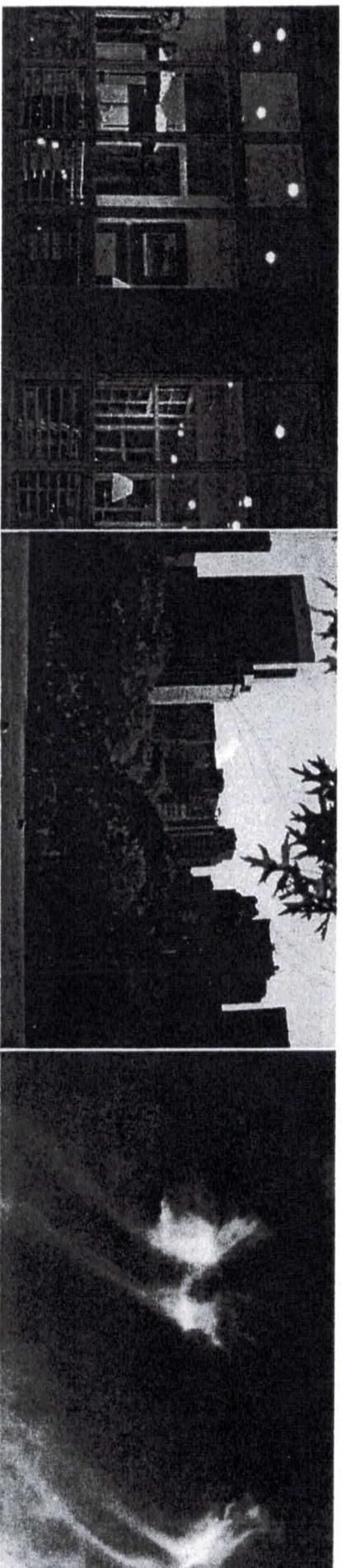


Plus/Minus = 45 cases  
FE001AD

**COVANTA**

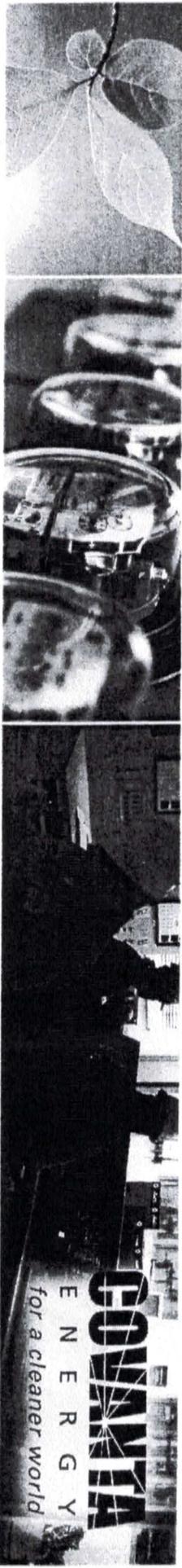
E N E R G Y

for a cleaner world



**Energy from Waste - Virginia**

**Covanta Energy**



## Introduction to Covanta Energy

# Leading Producer of Energy-from-Waste

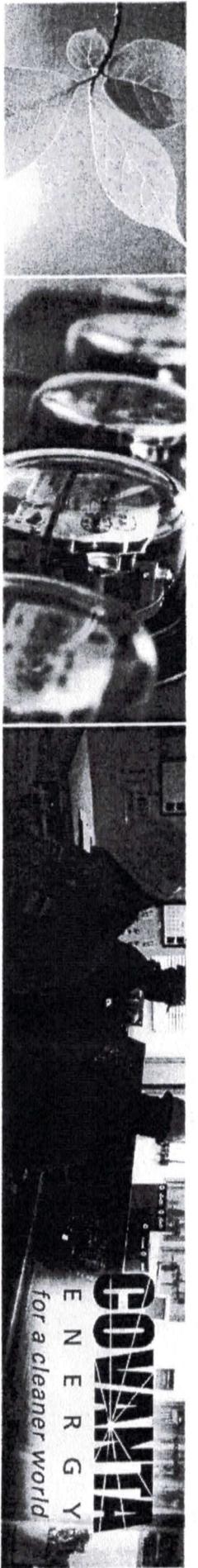
Covanta Holding Corporation (NYSE: CVA)

Largest Energy-from-Waste (EFW) operator

- 41 EFW facilities in the US
- North America, Asia & Europe
- 4,000+ employees worldwide

## Virginia

- Covanta operates 2 facilities in Virginia – Alexandria and Fairfax
  - Employs 130 people with a payroll of \$15 million
  - \$1.9 million in local taxes, host fees and surcharges
  - Spend \$79 million in the state economy
- Covanta's Renewable Power
  - Produce 113 megawatts of base load electricity
  - Enough energy to power 100,000 homes each year
- Covanta VA converts 1.40 million tons of waste per year into renewable energy
  - Avoiding the equivalent of ~ 1.40 million barrels of oil each year



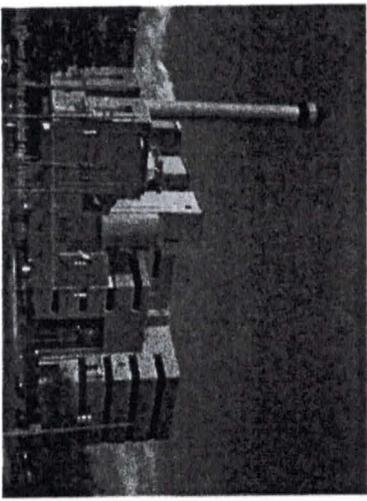
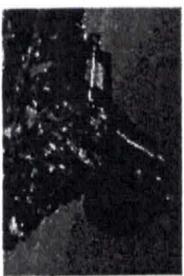
# Converting Waste Into Clean Renewable Power

Helps Solve Four of the Nation's Biggest Challenges

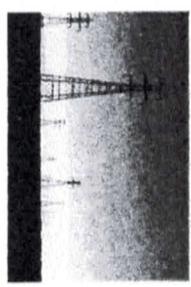
- Clean Renewable Energy → Baseload power near the load center, with lower price than other renewable sources
- Climate Change → One ton of trash reduces one ton of CO<sub>2</sub> eq
- Green Jobs → New facility creates ~\$1 billion in economic activity
- Sustainable Waste Management → Follows EPA and EU waste hierarchy

Energy-from-Waste is a specially designed energy generation facility that uses household waste as fuel and helps solve some of society's big challenges

Municipal Solid Waste (MSW): 1 ton

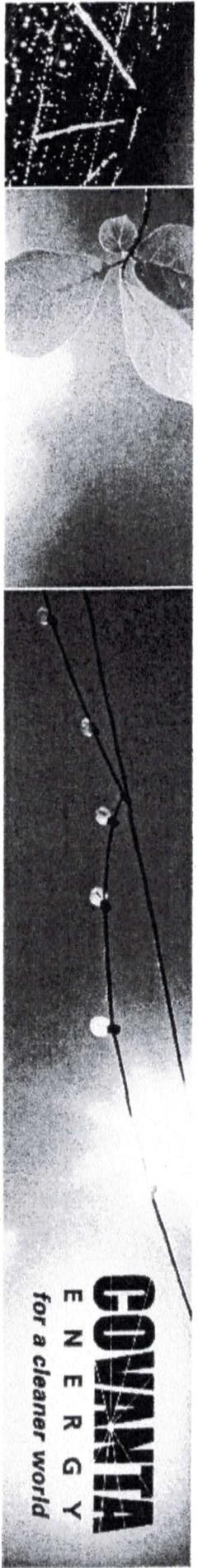


Alexandria, VA



*Handwritten signature: Russell Sotkoff*

- Power: 550-750 kWh
- Metal: 50 lbs
- Ash: 10% of original volume

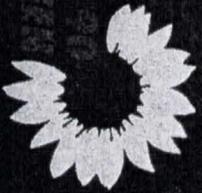


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## After Recycling, there are two choices: EFW or landfill

- EFW manages 1 ton of MSW in 1-hour vs. 100 years in a landfill and avoids trucking related emissions
- EFW is a process with continuous combustion controls, dedicated air pollution control systems and continuous monitoring systems. Landfills do not have any air pollution monitoring or controls.
- EFW generates more net electrical power per ton of MSW than any landfill process - 700 kWh versus 65kWh
  - EFW avoids 100 % of methane potential from landfills
- EFW enables recovery and recycling of metals

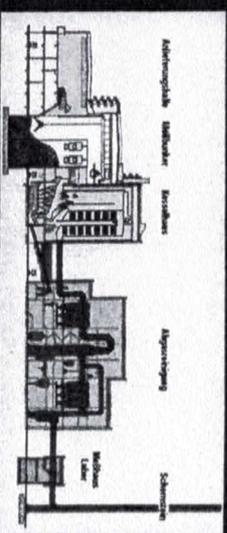
*Not greenhouse  
gas reduction*

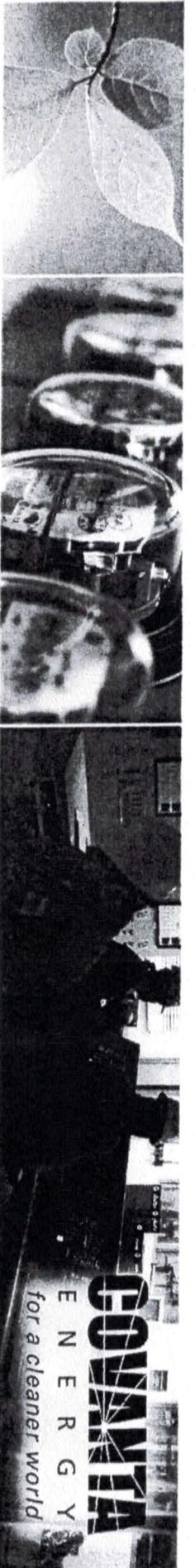


## Incineration

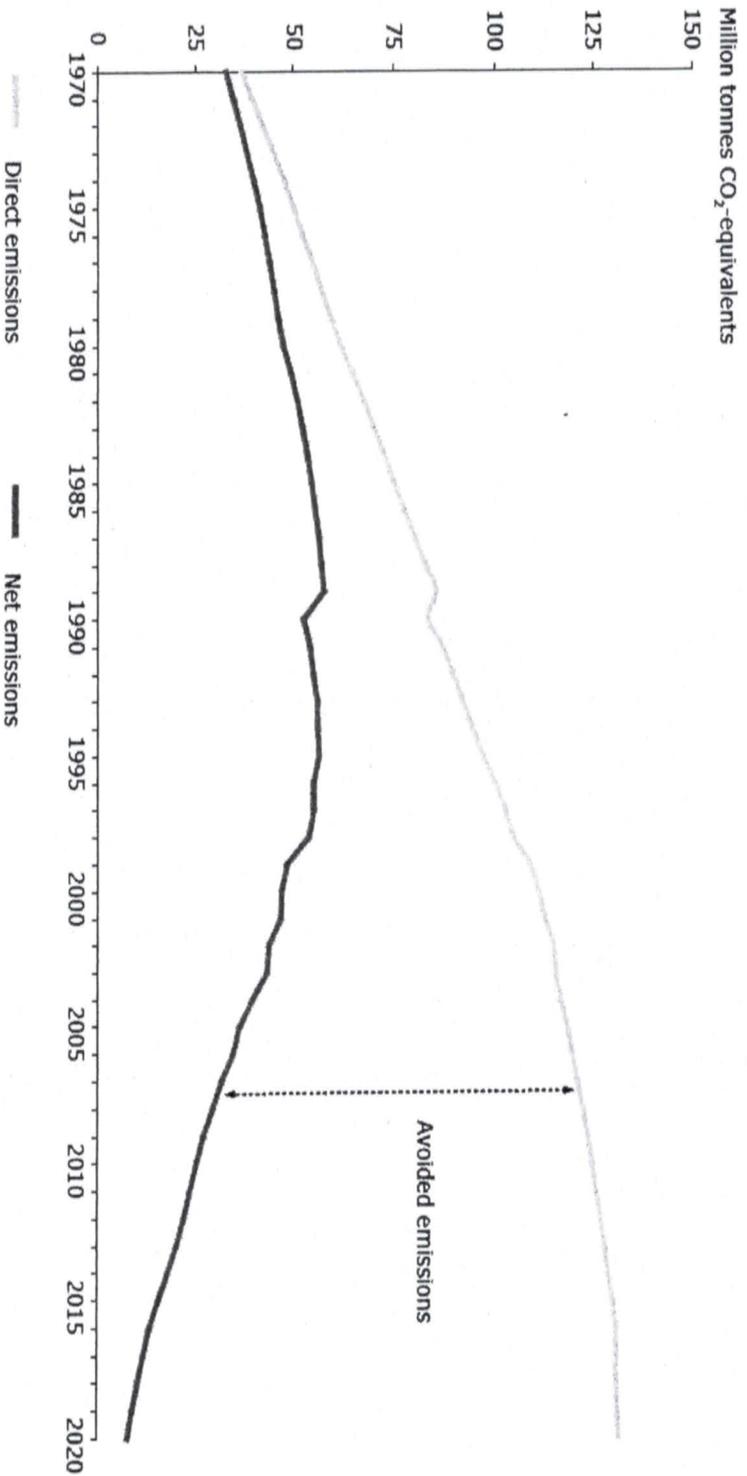
**Dr. Michael Weltzin**  
Scientific Assistant  
in the Parliamentary  
Group

- **Advantage: proven technology for many years**
- **When using a facility with the best available technology - very low environmental impact:**
  - **high efficiency in recovering of heat and electricity**
  - **low emissions**
  - **use of different by-products by producing acid and gypsum**
  - **use of ashes e.g. in the construction industry**
  - **no landfilling, only small amount of the input has to be left over to be deposited in the subsoil**
  - **potential to be developed into more decentral, flexible structures**
  - **producer responsibility leads to products free of harmful substances, like heavy metals, means future potential for much lower emissions**





# Trends and projections of greenhouse gas emissions from municipal waste in the EU

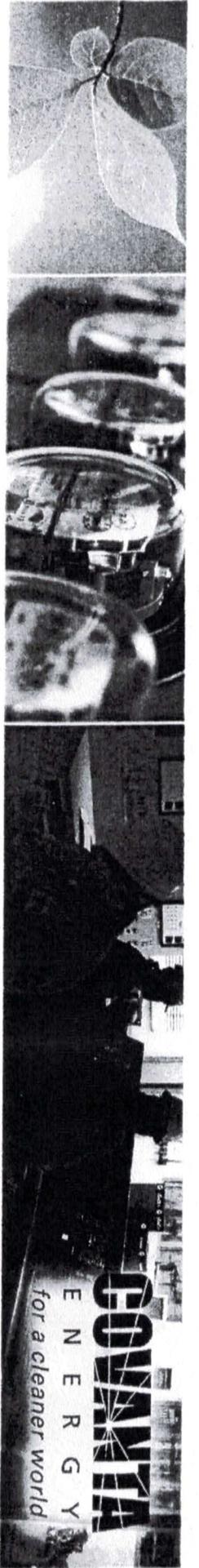


Source: ETC/RWM.

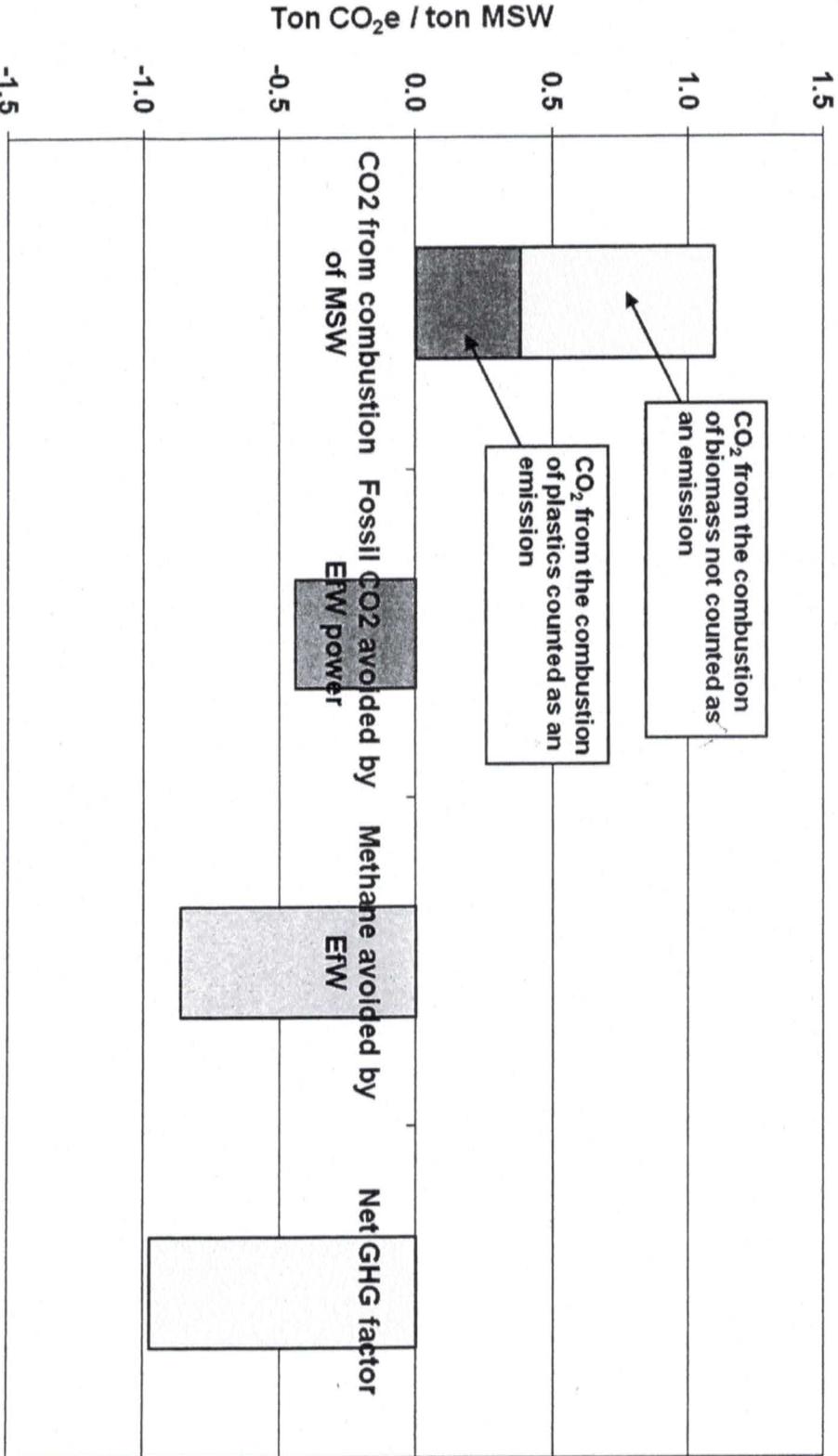
European Environment Agency



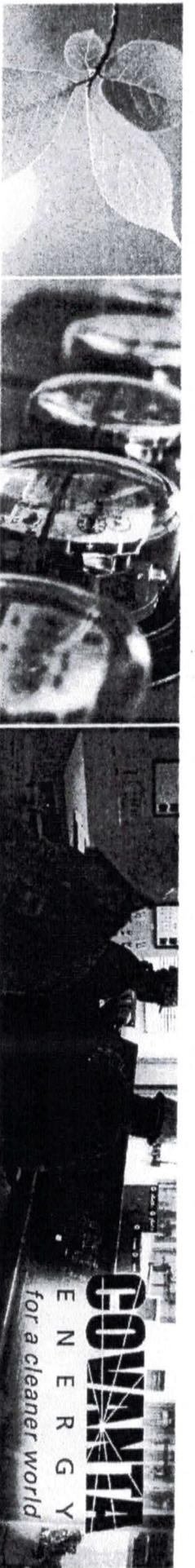
EEA Briefing, "Better management of municipal waste will reduce greenhouse gas emissions"



# EFW is a Net Reducer of GHG



EFW Life Cycle Unit Operations



## Carbon Offsets: Recognizing the Benefits

RGGI should recognize landfill methane avoidance as an offset project type.

- **Voluntary Markets:**

636 tpd capital expansion Lee County EFW Facility in Ft. Myers, FL

- **International / Kyoto Protocol:**

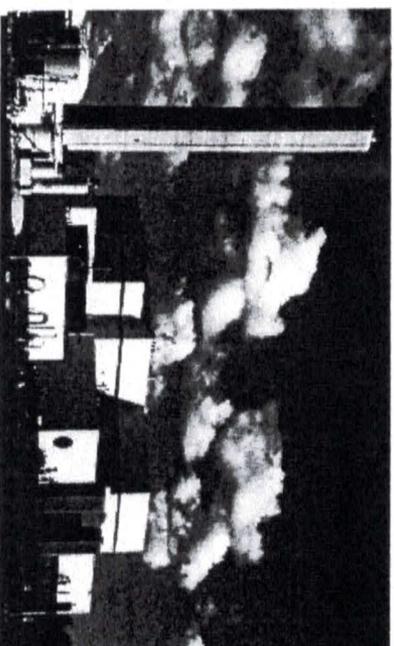
Huzhou Nantaihu facility in China approved and registered as CDM project – Sept 2010 (AM00025)



**Project Description**  
Lee County Waste to Energy (WtE) Facility  
2007 Capital Expansion – Unit #3

10500 Buckingham Road  
Ft. Myers, FL

August 2009





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for a cleaner world



“The performance of the MACT retrofits have been outstanding.”

A 1 B

award (B-A)

Pollutant	1990 Emissions (tpy)	2005 Emissions (tpy)	Percent Reduction
CDD/CDF, TEQ basis*	4400	15	99+%
Mercury	57	2.3	96%
Cadmium	9.6	0.4	96%
Lead	170	5.5	97%
Particulate Matter	18,600	780	96%
HC1	57,400	3,200	94%
SO <sub>2</sub>	38,300	4,600	88%
NO <sub>x</sub>	64,900	49,500	24%

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**MACT COMPLIANCE REPORT**  
 MACT 1.0 (M)

Facility Name: **GOVANTA ENERGY**  
 Address: **10000 W. 10th Ave., Denver, CO 80202**  
 SIC Code: **2811**  
 EPA Region: **8**

Reporting Period: **1990-2005**

**Summary of Emissions (tpy)**

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**Notes:** The information provided in this report is based on the best available information. The data is subject to audit and may be revised. The information is provided for informational purposes only and does not constitute a guarantee or warranty of any kind. The information is provided as a service to the public and is not intended to be used for any other purpose.

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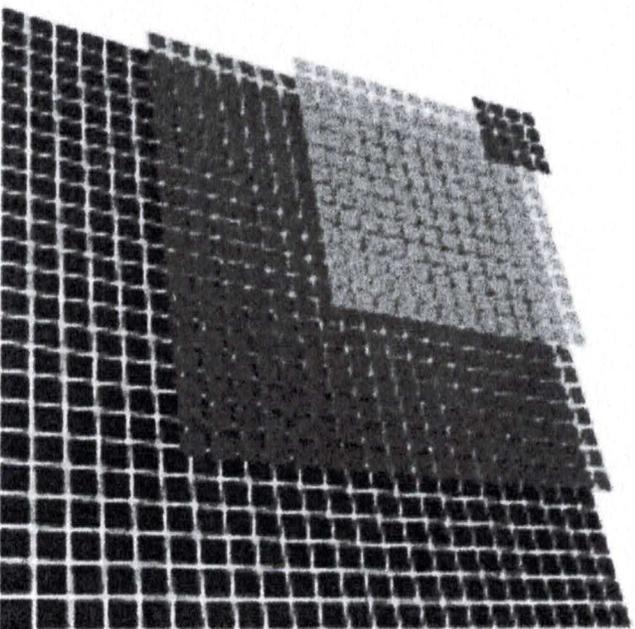
# Energy-from-Waste Is Land Dense

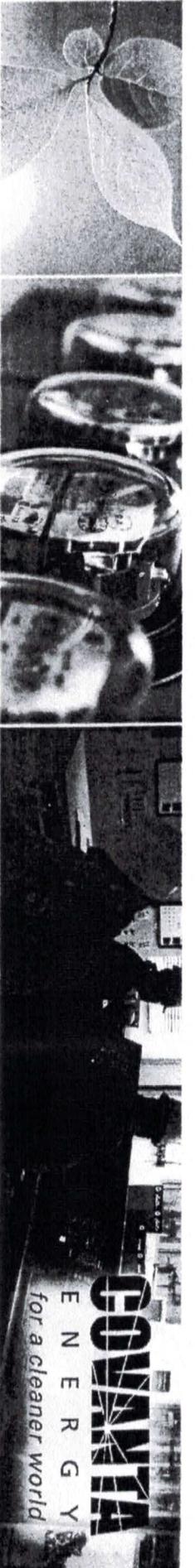
Energy-from-Waste uses less land per megawatt than other renewable energy sources.

- EFW facilities require an average of 0.7 acres/MW
- Landfill gas 27 acres/MW
- Solar requires 8 acres/MW
- Wind requires 18 acres/MW

*How low*

- Cowanta Energy-from-Waste
- Solar Power
- Wind Power
- Landfill gas to energy





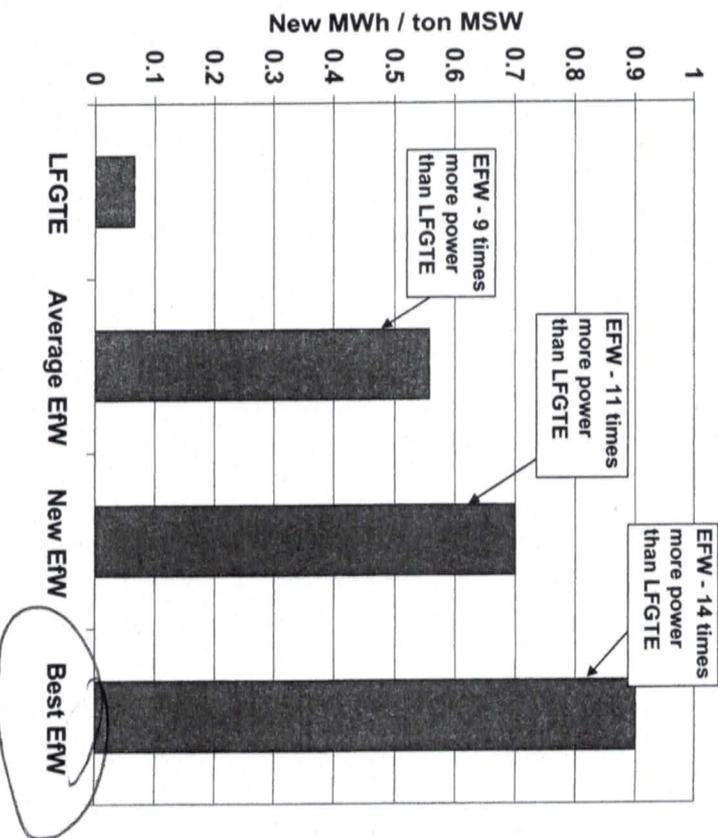
# Renewable Energy

**EFW facilities produces 9 to 14 times the energy per ton compared to landfills.**

- U.S. EPA states that Energy-from-Waste (EFW) “produces electricity with less environmental impact than almost any other source”
- 25 States and the federal government defined EFW as renewable including MD
  - **EFW compliments other renewable sources – 24/7**
  - **One ton of waste ~ 1/4 ton of coal**
  - **One ton of waste ~ 1 barrel of oil**

*offset*

*offset*





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Thank you

