Community/Customer Engagement
Bruce Bartel, Treatment Manager
NEW Water, Green Bay, WI
US DOE Better Plants Summit

Community / Customer Engagement

August 23, 2018

Bruce Bartel – NEW Water
Treatment Manager
Who or What is NEW Water?

- Brand of Green Bay Metropolitan Sewerage District (GBMSD)
- Two treatment facilities serving NE Wisconsin 24/7/365
- Governed by five member Commission
About NEW Water

- Wholesale provider of wastewater conveyance and treatment services
- 18 municipal customers (217,000 people) and two direct industrial customer
- Service area of 285 square miles
- Third largest wastewater treatment plant in Wisconsin
- Treats 38 million gallons of wastewater per day on average
Protecting our most valuable resource, water
Green Bay Facility
32 mgd
De Pere Facility
8 mgd
R2E2

Resource Recovery Electrical Energy Project

Most cost-effective solution to replace solids handling at the Green Bay Facility

Tools to treat wastewater as a resource
Collaborative Approach

- Used three advisory committees – external, internal, and Commission
  - External Committee: Tom Collins, Sanimax; Kevin Erb, UW-Extension; Jodi Arndt, Isaac Walton League; Jeff DeLaune, Johnson Controls; Michael Finney, Oneida Nation; John Katers, UWGB; Rich Jones, Georgia-Pacific; Trisha Cooper, citizen; Joshua Smith, Village of Howard; Karen Heyrman, City of De Pere; and Matt Heckenlaible, City of Green Bay

- Meeting objectives:
  - A list of attributes and weighting to decide alternative
  - Input on strengths and weaknesses of the selected alternative
Collaborative Approach

Municipal and industrial customer working group

**Communities:** Allouez, Ashwaubenon, Bellevue, De Pere, Green Bay, Hobart, Howard, Lawrence, Ledgeview, and Suamico

**Industries:** Fox River Fiber, Georgia-Pacific, JBS, Pioneer Metal, Thilmany, US Paper Mills, Procter & Gamble, and Sanimax

**Civic Group:** Green Bay Area Chamber of Commerce
Project Approach

GBMSD Strategic Vision

Stakeholder Involvement

Confirm Goals and Approach
Assess Current and Future Conditions
Screening of End Uses and Technologies
Identify and Screen Alternatives
Evaluate Alternatives

Identify Plan

GBMSD Commission Approval
Solids Management Plan Alternatives

• Alternative 2: Incineration with Energy Recovery
• Alternative 3A: Digestion with Thermal Processing
• Alternative 3B: Digestion with Thermal Processing and Electrical Generation (known as R2E2 Project)
• Alternative 11: Composting
• Alternative 14: Incineration and Drying
• Alternative 16: Rehabilitate Existing Solids Handling System
Alternative Analysis:  
Process and Criteria

- Employed structured, rigorous analysis framework to consider monetary and non-monetary factors
- Defined criteria for weighting, scoring, and ranking across alternatives
  - Criteria and criteria weights based on advisory committee input and consistent with Commission values
- Criteria employed:
  - Financial impact (30%)
  - Operational flexibility (35%)
  - Social/community acceptance (15%)
  - Environmental impact (20%)
Alternative Scoring

Environmentally
Social/Community
Operations
Financial

- Alt. 2: 6.2
- Alt. 3A: 6.3
- Alt. 3B: 7.1
- Alt. 11: 4.8
- Alt. 14: 5.5
- Alt. 16: 4.1

Legend:
- Red: Environmental
- Yellow: Social/Community
- Purple: Operations
- Blue: Financial
Alternative Costs

<table>
<thead>
<tr>
<th></th>
<th>Alt.  2</th>
<th>Alt. 3A</th>
<th>Alt. 3B</th>
<th>Alt. 11</th>
<th>Alt. 14</th>
<th>Alt. 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Cost</td>
<td>$112.7 M</td>
<td>$154.9 M</td>
<td>$146.9 M</td>
<td>$80.6 M</td>
<td>$109.1 M</td>
<td>$88.4 M</td>
</tr>
<tr>
<td>Total Present</td>
<td>$121.5 M</td>
<td>$121.6 M</td>
<td>$112.6 M</td>
<td>$143.4 M</td>
<td>$123.5 M</td>
<td>$130.3 M</td>
</tr>
<tr>
<td>Worth*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Project capital cost: **$147 million**
- 9% per year wholesale rate increase through 2016
Public Information Meeting (PIM)

- Commission Approval
- Total 5 PIMs held throughout service area
  - 1 – Village of Ashwaubenon
  - 2 & 3 – Village of Allouez
  - 4 – GBMSD
  - 5 – Brown County Library Weyers-Hilliard Branch
Additional Outreach Efforts

- Comprehensive Outreach Plan
  - 54 Tasks
- Mayor’s Corner
- City Council Meetings
- Village Board Meetings

- Project Fact Sheets
- FAQ Sheets
- Quarterly Customer Meetings
  - Continues today
Project Support

- Met with Green Bay Press Gazette Editorial Board
  - Article in paper
  - Some incorrect facts, overall very supportive
- Municipal Support
  - Village of Allouez – Craig Berndt Public Works Director
- Not all on board with project
Background Information

Three main drivers:

• Aging infrastructure
• Environmental regulations
• Increased capacity needs
R2E2

- R2E2: Solids & Digestion Facilities
  - Includes:
    - Anaerobic Digestion
    - New Solids Building
    - Centrifuge Dewatering
    - Dryer
  - Biogas Storage
  - Electrical Energy Generation
  - Nutrient Recovery
  - Ash Dewatering and Storage
  - Installation of Fluid Bed Incinerator Equipment
R2E2

• R2E2: Solids & Digestion Facilities
  • Energy Recovery:
    • Biogas to run two – 2.2 MGW I.C. Engines
    • Heat from the I.C. engines to heat the anaerobic digesters
    • Heat recovery from the fluid bed incinerator to run dryer
    • Autogenous incinerator operation
    • Nutrient harvesting to produce fertilizer product
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
## R2E2 Costs

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Approximate Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Services</td>
<td>$25,000,000</td>
</tr>
<tr>
<td>Fluidized Bed Incinerator Equipment</td>
<td>$21,200,000</td>
</tr>
<tr>
<td>Construction Project #1</td>
<td>$6,300,000</td>
</tr>
<tr>
<td>Construction Project #2</td>
<td>$114,000,000</td>
</tr>
<tr>
<td>Construction Project #3</td>
<td>$2,500,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$169,000,000</strong></td>
</tr>
</tbody>
</table>