

# Institutional Drivers for Private Biodigester Investment

## Biodigesters and Biogas Case Study Track EPA Technology Market Summit

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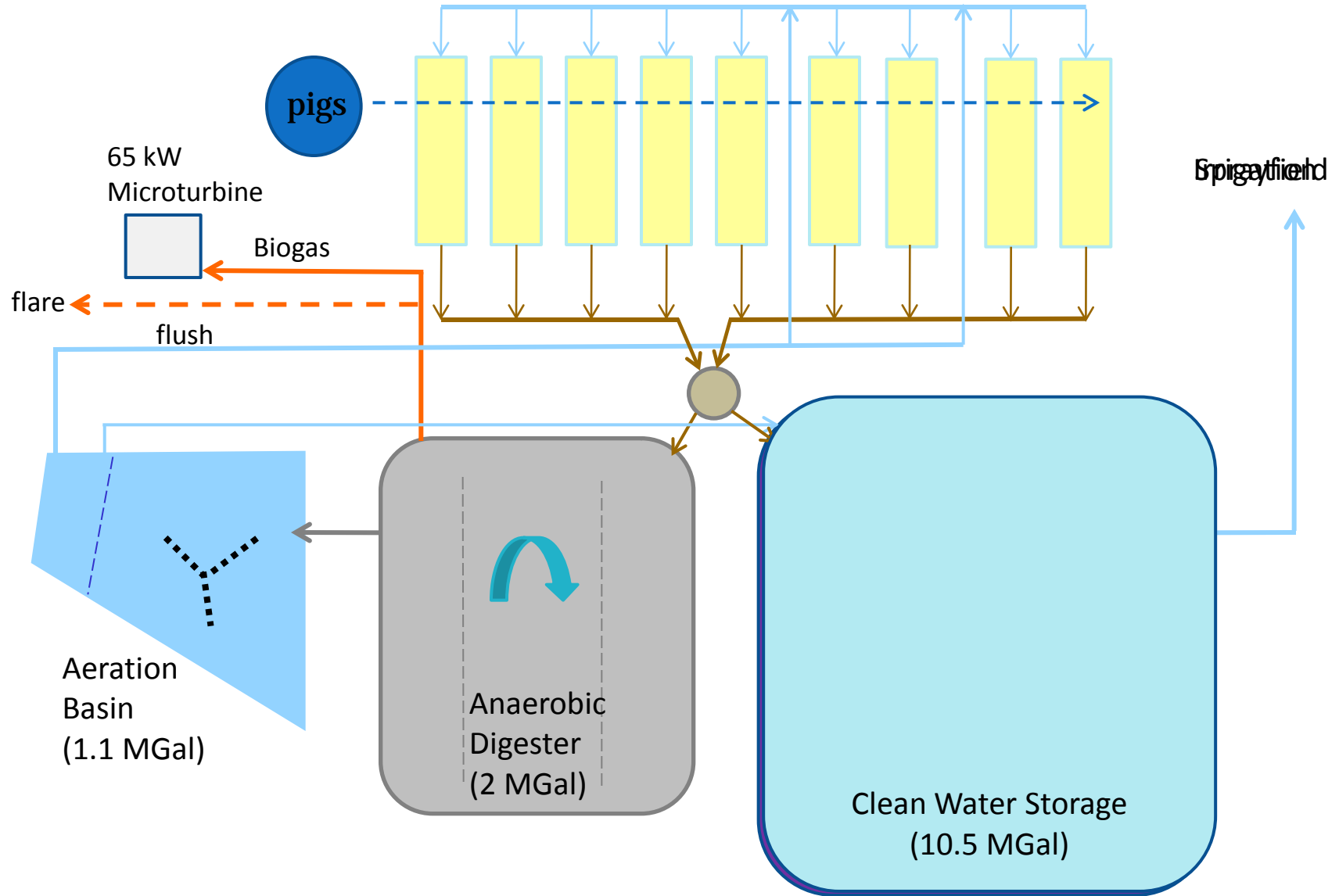
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**Duke Carbon Offsets Initiative**  
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# Loyd Ray Farms: Anaerobic Digestion-based Innovative Swine Waste Management



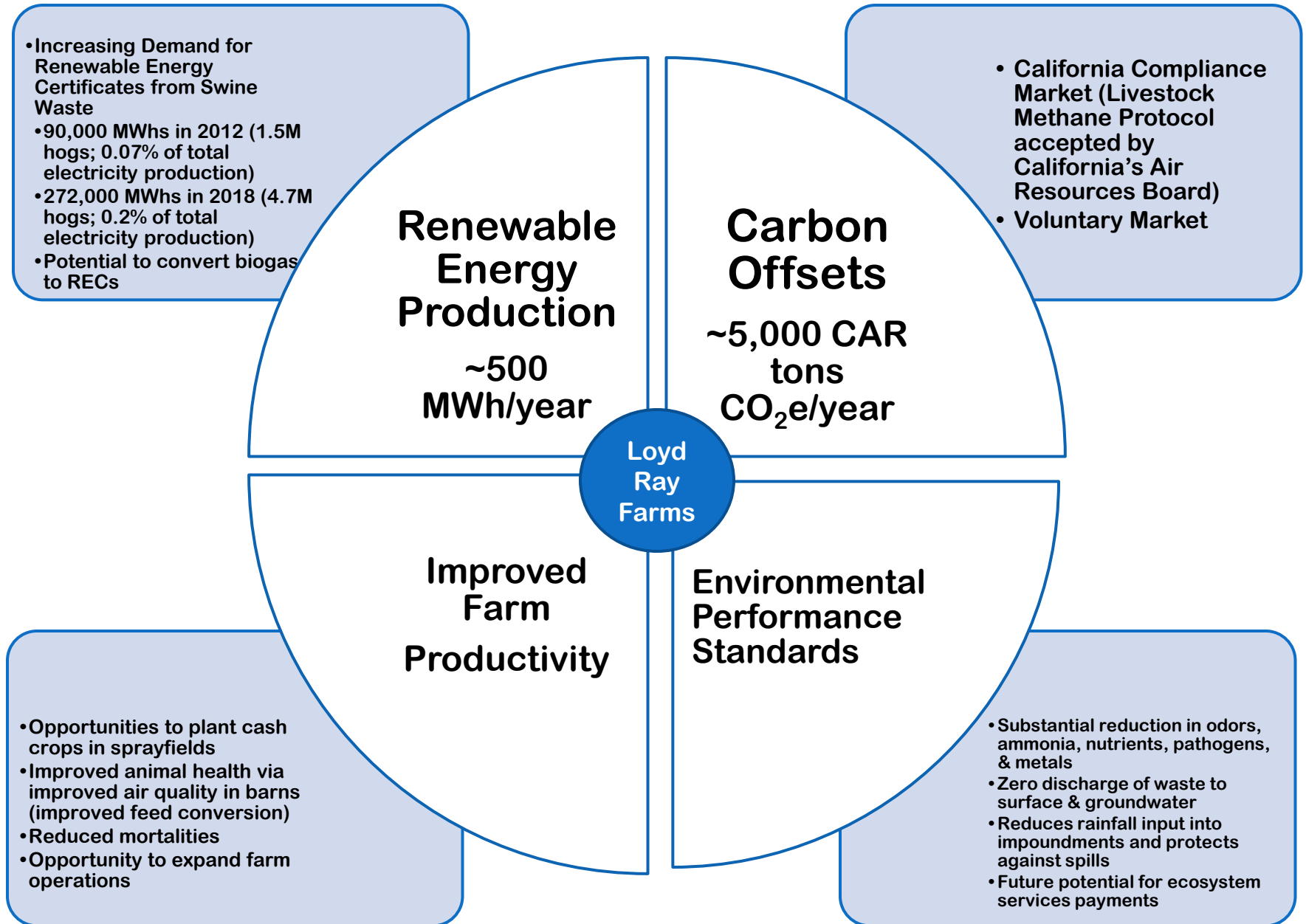
- 8,600-head finishing farm located in Yadkin County, NC
- Combined innovative animal waste management & electricity generation system; meets all NC environmental performance standards per Lagoon Conversion Program
- 1<sup>st</sup> AD-based System to be Permitted as an Innovative Waste Management System; 1<sup>st</sup> swine project to generate electricity under NC state REPS
- \$1.2M Construction Cost (\$500K in Federal & State funding)

# Loyd Ray Farms System

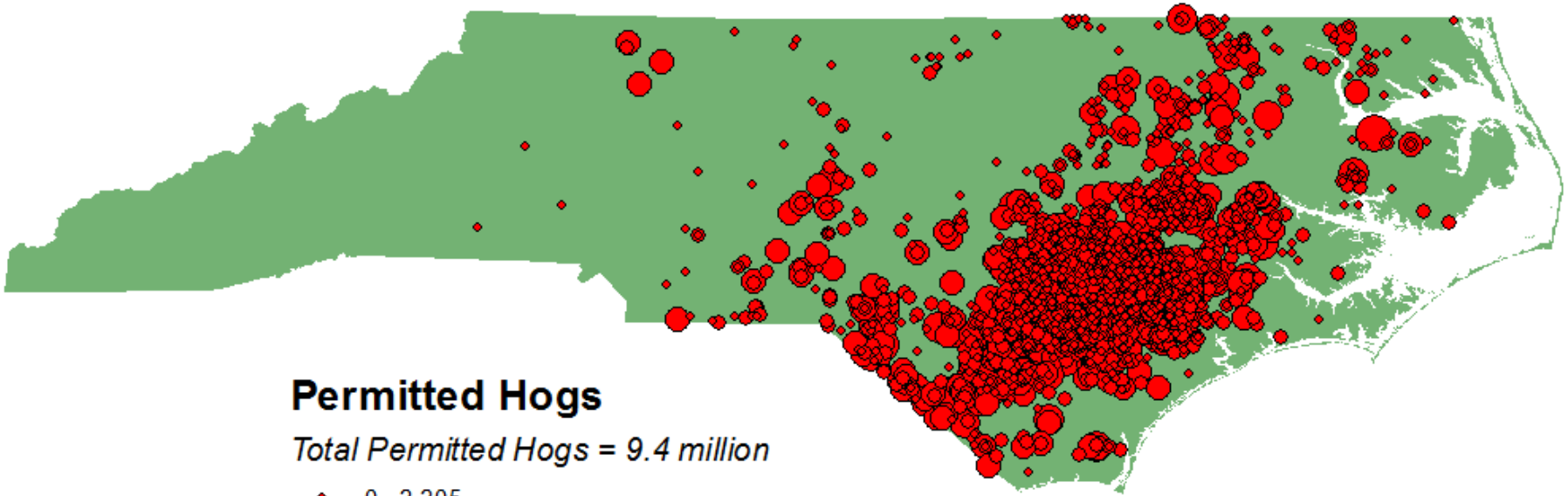


	<b>ENERGY PRODUCTION/RECs</b>	<b>CARBON REDUCTIONS</b>	<b>NUTRIENT MANAGEMENT</b>	<b>FINANCING OPPORTUNITIES</b>
<b>DUKE UNIVERSITY</b>	Preferred to create additional income streams; support operation of innovative waste management system	Voluntary Commitment to Climate Neutrality by 2024; seeking local offsets that yield significant co-benefits beyond carbon reductions; catalytic effect	Required per internal priorities to advance innovative waste management in NC	NC Lagoon Conversion Program NRCS Cooperative Conservation Partnership Initiative; Strong Incentive
<b>DUKE ENERGY</b>	Swine-waste set-aside in NC REPS; ratchets up from 90,000 MWhs in 2012 to 272,000 MWhs in 2018 (1.5M hogs to 4.7M hogs or 0.07 to 0.2% total electricity production)	Preferred	Preferred but not required for RECs*	\$1M annual R&D fund for REPS implementation; commercial contracts
<b>GOOGLE</b>	Preferred	Voluntary commitment to climate neutrality; seeking innovative projects that yield high-integrity offsets and leadership	Preferred per internal priorities	Preferred; Strong Incentive
<b>PRODUCER</b>	Reduces electricity costs; surplus electricity + REC production creates new income streams	Creates income stream	Required for LCP/CCPI; required for farm expansion; expands income-producing opportunities on-farm; protects vs. rain events	NC Lagoon Conversion Program NRCS Cooperative Conservation Partnership Initiative; Corporate Investors

# Specific Outcomes and Future Economic Benefits - AD-based Innovative Swine Waste Management



# North Carolina Potential



## Permitted Hogs

Total Permitted Hogs = 9.4 million

- 0 - 2,205
- 2,206 - 5,000
- 5,001 - 9,922
- 9,923 - 27,280
- 27,281 - 72,929

Data from NC Division of Water Quality, 2009

Summer 2012: DCOI + Nicholas Institute for Environmental Policy Solutions to Investigate Optimization Strategy for Swine-Waste Derived Biogas Delivery for Electricity & REC Production; consideration of co-digestion opportunities

THE DUKE CARBON OFFSETS INITIATIVE



# For more information

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