

Renewable Waste to Energy

Why Waste to Energy for Ashland ?

Current Cost of Waste in Ashland: \$100,000+

Bethlehem Landfill Closing in 2027

Anticipated Future Cost Estimated \$300,000+



Renewable Waste to Energy

Why Waste to Energy for Ashland ? Millions of Dollars Projected for Necessary Infrastructure Improvements over the next 10 Years.

- > \$ 9,000,000 for Electric Infrastructure Upgrade
- > \$10,000,000 for Sewer Infrastructure Upgrade
- > \$ 4,500,000 for New Police Station
- \$ 8,000,000 for Water System Upgrade
- \$ 2,000,000 for a New Library and Civic Center
- > \$ 700,000 for New Fire Truck



Renewable Waste to Energy

The U.S. Census Bureau released the latest five-year estimates from the American Community Survey.

According to the latest data the Poorest Town in New Hampshire is:

ASHLAND

A typical household in New Hampshire earns \$83,449 a year.

A typical Ashland household earns just \$33,365 a year, 60.0% less than the statewide median household income.



Renewable Waste to Energy

How Does Waste to Energy Work?

Municipal Waste is Diverted from Landfills

Combustion of Non-Hazardous Municipal Solid Waste (MSA)

- Steam Drives a Generator for Production of Electricity
- **Recycling Precedes Combustion**
- Metals are Recovered from Residual Ash
- A Portion of the Residual Ash is Sold
- Remaining Ash is Removed to Landfill (<10% of original Weight)



Renewable Waste to Energy

What Do We Get from WTE?

Up to a Maximum Production of 12 Megawatts of Electricity

- 1 Megawatt = 1,000,000 Watts = 10,000 100 Watt Light Bulbs
- 6 Megawatts = Energy Sufficient for approx. 4500 Homes for a Year

19,000 Megawatts of Electricity per Year

WTE Site Rendering





WTE Site Location and Layout





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How Much Waste Will the Plant Require?

168 Thousand Tons of MSW per Year at Full Capacity

- 90 Thousand Tons for Break-Even Operation

1.2 Million TPY Generated in the State of New Hampshire

700 Thousand TPY of MSW in NH Surrounding Communities

Out of State Sources of MSW Can Be Considered



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What is the Cost to Build the Plant?

Capitalized with 135 Million Dollars of Municipal Revenue Bonds

- No Impact on Town Budget or Resident Tax Assessments

Ashland Power Plant Secures the Borrowing

- Plant Reverts to Bond Holders in the Event of Default



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What is the Environmental Impact?

Reduction of Greenhouse Gases Particularly Methane (CH4)

- Landfills Generate Significant Levels of Methane
- Less Landfill Volume = Reduction in Methane

Flue Gasses are Collected, Filtered and Cleaned

- Below Federal EPA and NHDES Emission Standards
- Emissions are Monitored Continuously
- Landfills Require Dedicated Space
 - Landfill Areas can be Used More Productively

Reduced Dependency on Fossil Fuels



Renewable Waste to Energy

Control of Emissions:

- 99.9% of Emitted Gases are Normal Components of Air
 - Nitrogen, Oxygen and Water Vapor
- **Combustion Occurs at >2000 degrees Fahrenheit**
- **Automated Air Quality Control Equipment**
 - Monitor Emissions, Process Temperatures & Steam Flow
 - Adjust Process Parameters to Maximize Air Quality
- Sulfur Dioxide Neutralized Utilizing Lime in a Scrubber Reactor
- Particulate Matter Removed in Filtered "Bag Houses"

100% of Combustion Gases are Processed Through Air Quality Control Equipment



ASHLAND POWER STATION EMISSIONS CONCENTRATION COMPARISON

The Ashland Power Station vs. A typical Truck on I-93





NO_x 70 mg/Nm3 vs 350 mg/Nm3 = Ashland is 80% less CO 89 mg/Nm3 vs 312 mg/Nm3 = Ashland is 72% less SO2 49 mg/Nm3 vs 257 mg/Nm3 = Ashland is 81% less

predicted results, not guaranteed, diesel emissions based on dieselnet.com information

WALDRON ENGINEERING & CONSTRUCTION, INC.



Renewable Waste to Energy

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Years -3 to 0

Start-Up Years:

	Year -3	<u>Year -2</u>	<u>Year -1</u>	Year 0
Revenue	\$0	\$0	\$0	\$2,847,523
Expenses	-\$36,000	\$0	-\$146,752	-\$1,377,057
Bond Repayment	\$0	\$0	\$0	\$0
Capital Reserve Before Capital Expense	-\$36,000	\$0	-\$146,752	\$1,470,466
Capital Expense	\$0	\$0	\$0	\$0
Capital Resv Total	-\$36,000	-\$36,000	-\$182,752	\$1,287,713



Renewable Waste to Energy

Financial	Performance

Years 1 - 4

Operating Years:

	Year 1	Year 2	Year 3	Year 4
Revenue	\$16,241,541	\$19,195,964	\$ 22,404,600	\$23,510,906
Expenses	-\$7,469,047	-\$7,972,669	-\$8,510,786	-\$8,785,672
Bond Repayment	-\$9,327,983	-\$9,327,983	-\$9,327,983	-\$9,327,983
Capital Reserve	-\$555,489	\$1,895,313	\$4,565,831	\$5,397,252
Capital Expense	\$0	-\$25,000	-\$1,100,000	-\$650,000
Capital Reserve	\$732,224	\$2,602,537	\$6,068,368	\$10,815,619



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Financial Performance

Future Years

Operating Years:

	<u>Year 6</u>	Year 8	<u>Year 10</u>	<u>Year 12</u>
Revenue	\$25,904,938	\$27,295,937	\$28.762,153	\$30,307,687
Expenses	-\$9,368,455	-\$9,851,380	-\$10,360,853	-\$10,898,504
Bond Repayment	-\$9,327,983	-\$9,327,983	-\$9,327,983	-\$9,327,983
Capital Reserve	\$7,208,502	\$8,116,574	\$9,073,318	\$10,081,199
Capital Expense	-\$1,900,000	-\$ 800,000	-\$920,000	-\$3,000,000
Capital Reserve	\$21,300,314	\$33,148,341	\$49,037,446	\$60,504,493



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Financial Performance

Future Years

Operating Years:

	<u>Year 14</u>	<u>Year 16</u>	<u>Year 18</u>	<u>Year 20</u>
Revenue	\$31,936,859	\$33,654,230	\$35,464,610	\$38,211,601
Expenses	-\$11,446,086	-\$12,065,478	-\$12,698.702	-\$13,397,934
Bond Repayment	-\$9,327,983	-\$9,327,983	-\$9,327,983	-\$9,327,983
Capital Reserve	\$11,142,790	\$12,260,769	\$13,437.926	\$15,515,684
Capital Expense	-\$6,900,000	-\$ 320,000	-\$800,000	-\$700,000
Capital Reserve	\$74,430,809	\$96,402,309	\$121,242,007	\$149,467,288



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The Claw