MID-ATLANTIC BIOENERGY COUNCIL

# Organic Waste Management & Recycling

**September 2019 | Patrick Serfass**

*www.MABEC.org*

MID-ATLANTIC BIOENERGY COUNCIL

- Promotes deployment of systems that convert woody biomass and non-woody biomass (organics) to energy
- Biogas, biomass to heat and power, and soil amendments
- 30+ organizations across the Mid-Atlantic
- Dues: $2,700 - $500
- Join today:

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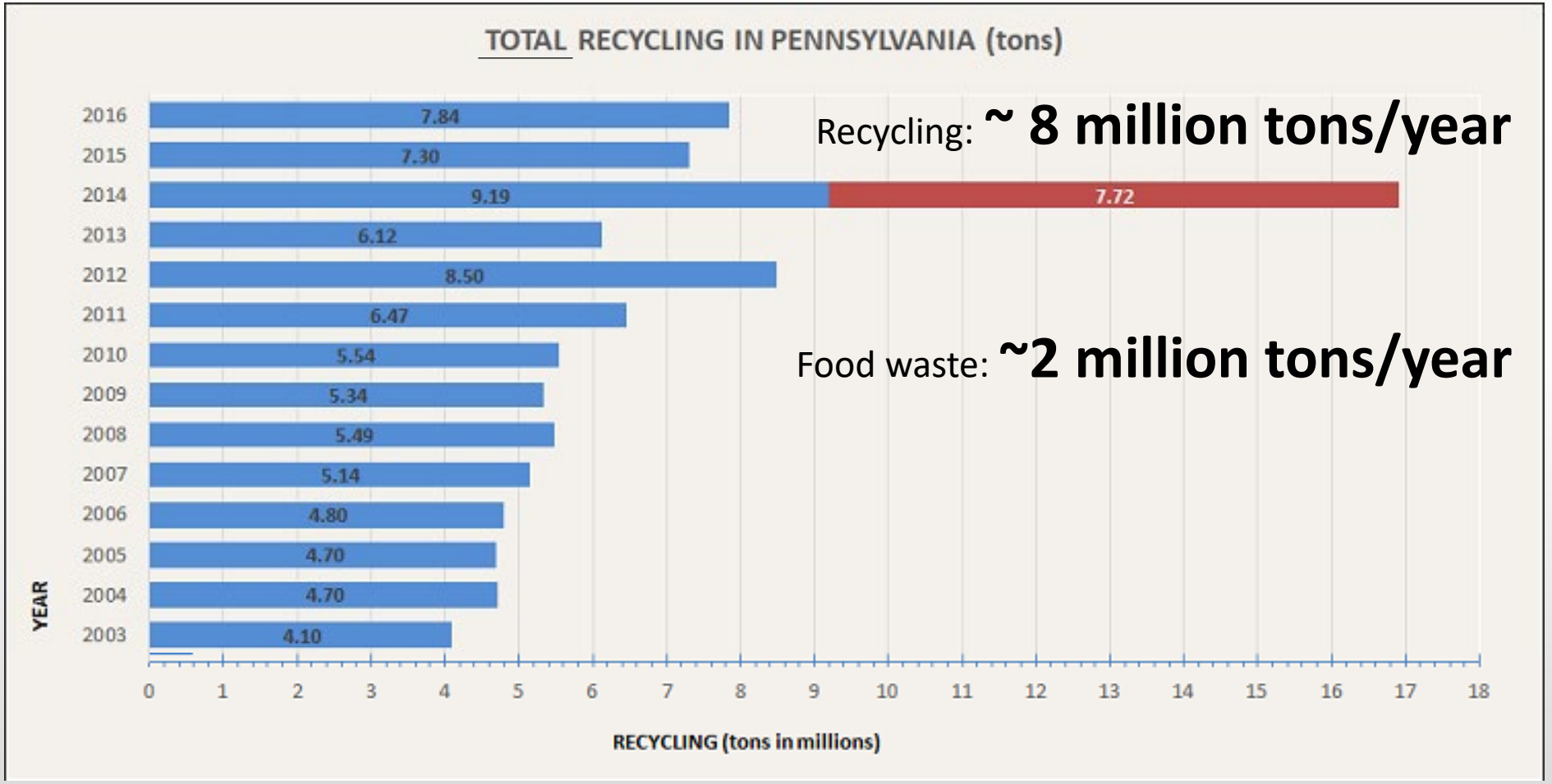
# Recycling in Pennsylvania




Recycling: **~ 8 million tons/year**

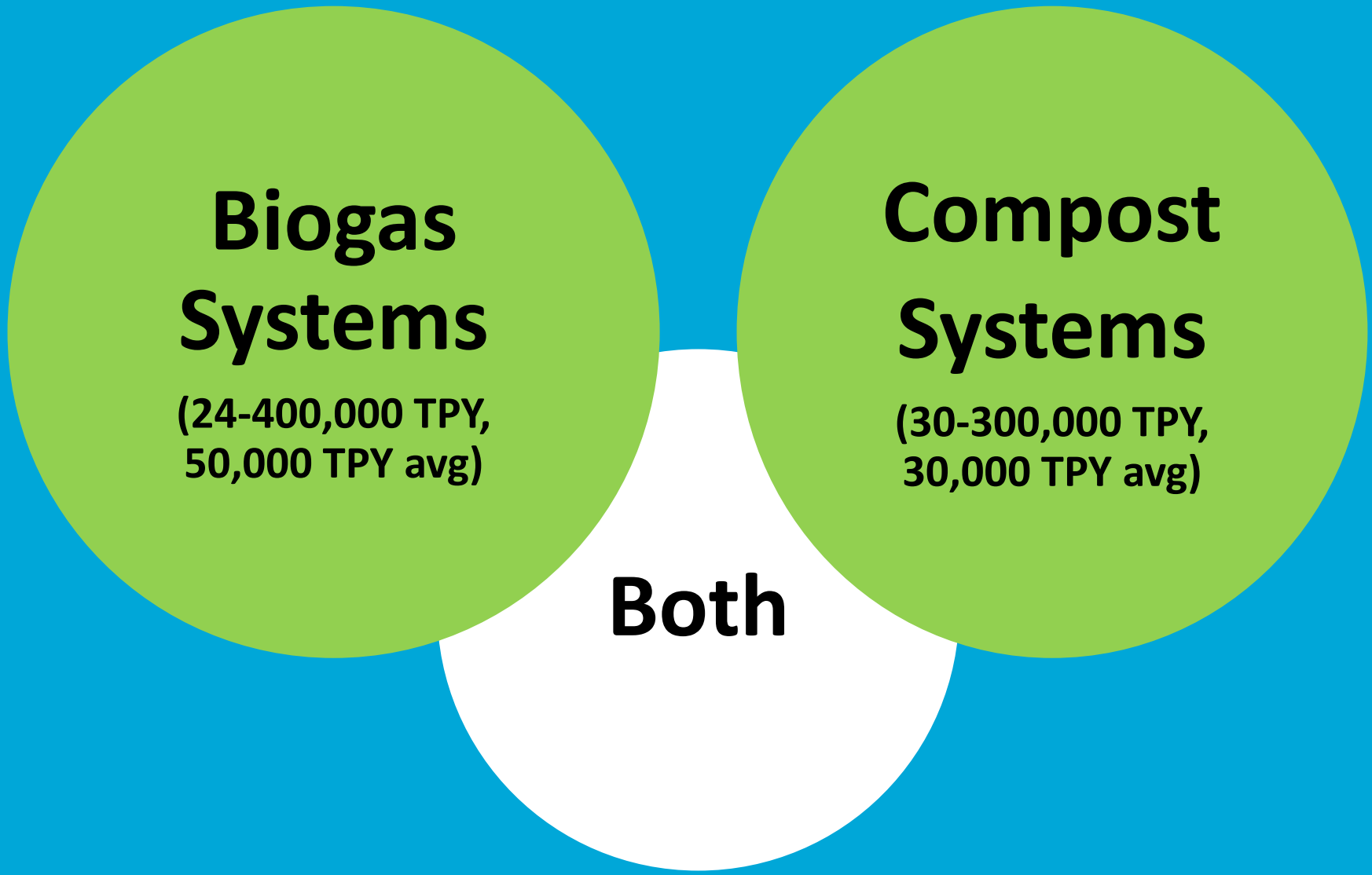
Food waste: **~2 million tons/year**

# Other Organics

Manure
61,028,000
tons/year (NASS)

Wastewater
110,761,440 tons/year
(assuming 4% solids from 218 WRRFs @ 8.7 MGD avg. size)

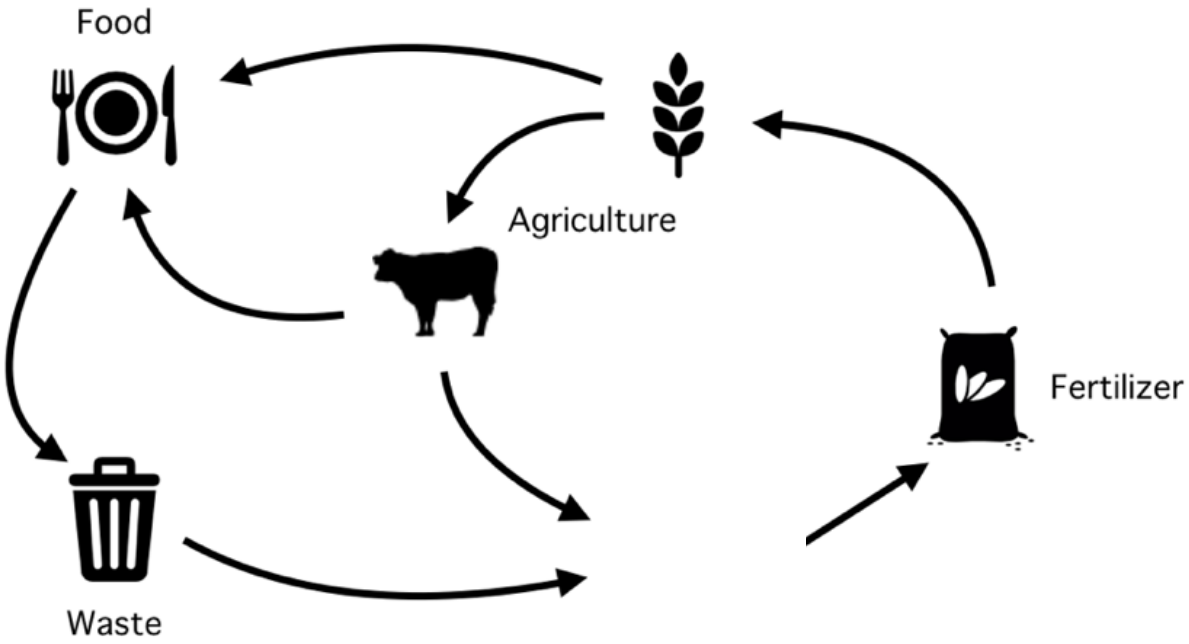
# 2 Ways to Recycle Organic Material



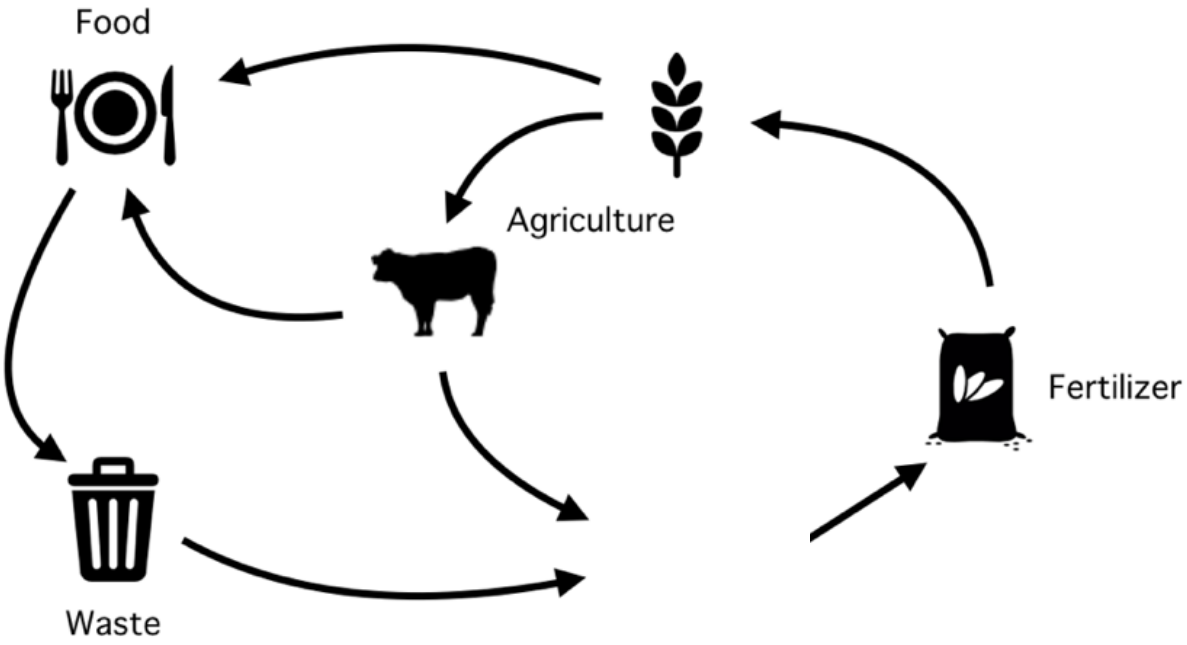
# Compost systems scale DOWN really well

# Biogas systems scale UP really well

# Compost Systems



# Biogas Systems



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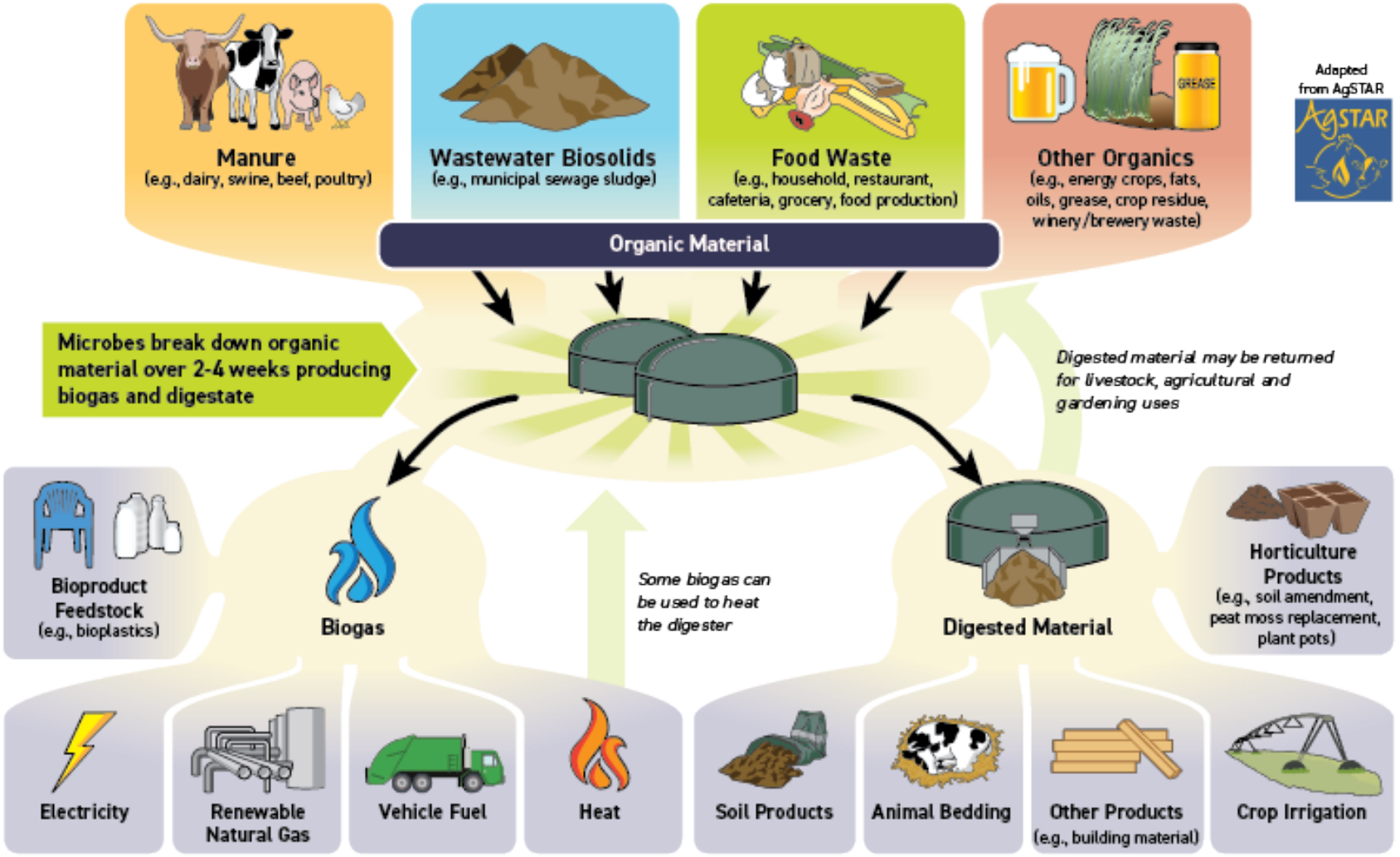
# How Biogas Systems Work




Source: ABC, adapted from EPA AgSTAR

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# COMMERCIAL food scraps

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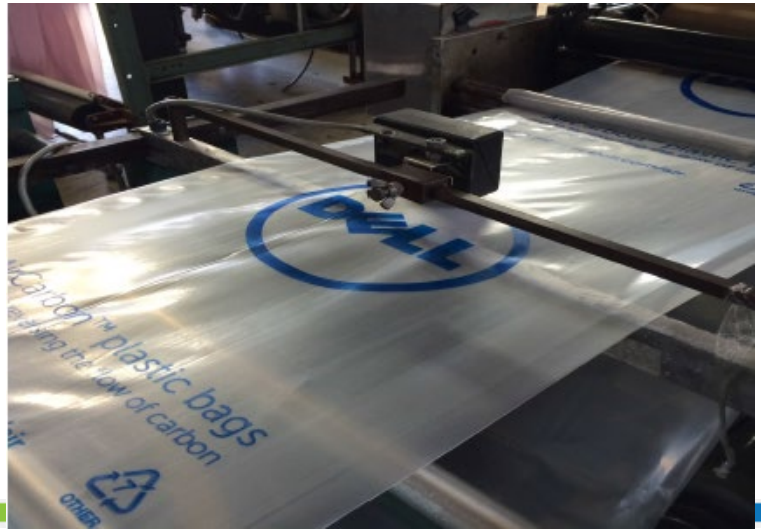
# Biogas products



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# Digestate

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# Digestate Products



# Real projects

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# Biogas Projects

# Blueline, South San Francisco (CA)

- 11,200 TPY food and yard waste
- Dry anaerobic digestion
- Makes 120,000 diesel gallon equivalents of renewable natural gas (RNG)
- Digestate: organic certified compost
- 35 million cuft/year of biogas

# Forest County Potawatomi (WI)

- 132,000 gal/day food waste and wastewater from casino
- Biogas system located in parking lot of casino
- Biogas used for electricity and heat
- Digestate is land applied

# UW-Oshkosh Urban Dry Digester

- 10,200 TPY food and yard waste from college campus
- Dry anaerobic digestion
- Makes electricity and heat
- Digestate: organic certified compost
- 27 million cuft/year of biogas (2.1 million kWH/yr)

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# US Biogas Markets

**Current Projects**

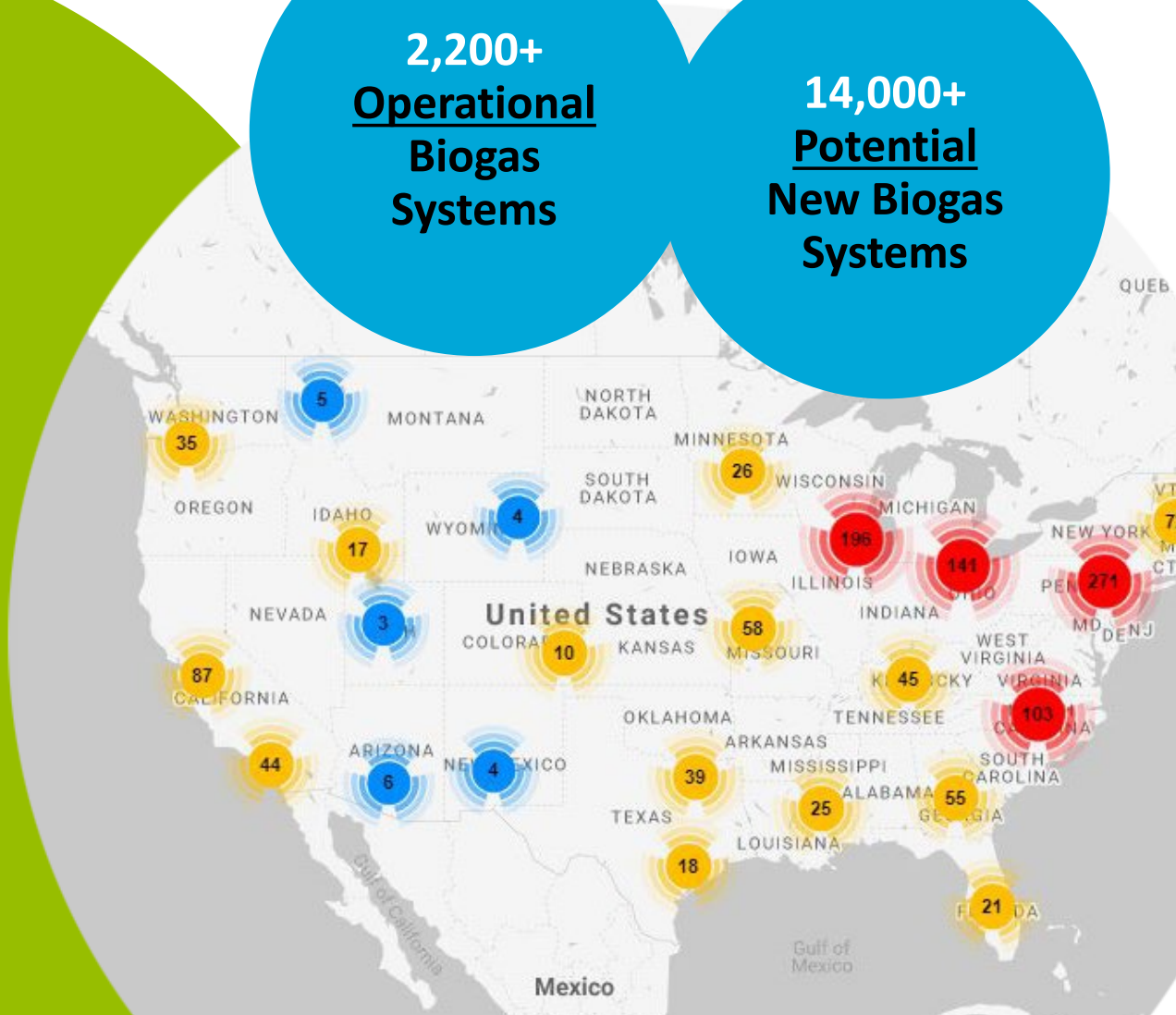
**253** on Farm
**1,269** Water
**66** Food Scrap
**645** at Landfills

**Potential Projects**

**8,300** on Farm
**4,000** Wastewater
**1,000** Food Scrap
**440** at Landfills

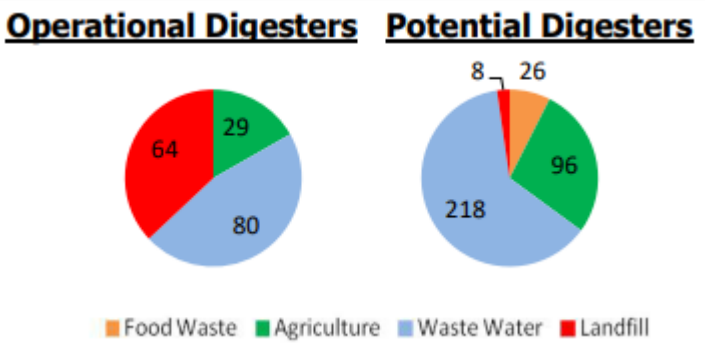
**2,200+ Operational Biogas Systems**

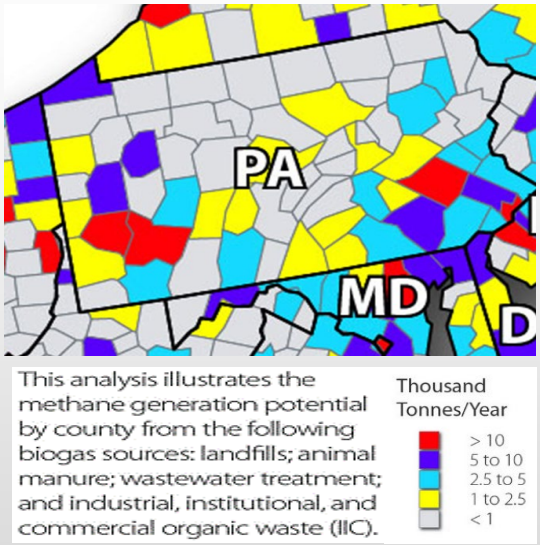
**14,000+ Potential New Biogas Systems**



# PA Biogas Market

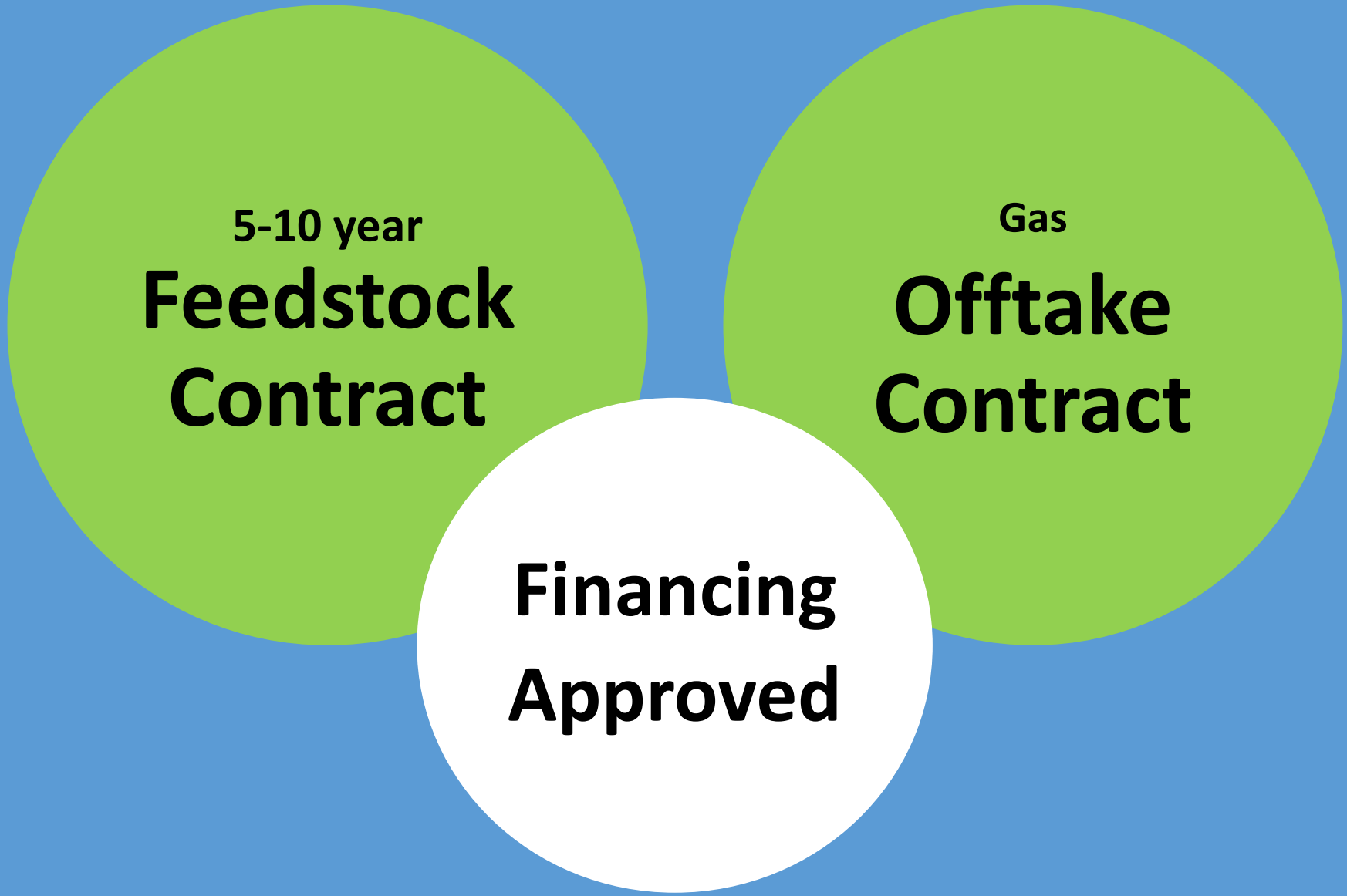
- #9 among U.S. states for methane production potential from biogas sources
- PA's full biogas potential:
  - $1 billion in new capital investments AND
  - 8,700 short-term construction jobs, 696 permanent jobs, and numerous industry-supporting jobs in the supply chain AND
  - Enough electricity to power 151,586 homes (2 billion kWh) or enough renewable natural gas to fuel 151,586 vehicles AND
  - reduce greenhouse gas emissions by the equivalent of 18.1 trillion tons of carbon dioxide, the same as growing 35.6 million tree seedlings for ten years or the amount 1,187,211 acres of U.S. American forest sequester each year.




American Biogas Council, http://www.americanbiogascouncil.org/stateprofiles.asp

# To Build New Biogas Systems



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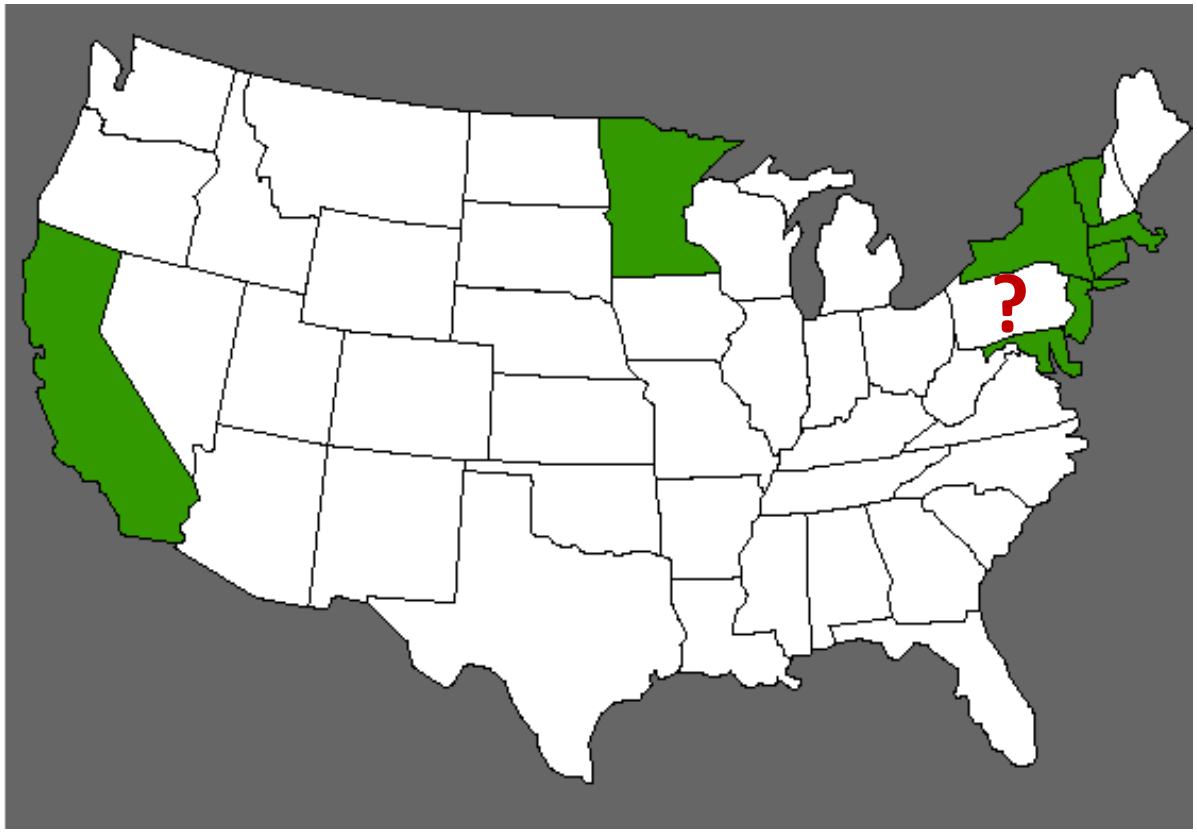
# Statewide Organics Recycling Laws



# Organics Recycling Policy

**Basic Formula:** *Build it and they will come*

**IF**

- You are a large organic waste generator,
  AND
- There is an organic waste recycling facility nearby (20-25 mi),
  AND
- The facility will receive your material,

**THEN**

- By a certain date, you must recycle your organic material,

**OR ELSE**

- Nothing happens.

# Organics Recycling Policies

**Municipalities:** San Francisco, Seattle, Austin, Vancouver, New York City, most starting in 2009-10

**2011:**

1. CT, Public Act 11-217 (updated in 2013)

**2012:**

2. VT, Universal Recycling Law, Act 148—all organics, largest gen. first, effective 7/1/2016

**2013**

- CT: Public Act 13-285 (update to 2011)—Commercial organics, effective 1/1/14
- NYC: Local Law 146-2013—Commercial organics, effective 7/1/2015

**2014**

3. MA: 310 CMR 19.000 regulations—Commercial organics, effective 10/1/14
4. RI: An Act Relating to Health and Safety—Commercial organics, effective 1/1/2016
5. CA AB 1826: Mandatory Commercial Food Waste Recycling, effective 1/1/2016

**2015**

6. MN: Statute 115A.151 Public Entities; Commercial Bldgs; Sports Facilities, effective now

# Organics Recycling Policies

**2019**

7. MD: HB 510—all source separated organics, effective 10/1/19
8. NY: Article 27 Section 22—Commercial organics, effective 1/1/2022
9. NJ: S1206/A3726 (conditional veto) —Commercial organics, effective 1/1/2020

**2020**

- PA: ???

# Questions?

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