



Benefits of Energy from Waste
Lake County Solid Waste Alternatives Task Force
August 23, 2010

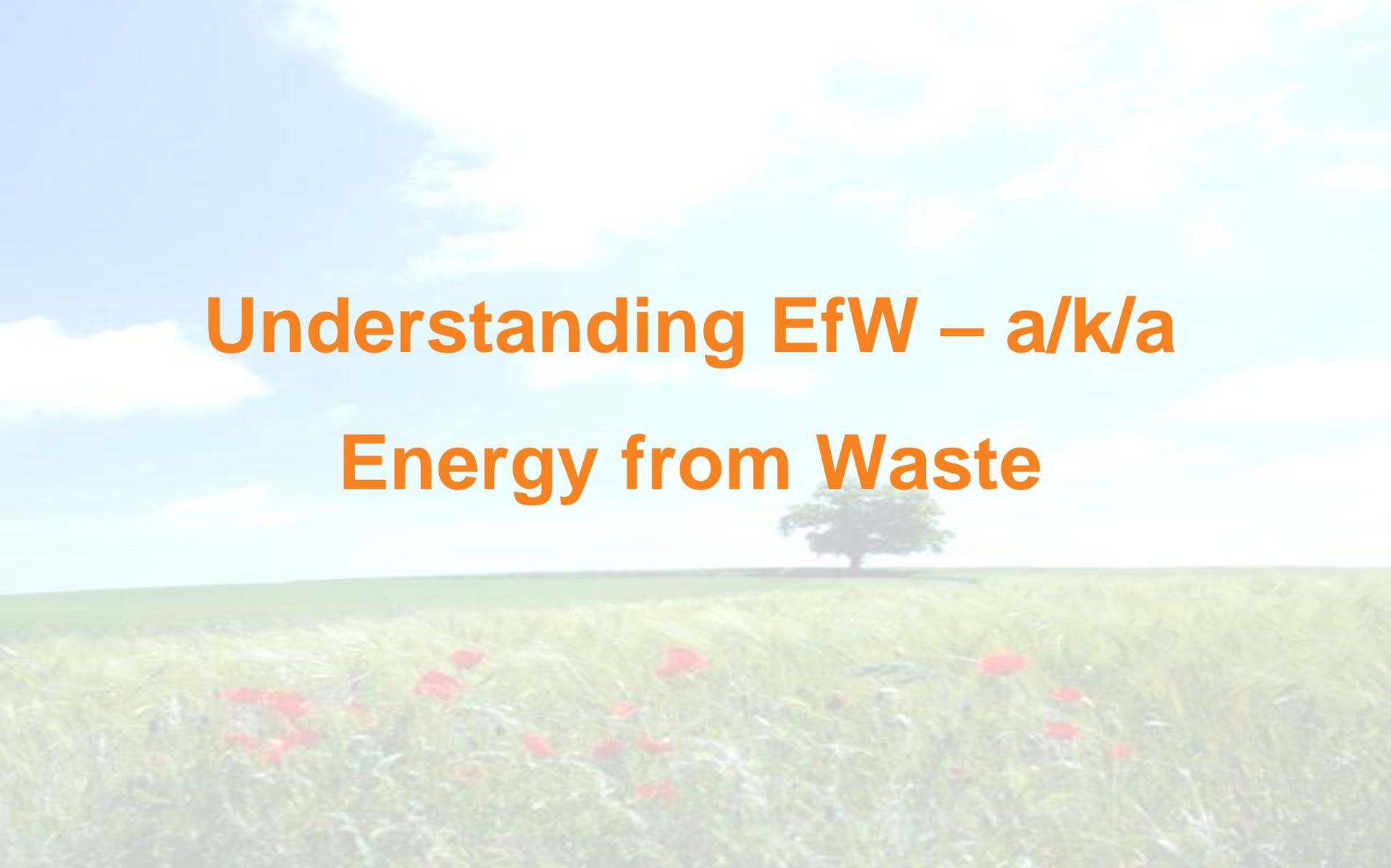


Our Discussion today

- **Understanding EfW: a/k/a Energy from Waste**
- Covanta Energy **corporate overview**
- EfW, an **worldwide perspective**
- EfW's status in the **U.S. and Florida**
- The **environmental advantages** of EfW
- The **economics** of EfW
- Lake County / Covanta **contract specifics**
- The **future of EfW** in Lake County



Understanding EfW – a/k/a Energy from Waste





Understanding EfW: Proven technology uniquely suited to meet some of society's most pressing challenges

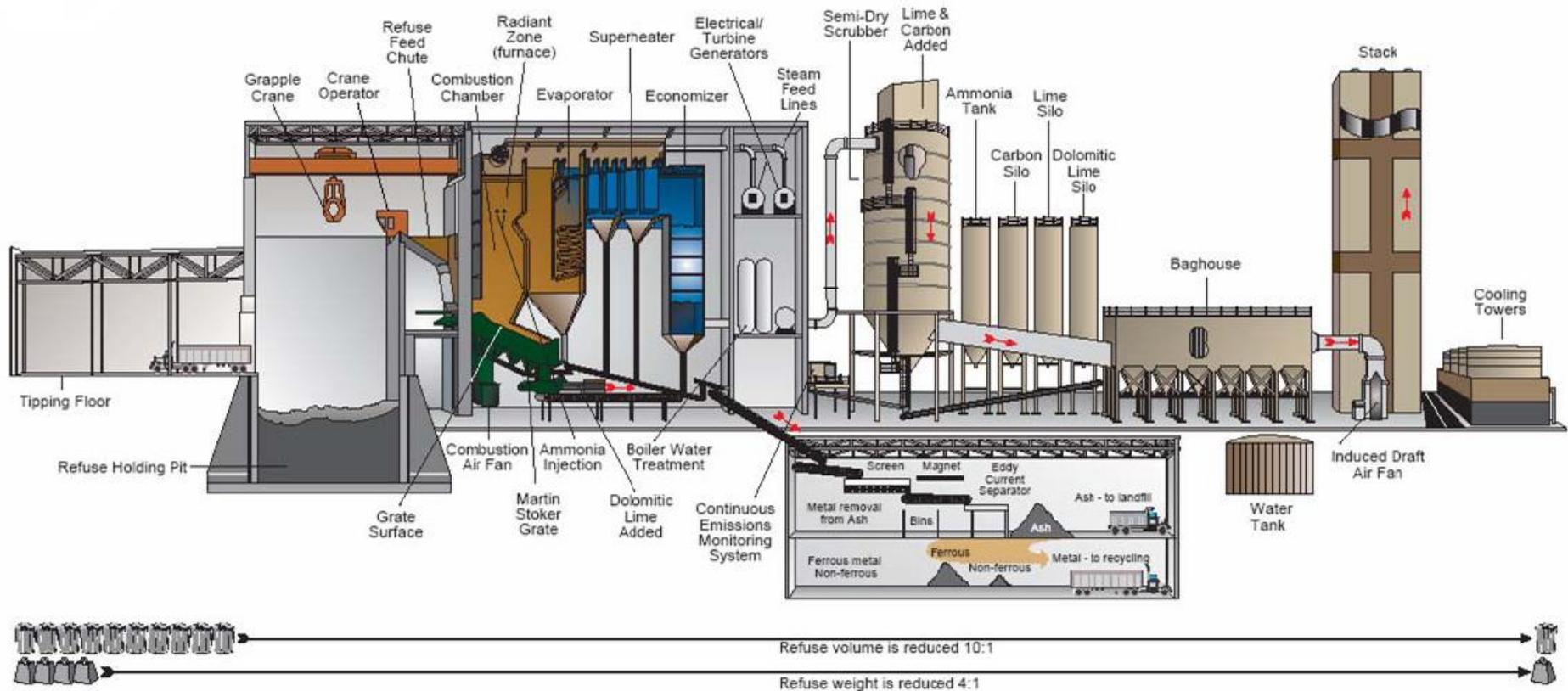
http://www.covantaholding.com/responsible_business_08.shtml

- **Integrated** waste management & disposal
- **Climate change** & greenhouse gas emissions
- Sustainable **land use & recycling**
- **Avoid need** for new landfill space
- Spur **new investment, job creation & infrastructure**
- Reduce **reliance on imported fuel**

Understanding EfW: The Basics

- **Simple household trash**
 - Heat combustion creates steam which is routed to a turbine to continuously create electricity
 - Trash is reduced to 10% of its original volume
- **Generates nearly 9% of U.S. renewable electricity**
- **For every ton of waste processed,**
 - one barrel of oil is not imported; or,
 - a quarter ton of coal is not mined.
- In aggregate, the U.S. EfW industry **saves the equivalent of 30 million barrels of oil per year**

Understanding EfW: Modern Energy-from-Waste



Understanding EfW: Martin[®] Stoker Design Features



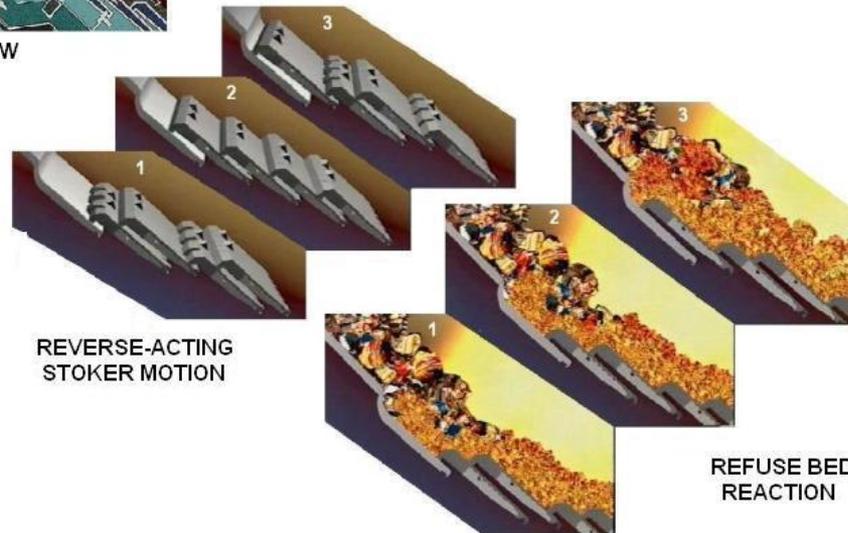
STOKER MIXING REFUSE - SIDE VIEW

ESSENTIAL FEATURES OF THE MARTIN STOKER

- Uphill pushing of grate agitates refuse for maximum combustion efficiency.
- Glowing mass is continuously rotated and mixed for an even bed depth.
- Continuous and efficient supply and distribution of combustion air through burning layer.
- Part of glowing mass is continuously pushed towards the grate front to ensure rapid drying and ignition of freshly fed refuse.
- Feeder and grate actuation by hydraulic power cylinders with electronic control system.



EVEN AIR DISTRIBUTION



REVERSE-ACTING
STOKER MOTION

REFUSE BED
REACTION

“The Power Sector can be gradually de-carbonized by shifting increasing proportions of electricity production to non-carbon fuels, this includes options such as...waste-to-energy, and/or biomass.”

Global Roundtable on Climate Change

Benefits of Energy-from-Waste

Environmental Benefits of EfW

- **Provides sustainable waste disposal as part of an integrated waste management system**
 - *EfW compliments recycling and recovers metals and energy from residual waste*
 - *Reduces volume of waste by 90%*
 - *Reduces long haul trucking of waste to distant landfills*
 - *Doesn't shift trash burden to distant communities or future generations*
- **Global community recognizes EfW as a preferred disposal alternative to landfills**



“Generation of energy from MSW disposal in a waste-to-energy facility not only offers significant environmental and renewable benefits, but also provides great energy diversity and increased energy security for our nation.”

U.S. Council of Mayors

Benefits of Energy-from-Waste

Energy Benefits

- **Generating clean energy from local renewable fuel source**
 - *US EPA states EfW “produces electricity with less environmental impact than almost any other source”*
 - *Baseload power – 24/7/365*
 - *Homegrown power generated in populated areas where electricity is in demand*
- **Promoting Energy Security**
 - *One ton of waste will produce 500 -750 kWhrs*
 - *Avoids burning coal and other fossil fuels*
 - *Potential to produce 3-5% of U.S. electricity*



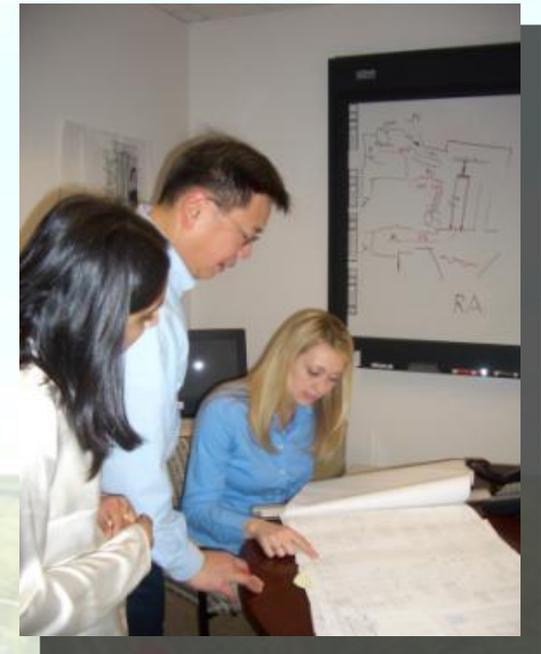
“Energy Innovator Award presented to Covanta Energy in recognition of outstanding effort demonstrated in the deployment of renewable energy services.”

*Alexander Karsner
Assistant Secretary, U.S. Department of Energy*

Benefits of Energy-from-Waste

Economic Benefits

- **Stabilize and energize the local economy**
 - *EfW offers predictable waste disposal costs*
 - *Exporting to distant landfills exposes communities to price uncertainty*
 - *Local solutions for local waste management challenges*
- **Green jobs to construct, operate and maintain**
 - *High-paid, permanent jobs for local workforce*
 - *Goods and services purchased locally*
- **Competitively priced renewable energy source**





Covanta Corporate Overview

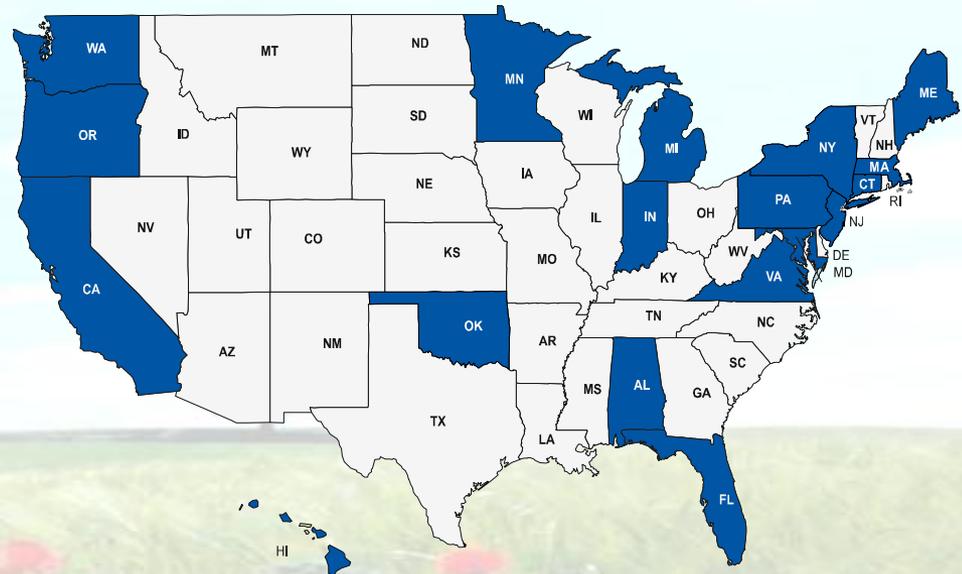




Covanta Overview: Operating Portfolio

- **Corporate Headquarters:** Fairfield, NJ
- **45 EfW facilities worldwide** (240 to 3,000 TPD)
 - *22 Martin Mass Burn*
 - *4 Refuse Derived Fuel (RDF)*
 - *4 Fisia DBA Mass Burn*
 - *3 Enercon Mass Burn*
 - *1 O'Connor Rotary Mass Burn*
 - *1 Aireal Mass Burn*
- **12 Transfer Stations**
- **3 Ashfills and one landfill**
- **7 Biomass-to-electricity facilities**
- **5 Landfill gas-to-energy facilities**
- **2 Hydroelectric facilities**

Covanta Operates 41 EfW Facilities in 18 States



Covanta operates and maintains more combustion technologies than any other company.

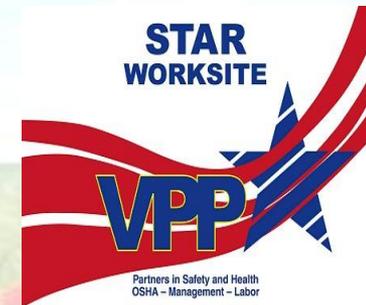


Covanta Overview: Unparalleled Depth, Capabilities, Experience

- **Experienced domestic and international project development and operations team**
 - Senior management **averages more than 20 years** of waste and energy experience;
 - Facility management **average 17 + years experience** in EfW
 - Strong track record of **successful public/private partnerships**
- **Core skills**
 - Operate and maintain **virtually every commercially viable EfW Technology**
 - Environmental **compliance under tight regulation**
 - Management of **construction, start-up and performance testing** of EfW facilities
 - Negotiation and management of **waste supply and other ancillary agreements** with public sector clients
 - Public / community relations – **recipient of numerous environmental & safety awards**

Covanta Overview: Environmental Health and Safety focus

- 38 of our 41 US facilities are OSHA VPP “STAR” worksites
- All 5 Florida facilities are OSHA VPP “STAR” worksites
- Environmental Leadership
 - First to install mercury control
 - New patented low NO_x technology
 - Numerous industry, environmental, and community awards





Covanta overview: Environmental Policy

Five Principles

- Protection
- Compliance
- Conservation
- Qualification
- Commitment

‘Environmental Awareness and performance is the responsibility of every employee.’



Environmental Policy

Our environmental policy is embodied in five principles:

PROTECTION:

We will conduct our business in an environmentally sound manner that is protective of human health and the environment.

COMPLIANCE:

We will manage our work to assure compliance with all applicable environmental regulations and requirements.

CONSERVATION:

We will minimize impact to the environment by encouraging pollution prevention at the source, waste minimization, recycling, and responsible disposal of production by-products.

QUALIFICATION:

We will ensure that all employees have the necessary information, resources and training to make informed environmental decisions.

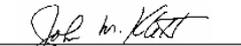
COMMITMENT:

Covanta is committed to be an industry leader in environmental protection by achieving superior awareness and performance through a process of continuous improvement.

Environmental awareness and performance is the responsibility of every employee. By embracing this philosophy, we all can make a difference.




Anthony Orlando, President and CEO


John M. Klett, Senior Vice President & COO

Covanta Overview: Recognition

GULF COAST Business Review

DECEMBER 26 - JANUARY 1, 2009

FIRST UP

Power Play

Companies and environmental groups are pushing for more renewable energy in Florida, which would increase competition among energy providers.

There is a major debate going on in Florida regarding the new energy standards that Gov. Charlie Crist would like to see instituted.

Among the consequences if they are implemented, a new wave of competition could come to the Florida utility market.

Recent rulemaking by the Florida Public Service Commission, which regulates utilities, did little to move the needle on them.

The governor appoints the commission members. But the commission answers to the Legislature, which wants a new policy on the standards by Feb. 9.

The rulemaking is known as the RPS — renewable energy portfolio — which is how the state uses renewable energy, such as biomass and solar, to meet mandated standards. A lot of the energy Florida uses comes from non-renewable sources, such as coal, fuel oil and natural gas.

There is a group called REAL (the Renewable Energy Alliance) that has been formed among private companies and moderate environmental groups that hopes to beef up the gov-



Joe Treshler, vice president of business development and community affairs for Covanta Energy, believes Florida's economy and environment would benefit from more renewable energy plants.

moderate the cost of renewable energy and create jobs to stimulate the economy and improve the environment.

Investor-owned utilities, such as Florida Progress, Florida Power & Light and TECO Energy, want to build renewable facilities and control the market. So far, the PSC rulemaking has supported them.

Covanta Energy, which has been active in building energy-from-waste plants, has been pushing for the state to meet the governor's standards more quickly.

Covanta believes energy from waste can contribute to Florida's Renewable Energy Portfolio and that the PSC's proposed rules not only do not support renewable energy generation, they impede it dramatically.

Simply put, Covanta takes household trash and uses it as fuel to generate energy in the form of electricity. It operates 35 of these facilities throughout the country and has four of its 11 Florida facilities in the Tampa Bay area.

Florida has the most energy-from-waste facilities of any state and processes about 15% of the solid waste statewide. The Environmental Protection Commission considers energy from waste to be one of the cleanest forms of electrical generation, cleaner than coal or fuel oil.

Right now in Florida, the electricity generated from the EFW facilities — all 11 of them — is about 517 megawatts vs. about 55,000 megawatts of capacity. Energy from waste accounts for about 50% of renewable energy on the state's electrical grid.

The governor wants 20% of the state's energy base to be in renewable by 2020. Commissioners at the PSC suggested 2041.

They (the commissioners) didn't do anything to allow for good competition," says Joe Treshler, vice president of business development and community affairs for Covanta Energy. "It is still in the hands of investor-owned utilities. We're not seeing any change."

To Treshler, Covanta and other companies are seeking a level playing field to compete on, which means getting paid a fair value for electricity and holding the current utilities more responsible for meeting the standards.

He believes a rule change would actually help the utilities by spreading the risk for reliable energy production to other companies.

"I think the commissioners recognize the need to make it happen," Treshler says. "I can't say that for the staff. Some maybe have been there too long."

— Dave Szajmowski

Joe Treshler, Covanta Energy: They (the commissioners) didn't do anything to allow for good competition. It is still in the hands of investor-owned utilities. We're not seeing any change.

TAMPA, FLORIDA • ONLINE AT TBO.COM • LIFE, PRINTED DAILY.

THE TAMPA TRIBUNE

and The Tampa Times

Covanta seeking mercury thermometers, thermostats at Earth Day event

By KLINT LOWRY | The Suncoast News

April 22, 2009

Covanta Pasco will hold its 13th annual Earth Day celebration this Saturday at Crews Lake Wilderness Park but won't mind at all if people attending come bearing a toxic substance.

As always, the event will feature plenty of educational and fun activities designed to teach, entertain and inspire. For 2009, however, the Earth Day observance will offer people a chance to safely get rid of items containing mercury and earn a few dollars in the process.

The Earth Day event will be held from 9:30 a.m. until 2 p.m. April 25 at the 113-acre county park at 16739 Crews Lake Drive.

Its activities will span a wide variety of interests, from Croc Encounters to the Central Pasco & Gulf Railroad trains, an under-construction railroad modeled after the Orange Beltway railway. Learn how to build a rain barrel or take a walk back in time at the antique car show.

Kids' crafts and educational displays will focus on interesting ways to keep Mother Earth healthy, while vendors will offer various keys to healthier living. Folks who like to directly add to the greening of the Earth will be able to purchase plants from the Florida Native Plant Society.

The celebration culminates with the release of 10,000 ladybugs in a colorful display of environmentally friendly gardening. Ladybugs like to dine on aphids and other pests that can harm plants.

Covanta Pasco operates the Pasco County Solid Waste Resource Recovery Facility. The plant on Hays Road burns up to 1,000 tons of solid waste per day, converting it into energy. The facility also has a public drop-off center where residents can bring nonhazardous household items for disposal.

In addition to its on-site operations, the company sponsors many public, private and nonprofit organizations with money, equipment, and time and labor. Covanta Pasco is a member of the Florida Recycles Today organization and participates in recycling events throughout the county.

Covanta Pasco is also involved in our local Keep American Beautiful Affiliate; Keep Pasco Beautiful. The company organizes and participates in two countywide cleanups per year, and sponsors local recycling art contests

This year, the Earth Day event will include a specific environmental issue, as it will launch its new Mercury Bounty program. Covanta Energy will give guests \$5 gift cards for each of their mercury-based

thermometers and thermostats they bring for disposal.

Mercury-based thermostats were once the standard, produced by more than 60 companies nationwide, according to statistics provided by Covanta Energy. Most halted production within the last three years although electric thermostats have been steadily replacing mercury for more than a decade.

Mercury, a heavy metal element, can damage organs such as the brain, lungs and kidneys.

Although most homes now use digital thermometers and electric thermostats, many of the units they have replaced have not been disposed of. Likewise, many households still have old thermometers for cooking, candy-making and medical purposes lying in drawers or packed away in garages.

An average wall thermostat contains 4 grams of mercury, which nearly equals the mercury content of 1,000 compact fluorescent lights. Mercury thermostats can be identified by removing the plastic cover. Underneath will be glass vial with a blob of bouncing quicksilver.



Covanta Overview: Recognition

Place your offer in front of a new audience by sponsoring the reader poll online!
dailycommercial.com

Covanta sees trash as treasure

By Sean Thomas
December 17, 2005

OKAHUMPKA – Tucked away in an industrial park, the tower of Covanta Lake II Inc. stands above the skyline of the waste-to-energy plant. The plant in Okahumpka provides garbage disposal for Lake County, some cities and other local governments outside the county.

The process of turning your ordinary household waste into electricity is lengthy and heavily regulated. Business Manager Teri Staniec calls garbage the "ultimate alternative fuel."

Staniec said that with the continual influx of people to Florida, there will always be a need for disposal of solid waste. With a waste-to-energy plant, Staniec said, two problems are solved: high energy costs and garbage disposal.

The life of your trash

Trucks drive into the facility six days a week and drop garbage into "the pit." From the 85-foot-deep pit, shift engineers like Joe Amato sift through the trash with a 6,400 pound crane. Amato, who has been at the plant since it opened 15 years ago, has to mix the trash so that the trash being burned is a semi-consistent load.

Amato said years of experience have allowed him to know what a good mix of household, yard and other materials will make a good burning mix. By moving the trash into towering spires, he can be sure to catch large items, like water heaters and sinks, that get tossed into the garbage.

The trash is carried by conveyer into the boilers that burn between 1,800 to 2,000 degrees, Staniec said. Monitors inside the control room allow

engineers to keep track of every single aspect of the facility.

The hot burning trash heats water into steam that powers a turbine, creating the electricity the plant sells. At any given moment, the plant is producing 13.5 megawatt hours of electricity, enough to power 13,500 homes, Staniec said.

Staniec said about 10 percent of the facility is dedicated to burning trash and the other 90 percent is dedicated to environmental controls.

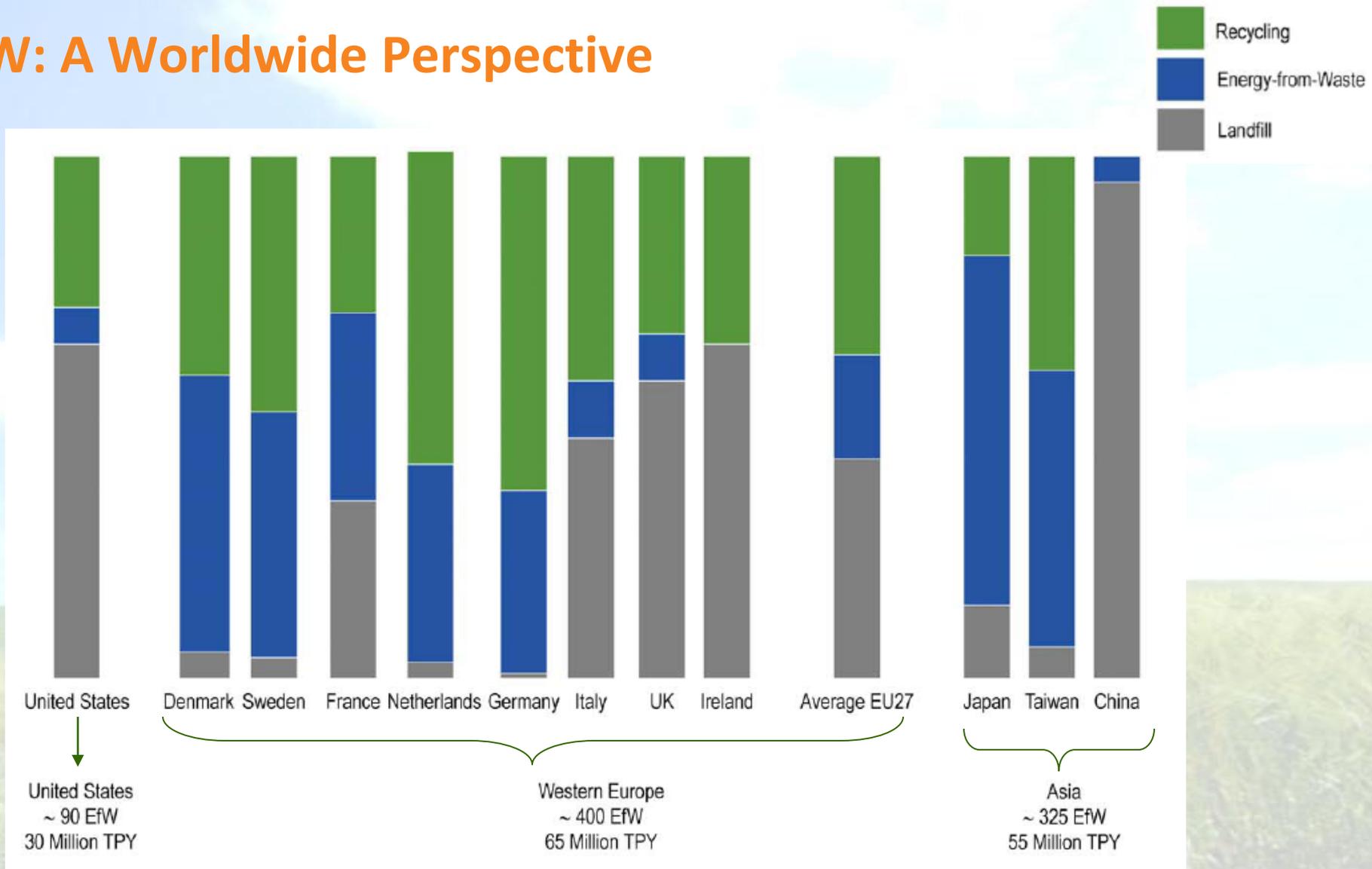
The control room monitors gases, metals and anything else the garbage could possible give off. Several systems help remove dangerous elements from the gases given off from the burning refuse. At the very end of the process are bag houses, which Staniec calls "744-foot-long vacuum cleaner bags." The bags pull all



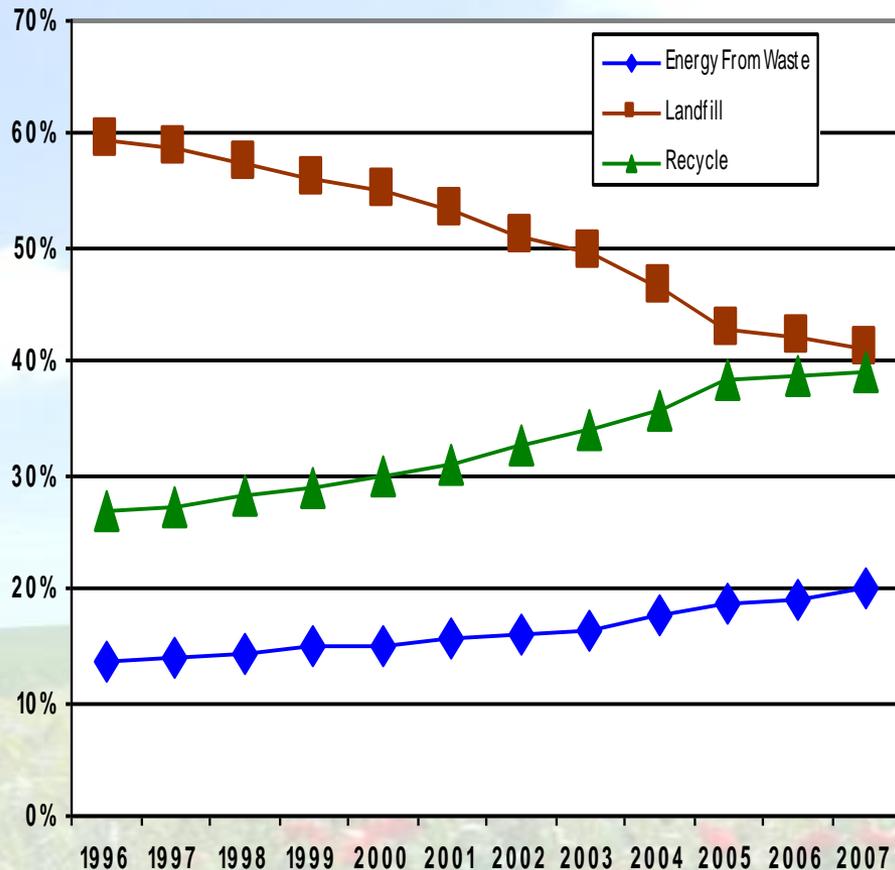
EfW: A worldwide perspective



EfW: A Worldwide Perspective



EFW: A worldwide perspective: In Europe, the amount of MSW managed by recycling and EfW is growing in the EU-27 due to Directives designed to minimize landfilling



According to The Fourth Assessment Report by the European Environment Agency, “there is no evidence to support” the argument that “incineration of waste with energy recovery hinders the development of recycling.”*

* Source: http://www.eea.europa.eu/publications/state_of_environment_report_2007_1/chapter6.pdf



EfW's status in the United States and in Florida



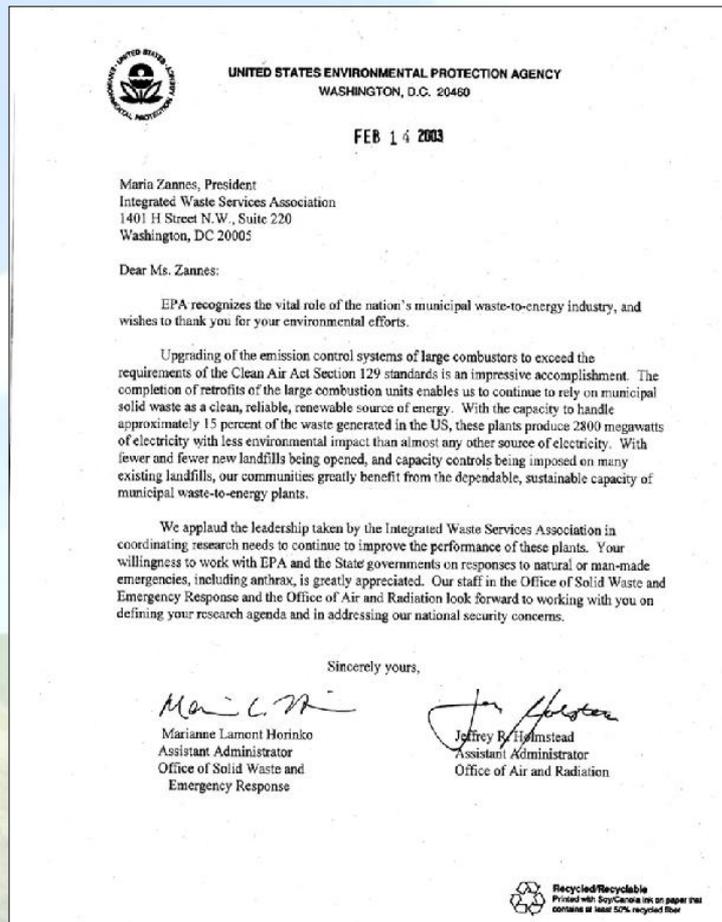
EfW in the US: 87 Facilities

– 11 in Florida



More than any
other state

EfW: An Environmental Success Story



- *“Upgrading of the emissions control systems of large combustors to exceed the requirements of the Clean Air Act Section 129 standards is an impressive accomplishment. The completion of retrofits of the large combustion units enables us to continue to rely on municipal solid waste as a clean, reliable, renewable source of energy. With the capacity to handle approximately 15 percent of the waste generated in the US, these plants produce 2,800 megawatts of electricity with less environmental impact than almost any other source of electricity.”*

- Letter to IWSA from Assistant Administrators
Jeff Holmstead and Marianne Horinko, US EPA

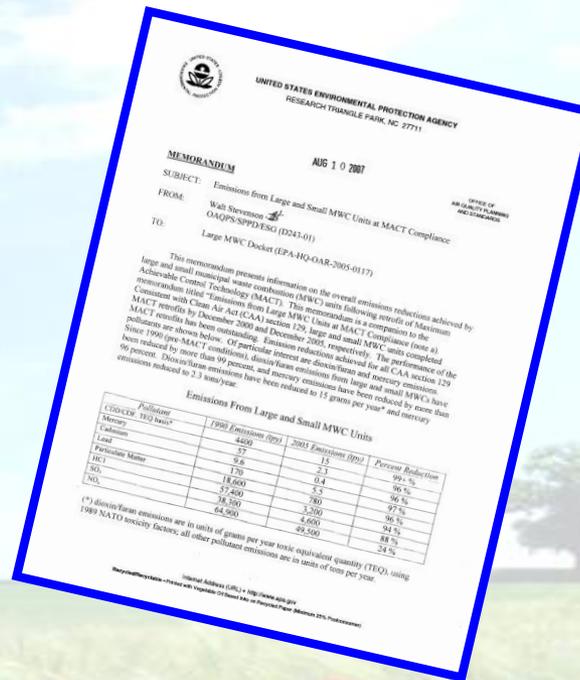
- February 2003

EfW's status: Environmental performance

Clean Air Act

Amendments of 1990

“The performance of the MACT retrofit has been outstanding.”
USEPA 8/10/2007



Pollutant	1990-2005% reduction
Dioxin	99
Mercury	96
Cadmium	96
Lead	97
Particulate Matter	96
HCl	94
SO ₂	88
NO _x	24

EfW's status: Covanta Environmental performance

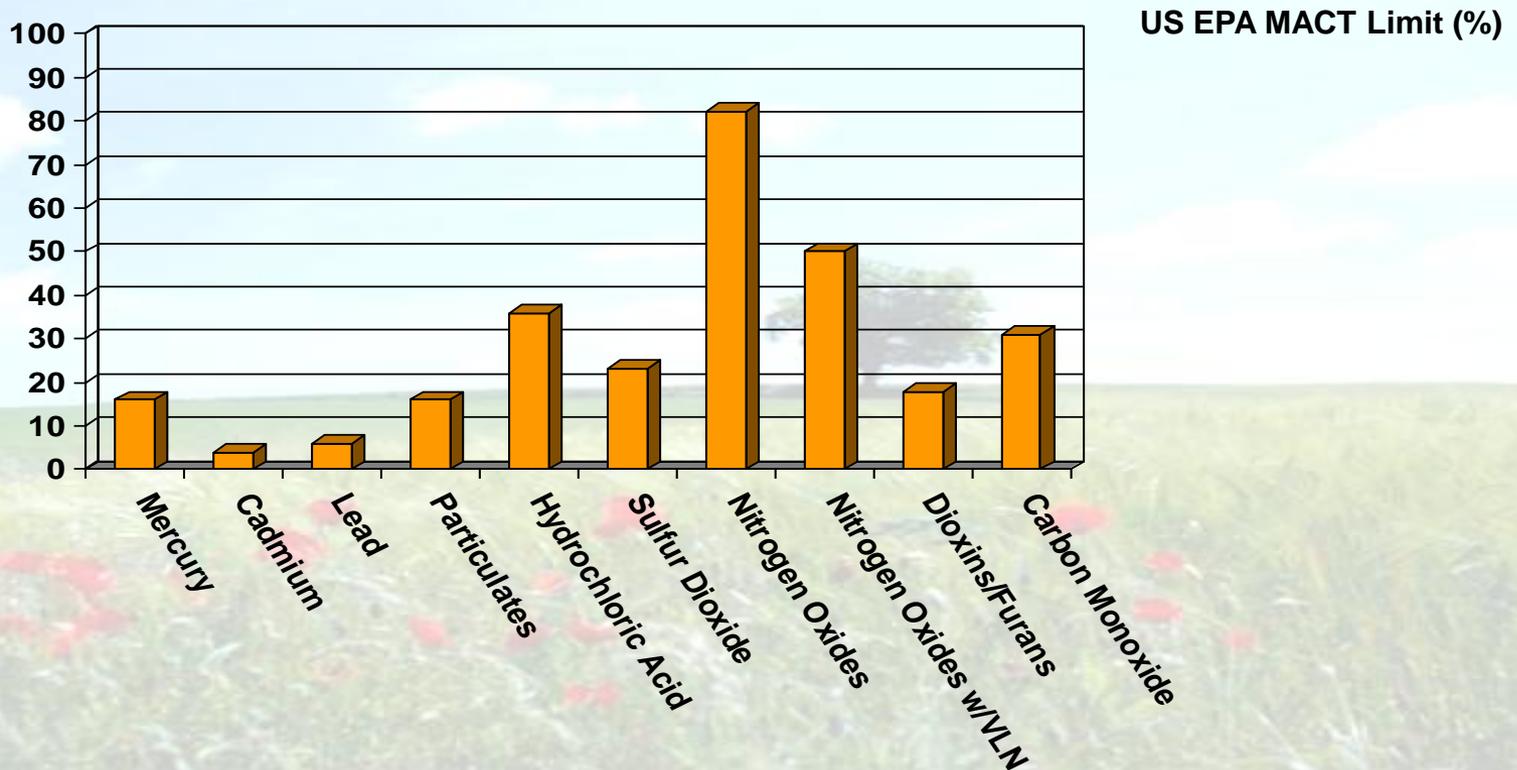
- Technology, operating protocols, employee incentives and skilled operators result in superior environmental performance
- Typical operation 60-80% below EPA limits
- Leadership in developing/applying technologies
 - *LNTM (low NO_x Technology)*
 - *Carbon injection for mercury control*
- Numerous awards
 - *28 EPA Performance Track facilities*
 - *Sustainable Florida Leadership*
 - *Michigan Clean Corporate Citizen*
 - *Virginia Environmental Excellence*
 - *New Jersey Clean Communities*

Year	Operating Hours	Compliance %
2001	612,739	99.8
2002	628,035	99.8
2003	628,775	99.8
2004	637,868	99.9
2005	630,228	99.9
2006	631,214	99.9
2007	653,995	99.9
2008	705,217	99.9
8-Year Average	643,881	99.9%

Our goal is 100% compliance

EfW's status: Covanta Environmental performance

Demonstrating our ongoing commitment to the environment, our EfW facilities operate with average emissions levels (as a percentage) far below U.S. EPA permitted limits:



Lifetime Landfill Gas Collection Efficiency

A life cycle comparison requires a lifecycle collection efficiency

Stage	Stage Description	Length (yrs)	% of Total CH ₄ in Phase	Collection Efficiency in Phase
1	Daily cover – no collection	3	13.9%	0%
2	Intermediate cover & collection	4	15.6%	35%
3	Final collection system	3	9.8%	50%
4	Final Closure & cap	30	47.1%	75%
5	Post closure – No collection	60	12.9%	0%
		100		46%

Two Choices: Energy-From-Waste vs. Landfill

**252 Million tons
of trash to
Landfills**



EFW

30 Million tons to EFW



LFGTE

**Energy Generated from Landfills -
billion kWh**

20-60 kWh/ton

**Landfill Gas
Used for Energy**

**Renewable energy generated from EFW
Facilities - 15 billion kWh**

550 kWh/ton

Sources:

DOE/EIA, EIA-906 year 2002

Kaufman et. al., [Biocycle](#), Jan 2004

Today's modern EFW facilities avoid 30 million tons per year of CO₂ equivalent by avoiding CO₂ from fossil fuel power plants and methane from landfills.

Existing MSW Landfills in Florida

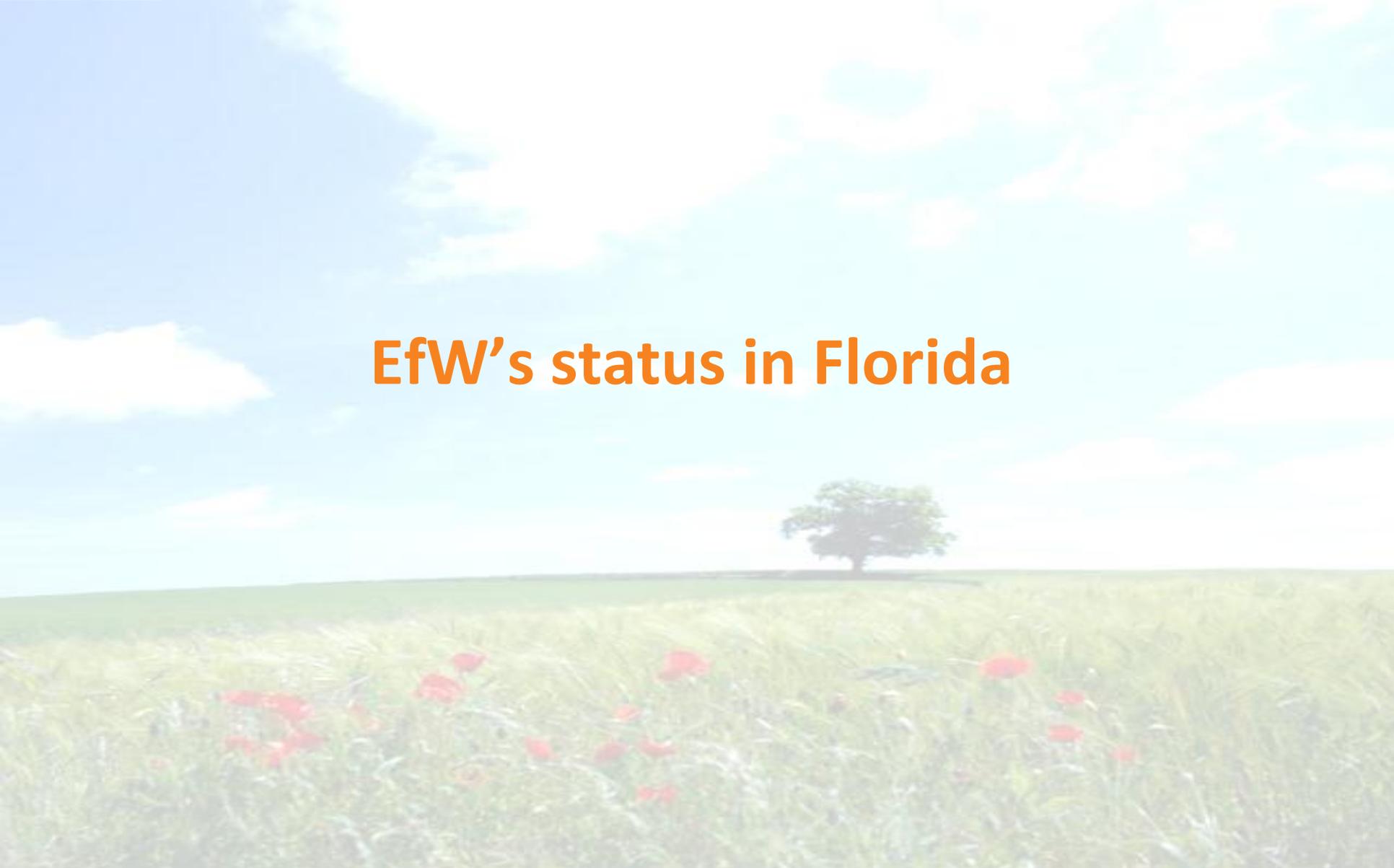
There are 66 active MSW landfills in Florida.



- Uncontrolled and unmonitored air emissions
- US EPA emission factor database, landfill gas contains 170 air pollutants, 45 of which are Title III air toxics
- Risk of water contamination from landfill runoff threatens the Florida Aquifer and the Everglades
- At the mouth of the Everglades is one of the top 10 largest landfills in the country:
 - 2,400 Acres
 - 8,461 TPD
 - Nearly 3 million tons a year



EfW's status in Florida



Florida's Energy-from-Waste Success Story



- Florida has 11 Energy-from-Waste Facilities
- EFW is Florida largest source of renewable power
 - Combined, Florida's 11 EFW facilities produce:
 - More than 50 percent of the State's renewable electricity
 - Less than 1 percent of the State's total power needs
- Covanta is Florida's largest generator renewable electricity
 - We produce over 1,000 giga-watt hours per year, enough to power 100,000 FL homes

DRAFT

Executive Summary » Step 3 » *Solid Biomass Technical Potentials*

A summary of the solid biomass resource potential is below.

Florida Solid Biomass Technical Potential (excludes biomass and waste currently used for energy production)					
Biomass Resource	Quantities (dry tons/yr)	MWh/yr (25-40% efficiency)	MW (85% cap. factor)	Comments (See main text for details)	
Biomass already collected or generated onsite	Mill residues	2,000	2,345 – 3,751	0.3 – 0.5	<ul style="list-style-type: none"> Unused portion only (<1% of total produced)
	Municipal solid waste	15 – 26 million (wet tons)	9,907,000 – 16,930,000	1,330-2,273	<ul style="list-style-type: none"> Range based on different solid waste generation assumptions for 2020 timeframe 650 kWh/ton net output assumed
	Animal waste	440,000 – 840,000 (wet tons)	257,000 – 673,000	34 - 90	<ul style="list-style-type: none"> Poultry litter & horse manure only
	WWTP residuals	134,000 – 791,000	90,000 – 793,000	12 - 107	<ul style="list-style-type: none"> 20-30% net electrical efficiency
	Subtotal	15.8 – 27.7 million¹	10,256,000 – 18,400,000	1,377 – 2,471	
Biomass available but not currently collected	Logging residues	2.3 million	2,635,000 – 4,216,000	354 - 566	<ul style="list-style-type: none"> All existing residues from logging operations left in the forest, as reported by the US Forest Service
	Agricultural residues	0.4 – 3.6 million	410,000 – 5,904,000	55 - 793	<ul style="list-style-type: none"> Range based on existing estimates for Florida
	Subtotal	2.7 – 5.9 million	3,046,000 – 10,121,000	409 – 1,359	
Biomass Potentially Available	Net change in “growing stock” volume	3.0 million	3,755,000 – 6,900,000	733 – 1173	<ul style="list-style-type: none"> “Net change” in merchantable timber volume in all growing stock trees >7-inch diameter. Based on 2006 data; likely to decrease in the future
	Net change in “non-growing stock” volume	1.1 million	1,425,000 – 2,280,000	171 - 306	<ul style="list-style-type: none"> “Net change” in volume in all non-growing stock trees >5-inch diameter. Based on 2005 data.
	Intensive pine silviculture	3.5 million	4,000,000 – 7,057,000	592 – 948	<ul style="list-style-type: none"> Assumes intensification of management on 500,000 acres of existing planted pine forest (10%) due to market or other incentives
	Energy crops on reclaimed lands that are not farmland	1.2 – 5.2 million	1,586,000 – 10,729,000	213 – 1,441	<ul style="list-style-type: none"> Low acreage: 123,000 acres of clay settling areas High acreage: 325,000 acres total reclaimed land
	Energy crops on existing farmland	14.4 – 22.4 million	18,196,000 – 45,071,000	2,444 – 6,053	<ul style="list-style-type: none"> 1.3 million acres by 2020 (14% of total farmland)
	Forest understorey and other forest biomass		Insufficient data		<ul style="list-style-type: none"> Several million tons/yr may be available, but more analysis required to determine sustainable quantities
	Algae		Insufficient data		<ul style="list-style-type: none"> High yields possible, but more analysis required Non-lipid fraction could be used for electricity
	Subtotal	23.3 – 35.2 million	29,372,000 – 71,145,000	3,945 – 9,555	
Total	41.8 – 68.7 million¹	42,673,000 – 99,666,000	5,960 – 13,750		

Report to FL PSC identifies renewable energy generation potential of municipal solid waste in Florida to be 1,330 to 2,273 new MWs by 2020 Navagant Dec 2008

1. Total includes both dry quantities and as collected quantities, where dry tons estimates were not available, mainly for municipal solid waste.



Covanta's Role in Florida

- **Employs about 400 people**
- **Operates 5 EfW Facilities**
 - **Lee County EfW Facility (1,836 TPD)**
 - **Hillsborough County EfW Facility (1,800 TPD)**
 - **Pasco County EfW Facility (1,050 TPD)**
 - **Lake County EfW Facility (528 TPD)**
 - **Miami Dade EfW Facility (3,000 TPD)**
- **Largest in-state generator of renewable electricity**
 - Enough to continuously power approximately 160,000 FL homes
- **During over 20 years of operation in Florida**
 - Reliably produced 11.5 million MW hours of Renewable Energy
 - Safely disposed of approximately 45 million tons of MSW
 - Recovered for recycling over 670,400 tons of ferrous metal
 - Recovered for recycling over 36,000 tons of non-ferrous metal

Palm Beach Solid Waste Authority – *Currently in planning*

3,000 EFW Facility



- Proven Mass Burn technology stipulated
- An addition to the Authority's existing 1,800 TPD RDF facility completed in 1991
- Completion targeted for 2015
- > 75 MW net electrical generating capability
- Publicly-owned facility



2007 Facility Expansion: Lee County



1,836 TPD EfW Facility

- Two 600 TPD and one 636 TPD Martin[®] combustion units
- Originally designed as 1,200 TPD facility in 1994
- 636 TPD 3rd unit expansion completed in Oct 2007
- 57.3 MW electrical generating capability
- Publicly owned
- 2 time Power Gen International Renewable Energy Project of the Year Winner.

2009 Facility Expansion: Hillsborough County

1,800 TPD EfW Facility

- Three 400 TPD Martin[®] combustion units plus new 600 TPD unit
- Originally designed as 1,200 TPD facility completed in 1987
- 600 TPD 4th unit completed Fall 2009
- 46.5 MW electrical generating capability
- Publicly owned





EfW in Lake County

- **Covanta background/history**
- **Waste disposal agreement specifics**
 - **Performance**



Lake County Resource Recovery, Okahumpka

528 TPD EfW Facility



- Two 264 TPD Martin[®] combustion units
- Opened: January 1992
- Nameplate generation capacity: 14.5 MW (enough for ~ 11,000 homes / businesses)
- Total tons MSW processed: >3 million

EfW in Lake County: Long-term, environmentally superior solution for solid waste disposal

- More than **3 million tons** of waste processed since January, 1992
- More than **1.829 million megawatt** hours of electricity produced
- More than **750,000 tons of coal NOT USED** (equal to 15,000 railroad cars)
- More than **180 acres** of landfill space preserved



EfW in Lake County: Environmental benefits | emissions

Lake Facility emissions	Facility Permit Limit/Unit	2007-2010 Results	% Below Facility Limit
Particulate (mg/dscm)	25	3.51	85.9%
Dioxin/Furan (ng/dscm)	30	8.02	73.2%
Mercury (ug/dscm)	50	8.53	82.9%
Lead (ug/dscm)	400	17.94	95.5%
Cadmium (ug/dscm)	35	2.39	93.1%
SO2 (ppm)	29	2.20	92.4%
Nox (ppm)	205	178.25	13.0%
CO (ppm)	100	9.12	90.8%
HCl (ppm)	29	11.13	61.6%

Stimulative Economic Benefits: Lake County

- **Stable, high-wage jobs**
 - 36 full-time employees + 45 (estimated) secondary jobs
 - Average tenure of Lake facility employees: 8.5 years
 - Total annual expenditures, (payroll, purchases, etc): \$8-9 million / year (more than half expended locally)
 - Annual economic impact: More than \$12 million / year
- **Preservation of landfill space / extension of landfill life**
 - Approximately 180 acres preserved since 1992
 - Life of Astatula landfill extended to ??
- **Direct benefit to Lake County tax rolls**
 - Estimated \$650,000 / year (beginning in 2014)
 - Total estimated sales tax: \$180,000 / year (beginning in 2014)



Background/History

- The EfW Facility was built to **protect Lake County's environment** and to **preserve your existing landfill/solid waste management resources**.
- The Facility was financed with Industrial Development Revenue Bonds – **just like 14 other privately developed project-bond issues** in Lake County.
- Many of the people who started with Covanta on this project as far back as 1988 **still work together with Lake County** on the Facility's operations & administration.
- Working together, Covanta and Lake County have made **great strides to reduce Lake County's cost** of solid waste management service

Working relationship: Waste Service Agreement

- **Term – total** - 25 years - renegotiated in Dec 2004, ending 6/30/2014
- **Waste Deliveries**
 - Lake County Guaranteed Annual Tonnage (GAT): 163,000 TPY
 - Excess Tonnage: 8,000 to 10,000 TPY over GAT
 - Merchant Waste: up to 8,000 TPY by Covanta
 - Additional Waste Service Fee: (\$16.94 est) paid on all TPY over GAT
- **Compensation**
 - O&M Fee – Approximately \$8 million/yr (2010) with annual escalation tied to 5 yr rolling average of PPI, CPI – All Urban Consumers and CPI - Miami.
 - Energy Revenues – Split 90% to Lake County and 10% to Covanta
 - Recovered Metals Revenues – 100% to Covanta; Recycling credits to Lake County
 - Lake County receives payment (currently \$48.92) for every ton of merchant waste Covanta delivers

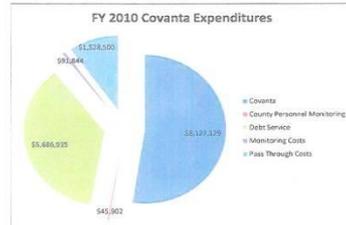
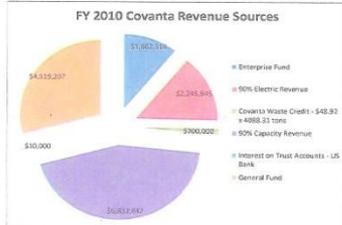
Working relationship: Waste Serve Agreement cont.

- **Pass Through Costs:** Debt Service, Property Taxes, Sales Taxes, Insurance, Electricity, Various Permits & Licenses, Natural Gas, Carbon & Ammonia
- **Performance Guarantees**
 - Process 163,000 TPY of acceptable waste
 - Generate 519.5 Kwhrs/ton net with waste @ 5000 Btu/lb
 - Operate Facility within the limits of all required Federal, State and Local permit requirements
 - Operate Facility with limits of established reagent limits
- **Uncontrolled Circumstance / Change in Law Liability – Lake County**

Results: The Lake County-Covanta Lake Success Story

ANNUAL COVANTA CONTRACT REVIEW

	Actual October 2004	Actual October 2005	Actual October 2007	Actual October 2008	Actual October 2009
Total Operations & Maintenance Charge (Monthly)	\$ 572,861	\$ 591,319	\$ 615,256	\$ 644,272	\$ 675,177
Charge For Obtaining & Maintaining Outside Waste (Monthly)	\$ 11,212	\$ -	\$ -	\$ -	\$ -
CUPPO Retiree Chemical Charge (Monthly)	\$ 4,416	\$ -	\$ -	\$ -	\$ -
Air Conditioning Retrofits/Retiree Linc Charge (Monthly)	\$ 14,768	\$ -	\$ -	\$ -	\$ -
Property Taxes (Annual)	\$ 1,074,780	\$ 715,002	\$ 624,489	\$ 611,169	\$ 602,421
Debt Service (Annual)	\$ 7,794,132	\$ 6,958,140	\$ 6,708,400	\$ 6,708,400	\$ 6,686,933
Insurance (Fixed Year Cost)	\$ 406,422	\$ 236,266	\$ 196,437	\$ 202,068	\$ 192,711
Additional Waste Service Fee % Reduction (Per Ton-Max @ 6,000 tons)	\$ 7.04	\$ 6.26	\$ 7.60	\$ 4.62	\$ 2.60
Air Disposal Bonus Fee Budgeted	\$ 1,000,000	\$ -	\$ -	\$ -	\$ -
Energy Revenue (FY 2005, FY 2006, FY 2007, FY 2008, FY 2009)	\$ 6,792,288	\$ 7,258,271	\$ 7,758,922	\$ 8,111,404	\$ 8,619,903
Energy Price (Average for FY 2004, FY 2005, FY 2007, FY 2008, FY 2009)	\$ 22.5463	\$ 24.0580	\$ 25.6604	\$ 26.4632	\$ 28.3242
Total Covanta Budget (No Settlement Charges - Annual - FY 05, FY 07, FY 08, FY 09, FY 10)	\$ 11,250,000	\$ 8,132,000	\$ 7,517,425	\$ 7,734,877	\$ 6,186,322
Budget Change From FY 2002	\$ (5,118,000)	\$ (5,118,000)	\$ (5,722,579)	\$ (3,515,121)	\$ (5,063,477)
Millage Transfer	0.03	0.4497	0.2192	0.1443	0.1489
Waste Available For Guaranty (FY 2006, FY 2007, FY 2008 & FY 2009)		187,485	191,228	176,182	163,419
Lake County Delivered		166,230	162,997	162,293	160,284
Covanta Delivered		3,094	4,068	5,128	3,535
Lake County Delivered		17,171	24,880	5,763	4,990



County Review shows \$5.06M in cost savings from \$11.25M in 2004 to \$6.19M for 2009 contract year

Working together with Lake County, we have achieved a 44.9% reduction in the cost of service since 2004



Covanta Lake, Inc.
 At Covanta's Energy Center
 2520 Rogers Industrial Park Road
 Ocala, Florida 34729
 Tel: 352-365-1611
 Fax: 352-365-0359

October 15, 2009

Mr. Jeff Cooper
 Service Coordinator
 Lake County Florida
 PO BOX 7800
 Tavares, FL 32778-7800

RE: 2009-2010 Annual Cost Estimate

Dear Mr. Cooper:

As required in Waste Disposal Agreement Section 6.01, the costs for Covanta's Services Costs for the new contract year are estimated as follows:

O&M Fee	\$ 7,983,000
Billed Pass Through Costs	\$ 1,201,500
Direct-Paid Pass Through Costs	\$ 500,875
Debt Service	\$ 5,345,320
Additional Waste Service Fee (7,000 tons)	\$ 182,490
Total Covanta Costs to Lake County:	\$ 15,273,185
Less Covanta Generated Revenues:	
Electric Revenues	\$ (9,056,240)
Trust Fund Revenues	\$ (0)
Outside Waste Receipts	\$ (246,600)
Total Cost for Covanta Waste Reduction Service	\$ 5,970,345

By processing the assumed 170,000 tons of waste, the County cost of \$23.12 per ton

Should you have any questions, please

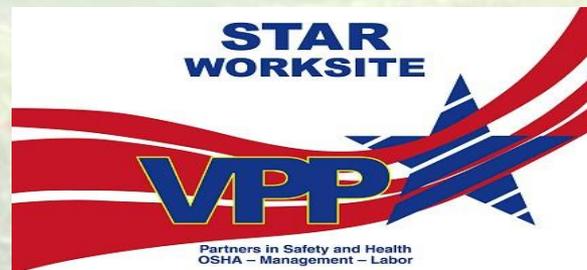
Sincerely,
Teri Stancic
 Teri Stancic
 Service Coordinator
 Phone: (352) 365-1611
 Fax: (352) 365-0359

CC: Daryl Smith, Lake County
 Brad Chipell, Covanta Lake
 Gary Muir, Covanta Lake

Covanta estimates 2009-2010 costs with Debt Service Pay-down will be \$5.98M

Results: Covanta's Clean World Initiatives and Awards have earned positive local recognition

- 2005 & 2006 Best Places to Work Lake & Sumter counties / 2007 Exceptional Employer
- 2007 OSHA VPP Flag Raising & Open House
- 2008 EPA Award & Clean Tech Celebration
- 2008 William C. Schwarz Innovation Award, Mid-Florida Economic Development Commission





Results: Covanta's Investment in the Lake County

- LSCC Foundation & Beacon College
- Lake County Green Fairs & Symposium
- Teacher Appreciation Events
- Scouting Groups
- Lake County Days
- Local Chambers
- Ibini Tera Lake Clean-up & various in-kind events
- Mercury Bounty Programs recovering over 15 pounds of Hg
- Public Tours – over 5,000 visitors/contacts since 2005
- Public Speaking at Rotary Clubs, Chambers, Retirement Communities & local TV spots



Covanta Lake invests over \$25,000 per year in local sponsorships



So what does the future look like?





Post 2014 Lake County Solid Waste Opportunities

- **What are Lake County's options?**
 - Continued use by Lake County of the existing Covanta Lake EfW Facility under an extended or amended waste disposal agreement
 - Cease any further use by Lake County of the Covanta Lake EfW Facility and rely solely on Lake County's existing landfill capacity until it's exhausted. (< 20 years)
 - Export Lake County Waste to an existing out-of-county Landfill (Okeechobee, Holopaw, etc.)
 - Export Lake County Waste to Polk County (Mims) recycling project, or a "future" proposed out-of-County Landfill (Sumter County, Angelo's, Mascotte, etc.)
 - Export Lake County Waste to a "future" proposed and commercially unproven technology project (City of Orlando Gasification Facility, St Lucie County Geoplasma Project, etc.)
 - Develop a new large scale \approx 1500 - 1800 TPD Regional EfW Facility with the Heart of Florida Counties & Communities that works in conjunction with the existing Covanta Lake EfW Facility
 - Use of the Covanta Lake EfW Facility by customers other than Lake County - neighboring Heart of Florida counties & municipalities



What's all this going to cost? - Nobody knows yet.

Many factors impact the cost & revenue sources for each potential option

- Economies of Scale
- Permitting Requirements
- Typical System Costs (O&M / Tip Fees/Hauling Fees)
- Electric Rates / Florida PSC
- Recycling Credits
- Renewable Energy Credits
- Carbon Credits
- Tax Credits



FPSC Rules Control the value of electric payments to Florida's Independent Power Producers

- Payments are based on “avoided cost.” Avoided cost is:
 - The cost the Investor Owned Utilities (IOU) calculates they AVOIDED by not generating the purchased power themselves.
 - Under current FL PSC rules the “avoided cost” rate remains very low - not withstanding the IOUs then sell to consumers for considerably more.
- Prior to 1991, “Avoided Cost” was based on the capital cost of a base-loaded coal unit - **High Capital Cost with a Low , Stable Fuel Cost.**
- Post '91, the calculation was *changed to accommodate the Investor Owned Utilities* and is now based on the capital cost of a natural gas-fired turbine “Peaking Unit” – **Low Capital Cost with a Potentially Volatile Fuel Cost**



FPSC Rules Control the value of electric payments to Florida's Independent Power Producers cont.

- The Post '91 approach gutted the independent power/renewable power production market
- Hillsborough County and the City of Tampa
 - Committed in the early 1980's to EfW and renewable energy
 - They are currently being offered less for the reliable renewable energy they generate than before the recent climate change initiatives began.
- NOTE: Current PSC rules allow IOUs to build new capacity on a "Full Cost Recovery" basis, guaranteeing IOU margins. Florida IOUs are also allowed to pre-bill the costs for the future nuclear energy power plant construction

Renewable Energy Credits (REC's)?

At \$15/MWh 1,800 TPD Facility (46.5 MW) - \$4,949,175

At \$25/MWh 1,800 TPD Facility (46.5 MW) - \$8,248,625

REC Price	All Generation	Biogenic Only	Difference
\$15 / MWh	\$4.9 M [\$8.86/ton]	\$3.2 M [\$5.94/ton]	\$1.7 M [\$2.92/ton]
\$25 / MWh	\$8.2 M [\$14.86/ton]	\$5.4 M [\$9.96/ton]	\$2.8 M [\$4.90/ton]

Notes:

- Based on 2008 Net electrical generation
- Assumes that 65% of electricity generation is biogenic
- Lower price of \$15 / MWh based on EIA assessment of earlier version of Waxman-Markey bill, upper price of \$25 / MWh based on proposed alternative compliance payment

Carbon Credits?

Annual Carbon Credit Projection

Facility	10/20/09 CCX Value (\$0.10/ton)	Average 2008 CCX Value (\$6.00/ton)	EPA Projected Minimum Value (\$13.00/ton)	EPA Projected Maximum Value (\$24.00/ton)
500 TPD FACILITY	\$2,464	\$147,825	\$320,288	\$591,300
1800 TPD FACILITY	\$8,870	\$532,170	\$1,153,035	\$2,128,680

- Assumptions:
- Conservative VCS Verification Protocols Apply (~ 0.15 ton GHG/ton MSW) – community specific
 - additionality provisions of voluntary market will not apply to regulated market
 - pricing projections as stated in EPA Analysis of Waxman-Markey Bill
 - transaction and registry fees not included
 - assumes “full” credit under ACELA (no anthropogenic/non-anthropogenic split)

Florida Population & Solid Waste Estimates

COUNTY	April 2009	Est MSW	Est TPD
Lake	312,119	256,954	704
Marion	330,440	290,787	797
Sumter	95,326	83,887	230
Citrus	142,609	125,496	344
Levy	40,674	35,792	98
TOTAL	901,042	792,917	2172

Based on EPA Generation rate of 1600 lbs per person per year.
 Excludes Commercial generation.
 Population numbers from Florida Legislature Economic & Demographics Web Site

Florida Population & Solid Waste Estimates

COUNTY	April 2009	Est MSW	Est TPD
Volusia	507,105	446,252	1,223
Seminole	423,759	372,908	1,022
Orange	1,108,882	975,816	2,673
Osceola	272,788	240,053	658
Brevard	555,657	488,978	1,340
TOTAL	2,868,191	2,524,008	6,915

Based on EPA Generation rate of 1600 lbs per person per year.
 Excludes Commercial generation.
 Population numbers from Florida Legislature Economic & Demographics Web Site



**What Benefits would a
New 1,500 TPD Regional
ENERGY-FROM-WASTE FACILITY
Bring To Central Florida?**



Stimulative Economic Benefits: New EfW facility

- Spurs planning which requires immediate spending
 - Engineering and environmental jobs
 - Legal and financial work
 - Several projects could begin construction within 18 to 24 months
- Creates new permanent green jobs to operate and maintain facilities
 - High skilled, high paying jobs
- Renewable energy benefit also flows to municipalities via lower waste disposal cost and tax revenue
- Provides stability and predictability for both waste disposal and electric generation costs

ECONOMIC IMPACT FROM ONE NEW 1,500 TPD EFW FACILITY IN FLORIDA*

• Construction Costs	\$400 Million
• Primary Construction Jobs (For 3 years)	250
• Secondary Construction Jobs (For 3 years)	625
• Total Economic Impact of Construction	\$652 Million
• Permanent Jobs Created (Primary and Secondary)	115
• Total Annual Economic Impact of Operations	\$22 Million / Year

**Source: The Existing and Potential Economic Impact of the Energy-from-Waste Industry in Florida
By Thomas Conoscenti, PhD, New York University, March 2009*



Continuing the Partnership's Success

- Covanta is ready to help the Lake County BCC solve current waste shortfall issue
- Covanta is willing to give Lake County BCC priority for future utilization of existing facility
- Covanta can assist in bringing regional solutions to the Heart of Florida
- A new regional facility will bring economic stimulus and green jobs to the host community



Thank you!

Questions?





It's Not Waste



It's Energy

