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**Effectiveness of State Incentives for Adoption of Anaerobic
Digestion Systems in the U.S.**

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Effectiveness of state incentives for adoption of anaerobic digestion systems in the U.S.

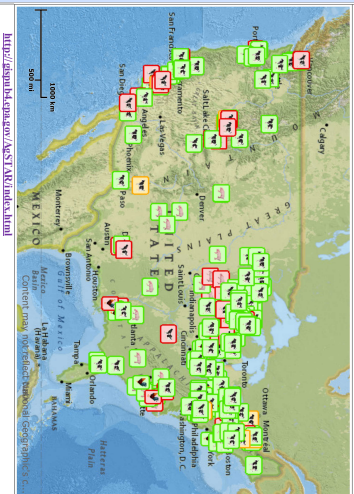
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Background

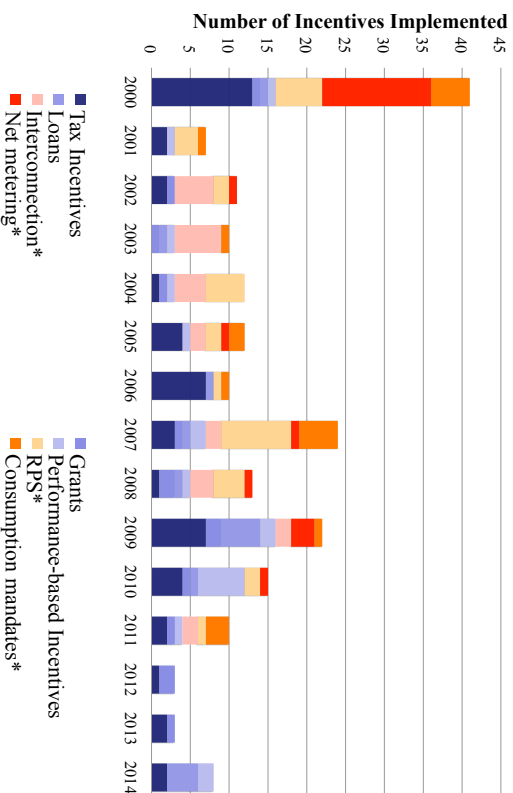
- 247 operational farms in 38 states have implemented anaerobic digestion (AD) systems¹
- 948 million kWh equivalent of energy generated¹



- Rising environmental concerns for more sustainable farms²
- Need for waste stabilization and reduction of surface and groundwater contamination from livestock and poultry manure runoff on farms³
- AD systems breaks down organic material (Manure) to produce either manure nutrients or processed further⁴ to produce biogas
- Biogas is used to generate heat and electricity³

<http://www.anaerobicdigestion.com/industry>

State Incentives⁴



*State mandates

The objective of this study is to examine the effectiveness of state-level incentives in promoting the adoption of anaerobic digestion (AD) systems in the U.S. We compile a panel data for 38 states in the U.S. from 2002 to 2014 on the state-level adoption rate of AD systems, LCV house energy votes, and incentive programs to promote the adoption of AD systems. We compare the effectiveness of financial incentives and state mandates.

Organic material
(e.g. animal waste, food waste, agricultural waste, wastewater sludge)

Digestion tank

Biogas
(for electricity, heating, vehicles, pipelines)

Co-products
(e.g. livestock bedding, compost, fertilizer, nutrients)

www.americanbiogasCouncil.org

Results

- After running a panel fixed effects model, we find
- State-level adoption rates for AD systems are significantly greater with performance-based incentives
 - In contrast, interconnection and net metering did not statistically significant increase the adoption of AD
 - The number of adopters increased over time
 - Tax and loans are excluded from the regression due to lack of variation over time

Number of adopters	Coef.	Std. Err.
LCV house vote	-.016	.014
Performance-based Incentives	3.62*	.20
Grants	-.37	.60
Interconnection	-2.74*	.52
RPS	.14	.55
Net metering	-1.83	.95
Consumption Mandates	.54	.69
Year	.71*	.07
Constant	-1411.54*	133.95

*statistically significant at 5%

References

1. <http://www.epa.gov/asstar/asstar-data-and-trends#biogasfacts>
2. <http://www.renewable-waste.com/pdf/AnaerobicDigestionBrief.pdf>
3. <http://biogas.fras.ufl.edu/usas.asp>
4. <http://www.dsireusa.org/>

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