...helping communities protect themselves from polluting energy and waste technologies
Landfilling vs. Incineration
Landfilling vs. Incineration

...and Ash Landfilling
World’s largest waste corporation driving away from incineration

[pulls out of gasification, pyrolysis, plasma and trash-to-ethanol investments, selling off Agilyx, Enerkem, Fulcrum, Genomatica & InEnTec]

Jul 29, 2014: “Waste Management to Sell Wheelabrator for $1.94 Billion”
[pulls out of long-standing ownership of Wheelabrator, the second-largest operator of conventional incinerators in U.S.]
### Where DC’s waste went (to VA) in 2016:

<table>
<thead>
<tr>
<th>Landfill Name</th>
<th>Quantity (lbs)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covanta Fairfax</td>
<td>222,937</td>
<td>27%</td>
</tr>
<tr>
<td>Shoosmith Sanitary Landfill</td>
<td>221,415</td>
<td>27%</td>
</tr>
<tr>
<td>Middle Peninsula Landfill and Recycling Facility</td>
<td>190,323</td>
<td>23%</td>
</tr>
<tr>
<td>BFI Old Dominion Landfill</td>
<td>118,785</td>
<td>14%</td>
</tr>
<tr>
<td>Tri City Regional Disposal and Recycling Services</td>
<td>36,898</td>
<td>4%</td>
</tr>
<tr>
<td>King George Landfill &amp; Recycling Center</td>
<td>20,002</td>
<td>2%</td>
</tr>
<tr>
<td>Covanta Alexandria Arlington</td>
<td>16,690</td>
<td>2%</td>
</tr>
<tr>
<td>King and Queen Sanitary Landfill</td>
<td>267</td>
<td>0%</td>
</tr>
<tr>
<td>Charles City County Landfill</td>
<td>18</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>827,335</strong></td>
<td></td>
</tr>
</tbody>
</table>
Where DC’s waste went (to VA) in 2016:
## Facilities in Focus for 2017 & This Presentation

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Type</th>
<th>Average Distance from DC Transfer Stations (mi)</th>
<th>Annual Precipitation (inches)</th>
<th>Years of Life Remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covanta Fairfax</td>
<td>Incinerator</td>
<td>26</td>
<td></td>
<td>13 (if it lives to 40)</td>
</tr>
<tr>
<td>King George</td>
<td>Landfill</td>
<td>68</td>
<td>42.8</td>
<td>11</td>
</tr>
<tr>
<td>King &amp; Queen</td>
<td>Landfill</td>
<td>122</td>
<td>45.4</td>
<td>26</td>
</tr>
<tr>
<td>Middle Peninsula</td>
<td>Landfill</td>
<td>130</td>
<td>45.4</td>
<td>73</td>
</tr>
<tr>
<td>Charles City</td>
<td>Landfill</td>
<td>130</td>
<td>46.3</td>
<td>74</td>
</tr>
</tbody>
</table>

[“Other 3 Landfills” in future slides refers to the last three above, which are all about the same distance from DC.]
How to Compare?

- Population impacted & environmental justice
- Human health impacts
  - Nitrogen Oxide emissions (asthma)
  - Particulate emissions
  - Toxic and Cancer-causing emissions
- Eutrophication
- Acidification (acid rain…)
- Ecosystem toxicity
- Ozone depletion
- Smog formation
- Global warming
- Cost
Data Sources

- **U.S. EPA**
  - National Emissions Inventory
  - Emissions & Generation Resource Integrated Database (eGRID)
  - FLIGHT (Greenhouse gas inventory)
  - Landfill Methane Outreach Program database

- **U.S. Energy Information Administration**
  - Form 860 database (Annual Electric Generator data)
  - Form 923 database (Annual Electric Utility Data)

- **Virginia Department of Environmental Quality**

- **DC Department of Public Works**

- **Energy Recovery Council**

- **Sound Resource Management Group**
Incineration Worse than Coal

Toxic Air Emissions are...

- Dioxins / furans (28 times as much)
- Mercury (6-14 times as much)
- Lead (6 times as much)
- Nitrogen Oxides (NOx) (3.2 times as much)
- Carbon Monoxide (CO) (1.9 times as much)
- Sulfur Dioxide (SO₂) (20% worse)
- Carbon Dioxide (CO₂) (2.5 times as much)

www.energyjustice.net/incineration/worsethancoal
Incineration Worse than Coal

Ratios of pollution levels emitted per unit of energy produced by U.S. coal power plants and trash incinerators
Incinerator, Not a Power Plant

“a waste-to-energy plant is designed to manage solid waste... the electricity output is a secondary function”

Ted Michaels, President, Energy Recovery Council, March 18, 2013 testimony before Washington, DC City Council
## Covanta Fairfax Reported Emissions (2014)

<table>
<thead>
<tr>
<th>Global Warming Pollutants</th>
<th>Pounds released (2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Dioxide (CO2)</td>
<td>2,169,540,876</td>
</tr>
<tr>
<td>Methane (CH4)</td>
<td>762,927</td>
</tr>
<tr>
<td>Nitrous Oxide (N2O)</td>
<td>100,130</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Damaging Pollutants</th>
<th>Pounds released (2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide</td>
<td>11,319</td>
</tr>
<tr>
<td>Hydrochloric Acid</td>
<td>57,408</td>
</tr>
<tr>
<td>Hydrofluoric Acid</td>
<td>1,385</td>
</tr>
<tr>
<td>Lead</td>
<td>68</td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>3,398,301</td>
</tr>
<tr>
<td>Particulate Matter (PM10)</td>
<td>14,709</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM2.5)</td>
<td>8,862</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>257,899</td>
</tr>
<tr>
<td>Volatile Organic Compounds</td>
<td>11,813</td>
</tr>
</tbody>
</table>
# EPA 2014 National Emissions Inventory Data

<table>
<thead>
<tr>
<th>Row Labels</th>
<th>Grand Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covanta Fairfax Inc</td>
<td>3,761,825.4</td>
<td>75%</td>
</tr>
<tr>
<td>Noman M Cole Jr Pollution Control Plant</td>
<td>623,138.0</td>
<td>12%</td>
</tr>
<tr>
<td>US Army - Fort Belvoir</td>
<td>264,181.0</td>
<td></td>
</tr>
<tr>
<td>Kinder Morgan Southeast Terminals LLC-Newington</td>
<td>144,809.7</td>
<td></td>
</tr>
<tr>
<td>Motiva Enterprises LLC - Springfield</td>
<td>105,306.2</td>
<td></td>
</tr>
<tr>
<td>BARNARD</td>
<td>51,994.9</td>
<td></td>
</tr>
<tr>
<td>Michigan Cogeneration Systems Inc</td>
<td>26,040.9</td>
<td></td>
</tr>
<tr>
<td>I-66 Landfill</td>
<td>3,926.5</td>
<td></td>
</tr>
<tr>
<td>RESTON HOSPITAL CENTER</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>MOUNT VERNON HOSPITAL</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>FORT BELVOIR COMMUNITY HOSPITAL</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>INOVA FAIRFAX HOSPITAL</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>ROUBIN &amp; JANEIRO INC</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>CRIPPENS</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>CIA HEADQUARTERS</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>FAIRFAX COUNTY POLICE</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>7TH DIV STATE POLICE HQTRS</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>INOVA FAIR OAKS HOSPITAL</td>
<td>603.0</td>
<td></td>
</tr>
<tr>
<td>DAVISON AAF</td>
<td>12.7</td>
<td></td>
</tr>
<tr>
<td>CENTREVILLE</td>
<td>12.7</td>
<td></td>
</tr>
</tbody>
</table>
Covanta Fairfax Emissions are Exceptional

Within 20 miles of DC’s borders, Covanta Fairfax is…

• **#1 in Nitrogen Oxides**
  – So high that Covanta’s home state of New Jersey singled out this incinerator as ineligible to sell renewable energy credits to NJ
  – #2 in the entire industry, worse than the Detroit incinerator (which has no NOx controls)

• **#1 in Carbon Dioxide**

• **#1 in Hydrochloric Acid**

• **#1 in Hydrofluoric Acid (was worst in their industry in 2008)**

• **#1 in Mercury**

• **#4 in Sulfur Dioxide**

• **Top 10 in Lead**

• **#3 in overall air pollution (after Dulles and DCA Airports)**
Trash Incinerator Health Impacts

• Increased dioxins in blood of incinerator workers
• Increased cancers, especially:
  – laryngeal and lung cancers
  – childhood cancers
  – colorectal
  – liver
  – stomach
  – leukemia
  – soft-tissue sarcoma
  – non-Hodgkin’s lymphoma
• Increases in babies born with spina bifida or heart defects
• Increases in pre-term births
Landfills and Landfill Gas Burning

www.energyjustice.net/lfg/
All Landfills Leak

- U.S. EPA acknowledges that all landfill liners leak within 20 years, if not sooner
- Landfill liners are only guaranteed for about 20 years
- Landfills are permitted to leak a certain amount of gallons/acre
- It's easy not to find leakage (underground or in air); testing is often inadequate
Landfill Gas: What it is…

• Not simply “methane”
• About half methane, half CO$_2$
• Organics breaking down create the methane; methane helps the toxic chemicals escape
• Hundreds of toxic contaminants
  – Halogenated compounds (trichloroethane, vinyl chloride, carbon tetrachloride and many more)
  – Mercury (methylmercury – the really bad kind)
  – Sulfur compounds (the stinky stuff)
  – Tritium (radioactive)
  – Other toxic organic compounds (benzene, toluene…)
<table>
<thead>
<tr>
<th>Compound 1</th>
<th>Compound 2</th>
<th>Compound 3</th>
<th>Compound 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-butanol</td>
<td>2,6-dimethylheptane</td>
<td>4-methyl-2-pentanol +</td>
<td>branched C-8 paraffin</td>
</tr>
<tr>
<td>1-chloro-1-fluoroethane</td>
<td>2-butanethiol</td>
<td>acetaldehyde</td>
<td>butanol isomer?</td>
</tr>
<tr>
<td>1-chloro-1-propene</td>
<td>2-butanol</td>
<td>acetone</td>
<td>butylcyclohexane</td>
</tr>
<tr>
<td>1-chloropropane</td>
<td>2-chloropropane</td>
<td>acetone + ethanol</td>
<td>butylene</td>
</tr>
<tr>
<td>1-heptene</td>
<td>2-ethylfuran</td>
<td>alpha-thujene</td>
<td>butylpropanoate</td>
</tr>
<tr>
<td>1-octene</td>
<td>2-ethylhexyl alcohol</td>
<td>alpha-pinene</td>
<td>C-10 olefin</td>
</tr>
<tr>
<td>1-pentene</td>
<td>2-ethyl-l-hexanol</td>
<td>alpha-thujene</td>
<td>C-11 diene</td>
</tr>
<tr>
<td>1-propanol</td>
<td>2-methyloctalcohol</td>
<td>alpha-thujene + branched C-10 paraffin</td>
<td>C-11 paraffin</td>
</tr>
<tr>
<td>1,1-dichloroethane</td>
<td>2-methyl heptane</td>
<td>branched C-11 olefin &amp;</td>
<td>branched C-10 paraffin + C-3 benzene</td>
</tr>
<tr>
<td>1,1,1-trichloroethylene</td>
<td>2-methyl propanoate</td>
<td>benzene</td>
<td>C-11 paraffin + C-3 benzene</td>
</tr>
<tr>
<td>1,2,3-tetramethylcyclohexane</td>
<td>2-methyl-2-propanethiol</td>
<td>benzothiazole</td>
<td>C-1 cycloparaffin</td>
</tr>
<tr>
<td>1,1,3-trimethylcyclohexane</td>
<td>2-methyl-3-pentanone + pentanol isomer</td>
<td>beta-pinene</td>
<td>C-10 diene</td>
</tr>
<tr>
<td>1,1-dichloroethane</td>
<td>2-methylbutanate</td>
<td>branched C-11 olefin</td>
<td>C-10 olefin</td>
</tr>
<tr>
<td>1,1-dimethyl-cyclopropane</td>
<td>2-methyl-butane</td>
<td>branched C-11 olefin +</td>
<td>branched C-12 diene</td>
</tr>
<tr>
<td>1,2,3-trimethylcyclohexane</td>
<td>2-methyl-ethyl butanoate</td>
<td>branched C-12 olefin</td>
<td>C-3 alkylcyclohexane isomer</td>
</tr>
<tr>
<td>1,2,3-trimethylcyclohexane isomer</td>
<td>2-methylfuran</td>
<td>branched C-11 paraffin</td>
<td>C-3 alkyl-substituted cyclopentadiene isomer</td>
</tr>
<tr>
<td>1,2-dichloroethene</td>
<td>2-methylheptane</td>
<td>branched C-11 paraffin</td>
<td>C-3 benzene</td>
</tr>
<tr>
<td>1,2-dichloroethylene</td>
<td>2-methylhexane</td>
<td>branched C-10 olefin</td>
<td>C-3 benzene + branched C-11 paraffin</td>
</tr>
<tr>
<td>1,2-dichloropropane</td>
<td>2-methylhexylbutyrate</td>
<td>branched C-10 olefin +</td>
<td>branched C-10 olefin + branched C-11 paraffin</td>
</tr>
<tr>
<td>1,3,5-trimethylcyclohexane</td>
<td>2-methyl-l-propanol</td>
<td>branched C-10 olefin + C3-benzene, ...</td>
<td>C-3 benzene + branched C-10 paraffin</td>
</tr>
<tr>
<td>1,3,5-trimethylcyclohexane isomer</td>
<td>2-methyloctahydropentalene</td>
<td>branched C-10 paraffin</td>
<td>C-3 benzene + C-11 paraffin</td>
</tr>
<tr>
<td>1,3-dichloro-2-butene</td>
<td>2-methylpentane</td>
<td>branched C-10 paraffin + 2-methylhexylbutanoate</td>
<td>C-3 benzene + C-10 paraffin</td>
</tr>
<tr>
<td>1,5-cyclooctadiene</td>
<td>2-methylthiobutane</td>
<td>branched C-10 paraffin + beta-pinene</td>
<td>C-3 benzene + C-9 diene</td>
</tr>
<tr>
<td>1-butanol</td>
<td>2-methylthiopropane</td>
<td>branched C-10 paraffin + C-9 diene</td>
<td>C-3 benzene + octahydro-2-methylpentalene</td>
</tr>
<tr>
<td>1-butanol + 1,2-dichloropropene</td>
<td>2-pentanone + 1,2-dichloropropene</td>
<td>branched C-10 paraffin + phellandrene</td>
<td>C-3 benzene isomer</td>
</tr>
<tr>
<td>1-chloropropane</td>
<td>2-pentene</td>
<td>branched C-12 diene</td>
<td>C-3 cyclohexane</td>
</tr>
</tbody>
</table>
Landfill Health Impacts

A New York study of 38 landfills found that women living near solid waste landfills where gas is escaping have a four-fold increased chance of bladder cancer or leukemia.

Life Cycle Analysis on DC Waste Options

Analysis done by:
Jeffrey Morris, Ph.D. (Economics)
Sound Resource Management Group
360-867-1033
jeff.morris@zerowaste.com
www.zerowaste.com

Dr. Morris authored several peer reviewed published studies on waste systems.
Life Cycle Analysis on DC Waste Options

- All comparison data includes pollution from trucking.
  - Note the tiny difference that doubling hauling distance makes.
- A 75% landfill gas capture rate is assumed, based on what was reported to us in calls to the four landfills. All three we reached independently reported the same percentage.
- For the landfills, the best data available for DC waste composition is used. Where categories were vague, we filled in the proportions with more detailed data from Montgomery County’s waste characterization study. Actual emissions data for Covanta Fairfax is used, as reported to EPA.
- We used local precipitation data from the areas where the landfills are located, which is wetter than average.
- “Other 3 Landfills” = King & Queen LF, Middle Peninsula LF, and Charles City LF
Nitrogen Oxide (NOx) Pollution

[Pounds of NOx per ton of waste disposed.]
Particulate Matter Pollution

[Pounds of PM2.5 equivalent per ton of waste disposed.]
Toxic Pollution

[Pounds of toluene equivalent per ton of waste disposed.]

Does not include dioxin/furan emissions.
Carcinogenic Pollution

[Pounds of benzene equivalent per ton of waste disposed.]

Does not include dioxin/furan emissions.
Eutrophication

[Pounds of nitrogen equivalent per ton of waste disposed.]

NOx and ammonia air emissions plus BOD, COD, phosphate, and ammonia water releases from landfills.
Incinerator emissions are largely from nitrogen oxides, but also include other acid gases (SO$_2$, HCl, HF). For the landfills, it’s hydrogen sulfide (H$_2$S) from the landfill, plus ammonia, NOx and SOx from the landfill gas burners.
Ecosystems Toxicity

[Pounds of 2,4-D herbicide equivalent per ton of waste disposed.]

For the incinerator, this is mainly based on mercury emissions. For the landfill, mainly formaldehyde.
Ozone Depletion

[Pounds of CFC-11 equivalent per ton of waste disposed.]
Smog Formation

[Pounds of ozone ($O_3$) equivalent per ton of waste disposed.]
Global Warming Pollution

[Pounds of CO₂ equivalent per ton of waste disposed.]
Recap!
Global Warming Pollution
Smokestack CO2 Emissions from U.S. Power Plants

CO2 (lbs/MWh)

Data is in pounds of CO2 per unit of energy produced (lbs/MWh)

Source: U.S. EPA Emissions & Generation Resource Integrated Database (eGRID) v.9, released 2/24/2014 (2010 data)
Global Warming Pollution

[EPA Public Relations on MSW Incineration]

**CO2 (pounds per megawatt hour)**

<table>
<thead>
<tr>
<th></th>
<th>MSW</th>
<th>Coal</th>
<th>Oil</th>
<th>Natural Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>1000</td>
<td>2500</td>
<td>1500</td>
<td>1200</td>
</tr>
</tbody>
</table>
Global Warming Pollution

[EPA FLIGHT Data in 2015 metric tons CO2 equivalent.]

NOTE: This ignores biogenic emissions from incineration, but not from landfills, making Covanta seem half as bad as they are.
Global Warming Pollution

[Energy Recovery Council Public Relations on MSW Incineration]

![Graph showing CO2 emissions from various sources and their net effect on GHG factors.]

- CO2 from the combustion of MSW not counted as an emission.
- CO2 from the combustion of plastics counted as an emission.

- CO2 from combustion of MSW
- Fossil CO2 avoided by WTE power
- Metals recovered for recycling
- Landfill methane avoided by WTE
- Net GHG factor
How they Mislead on Global Warming

• Ignoring the “biogenic” half of carbon emissions.
  – Biomass carbon neutrality has been scientifically debunked. See a compilation of the science here: [www.energyjustice.net/biomass/carbon](http://www.energyjustice.net/biomass/carbon)

• Pretending “biogenic” carbon’s share in MSW is larger than the 52.7% that EPA factors into their eGRID data.

• Subtracting avoided methane emissions from landfills, as if conventional landfills are the only alternative.

• Subtracting emissions from offsetting fossil fuel electricity
  – …as if they’re not just as readily competing with wind power, especially with Covanta Fairfax cashing in on Maryland Tier I Renewable Energy Credits ($3.9 million in 2015).

• Subtracting emissions due to recycling of metals that remain in the ash after combustion.

• Subtracting emissions from avoided transportation to landfills.

  Details at: [www.energyjustice.net/incineration/climate](http://www.energyjustice.net/incineration/climate)
Dioxin Facts

• Dioxins and furans are the most toxic chemicals known to science. They are highly toxic even in miniscule amounts.

• Dioxins cause infertility, learning disabilities, endometriosis, birth defects, sexual reproductive disorders, damage to the immune system, cancer and more.

• 93% of dioxin exposure is from eating meat and dairy products.

www.ejnet.org/dioxin/
# Exposure to Dioxins

<table>
<thead>
<tr>
<th>Source</th>
<th>Exposure (pg/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef Ingestion</td>
<td>38.0</td>
</tr>
<tr>
<td>Dairy Ingestion</td>
<td>24.1</td>
</tr>
<tr>
<td>Milk Ingestion</td>
<td>17.6</td>
</tr>
<tr>
<td>Chicken Ingestion</td>
<td>12.9</td>
</tr>
<tr>
<td>Pork Ingestion</td>
<td>12.2</td>
</tr>
<tr>
<td>Fish Ingestion</td>
<td>7.8</td>
</tr>
<tr>
<td>Egg Ingestion</td>
<td>4.1</td>
</tr>
<tr>
<td>Inhalation</td>
<td>2.2</td>
</tr>
<tr>
<td>Soil Ingestion</td>
<td>0.8</td>
</tr>
<tr>
<td>Water Ingestion</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

Total Exposure = 119 pg/day
How to make dioxin

• Dioxins are created by burning hydrocarbons with chlorine in the presence of oxygen.

• Dioxin emissions increase when:
  – More chlorine is in the fuel/waste stream
  – Certain metal catalysts are present (Copper, Iron, Zinc…)
  – The gases stay in a low temperature range (200-450ºC)
“In our industry, and in the waste industry as a whole, fires are becoming more prevalent.”

-Mark Harlacker – Covanta’s Commercial Business Director for Mid-Atlantic Region, 4/26/2017 testimony before DC City Council
Most Expensive Way to Manage Waste

“Waste-to-energy is an additional capital cost. That is not in dispute, compared to a landfill... compared to a landfill, which is a less capital-intense structure – it is more expensive. If you had a landfill next to a waste-to-energy facility, then almost in every case, you would think the landfill is going to be cheaper.”

Ted Michaels, President, Energy Recovery Council, March 18, 2013 testimony before Washington, DC City Council
Most Expensive Way to Manage Waste

Figure 3. Landfill and Incinerator Tip Fees

Most Expensive Way to Make Energy

Howland: “We made the decision I think 2 years ago, 3 years ago, that – we were taking our trash to the landfill, then – that’s a policy decision, the department, we signed a long-term contract with Fairfax County to convert it from waste to energy. One of the interesting things about that is that the last two trash hauling contracts that we entered into, we asked each vendor to give us a proposal on whether to send the – what would the cost be to send it to landfill? What would be the cost to send it to Fairfax? We negotiated the price with Fairfax and you just needed to give us the hauling costs from DC to Fairfax. There were 9 vendors in 2004 that bid, and 5 vendors that bid in 2009. All 14 bids, it was cheaper to take it to a landfill, which typically was as far away as Richmond, than it was to take it to Fairfax County. But we thought, environmentally, it was better to take it to Fairfax County and convert it to energy, than it was to landfill it.”
Landfills Cheaper for DC

-----Original Message-----
From: Howland, William (DPW)
Sent: Tuesday, February 03, 2009 8:00 PM
To: Thomas, Chimeka (EOM)
Subject: RE: Waste To Energy proposal

Chimeka

Not exactly. I am sure the distance is a factor in determining the cost.

Five years ago, DPW issued a solicitation for waste disposal. In the solicitation DPW asked for the vendors for pricing on two different scenarios. We asked them to give us a price for disposal if the vendors disposed of the trash at any facility of their choosing.

We also asked for a price to transport it to Fairfax County to their waste to energy facility. The price for disposal was fixed at the same cost for all of the vendors so the only thing we needed to know is what the transport cost would be to Fairfax.

We had three bidders and all three companies bid a lower cost to haul the trash to a landfill much further away than it would be to haul it to Fairfax with a set disposal fee.

I doubt seriously that any waste to energy facility can get the cost significantly below $40 per ton. I realize the Fairfax County facility is nearly 20 years old and the technology has probably radically evolved.

I am still very much interested in discussing this option. I think it is environmentally a better option for the District. I am just not sure that it is a cheaper option. I think we will have achieved something if we can find an option that is price competitive.

Thanks

Bill

William O. Howland, Jr.
Landfills Cheaper for DC

- RFP for current contract was rigged by prior DPW administration

- Only bidders allowed were “waste to energy” facilities with at least a 3-year operating history, located within 50 miles of DC’s transfer stations
  - Only four such incinerators exist.
  - The only one in a white community (Montgomery County, MD) does not take out-of-county waste [Civil Rights Act Title VI violation]
  - Baltimore and Alexandria’s incinerators lacked capacity to bid, leaving the one and only bidder (Covanta Fairfax) to get the 5-11 year contract (five years plus two 3-year renewal options)
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• Tip fee at Covanta is $34.64/ton plus Lucky Dog hauling contract ($10.95/ton), totaling $45.59/ton.

• As in the past, if landfills were permitted to bid on such a multi-year contract, they could provide cost-competitive bids to the current Covanta and Lucky Dog arrangement, even with the greater hauling distance.

• Since there is no “put or pay” clause requiring use of the Covanta contract, DPW ought to issue an RFP for landfill bids over a comparable contract term, and continue the current use of landfills, even once Covanta Fairfax is operational again.
Incinerator Ash

• Incinerators still require landfills for their toxic ash
• Choice is NOT landfill vs. incinerator, but:

  landfill

  vs.

  incinerator AND a smaller, more toxic landfill
Incinerator Ash

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- Choice is NOT landfill vs. incinerator, but:

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  OR...

  Zero Waste and minimal landfilling
Incinerator Ash

- Incinerators still require landfills for their toxic ash
- 30 tons of ash produced for every 100 tons burned
Incinerator Ash = Hazardous Waste

Incinerator ash is toxic, but the U.S. EPA allows a special test that enables it to test as non-hazardous, saving the industry a lot of money.

Despite Canada relying on the same test, Vancouver’s incinerator ash is leaching toxic cadmium at levels about twice the province’s acceptable limits. They’ve had to ship the hazardous ash to a hazardous waste landfill in Alberta.
The back end is still a landfill...

1. Direct landfilling
   (bad, but better than incineration)

2. Incineration $\rightarrow$ toxic ash to landfill
   (most polluting and expensive option)

3. Anaerobic digestion $\rightarrow$ landfill
   (best option, economically and environmentally; avoids having gassy, stinky landfills)
Impacts of Each Major Option

1. **Direct landfilling**
   - leachate (toxins)
   - air emissions (toxins, methane, odors)

2. **Incineration** → toxic ash to landfill
   - leachate (even more toxins)
   - air emissions from ash blowing off site (toxins)

3. **Anaerobic digestion** → landfill
   - odor, leachate and air emissions highly minimized
Zero Waste Hierarchy

• Rethink / Redesign
• Reduce
• Reuse
• Source Separate:
  – Recycle (multi-stream)
  – Compost
  – Waste
    • Research to see what is left, and encourage redesign
    • Recovery: mechanically remove additional recyclables
    • Anaerobically digest, then aerobically compost residuals
    • Stabilized (digested) residuals to landfill

www.energyjustice.net/zerowaste
What is the best disposal option for the “Leftovers” on the way to Zero Waste?

By
Dr. Jeffrey Morris
Dr. Enzo Favoino
Eric Lombardi
Kate Bailey

www.ecocycle.org/specialreports/leftovers
The MRBT scenarios had the lowest environmental and health impacts among all the disposal options.
Figure 3: Standardized Environmental Impact Scores for the Five Management Options for Leftover Waste Remaining after 70% Recycling
For more Info…

• Incineration:
  – www.EnergyJustice.net/incineration
  – www.EnergyJustice.net/biomass
  – www.EnergyJustice.net/tires
  – www.no-burn.org

• Landfills and Landfill Gas Burning:
  – www.EnergyJustice.net/lfg
  – www.ejnet.org/landfills
  – www.beyondlandfilling.org

• Zero Waste:
  – www.EnergyJustice.net/zerowaste
  – www.ilsr.org/initiatives/waste-to-wealth
  – www.grrn.org/zerowaste
  – www.zwia.org