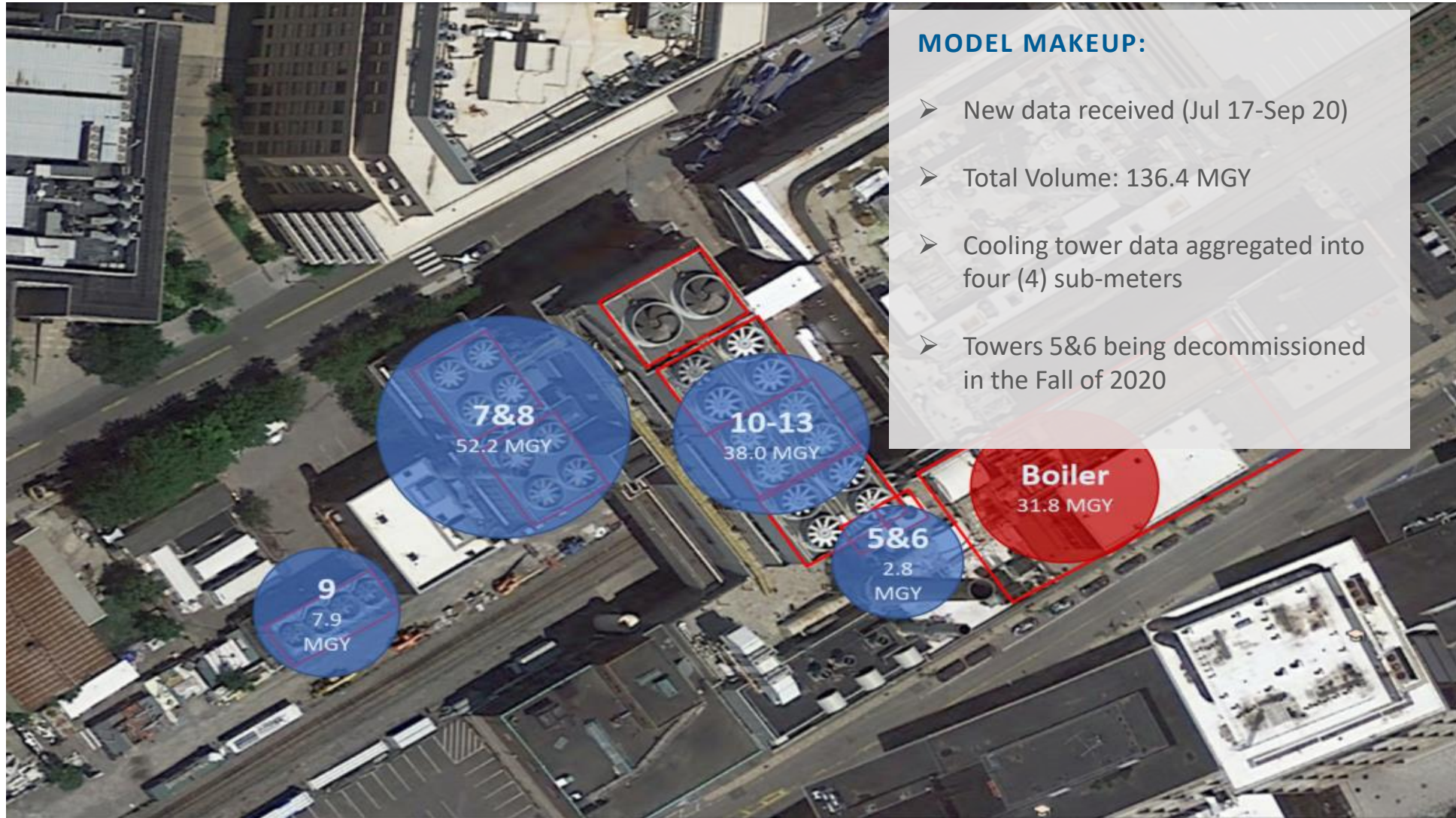


4. COMMISSIONING & START-UP



5. FACILITY OPERATIONS

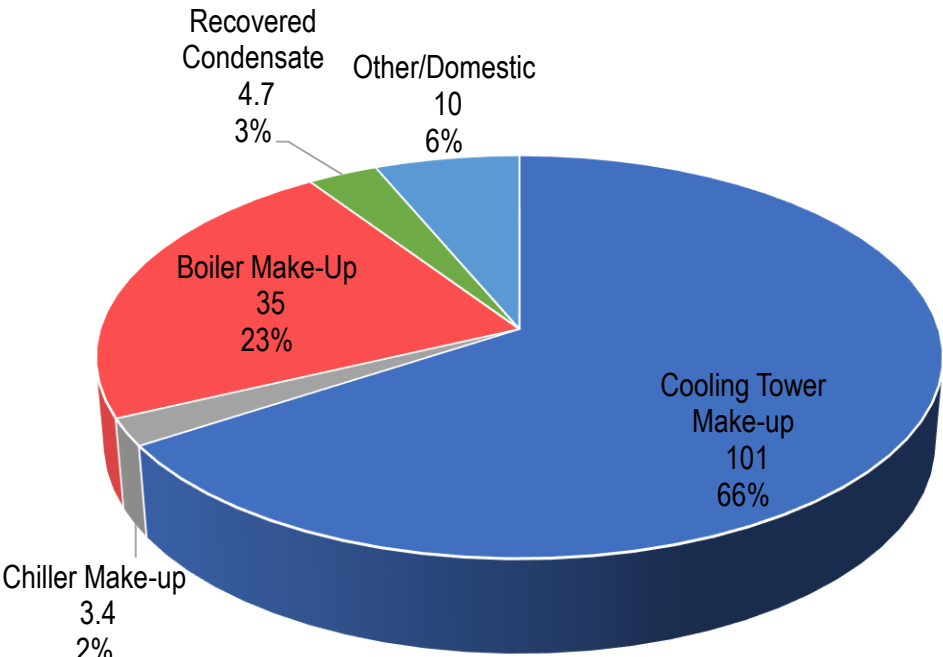
UTILITY PLANT REVIEW



PEAK SEASONAL DEMANDS REQUIRE HIGH TURNDOWN RATIO BETWEEN SUMMER AND WINTER... ECONOMIC SWEET-SPOT FOR HYDRAULIC DESIGN IS 600,000 GPD

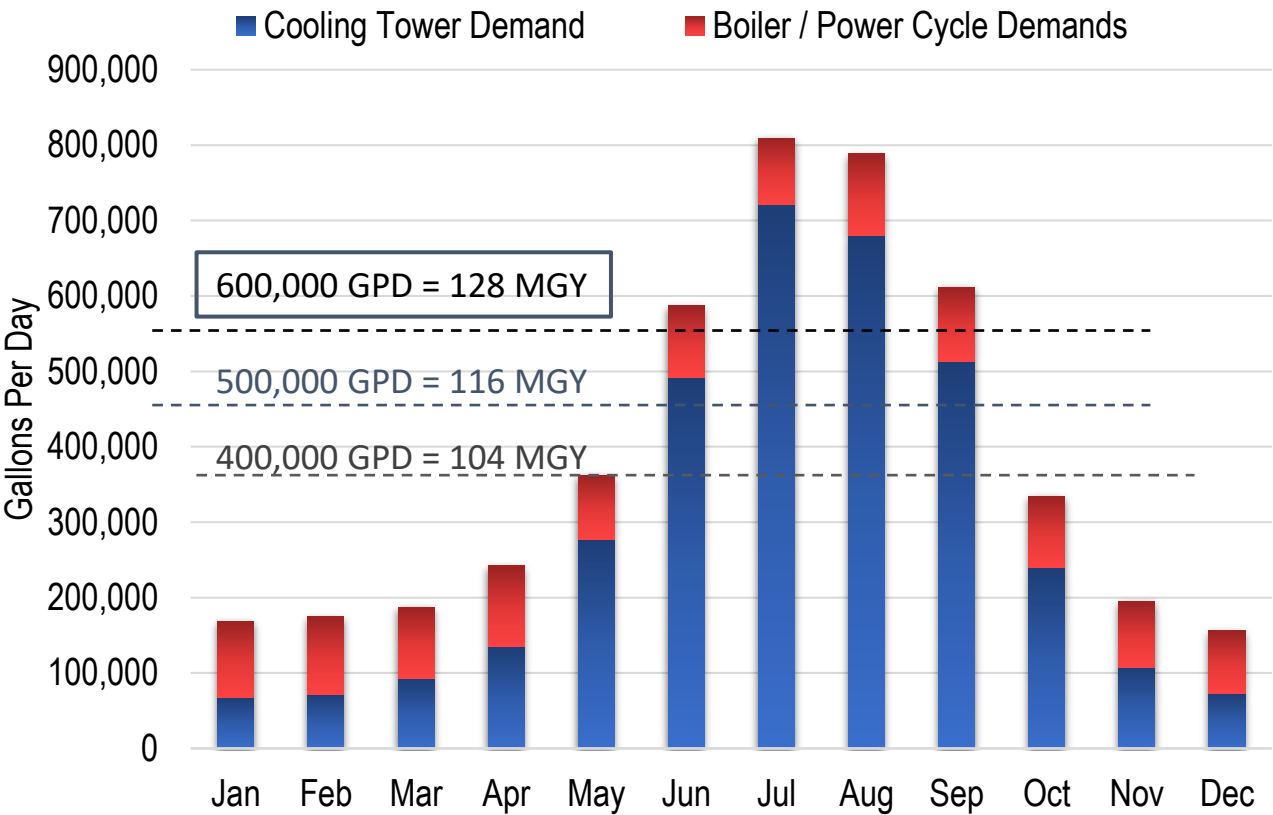
TARGETED UTILITY PLANT DEMANDS

Central Utilities Plant Water Use by Type



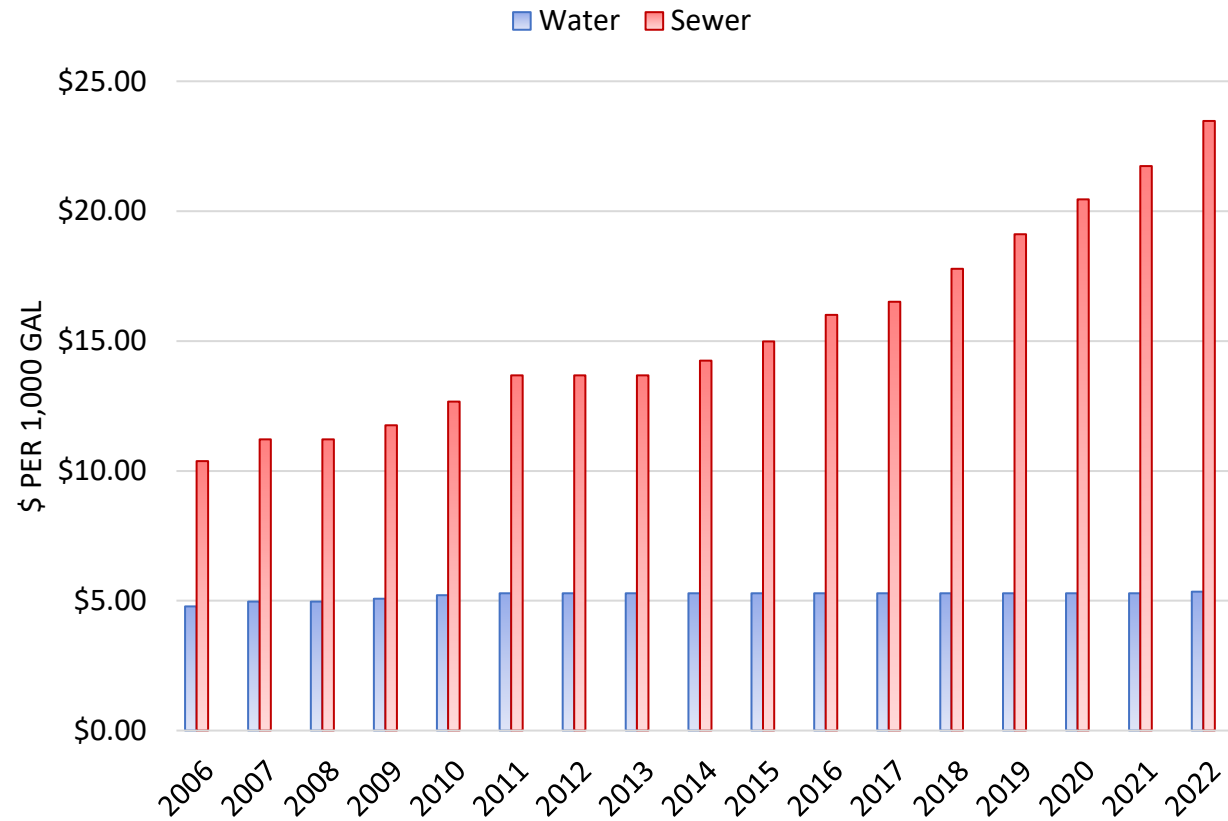
150 MGY Total Potable Water Use
(155 MGY including Condensate Use)

Seasonal Non-Potable Demands & Wastewater Resources



HISTORICAL WATER & SEWER RATES

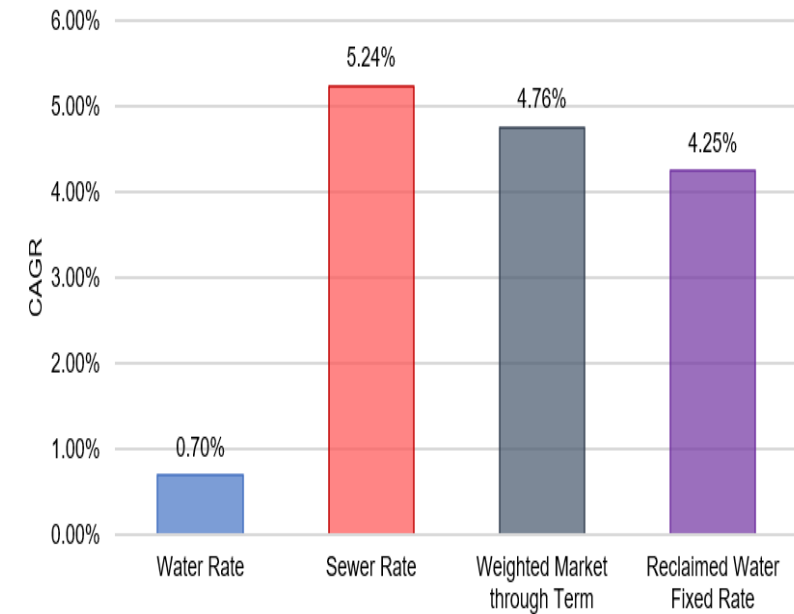
Historical Market Water & Sewer Rates, FY06 - FY22



Water & Sewer Cost: \$28.82 /kgal

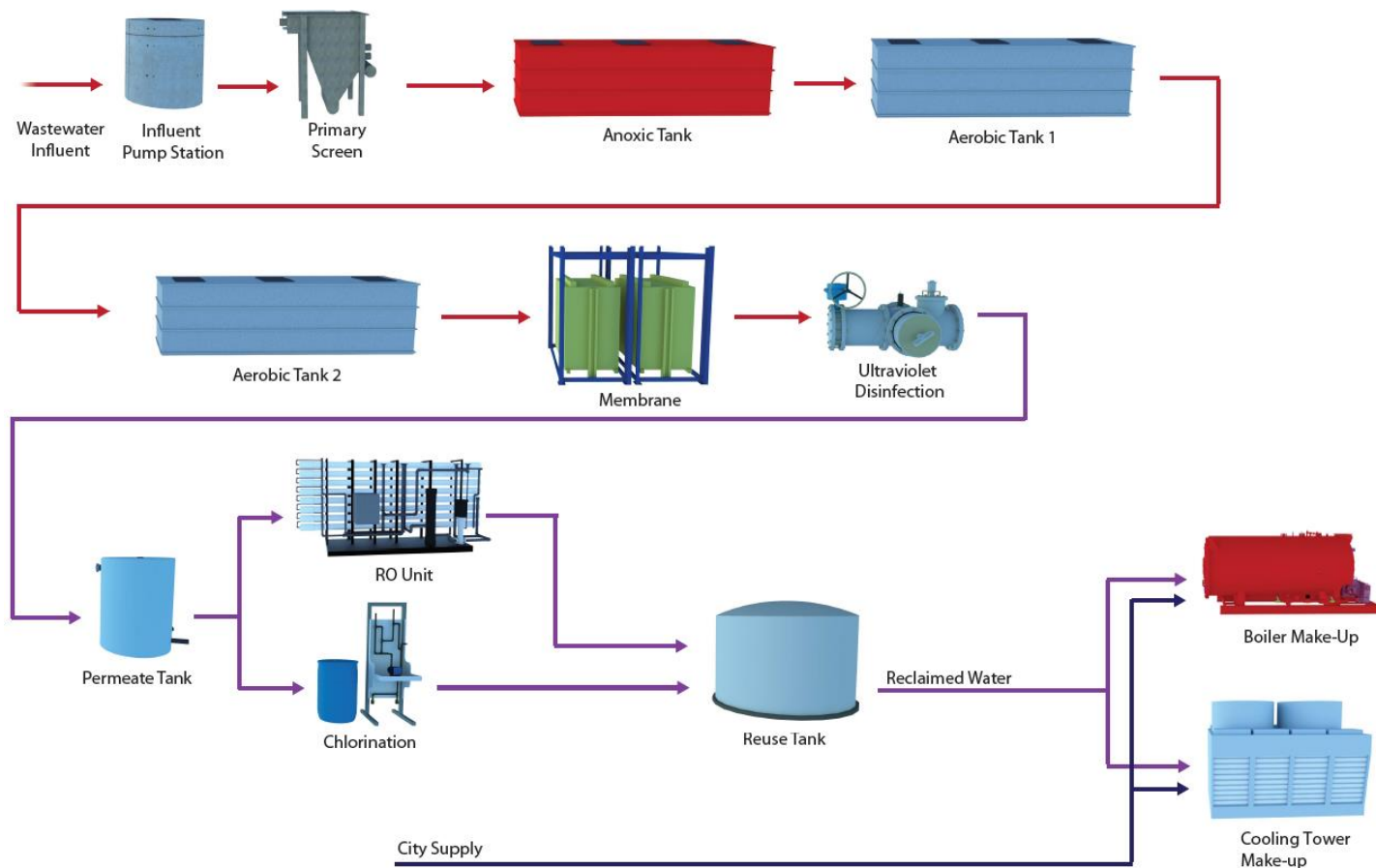
- Increasing Block Tiered Structure
- Block 5- Highest Tier (99% of Costs)

Historical Market Rate Escalation



PROJECT MIMICS DUKE & UT-A PROCESS DESIGN APPROACH BUT INCLUDES CERAMIC MEMBRANES IN BASE DESIGN SCENARIO.

PRELIMINARY DESIGN BASIS



Parameter	Unit	Influent Basis	Effluent Basis
Flow	MGD	--	0.6
BOD	mg/L	200	< 10
TSS	mg/L	195	< 5
Total Nitrogen	mg/L	35.0	< 10
Total Phosphorus	mg/L	5.6	< 0.5
TKN	mg/L	14	--
Ammonia-Nitrogen	mg/L	20	--
pH	S.U.	--	6.5 - 8.5
Fecal Coliform	#/100 mL	--	< 14
Turbidity	NTU	--	< 2
Conductivity	mmho	1,400	
Total Dissolved Solids	mg/L	875	

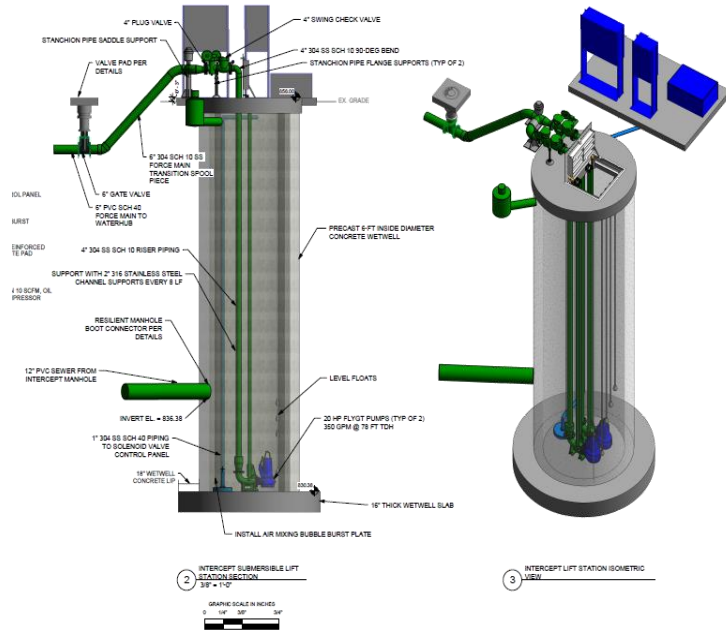
Targeting Class A Reclaimed Water

TECHNOLOGY IS CUSTOM SELECTED FOR EACH PROJECT BASED ON SITE-SPECIFIC WATER CHARACTERISTICS AND DESIRED POINTS OF REUSE

WATERHUB® TECHNOLOGY

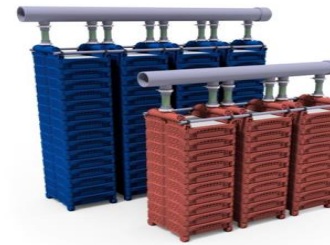
SEWER MINING

- » Wastewater Mining Systems
- » Lift Stations



SCREENING & FILTRATION

- » Drum Screen
- » Odor Control
- » MBR
- » Poly/Ceramic Membrane
- » Ultrafiltration

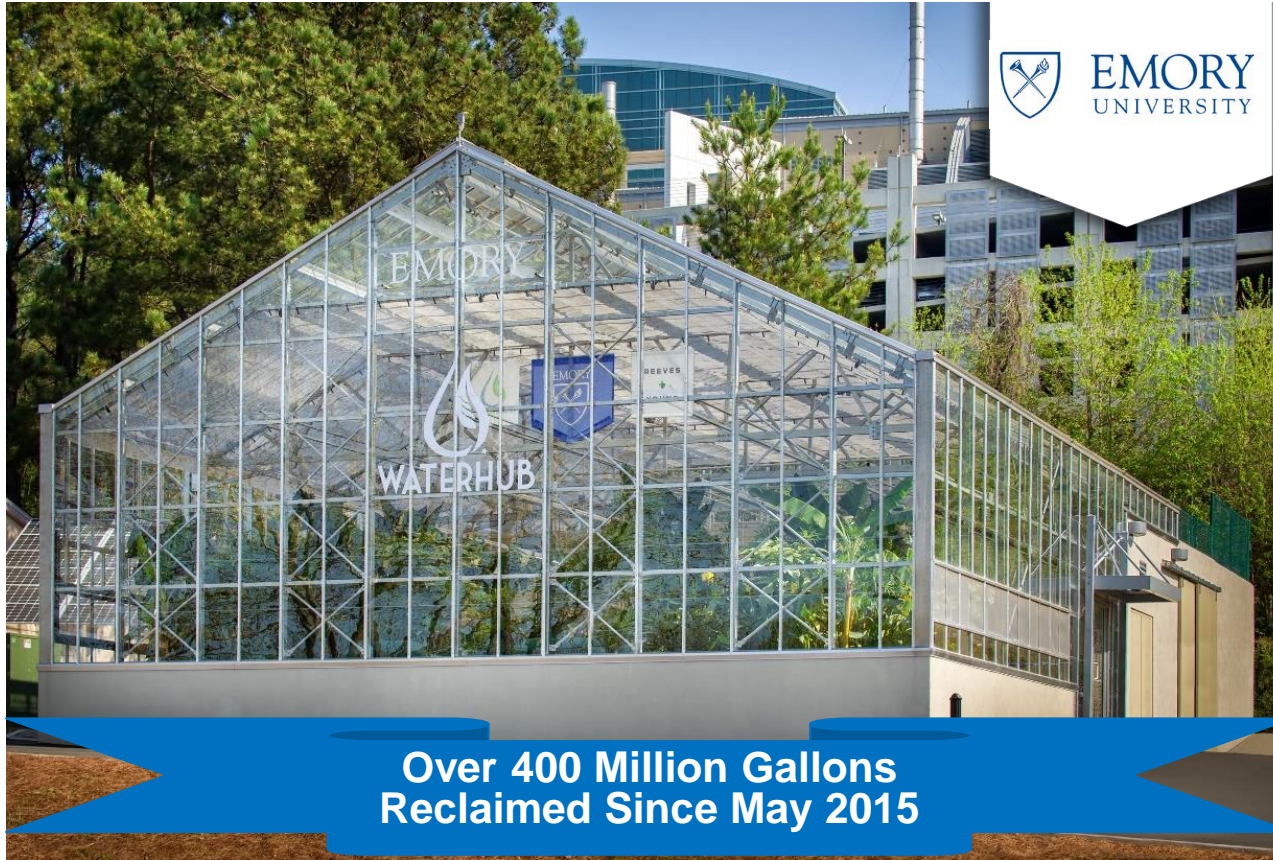


POLISHING & DISINFECTING

- » UV Disinfection
- » Reverse Osmosis
- » Capacitive Deionization



THE WATERHUB® AT EMORY UNIVERSITY



Over 400 Million Gallons
Reclaimed Since May 2015

CLIENT TYPE

Private University

LOCATION

Atlanta, GA

HYDRAULIC CAPACITY

440,000 GPD

FOOTPRINT

Building: 3,500 ft²

Lower Site: 3,000 ft²

COMMERCIAL OPERATION

May 2015

END USES

Boiler Makeup

Cooling Tower Makeup

Toilet Flushing

GOALS / OUTCOMES

40% Reduction in Potable Water

66% Decrease in Discharge

TECHNOLOGIES APPLIED

Hydroponic – MBBR

Reciprocating Wetlands



OUTDOOR WETLANDS



INTERIOR HYDROPONICS

SUSTAINABILITY SHOWCASE



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THE WATERHUB® AT PHILIP MORRIS USA



PhilipMorrisUSA

CLIENT TYPE

Industrial Manufacturing

LOCATION

Richmond, VA

HYDRAULIC CAPACITY

650,000 GPD

FOOTPRINT

Building: 8,200 ft²

Storage Tank: 1,200 ft²
(24 ft. hgt. & 39 ft. dia.)

Over 300 Million Gallons
Reclaimed Since August 2019

COMMERCIAL OPERATION

August 2019

END USES

Cooling Tower Make-Up

Open-Aired Chiller Make-Up

TECHNOLOGIES APPLIED

- Hydroponic – MBR
- RO Polishing



RECLAIMED STORAGE TANK



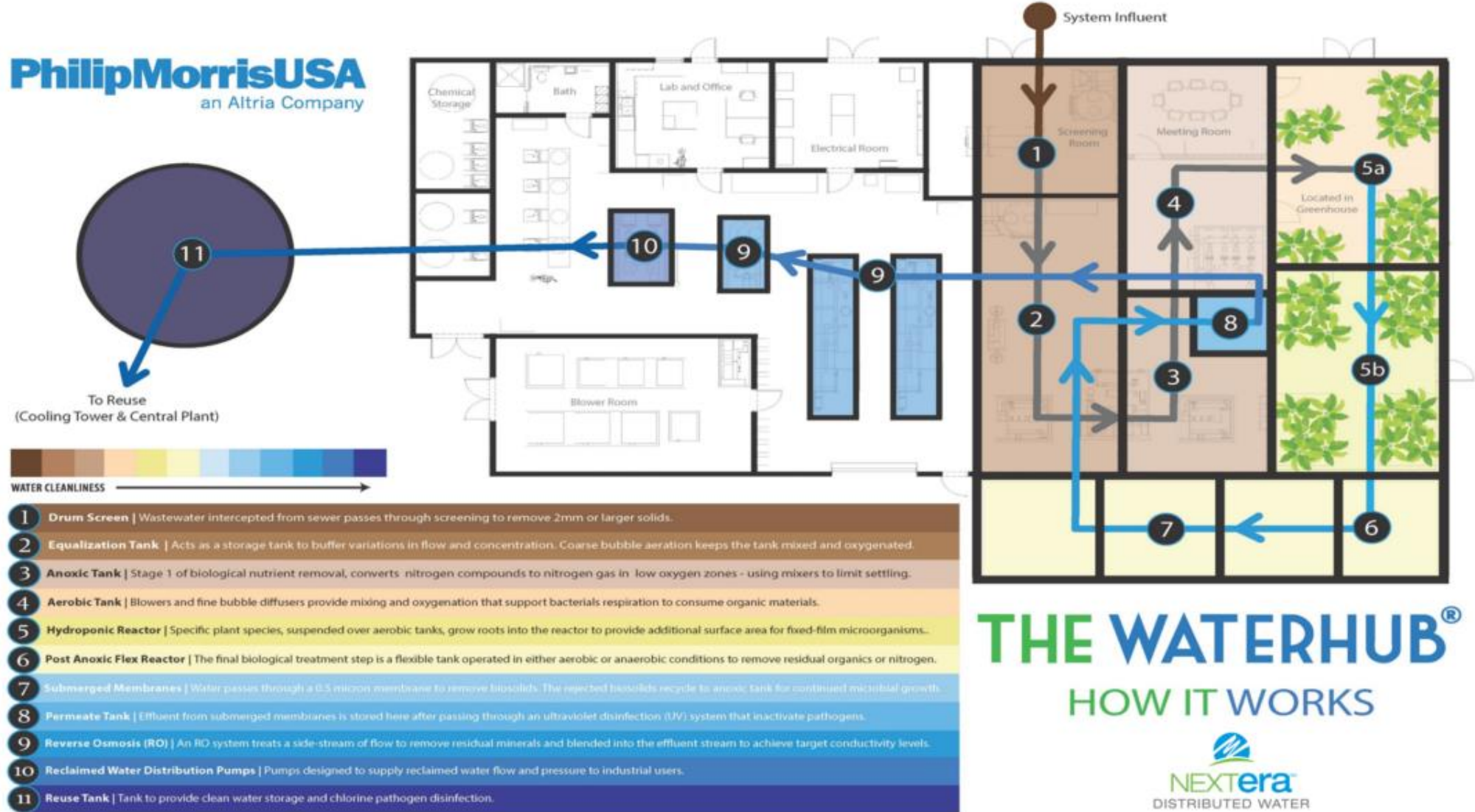
HYDROPONIC PLANTINGS



THE WATERHUB® AT PMUSA SITE MAP



THE WATERHUB® AT PMUSA PROCESS DESIGN



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THE WATERHUB® AT PIEDMONT ATLANTA HOSPITAL



CLIENT TYPE

Commercial Healthcare Campus

LOCATION

Atlanta, GA

HYDRAULIC CAPACITY

250,000 GPD

FOOTPRINT

4,300 ft²

COMMERCIAL OPERATION

Anticipated Fall 2022

GOALS

- Resilient Utility Operations
- Water Conservation
- 75% Decrease in Discharge
- Enable Future Development

TECHNOLOGIES APPLIED

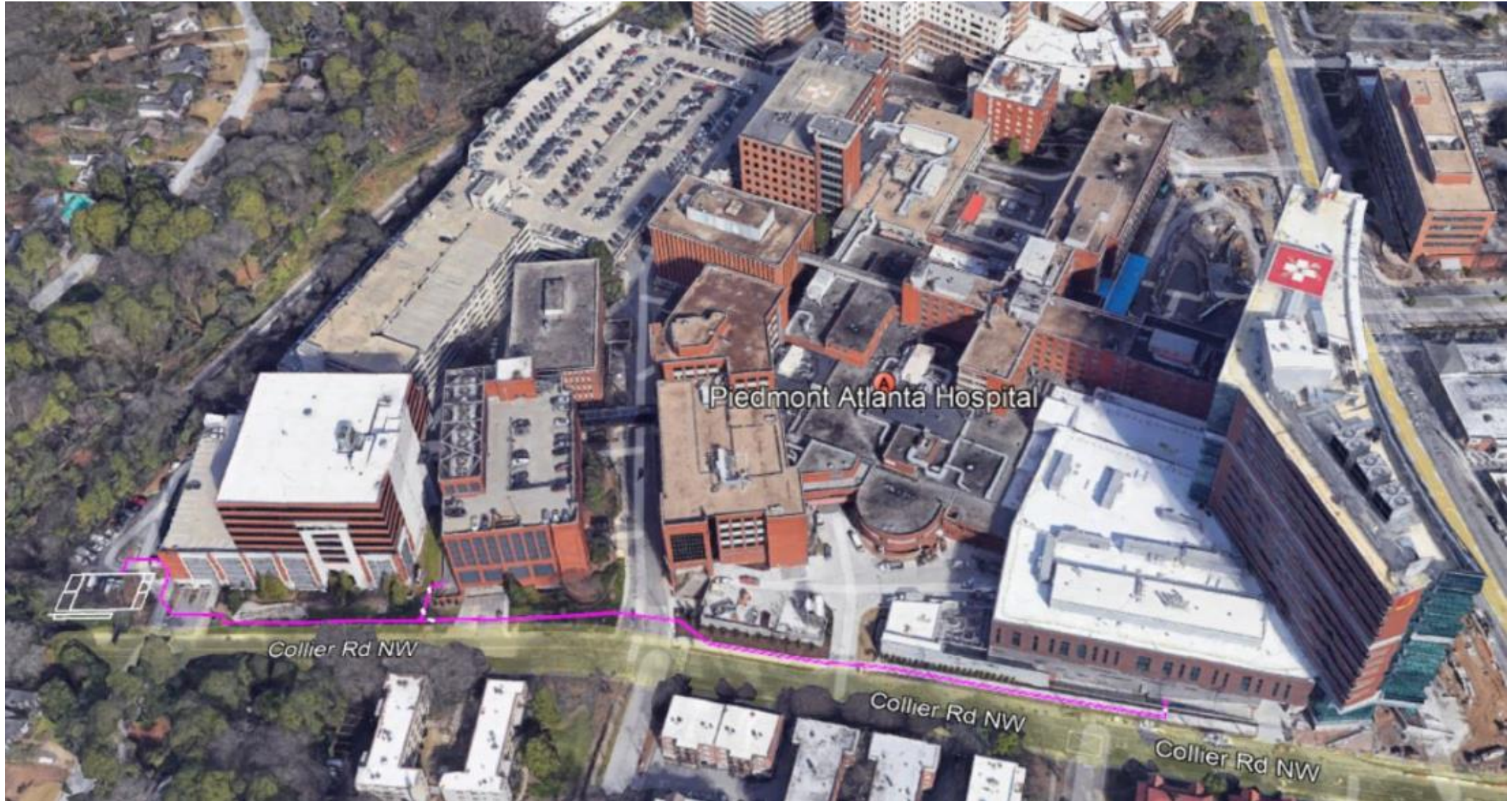
Outdoor Hydroponics

Tertiary: Membrane Bioreactor (MBR)

Disinfection: Dual-Stage UV & Chlorine



THE WATERHUB® AT PIEDMONT: DISTRIBUTION NETWORK



THE WATERHUB® AT PIEDMONT: CONSTRUCTION UPDATE

BROKE GROUND OCTOBER 2021, COD EXPECTED OCTOBER 2022



UNIVERSITY OF TEXAS AT AUSTIN WATERHUB®



CLIENT TYPE
Public University

LOCATION
Austin, TX

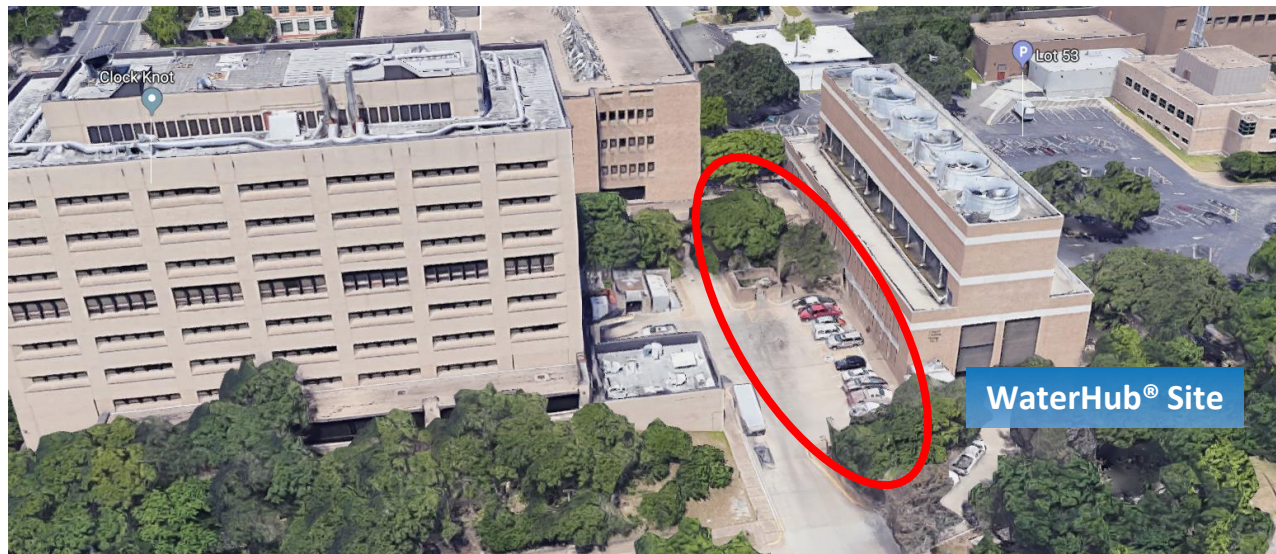
HYDRAULIC CAPACITY
1,000,000 GPD

FOOTPRINT
15,000 ft²

COMMERCIAL OPERATION
Anticipated Spring 2022

END USES
Cooling Tower Make-Up
Boiler Make-Up

TECHNOLOGIES APPLIED
Hydroponics
Membrane Bioreactor (MBR)
Reverse Osmosis



Questions?

Thank You!

Bob Salvatelli

NextEra Distributed Water

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