

Biogas State Profile: Pennsylvania

Biogas Potential

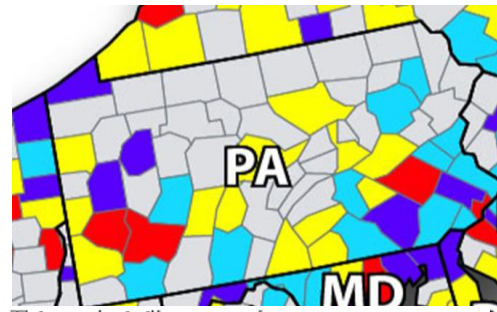
Pennsylvania ranks #9 among U.S. states for methane production potential from biogas sources.¹

Currently Pennsylvania has 173 operational biogas systems. We see the potential for more than 348 new projects to be developed based on the estimated amount of available organic material.

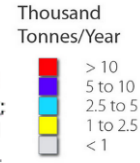
Constructing this many projects would generate \$1 billion in capital investment, and create 8,700 short-term construction jobs, 696 long-term jobs, and numerous industry-supporting jobs.

If fully realized, these biogas systems could produce enough electricity to power 151,586 homes (2 billion kWh) or enough renewable natural gas to fuel 3,220,930 vehicles.

They would also collectively 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.²



This analysis illustrates the methane generation potential by county from the following biogas sources: landfills; animal manure; wastewater treatment; and industrial, institutional, and commercial organic waste (IIC).

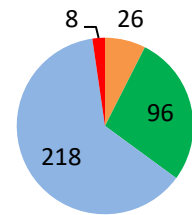
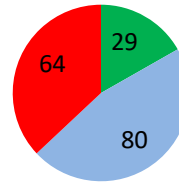


U.S. Energy Rankings

Energy	
Total CO2 Emissions ¹²	Ranks 3 rd in U.S., 5.5% share
Per Capita Energy Consumption ¹³	Ranks 28 th in U.S.
Renewable Electricity Generation ¹⁴	Ranks 17 th in U.S.
Energy Prices Rank ¹⁵	Ranks 14 th in U.S.

Operational Digesters

Potential Digesters



Food Waste Agriculture Waste Water Landfill

Biogas Systems

Food Waste

Operational food waste biogas systems ³	-
Potential food waste biogas systems ⁴	26

Agriculture

Operational biogas systems on farms ⁵	29
Potential dairy farm biogas systems ⁶	60
Potential swine farm biogas systems ⁷	36

Waste Water

Operational biogas systems at water resource recovery facilities ⁸	80
Potential biogas systems at WRRFS ⁹	218

Landfills

Operational landfill gas systems ¹⁰	64
Potential landfill gas systems ¹¹	8

Feedstocks

Manure

Total Manure Volume ¹⁶	41.8 million gallons per day
Total Dairy Manure ¹⁷	9.5 million gallons per day
Total Swine Manure ¹⁸	1.6 million gallons per day
Total Broiler Manure ¹⁹	27.1 million gallons per day
Total Turkey Manure ²⁰	1.7 million gallons per day
Total Beef Manure ²¹	1.6 million gallons per day

Food Waste

Total Food Waste Generated ²²	1.3 million tons per year
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Waste Water

Average flow from WRRF'S ²³	8.7 million gallons per day
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Pennsylvania Green Policies

RPS ₂₄	18% alternative energy resources by compliance year 2020-2021
Statutes and Regulations	Net Metering Fuel Mix Disclosure Public Benefits Program Interconnections Standard Building Energy Code Biodiesel Infrastructure Certification
Sustainability Commitments	City of Philadelphia-Green Power Purchasing University of Pennsylvania Penn State University Drexel Villanova University University of Pittsburgh Duquesne University Allegheny University City of Pittsburgh
State Funding Opportunities	Sustainable Development Fund Financing Program West Penn Power SEF Commercial Loan Program Alternative and Clean Energy Program (Grant) Alternative and Clean Energy Program (Loan) Alternative and Clean Energy Program (Industry recruitment/Support)

Biogas Companies Located in PA

BioCycle Cambi, Inc. Effluential Synergies LLC Northeast Energy Systems/Western Energy Systems Ryan Equipment Turning Earth LLC West Penn Power Sustainable Energy Fund + Dozens More
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[Visit www.AmericanBiogasCouncil.org for the full Biogas Industry Directory](http://www.AmericanBiogasCouncil.org)

Pennsylvania Biogas Resources:

[Penn State Extension](#)

Penn State Extension within the College of Agricultural Sciences offers information and resources in a variety of fields. This includes a section dedicated to biogas and anaerobic digestion.

[PA Biomass](#)

The PA Biomass Energy Association is a non profit, industry-driven organization working to advance the use of biomass for clean and for combined heat & power applications. They also have resources dedicated to biogas.

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- 1 <http://www.nrel.gov/docs/fy14osti/60178.pdf>
 - 2 (See ABC Biogas Potential Calculator)
 - 3 (See ABC Food Waste Digester Excel Spreadsheet)
 - 4 (See ABC Biogas Potential Calculator)
 - 5 <http://epa.gov/agstar/projects/index.html>
 - 6 http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_State_Level/Pennsylvania/st42_1_017_019.pdf (Farms with 500 to 999 milk cows)
 - 7 http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_State_Level/Pennsylvania/st42_1_020_023.pdf (Farms with 5,000 or more hogs)
 - 8 <http://resourcerecoverydata.org/>
 - 9 (See Above)
 - 10 <http://www.epa.gov/lmop/projects-candidates/operational.html>
 - 11 <http://www.epa.gov/lmop/projects-candidates/candidates.html>
 - 12 <http://www.eia.gov/state/rankings/?sid=CA#series/226>
 - 13 <http://www.eia.gov/state/?sid=CA#tabs-5>
 - 14 (See Above)
 - 15 <http://www.eia.gov/state/rankings/#/series/31>
 - 16 (See EQIP State Matrix Livestock Inventory)
 - 17 (See Above)
 - 18 (See Above)
 - 19 (See Above)
 - 20 (See Above)
 - 21 (See Above)
 - 22 (See ABC Biogas Potential Calculator)
 - 23 <http://resourcerecoverydata.org/>
 - 24 <http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx#pa>

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