RTCC SMART Series
Water as a Tool for Industrial Economic Development
August 15, 2017
Mission
Accelerate the cleantech economy through collaboration and partnerships which promote innovation and sector growth
Board of Directors

ABB
Duke Energy
FIELD2BASE
Itron
Power Secure
RTI International
Sas
Sensus
SMART Series

Water as a Tool for Industrial Economic Development
Chris Johnson
Director of Economic Development
“Your Best Route to Success”
The most terrifying words in the English language are: I'm from the government and I'm here to help.

*Ronald Reagan*
Transportation Network

- Interstate highways, railroads

- Proximity to RDU and NCGT
Population Data

- Johnston County is the 3rd largest in population in the Research Triangle Region. (Behind Wake and Durham)

- Population 2016 - 195,000 to 200,000 (2.5 to 3% Growth)

- A 50 Mile population from the site is 2,481,869 people.

- The Triangle Region has 2.5 Million citizens.
  - This is larger than 14 States.
## Existing Water Supply and Demand

<table>
<thead>
<tr>
<th></th>
<th>Capacity (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>County WTP – Neuse River at Wilson’s Mills</td>
<td>12.0</td>
</tr>
<tr>
<td>Existing Purchase Agreements</td>
<td>6.6</td>
</tr>
<tr>
<td>Total Capacity</td>
<td>18.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Day Demand (MGD)</td>
<td>9.83</td>
<td>10.24</td>
</tr>
<tr>
<td>Peak Day Demand (MGD)</td>
<td>13.75</td>
<td>14.73</td>
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</tbody>
</table>
Water Services: Growth

- For the past year, average of 134 new retail water services per month; equivalent to approx. 5% growth rate.

- Based on recent demand projections, Johnston County’s current supplies should meet peak daily demands through 2018.
Projected Water Demand

YEAR

MGD

Available Water Supply
(Existing Conditions)

Average Day Demand

Max Day Demand

2015 2020 2025 2030 2035 2040 2045 2050 2055 2060 2065

0.00 5.00 10.00 15.00 20.00 25.00 30.00 35.00 40.00

Projected Water Demand
Water Services: Challenges

- Secure additional water supply to meet future demands
  - Immediate need by 2019
  - Funding
  - Design, permit and construct
  - Long-Term Water Supply – Lower Neuse Intake

- Ensure bulk water supplies meet contract requirements

- Adequate transmission infrastructure to meet future demands

- Implement an asset management plan

- Upgrade mobile technologies to improve efficiency

- Comply with ever changing federal quality regulations
For Assistance Contact:

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Panelists

Sydney Miller  
City of Durham

Edwin Newell  
Delta Products

Mike Myers  
Envirolink

Tammy Zucco  
Itron
Sydney Miller
Water Resources Planning Manager
City of Durham
Water & Sewer for Now and the Future

RTCC SMART Series
August 17, 2017
Presentation Outline

• Regional Vision
• Water & Sewer System Overview
• Current & Near Term Capital Spending
• Facility Capacities
• Regional Present
THE FOUNDING VISION REALIZED

Over fifty years ago, leaders in business, government and academia together framed an ambitious plan to transform thousands of acres of woods and farmland into one of the world’s first science parks. The fruit of this vision, the Research Triangle Park (RTP), has been a resounding success, leading the way in creating a more diverse, knowledge-based economy and generating considerable prosperity in the region and in the State of North Carolina as a whole. The Park symbolizes a dynamic and innovative spirit, and has come to be known world-wide as a center of ground-breaking research and technological discovery. Over time, the surrounding Research Triangle Area has grown and benefited from its association with RTP - the vibrant core of the regional economy.
- 3 Water Supply Reservoirs
- 2 Water Treatment Plants
- 2 Water Reclamation Facilities
- 7 Water Interconnections
- 1,430 miles of water distribution mains
- 1,100+ miles of wastewater collection mains
- 92,600 water connections
- 268,600 residents
- Duke, NCCU and RTP major customers
Lake Michie Reservoir (2.8 Bgal)
Little River Reservoir (4.8 Bgal)
Williams Plant
Wade G. Brown Treatment Plant
Peak Daily Water Supply & Demand Projection
Department of Water Management - 2016

Data does not include outside water sales

- **Brown and Williams WTPs (52 MGD)**
- **80% of Treatment Capacity**
- **After Brown Expansion (64 MGD)**
- **After Jordan Lake WTP (80.5 MGD)**

**Legend:**
- Peak Day Demand (MGD)
- Ex/Fut Plant Cap
- 80% of Plant Cap
- Linear (Peak Day Demand (MGD))
Durham – Where Great Things Happen
Jordan Lake Partnership
50 Year Regional Water Supply Plan
Arrows depict the ability to move water between systems. They are not intended to represent the physical locations of interconnections or pipes.
Mike Myers
President
Chatham Park

Proposed Land Use
Chatham Park Framework

- **Commercial Uses** Oriented Toward Historic Pittsboro & Interstate Highways.

- **Five New Residential Villages** Oriented Toward The Haw River and Lake Jordan.

- **Open Space and parkland** along stream valleys, the river and the lake.
Town of Pittsboro Challenges

- Limited technical & financial resources
- Water & sewer capacity insufficient to meet demands of development
- Town unable to move at the pace of development
  - Limited resources
  - Regulatory process
  - Governmental process
- Risk tolerance
  - North Dakota Story
- Public-Private Partnership Part of Total Solution
Wastewater Phasing Plan

• Phase 1A – limited adjacent areas tributary directly to existing Town system and WWTP

• **Phase 1B - DCWRRF**
  • Initial 0.25 MGD (2018), expandable to 1.0 MGD (TBD as needed)
  • Overall Wastewater system

• Phase 2 - Sanford
  • Total capacity 2.0 MGD

• **Phase 3 – Expand Private Plant, time TBD as needed**
  • Expand local wastewater treatment & reclamation
    • At DCWRRF
    • New regional site/WWTP
  • Other regional opportunities
Decentralized Water Resource Recovery Facility

Pittsboro – Envirolink Public Private Partnership

**No Capital or Operational Outlay**
Services provided at no added cost nor effort by Town.

**Sustainability**
Reclaimed Water availability enhances developer & Town’s vision for community.

**Goals & Objectives**
Scope for partnering can take on many different roles depending on Partner’s Goal & Objectives.

**Risk Allocation**
Developer & Private Partner assume development risk. Existing Town residents avoid risk associated with the project.

**Technical Capabilities**

**Project Delivery Timeline**
Private partner able to deliver plant from NTP to Startup in 18 months.
Water Resource Recovery Facility
Chatham Park WRFF
Benefit to Economic Development

➢ Faster
   Able to commit to sewer availability *two (2) years ahead* of Town’s original estimate.

➢ Lower Capital & Operating Cost
   Leverage *private partner’s* financial & technical resources for the betterment of the project.

➢ Leverage benefits of Public & Private
   Town maintains customer service
   Private partner maintains industry specific knowledge, quality & cost controls

➢ *Sustainable* use of Natural Resources
Edwin Newell
Senior Director of Sales & Marketing
Water And Energy Are Interlocked

August 15th 2017
Edwin Newell
Sr Director Industrial Automation
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Typical City Electrical Spend

30% of this Energy is Easy to Save!
Deploy VFDs on All Pump Motors

VFD – a Variable Frequency Drive uses power electronics to produce exact speed on electric motors

• VFDs save 30% energy by running pumps at the most efficient speed
• VFDs increase life of equipment by gentle starting and running at lower speeds
• VFDs prevent water main breakage by allowing better pressure adjustment
• VFDs provide better process control by infinite speed control
• VFDs eliminate the highly wasteful throttling valves
• VFDs eliminate the stress on pumps and seals caused by throttling valves
Review your Energy Costs – So you know the total Costs
Set Goals and Timetables – So you have clear focus
Perform Energy Audits – So you know where it all goes
Create an Action Plan for Energy – To prioritize best projects
Measure Energy flow with sub-metering – To get actionable data
Automate all process – So changes don’t revert back
Continue to monitor & improve – Take advantage of technology
Create your own Energy

- Inverters Required to convert DC to AC
- Some Are Highly Efficient - up to 98.8%
- Long life and Reliable
- Proven world wide
Delta is a leading provider of Industrial Automation technology. Delta is committed to help the world realize enhanced value & innovation through the unique and feature rich Automation solutions.

Mission - Industrial Automation

To elevate our living environment through advanced automation technology and value added innovation.
Tammy Zucco  
Director of Business & Marketing Operations  
Networked Solutions Business
CREATING A MORE RESOURCEFUL WORLD

Tammy Zucco, Director Marketing
Raleigh is a major Itron location housing our Software Center of Excellence.
ITRON AT-A-GLANCE

- 160M Utility Communications Devices Deployed
- 20M Water Communication Devices Deployed
- 20M+ OpenWay AMI Meters Deployed
- ITRI Public Company Traded on NASDAQ
- $2.0B 2016 Revenue
- $168M 2016 R&D Investment
DELIVERING BUSINESS OUTCOMES

- Operational Efficiency
- Revenue Protection
- Customer Engagement
- Basic Analytics

- Distribution Leak Reduction
- Field Work Optimization
- Customer Leak Reduction
- Pressure Management
- Water Quality Monitoring

- City Services
- Water Conservation
- Sustainability Programs
- Economic Development
- Quality of Life
ITRON TECHNOLOGY BENEFITS
Delivering value beyond meter reading

OPERATIONAL EFFICIENCY
» Optimized & efficient meter reading
» Prioritize workload
» Eliminate truck rolls
» Remote disconnect

REVENUE PROTECTION
» Deter water theft
» Tamper & advanced meter alerts
» Event/tamper analysis
» Advanced reporting
» Identify, prioritize & take action

WATER EFFICIENCY
» Enhanced distribution leak detection
» Reduce non-revenue water
» Additional sensing options
» Robust data analytics

CUSTOMER ENGAGEMENT
» Customer service app
» Consumption comparisons
» Customer engagement web portal
» Customer leak alerts
CUSTOMER SERVICE ENHANCEMENTS
Leveraging data externally

25% REDUCTION IN CALL VOLUME
With leak notification implementation

$250K ANNUAL SAVINGS
Enhanced customer service and leak notification

Customer Leak Notification
EXTENDING THE VALUE OF WATER USAGE DATA

Consumer App

» Awareness, Communication, Education, Action
» Mobile App, Print and Email options
» Incorporating social comparison or historical comparison
» Targeted timely message modules
» Personalized water-saving recommendations
LEAK DETECTION
CITY OF NORTH MIAMI BEACH, USA

$38k
DOLLARS SAVED ANNUALLY
REDUCE CONSUMPTION
20%
ENVISION CHARLOTTE
DRIVING REDUCTION THROUGH AWARENESS
REDUCE CONSUMPTION
THANK YOU
Upcoming Events

August 17 – Marketplace: Meet the Developers: Kane Realty

Marketplace.

Meet the Developers: Kane Realty.

A new series by the Research Triangle Cleantech Cluster
Upcoming Events

September 14 – RTCC Annual Meeting
THANK YOU