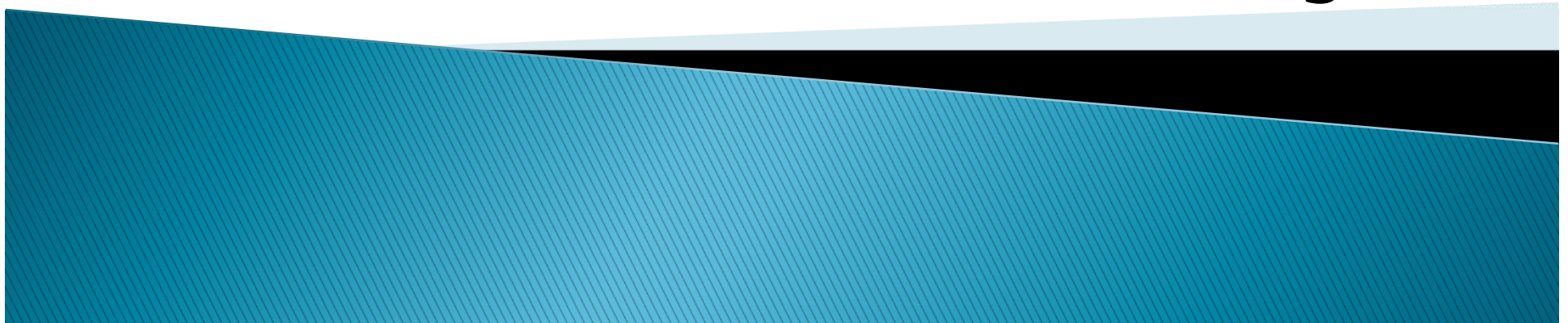


# Renewable Waste Executive Findings

Maximise ROI, negotiate regulations and increase investment opportunities for Municipal Solid Waste projects

## 5 Minute Findings



# U.S Waste Conversion Market

There are **30 states** with renewable portfolio standards in place. Eight others have set voluntary goals – ones not set out in legislature. This is to achieve a certain proportion of renewable energy.

In federal facilities, the US has set a target of **7.5% renewable consumption** from 2013 onwards.

Yet there are currently only **22 waste to energy projects** in an advanced state of **planning** in the US.

# Investment

Partnerships are already being formed between start-ups and equity investors.

Such partnerships have driven some of the developers as far as IPO. But there were still only a few **renewables deals** in 2011 – **24 biofuel and 8 biomass** – compared with the much **wider renewables market**, which totalled **195**.

The consensus of the executives interviewed in this report is that waste to energy **offers significant investment opportunity over the long term**. There is a clear market for **biofuel and renewable energy outputs** and the producer landscape is under-populated.

However, the following factors impact any investment strategy:

1. No current 'industry standard'
2. Over-reliance on government support is outdated
3. Targets with the most potential seek strategic as well as financial investment
4. Current best-case scenarios involve a team of investors
5. Initial attempts at commercialisation are experimental
6. Investment timescales are long-term – a 20 year ROI is expected

# Market Activity

The US currently has **143 conversion companies operating** either commercial or demonstration facilities with MSW. Financing for the majority of these has been from a combination of debt financing, federal loans and incentive, private equity, and venture capital

**Table 4: Waste to Energy Plants and Conversion technologies processing MSW in the US**

*Source: Harvey Gershman; President of Gershman, Brickner & Bratton, Inc.; hgershman@gbblinc.com; 2011*

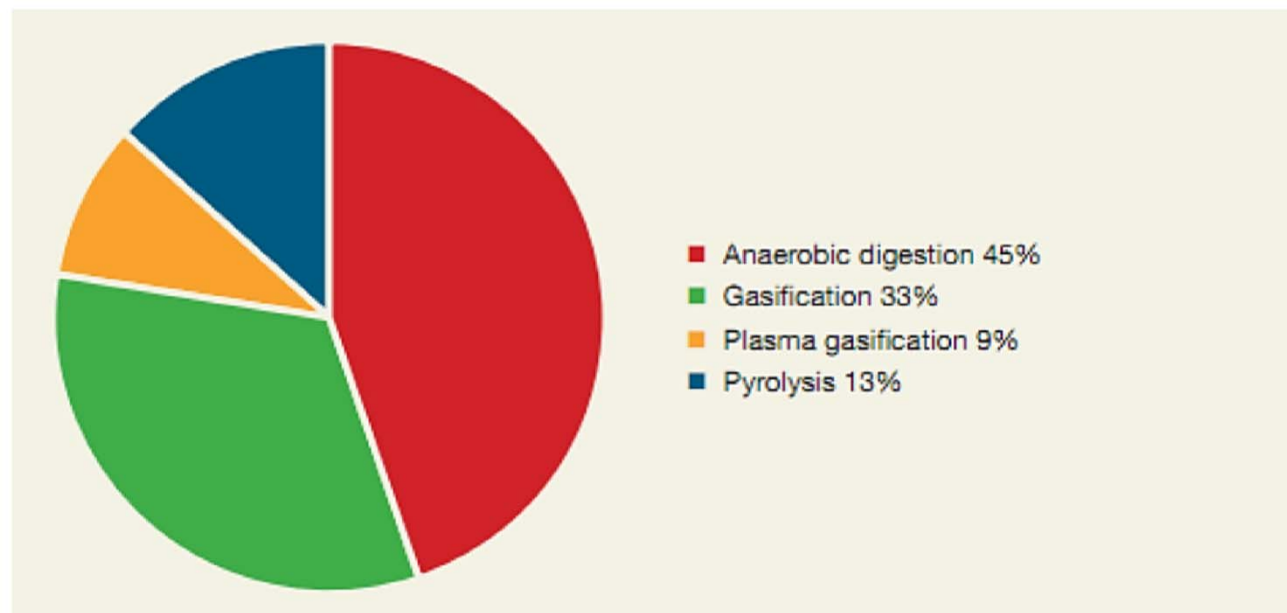
Technology	Total
Mass Burn	64
Modular	7
RDF	13
RDF coal	2
Anaerobic digestion	64
Gasification	47
Plasma gasification	13
Pyrolysis	19

# Technology Split

Technology Split of 143 alternative conversion Waste to Energy Technologies in the US, 2011

**Figure 2: Technology split of 143 alternative conversion Waste to Energy technologies in the US, 2011**

*Source: Harvey Gershman; President of Gershman, Brickner & Bratton, Inc.; hgershman@gbbinc.com; 2011*



# Costs

## Operating Costs for Food Scraps Composting Facilities

**Table 6: Operating Costs for Food Scraps Composting Facilities**

Source: [www.dec.ny.gov/docs/materials\\_minerals\\_pdf/frptbeyondwaste.pdf](http://www.dec.ny.gov/docs/materials_minerals_pdf/frptbeyondwaste.pdf)

Facility	Operating cost
NYS Department of Corrections, New York	\$34/Ton
Terra Firma Organics, Wyoming	\$50/Ton
Barnes Nursery, Ohio	\$26/Ton
Cedar Grove, Washington	\$55/Ton
Mackinac Island, Michigan	\$37/Ton
City Of Ann Arbor, Michigan	\$52/Ton

(Source: Dimino, 2010)

# Funding

## Top USDA Funding Hydrolysis Projects, 2011

**Table 10: TOP USDA  
funding Hydrolysis  
projects, 2011**

Source: [http://www.biofuelstp.eu/cell\\_ethanol.html](http://www.biofuelstp.eu/cell_ethanol.html)

Company	Amount	Area	Production (mGal/ya)
Coskata	\$250m	Alabama	55
Enerkem	\$80m	Pontotoc	10
INEOS Bio	\$75	Vero Beach	8

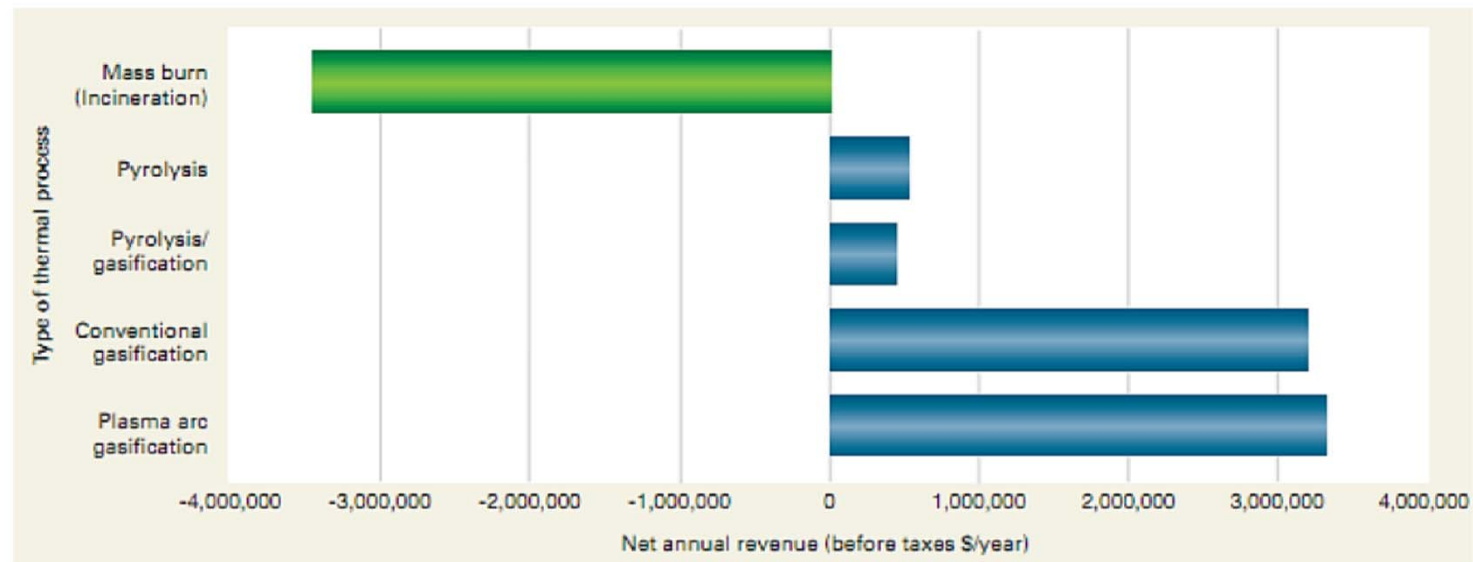




# Revenue Comparison

**Figure 8: A comparison of the (pre-tax) net annual revenue of thermal process**

Source: Young, G. (2011). *Plasma Arc The Leading Light*. Available: <http://www.waste-management-world.com/index/display/article-display/5353267336/articles/waste-management-world/volume-11/issue-6/features/plasma-arc-the-leading-light.html>. Last accessed 30 Jan 2012

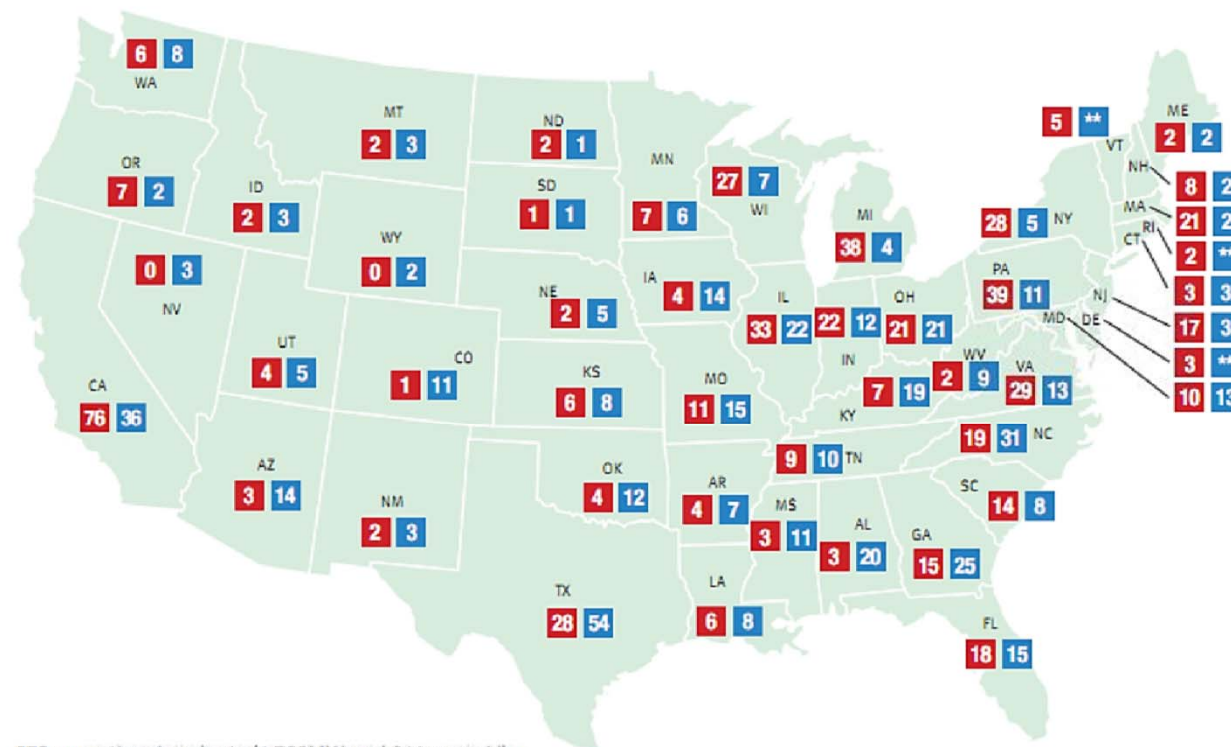




# Landfill Activity

**Figure 10: Landfill methane capture across the US**

Sources: <http://epa.gov/lmop>



576 operational projects (1,763MW and 311mmscfd)  
510 candidate landfills (1,155MW or 590mmscfd, 13MMTCE potential)

- Operational projects
- Candidate landfills\*

\*Landfill is accepting waste or has been closed for 5-years or less, has at least 1m tons of waste and does not have an operational/under construction LFG energy project or is designated based on actual interest/planning.

These data are from LMOP's database as of January 4, 2012.

\*\*LMCP does not have any information on candidate landfills in this state

- Interested in the emerging Waste Conversion Market in the US ?
- Considering a Waste Conversion project, but need clarification on the risks?

## 2nd Annual Waste Conversion Congress East Coast

*Find the viable, scalable, commercial waste conversion technology that will secure long term profitability for your MSW feedstock.*

Radisson Warwick Hotel, Philadelphia, 12 – 13 June 2012

### Event Overview

The appetite for waste conversion technologies is rapidly growing, however, finding a viable technology for your feedstock is timely and cost intensive. Following on from last year's Waste Conversion Congress East Coast and the Waste Conversion Congress West Coast, this event will address the issues that define the difference between successful and unsuccessful projects.

The industry is developing, technologies are advancing and attitudes are progressing and this is the event where you can meet and be part of the development.

### Agenda Overview

- Qualifying viability of technologies
- Finance and Funding
- Regulation and Legislation
- Maximising feedstock value

For more the full agenda and speaker line up please visit:

[www.renewable-waste.com/waste-conversion-east/index.php](http://www.renewable-waste.com/waste-conversion-east/index.php)

