

# **THE CASE AGAINST SB 864**

February 22, 2008



# **THE FACTS ARE IMPORTANT!!**

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## **Landfills:**

- **Do Not Produce a Significant Amount of Energy**
- **Are Not Well Designed to Capture Methane**
- **Provide a DIRTY Source of Energy**

# **THE FACTS ARE IMPORTANT!!**

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**SB 864 will:**

- **Not Significantly Increase Energy Production**
- **Increase GHG Emissions**
- **Likely Cause Increased Pollution**
- **Be Detrimental to Michigan's Composting Industry**
- **Cause Job Loss**
- **Place Michigan at a Competitive Disadvantage**
- **Accelerate the Depletion of Existing Landfill Space**
- **Increase Disposal Costs for All of Us**

**Table 3: Energy Projections for 7 and 10 Percent Renewable Portfolios  
(GWh/year and Percent of Total Generation Requirements)**

Year	Plan Forecast	Existing Renewable	7% by 2016 RPS Renewable Resources Modeled (GWh/year)						10% by 2015 Accelerated RPS (GWh/year)		
			Landfill Gas	Anaerobic Digestion	Cellulosic Biomass	Wind	Total New Renewable	RPS %	Wind	Total <sup>1</sup> New Renewable	RPS %
2006	112,183	3,279	0	0	0	0	0	2.9%	0	0	2.9%
2007	113,021	3,279	189	28	0	25	242	3.1%	586	803	3.6%
2008	114,492	3,279	370	74	284	213	942	3.7%	1,172	1,900	4.5%
2009	115,411	3,279	560	123	568	216	1,467	4.1%	1,494	2,745	5.2%
2010	116,902	3,279	741	165	853	292	2,051	4.6%	2,344	4,103	6.3%
2011	118,442	3,279	930	207	1,135	378	2,650	5.0%	2,930	5,202	7.2%
2012	120,245	3,279	946	304	1,448	667	3,365	5.5%	3,516	6,214	7.9%
2013	121,685	3,279	970	372	1,760	883	3,985	6.0%	4,102	7,204	8.6%
2014	123,396	3,279	993	448	2,073	1,006	4,520	6.3%	4,688	8,202	9.3%
2015	125,023	3,279	1,009	509	2,386	1,141	5,045	6.7%	5,274	9,178	10.0%
2016	126,811	3,279	1,033	572	2,698	1,288	5,590	7.0%	5,274 <sup>2</sup>	9,577	10.1%
2017	128,180	3,279	1,056	582	2,748	1,312	5,698	7.0%	5,274	9,660	10.1%
2018	129,982	3,279	1,072	595	2,807	1,340	5,813	7.0%	5,274	9,748	10.0%
2019	131,775	3,279	1,096	608	2,871	1,370	5,945	7.0%	5,274	9,849	10.0%
2020	133,721	3,279	1,120	622	2,937	1,402	6,080	7.0%	5,457	10,136	10.0%
2021	135,456	3,279	1,143	635	2,996	1,430	6,204	7.0%	5,457	10,231	10.0%
2022	137,329	3,279	1,159	648	3,059	1,460	6,326	7.0%	5,641	10,507	10.0%
2023	139,226	3,279	1,183	662	3,127	1,493	6,465	7.0%	5,641	10,613	10.0%
2024	141,266	3,279	1,206	677	3,197	1,526	6,607	7.0%	5,825	10,905	10.0%
2025	143,094	3,279	1,222	691	3,261	1,556	6,730	7.0%	5,825	10,999	10.0%

<sup>1</sup>Landfill gas, anaerobic digestion, and cellulosic biomass quantities are unchanged for the accelerated RPS.

<sup>2</sup>Wind energy remains the same some years after 2015 because biomass resource types were all projected to continue to increase from 2016 through 2025 at the same rate as forecast demand. In order to maintain the RPS as close as possible to a constant 10%, wind capacity growth was modeled at 75 MW increments every few years.

# MICHIGAN'S ENERGY DEMAND

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Total Power Generation:	125,023 GWh/Yr
Landfill Gas (LFG) Potential:	1,009 GWh/Yr
LFG as a % of Total Generation:	0.81%

Source:  
Michigan's 21st Century Electric Energy Plan, Appendix - Volume II, January 2007

# THE UNITED STATES EPA AND DOE SAY:

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LFG generated electricity can fulfill  
only 0.57% of America's electricity needs.

**0.57% < total lfg energy potential < 0.81%**

Source:

U.S. EPA, *An Overview of Landfill Gas Energy in the United States*, Landfill Methane Outreach Program, May 2007.

U.S. Energy Information Administration, *Electric Power Annual*, October 22, 2007

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**HOW MUCH OF THAT SMALL ENERGY  
POTENTIAL IS ATTRIBUTABLE TO YARD  
CLIPPINGS?**



# NTH CONSULTANTS RESEARCH SHOWS:

## EXHIBIT 11

### Statewide Landfill Energy-Production Capacity

Facility type	Yard waste	2007 (MW) Total	2007 (MW) Average	2015 (MW) Total	2015 (MW) Average	Peak year total	Peak year average	Peak (MW) total	Peak (MW) average
Current major	Excluded	188.8	9.4	230.4	11.5	2014	2022	232.0	13.5
	Included	204.8	10.2	265.6	13.3	2015	2021	265.6	15.7
Current major plus potential major	Included	241.6	3.1	315.2	4.1	2016	2030	316.8	11.9

SOURCE: NTH Consultants Ltd. 2007.

NOTE: Current major facilities are landfills with existing landfill energy-production facilities. Potential major facilities are landfills that produce enough landfill gas to generate 1.6 MW or more.

# THE “GRANGER” REPORT SAYS:

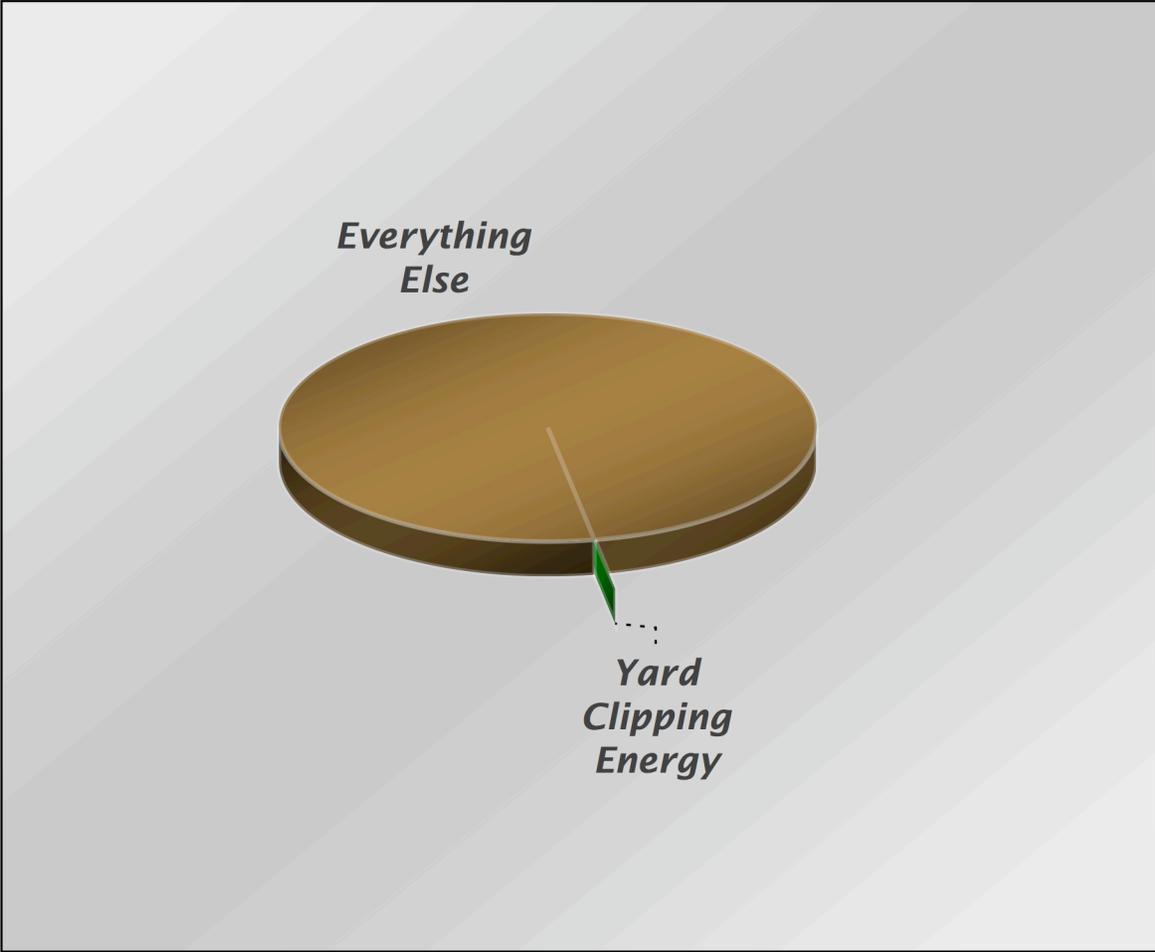
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- Adding Yard Clippings to Landfill May Increase LFG Electricity by 15.3%.
- This Means the Electricity Potential Attributable to Yard Clippings is Between **0.087%** and **0.124%** of Total Generation.



# IF YOU THINK ABOUT IT ANOTHER WAY!

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# THE TRADEOFFS FOR THIS ENERGY ARE:

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- Negative Impact on the Environment
- Negative Impact on Michigan's Compost Industry
- A Loss of Jobs in Michigan
- Competitive Disadvantage in Relation to Development & Implementation of State-of-the-Art & Emerging Technologies
- Increased Disposal Costs for Citizens, Local Units of Government, and Businesses in Michigan

# ORGANICS AND CLIMATE CHANGE?

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Global Climate  
Change Today

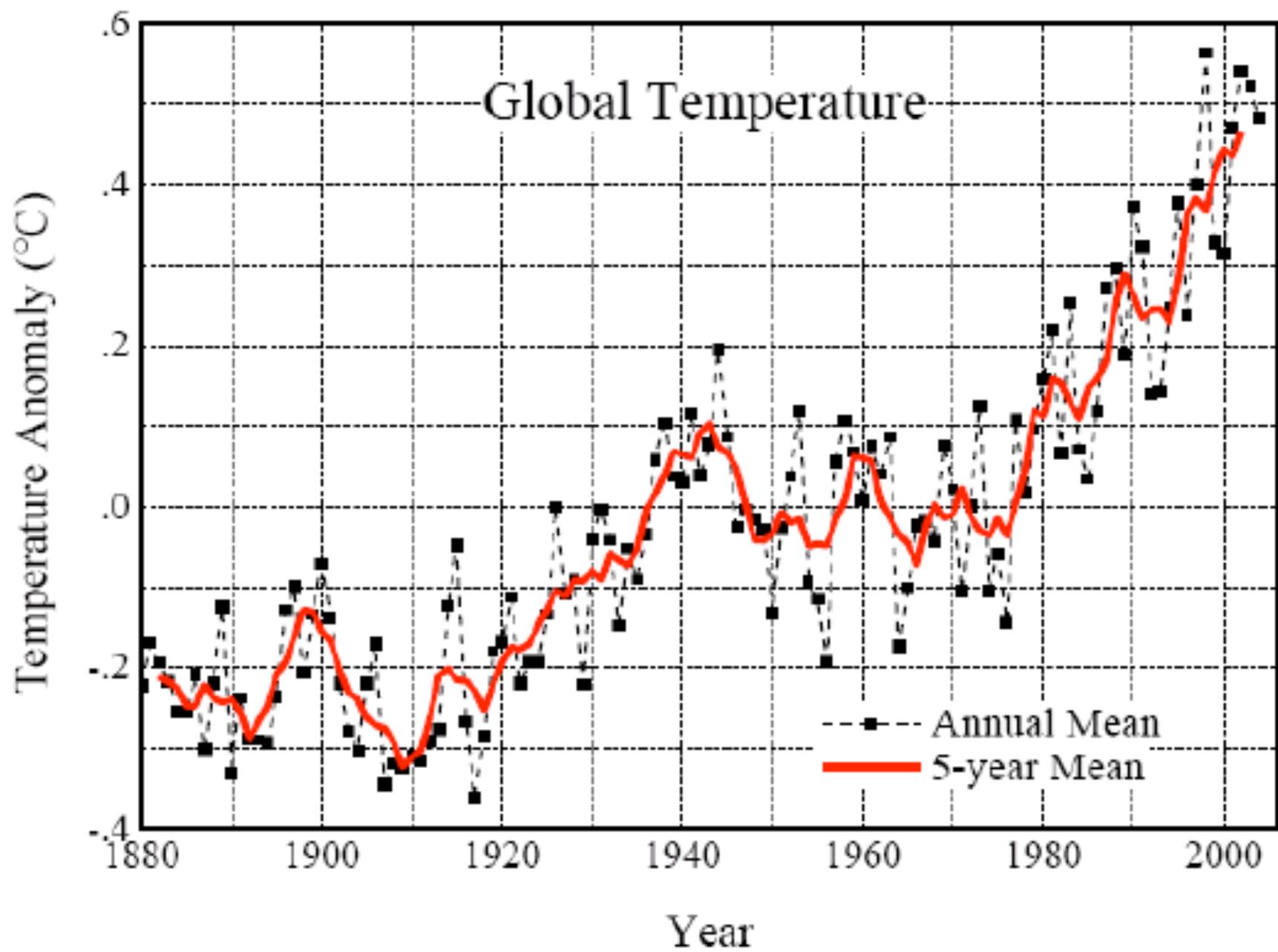
- It's here
- It's happening
- Get used to it

Organics  
Collection is  
Next

- It's hard
- It's expensive
- We need some breaks

Intersection of  
Climate Change  
and Organics

- It's all about the methane
- Let's do something with it



# HOW MUCH METHANE DOES THIS MATERIAL PRODUCE?

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Material	Methane Generation Potential*
Food Waste	<b>12.0 Mg CO<sub>2</sub>equiv per Mg</b>
Grass Clippings	<b>5.5 Mg CO<sub>2</sub>equiv per Mg</b>
Old Newspaper	<b>3.0 Mg CO<sub>2</sub>equiv per Mg</b>
Hog Manure	<b>2.3 Mg CO<sub>2</sub>equiv per Mg</b>
Leaves	<b>1.2 Mg CO<sub>2</sub>equiv per Mg</b>

\*"Green House Gas Balance for Compost" - Dr. Sally Brown, 2007

# HOW GOOD IS LANDFILL GAS COLLECTION?

- US EPA assumptions:
  - 1998 “heroic” assumption      =< 75%
  - 2002 admission                      =< 20%
- To Match Composting Greenhouse Gas (GHG) Admissions, Collection Efficiency Would Need to Be GREATER THAN 95%!
  - @ 75% efficiency: GHG emissions are worse by 4X
  - @ 20% efficiency: GHG emissions are worse by 15X

# LFG RELATIVE TO ALL GHG EMISSIONS

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- 8 - 9% of total US emissions
- Third largest contributor behind:
  - Transportation
  - Buildings
- Therefore, SB 864 could cause a HUGE INCREASE in overall Michigan GHG emissions!!

# COMPARISON OF NATURAL GAS AND LFG

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## Natural Gas

- 70-90 % methane
- Measurable amounts of ethane, butane, and propane
- Smaller amounts of carbon dioxide, oxygen, nitrogen, and hydrogen sulfide

Source:  
NaturalGas.org, Background,

## Landfill Gas

- 45-60% methane
- 40-60% carbon dioxide
- Smaller amounts of nitrogen, oxygen, hydrogen sulfides, carbon monoxide
- Contaminants such as benzene, trichloroethene, and vinyl chloride

Source:  
Agency for Toxic Substances and Disease Registry, Landfill Gas Primer, An Overview for Environmental Health Professionals, November 2001, Chapter 2

# LFG AND NMOC'S ACCORDING TO THE USEPA

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- NMOC Means Non-Methane Organic Compound
- LFG Contains Hundreds of Contaminants, Most of Which Are NMOC's
- Many NMOC's Are Halogenated Chemicals That Recombine Into HIGHLY TOXIC COMPOUNDS Such As DIOXINS AND FURANS

Sources:

U.S. EPA, Air Emissions from Municipal Solid Waste Landfills Background Information for Proposed Standards and Guidelines, (EPA/450/3-90/011A) March 1991

Ewall, Mike. *Primer on Landfill Gas as Green Energy*, February 10, 2000, p. 1

# WHAT CAN WE EXPECT FROM OUR LANDFILLS?

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- 3<sup>rd</sup> Qtr 2007 Solid Waste Management Program Inspections
  - Total Compliance Inspections = 234
  - Violation Letters Issued = 39

**17% VIOLATION RATE**

Source:

Michigan DEQ's Compliance and Enforcement Program for the Waste and Hazardous Materials Division, 3rd Quarter FY'07, November 1, 2007

# WHAT CAN WE EXPECT FROM OUR LANDFILLS?

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- 2006 Solid Waste Management Program Inspections
  - Total Compliance Inspection = 608
  - Violation Letters Issued = 94

**16% VIOLATION RATE**

Source:

Report of Activities Funded by the Staff Account of the Solid Waste Management Fund  
October 1, 2005 – September 30, 2006, MDEQ, WHMD, March 1, 2007

# SAMPLE COMMENTS FROM INSPECTIONS

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- “Odors also due to significant increase in generation rate of landfill gas.”
- “damaged areas of the landfill liner.”
- “the landfill cell was not built in compliance with the approved plans”
- “allowing odors to escape, and resulting in the infiltration of storm water into the waste.”
- “failure to apply daily cover, failure to measure and record leachate amounts, failure to properly manage leachate, and failure to control surface water runoff.”

Source:  
MDEQ Case Table

# MORE COMMENTS

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- “groundwater (contamination) at the site exceeds standards of Part 201, Environmental Remediation, of the NREPA, which constitutes a violation of Part 115.”
- “failure to follow the leachate recirculation plan, and failure to control runoff and leachate from the landfill.”
- “the leachate and secondary collection system pumps, electrical panels, and associated piping were not installed as required.”
- “groundwater contamination that has escaped off-site.”

Source:  
MDEQ Case Table

# BUT MOST IMPORTANTLY

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- × **“that concentrations of methane gas had exceeded the lower explosive limit (LEL) in perimeter gas monitoring wells”**

Source:  
MDEQ Case Table



# IMPACT ON COMPOSTING INDUSTRY

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- Sets Michigan Backward with Regard to National and International Standards and Best Practices
- Undermines Environmentally Sound Options for Yard Waste Management
- Causes Job Loss

# THE JOB IMPACT

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Type of Operation	Jobs per 10,000 TPY
Computer Reuse	296
Textile Reclamation	85
Misc. Durables Reuse	62
Wooden Pallet Repair	28
Recycling-based Manufacturers	25
Paper Mills	18
Glass Product Manufacturers	26
Plastic Product Manufacturers	93
Conventional Materials Recovery Facilities	10
Composting	4
Landfill and Incineration	1

Source:

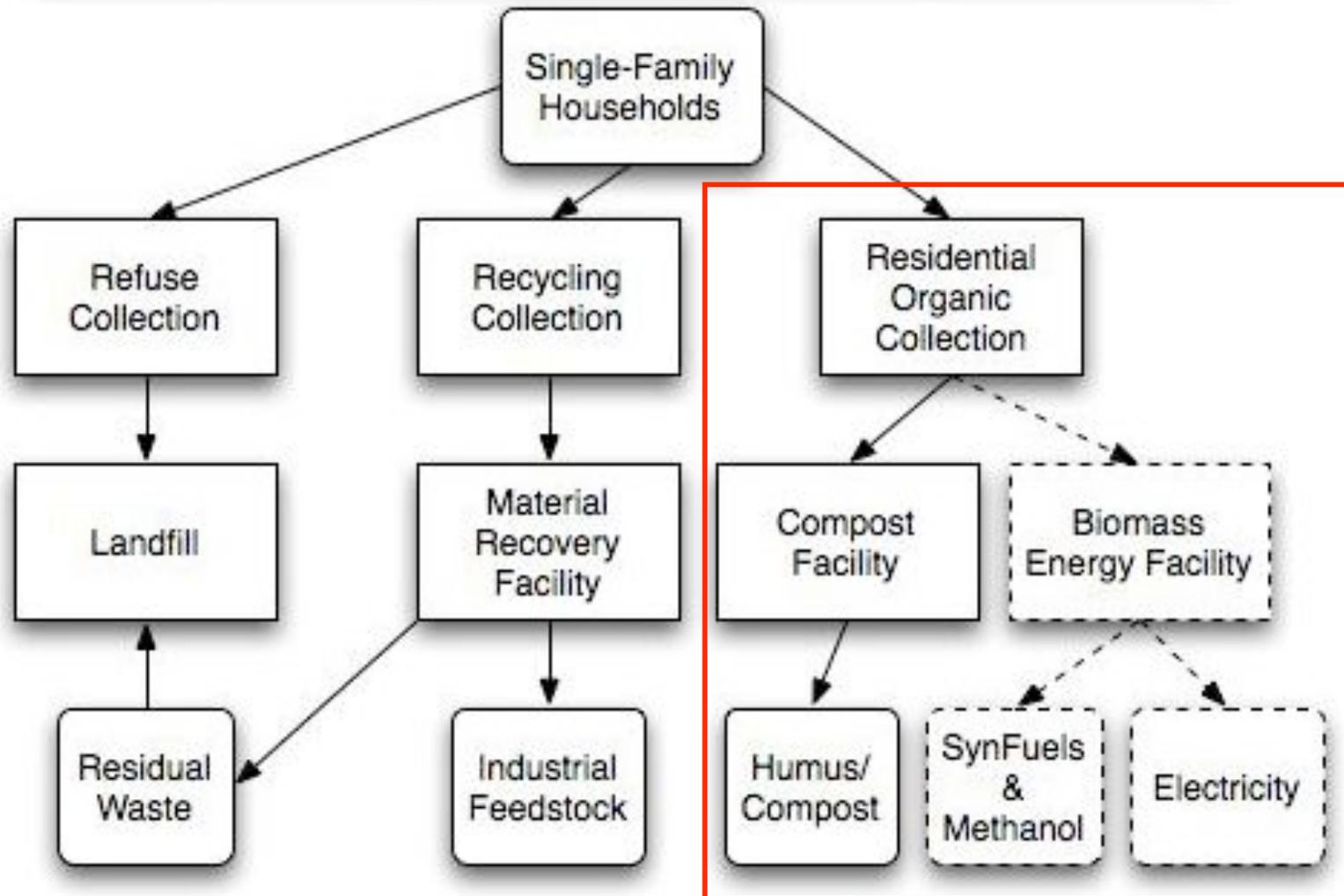
Institute for Local Self-Reliance, Washington, DC, 1997.

# BENEFITS OF COMPOSTING

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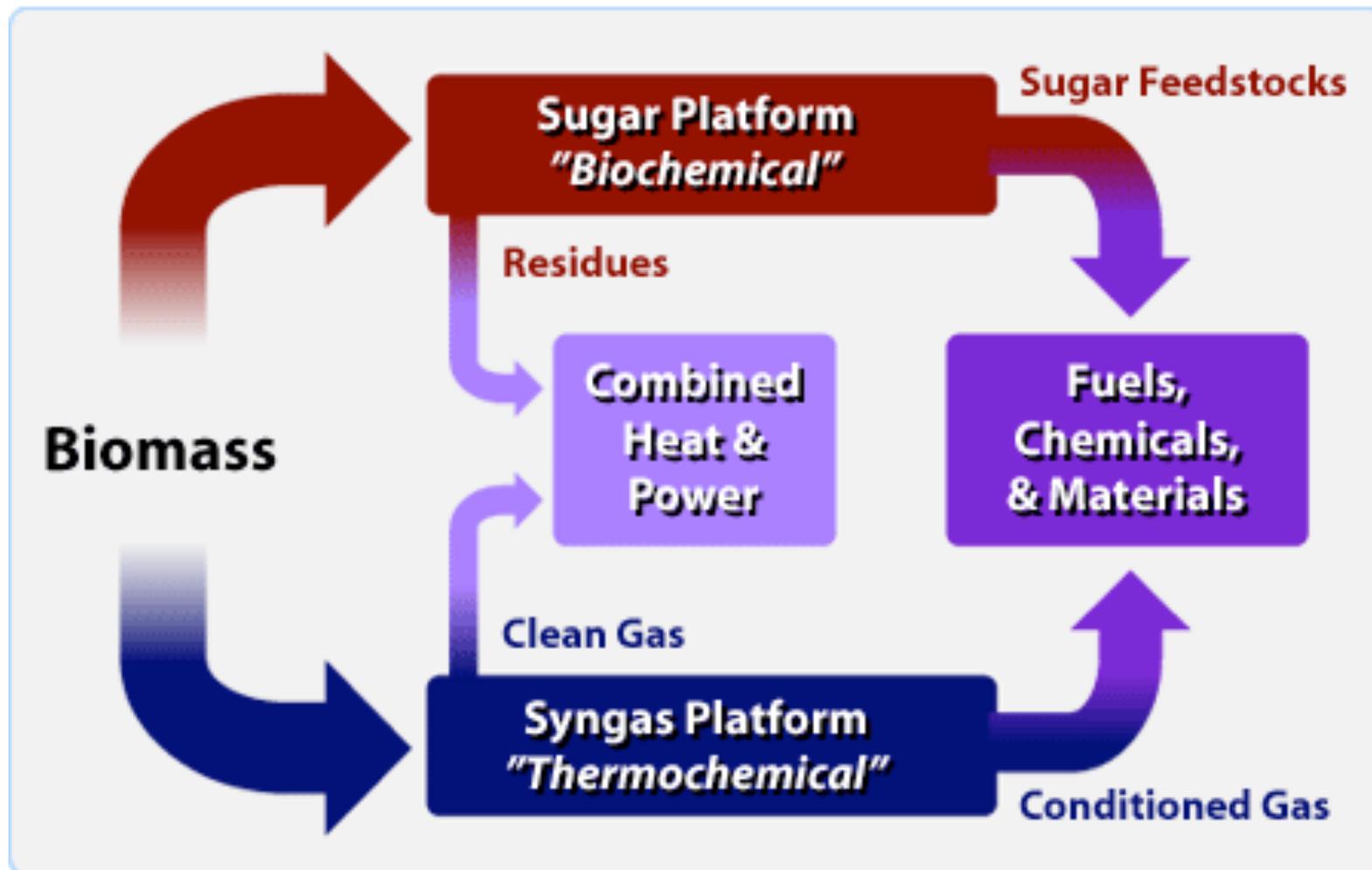
- Reduces Greenhouse Gas Emissions
- Decreases Fertilizer and Pesticide Use
- Improves Soil Structure
- Reduces Irrigation Needs
- Increases Soil Productivity
- Limits Erosion
- Stores Carbon in the Soil

## Curbside Solid Waste System: Biomass Configuration



# ALTERNATIVE VISIONS

## Biorefinery Concept

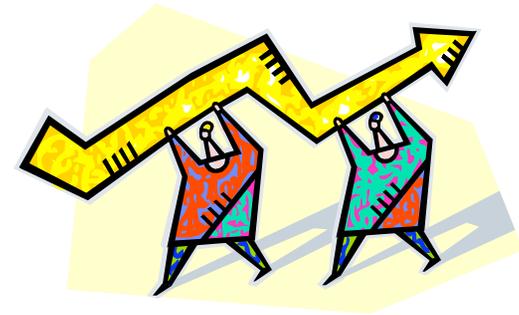




# SB 864 IMPACT ON DISPOSAL COSTS

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- Increase Landfill Tip Fees
- 500,000 to 1,200,000 Tons Per Year of Additional Material Will Be Directed to Landfills
- Additional Volume Will Compete With Existing Waste Volume From Michigan's Businesses and Consumers and Hasten the Depletion of Landfill Capacity.
- Assuming Tip Fees of \$25/ton & 700,000 tons, This Will Add \$17.5 Million to Landfill Owners' Revenue Streams...



**at the Expense of Other Michigan Industries, Michigan's Consumers, Michigan's Economic Future, and Michigan's Environment.**