Resource Recovery & Electrical Energy (R2E2)

CSWEA Resource Recovery Seminar

Speakers: Nathan Qualls and Jake Becken

November 14, 2018
Agenda

• NEW Water Background Information
• R2E2 Project Overview
• Resource Recovery Highlights
• Startup Wins and Opportunities
• Next Steps
• Q&A
Who is NEW Water?
Opportunities and Challenges: Clean Water Industry

- Managers of valuable resources to be recovered and reused
- Maximize net benefits to the community and the environment
- Maintain desired level of service with aging infrastructure
- Develop strong partnerships with external stakeholders
- Finance needed improvements
Resource Recovery and Electrical Energy Generation (R2E2)
Background Information

2008 – Initiated planning for future of solids handling

Three main drivers:
- Aging infrastructure
- Environmental regulations
- Increased capacity needs

2011 – Completed the Solids Management Facility Plan
R2E2 Timeline

• Planning Stage (2008-2011) Complete
• Design Stage (2012-2015) Complete
• Equipment Procurement (2013-2014) Complete
• Construction Project #1 (2014) Complete
• Construction Project #2 (2015-2018) Complete
• Implementation (2018) Underway
• Construction Project #3 (2019-2020) In Design
# R2E2 Costs

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Approximate Costs</th>
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<tbody>
<tr>
<td>Engineering Services</td>
<td>$25,000,000</td>
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<tr>
<td>Fluidized Bed Incinerator Equipment</td>
<td>$21,200,000</td>
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<tr>
<td>Construction Project #1</td>
<td>$6,300,000</td>
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<tr>
<td>Construction Project #2</td>
<td>$117,000,000</td>
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<tr>
<td>Construction Project #3</td>
<td>$3,200,000</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$172,700,000</strong></td>
</tr>
</tbody>
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In 2013, NEW Water initiated four years of rate increases to pay for R2E2 debt service.
**R2E2 Benefits**

- Addresses the original project drivers:
  - Aging infrastructure
  - Environmental regulations
  - Increased capacity needs

- Lowest cost plan over a 20-year planning period

- Generate about 50% of NEW Water’s energy needs
Resource Recovery Emphasized in Design of Facility

- Anaerobic Digestion
- Electrical Generation
- Heat Recovery (incineration and biogas engines)
- Nutrient Harvesting
- Incineration Without the Use of Auxiliary Fuel
Picture of Plant Before Our Lives Changed Forever
High Strength Waste
Co-Gen Engines
Digester Heat Exchangers
Thermal Oil / Hot Water Heat Exchangers
Fluid Bed Incinerator
Nutrient Recovery System
Nutrient Recovery System

• Reduces struvite maintenance issues
• Beneficial reuse
• Generates revenue stream
What Went Well?

• Adapted process design though project (added nutrient recovery)
• Staff with plant expertise 100% dedicated to project
• Safety Walkthroughs During Project
• Stakeholder Involvement Though Entire Process
• Cross Training
Opportunities?

• Training (compressed startup)
• Staffing
• Tight project schedule
• Interconnectedness of processes (easy to delay)
• Managing project creep and change order management
Next Steps...

- Nutrient Recovery Start-Up (last process startup)
- Process Optimization
- Energy Management Approach
- Proceed with decommissioning old solids processing system
Pre Tour Overview
Thank you!

Contact Information:

Nate Qualls, Director of Technical Services
nqualls@newwater.us
(920) 438-1032

Jake Becken, Treatment Leader
jbecken@newwater.us
(920) 438-1004
Questions/Comments?

Thank you for coming!

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