

COUNCIL WORK SESSION
TUESDAY
28 SEPTEMBER, 2010
2:30 P.M. – 6:00 P.M.
CITY COUNCIL CHAMBER

Speakers from the floor on **non-agenda** items from 2:30 – 3 p.m.

1. Fourth Quarter Budget Update.
2. Presentation on Phase I (State of the Industry) for White Street Landfill.

Attachments will be provided in this week's IFYI and will be available for viewing by the public in the City Clerk's office.

Prior to the date of the briefing, contact Channel 13 at 333-6922 if you have electronic presentations.

Any individual with a disability who needs an interpreter or other auxiliary aids or services for this meeting may contact the City Clerk's Office at 373-2397 or 333-6930 (TDD).



City Council Briefing

4th Quarter FY 09-10 Budget Update
(July 1 through June 30 *unaudited*)
September 28, 2010

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Summary

- In FY 09-10, the City was below its original revenue targets in all revenue categories as the economy continued to slow through mid-year
- Positive revenue trends were sustained beginning in February 2010 for Sales Tax & Hotel/Motel Tax Collections
- Department spending slowed in the 2nd half of the fiscal year vs. the first six months



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General Fund Financial Performance for the Fiscal Year Ended June 30 (unaudited)						
Revenue	FY 2009 FYD	FY 2010 FYD	Var. 10%	Amended	%	
	06/30/09	06/30/10		FY 2009-10	FY 2009-10	Collected
	Actual	Actual	Change	Budget	Actual	Collected
Property Tax	143,721,139	145,981,702	1.3%	140,549,800	145,981,702	104.3%
Sales Tax Hold/Reimburse Payments	37,403,833	36,734,765	-2.0%	39,227,000	36,734,765	93.6%
Utility Taxes	18,195,814	18,555,170	2.2%	18,748,800	18,555,170	98.9%
Beer & Wine ABC System Profit Distrib	1,212,534	2,518,076	210%	3,316,700	2,318,026	69.9%
Privilege Licenses	3,306,671	3,316,740	4.0%	3,321,350	3,113,230	93.7%
Building Permit Fees	1,113,897	1,787,478	16.0%	2,172,000	1,787,478	82.3%
Waste/Trash Collection	6,966,794	6,955,680	-0.1%	6,915,000	6,955,680	100.6%
Other Revenue	33,639,936	22,528,064	-33.0%	23,018,200	22,928,064	99.6%
Total Revenues	239,178,963	237,177,145	-0.8%	242,868,727	237,177,145	97.7%
Transfers In From Other Funds	647,084	829,310	27.3%	820,310	820,310	100.0%
Appropriated Fund Balance	0	0	0.0%	6,543,541	0	0.0%
Total Revenues, Transfers and Appropriated Fund Balance	245,854,817	245,487,455	-0.2%	257,643,578	245,487,455	95.3%
Expenditures						
Personnel Salaries & Benefits	146,095,000	146,878,000	0.5%	148,549,800	146,878,000	98.9%
Materials & Operations	64,117,077	70,346,900	1.0%	70,492,210	70,346,900	99.8%
Capital Outlay	147,092	219,934	15.0%	373,184	219,934	59.0%
Total Expenditures	215,345,872	217,444,834	0.9%	219,415,214	217,444,834	99.1%
Transfers Out to Other Funds	29,251,674	22,501,177	-0.8%	29,660,330	22,501,177	75.9%
Total Expenditures and Transfers	244,716,146	244,729,110	0.0%	257,643,578	244,729,110	95.0%
Revenues Over (Under) Expenditures & Net Transfers	1,138,671	(1,659,661)	-24.6%	0	(1,659,661)	

Notes:
Financial statements are unaudited and subject to adjustment.
This statement includes the Police & SO Fund which is reported with the General Fund in the Comprehensive Annual Financial Report.



FY 09-10 General Fund Overview

Unaudited Figures as of June 30, 2010

- Total revenue collected:
 - \$245.4 million representing 95.3% of the amended General Fund budget of \$257.6 million
- Total expenditures:
 - \$247.0 million representing 95.9% of budget
- Expenditures exceeded Revenues by \$1.55 million
 - Appropriated \$6.5 million in Fund Balance but only used \$1.55 million
 - Less than 3rd quarter estimate of \$1.72 million



FY 09-10 General Fund Revenue Overview

Unaudited Figures as of June 30, 2010



- FY 09-10 Estimated Assessed Valuation of \$24.42 billion
 - Tax base increased by 0.7% to \$24.35 billion in FY 09-10 with slowdown in economic activity
 - This figure is down from the 1.5% growth rate assumed for the Budget and the 1.0% assumed during the 3rd quarter report
 - AV growth averaged 3.2% over past five years, including 2008 annexation, or 2.4% net of 2008 annexation
- Property tax revenue equaled \$145.1 million or 99.3% of the \$146.0 million budget
 - 98.0% collection rate for taxes levied in FY 09-10; comparable to past two fiscal years
 - Approximately 99.3% of Property Tax is collected within 2 years of levy



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FY 09-10 General Fund Revenue Overview

Unaudited Figures as of June 30, 2010



- Sales tax revenue equaled \$36.7 million or 93.6% of the \$39.2 million budget
 - Sales tax collections continued to decline through January 2010 due to the recession; revenues were \$1.8 million or 4.8% less than the previous year
 - However, sales tax collections began to improve in February 2010; revenue from February to June 2010 increased 6.1% over February to June 2009
- Utility tax revenue equaled \$18.6 million or 98.9% of the \$18.8 million budget
 - Electric franchise tax revenue increased by 8.0% from the previous fiscal year
 - Natural Gas excise taxes were flat (from the previous fiscal year
 - Sales taxes on Telecommunications declined by 4.0% (from the previous fiscal year



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FY 09-10 General Fund Revenue Overview

Unaudited Figures as of June 30, 2010



- Beer & Wine tax revenue
 - The State budget, adopted in August 2009, included a reduction in the annual Beer & Wine tax distribution by 2/3 of actual FY 09-10 revenues (April 1, 2009 to March 31, 2010)
 - Projected revenue of \$1.2 million was reduced to \$400,468; actual tax collected equaled \$376,418 and was received May 2010
- ABC Board Profit Distribution equaled \$2.54 million or 88% of the \$2.9 million budget
 - ABC revenue fell 12% short of budget projections with an 8% decline in revenue from sales in the prior year
 - The ABC Board Profit Distribution included a \$100,000 per quarter deduction since FY 07-08 to increase working capital and provide for future expansion & capital improvements
 - Projected revenue of \$3.3 million was reduced by \$400,000 for a net tax payment budgeted at \$2.9 million



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FY 09-10 General Fund Revenue Overview

Unaudited Figures as of June 30, 2010



- Other Revenue Collections
 - Privilege Licenses – business activity has slowed with FY 09-10 revenue of \$3.12 million or 93.8% of the \$3.32 million budget
 - Building Permit Fees – revenue of \$1.8 million was 21.3% below the \$2.3 million budget with building activity significantly lower than projected
 - Waste/Trash Collection Fees – commercial activity declined and revenue of \$6.1 million was 12.4% below the \$6.9 million budget
 - Other Revenue – all other revenue of \$22.9 million was slightly under the \$23.0 million budget



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FY 09-10 General Fund Expenditure Overview

Unaudited Figures as of June 30, 2010



- Salary costs were approximately \$108.17 million, or 98.5% of the total \$109.8 million budget
 - Salary costs for FY 08-09 equaled \$108.2 million
- Benefits costs equaled \$38.7 million, or 99.9% of the \$38.75 million budget
 - Benefit costs were 2.1% greater than in FY 08-09
 - An increase in the health insurance fund contribution was partially offset by a reduction in workers' compensation fund contributions
- Maintenance and Operating (M&O) costs equaled \$70.25 million, or 88.97% of the \$78.96 million budget
 - M&O costs in FY 08-09 were 85.88% of the budget
 - M&O costs were 1.63% more in FY 09-10 than in FY 08-09



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FY 09-10 Other Fund Activity

Unaudited Figures as of June 30, 2010



- Major Enterprise Funds
 - Water Resources – revenues exceeded expenses by \$22.9 million, before transfers. After transfers to Capital Project Funds, revenues exceeded expenses by \$8.8 million, primarily due to lower than projected expenses (87.4% of budget)
 - Solid Waste Management – expenses exceeded revenues by \$3.4 million, before transfers. After transfers from the General Fund and to the Capital Project Fund, expenses exceeded revenues by \$774,000, reducing the available fund balance by that amount
 - Coliseum Fund - expenses exceeded revenues by \$2.25 million, before transfers. After the \$1.8 m transfer from the General Fund, expenses exceeded revenues by \$447,000, reducing the available Coliseum fund balance to approx. \$47,000
- Special Revenue Fund
 - Hotel/Motel tax collections began to improve in February 2010; Revenue for the five month period February to June 2010 increased 11.4% over the same period in 2009



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Performance Management: Let's Put Greensboro on the MAP

Rashad M. Young, City Manager
Presentation to City Council
September 28, 2010

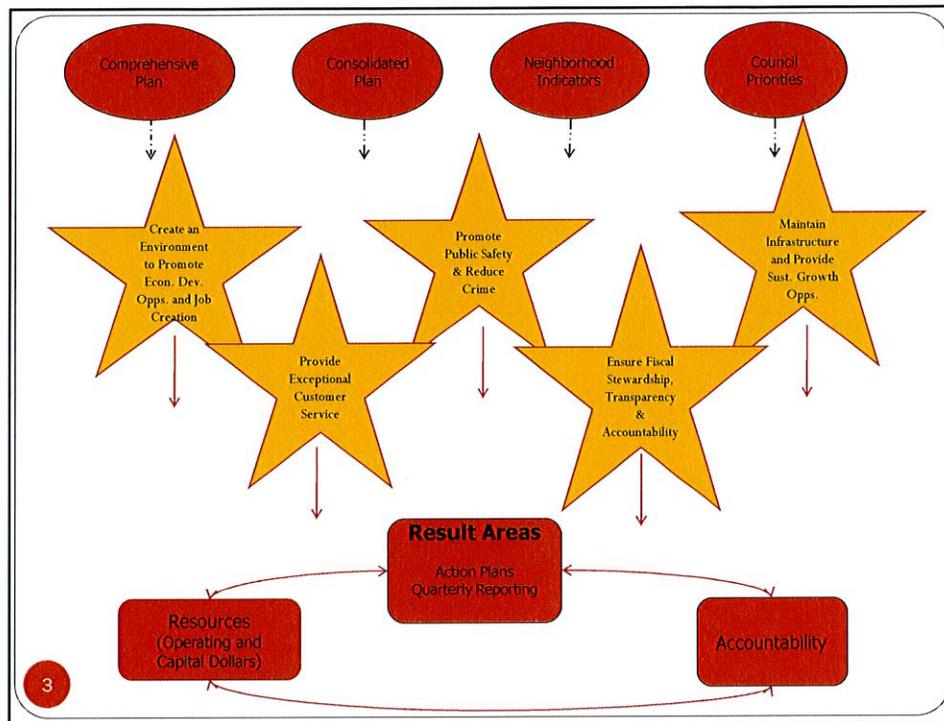


What is MAP?

MAP = Management, Accountability and Performance

Performance Management is a change for how we do business.

- It focuses on producing results that benefit the public.
- Gives the public confidence that we have produced those results.
- Makes government accountable for their actions because it provides a direct link to what is expected and what has actually occurred.
- Ensures that services and resources are aligned with desired results.



Changes in the CMO

- The CMO will begin reporting by Result Area when discussing strategy, budgeting, reporting, etc. rather than by Department.
- Each Result Area will:
 - Develop an annual work plan that will link the departmental work plans to the City goals and High Level Indicators.
 - Report Quarterly to the City Council by Result Area.

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Result Areas

- **Economic and Community Development (Andy)**
 - Planning and Community Development
 - Economic Development
 - Training And Employment Services
 - M/WBE Office
- **Infrastructure (Bob)**
 - Field Operations
 - Water Resources
 - Engineering & Inspections
 - Transportation
 - Environmental Services
 - Coliseum
- **Public Safety (Mike)**
 - Fire
 - Police
 - GM911
- **Culture, Recreation and Community Character (Denise)**
 - Library & Museums
 - Parks & Recreation
 - Public Affairs
 - Human Relations
- **General Government (Rashad leads/Nelsie coordinates)**
 - Legal (Rashad)
 - Clerk/Legislative (Rashad)
 - Human Resources (Mike)
 - Finance (Bob)
 - Budget & Evaluation (Bob)
 - Internal Audit (Bob)
 - Information Technology (Denise)

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High Level Indicators

- Indicators are high-level measures to help the City track its progress on meeting the Goals of the City.
- By monitoring these indicators, the City can learn the success/progress it is making towards the Goals.
- The indicators do not represent all possible indicators, but they represent what is most critical to meeting the goals.
- City Results Areas and Departments monitor more specific indicators that tie into the High Level Indicators.
 - High Level Indicators → Result Area Work Plans → Departmental Work Plans → Department-Specific Indicators

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Goal #3: Promote Public Safety & Reduce Crime

High Level Indicators

1. Crime Rate for Felony Offenses (Part I)
2. Juvenile Crime Rate (Part I and Part II)
3. % of felony offenses solved during year (of those created during that year)
4. % commercial property loss due to fire
5. % of residential fires contained to room origin
6. Response Time of High Priority emergency calls from call to arrival
7. % pulses recovered
8. % core competencies/accreditations met during Fiscal Year (includes Police, Fire, and GM-911)

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Goal #4: Provide Exceptional Customer Service and a Diverse City Government Workforce

High Level Indicators

1. Contact Center's call abandonment rate
2. % of Contact Center calls resulting in a work order completed or contacted within internal business standards
3. % of Public information requests responded to within 2 days or less
4. Ratio of City government employees (diversity breakdown) to overall City population (diversity breakdown)
5. Average hours spent on professional development per employee
6. Average number of days to process mission critical services (e.g. contracts, inspections, plan review, hiring, etc.)
7. Average daily attendance at City Libraries and Recreational Centers
8. % increase in City internet site visits and social media users

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Goal #5: Ensure Fiscal Stewardship, Transparency, & Accountability

High Level Indicators

1. % of capital projects completed during the Fiscal Year that were either on or under budget
2. % of total spending reduced due to timely payment of invoices (includes invoices, p-card and travel card purchases)
3. Maintenance of the City's General Obligation and Revenue Bond ratings
4. Ratio of City tax dollars used to leverage non-City tax dollars (Grants, Foundation dollars, etc.) for public purposes
5. Overall Collection Rate
6. % of audit findings resolved
7. Ratio of Actual Revenue Compared to Budgeted Revenue
8. Ratio of Actual Revenue to Actual Expenditures
9. \$ Saved in health insurance and workers compensation costs due to City Wellness and Safety programs

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Example of MAP Product

Goal: Maintain Infrastructure and Provide Sustainable Growth Opportunities

High Level Indicator: Pavement Condition Rating

Result Area: Infrastructure Work Plan

Strategies:

- Resurface 80% of roads within one year of City's resurfacing schedule
- Implement Bi-Ped Plan to improve pedestrian and bicycle safety
- Maintain and enhance traffic control infrastructure
- Complete street improvement projects on schedule

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Next Steps

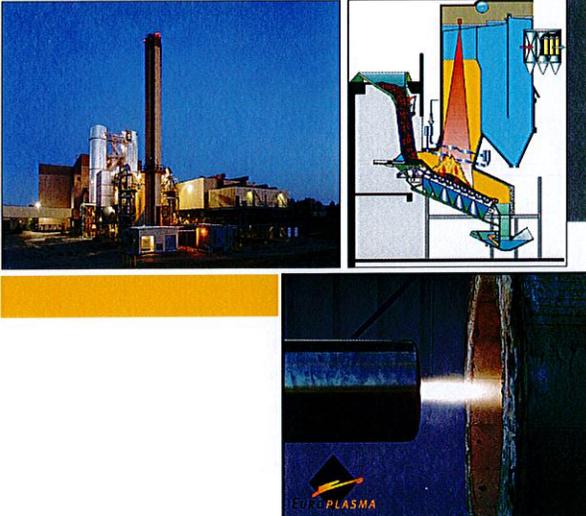
- Seek private funding to support a Citizen Survey reoccurring every three or four years. Results of this are important to:
 - Understand the public need
 - Determine if the City is meeting expectations and providing quality service
 - Modify High Level Indicators Accordingly
- Implement this process in February 2011
 - Develop the FY 2011-2012 Budget using this Framework
 - Begin reporting to City Council Quarterly by Results Areas and under this Framework
 - Website Enhancements

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Questions?

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**SOLID WASTE
TECHNOLOGY
INFORMATION
SESSION**



City of Greensboro

September 28, 2010

HDR

Presentation Overview

- Technology Overview
- International State of the Industry
- What other Municipalities are Doing
- Proven vs. Emerging Technologies
- Costs and Environmental Concerns
- Summary
- Next Steps

HDR

Technology Overview

Biological Treatment

Process that utilizes chemical reactions to change the composition of the organic fraction of MSW

Thermal Treatment

Process that utilizes significant quantities of heat to change the composition of the organic fraction of MSW.

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Technology Overview

Biological Treatment

Examples of biological treatment technologies:

- Anaerobic Digestion
- Composting (does not generate energy)
- Hydrolysis

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Technology Overview

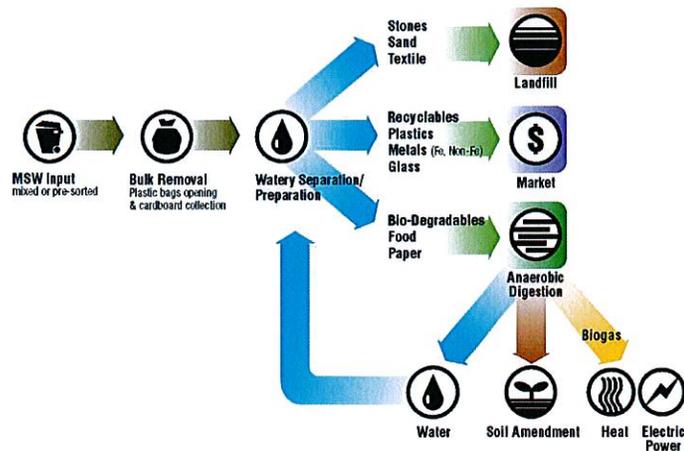
Biological Treatment:

- Advantages:
 - Produces methane gas that can be used to generate electricity, steam, hot water, and compostable “digestate”
 - Feedstock – Biodegradable MSW
- Disadvantages:
 - Compost product quality can be an issue with contaminants
 - Requires significant pre-processing of mixed waste (MSW)
 - Odor issues

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Technology Overview

Biological Treatment Process



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Technology Overview

Thermal Treatment

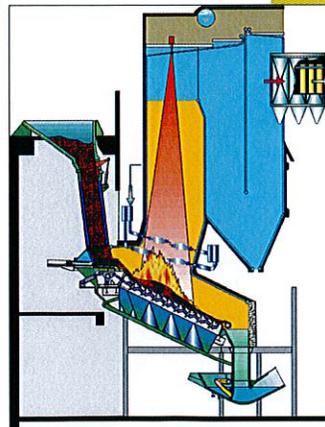
- Examples of Thermal Treatment Technologies:
 - Advanced Thermal Recycling (Municipal Waste Combustors)
 - Gasification
 - Steam Classification / Autoclave

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Technology Overview

- Types of MWCs:
 - Mass Burn Waterwall, Excess Air**
 - Rotary Waterwall, Excess Air
 - Refuse Derived Fuel Units
 - Modular Mass Burn, Starved Air
- Typically European Designed
 - Martin GmbH (Germany)
 - Von Roll (Switzerland)
 - Fisia Babcock (Italy)

Technology

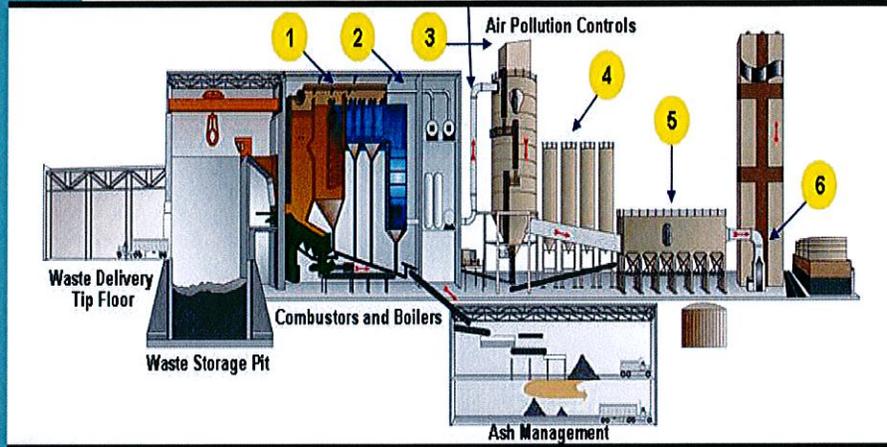


**Most Common in U.S.

Section View:
Mass Burn Waterwall unit (courtesy Martin GmbH)

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Technology Overview - MWCs



Pictured: I-95 Resource Recovery Facility, Fairfax County, VA

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Technology Overview

Municipal Waste Combustors

- Advantages:
 - Proven (+30 years experience in U.S.)
 - Reliable (avg. +90% availability)
 - Reduces GHG emissions
- Disadvantages:
 - Public Opposition to incineration
 - Cost



MacArthur Resource Recovery Facility, Islip, NY

Technology

HDR

Technology Overview

Technology

Types of Gasification Technologies:

- Gasification
- Plasma Arc
- Pyrolysis

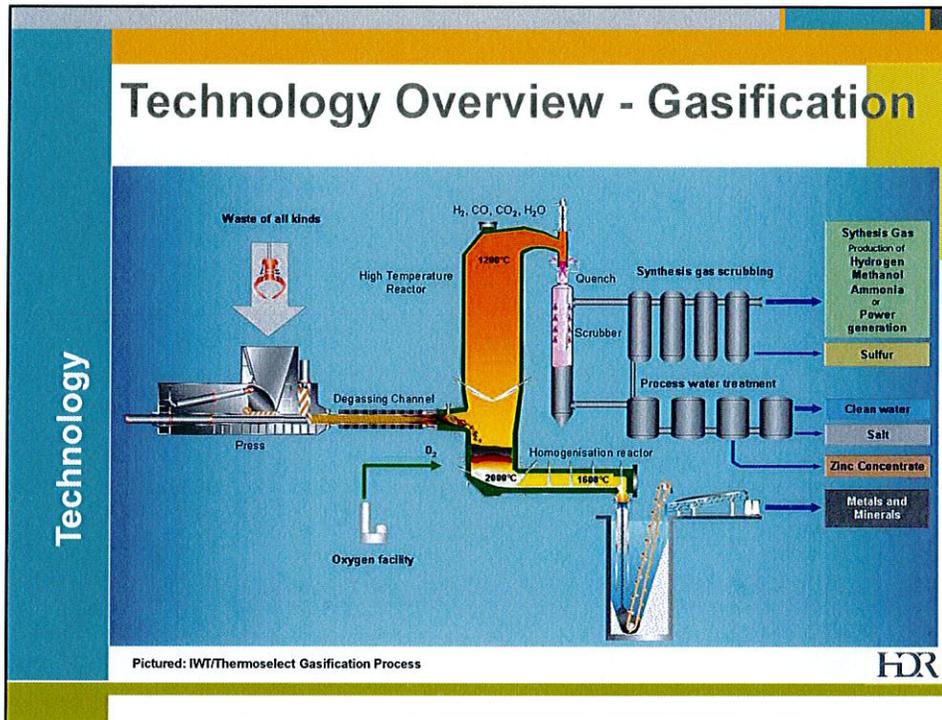
- **Design Principles:**
 - High temperature destruction of MSW without the presence of oxygen
 - Most require significant front-end processing of waste (e.g. size reduction, fuel components)
 - Generates Syngas, slag, metals, other marketable products

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Technology Overview

- **Advantages:**
 - Ash is melted and vitrified and rendered non-hazardous, much of which is sold as slag material
 - Air emissions reported to be well below permit limits of plants
 - Typically modular design – more cost effective for smaller waste streams
- **Disadvantages:**
 - Typically requires preprocessing of fuel
 - Works best with a more uniform and select feedstock (plastics, biomass, industrial waste)

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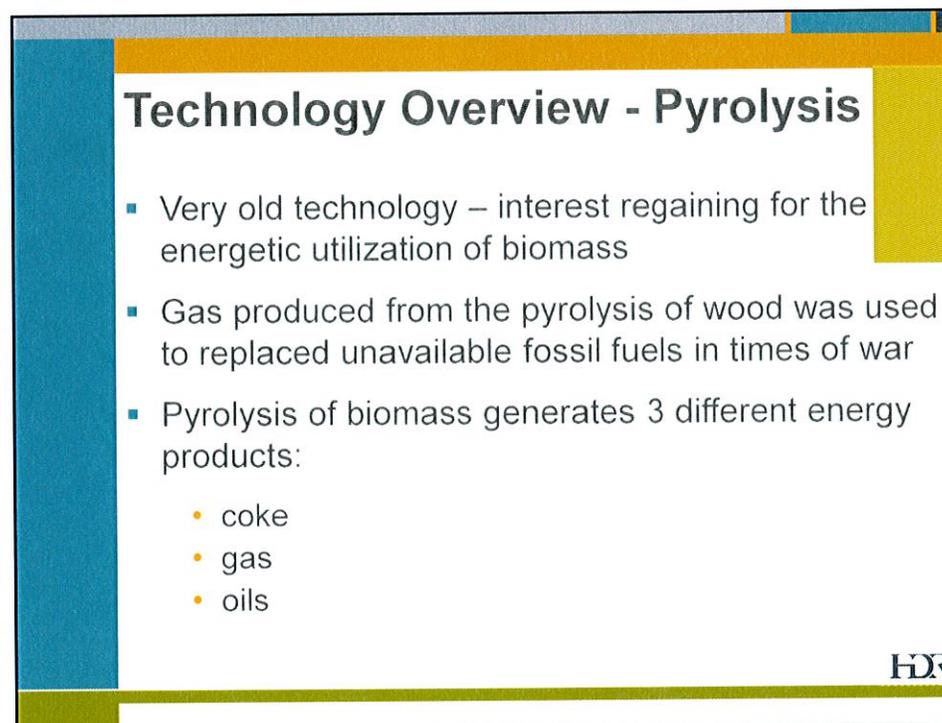
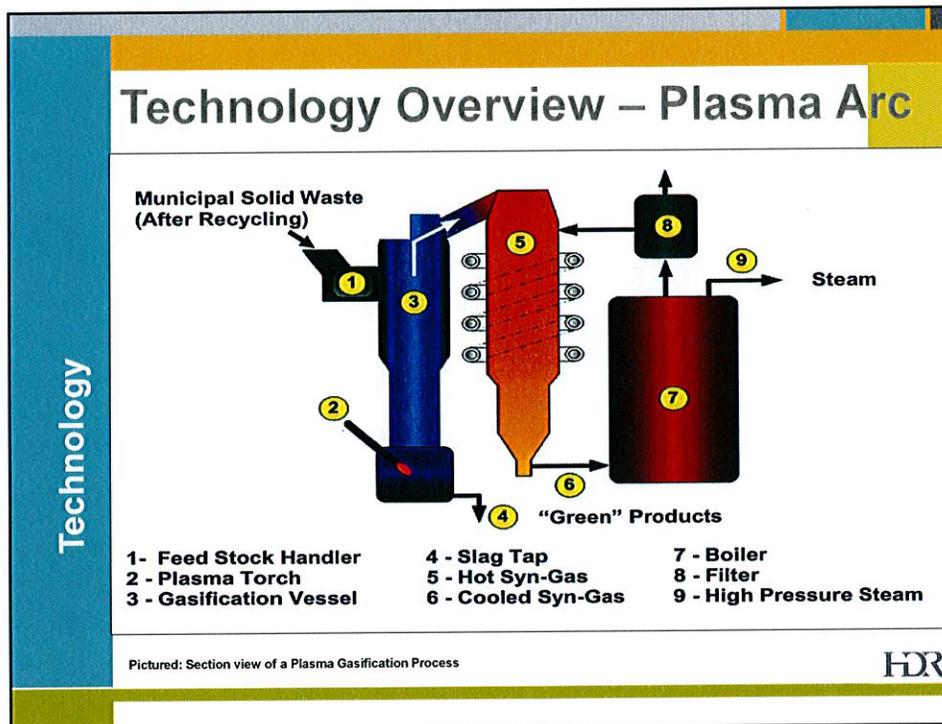
Technology Overview— Plasma Arc

Technology

- Design Principles:
 - Super high temperature destruction of MSW (> b/w 5,000°F-8,000°F) under sub-stoichiometric oxygen conditions
 - Uses Plasma torches located at bottom of reactor
 - Torch requires electricity to generate high temperatures
 - Generates Syngas, high-quality vitrified slag, other marketable products

Furnace

EUROPLASMA



Technology Overview - Pyrolysis

- **Advantages:**

- Produces gas
- Carbon filtration media
- Soil Amendment

- **Disadvantages:**

- Requires significant pre-processing of feedstock
- Requires significant input energy
- Market for by products

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Technology Overview – Steam Classification / Autoclave

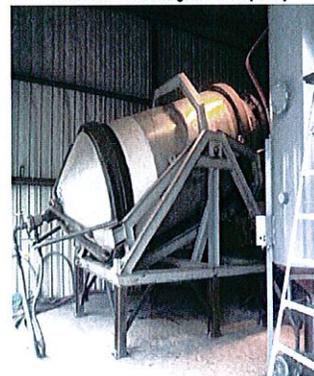
- **Advantages:**

- Marketability of products
- Over 60% reduction in waste volume
- Cellulose recovery
- Ethanol production feedstock
- Digester feedstock for methane production
- Recyclables sold to locally and nationally
- Organics used in pulp production, composting or refuse derived

- **Disadvantages:**

- O&M requirements
- Downtime
- Energy consumption
- Cost
- Environmental concerns:
air emissions (VOCs),
water pollution

Rotating steam autoclave reaction vessel, 6' diameter x 15' long, 2 ton capacity



International State of the Industry

Technology	US	World
Advanced Thermal Recycling	89	650
Gasification	0	38
Plasma Arc	0	1
Pyrolysis	0	12
Hydrolysis	0	0
Steam Classification / Autoclave	0	0
Anaerobic Digestion	0	29
Composting	12	Numerous

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International State of the Industry

- Biological Treatment – Predominantly in Europe
- Majority use food waste and yard waste
- 15 plants were installed between 1991 and 1995, with total capacity of about 200,000 tons
- The expected installed biowaste or MSW capacity by the end of 2010 will be about 6 million tons/year (tpy) divided over 200 plants in 17 European countries
- Germany is the leader in anaerobic digestion capacity

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International State of the Industry

- Biological Treatment:
Example: ArrowBio (Israel)

- Since Feb 2009 non segregated waste
- 100,000 tons per year of MSW
- 23,000 tons of compost product
- 19,000 tons of residue



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International State of the Industry

- Biological Treatment
Example: ArrowBio (Sydney Australia)

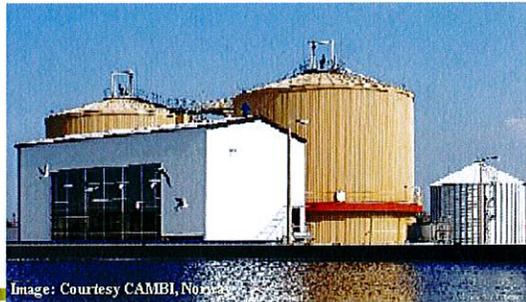
- Since February 2009 the plant receives non segregated waste
- 100,000 tons per year of MSW
- 23,000 tons of compost product
- 19,000 tons of residue



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International State of the Industry

- Biological Treatment
 - Example: Cambi, Norway
 - Initial Hydrolysis stage then 2-stage digester
 - Biogas produced for engine
 - Gas cleaned for town's buses



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International State of the Industry

- Biological Treatment
 - Example: Bassano del Grappa, Italy
 - 110,000 tons/yr of organic waste
 - Originally designed for MSW
 - Currently organics fraction only
 - Held for 35 days in 3 cylindrical digesters that are 3,139 cy
 - Used as compost or fertilizer



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International State of the Industry

Thermal Treatment:

- Advanced Thermal Recycling - MWCs
 - disposes of 13% of the nation's waste
 - 87 operating facilities in the US in 27 states
 - generation capacity in excess of 2,700 MW, or 16 million MWhrs of power annually
 - 650 operating facilities worldwide
 - Mass Burn requires little or no fuel preparation (except RDF)
 - RDF requires fuel processing, results in recovering some recyclables (metals)



U.S. WTE Plants by Technology Generating approx. 2,700 MWs

Technology	Operating Plants	Daily Design Capacity (TPD)	Annual Capacity ⁽¹⁾ (Million Tons)
Mass Burn	64	71,354	22.1
Modular	7	1,342	0.4
RDF – Processing & Combustion	12	15,428	4.8
RDF – Processing Only	2	6,075	1.9
RDF – Coal Combustion	2	4,592	1.4
Total U.S. Plants ⁽²⁾	87	98,791	30.6
WTE Facilities	83	92,716	28.7

(1) Annual Capacity equals daily tons per day (TPD) of design capacity multiplied by 365 (days/year) multiplied by 85 percent. Eighty-five percent of the design capacity is a typical system guarantee of annual facility throughput.

(2) Total Plants includes RDF Processing facilities that do not generate power on site.



International State of the Industry

Thermal Treatment

- Gasification (Gasification, Plasma Arc, Pyrolysis)
 - 0 commercial facilities operating in the US
 - 51 facilities operating worldwide
 - operational issues due to fuel feed system
 - requires significant front-end fuel processing
 - no extensive operation at full load
 - no long duration tests run (MSW)
 - minimal stack testing data released (MSW)

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Gasification & Other Technology Facilities

Location	Technology	Capacity (TPD)				
			MSW	Industrial	Medical Waste	Sewage Sludge
Kawaguchi, Japan	Fluidized Bed Gasification/Ash Melting	420	X	X		
Kuznica, Poland	Gasification	3.5			X	
Fayetteville, AK	Gasification/Biosynthesis	1.5	X			
Romoland, CA	Pyrolysis/Syngas Blower	30	X			
Nagasaki, Japan	Pyrolysis + Gasification/Syngas Engines and Boiler	300	X			
Toyohashi, Japan	Pyrolysis + Gasification/Steam Turbine	400	X			
Kazusa, Japan	High Temperature Gasification	200	X			
Akita, Japan	High Temperature Gasification	400	X	X		X
Heanam, Korea	Gasification	20	X			
Gangjin, Korea	Gasification	25	X			
Bosung, Korea	Gasification	45	X			
Pyungshan, Korea	Gasification	25	X			
Hapchon, Korea	Gasification	20	X			

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Information from "Evaluation of Emissions from Thermal Conversion Technologies Processing Municipal Solid Waste and Biomass" June 21, 2009 by University of California, Riverside

Plasma Arc Facilities

Location	Capacity (TPD)	MSW	WWTP Sludge	PSR	MSW Ash	Industrial	PCBs	Medical	Asbestos	Tannery	Fly Ash	Aluminum Procs	Catalytic Converters	Batteries	Munitions	Ammunition	Shipboard	Chemical Agents
Mihama-Mikata, Japan	28	X	X															
Utashina, Japan	300	X	X															
Kinuura Japan	50			X														
Kakogawa, Japan	30			X														
Shimonoseki, Japan	41			X														
Imizu, Japan	12			X														
Maizuru, Japan	6			X														
Iizuka, Japan	10				X													
Osaka, Japan	4					X												
Taipei, Taiwan	4					X							X					
Bordeaux, France	10			X														
Morcenx, France	22							X										
Bergen, NO	15								X									
Landskrona, SW	200									X								
Jonquiere, Canada	50										X							
Ottawa, Canada	85	X																
Anniston, AL	24											X						
Honolulu, HI	1						X											
Hawthorne, NV	10												X					
Alopc, WV	10													X				
U.S. Navy	7														X			
U.S. Army	10															X		

Information from presentation by Dr. Louis J. Circeo, "Plasma Arc Gasification of Municipal Solid Waste"

International State of the Industry

Thermal Treatment: Steam Classification / Autoclave

- 0 commercial facilities in US
- 0 facilities operating worldwide

- Three demo projects in U.S.:
 - Salinas Valley, CA
 - Twin Cities, MN
 - Anaheim, CA (closed)

- Converts MSW to sterilized organics and in-organics
- Inorganics can be further processed for recycling and diversion
- Organics used in pulp production, composting

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Other Municipalities

- Biological
 - Cedar Grove Composting near Seattle, WA - energy equivalent to power 400 homes
 - 50,000 tons/yr food waste
 - 275,000 tons/yr yard waste
 - Los Angeles Department of Public Works
 - Convert 150 tons/day of post-recycled organic MSW
 - Products: biogas and compost
 - Boston area – Harvest Power developing techniques for turning organic waste into energy or fertilize.
 - City of San Jose, Calif., contracted with Harvest Power as part of a renewable-energy program
 - None of these facilities process MSW wastestream

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Other Municipalities

Advanced Thermal Recycling

- Mass Burn
 - Olmsted County, MN (expansion)
 - Lee County, FL (expansion)
 - Hillsborough, FL (expansion)
 - York, PA (expansion)
 - Islip, NY (expansion)
 - Hempstead, NY (expansion)
 - Peel Region, Canada (expansion)
 - Alexandria, MN (expansion)
 - Durham Region, Canada (new facility)
 - Chester, SC (new facility)
 - Harford, County, MD (new facility)
 - Frederick County, MD (new facility)
 - City of LA, CA

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Other Municipalities

- RDF
 - Honolulu, HI (expansion)
 - West Palm, FL (expansion)
 - Hartford, CT (expansion)
 - Mecklenburg County, NC (new facility)

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Other Municipalities

- Gasification
 - St. Lucie Co., FL – FLDEP issues permit to construct 600 tpd plasma arc facility
 - LA County selects three technologies for demonstration
 - Ottawa, Canada (pilot – plasma arc)
- Hydrolysis
 - Lancaster, PA
- Pyrolysis
 - Romoland
 - San Diego
- Steam Classification / Autoclave
 - Salinas Valley, Ca.
 - St. Paul, MN
 - Anaheim, CA (closed)

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Proven vs Emerging

- Commercially Proven:
 - Advanced Thermal Recycling (Waste-to-Energy)
 - Mass Burn
 - Refuse Derived Fuel (RDF)

- Less Commercially Proven :
 - MSW Composting

- Not Commercially Proven for MSW:
 - Pyrolysis (emerging)
 - Gasification (emerging)
 - Plasma Arc (emerging)
 - Anaerobic Digestion
 - Hydrolysis
 - Steam Classification / Autoclave

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Cost and Environmental Concerns

Technology	Tipping Fee (\$/ton) New Facilities	Capital Costs (\$/ton/day Design Capacity)
Advanced Thermal Recycling	\$60 - \$150	\$150,000 – \$250,000
Gasification	\$300 (+/-)	\$275,000 (+/-)
Plasma Arc	\$300 (+)	\$275,000 (+)
Pyrolysis	\$300	\$200,000 - \$275,000 (+/-)
Hydrolysis	unknown	unknown
Steam Classification / Autoclave	\$85	\$40,000 (+/-)
Anaerobic Digestion	\$130 (+/-)	\$110,000 (+/-)
MSW Composting	\$40 - \$100	\$30,000 - \$60,000

Note: Tipping fees noted for advanced thermal recycling facilities are typical for municipality-developed facilities with contracted operations. Other fees provided were obtained from facility visit, discussions with operations, and internet information.

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Some WTE Costs from Hawaii

Location	MSW Capacity TPD	Capital Cost at Location (\$1,000)	Net Cost \$/ton	Capital Costs (\$/ton/day Design Capacity)
Hawaii County, HI ⁽¹⁾	230	\$125.5M	135	\$545,000
Honolulu County, Hawaii ⁽²⁾	854	\$90.72	91	\$110,000
Maui County, HI ⁽³⁾	360	\$86 M	81	\$240,000

Source :

- 1) Big Island's Waste to Energy Plant Moves Forward, Advertiser Big Island Bureau, Kevin Dayton, April 2009
- 2) <http://www.brighterenergy.org/3754/news/bioenergy/302m-expansion-for-hawaii-energy-from-waste-plant/>
And <http://www.covantaholding.com/site/news-2009/december-21, 2009>
- 3) County of Maui, Integrated Solid Waste Management Plan, February, 2009, GBB

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Cost and Environmental Concerns

Technology	Environmental Concern
Advanced Thermal Recycling	combustion emissions, ash disposal
Gasification	combustion emissions, byproduct use
Plasma Arc	combustion emissions, ash disposal
Pyrolysis	combustion emissions, ash disposal
Hydrolysis	combustion emissions, VOC emissions
Steam Classification / Autoclave	VOC emissions, wastewater treatment
Anaerobic Digestion	Odors, air emissions
MSW Composting	Odors, air emissions

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Summary

- Advanced thermal recycling technologies such as mass burn and RDF are commercially proven at all ranges of processing capacity
- Expansions of existing MWCs are underway or in the planning phase; some greenfield development in US and Canada

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Summary

- Alternative conversion technologies (gasification, plasma arc, pyrolysis) show promise, but currently have proved to be commercially viable for high BTU, homogeneous waste streams – not typical MSW
 - factual performance, emissions and cost data difficult to obtain
 - applicability of existing regulations to technology in many states not clear

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Summary

- Public opposition exists with regard to any new facility development – NIMBY
- For all alternative technologies, capital and operational costs are higher than that for traditional landfill disposal

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Next Steps

- Important Issues to Consider:
 1. Some proposed technologies not proven commercially at required capacity
 2. Experience and Financial viability of some proposers
 3. Conditions of the “deal” have not been established – No contract T&Cs, guarantees, pass-throughs, etc. provided
 4. The majority of the offers imply the use of the White Street facility property

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Next Steps

1. Request sent to offerors for extension of proposal validity date
2. Policy decisions indentified previously need to be addressed
3. A detailed list of questions and request for information needs to be prepared for each proposal
4. Establish Evaluation Criteria
5. Apply criteria based on all information received and rank and short-list offerors
6. Interview short-listed firms and provide recommendation for negotiation

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End

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