



# Biogas State Profile: Minnesota

## Biogas Potential

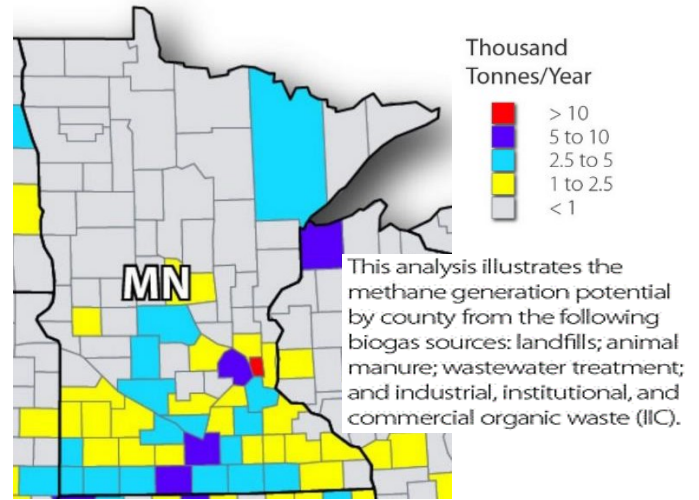
Minnesota ranks #17 among U.S. states for methane production potential from biogas sources.<sup>1</sup>

Currently Minnesota has 42 operational biogas systems. We see the potential for more than 450 new projects to be developed based on the estimated amount of available organic material.

Constructing this many projects would generate \$1.35 billion in capital investment, and create 11,250 short-term construction jobs, 900 long-term jobs, and numerous industry-supporting jobs.

If fully realized, these biogas systems could produce enough electricity to power 86,402 homes (1.1 billion kWh) or enough renewable natural gas to fuel 1,474,557 vehicles.

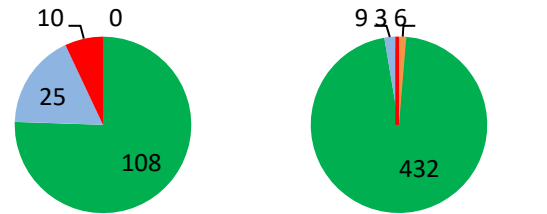
They would also collectively reduce greenhouse gas emissions by the equivalent of 8.2 trillion tons of carbon dioxide, the same as growing 19,586,030 million tree seedlings for ten years or the amount 652,868 acres of U.S. American forest sequester each year.<sup>2</sup>



## U.S. Energy Rankings

Energy	
Total CO2 Emissions <sup>12</sup>	Ranks 24 <sup>th</sup> in U.S., 8.1% share
Per Capita Energy Consumption <sup>13</sup>	Ranks 18 <sup>th</sup> in U.S.
Renewable Electricity Generation <sup>14</sup>	Ranks 12 <sup>th</sup> in U.S.
Energy Prices Rank <sup>15</sup>	Ranks 23 <sup>rd</sup> in U.S.

## Operational Systems Potential Systems



Food Waste Agriculture Waste Water Landfill

## Biogas Systems

### Food Waste

Operational food waste biogas systems <sup>3</sup>	0
Potential food waste biogas systems <sup>4</sup>	6

### Agriculture

Operational biogas systems on farms <sup>5</sup>	7
Potential dairy farm biogas systems <sup>6</sup>	108
Potential swine farm biogas systems <sup>7</sup>	324

### Waste Water

Operational biogas systems at water resource recovery facilities <sup>8</sup>	25
Potential biogas systems at WRRFS <sup>9</sup>	9

### Landfills

Operational landfill gas systems <sup>10</sup>	10
Potential landfill gas systems <sup>11</sup>	3

## Feedstocks

### Manure

Total Manure Volume <sup>16</sup>	42.4 million gallons per day
Total Dairy Manure <sup>17</sup>	11.7 million gallons per day
Total Swine Manure <sup>18</sup>	136.7 million gallons per day
Total Beef Manure <sup>19</sup>	8.9 million gallons per day
Total Broiler Manure <sup>20</sup>	1.4 million gallons per day
Total Turkey manure <sup>21</sup>	1.3 million gallons per day

### Food Waste

Total Food Waste Generated <sup>22</sup>	300 thousand tons per year
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### Waste Water

Average flow from WRRF's <sup>23</sup>	1.2 million gallons per day
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\* All citations are available on [AmericanBiogasCouncil.org](http://AmericanBiogasCouncil.org).

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- <sup>1</sup> <http://www.nrel.gov/docs/fy14osti/60178.pdf>
- <sup>2</sup> (See ABC Biogas Potential Calculator)
- <sup>3</sup> (See ABC Food Waste Digester Excel Spreadsheet)
- <sup>4</sup> (See ABC Biogas Potential Calculator)
- <sup>5</sup> <http://epa.gov/agstar/projects/index.html>
- <sup>6</sup> [http://www.agcensus.usda.gov/Publications/2012/Full\\_Report/Volume\\_1,\\_Chapter\\_1\\_State\\_Level/Minnesota/st27\\_1\\_017\\_019.pdf](http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_State_Level/Minnesota/st27_1_017_019.pdf) (Farms with 500 to 999 milk cows)
- <sup>7</sup> [http://www.agcensus.usda.gov/Publications/2012/Full\\_Report/Volume\\_1,\\_Chapter\\_1\\_State\\_Level/Minnesota/st27\\_1\\_020\\_023.pdf](http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_State_Level/Minnesota/st27_1_020_023.pdf) (Farms with 5,000 or more hogs)
- <sup>8</sup> <http://resourcerecoverydata.org/>
- <sup>9</sup> [http://www.insinkerator.com/en-US/Documents/Disposer/us\\_wastewater\\_treatment\\_plant\\_capabilities.pdf](http://www.insinkerator.com/en-US/Documents/Disposer/us_wastewater_treatment_plant_capabilities.pdf)
- <sup>10</sup> <http://www.epa.gov/lmop/projects-candidates/operational.html>
- <sup>11</sup> <http://www.epa.gov/lmop/projects-candidates/candidates.html>
- <sup>12</sup> <http://www.eia.gov/state/rankings/?sid=MN#series/226>
- <sup>13</sup> <http://www.eia.gov/state/?sid=MN#tabs-5>
- <sup>14</sup> (See Above)
- <sup>15</sup> <http://www.eia.gov/state/rankings/#/series/31>
- <sup>16</sup> (See EQIP State Matrix Livestock Inventory)
- <sup>17</sup> (See Above)
- <sup>18</sup> (See Above)
- <sup>19</sup> (See Above)
- <sup>20</sup> (See Above)
- <sup>21</sup> (See Above)
- <sup>22</sup> <http://www.calrecycle.ca.gov/Publications/Documents/General/2009023.pdf>
- <sup>23</sup> <http://resourcerecoverydata.org/>

**American Biogas Council**  
**1211 Connecticut Ave, NW**  
**Suite 650**  
**Washington, DC 20036-2701**  
**(202) 640-6595**  
[info@americanbiogascouncil.org](mailto:info@americanbiogascouncil.org)