

# Economic and Policy Drivers in the WTE Sector

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President  
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NEWMOA webinar  
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## Overview

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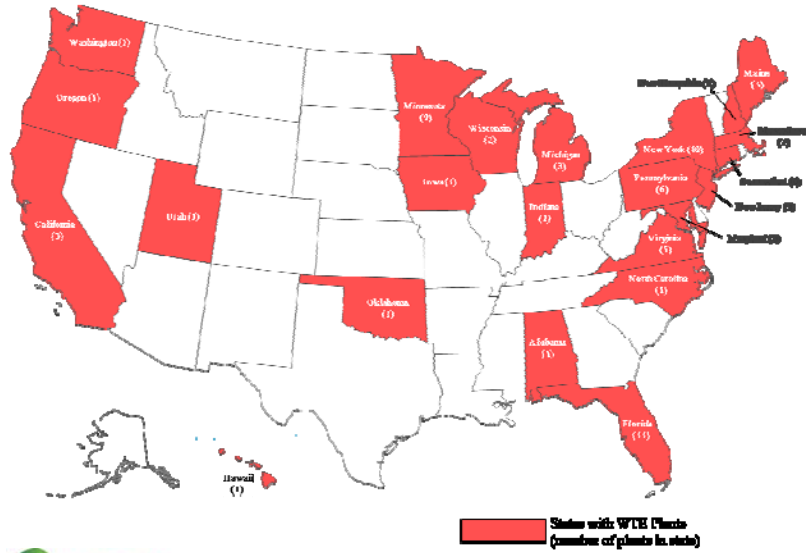
- WTE Overview
  - Market Conditions for WTE
  - Overview of WTE Economics
  - Specific Policy Opportunities
    - REC —TAX —GHG —SOLID WASTE —ASH
  - Potential Impact of Specific Policies on Bottom Line
  - Conclusions
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# WASTE-TO-ENERGY OVERVIEW



## Waste-to-Energy Locations in the US



## Waste-to-Energy Locations in the Northeast



### Connecticut

- 1) Bristol Resource Recovery Facility
- 2) CRRA Hartford Trash-to-Energy Plant
- 3) Southeastern Connecticut Resource Recovery Facility
- 4) Wallingford Resource Recovery Facility
- 5) Wheelabrator Bridgeport, L.P.
- 6) Wheelabrator Lisbon Inc.

### Massachusetts

- 1) Haverhill Resource Recovery Facility
- 2) Pioneer Valley Resource Recovery Facility
- 3) Pittsfield Resource Recovery Facility
- 4) SEMASS Resource Recovery Facility
- 5) Wheelabrator Millbury Inc.
- 6) Wheelabrator North Andover Inc.
- 7) Wheelabrator Saugus Inc.

### Maine

- 1) ecomaine (Portland)
- 2) Mid-Maine Waste Action Corporation
- 3) Penobscot Energy Recovery Company

### New Hampshire

- 1) Wheelabrator Claremont Company, L.P. (inactive)
- 2) Wheelabrator Concord Company, L.P.

### New Jersey

- 1) Covanta Camden Energy Recovery Center
- 2) Covanta Warren Energy Resource Company Facility
- 3) Essex County Resource Recovery Facility
- 4) Union County Resource Recovery Facility
- 5) Wheelabrator Gloucester Company, L.P.

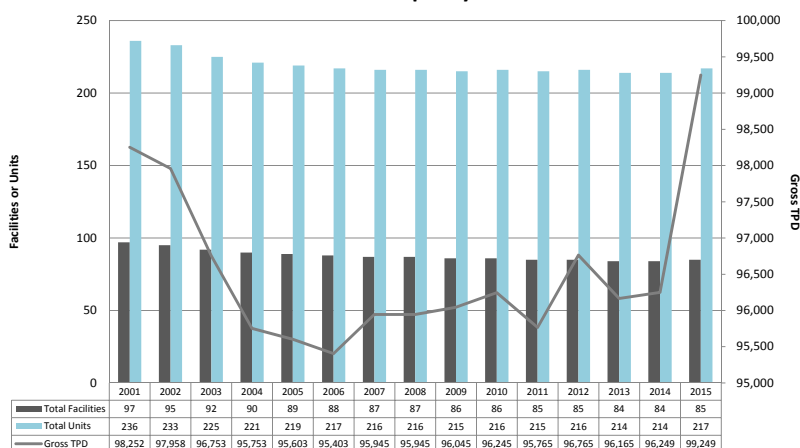
### New York

- 1) Babylon Resource Recovery Facility
- 2) Covanta Hempstead
- 3) Dutchess County Resource Recovery Facility
- 4) Huntington Resource Recovery Facility
- 5) MacArthur Waste-to-Energy Facility
- 6) Niagara Resource Recovery Facility
- 7) Onondaga County Resource Recovery Facility
- 8) Oswego County Energy Recovery Facility
- 9) Wheelabrator Hudson Falls L.L.C.
- 10) Wheelabrator Westchester, L.P.

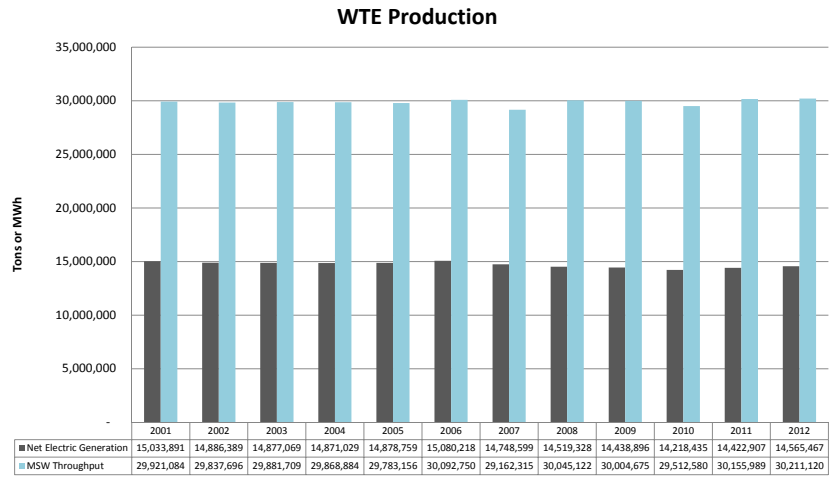


## Industry Status - 84 WTE facilities in 23 States in 2014

### WTE Capacity

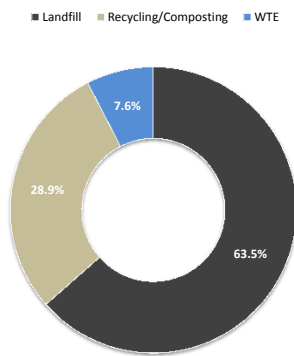


## Industry Status - 84 WTE facilities in 23 States in 2014

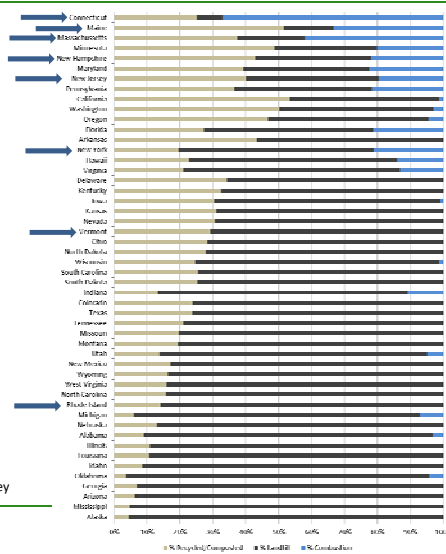


## Industry Status - 84 WTE facilities in 23 States

### MSW in the United States



Source: 2011 data based on Columbia University EEC 2013 Survey

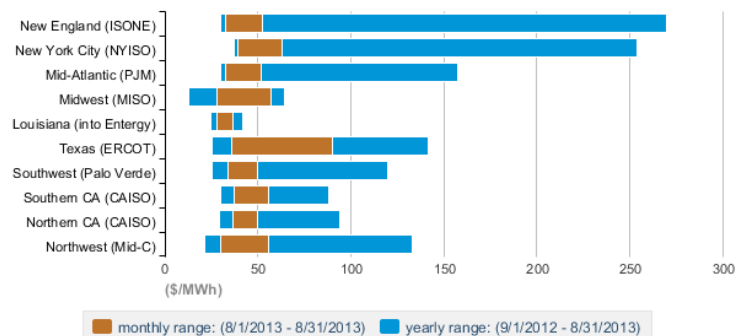


## MARKET CONDITIONS FOR WASTE-TO-ENERGY



### What are the Market Conditions for WTE?

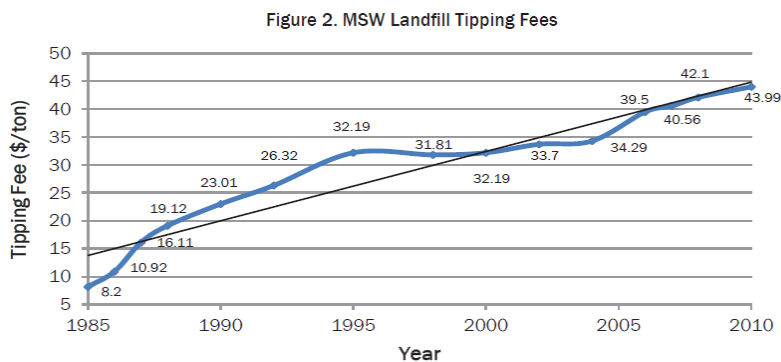
Monthly and annual range of wholesale electricity prices for selected regional trading hubs, August 2013



eia Source: U.S Energy Information Administration based on SNL Energy



## What are the Market Conditions for WTE?



Source: "Municipal Solid Waste Landfill Facts" (National Solid Waste Management Association)



## OVERVIEW OF WTE ECONOMICS



## It's the Economy!

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The economics of a WTE facility must make sense for the facility to be developed. Other issues are important, but subordinate.



Palm Beach County Waste-to-Energy Project, April 19, 2013



## Policy Impact (+ or -)

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Does a policy help build a project that would not have otherwise been built or increase the economic viability of an existing facility?

OR

Does a policy create a burden that makes it more difficult for a facility to sustain itself economically?



## Illustrative Profit & Loss Statement

**NOTE: This is a hypothetical situation and a combination of facility-specific factors and market conditions can lead to vastly different overall financials.**

Hypothetical Waste-to-Energy Facility, Privately Owned			
Operating Revenues		Waste Capacity (tpd):	1,000
Tipping Fees	24,703,200	Energy Capacity (MW):	25
Special Waste	2,956,500	Availability (%):	90%
Energy Sales	7,982,550	Parasitic Load (%):	10%
Recycled Metals	1,231,875		
Policy-related Revenue	-	MSW Tipping Fee:	80.00
Total Operating Revenues	36,874,125	Special Waste Tip Fee:	150
		MWH wholesale price:	45
Operating Expenses		Ash Disposal Tip Fee:	45
Wage & Benefits	4,927,000	Metals price:	150
Parts & Maintenance	6,898,000	Throughput (tons):	328,500
Supplies	1,576,000	Net Elec. Output (MWh):	177,390
Ash Hauling and Disposal	3,695,625	Throughput MSW (%):	94%
Misc Expense	197,000	Throughput Special Waste:	6%
State & Local Taxes	900,000	Metals Recycling (% throughput):	2.5%
Total Operating Expenses	18,193,625	Capital Cost (\$/installed ton):	275,000
Debt Service	17,603,290	Financing Term	25
Maintenance Capital Expenditures	750,000	Interest Rate (%)	4%
Net Operating Income (Loss)	327,210		



## Summary of Economic Factors

- The combination of many different factors contribute toward the economics of any particular facility, including:
  - Location of the facility
  - Facility capacity and % of capacity utilized
  - Market conditions for MSW tipping fees, energy revenue, metals revenue, and ash disposal fees
  - Operations and maintenance costs
  - Meaningful policy incentives





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## SPECIFIC POLICY OPPORTUNITIES

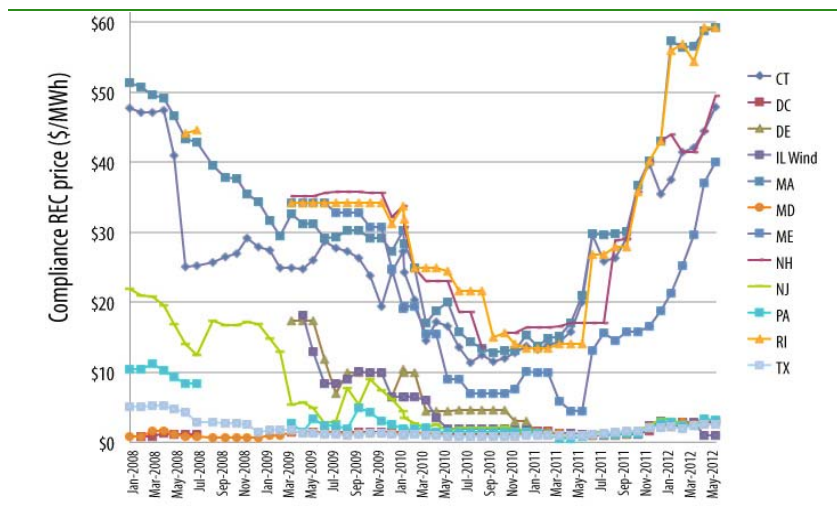


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## RENEWABLE ENERGY CREDITS



## REC: Renewable Energy Credits

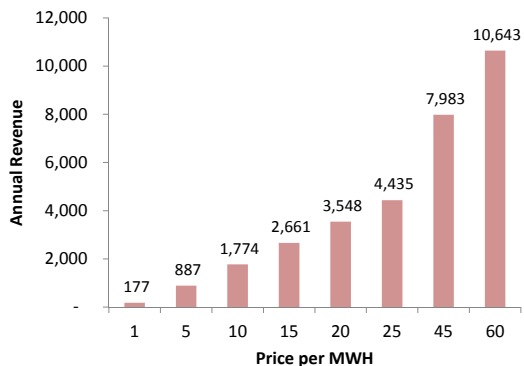


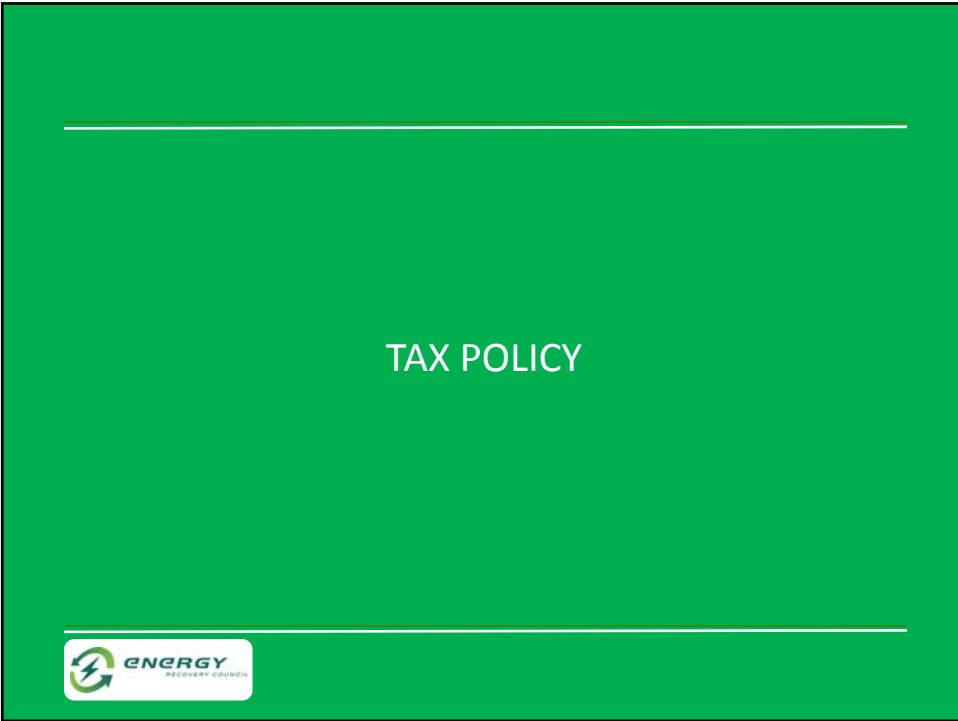
Compliance market (primary tier) REC prices, January 2008 to June 2012  
Sources: Spectron Group (2012).

## REC: Renewable Energy Credits

- Pro:
  - Can be applied to new and existing facilities
- Con:
  - Market price can fluctuate dramatically

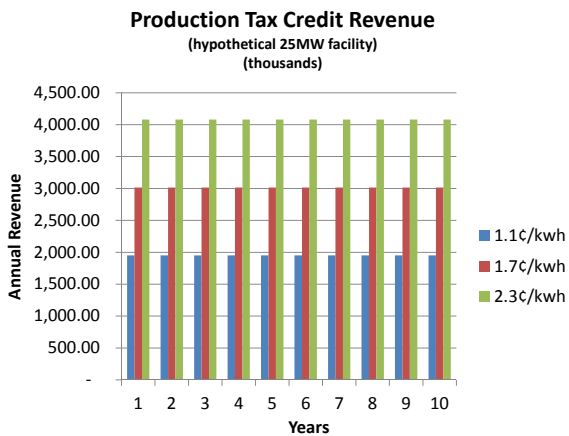
**Renewable Energy Standard Revenue**  
(hypothetical 25MW facility)  
(thousands)





### TAX: Production Tax Credit (PTC)

- Currently lapsed
- 10 years payout @ 1.1 cents/kwh
- The future of the program is being debated in Congress.
- It only applies to new capacity owned by taxpayers.



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## GREENHOUSE GASES

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### GHG: Greenhouse Gases

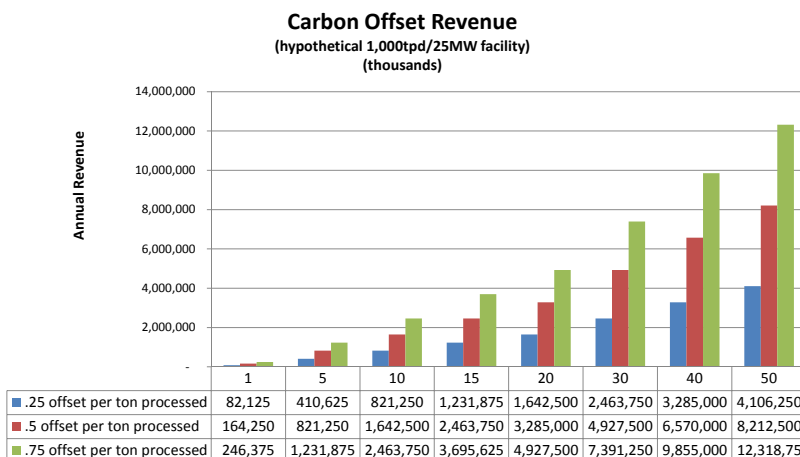
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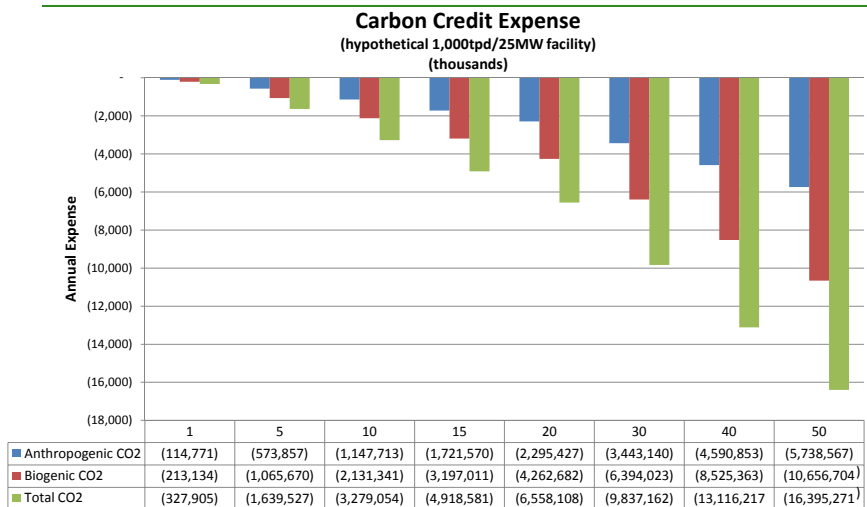
- Putting a price on carbon
  - State and regional GHG programs address global warming
  - The national debate ebbs and flows
- Policy drives economics
  - Will WTE generate and sell offsets?
  - Will WTE be forced to buy credits?

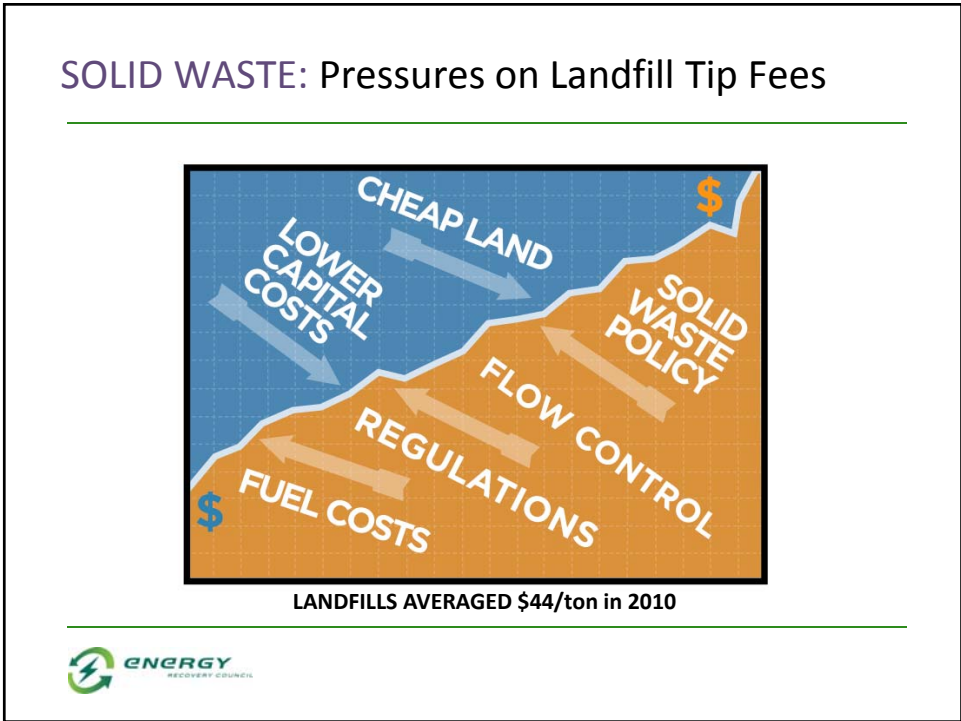


## GHG: Potential Carbon Offset Revenue

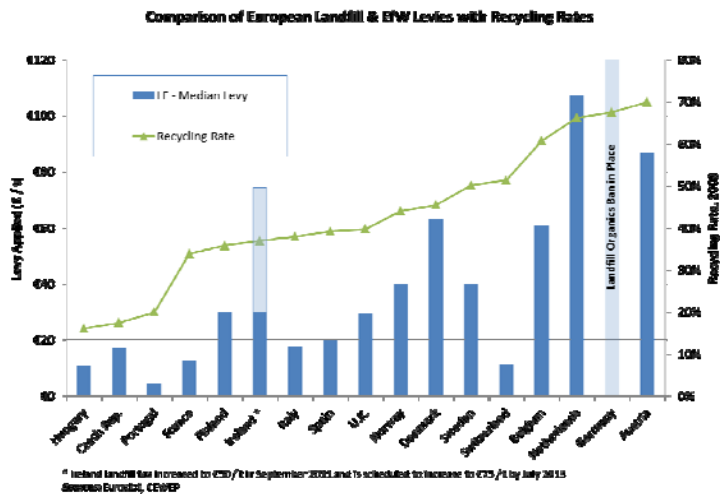


## GHG: Potential Carbon Credit Expense





## SOLID WASTE: EU Solid Waste Policy



## ASH DISPOSAL AND REUSE



## From **ASH** Disposal to **ASH** Reuse



ASH IS ~25% OF INCOMING WASTE BY WEIGHT AND ~20-40% OF O&M COSTS

MOVING FROM DISPOSAL TO REUSE REQUIRES OVERCOMING



TECHNICAL BARRIERS



REGULATORY BARRIERS



COMMERCIAL BARRIERS



Photo Courtesy of LCSWMA

## CONCLUSIONS





## Conclusions

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- Market conditions play a large role in renewable industries
- Government policies can and oftentimes do influence markets
- Specifics of policy have enormous impact on usefulness of policy for any technology. Details matter.
- Policies are relative to competitors: a small gain can be a big win if it coincides with a disadvantage for a competitor
- The market conditions for new WTE development can improve with progressive government policy



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