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Policy Short-Sightedness with Regard to Integrated Waste Management in North America

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GBB -- Quality – Value – Ethics – Results



- Established in 1980
- Solid Waste Management and Technology Consultants
- Helping Clients Turn Problems into Opportunities

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2



GBB Waste Technology Services

- Economic, technical, and environmental reviews
- Markets development
- Process planning and design
- Waste characterization and sourcing
- Procurement and negotiation assistance
- Independent feasibility consultant
- Technology due diligence
- Acceptance testing and operations monitoring





3



RENEWABLE Energy

FROM WASTE CONFERENCE



NOVEMBER 17 - 20, 2014
SAN JOSE, CALIFORNIA

Food Waste or Fuel Source?

DEPARTMENTS - CRITICAL THINKING
Harvey Gershman
OCTOBER 16, 2013

Nahvee... take out the garbage. It stinks! my mom used to remind me of my household chore growing up in Pawtucket, R.I. in the 60s. We had a 30-gallon can for food waste in the back corner of our lot waiting to be collected by the city and delivered to pig farmers for feed. Neighboring Providence did it a little differently. It had to be bundled in newspapers and set out for collection, eventually to find its way to pig farmers.

Fast-forward to the new millennium. We are serious about increasing recycling even more by going after organics. The U.S. Environmental Protection Agency reports that food waste accounts for approximately 21 percent of landfilled municipal solid waste (MSW), or around 35 million tons per year (TPY). This waste is a resource that can be used to produce bioogas, for power production or

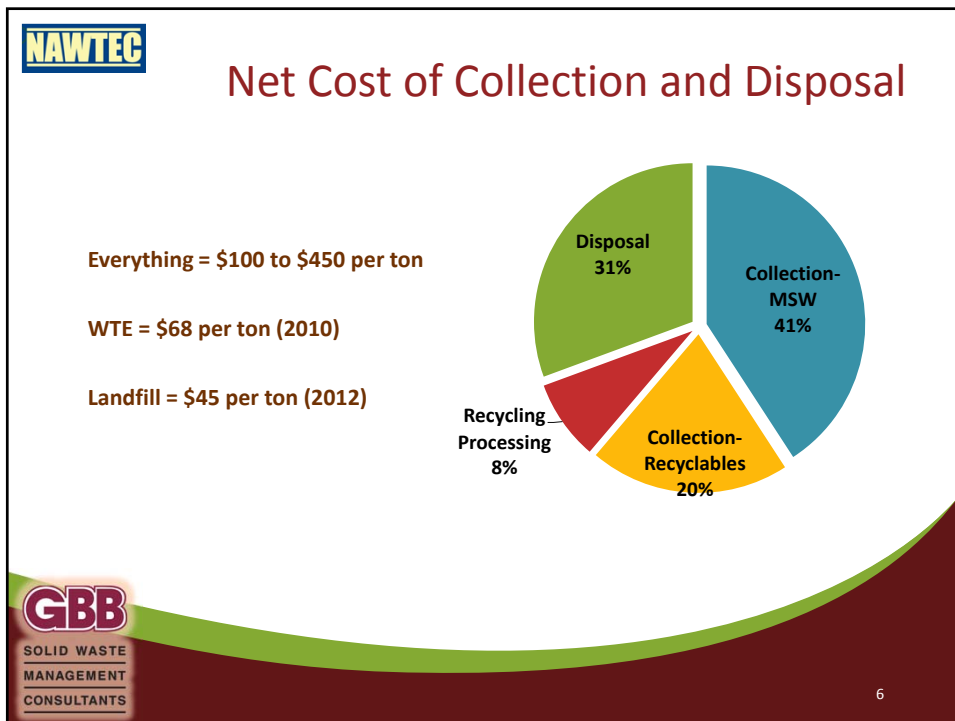
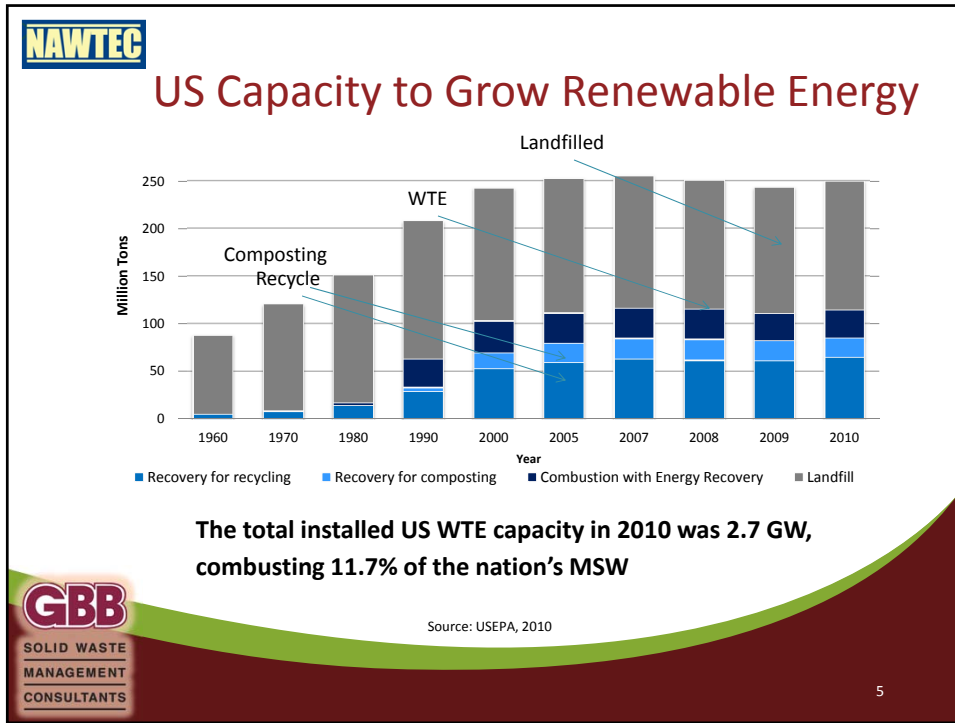


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4





How did US get to this?

- Earth Day 1970 was an awakening
- Federal
 - Demonstration grants for ‘proven’ technologies in the 1970s
 - Slow implementation of Subtitle D for sanitary landfills
 - Urban planning grants for development of recycling and waste-to-energy in the late 1970s and early 1980s
 - EPA Agenda for Action and Waste Hierarchy
 - Loan/grants for renewable fuels in 2000 +
- States
 - Slow adoption of Subtitle D for sanitary landfills
 - Wide variance in laws for recycling, diversion, and renewable energy
 - Some bans on landfilling yard waste and now organics



7




How did US get to this? (Cont'd)

- Industry
 - Slow to embrace using recyclables
 - Moved production overseas; decline in domestic consumption of recyclables
 - Promote new technologies and programs to avoid deposit legislation
- Local Governments
 - React to crises – The dump is closed! *Now what?*
 - Initial rush to WTE, like western Europe
 - Move to recycling, fear of ‘incineration’
 - Always concerned about cost impact
 - Citizens love to recycle
 - Now move to sustainability



8




Recent State Regulatory Initiatives

State goals to drive action:

- CA- 75% of MSW & 50% organic waste by 2020
- OR- 50% recovery goal met in 2010; Material management 2050 Vision
- VT – landfill ban for all recyclable and compostable materials by 2020
- WA- 50% recycling met in 2011; eliminate yard waste from landfills by 2012

States with bans on food waste from commercial generators:

- CT - 2014 (large generators); 2020 (all generators)
- MA - 2014
- VT - 2014 (large generators); 2020 (all generators)



9



Recent Local Community Initiatives



San Francisco

- Zero Waste Goal
- Mandatory Recycling and Composting Ordinance, 2009
- First residential food waste collection program in the US
- 99% of the households are covered
- Commingled with yard waste



Seattle

- Goal is to divert 60% of MSW to recycling and composting by 2012, and 70% by 2025
- Commingled with yard waste
- The single family sector 70.3% recycling rate in 2010 due to increased food waste collection



Portland

- Currently on 70% waste diversion
- Goal is 75% by 2015, and 90% by 2030
- Residential and commercial program
- Commingled with yard waste
- Currently capture 45% of the organics available in the MSW



New York City

- Implemented successful pilot program in single family homes in 2012
- Plan to expand collection citywide by September 2013
- Plan to expand to commercial and institutional
- Issue an RFP for AD plant in 12 months



10





SWAPBC



Monterey



Quasar



Enerkem



Honolulu



INEOS Bio



11



The Sustainable Waste Management Ladder

Earth Engineering Center, Columbia University (based on Eurostat 2008 data)

Country	% Recycled	% Composted	% Landfilled	% to Waste-to-Energy
Netherlands	10	10	10	70
Germany	15	10	10	55
Sweden	15	10	10	55
Austria	15	10	10	55
Denmark	15	10	10	55
Belgium	15	10	10	55
Luxembourg	15	10	10	55
France	15	10	10	55
Italy	15	10	10	55
Finland	15	10	10	55
United Kingdom	15	10	10	55
Spain	15	10	10	55
Ireland	15	10	10	55
Portugal	15	10	10	55
Slovenia	15	10	10	55
Hungary	15	10	10	55
Estonia	15	10	10	55
Greece	15	10	10	55
Slovakia	15	10	10	55
Czech Republic	15	10	10	55
Poland	15	10	10	55
Cyprus	15	10	10	55
Latvia	15	10	10	55
Lithuania	15	10	10	55
Malta	15	10	10	55
Romania	15	10	10	55
Bulgaria	15	10	10	55

U.S.A. SOG 2008 data



Source: Earth Engineering Center, Columbia University, 2009

12



How High are the EU Landfill Taxes?

- Highest landfill tax rates and a ban too! >>>\$100 per ton!!
- 1999 EU Landfill Directive
 - Reduce biodegradable waste sent to landfill 65% by 2020
- EU targets to be met by 2020 (the '20-20-20' targets):
 - Greenhouse gas emissions of at least 20 percent below 1990 levels
 - 20 percent of energy consumption from renewables
 - 20 percent reduction in primary energy use by energy efficiency

Country	Landfill Tax
Austria	€ 87
Belgium	€60-€80
Denmark	€ 63
Finland	€ 40
France	€ 70
Germany	Ban
Ireland	€ 50
Netherlands	€ 107
Norway	€ 59
Sweden	€ 43
UK	€ 63



Lots of WTE in Europe



Countries	Thermally treated waste in 2009 (tons)
Austria	2,425,084
Belgium	3,086,471
Czech Republic	440,924
Denmark	3,858,089
Finland	330,693
France	15,101,661
Germany	21,054,140
Hungary	440,924
Ireland	220,462
Italy	4,960,400
Luxembourg	110,231
Netherlands	6,944,559
Norway	1,102,311
Poland	44,092
Portugal	1,212,542
Spain	2,425,084
Slovakia	220,462
Slovenia	11,023
Sweden	5,180,862
Switzerland	3,968,320
UK	3,747,857
Total	76,886,192



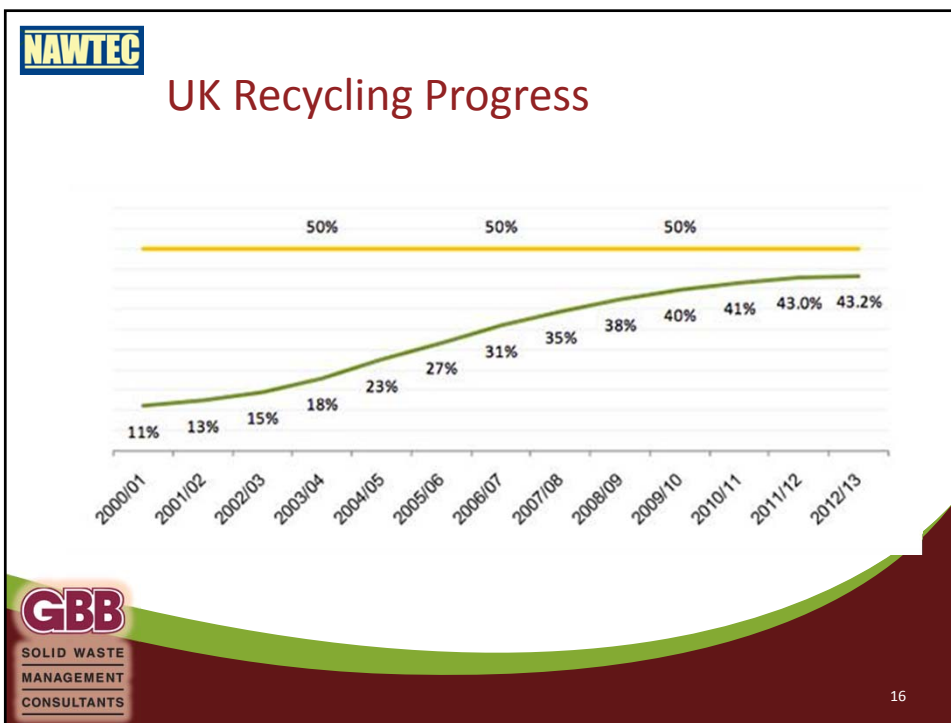
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UK Waste Management Policy Drivers

- **Waste Framework Directive (WFD)** –primary EU legislation implemented in England and Wales by the Waste (England and Wales) Regulations 2011
- **Integrated Pollution Prevention and Control Directive (IPPCD)**
 - To deliver a high level of environmental protection by limiting emissions
 - Will be replaced by the Industrial Emissions Directive (IED)
- **Environmental Permitting (England and Wales) Regulations 2010**
 - Provides a single regulatory framework for an environmental permitting and compliance system

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UK Renewable Energy Policy Incentives

- Promotes low carbon and renewable energies

- Renewable Obligations Certificates (ROCs)
- Feed-in-Tariffs (FiT)
- Renewable Heat Incentives (RHI)


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Change Federal Policies

- Establish national goal for zero waste to landfills by 2020
 - 50-60-70% recycling/composting
 - organics ban
 - renewable fuel use
- New infrastructure
 - Disposal taxes
 - Planning grants, loan/grants, and investment tax credits
- Technical assistance and training as done in the 1970s/1980s
- Mandate recycled content in products
- Lead the way with RFS and EF rules (EPA)
- Incentives for diversion and GHG reductions



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Change State Policies

Ban organics from landfills
Tax landfill disposal and reinvest funds into new infrastructure
Streamline permitting
Raise the bar for recycling/diversion goals and Producer Responsibility (EPR)

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Engineered Fuel for Significant Landfill Diversion in California

- In California, 139 “intermediate processing” facilities accept “aggregated materials” of some kind for “material recovery”
- Of the 139 facilities:
 - 56 (or 40 %) process “mixed solid waste”
 - 54 (or 39 %) process “mixed inerts/C&D”
- These facilities can be retrofitted to produce Engineered Fuel
- Use Engineered Fuel in:
 - Existing Cement Kilns
 - Existing Biomass and Coal Boilers
 - New Dedicated Boilers/WTE facilities permitted with MACT

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NAWTEC Recycling and Power or Fuel Production Potential from Landfilled Waste

- Additional recyclables recovered @ 10 percent of tons
- 1,000 TPD of MSW (340,000 TPY) = 20 MW
- 1 Ton of MSW = 60 gallons ethanol

State	Landfilled (Tons)	Potential			
		Materials Recovery (Tons)	Electricity (MW)	or	Ethanol (MG)
CA	28,216,903	2,821,690	1,660	or	1,693
OR	2,689,119	268,912	158	or	161
WA	4,986,236	498,624	293	or	299

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NAWTEC New Initiative – “Closed Loop Fund”

- Provide zero interest loans to municipalities to invest in recycling infrastructure and private companies focused on waste reduction and recycling
- Create a link between the companies who need recycled material back to reduce cost and the capital for municipalities to invest in recycling infrastructure and programs to divert material from landfills to recycling
- Founding investors include Walmart, Coke, Pepsi, Procter & Gamble, Unilever, Johnson & Johnson, Green Mountain Coffee and Goldman Sachs
- Ron Gonen, inventor/founder of RecycleBank, announced as the Co-Founder and CEO

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NAWTEC Summary
Policies and Programs Needed

Mandatory Recycling

Financial Incentives

Pay As You Throw

Public Education

Extended Producer Responsibility

Landfill Bans

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Questions and comments?

Thank you!

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24