



Dairy Operations and Manure Management in California

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CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE

Dairy Industry Key Statistics

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Dairy State in the US

1.7M

milking cows

1,250

dairies across CA

\$1.8B

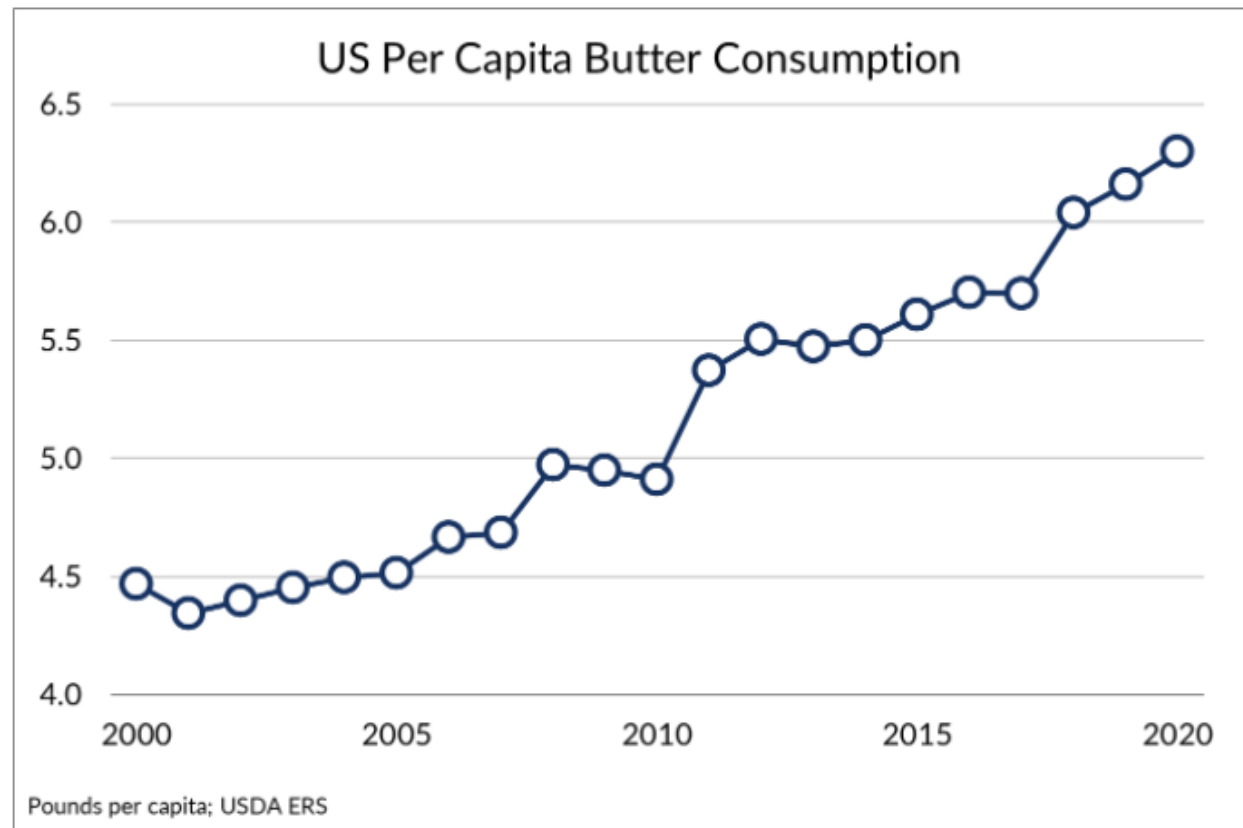
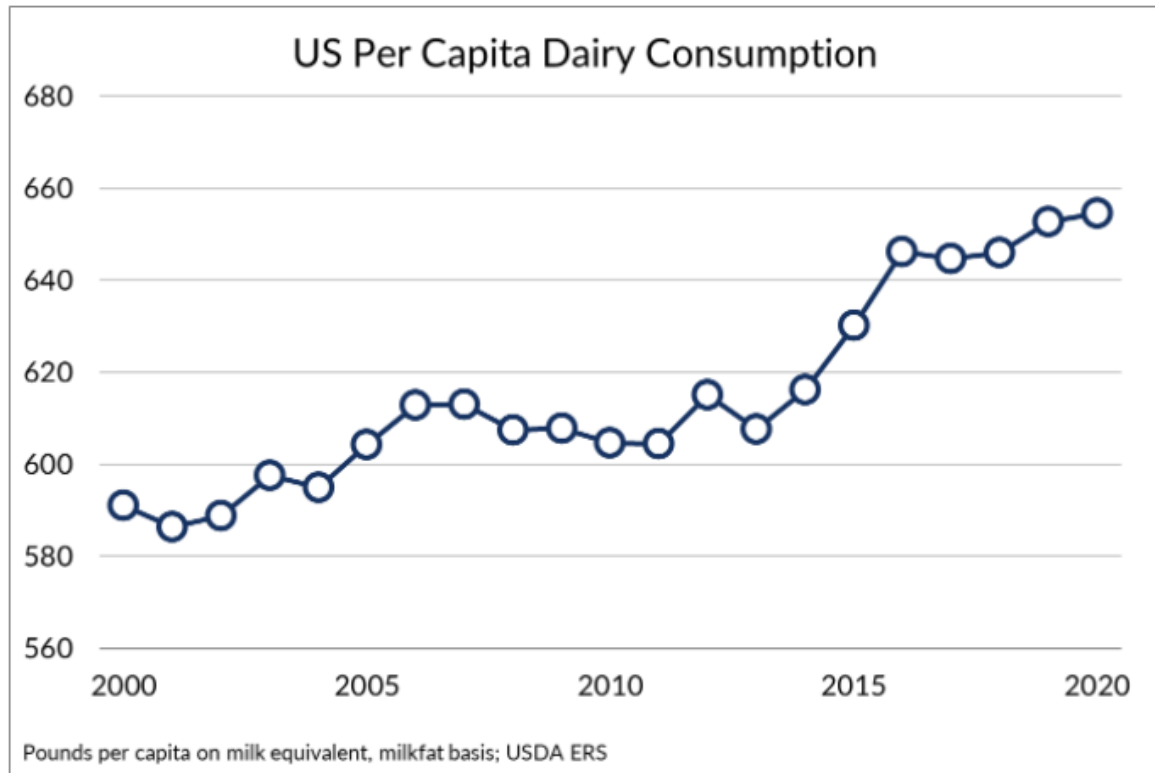
Dairy and dairy products
export value

19%

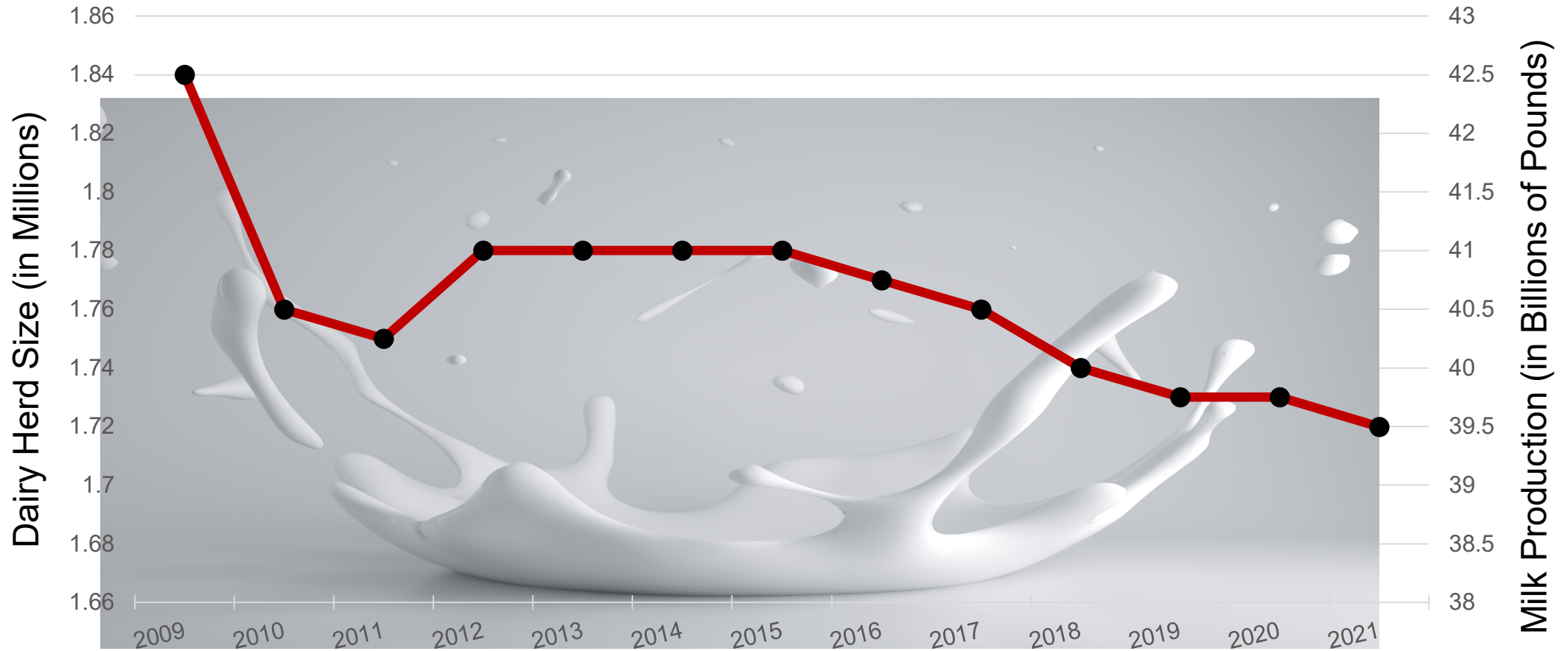
of US milk

The California dairy sector provides milk and milk products like cheese that are highly nutritious, safe, and affordable food sources for children and adults. The dairy sector plays an important role in local, national, and international food security

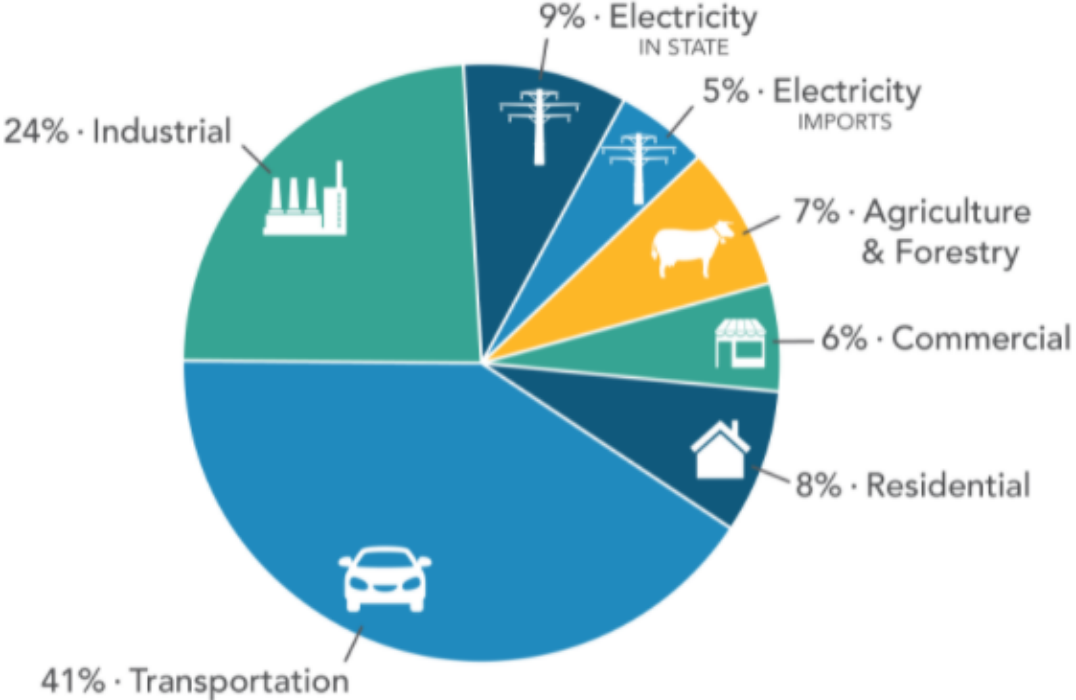
Consumption of dairy and products continue to rise across the country



Dairy Herd Size vs. Milk Production in CA

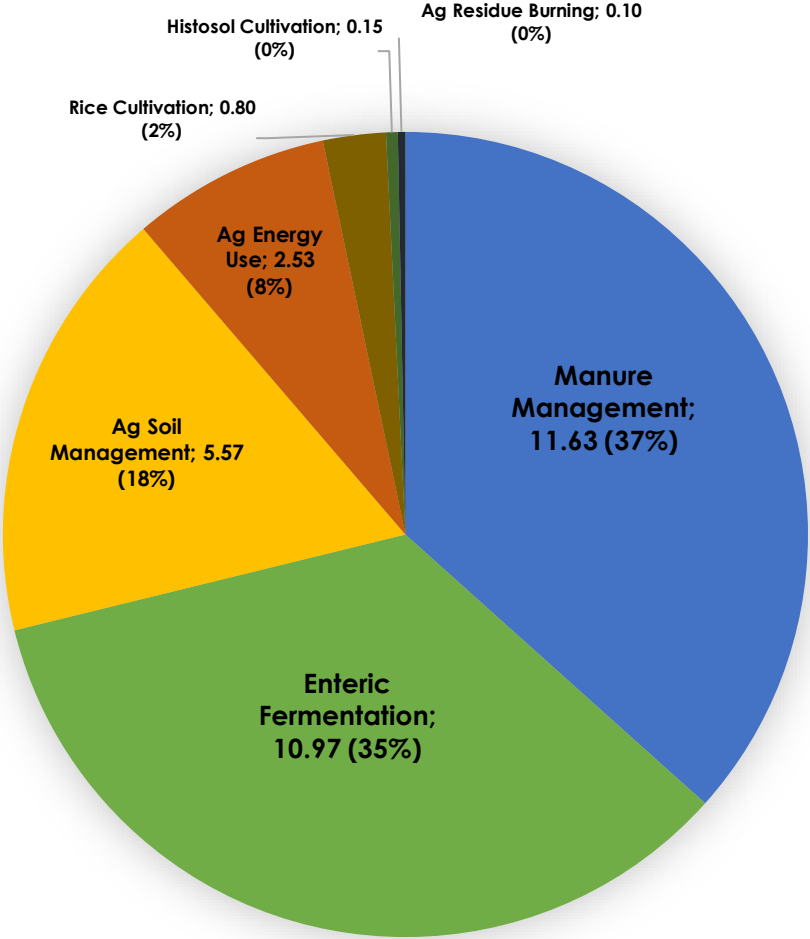


GHG Emissions From Agriculture In California



418.2 MMT CO₂e
2019 TOTAL CA EMISSIONS

7%



Total Ag & Forestry:
31.7 MMTCO₂e

Source: California Greenhouse Gas Inventory – 2021 Edition
<https://ww2.arb.ca.gov/ghg-inventory-data>

California's Approach To Methane Reduction

Legislative and Regulatory Measures

- AB 32 and SB 32
- SB 1383 (Lara, 2016)
 - Reduction in emission of manure management methane from dairy and livestock sector to 40% below 2013 levels by 2030.
 - Regulation for methane reduction on or after 2024.
- California's Short-Lived Climate Pollutant Strategy (SB 605, Lara, 2014).

Voluntary Measures

- Incentive Programs at CDFA
 - Anaerobic digesters for renewable energy (DDRDP)
 - Non-digester based approaches (AMMP)



Alternative Manure Management Program



Dairy Digester Research & Development Program

- Enteric Fermentation
 - Research to determine cost-effective and feasible approaches



Methane Reduction Programs at CDFA



Dairy Digester Research and Development Program (DDRDP)

- Incentives for anaerobic digester on California dairy operations
- Since 2014
- 117 projects



Alternative Manure Management Program (AMMP)

- Incentives for non-digester manure management practices on California dairy and livestock operations
- Since 2017
- 116 projects

FUNDING

- Past – Greenhouse Gas Reduction Fund, as part of CA Climate Investments
- Current – State Budget General Fund; FY 2021-22, \$32 million for Livestock Methane Reduction with priority given to AMMP, FY 2022-23, \$48 million



Dairy Digester Research and Development Program

2014 - 21: \$195.25 million awarded

Up to \$1.6 million grants

1. Process stabilizes the digestate and reduces odors
2. Nutrients are preserved and can still be used as fertilizer
3. Higher availability of nutrients after the digestion process
4. Currently supported by LCFS and RIN markets
5. Renewable and storage of biogas that will replace fossil fuels
6. Maximizes the GHG and odor reduction for dairies
7. Represents a long-term commitment to GHG reduction
8. Creates many local temporary and permanent jobs
9. Protects water quality by ensuring double-lined lagoon or above ground tanks for anaerobic digestion

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Digesters on CA Dairy
Operations

2.1 M






Metric Tons of CO₂e
reduced/year

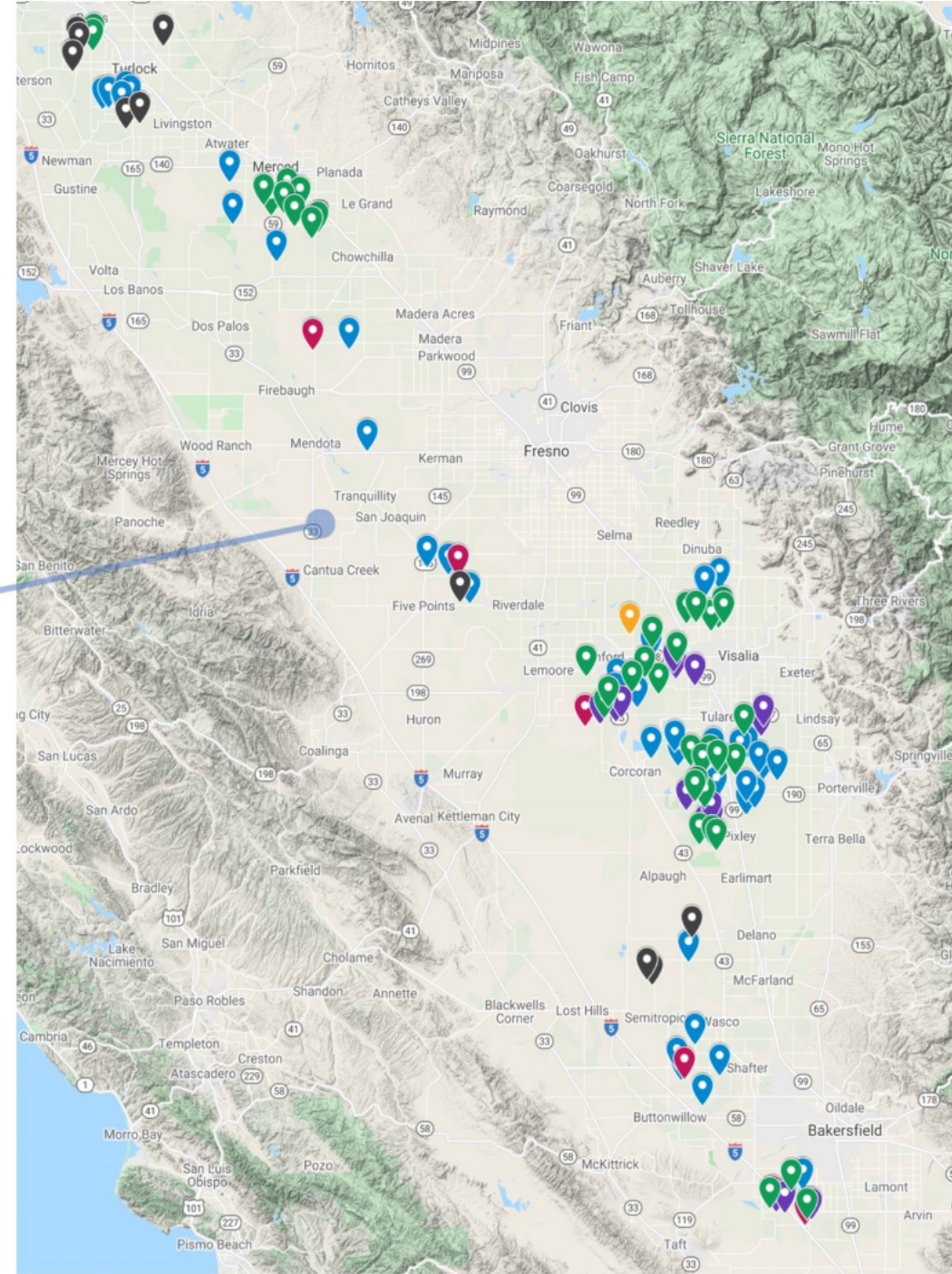
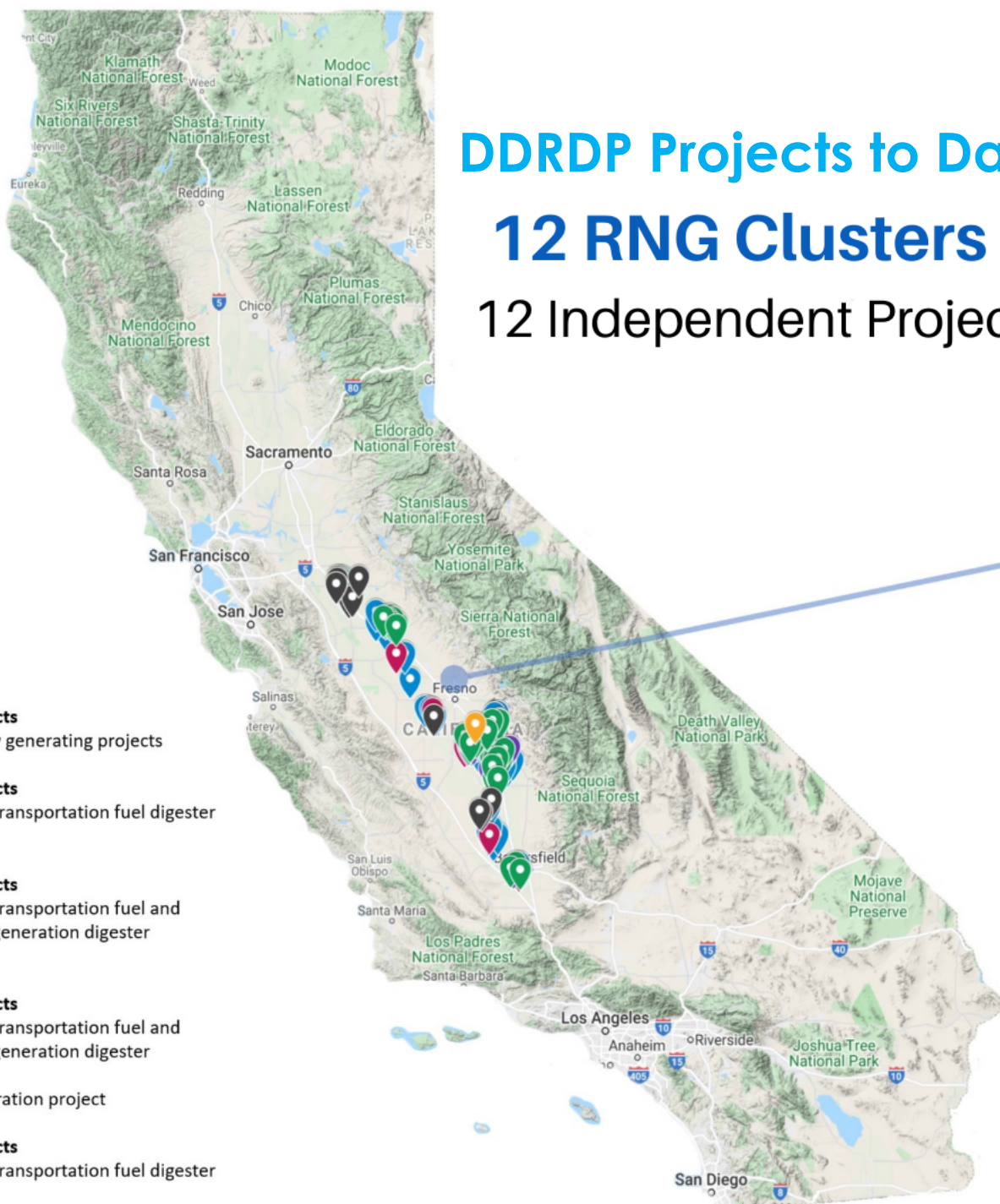
\$392 M

In matching funds

DDRDP Projects to Date

12 RNG Clusters + 12 Independent Projects

-  **2015 projects**
6 electricity generating projects
-  **2017 projects**
16 biogas/transportation fuel digester projects
-  **2018 projects**
40 biogas/transportation fuel and electricity generation digester projects
-  **2019 projects**
42 biogas/transportation fuel and electricity generation digester projects +
1 Demonstration project
-  **2020 projects**
12 biogas/transportation fuel digester projects







Alternative Manure Management Program

2017 - 21: \$68.3 million awarded

Up to \$750,000 grants, Technical Assistance Providers

Non-digester practices include:

- Pasture-based management
- Compost bedded pack barn, slatted floor pit storage
- Solid separation and flush-to-scrape conversion in conjunction with treatment or drying practice

Environmental Co-Benefits:

1. Production of compost for soil amendment, fertilizer, or cow bedding
2. This compost can create a source of revenue for farmers
3. It is easily implementable and at a lower cost/investment to the farmer

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AMMP Projects on CA Dairy and Livestock Operations

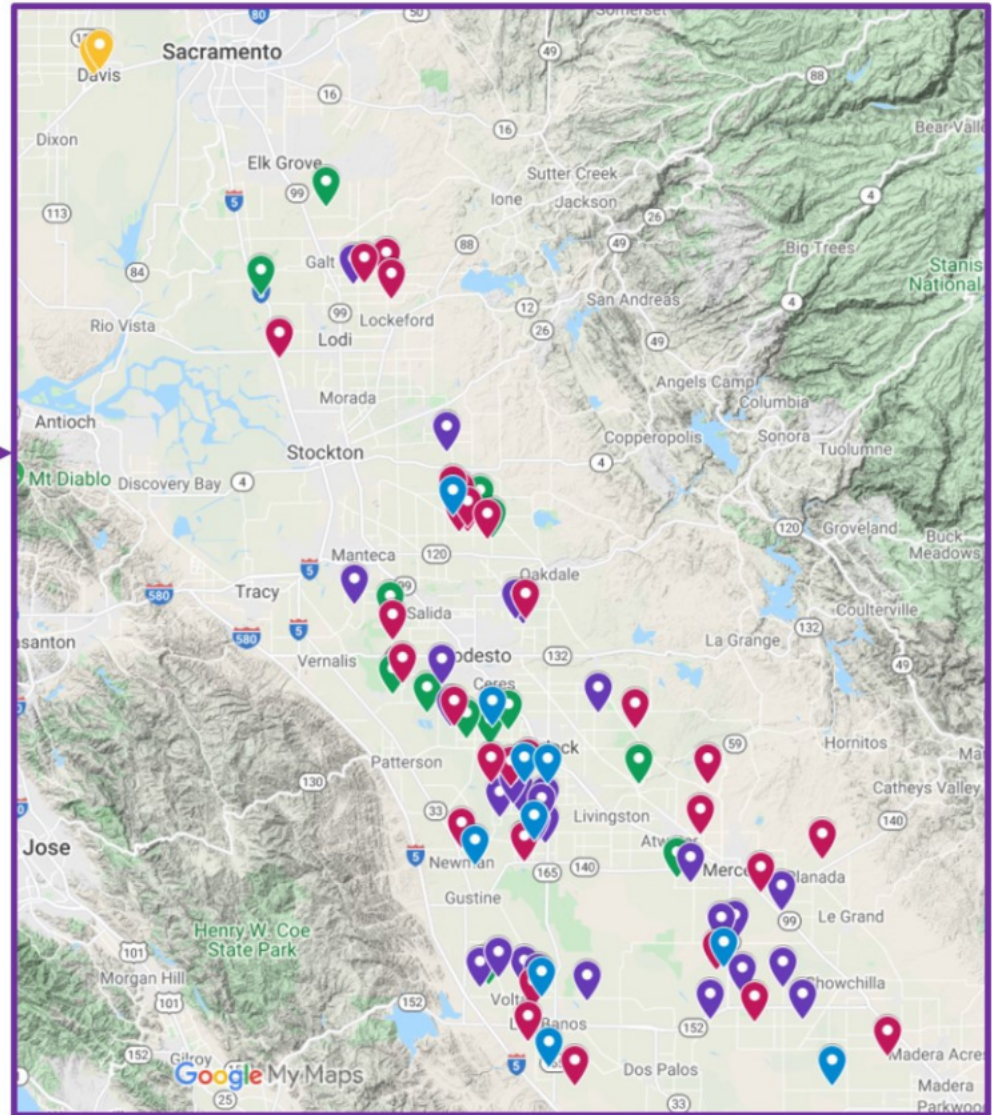
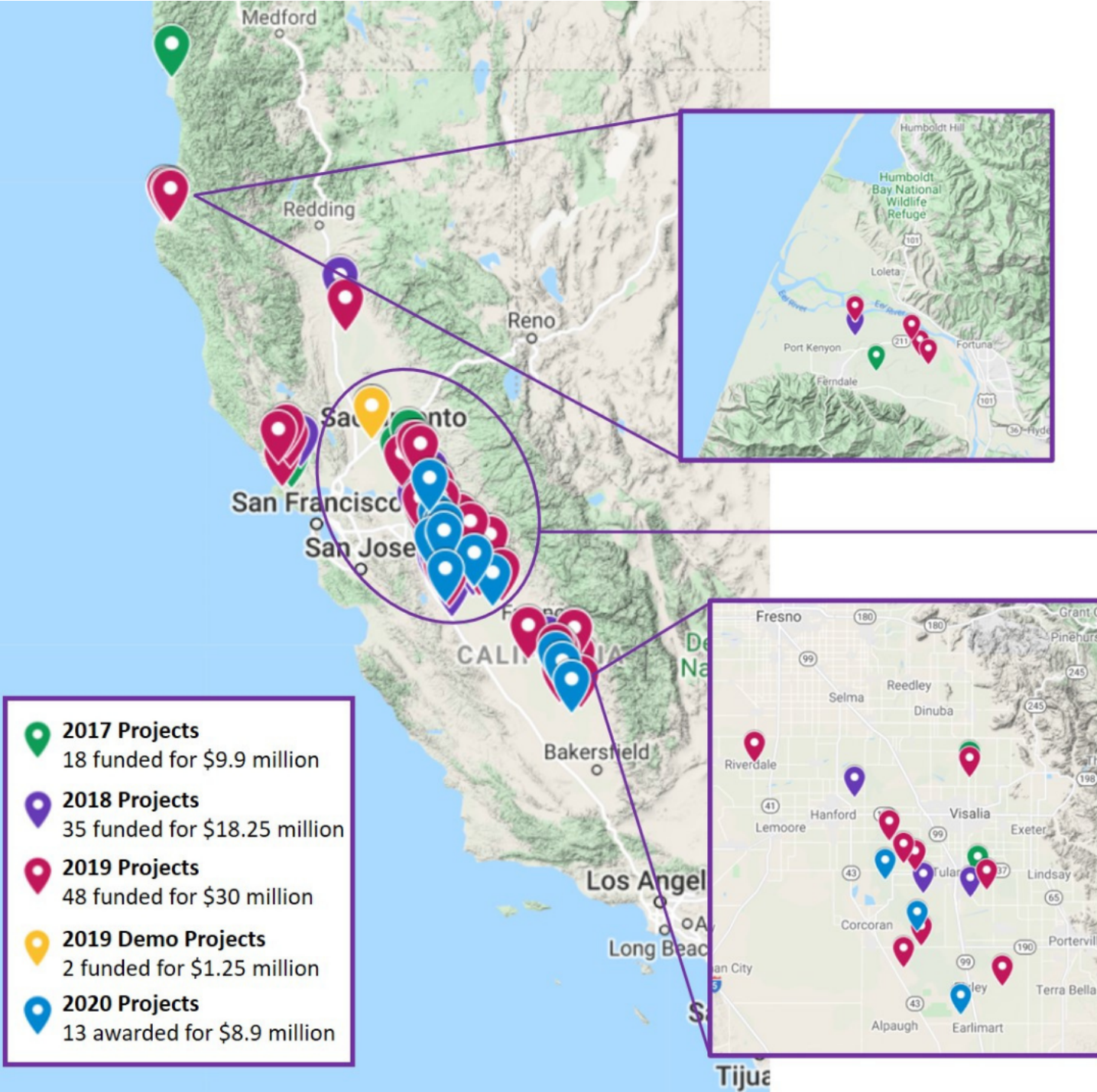
221,666

Metric Tons of CO₂e reduced/year

\$10 M

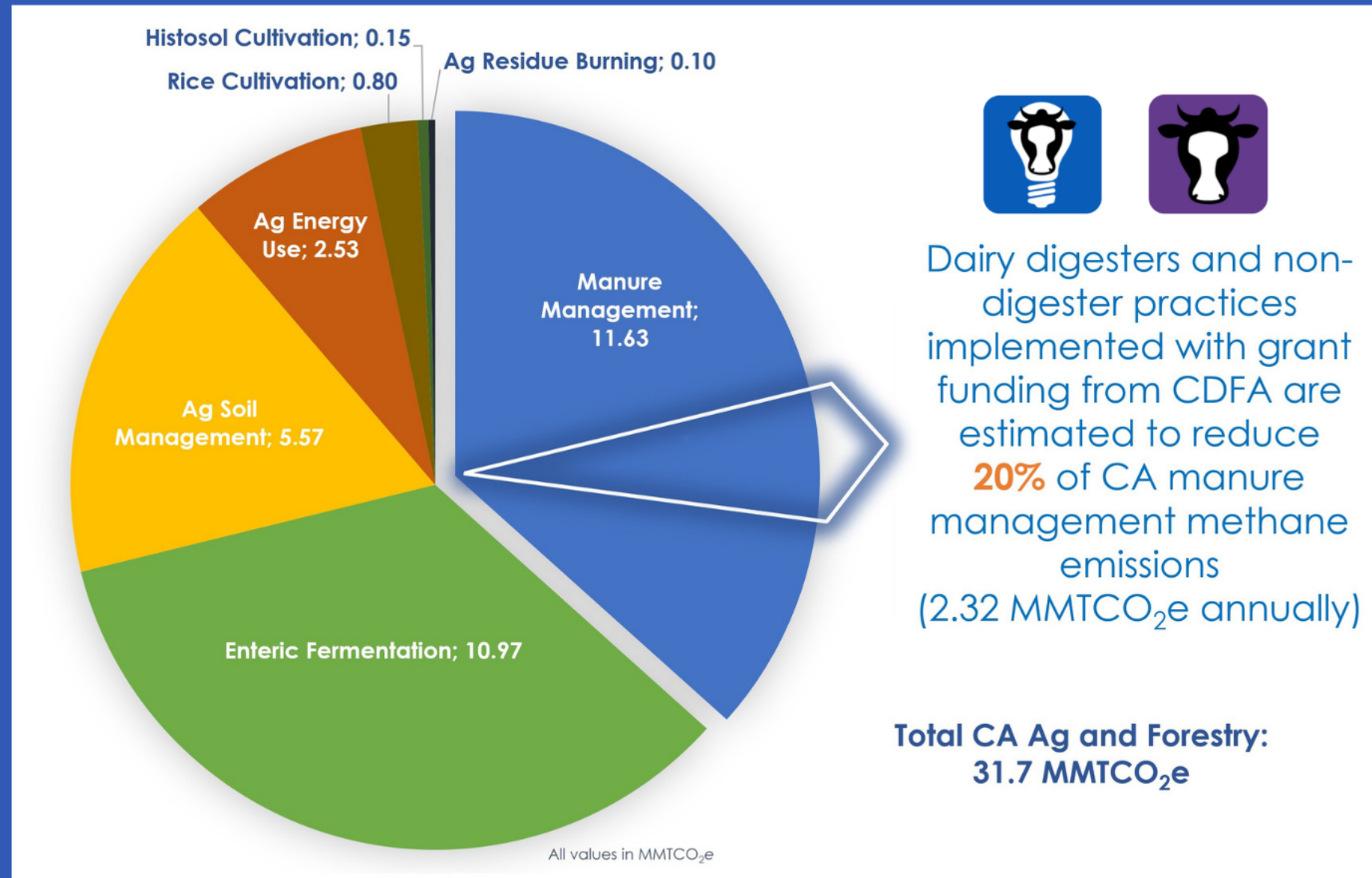
In matching funds

AMMP Projects to Date





GHG Emissions from Dairy and Livestock Operations in California





Thank you!

CDFA Office of Environmental Farming and Innovation Dairy and Livestock Methane Team

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Dairy Digester Research and Development Program

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**Alternative Manure
Management Program**

CDFA OFFICE OF ENVIRONMENTAL FARMING & INNOVATION



**Dairy Digester Research and
Development Program**

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