Post Point Treatment Plant Resource Recovery Project

February 11, 2020
MILESTONES

2005
- City Adopts first Climate Action Plan
- City starts using 100% Green Power
- EPA Green Power Partner of the Year

2007
- Council passes Cities for Climate Protection Program
- Energy conservation retrofits in City buildings

2009
- Streamlined permits for rooftop solar

2011
- Mayor joins opposition to Keystone Excel pipeline
- Environmental Chapter added to Comp Plan

2012
- 3rd Emissions Inventory Complete
- City joins UN Compact of Mayors
- City begins retrofitting LED streetlights

2015
- Mayor joins Mayors for 100% Clean Energy

2017
- City Adopts 2018 Climate Action Plan Update
- Council passes Task Force Resolution

2018
- City hosts first ALL IN for Climate Action Week
- City begins purchasing municipal energy through Green Direct

2019
SIX CORE STRATEGIES

Energy Efficiency and Conservation
Transportation
Renewable Energy
Green Building
Waste Reduction
Land Use
Climate Action in many of our projects.

Water Use Efficiency
Renewable Energy

• Solar Panels at Whatcom Falls

• 83,718 KWh

• 76 tons CO2
Energy Efficiency and Conservation

• Lighting
• Asset management principals
• Mechanical Equipment Efficiency Upgrades
History

Original Plant

1973 Primary treatment

1990 Added Secondary

2014 Secondary upgrade
Solids Process Overview

Multiple hearth furnace (MHF)
MHF1: 42 years old today
MHF2: 22 years old today

Gravity Belt Thickeners
22 years old today

Mechanical equipment life expectancy is typically 25 yrs

Thickening  Storage  Dewatering  Incineration
Limitations:  
Multiple Hearth Furnaces (MHFs)

Require regular repair and maintenance
- Refractories, Hearths, Insulation, Shell reinforcements, PLC
- Replacement parts are difficult and costly to procure
- Limit redundancy and reduce reliability

Consume significant energy
- 25,000 cubic feet natural gas/day
- 2.5 million kWh per year
- 3,300 gallons of diesel fuel
- Emits 1,700 tons of fossil fuel-based carbon dioxide equivalents
- No energy recovery on either furnace

Federal air regulation more stringent difficult to permit incinerators

Evaluation...
Project Drivers

The incinerators...

- Past their design life
- Expensive to repair & maintain
- Burn solids (resources) rather than recover them
- No heat recovery
- Increasing stringent air quality regulations
Biosolids Projections vs Actual

2011 – 2035 lbs/hr

2008 – 2015
Biosolids Actual
lbs/hr

Solids, lb/hr (Primary & WAS)

Solids, ppd (Primary & WAS)
Prime opportunity to recover resources at Post Point
### TBL+ criteria measure desired outcomes

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Social</th>
<th>Financial</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Healthy Environment)</td>
<td>(Sense of place, Safe and Prepared Community)</td>
<td>(Quality, Responsive Services, Vibrant Sustainable Economy)</td>
<td>(Quality, Responsive City Services)</td>
</tr>
<tr>
<td>E1 – Minimize Carbon Footprint</td>
<td>S1 – Minimize Noise</td>
<td>F1 – Optimize System Value</td>
<td>T1 – Proven Reliability</td>
</tr>
<tr>
<td>E2 – Protect Air Quality</td>
<td>S2 – Minimize Odor</td>
<td>F2 – Maintain Affordability</td>
<td>T2 – Minimize Post Point Impacts</td>
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<tr>
<td>E4 – Minimize Energy Usage</td>
<td>S4 – Minimize Visual Impacts</td>
<td></td>
<td>T4 – Minimize Complexity</td>
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<tr>
<td>E5 – Protect Local Habitat</td>
<td>S5 – Minimize Toxin Exposure</td>
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</table>
TBL+ process reflects adopted Legacies and Strategic Commitments

TBL+ Criteria
- Environmental
- Social
- Financial
- Technical
Step 2 – comparison TBL+ results

Compatibility with Criteria

Ideal  Alt 1 Post Point Class B  Alt 2 Post Point Class A Dried  Alt 3 Post Point Class A Soil  Alt 4 Off-site Class A Soil
Resource Recovery Project Presents Biogas Use Opportunities
## Class A Soil Blending

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Post Point Process</th>
<th>Off-Site Process</th>
<th>Beneficial End Use</th>
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<tbody>
<tr>
<td>1. Class B Digestion &amp; Land Application</td>
<td><img src="image1" alt="Image" /></td>
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<td><img src="image2" alt="Image" /></td>
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<tr>
<td>2. Digestion &amp; Thermal Drying (Class A)</td>
<td><img src="image3" alt="Image" /></td>
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<td><img src="image4" alt="Image" /></td>
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<td>3. Class A Digestion &amp; Off-site Soil Blending</td>
<td><img src="image5" alt="Image" /></td>
<td><img src="image6" alt="Image" /></td>
<td><img src="image7" alt="Image" /></td>
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<tr>
<td>4. Off-site Class A Digestion &amp; Soil Blending</td>
<td><img src="image8" alt="Image" /></td>
<td><img src="image9" alt="Image" /></td>
<td><img src="image10" alt="Image" /></td>
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</tbody>
</table>
Project Divided 5 Phases

- PHASE 1 – Define Conceptual Alternative
- PHASE 2 – Refine Concepts
- PHASE 3 – Implementation Plan
- PHASE 4 – Predesign
- PHASE 5 – Final Design, Construction & Operation
Accomplishments

- Completed Phases 1 & 2
- Screen World of Opportunities
- Council & Community Goals
- Engage Public in Solution
- Refine Concepts
- Selected Preferred Alternative
- Incinerator Evaluation
Phases 3, 4, & Nutrient Control

Phase 3

- Update Facility Plan
- Permitting
- Data Collection
- Procurement Evaluation
- Financial Assessment
- Marketing Report
- Ongoing Stakeholder Outreach
Phase 4 Preliminary Design

- Site Layout
- Process Diagrams
- Mechanical
- Structural
- Electrical
- Controls
- Public Outreach
Nutrient Removal & Drivers

- Nitrogen Regulations Forthcoming
- Post Point Footprint Limited
- Significant Impact to Plant Capacity
- Biosolids & Nitrogen Removal Linked
- Uncertainty Surrounding Timing & Limits
- Nitrogen Removal is Expensive
Implementing the Climate Action Plan

- Environmentally Responsible
- Socially Acceptable
- Proven Technology
- Lifecycle Costs
- Sustainable
Post Point Treatment Plant
Resource Recovery Project Update

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