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Presentation To:

The SWMP Steering Committee

Capital Region Solid Waste Management Plan

Evaluation of Municipal Solid Waste Technologies



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Covanta's Philosophy...

Reduce,
Reuse,
Recycle…



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Covanta's Philosophy...

Rethink!

In 2003, the U.S. EPA stated that Energy-from-Waste (EfW) facilities "enable us to continue to rely on municipal solid waste as a clean, reliable, renewable source of energy" and produce power "with less environmental impact than almost any other source of electricity."



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Albany's Waste Management Challenges

- "Seven more years of predictable and reasonably priced waste disposal" –Then what?
  - *Rapp Road Landfill serves 220,000 residents in the Capital Region*
  - *Recent expansion of landfill will extend life until 2016 – 5th expansion of landfill since 1990*
  - *The last expansion to be granted*
  - *Plans to develop a new regional landfill in the Town of Coeymans have been challenging*
- Preparation of New Long-Term Regional Solid Waste Management Plan through 2030
  - *Regional Solution for entire Planning Unit – 13 municipalities and 220,000 residents*
  - *Continued emphasis on waste reduction and expanded recycling programs*
  - *If 47% reduction and recycling goals are achieved, will still need to identify proven solutions for what's left (approximately 227,000 tons/year in 2011)*
  - *Looking for a solution that reduces the amount of solid waste requiring landfill disposal*



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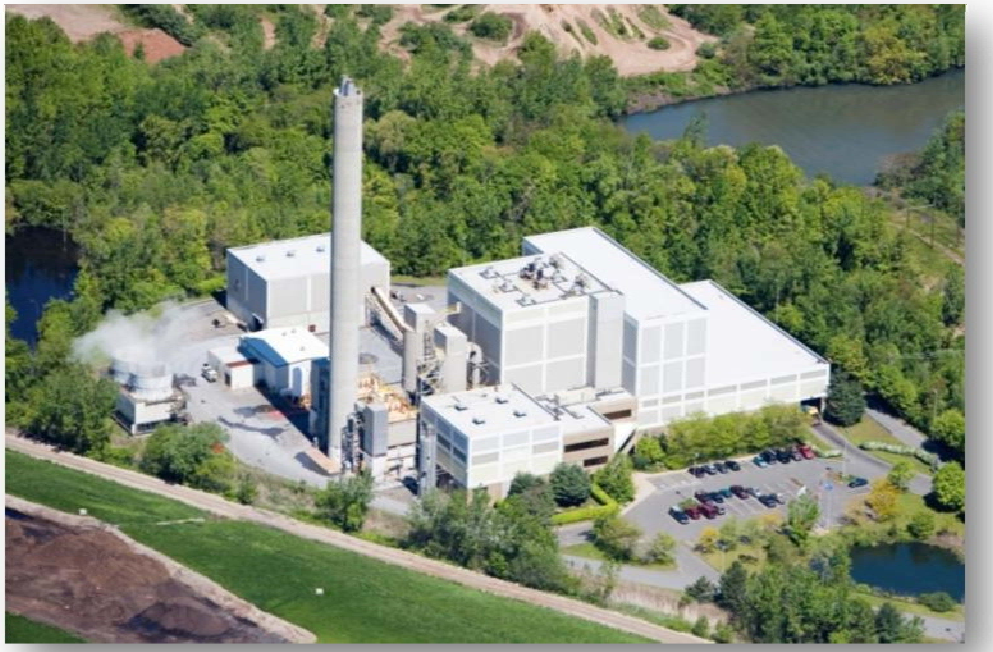
Albany's Opportunity

- Lead a sustainable long-term solution for waste residuals disposal for itself and other communities in need
- Examples – North Andover, MA & Bristol, CT
- Don't export – re-invest waste management dollars into the local economy





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EfW: Meeting Three Critical Global Challenges

- Creates Green Jobs → Typical facility creates 500 construction jobs (3+ years)
- Energy & Security → Renewable energy available locally
- Climate Change → One ton of trash reduces one ton of CO_2 eq.

One Ton of MSW

- ***850 kWhrs of Power***
- ***50 lbs of Recycled Metal***
- ***Ash: 10% of Original Volume***



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Global Endorsement of EfW

- United States
  - *EPA's Solid Waste Management Hierarchy identifies EfW as a preferable means of solid waste disposal to landfilling*
  - *25 States and the federal government define EfW as renewable*
- Europe
  - *EU Landfill Directive – 65% reduction in landfilling of biodegradable MSW*
  - *Recognition of landfill methane as a reduction target*
  - *Significant landfill tax and other incentives to recycle and recover energy from waste*
- China
  - *Target 30% EfW by 2030*
  - *Preferential feed-in electricity tariff*
- Kyoto
  - *Recognizes EfW as an eligible offset for CDM protocol*
- Davos – The World Economic Forum
  - *Identifies 8 emerging clean energy sectors, including wind, solar and EfW*

EPA Waste Hierarchy



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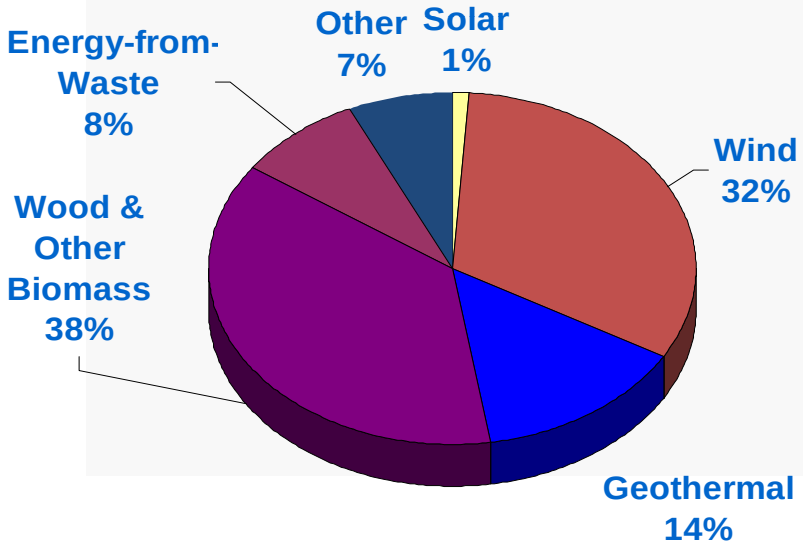
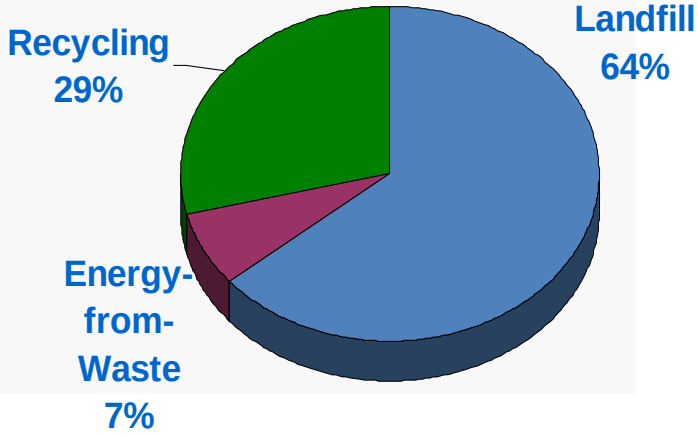
EfW's Vital Role in the U.S.

Annual U.S. Renewable Generation =
105,238,000 megawatt hrs (excluding hydro)



Source: U.S. Department of Energy, Energy Information Administration 2008 Report

Annual U.S. Waste Generation =
413,014,732 Tons



Source: 2008 Joint Study by Biocycle and Earth Engineering Center of Columbia University



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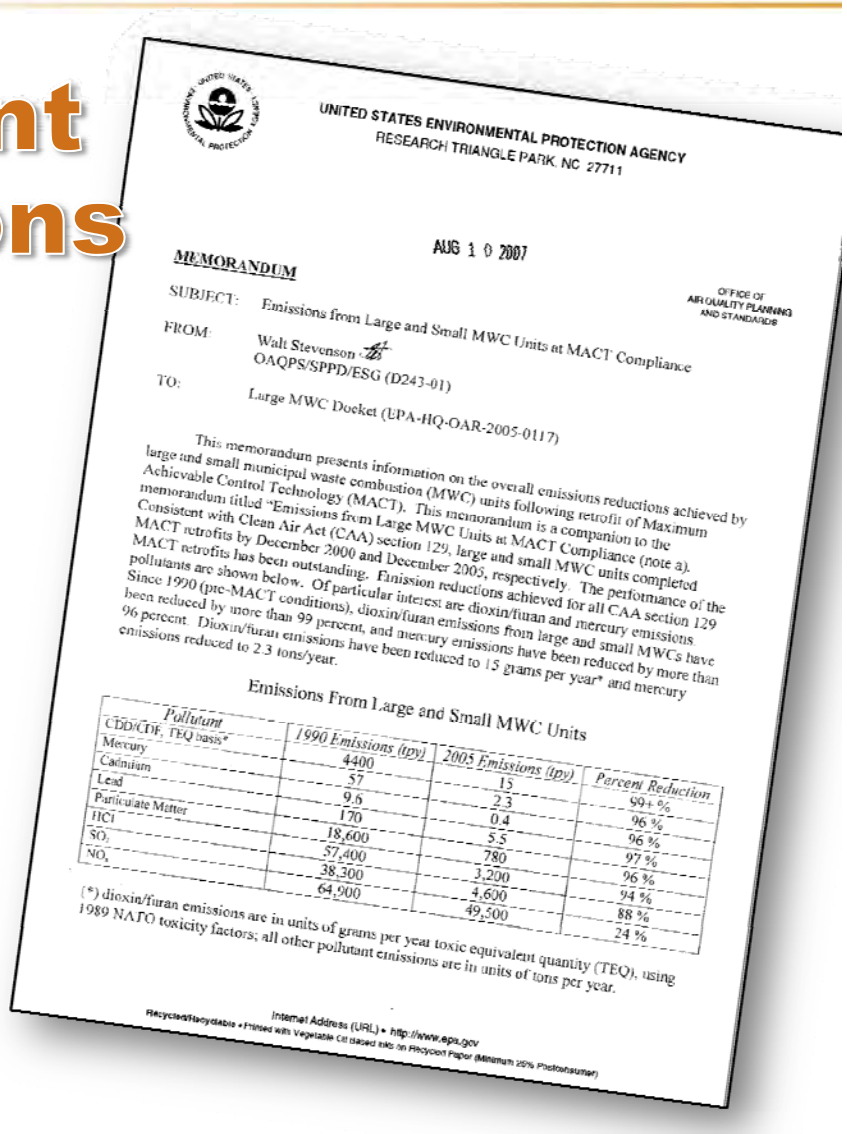
Achieving Significant Emissions Reductions

Pollutant	1990 Emissions (tpy)	2005 Emissions (tpy)	% 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%
SO2	38,300	4,600	88%
NOx	64,900	49,500	24%



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

AUG 1 0 2007

MEMORANDUM

OFFICE OF AIR QUALITY PLANNING AND STANDARDS

SUBJECT: Emissions from Large and Small MWC Units at MACT Compliance

FROM: Walt Stevenson
OAQPS/SPPD/ESG (D243-01)

TO: Large MWC Docket (UPA-HQ-OAR-2005-0117)

This memorandum presents information on the overall emissions reductions achieved by large and small municipal waste combustion (MWC) units following retrofit of Maximum Achievable Control Technology (MACT). This memorandum is a companion to the memorandum titled "Emissions from Large MWC Units at MACT Compliance (note a). Consistent with Clean Air Act (CAA) section 129, large and small MWC units completed MACT retrofits by December 2000 and December 2005, respectively. The performance of the MACT retrofits has been outstanding. Emission reductions achieved for all CAA section 129 pollutants are shown below. Of particular interest are dioxin/furan and mercury emissions. Since 1990 (pre-MACT conditions), dioxin/furan emissions from large and small MWCs have been reduced by more than 99 percent, and mercury emissions have been reduced by more than 96 percent. Dioxin/furan emissions have been reduced to 15 grams per year* and mercury emissions reduced to 2.3 tons/year.

Emissions From Large and Small MWC Units

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 %
HCl	57,400	3,200	94 %
SO_2	38,300	4,600	88 %
NO_x	64,900	49,500	24 %

(*) dioxin/furan emissions are in units of grams per year toxic equivalent quantity (TEQ), using 1989 NATO toxicity factors; all other pollutant emissions are in units of tons per year.

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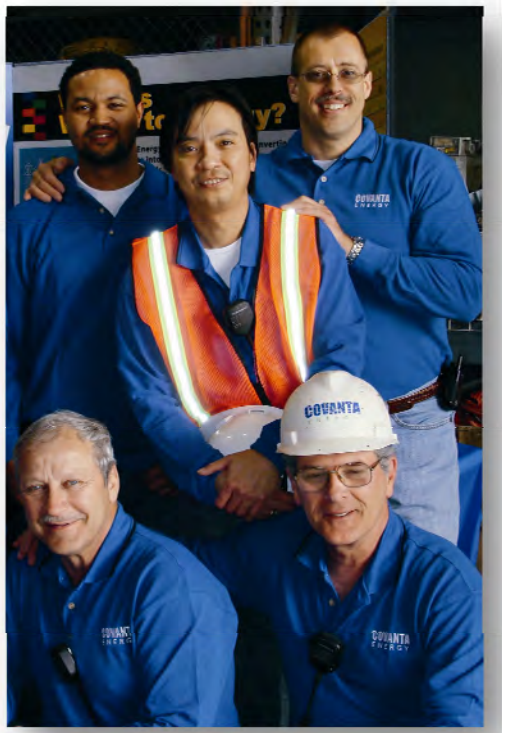
Covanta: Leadership in EfW

- Wholly-owned subsidiary of Covanta Holding Corporation (NYSE: CVA)
- Dedicated to EfW since 1983
- Owner and/or operator of 60 power generation assets throughout the world, including 38 EfW facilities
  - *Process over half of U.S. EfW volume (17 of 30 million tons) or 5% of post-recycled MSW*
  - *Produces almost 10% of America's non-hydro renewable electricity—enough to power over a million homes (8,000,000 megawatt hours/year)*
- Unsurpassed environmental record of performance
- Full-service, single source approach to the permitting, design, construction, operation and maintenance of EfW facilities
  - *More EfW permitting, design and construction experience than any other firm in United States*
  - *24 Covanta EfW facilities were completed with Covanta serving as the sole project developer*





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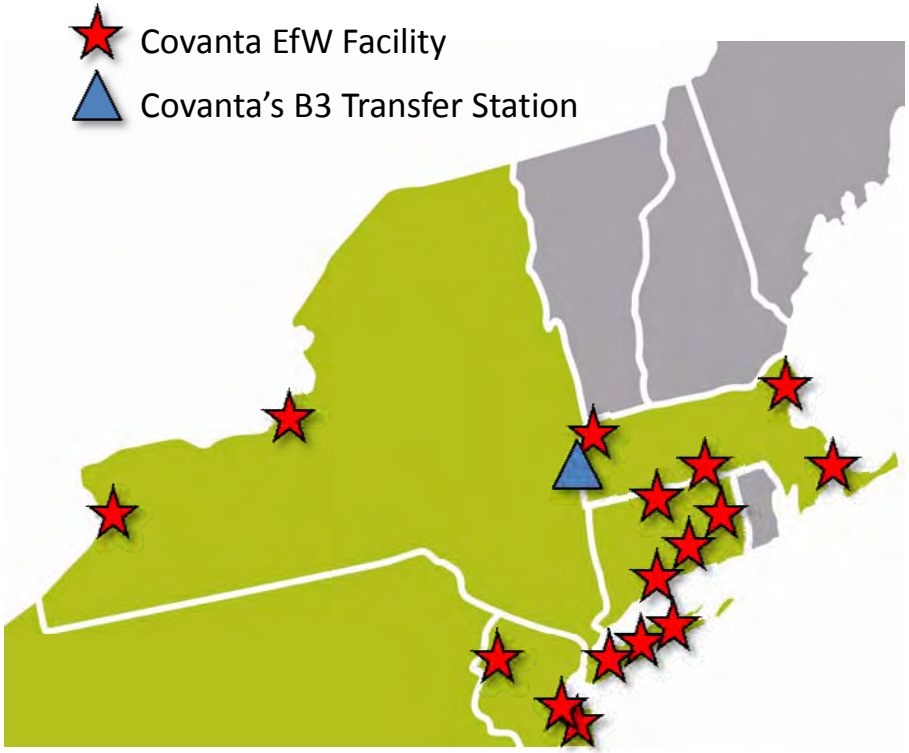
Covanta's Immediate Solution: Use of Existing EfW Capacity

- Immediate diversion of region's waste to Covanta's local network of EfW facilities
- Use of regional transfer capacity, including Covanta's B3 Transfer station in neighboring Columbia County
  - *By combining loads, a significant reduction in total waste transport miles can be achieved*
- Covanta operates more than 20 EfW facilities in the Northeast
  - *5 in the State of New York and several others in Massachusetts and Connecticut*
  - *Our Pittsfield, MA (17.5 miles) and Springfield, MA (53 miles) Facilities are within short distance of B3 Transfer Station*





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Covanta's Long-term Solution: New Regional EfW Facility

- Typical facility creates $1 Billion in Economic Activity
  - *$500 - $700 million in construction expenditures*
  - *$30 - $40 million in annual operating budget*
  - *300 – 500 direct construction jobs per year*
  - *60 – 80 full time facility operations positions*
  - *Goods and services purchased locally*
  - *State Income Tax and host community benefits*

- Critical component of environmentally sound integrated waste management plan
  - *Offsets up to one ton of CO_2 equivalent for each ton of waste processed*
  - *Local and sustainable waste management solution that conserves open space*
  - *Works in concert with comprehensive recycling programs*
  - *Avoids methane emissions from landfills—methane is 21x more potent as a GHG than CO_2*



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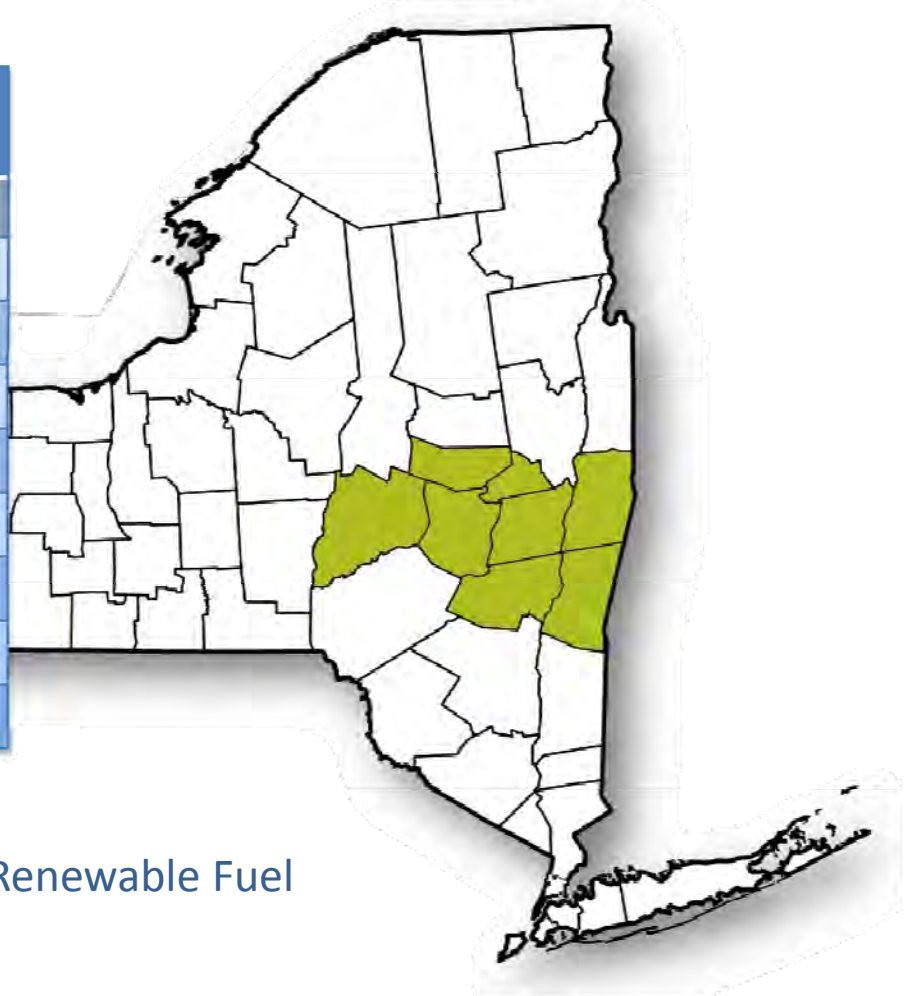
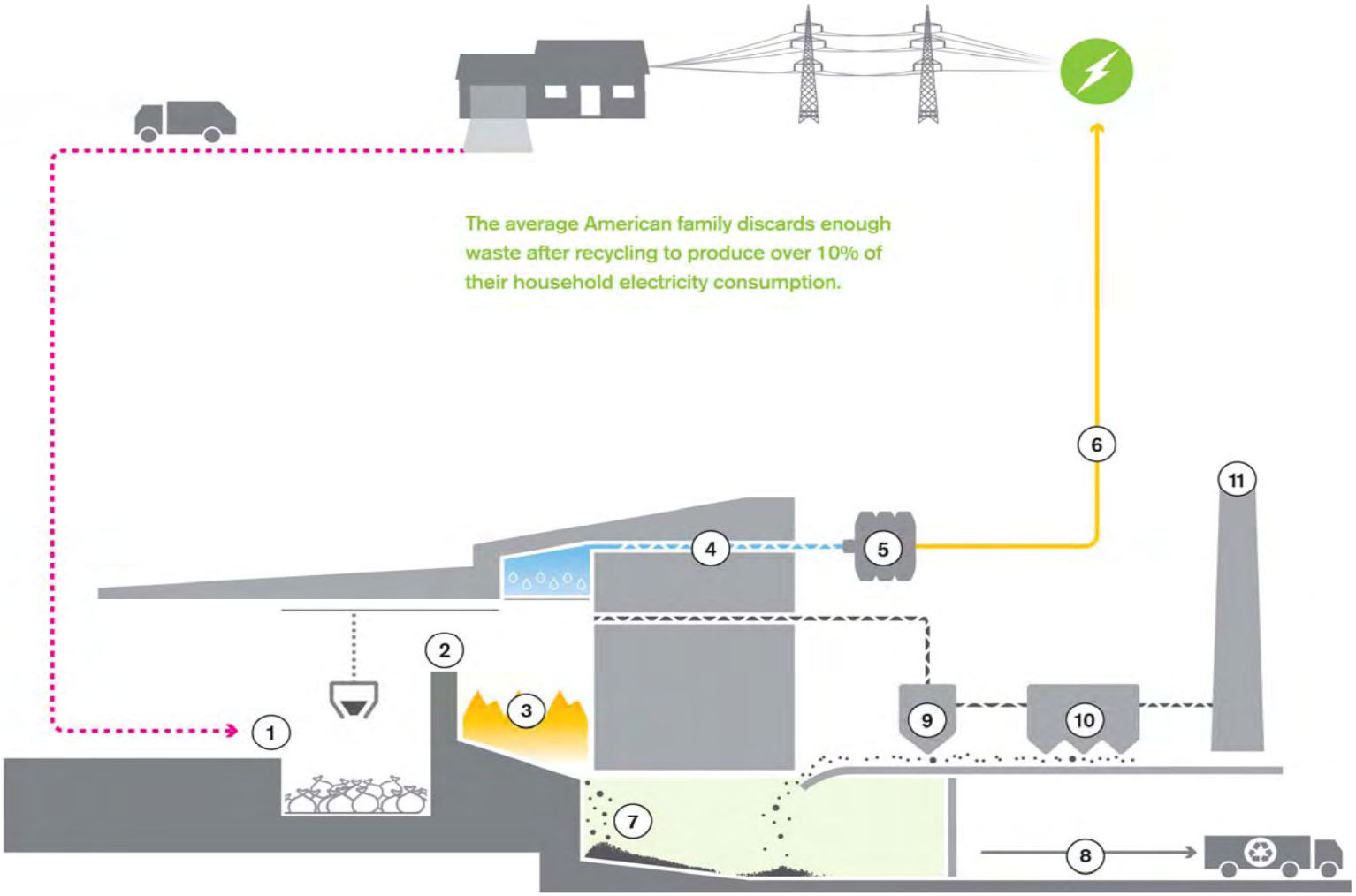
Potential Regional EfW Consortium

County	Population	Available TPD of MSW (est.)	
		Residential	Commercial
Albany	299,000	394*	197
Schenectady	150,000	270	135
Rensselaer	155,000	280	140
Montgomery	48,000	86	43
Otsego	62,000	112	56
Schoharie	32,000	58	29
Columbia	62,000	112	56
Greene	49,000	88	44
		1400	**700**



Approximately **2,100 TPD** of Available Renewable Fuel

*Not including the Town of Colonie



SO HOW DOES IT WORK?

Waste is tipped and stored in an enclosed concrete pit (1) then picked up and loaded into a hopper (2) for transfer into a combustion chamber (3) where self sustainable combustion is maintained at extremely high temperatures. Heat from the combustion process is recovered to generate steam (4) which is utilized by a turbine generator (5) to generate electricity (6). Ash residue from both the combustion process and the air pollution control equipment is collected (7) and subsequently processed to extract metal content for recycling (8). Combustion flue gases pass through a scrubber reactor (9) to remove acid gases. The "scrubbed" gases then pass through a fabric filter (10) to remove particulate matter. The cleaned gas is continuously monitored before being emitted into the atmosphere through the stack (11).



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Superior Environmental Performance

- Technology, operating protocols and procedures, employee incentives and skilled operators result in superior environmental performance
- Operating 60-80% below permit limits
- Leadership in developing/applying innovative technologies (e.g. VLN™)
- First firm to install EfW mercury control
- Winner of DOE Energy Innovator Award

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%**

Covanta's emissions are compliant 99.9% of the time. Our goal is to get to 100%.



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Covanta's Role in NY State

- Converts over 7,500 tons/day of New York State's waste into renewable energy
- Employs over 300 people in the State of New York
  - *5 EfW facilities owned and operated*
  - *3 Transfer Stations*
- Good Corporate Citizen
  - *Over $26 million in NY payroll plus spend $20 million/year in goods/services*
  - *Active in numerous community programs*
- During nearly 20 years of operation in New York State, our facilities have:
  - *Reliably produced 20 million megawatt hours*
  - *Safely disposed of approximately 40 million tons of municipal solid waste*
  - *Recovered about 1 million tons of metal for recycling*
  - *Maintained high level of safety at all of our in-state EfW facilities—4 of 5 facilities have already achieved OSHA VPP "STAR" work site status with the other currently in process*



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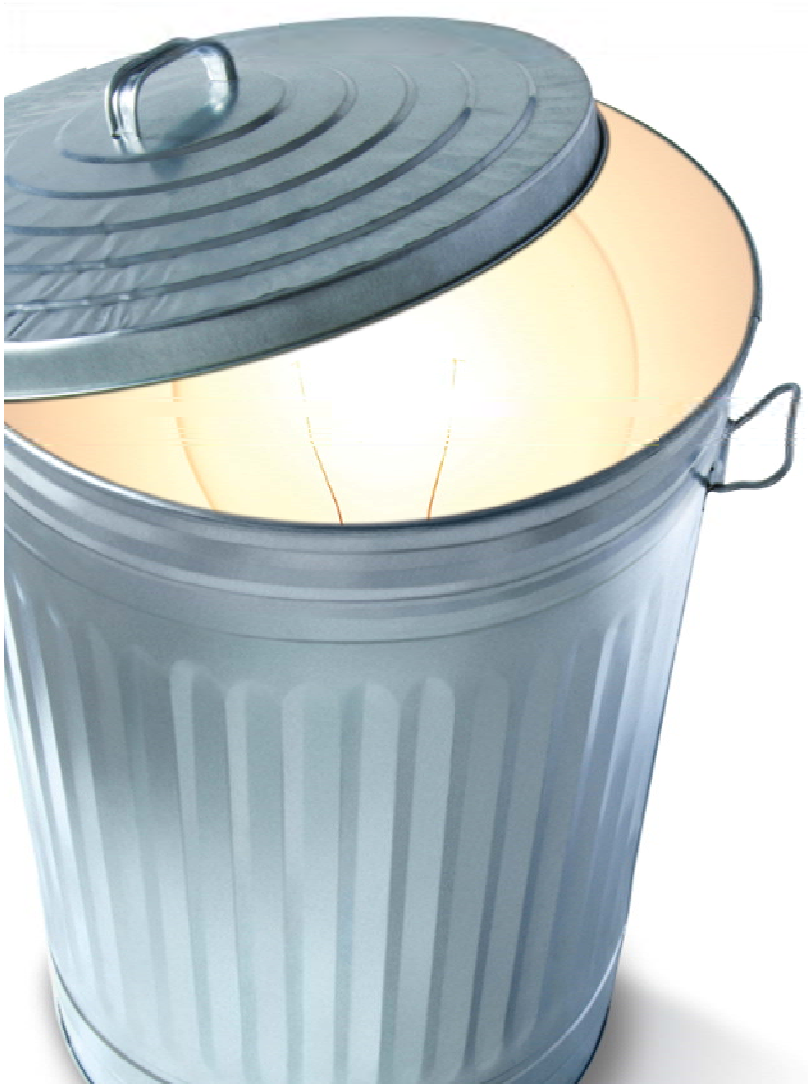

Thank you.