

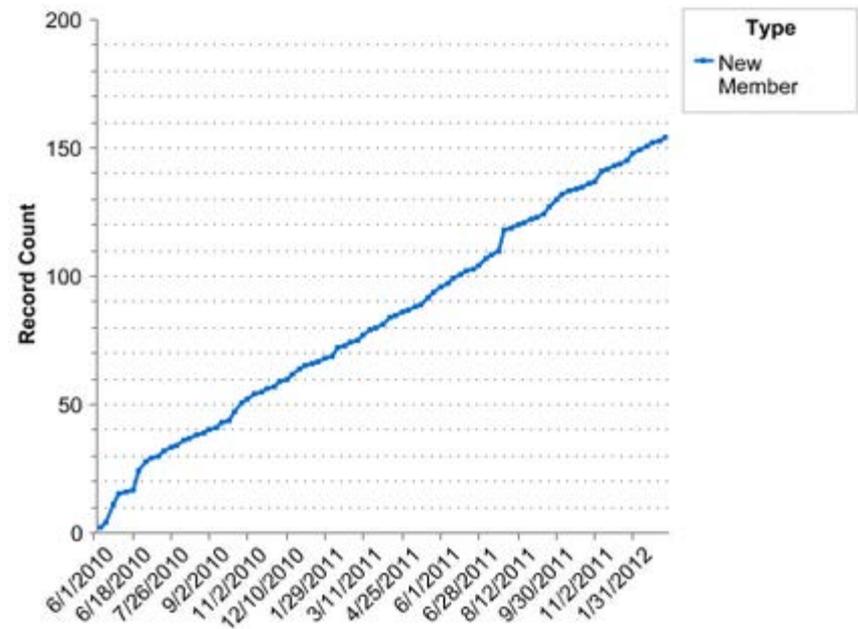


Biogas Markets and Federal Policy

Patrick Serfass, Executive Director

American Biogas Council: The Voice of the US Biogas Industry

- The **only** U.S. organization representing the biogas and anaerobic digestion industry
- **151 Organizations** in the U.S., Germany, Italy, Canada, Sweden, Denmark, Belgium, Brazil, the Netherlands and the UK
- **All Industry Sectors Represented:**
 - Landowners, waste managers
 - Project developers/owners
 - Manufacturers
 - Fuel refiners
 - Biogas users
 - Financiers
 - EPC firms
 - Wastewater
 - Utilities



Board of Directors



Paul Greene
O'Brien & Gere
Chairman



Norma McDonald
Organic Waste Systems
Vice-Chair



Melissa VanOrnum
DVO, Inc.
Treasurer



Patrick Serfass
Executive Director
(ex officio)



Christine McKiernan
Verliant Energy
Partners



Wayne Davis
Harvest Power, Inc.



Nora Goldstein
BioCycle



Shane Chrapko
Highmark bioGas



Kerry Kelly
Waste Management



**Amy McCrae
Kessler**
Turning Earth, LLC



Bernie Sheff
UTS Residual
Processing LLC



Shonodeep Modak
GE Energy



Ben Mathews
Caterpillar

Input:
Any organic waste

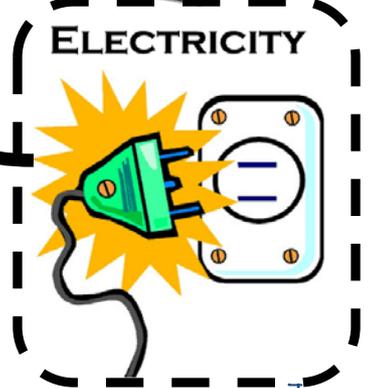
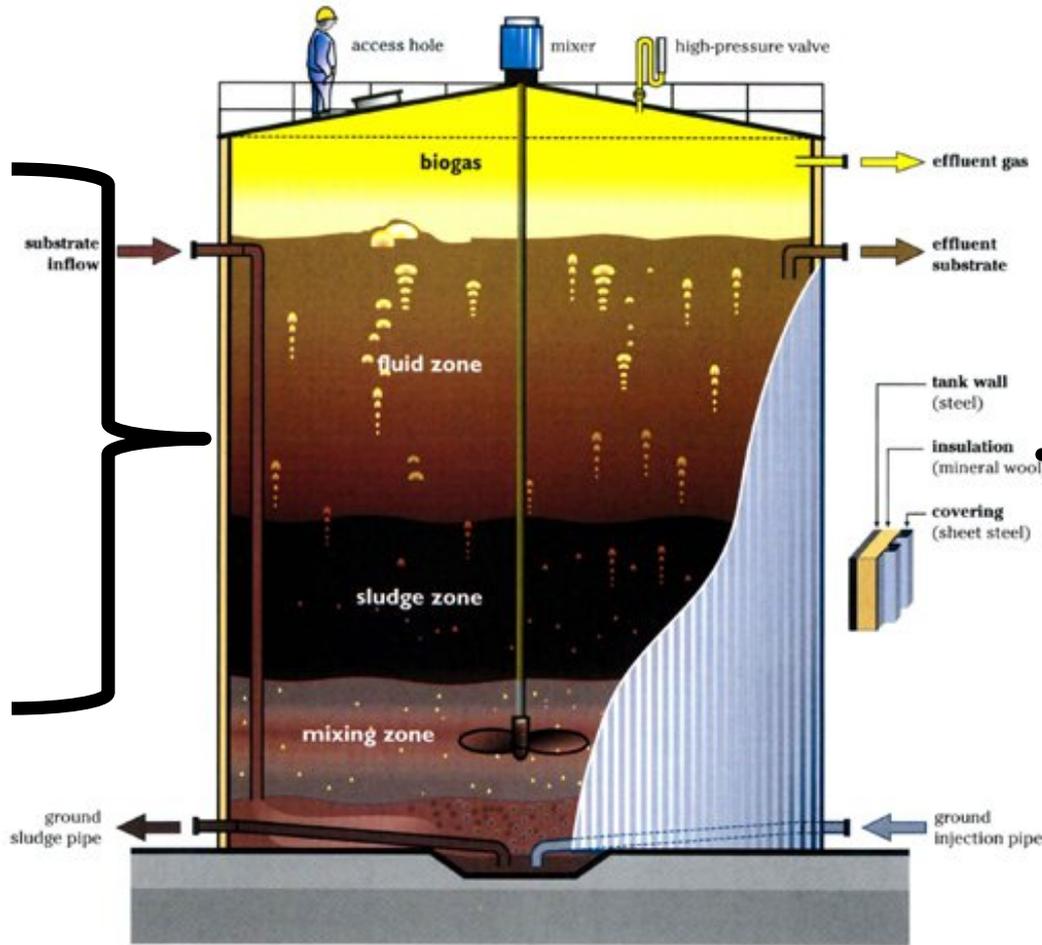
Farm



Urban



Wastewater

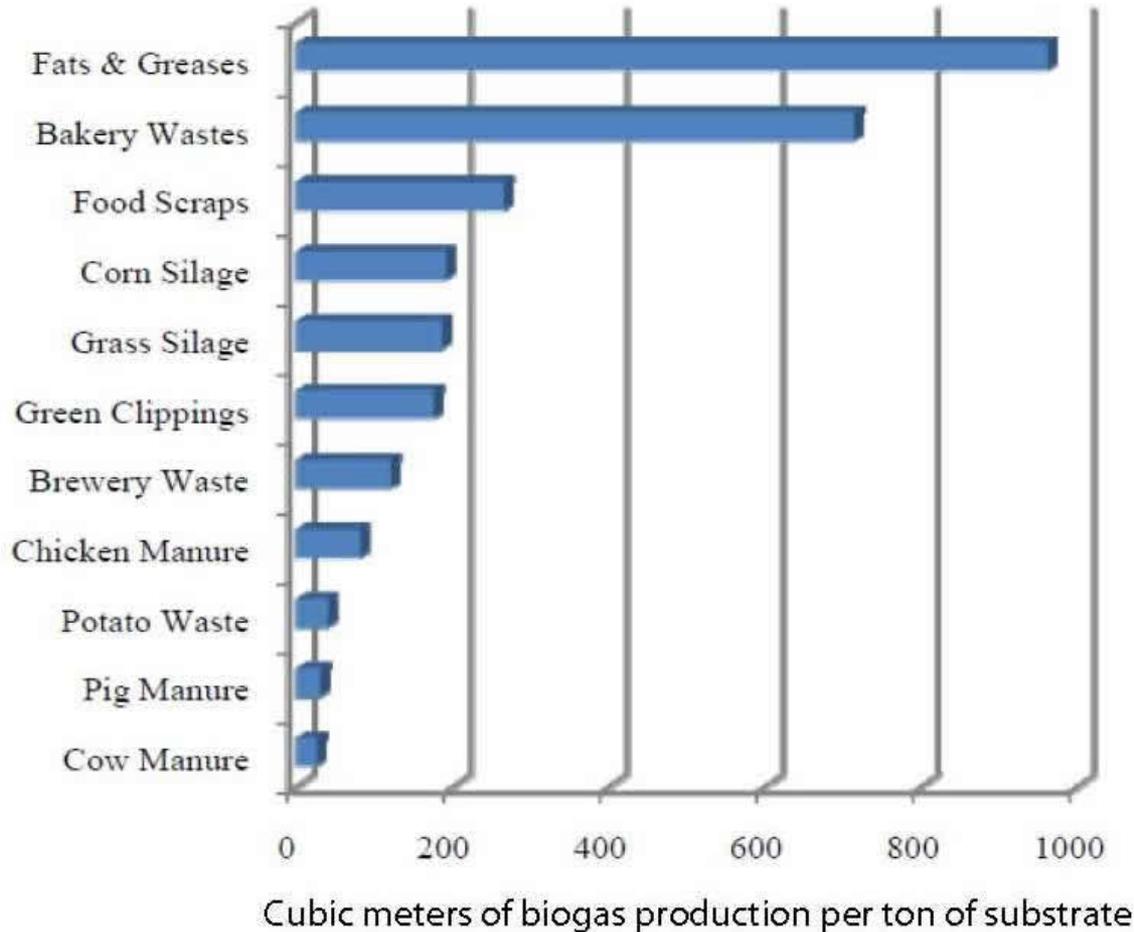


Goal: Turn all (non-woody) organic waste into BIOGAS

Benefits:

Waste Treatment	Energy	Environmental	Economic
<ul style="list-style-type: none"> • Biological process • Mature technology • Small footprint • Reduces waste volume • Very efficient and complete decomposition • Nutrient recovery and recycling 	<ul style="list-style-type: none"> • Net-energy producing • Multiple end-uses for biogas: <ul style="list-style-type: none"> • Heat/electricity/both • Pipeline quality, renewable natural gas • Vehicle fuel • Very reliable • Baseload renewable energy (not intermittent) 	<ul style="list-style-type: none"> • Complete biogas/methane capture • Dramatic odor reduction • Reduced pathogens • Reduced greenhouse gases • Addresses nutrient run-off • Increased crop yield 	<ul style="list-style-type: none"> • Reduced waste volume, reduces costs • Jobs (temporary and permanent) • Balance sheet: changes an expense to revenue • Works well with composting (biogas first)

What wastes are BEST for making biogas?



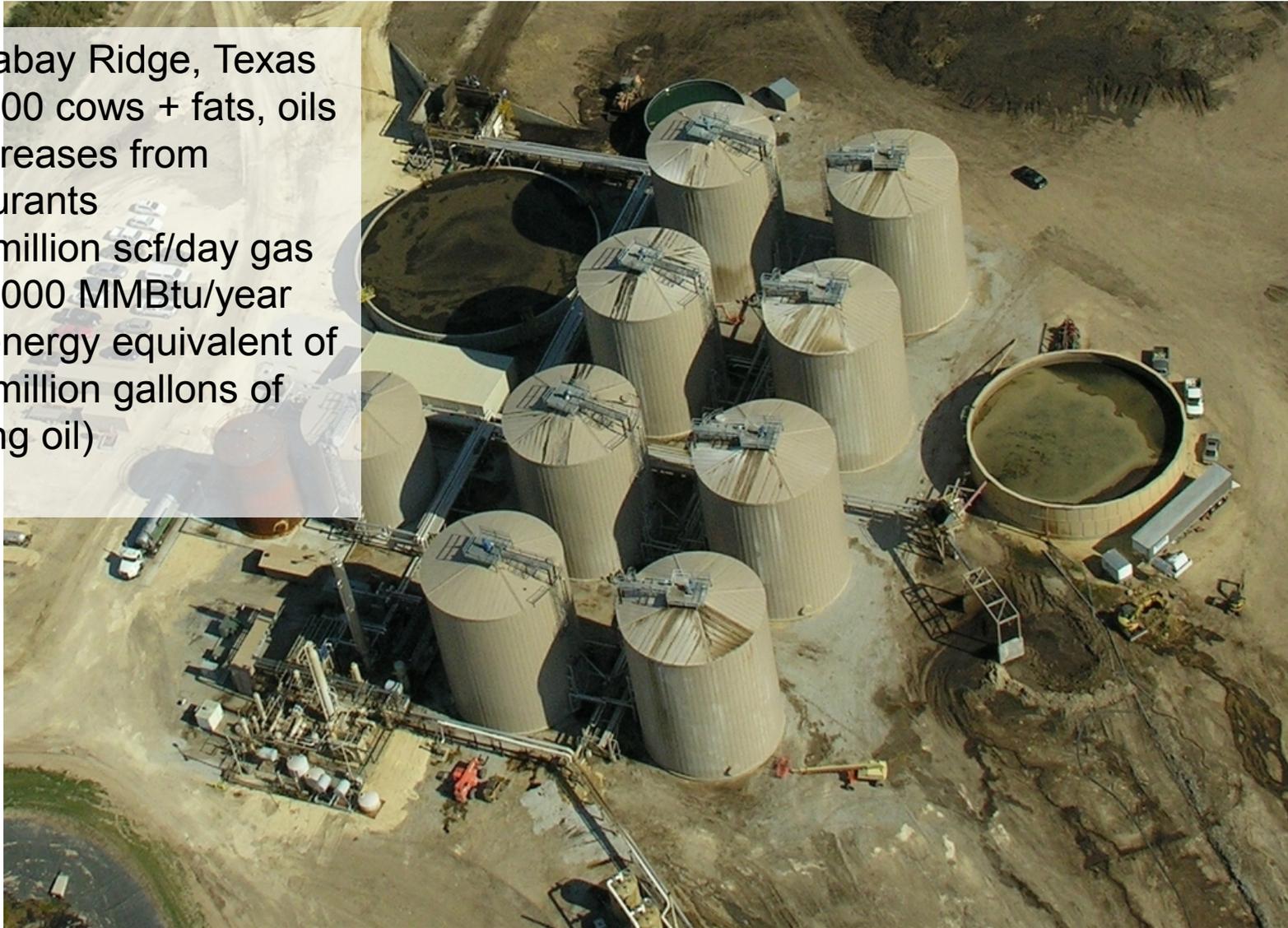
35x manure
25x manure
10x manure

Image source: [Basisdaten Biogas Deutschland](#)

Clover Hill Dairy, Wisconsin
1,250 cows
300kW power



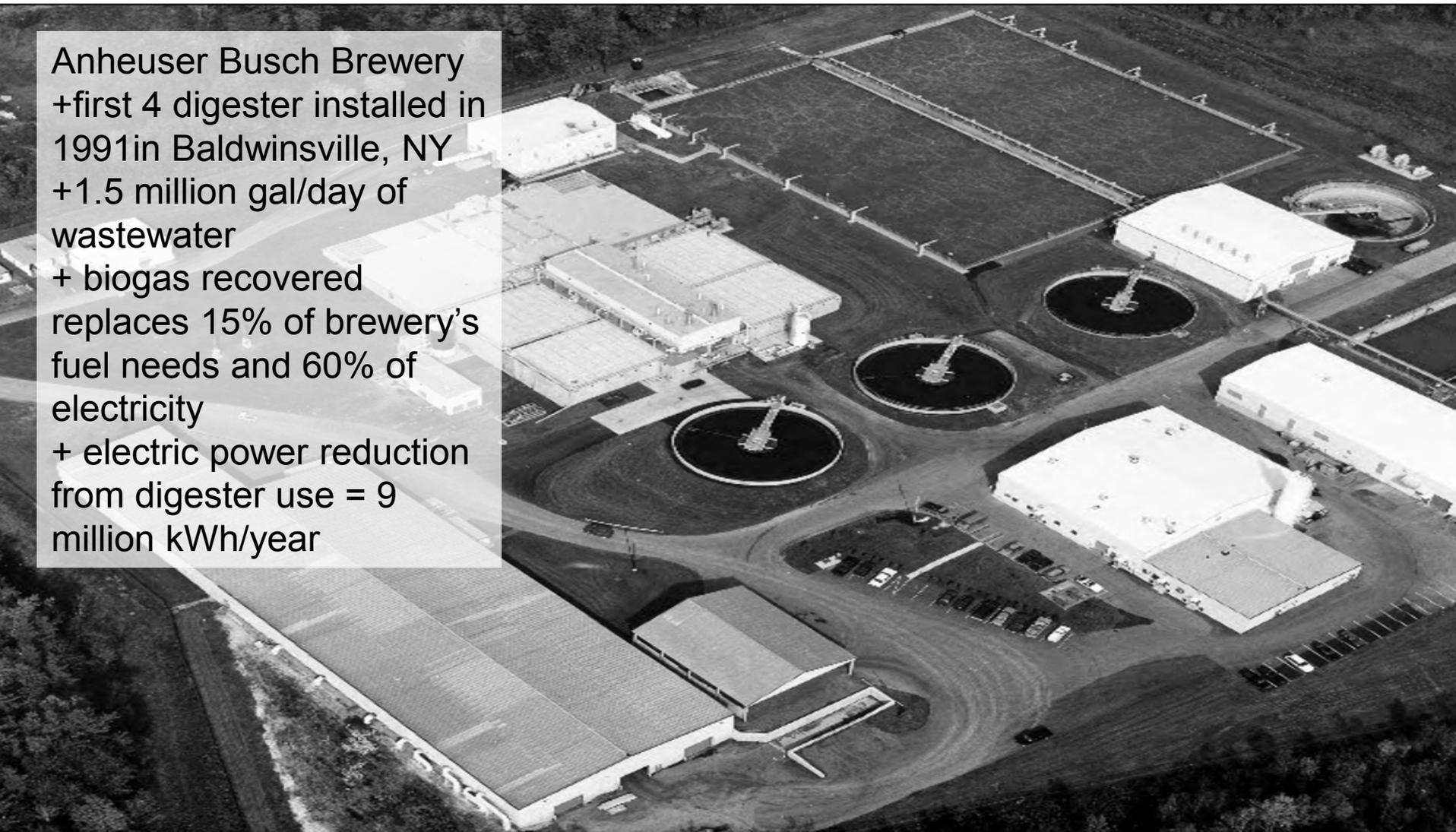
Huckabay Ridge, Texas
+10,000 cows + fats, oils
and greases from
restaurants
+2.7 million scf/day gas
+650,000 MMBtu/year
(the energy equivalent of
4.6+ million gallons of
heating oil)



DC Water
+largest advanced
wastewater facility in world
+370 MGD wastewater
+ \$400 million project
+13 MW generated, uses
26 MW
+saves \$10M/year in
electricity costs +
\$15M/year in other costs
(30 fewer truck trips/day)
+provides all emergency
power if major failure
+operational 2015



Anheuser Busch Brewery
+ first 4 digester installed in
1991 in Baldwinsville, NY
+ 1.5 million gal/day of
wastewater
+ biogas recovered
replaces 15% of brewery's
fuel needs and 60% of
electricity
+ electric power reduction
from digester use = 9
million kWh/year



EBMUD

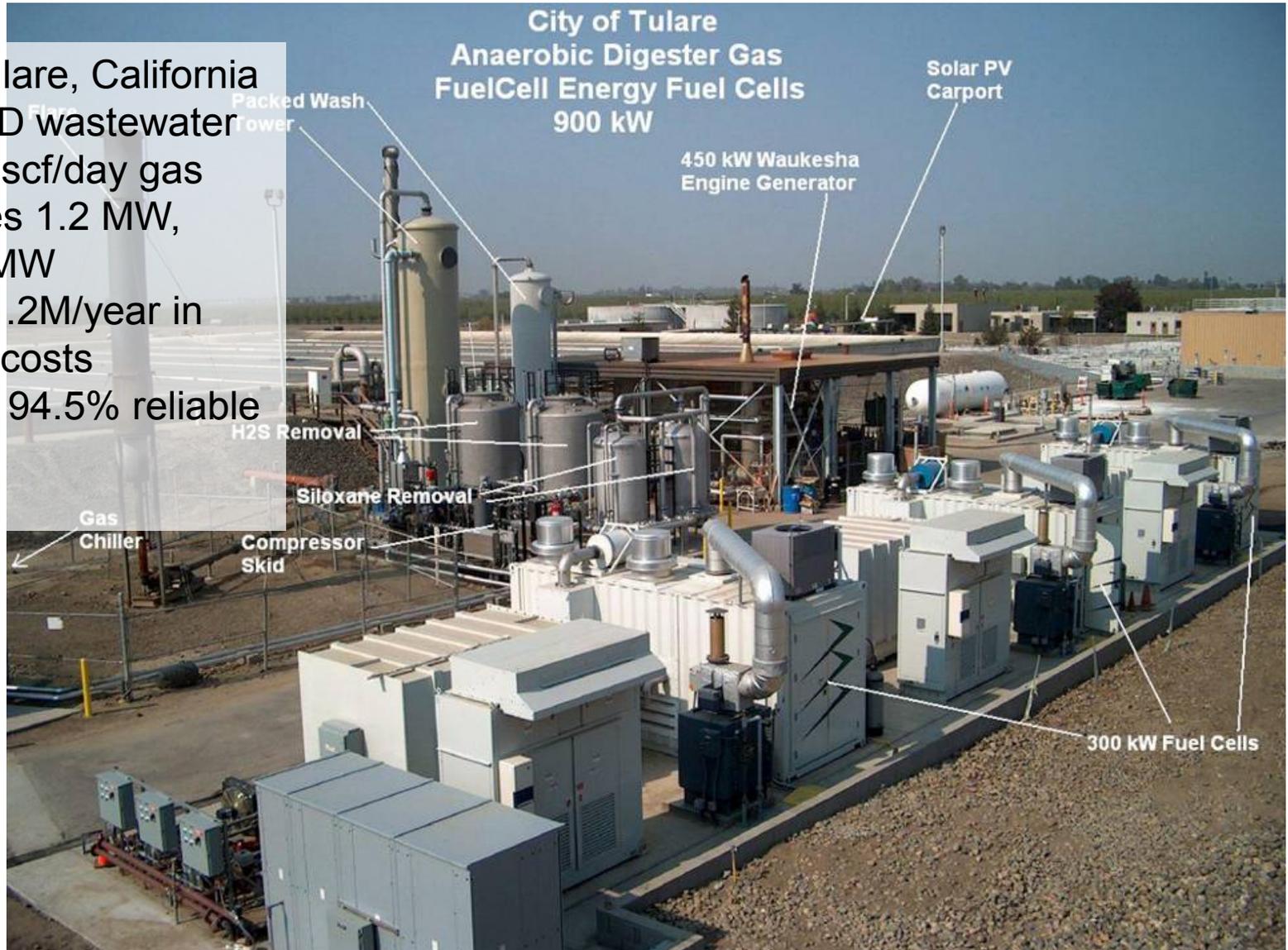
+2011: 40 tons/day of post consumer food waste,
240,000 gal/day of food processing waste

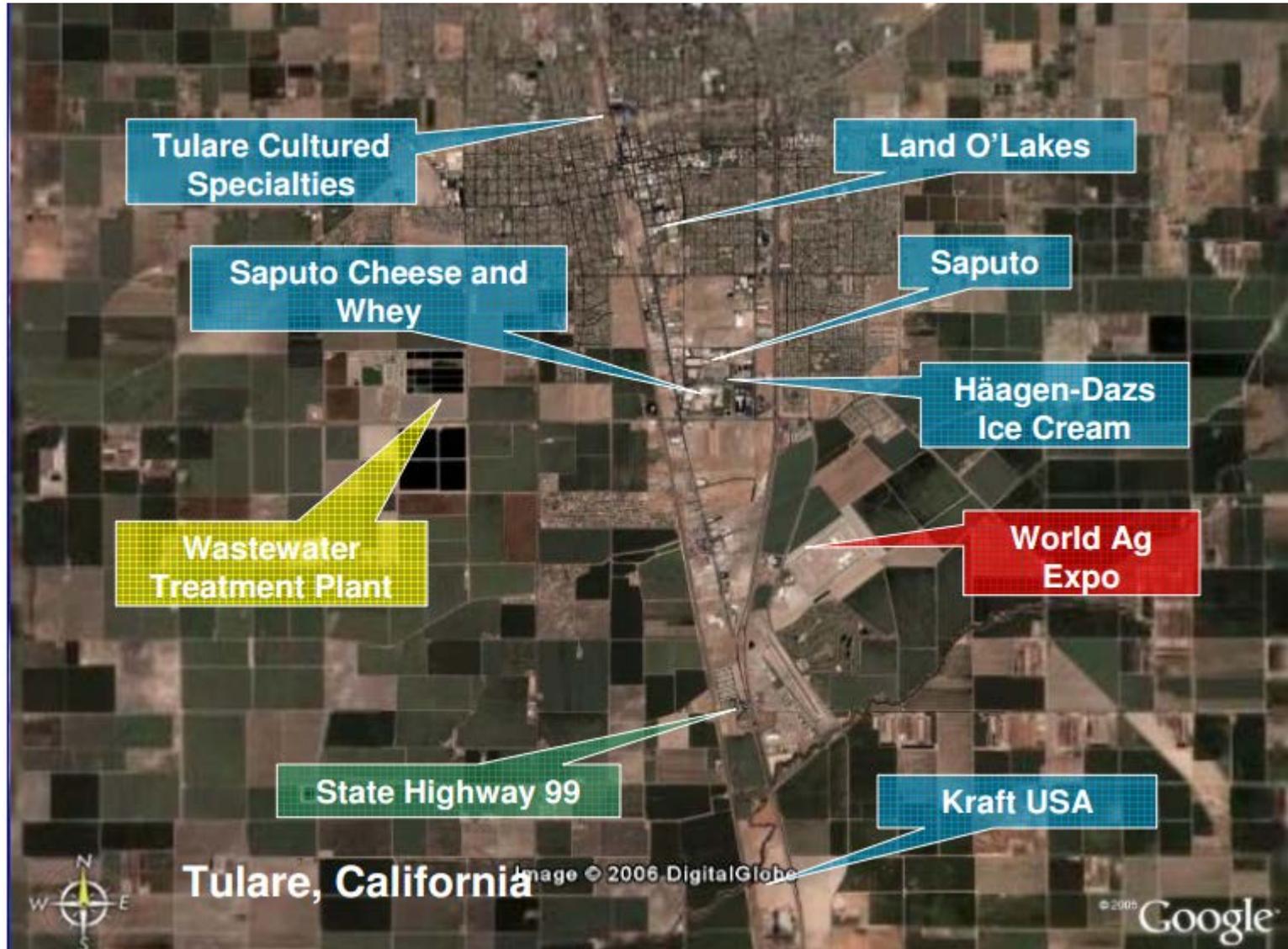
+ generates 90% of 5MW needed

+ to ramp up to 120 tons/day of post consumer food in the next 24 months



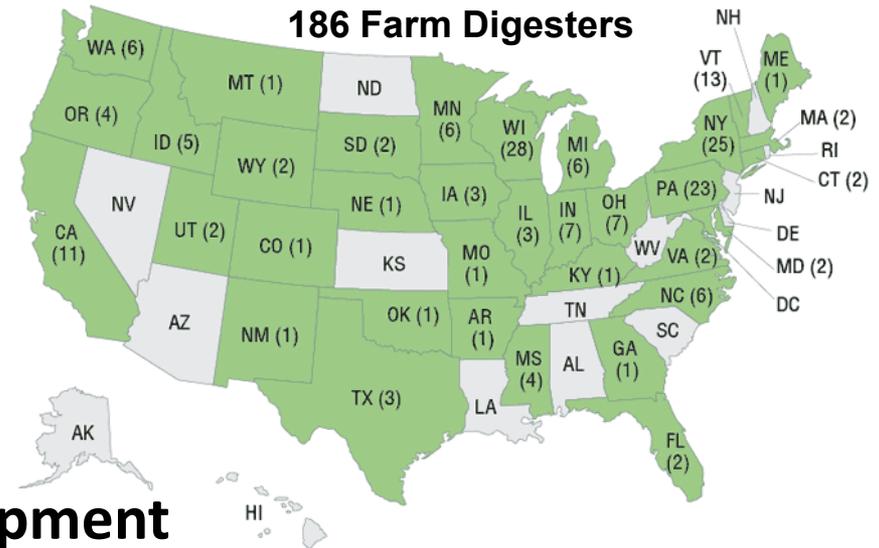
City of Tulare, California
+11.5 MGD wastewater
+500,000 scf/day gas
+generates 1.2 MW,
uses 2.7 MW
+saves \$1.2M/year in
electricity costs
+provides 94.5% reliable
power





2,200+ biogas-producing sites Currently Operational

- 186 Digesters on Farms (100 MW)
- 1,500 Digesters at Wastewater Treatment Plants (only 250 use the biogas they produce)
- 576 landfill-based energy projects

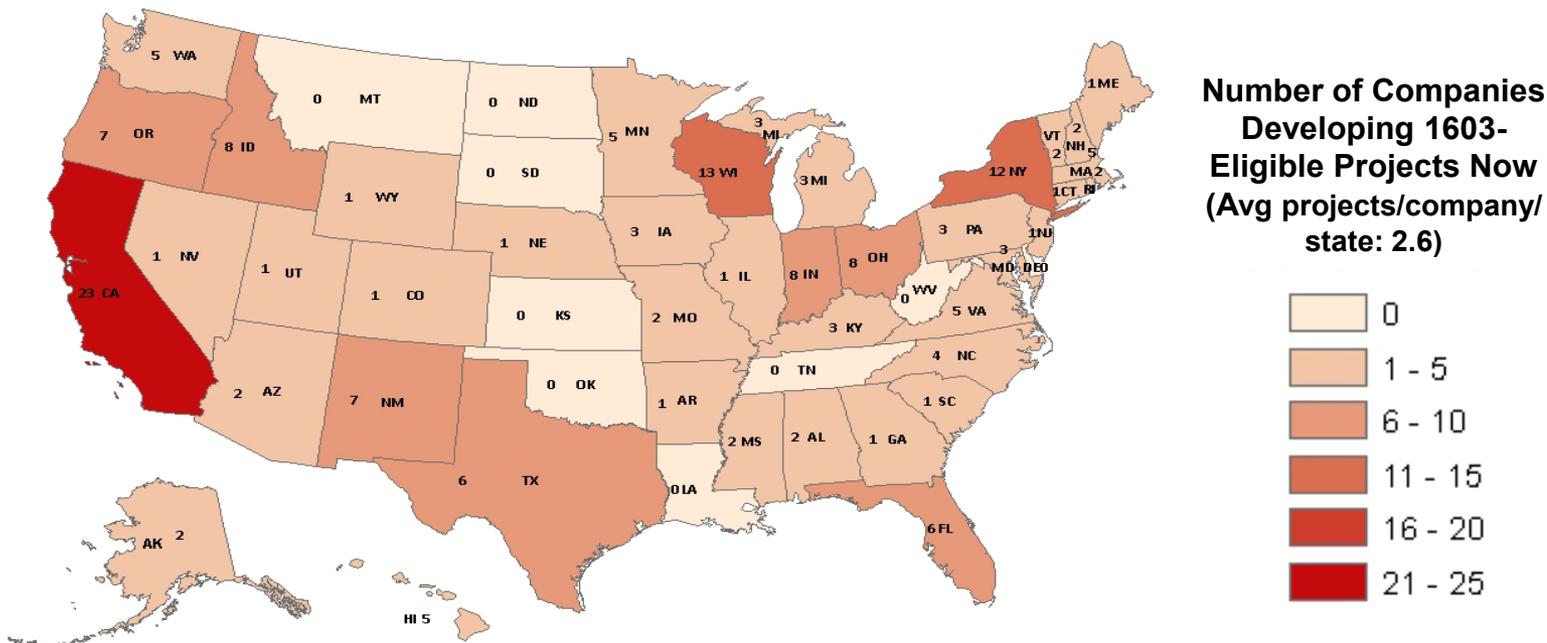


12,000+ sites Available for Development

- Farms: 8,200 (only counting dairy and swine)—1700 MW
- Wastewater Treatment Plants (WWTPs): 3,250—750 MW
 - 2,000 WWTPs > 1 MGD don't have a digester
 - 1,250 WWTPs producing, but not using biogas
- Landfills: 510
- Private commercial/industrial sites: ?

Where Companies are Developing Biogas-Electricity Projects

- Total Projects: 324*
- Total Power Capacity: 649 MW*
- Total Industry Investment: \$3.5 billion
- Average: \$5.74 million/MW
- Average: \$12.6 million/project



Federal Legislation In Place

- **Farm Bill programs** – 2008 Energy Title, especially REAP (Rural Energy for America Program), as well as conservation and other financing programs
 - REAP: 19+ “new” grants announced this Spring
- **2007 Energy Bill** – Provides incentives for the use of biogas as a transportation fuel (Alt Fuel Excise Tax Credit)
- **Federal Renewable Energy Production Tax Credit (PTC)**- per kilowatt-hour tax credit for electricity generated by qualified energy resources including biogas. Under Recovery Act modification a facility which would qualify for the PTC can elect to take the **Investment Tax Credit** instead, but only if it is an electric generation facility (expires end of 2013)
- **New Market Tax Credit:** credit for projects located in low-income area
- **List recently shrank (1603)**

Federal Policy Watchlist

- **Renewable Energy Tax Credits**
 - Extend **Section 1603** deadlines>>Becoming a **PTC** Focus, short-term extension, new bill introduced '13?
 - **Production Tax Credit** (Sec 48) and **Investment Tax Credit** (Sec. 45)
 - **Biogas Investment Tax Credit** (for biogas, not electrons)
 - Not generally helpful for municipalities (WWTPs)
- **Other:**
 - Support the **NAT GAS Act** for natural gas vehicles (upgraded biogas = renewable natural gas)
 - **RFS2** (2010 Clean Air Act), “Advanced biofuels,” ambiguity about MSW and use; EPA rulemaking coming VERY soon.
 - **PURPA Plus, HR.66 Waste to Energy** (wastewater or biosolids-- not landfills, not agricultural waste)
 - **Clean Energy Standard** featured biogas
 - Price on **carbon**

Federal Policy Watchlist (cont'd)

- **Farm Bill Energy Title**
 - HUGE bill, of which biogas is a small part
 - Expect massive changes (funding reductions)
 - Energy title = 1-2% of bill and still on chopping block
 - ABC filed testimony to Senate and House on many issues
 - ABC is active in Agricultural Energy Coalition
 - Due to all these efforts, there is a slight possibility for continued mandatory funding for REAP (Renewable Energy for America Program)

Federal Agencies

- Agriculture (USDA)—Rural Development, Conservation
- Defense (DOD) –shore power, base energy needs
- Environmental Protection EPA:
 - AgStar
 - Landfill Methane Outreach Program
- Federal Energy Regulatory Commission (DOE)—interstate pipelines
- Energy?

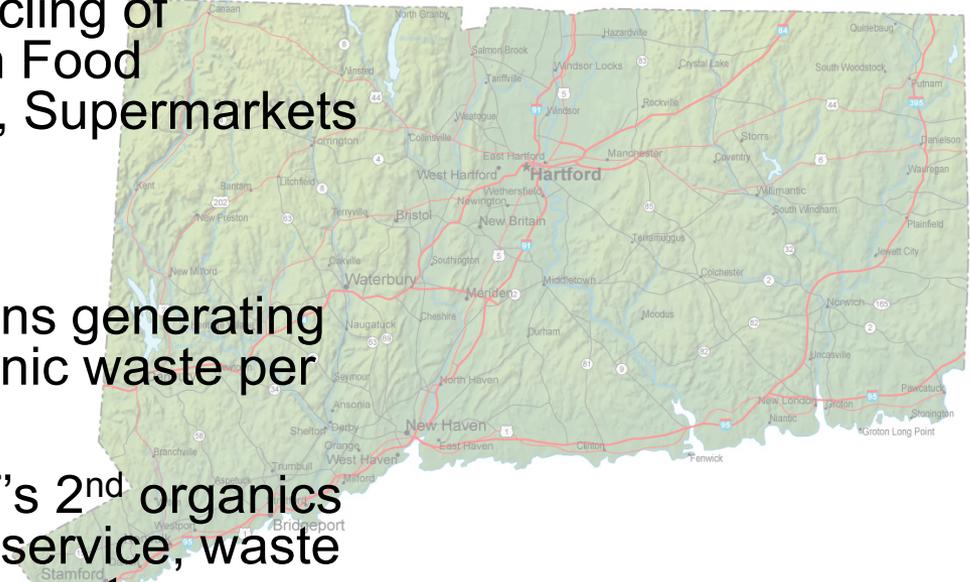


State Spotlight: California (RPS, Biomethane, CEC)

- March 16: CEC proposed wholesale moratorium on biomethane projects
- Biomethane no longer would qualify for RPS; biogas to electricity unaffected
- Reason: CEC wants to stop new non-CA biomethane projects from developing and selling the gas to CA utilities (cheaper than CA biomethane)
- Pros and Cons—but mostly Cons (economic, confusing, negative signal to renewables industry and investors)
- ABC took a strong position against the proposed moratorium citing stoppage of important CA economic activity and the process (legislature should handle, not CEC)
- 65 public comments filed
- Hearing today at 12pm CT: <http://www.energy.ca.gov/webcast/>
- <http://www.energy.ca.gov/portfolio/documents/#03282012>

State Spotlight: Connecticut, Setting an Example

- Public Act No. 11-217
- An Act Concerning the Recycling of Organic Materials by Certain Food Wholesalers, Manufacturers, Supermarkets and Conference Centers.
- Passed late 2011
- Targets commercial operations generating **more than 104 tons** of organic waste per year
- Less than 6 months after CT's 2nd organics recycling facility establishes service, waste generators **must source separate**
- For waste generators that have a recycling facility **within 20 miles**, their **organics must also be recycled** within those 20 miles.



Thank You!

- **Learn More**
 - Sign up for the **FREE Biogas News**
 - www.AmericanBiogasCouncil.org
- **Become a Member**
 - Dues start @ \$75-\$1,200
 - Application online, or contact us

Patrick Serfass, Executive Director
American Biogas Council
1211 Connecticut Ave NW
Suite 600
Washington, DC 20036

202.640.6595

info@americanbiogascouncil.org (yes, it will come to my inbox)