

# PROJECT SUMMARY

## Milk Production

### Dairy Power

#### The current situation.

Methane from manure is the second-largest source of greenhouse gas emissions in the fluid milk value chain — approximately 21 percent of the total fluid milk carbon footprint<sup>1</sup> — and, at the same time, presents a largely untapped source of renewable energy.

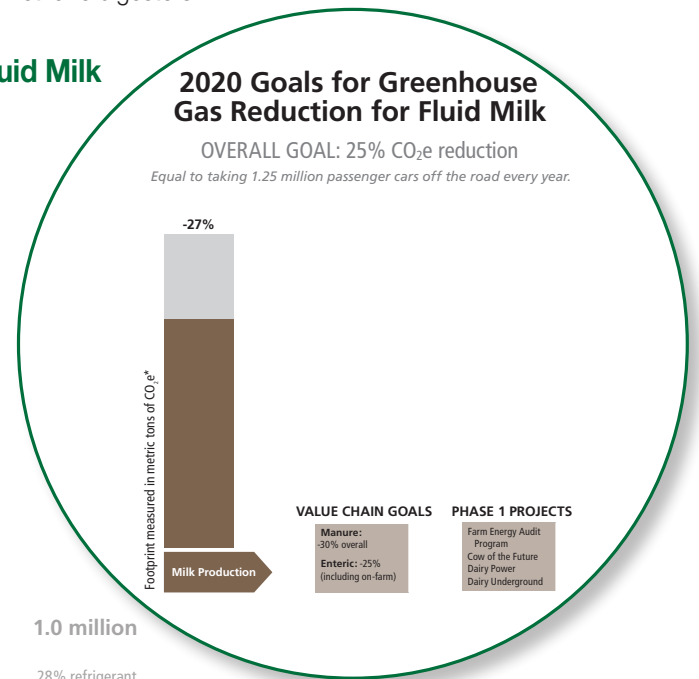
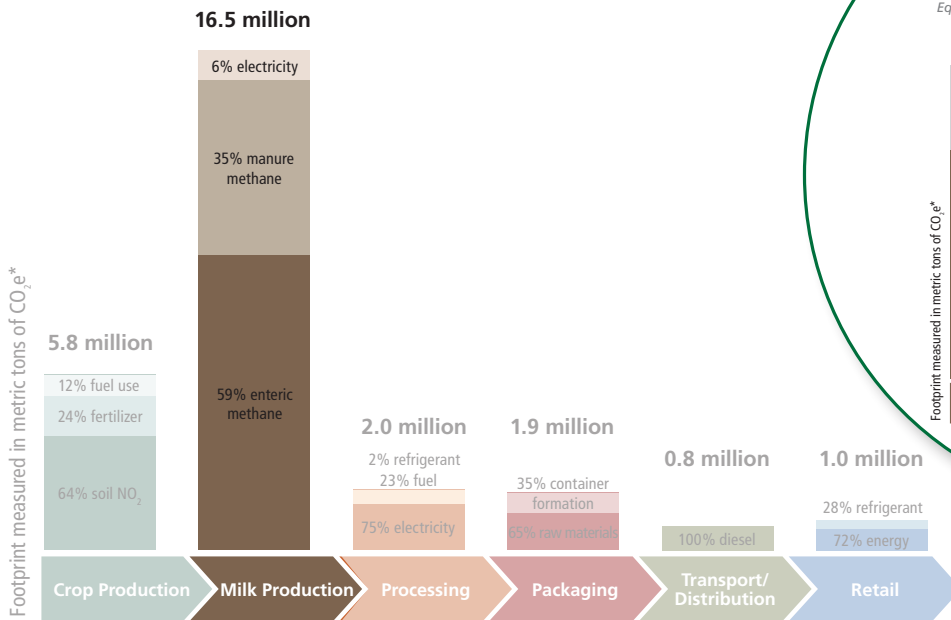
Anaerobic technologies such as methane digesters offer a way to capture this energy. They convert a waste product with negative environmental and social effects into a valuable source of revenue and cost savings, measured in renewable gas or electric energy, on-farm energy offsets, and bedding. In addition, they contribute to good neighbor relations by reducing odor and presenting the community with a valuable source of local, renewable energy.

Adoption of methane digesters in the U.S. has been slow, due to a number of barriers, including:

- Institutional challenges involving negotiation with utilities, variable and uncertain rates for electricity, regulatory hurdles, a complex permitting process, grid connection issues and digester industry labor capacity
- Technological variables involving reliability, maintenance and warranties
- Financial difficulties involving high-capital outlays for digesters, lack of financing and poor financing terms due to project uncertainty
- Cultural barriers involving producers' lack of positive experience with methane digesters

#### Estimated Sources of Greenhouse Gas Emissions for Fluid Milk

TOTAL = 28.0 million metric tons CO<sub>2</sub>e



#### REDUCTION OPPORTUNITIES

Conservation tillage Fertilizer use Pastured dairy Manure nutrients	<b>Enteric reduction</b> Methane capture Renewable energy generation Energy efficiency	Energy efficiency Process innovation Cogeneration Renewable energy	Energy efficiency Materials reduction Renewable/recycled materials	Truck efficiency Route efficiency Driver training	In-store energy efficiency (refrigeration and lighting)
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\*Footprint conducted by Blu Skye Sustainability Consulting is a scan-level footprint based on a literature-review of major greenhouse gas (GHG) studies in the dairy industry. University of Arkansas is currently conducting a life cycle assessment of GHG for fluid milk.

## A strategy for sustainability.

The Dairy Power project will send a strong signal to policymakers, digester developers, utilities and other stakeholders that the U.S. dairy industry is committed to large-scale digester adoption. It will help achieve mass market acceptance of digesters in the U.S. by developing and executing a coordinated, multistakeholder approach; by focusing on reducing regulatory, economic, technological and cultural barriers to digester adoption; and by working with existing national and regional programs such as the U.S. Environmental Protection Agency AgStar program.

## Tactics for change.

The multipoint strategy will be most effective with tactics that encourage understanding of how adoption of digester technologies has positive environmental, community, regulatory and financial impacts. Dairy Power will coordinate efforts among producers, dairy influencers, and financial and regulatory entities. Three tactics are being pursued simultaneously:

- 1 Lobby at the state and national levels to support the emergence of a thriving digester market.** Dairy Power will develop and implement a lobbying plan to impact carbon, nutrient and green energy regulation. Its goal will be to improve understanding among regulatory agencies and policymakers of the financial and environmental benefits of digester adoption. Specifically, this effort will align a large number of stakeholders with expertise in a variety of areas. The ability to understand the complex process of building functioning digester systems will be crucial to this effort.
- 2 Conduct a market assessment to determine the regions in which to focus efforts.** This assessment will identify and prioritize regions with the greatest opportunities for adoption of digesters. In addition, an initial review of existing primary and secondary research will be conducted to determine the essential areas of knowledge yet to be discovered, such as number of barriers to be addressed, number of digesters already in operation, emission reduction from digesters, energy production by digesters and total economic benefit to producers.
- 3 Convene a stakeholder engagement summit.** The purpose of the summit will be to gain alignment on and commitment to making digesters viable on a large scale, focusing on the financial, institutional, technical and cultural barriers preventing mass adoption. It will bring together critical and influential stakeholders, including digester developers, producers, milk cooperatives, utilities, third-party owner/operators, lobbyists and renewable energy buyers.

## Economic and environmental impact.

The environmental impact will initially be realized on or close to the farm, quickly extending to neighboring communities, and eventually to other industry stakeholders and consumers. Achieving digester adoption by the goal of 1,300 farms would yield yearly revenues of \$38 million and offset 2 million tons of carbon dioxide equivalent (CO<sub>2</sub>e) annually by 2020.<sup>2</sup>

<sup>1</sup>High-level carbon footprint scan conducted by Blu Skye Sustainability Consulting, based on a literature review of major GHG studies in the dairy industry.

<sup>2</sup>Both figures refer to the allocation of benefit to fluid milk sales, about one-third the total benefit to raw milk sales.