Update on the Hampden (Maine) Advanced Waste Processing Facility

SWANA Southern New England Member Appreciation Event

18 December 2019
## Update on the Hampden (Maine) Advanced Waste Processing Facility

<table>
<thead>
<tr>
<th>Entity</th>
<th>Description</th>
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<tbody>
<tr>
<td>Fiberight, LLC</td>
<td>Technology supplier and developer</td>
</tr>
<tr>
<td>Coastal Resources of Maine, LLC (Coastal or CRM)</td>
<td>Facility owner and operator. Owned by Fiberight and investors</td>
</tr>
<tr>
<td>Municipal Review Committee (MRC)</td>
<td>Site owner represents municipal waste suppliers</td>
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Update on the Hampden (Maine) Advanced Waste Processing Facility

The MRC Mission
Ensure affordable, long-term, and environmentally sound disposal of MSW

- 84 entities serving 115 towns having long-term waste disposal agreements with Coastal Resources of Maine, LLC
- Committed to deliver 102,513 tons per year of MSW
Update on the Hampden (Maine) Advanced Waste Processing Facility
The Hampden Facility concept
• Convert mixed MSW into marketable materials and products without source separation

Benefits
• Easier for generators
• Reduces collection/haul costs
• Recover from 100% of MSW
• Pulp/bio-gas vs. compost

Risks
• Usual development risks
• Emerging technology risks
• Material quality concerns
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A Recycling Focused Approach

Fiberight Process Pathway

Sorting
- Material Recycling Facility “MRF”, with Pulper
- Metals
- Plastics
- Residues & Grit
- Fines

Treatment
- Biomass Pulp Washing
- Clean Biomass
- Biomass
- Fines & Wastewater
- Wastewater
- Glass & Grit
- Plastics

Bio-Processing
- Enzymatic Hydrolysis
- Sugars
- Anaerobic Digestion
- Wastewater

Outputs
- Biomass Boiler
- Process Steam
- Process Power
- Industrial Sugars (Future)
- Bio-Gas (CNG or Pipeline)
- Residues (15-20%)
- Plastics (15%)
- Metals (5%)
Update on the Hampden (Maine) Advanced Waste Processing Facility

Products: bales, scrap, briquettes, pulp, bio-gas, ADC
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<table>
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<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>June 2013</td>
<td>MRC requests proposals</td>
</tr>
<tr>
<td>Jan 2014</td>
<td>Award to Fiberight</td>
</tr>
<tr>
<td>Feb 2015</td>
<td>Development Agreement</td>
</tr>
<tr>
<td>Dec 2015</td>
<td>Negotiated site lease and waste supply agreements</td>
</tr>
<tr>
<td>Jan to June 2016</td>
<td>Towns approve agreements</td>
</tr>
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<tr>
<td>April 2015</td>
<td>Permit applications to Maine DEP</td>
</tr>
<tr>
<td>August 2016</td>
<td>Maine DEP issues permits</td>
</tr>
<tr>
<td>September 2016</td>
<td>Permits appealed to District Court</td>
</tr>
<tr>
<td>April 2017</td>
<td>District Court dismisses appeal after 237 days</td>
</tr>
<tr>
<td>May 2019</td>
<td>Maine DEP requires new BUD tests for pulp and briquettes</td>
</tr>
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Tip floor and feed bin
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Tip floor congestion
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Feed and incline conveyor
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Trommel overs

Trommel unders
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Cans for the baler
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Bunkers of materials to be baled
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Loading the baler
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OCC bale quality
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Wash tunnel and rotary pulper
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Film to briquettes
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Briquettes
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AD tanks and Bio-gas
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**Performance Test**

Process 1200 tons over three days  
(Three-Day Test)

Process 45 tons over three hours  
(Three-Hour Test)

Divert >50 percent of incoming MSW  
(Diversion Test)

Comply with the protocol  
(Data, product standards, normal operation)
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The Three–Day Test (Oct 22-24)
Can Coastal empty the floor in time?
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The Three–Hour Test
Can Coastal process 174 3.5-cy bucket loads in 180 minutes?
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**The Diversion Test** Can Coastal convert over 50% of MSW to products (bales, scrap, pulp, briquettes, ADC and bio-gas)?
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<tr>
<th></th>
<th>Standard</th>
<th>Result</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>Three-day test</td>
<td>1200 tons</td>
<td>1279 tons</td>
<td>Best day was 520 tons in one shift</td>
</tr>
<tr>
<td>Three-hour test</td>
<td>135 tons</td>
<td>159 tons</td>
<td>Equivalent to 53 tons per hour</td>
</tr>
<tr>
<td>Diversion test</td>
<td>50.0%</td>
<td>54.1%</td>
<td>Working on improvements</td>
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Tanglers
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Source separate unprocessibles vs. recyclables
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Challenges

- Source-separate tanglers and unprocessibles rather than recyclables and organics
- Sustain required throughput
- Tight labor market (even for pickers!)
- Tough materials market
- Maine DEP action on BUDs
- Enhancements (bio-processing, pipeline gas)
- Investor and customer patience