

COVANTA

Powering Today. Protecting Tomorrow.

Covanta Essex Open Meeting | December 16, 2020

Covanta Essex Company

- Opened 1990
- Superior, sustainable waste management for 22 municipalities and the surrounding region
- Processes up to 985,500 tons of waste annually, in turn:
 - Eliminate **nearly 1 million tons** of CO₂ emissions
 - Generate enough renewable electricity for approximately **46,000 homes**
 - Recycle enough metal to build **21,000 cars**



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Virtual Tour



Waste Receiving & Tipping



Grapple Cranes



Boiler Charging



Feed Chute



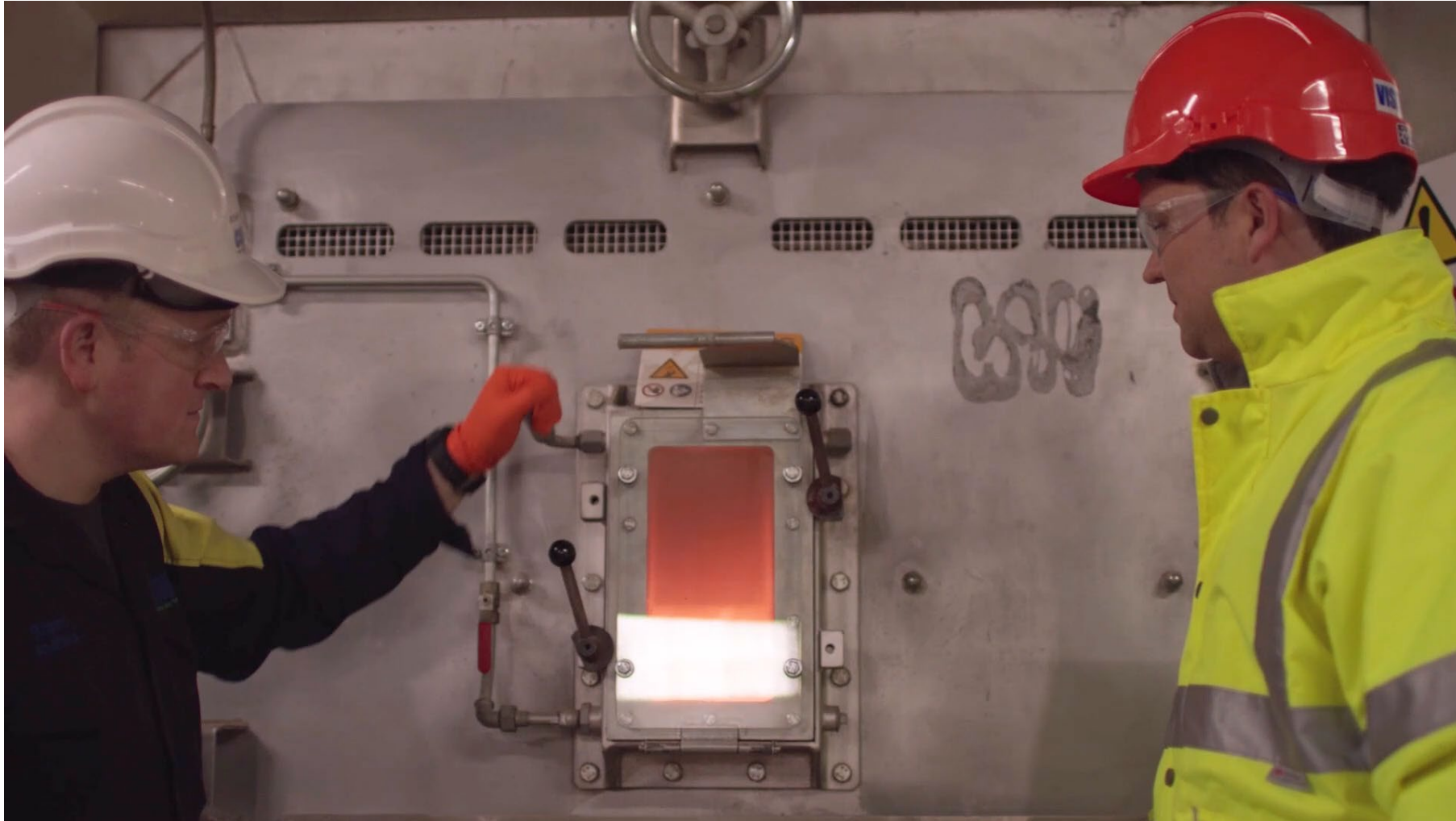
Hydraulic Feed Rams



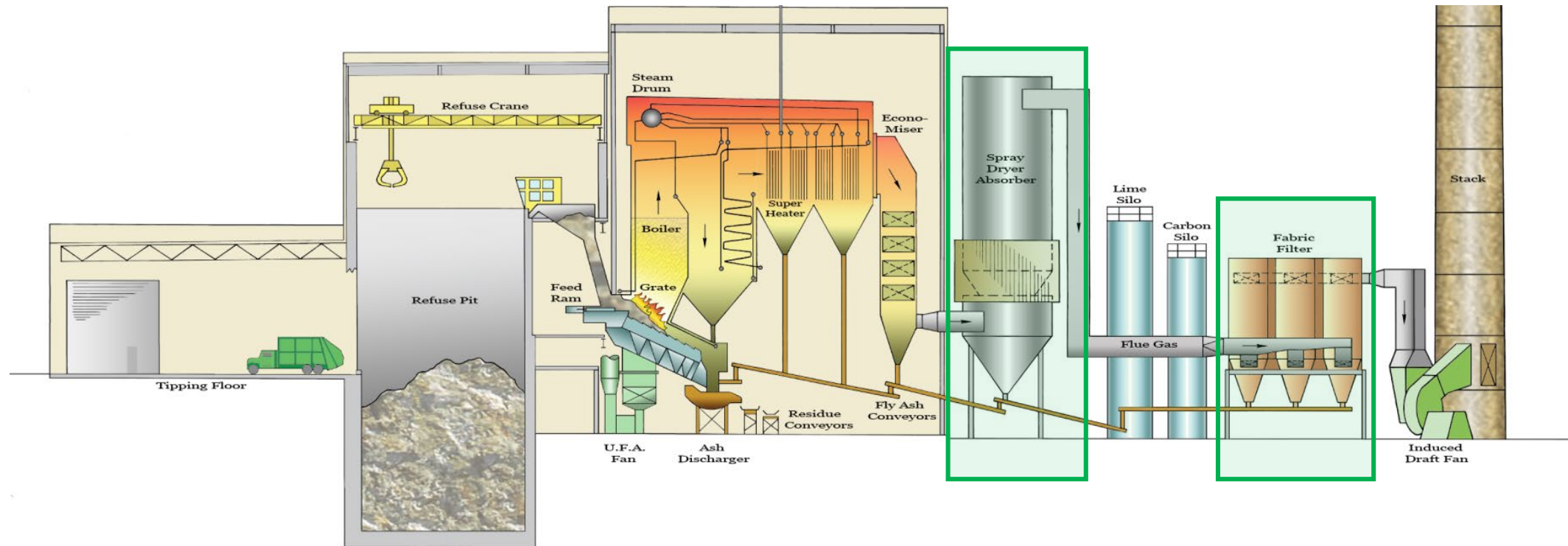
Roller Grate Technology



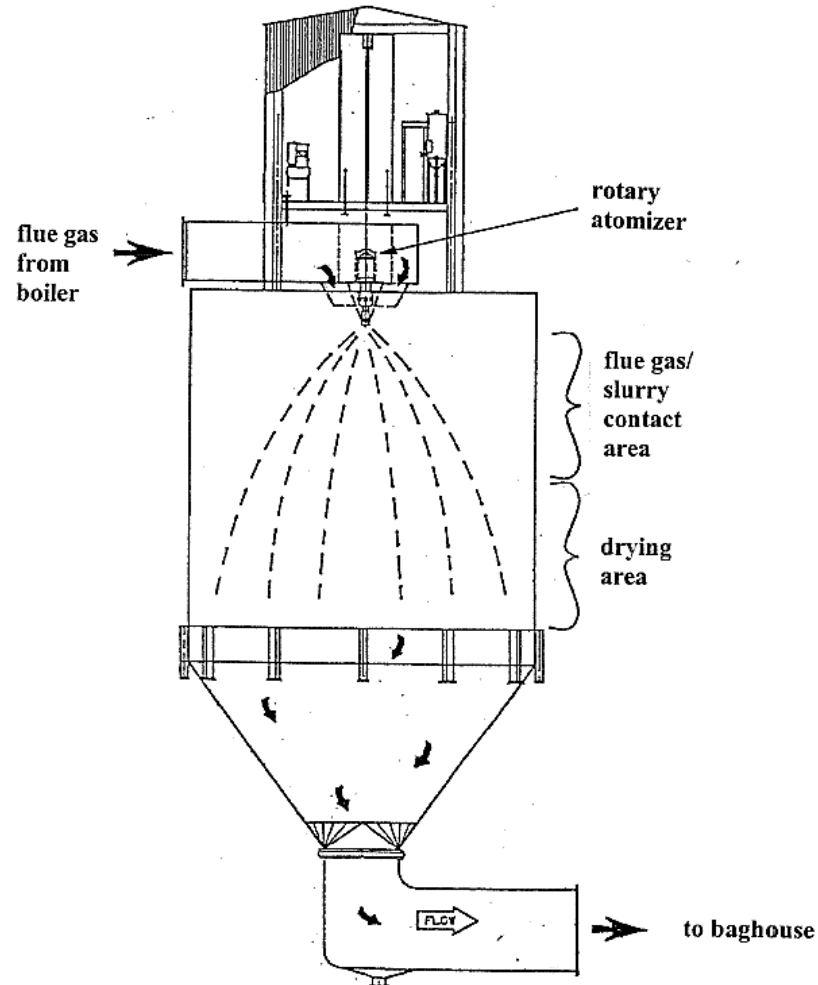
Combustion Process



Plant Design - Emissions Control



Spray Dry Absorbers for Acid Gas Control

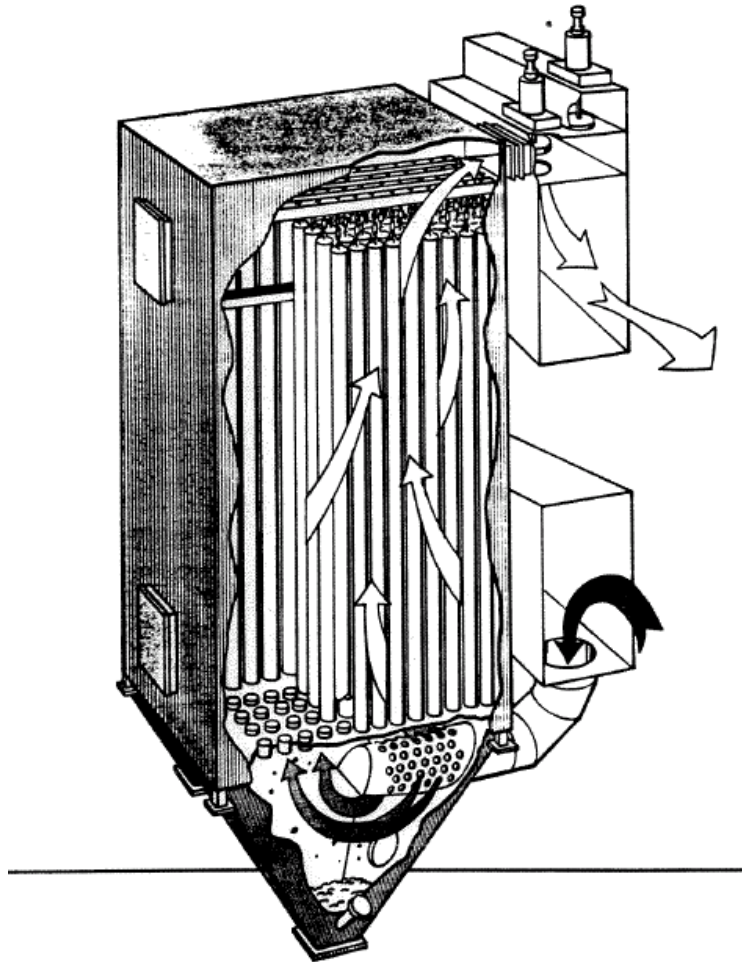


- System neutralizes acid gases using a lime slurry in a scrubber reactor
- Activated carbon is injected into the flue gas for heavy metal capture

Flue Gas Treatment

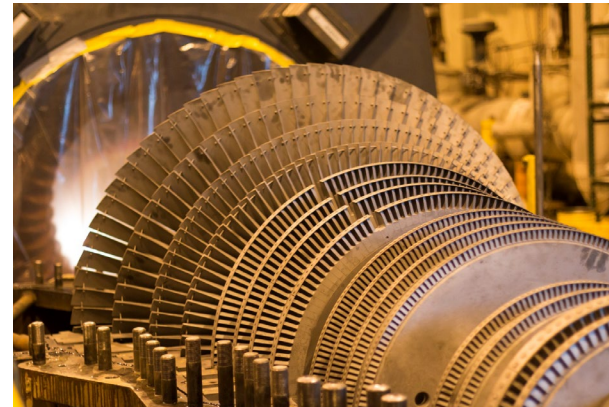


Baghouses – more than particulate control

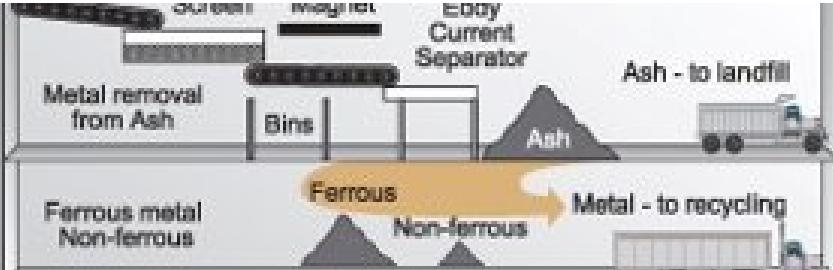


- Flue gas passes through thousands of long, thin bags
- Cake forms on outside of bag enhancing particulate capture and adsorption
- Cake with carbon contributes to further fine particulate, acid gas, mercury and dioxin control
- Bags are cleaned by pulses of high-pressure air or reverse flow

Turbine Generator – Electricity Generation



Ash & Metal Removal



Continuous Emissions Monitoring and Control

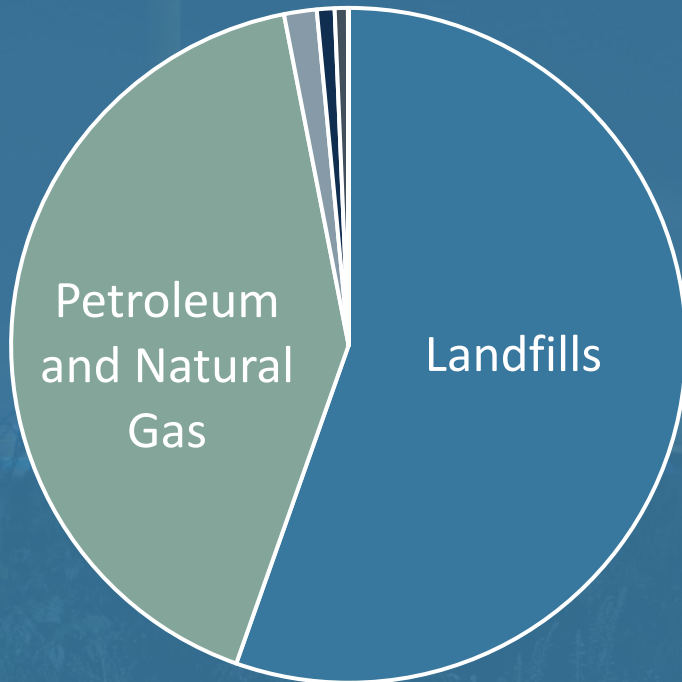


An aerial photograph of an industrial facility, likely a waste-to-energy plant, with a large dark blue semi-transparent overlay. The background shows railway tracks on the left, a blue-roofed structure, and various industrial buildings and equipment. A white vertical line is positioned to the left of the text.

Waste-to-Energy

Landfill vs. Waste-To-Energy

New Jersey Reported Methane Emissions (2019)

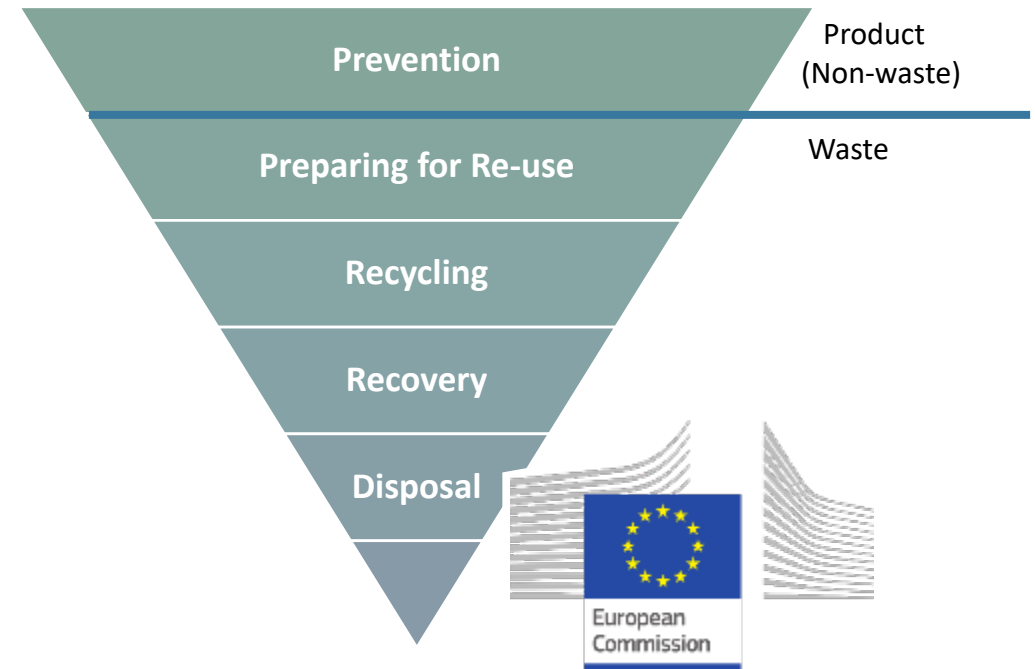
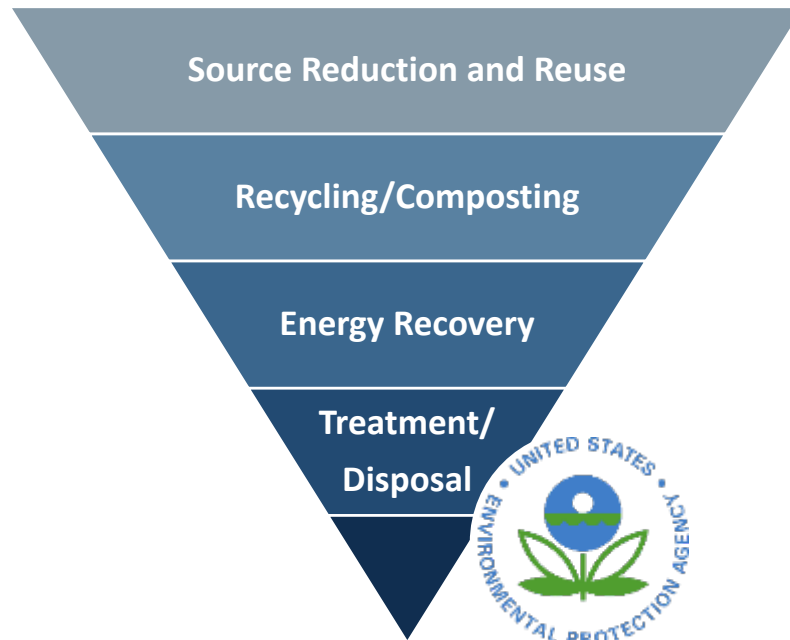


- Landfills.....
 - Emit methane – a GHG 84-86x more powerful than CO₂
 - NJ Landfills emitted over one million metric tons CO₂ equivalent in 2019
 - Generates leachate that can contaminate groundwater
 - Creates impacts for 100 years or more
- WTE....
 - Recovers energy from waste: 550 kWh per ton
 - Recovers metals for recycling
 - Only net-negative source for greenhouse gas emissions
 - 22% of NJ's total renewable energy
 - Safely disposes of unused medications

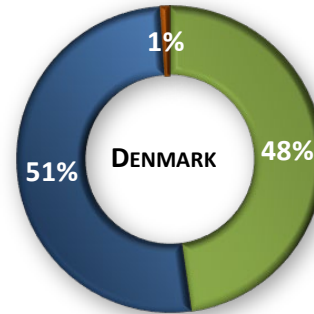
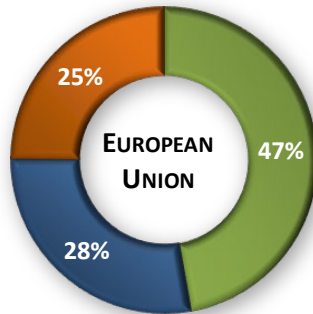
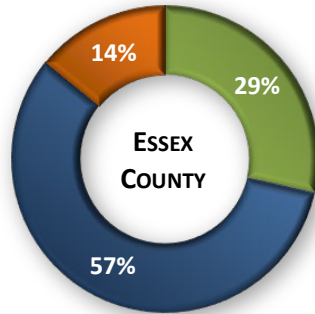
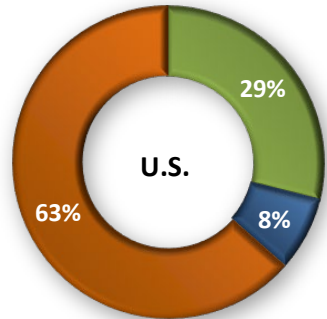
*Based on data made available through the US EPA's Greenhouse Gas Reporting Program

Waste Management Hierarchy

- The US EPA and the EU have ranked the most environmentally sound strategies for municipal solid waste – disposal in a landfill is considered the worst and final option
- The EU has set a target for all 27 countries to landfill 10% or less of all waste generated by 2035 in its landmark Landfill Directive



Waste-to-Energy: Global Perspective



■ Recycling / Composting ■ Energy Recovery ■ Landfilling

Data Sources: Eurostat, Columbia University, NJDEP



Ivry-Sur-Seine WTE Facility in Paris



SYSAV WTE Facility in Malmö, Sweden

- WTE is implemented in 25 of 27 European Union countries, as well as Norway, Iceland and Switzerland*
- Waste management in Essex County is as sustainable as in the average E.U. country

*Data from Confederation of European Waste-to-Energy Plants

Environmental Justice

- We strongly support the new environmental justice law for New Jersey
- We established our own Community Outreach & Environmental Justice Policy in 2011
- We remain committed to upholding this policy

Having open, two-way communication with communities on issues which may be of interest or concern to them...

Having an enhanced public participation strategy with communities on major facility permit actions and engage in substantive conversations with community members during the early stages of the permitting process.



COVANTA Community Outreach & Environmental Justice Policy
Powering Today. Protecting Tomorrow.

Covanta is committed to engage with and support the communities in which we have or will have facilities. Covanta believes in the meaningful opportunity for all people, regardless of race, ethnicity, color, income, national origin or education level to be knowledgeable and have the right to participate in public decisions and actions which have an impact on their environment and neighborhoods. To implement this policy consistent with our sustainability objectives, Covanta commits:

- To reduce discharges and minimize emissions from our facilities and to reduce other potential impacts of our operations, taking into account cumulative impacts.
- To identify and engage with individuals and organizations in the communities in which we operate, or in which we may operate, that are interested in our operations.
- To have open, two-way communication with communities on issues which may be of interest or concern to them, including environmental and quality of life issues in the community. Such communication shall include participation in meetings with community members or affected groups.
- To have an enhanced public participation strategy with communities on major facility permit actions and engage in substantive conversations with community members during the early stages of the permitting process.
- To work diligently to respond to issues identified by communities in which we operate.
- To promptly and effectively notify the community in the event of situations that may adversely impact the environment or their health.

Stephen J. Jones
Stephen J. Jones, President and CEO



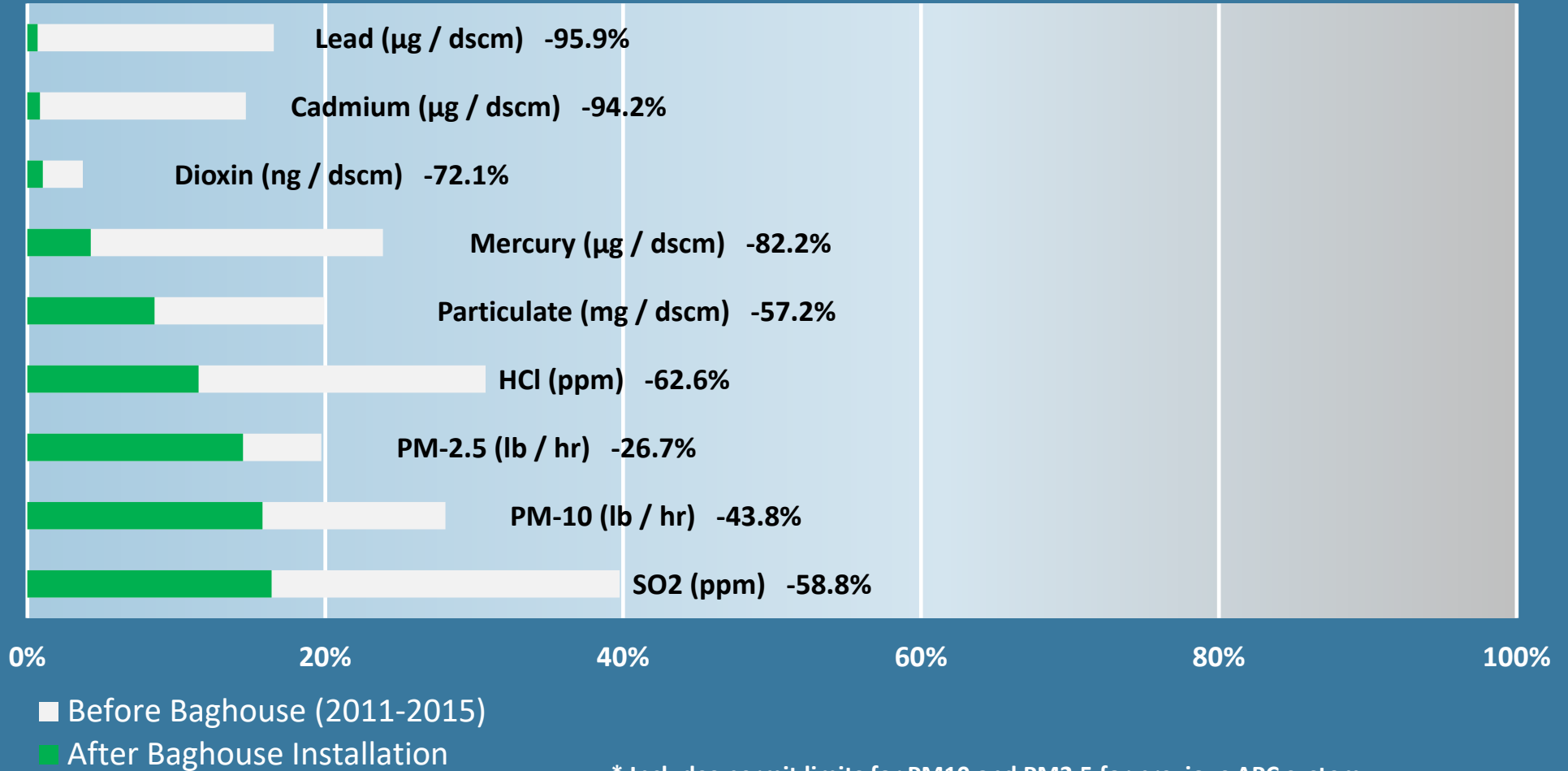


Environmental Justice

- Environmental Justice for Covanta is about action
- Recent investments total approximately \$100 million:
 - New Baghouse Installation – reduced emissions up to 90%
 - Low NOx Systems
 - Natural Gas Fueling Station
 - New Metals Recovery System
- We continuously assess opportunities to increase net environmental benefit for Newark

Reductions Following Baghouse Retrofit

Essex County WTE Emissions with Baghouse Compared to Previous APC System



* Includes permit limits for PM10 and PM2.5 for previous APC system

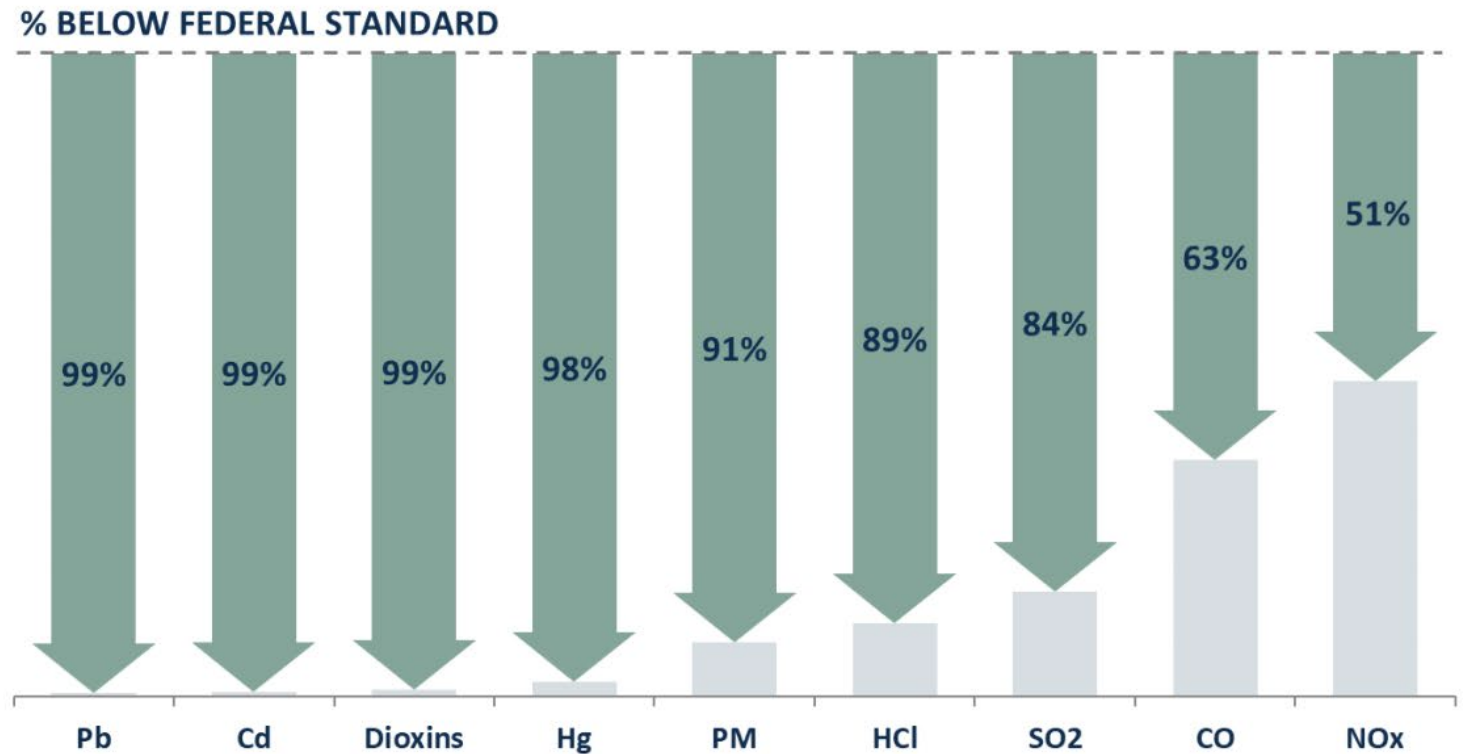
Overall Performance

2017-2019 WTE Emissions Compared to Federal Standards

The facility operates up to **99% below** federal emissions standards

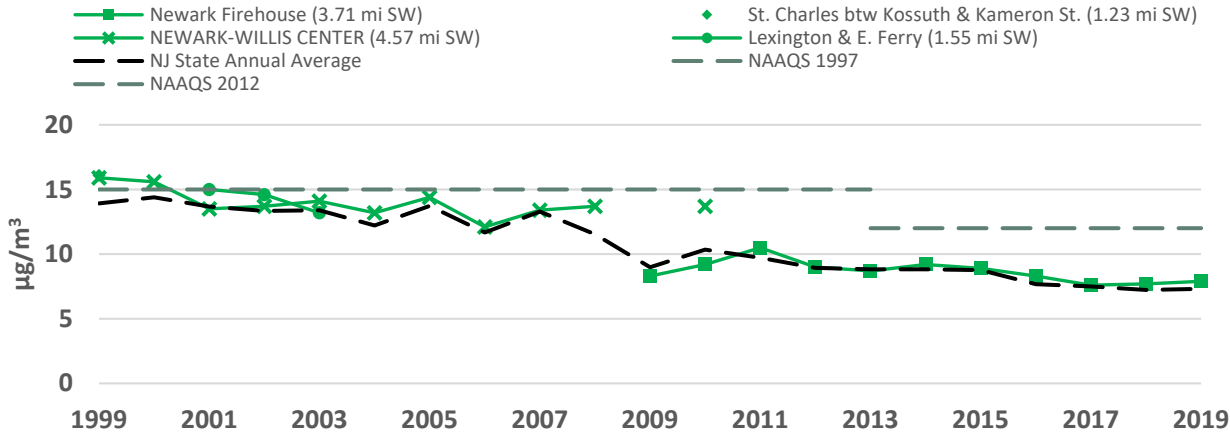
Emissions compared to federal guidelines for existing facilities (40 CFR 60 Subpart Cb).

Facility may be subject to more stringent requirements by permit or in accordance with other federal guidelines.

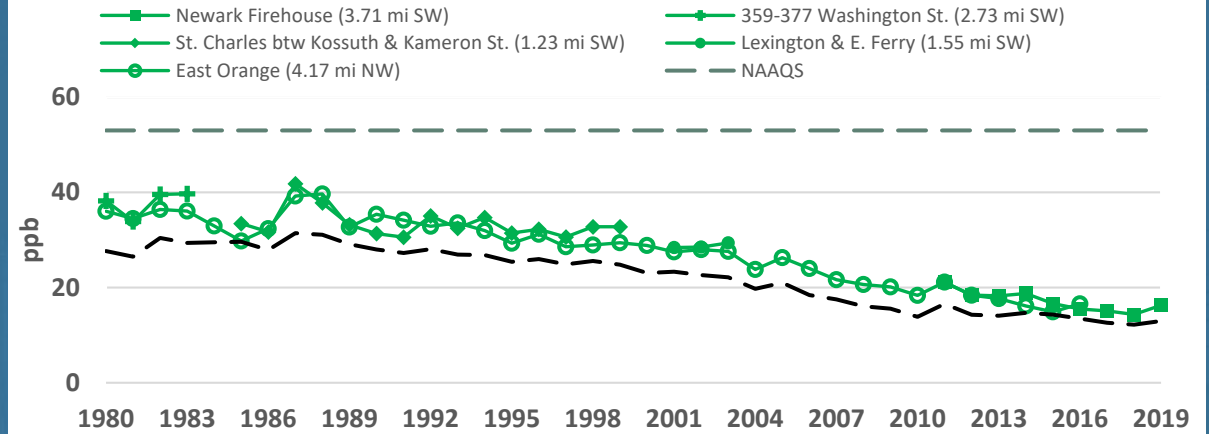


Local Air Monitoring Data

Annual Average of Daily Mean PM2.5 Concentrations



Annual Average of Daily Mean 1-hour NO2 Concentrations



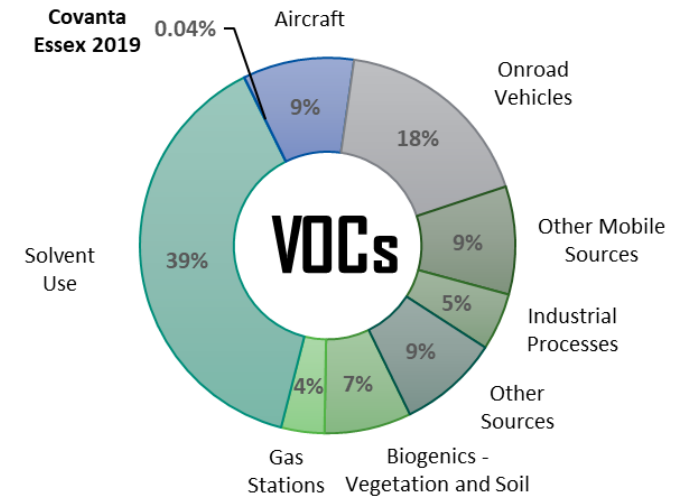
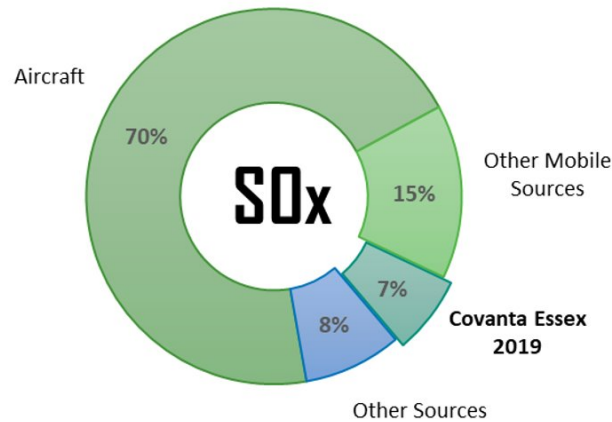
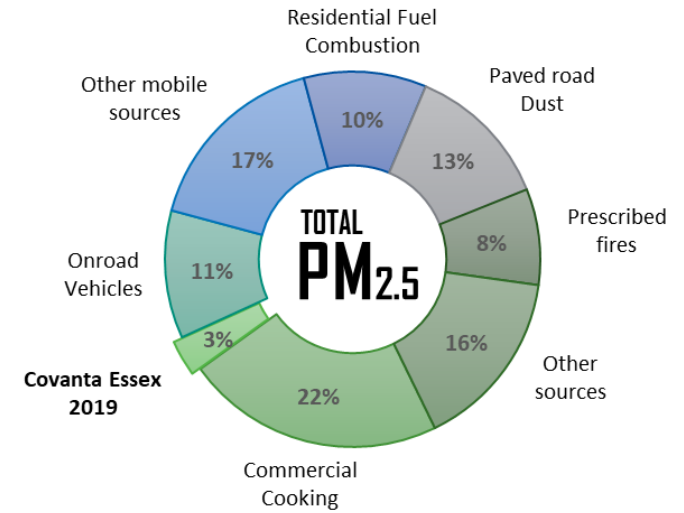
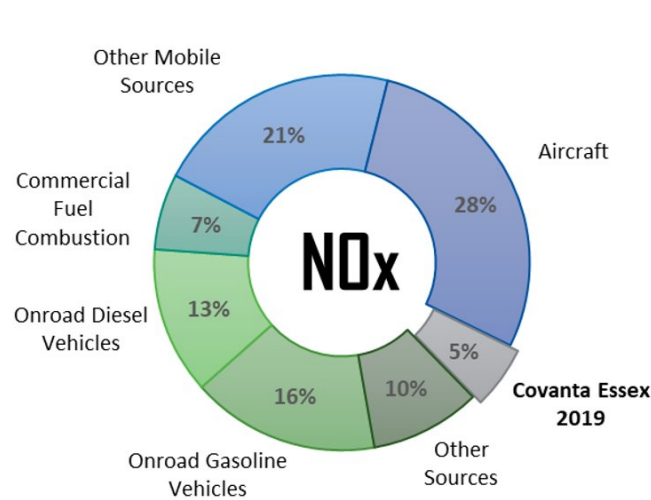
- EPA Air Monitoring Data placed at different locations throughout the county show a trend of decreasing overall levels of PM2.5 and NO₂ as well as several other pollutants (SO₂ and Ozone)
- Emissions levels for major pollutants in general have been decreasing over time in Essex County

Local Air Emissions

Among emissions sources within the county*, Covanta Essex is a minor contributor of most major pollutants.

* Based on the 2017 US EPA National Emissions Inventory; the most recently released complete inventory.

The facility's emissions are based on the most recent reported annual emissions data from 2019.



Purple/Pink Plumes Update

- Last event was on April 7, 2020
- Used data analysis, annual NJ DEP reports, and tipping floor video to determine source as an industrial facility located in Newark, NJ
- Covanta no longer accepts material from this generator
- Iodine is an irritant at 100 parts per billion (ppb). Modeling by a 3rd party environmental firm estimated the Iodine concentration to be 5 parts per billion at ground level
- Covanta agreed to an Administrative Consent Order (ACO) with the NJDEP for follow-up reports and actions pursuant to the events



What is the Purple Plume?

Visible evidence that iodine is in the waste stream

WE NEED YOUR HELP!!
Please keep iodine out of the waste stream



Combustion of iodine can lead to the discharge of unwanted, visible Pink/Purple plumes from the facility stack.

Covanta Essex Workforce Proximity to Facility



- 57% of our employees at Covanta Essex live within 10 miles of the facility
- 30% of our employees in NJ, live within 5 miles of where they go to work



Covanta in the Community

- Partnerships with:
 - Boys & Girls Club of Newark
 - United Way of Greater Newark
 - Salvation Army - Newark
 - Ironbound Ambulance Squad
 - City of Newark
 - Slam Dunk the Junk cleanups
 - Quarterly E-waste collection events
 - Adopt-A-Lot Program
 - Ironbound Business Improvement District
 - Essex County Turtleback Zoo
 - St. Benedicts Prep
 - Newark Public Schools

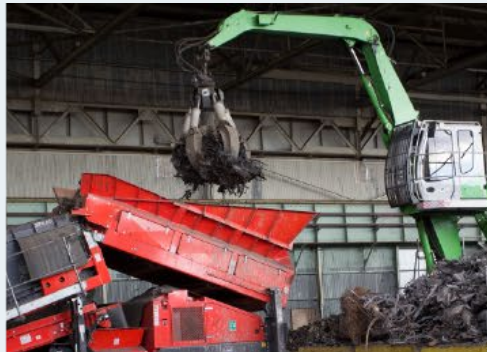


Covanta in the Community

- Highlights:
- Supported the City of Newark Community COVID-19 Fund with Shop Rite gift cards.
- Supported Sustainable Jersey for Schools Bronze certification for all 61 Newark Public Schools with the help of the Go Green Initiative.
- Distributed healthy meals at Camden Street Elementary School
- Held annual Open Meetings for the public with Blueprint Café.
- Introduced sustainability/environmental initiatives at St. Benedict's Prep.
- Partnered with Essex County in Operation Medicine Drop for proper disposal of prescription medication
- Provided holiday gifts for over 40 children through the Salvation Army Angel Tree Program



Thank You



Please visit covanta.com/essex for more information