Dairy Digester Research & Development Program

Methane is approximately 21 times more potent than carbon dioxide as a greenhouse gas. Dairy digesters capture methane gas at dairy farms and convert it into useful energy. Harnessing this potent gas prevents it from contributing to climate change. Converting it to a low-carbon energy source provides additional greenhouse gas reduction benefits.

cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

CALIFORNIA CLIMATE INVESTMENTS

Digesters capture emissions and convert them into energy.

CDFA's Dairy Digester Research and Development Program (DDRDP) helps California dairies:

- Reduce greenhouse gas (GHG) emissions
- Lessen energy demand by producing electricity or fuel on-site
- Reduce odors and pathogens
- Potential to provide additional revenue stream through production of by-products

What is a Dairy Digester?

Anaerobic digesters harness the natural process of anaerobic decomposition of dairy manure and other carbon-rich materials such as food waste to produce biogas and other useful coproducts. Biogas is composed largely of methane, which is captured to generate electricity or to be used as transportation fuel. Capturing the methane keeps it from escaping into the atmosphere, where it functions as a greenhouse gas (GHG) and contributes to climate change. Digesters also reduce odors, pathogens and waste.

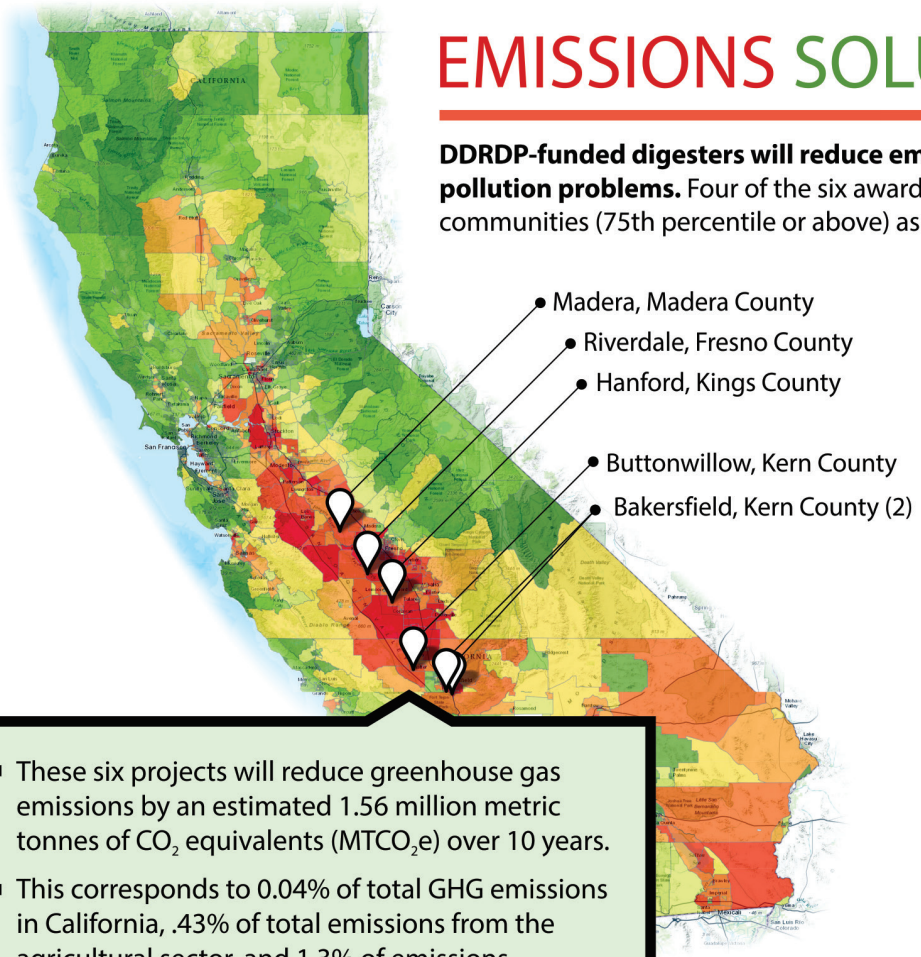
How Does This Program Help?

In 2014, CDFA was appropriated $12 million from the Greenhouse Gas Reduction Fund (GGRF) to support projects that reduce greenhouse gas (GHG) emissions from California dairy operations by capturing GHGs, harnessing GHGs as a renewable bioenergy source and promoting low carbon fuels. In 2015, CDFA awarded six projects for approximately $11.1 million in grants to implement digester technology on California dairy operations (see table below for details).

Project Name/Applicant	Digester Type	Location	Grant	Total Cost
Verwey-Hanford Dairy Digester	Covered lagoon digester	Hanford, Kings Co.	$3,000,000	$7,003,176
Open Sky Ranch Dairy Digester	Covered lagoon digester	Riverdale, Fresno Co.	$973,430	$1,946,864
Verwey-Madera Dairy Digester	Covered lagoon digester	Madera, Madera Co.	$2,281,091	$4,563,845
West-Str North Dairy Biogas Project	Covered lagoon digester	Buttonwillow, Kern Co.	$1,837,005	$9,000,000
Lakeview Farms Dairy Biogas Project	Covered lagoon digester	Bakersfield, Kern Co.	$2,000,000	$8,500,000
Carlos Echeverria & Sons Dairy Biogas Project	Covered lagoon digester	Bakersfield, Kern Co.	$1,000,000	$8,969,700
		Total	**$11,091,526**	**$39,983,585**

EMISSIONS SOLUTION

DDRDP-funded digesters will reduce emissions in communities with complex pollution problems. Four of the six awarded projects are in disadvantaged communities (75th percentile or above) as identified by CalEnviroScreen 2.0.



California Office of Environmental Health Hazard Assessment (OEHHA)

- These six projects will reduce greenhouse gas emissions by an estimated 1.56 million metric tonnes of CO_2 equivalents ($MTCO_2e$) over 10 years.
- This corresponds to 0.04% of total GHG emissions in California, .43% of total emissions from the agricultural sector, and 1.3% of emissions specifically from manure management on dairies.
- The projects will generate approximately 40,000 MW-h of renewable electricity per year.

Key Project Requirements:

» GHG emissions reductions from projects are estimated using the California Air Resources Board Compliance Offset Protocol: Livestock Projects (2011).

» Projects are required to provide 50% cost-share.

» New and defunct digesters are eligible for funding.

» Projects must meet environmental criteria for air and water quality.

» CalEPA's CalEnviroScreen 2.0 tool used to determine benefits to disadvantaged communities (DACs).

» Review criteria included: overall design and implementation plan, GHG reduction calculations, financial strength and feasibility, benefits to DACs, economic, environmental and other co-benefits, and project readiness (CEQA and permit status).

» Awarded projects required to report their verified actual GHG reductions to CDFA for 10 years after project is operational.

Projects underwent a multi-step review process, including (i) administrative review by CDFA staff to determine completeness of submitted proposals, (ii) financial review by CDFA Audits Office to determine fiscal soundness of applicant organizations, their ability to provide matching funds and front costs while waiting for reimbursements in arrears from CDFA, (iii) technical review of GHG emissions reduction estimates and proposed technologies by academic experts (University of California and Cal Poly), and (iv) a comprehensive review and scoring by a Technical Advisory Committee (DDRDP TAC).

Program Outcomes: The DDRDP TAC recommended that CDFA award funding to six digester projects for a total of $11.1 million, with $28.9 million provided by applicants as cost-share.

For more on the Dairy Digester Research and Development Program, visit: www.cdfa.ca.gov/go/dd

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