Smarter Critical Systems and Built Environment: Infrastructure Solutions

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Coastal Resiliency & Adaptation in the Water & Wastewater Industry

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Cape Fear Public Utility Authority: Who Are We?

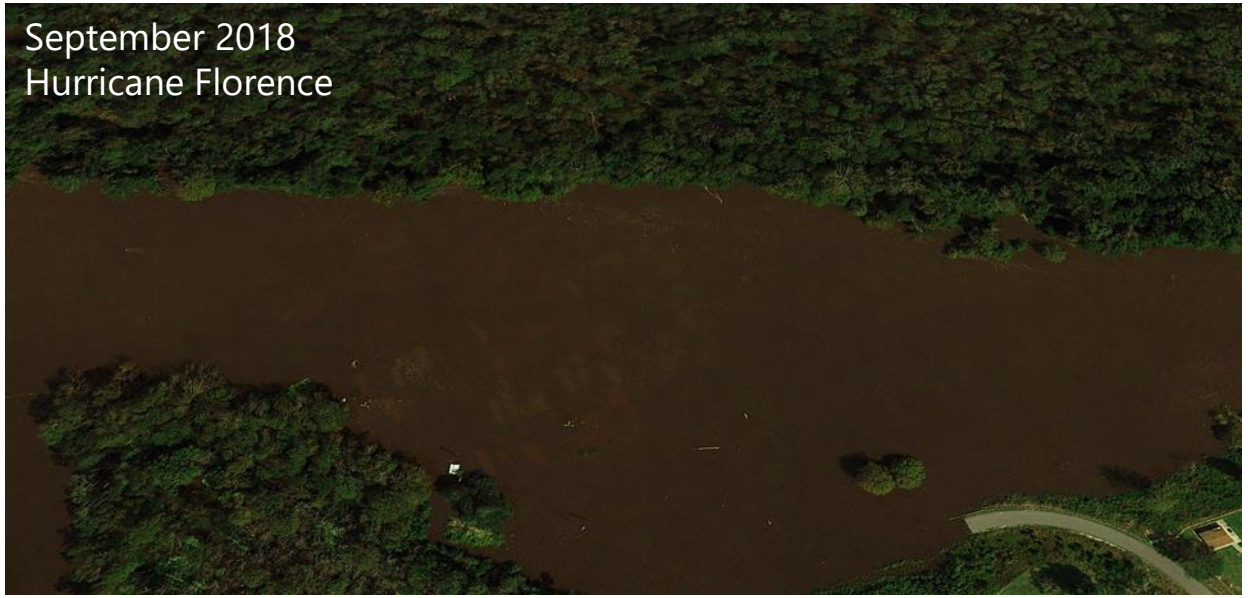
- Serve 250,000+ businesses and individuals
  - Including New Hanover Regional Medical Center and University of North Carolina Wilmington
- Source Waters:
  - Cape Fear River
  - Castle Hayne & Peedee Aquifers
- Maintain over 2,000 miles of water/wastewater pipes and 150 pump stations
- Public Utility Authority model:
  - Ratepayer funded, no tax dollars

What Will the Future Bring for Water/Wastewater Industry?

- Source water quality and quantity may deteriorate.
- Water infrastructure may be at risk from sea-level rise and more frequent flooding events.
- Temperature increases may affect working conditions for staff.
- Impacts from multiple extreme weather events may deplete financial resources and impact rate affordability.

Our Challenge

How do we prepare for an uncertain future when capital investment planning for water and wastewater infrastructure requires looking 30-50 years down the road?



Increasing Resiliency at CFPUA

Pilot Study Suggestions

- Raising critical & vulnerable assets
- Backflow prevention
- Disaster Planning
- Asset Management Program
- Install redundant infrastructure within system
- Increase system capacity
- Install green infrastructure
- Establish alternative power supplies and energy efficiency measures

Asset Management Keeps System Resilient

- Collections system designed to process wastewater, but also processes stormwater during rain events.
- Four days after Florence, a pump motor burned out and we needed a replacement ASAP.
- Ordering replacement would take a few days, we identified location of replacement pumps through Maximo in about 20 minutes
- Through correct management of materials and keeping critical spares inventoried in database, we can respond quickly and efficiently, especially in emergency situations

CFPUA Energy Team Priorities

Step 1: Track & organize CFPUA monthly energy use and identify consumption rates for CFPUA assets

Step 2: Compare CFPUA energy usage to national and regional benchmarks

Step 3: Identify assets and processes that could benefit from potential efficiency measures within CFPUA'S collection and distribution systems at CFPUA facilities

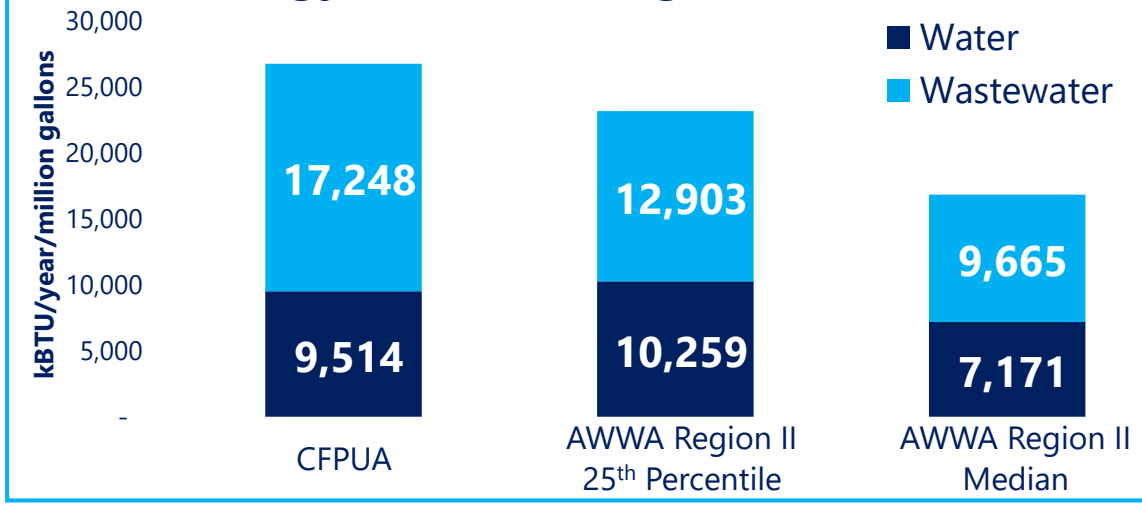
CFPUA Energy Monitoring

Energy Use at CFPUA (2018)

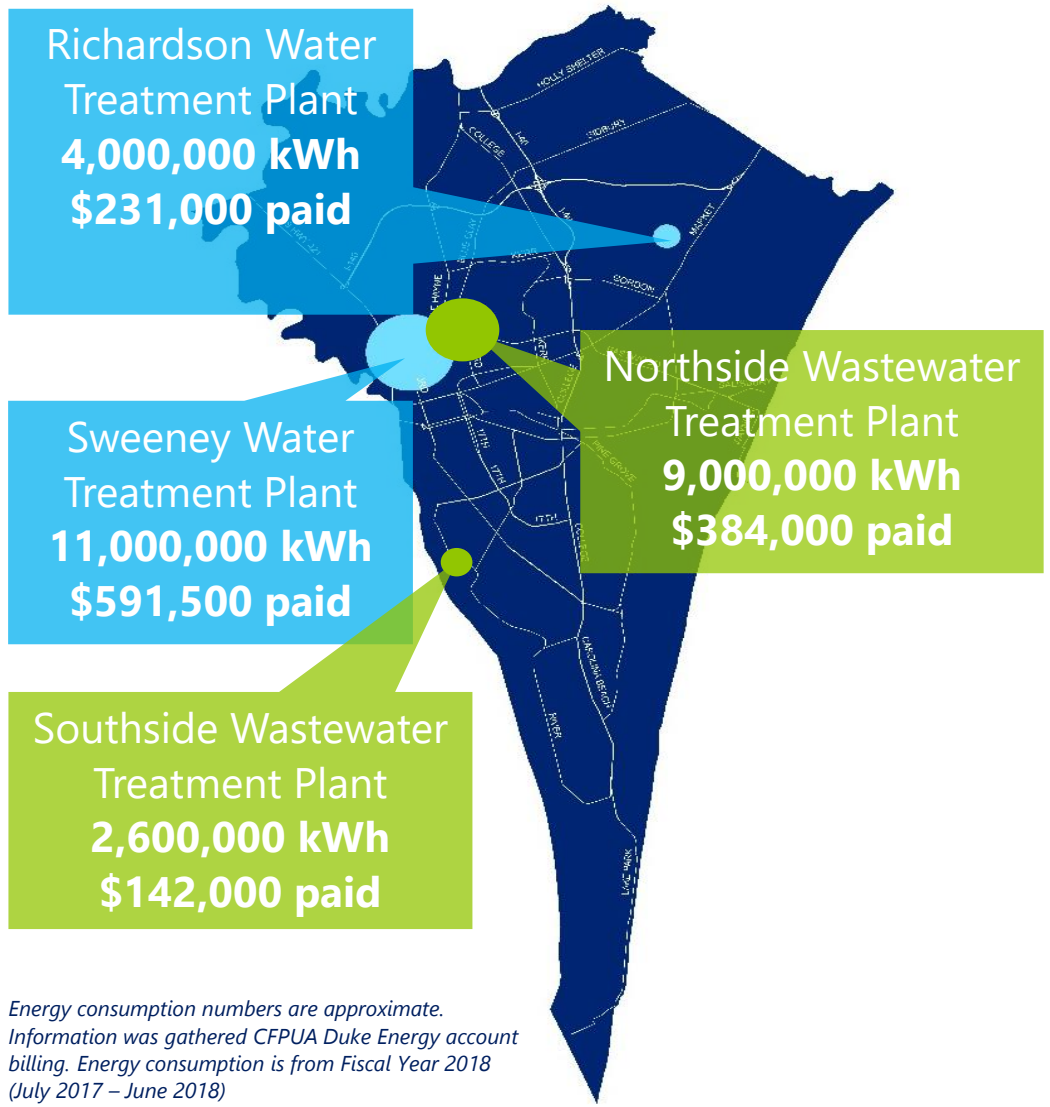
Electricity	34,000,000 kilowatt hours	24,000 Metric Tons of CO2
Gasoline	132,000 Gallons	1,200 Metric Tons of CO2
Natural Gas	35,000 Therms	200 Metric Tons of CO2

Consumption numbers are approximate and are from Fiscal Year 2018 (July 2017-June 2018
Carbon Dioxide (CO2) equivalencies are approximated from the EPA Greenhouse Gas Equivalencies Calculator

CFPUA Energy Benchmarking (2017)



CFPUA Plant Electricity Use (2018)



Energy consumption numbers are approximate. Information was gathered CFPUA Duke Energy account billing. Energy consumption is from Fiscal Year 2018 (July 2017 – June 2018)

CFPUA's Journey Towards Resiliency Continues

New CFPUA Strategic Plan approved April 2019

- Optimize natural resource usage
- Create energy-reducing goals
- Energy Team can use new monitoring system to achieve these goals.

American Water Infrastructure Act

- Requires water utilities to assess natural disaster vulnerability.
- CFPUA will also evaluate our resiliency to the impacts of climate change and create new goals.

THANK YOU

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