

DAIRY DIGESTER RESEARCH AND DEVELOPMENT PROGRAM (DDRDP)

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Undersecretary

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Renewable Gas 360



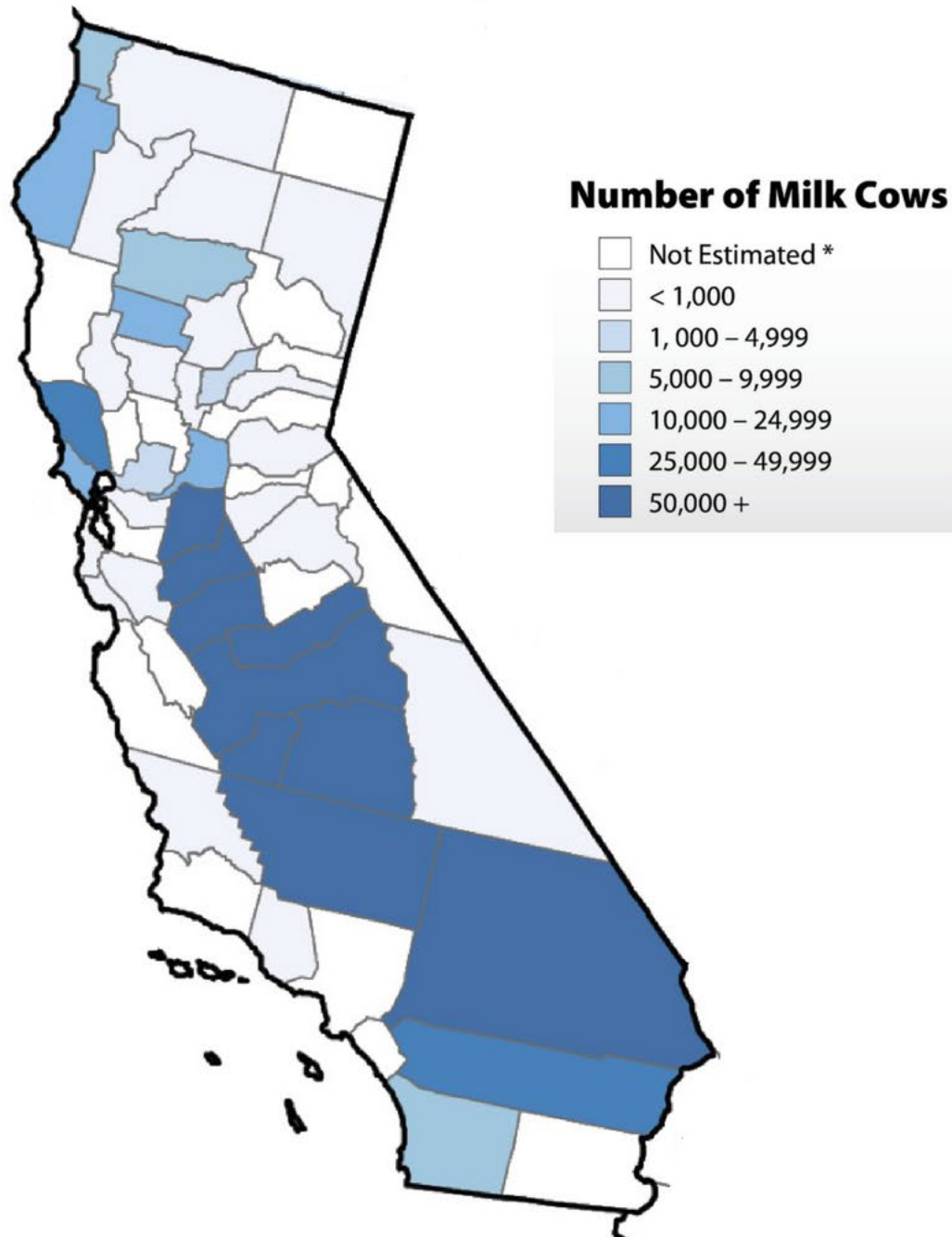
CALIFORNIA'S DAIRY REGIONS

VARY BY OVERALL POPULATION, DAIRYING STYLE, CLIMATE, AND ENVIRONMENTAL CONDITIONS.

Approximately 91 percent of state's dairy cows and more than 80 percent of dairies are in the Central Valley.

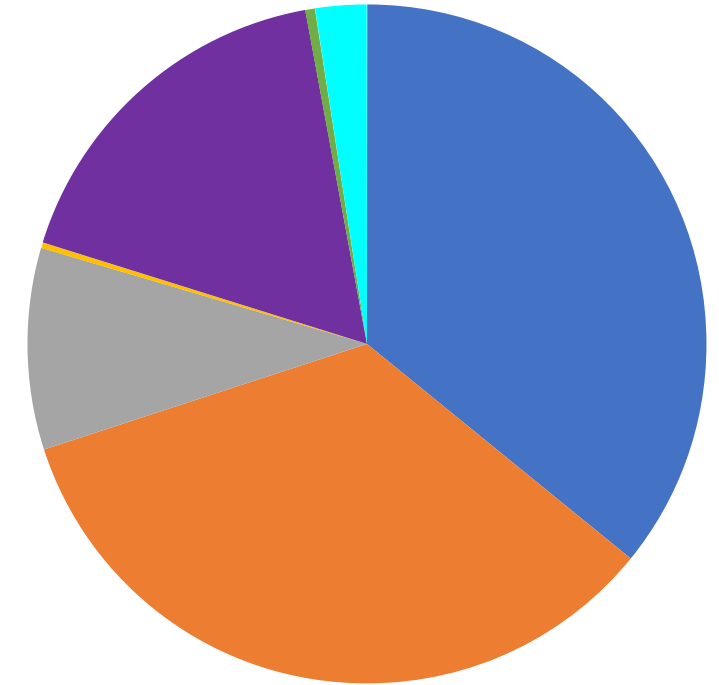
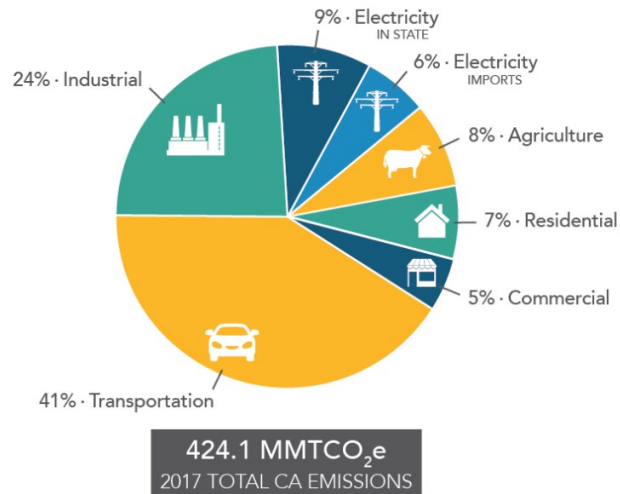
3 percent of state's dairy cows are in North Coast region, such as Humboldt, Marin and Del Norte counties, primarily on pasture.

5.6 percent of dairy cows are in Southern California, including Riverside, Imperial, and San Diego counties, primarily on drylots



GHG EMISSIONS FROM AGRICULTURE IN CALIFORNIA

Agriculture contributes to approx. 8% of the State's total GHG emissions.



■ Manure Management (including non-cattle livestock); 11.62 ■ Enteric Fermentation; 11.06
■ Ag Energy Use; 3.11 ■ Ag Residue Burning; 0.09
■ Ag Soil Management; 5.60 ■ Histosol Cultivation; 0.15
■ Rice Cultivation; 0.80
All values in million metric tonnes (MMT) of CO₂e

Approaches for Methane Reduction

LEGISLATION

- SB 1383 (Lara, 2016): Dairy and livestock methane emissions 40% below 2013 levels by 2030.
- Regulation of methane emissions on or after 2024.

VOLUNTARY REDUCTION

- Incentive programs administered by CDFA
 - Dairy Digesters.
 - Non-digester manure management practices.
- Enteric fermentation
 - Research to determine cost-effective and feasible approaches. .



DAIRY DIGESTER RESEARCH & DEVELOPMENT PROGRAM

Award funds to CA dairy operations and developers for the implementation of dairy digesters to capture methane for generation of renewable energy (renewable natural gas or electricity)

Projects must reduce methane emissions on commercial CA dairies



DAIRY DIGESTER RESEARCH AND DEVELOPMENT PROGRAM (DDRDP)

Grant Size

- A maximum of 50% of total project cost, up to a cap
- 2 year project term

Eligibility

- Existing milk producers, dairy digester developers.
- Cluster projects.
- Eligible biomethane uses: on-site use or into electrical grid/pipeline (i.e. RCNG), transportation fuel, utilization of thermal energy on site or at neighboring facility.

Environmental Quality Requirements

- *Water Quality Protection:*

Double-lined ponds consistent with Tier-1 specification of the Dairy General Order (Central Valley Regional Water Quality Control Board), or above ground tank, or below-ground concrete lined tank.

- *Air Quality Protection:*

Total NOx emissions no greater than 0.50 lb/MWh

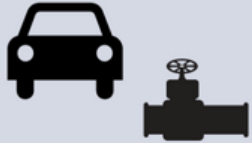
PROGRAM TO-DATE

2015



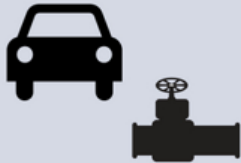
- CDFA awarded \$11.1 million to **6 projects** to generate electricity from biogas. These projects provided \$23.4 million in matching funds

2017



- CDFA awarded \$30.7 million to **16 projects** that will generate RNG. These projects provided \$74 million in matching funds

2018



- CDFA awarded \$72.4 million to **42 projects** that will generate RNG. These projects provided \$102 million in matching funds

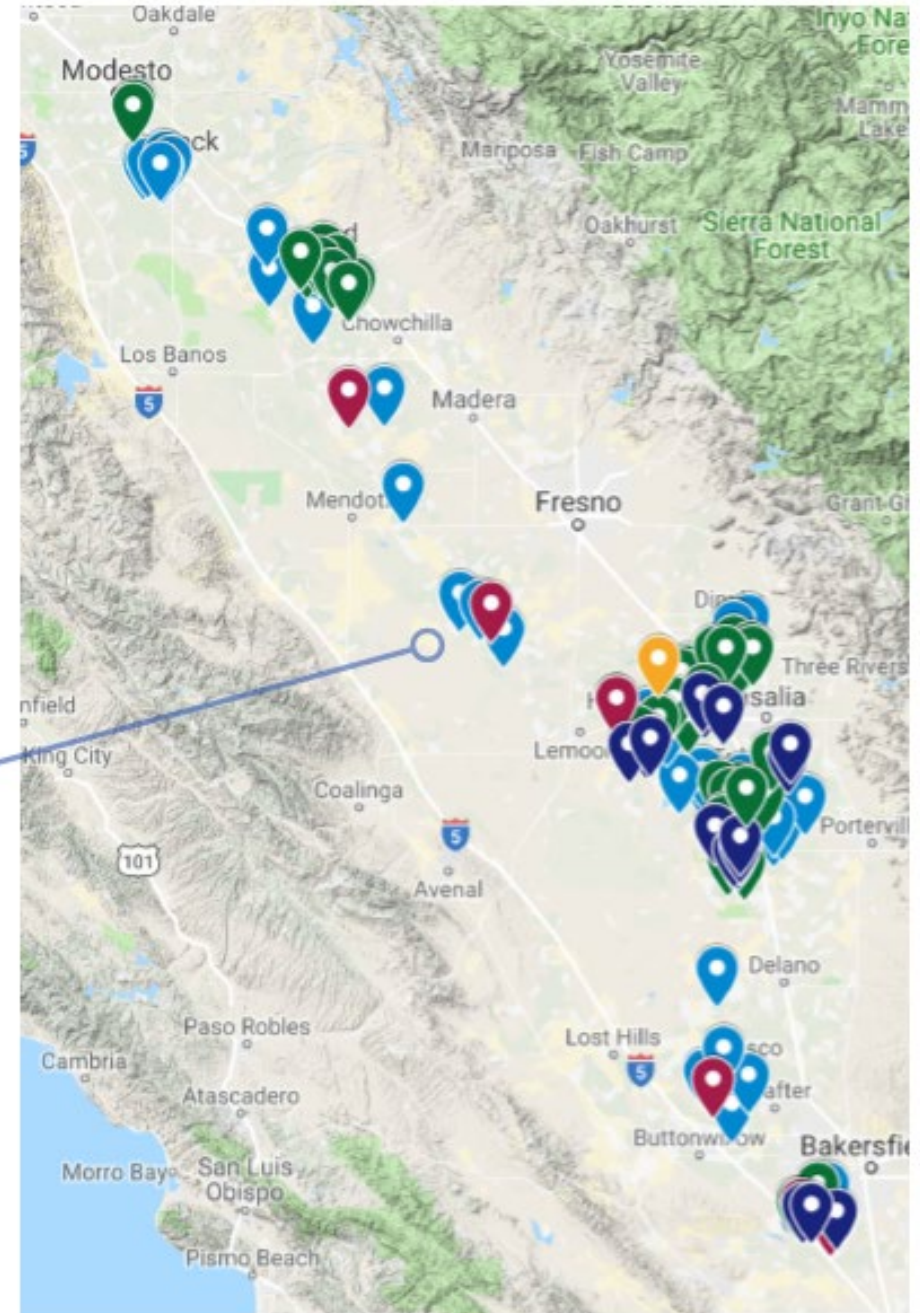
2019



- CDFA awarded \$69.1 million to **43 DDRDP projects** and **1 DDRDP Demo** project that will generate RNG and electricity for EVs. These projects provided \$170 million in matching funds

DDRDP FUNDED PROJECTS

Total estimated GHG reductions
19.9 million metric tons CO₂
equivalent (over 10 years)



DAIRY DIGESTER PROGRAM

CUMULATIVE IMPACT

2014-19 - \$183 million awarded to projects

107

Digesters on
California Dairy
Operations

**\$369
million**

In matching
funds



**1.9
million**

Tons CO₂
reduced/year

Renewable Compressed Natural Gas

19,074,860



gallons of
gasoline
consumed

35,991



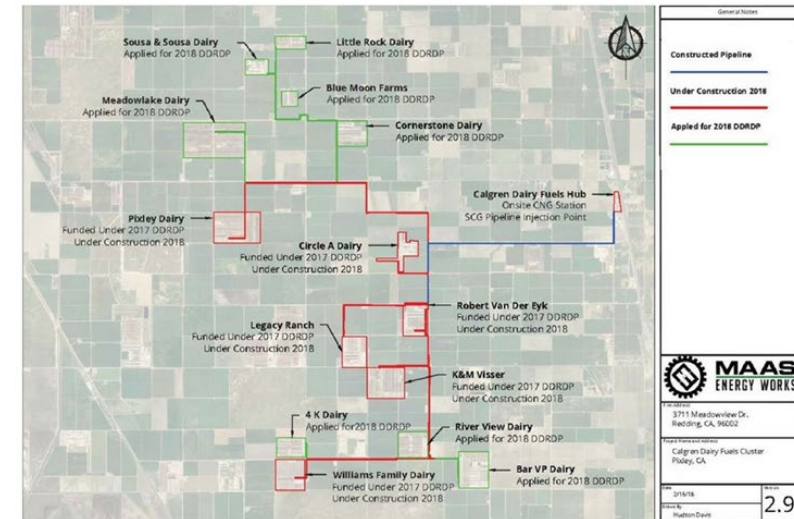
Passenger
vehicles driven
for one year





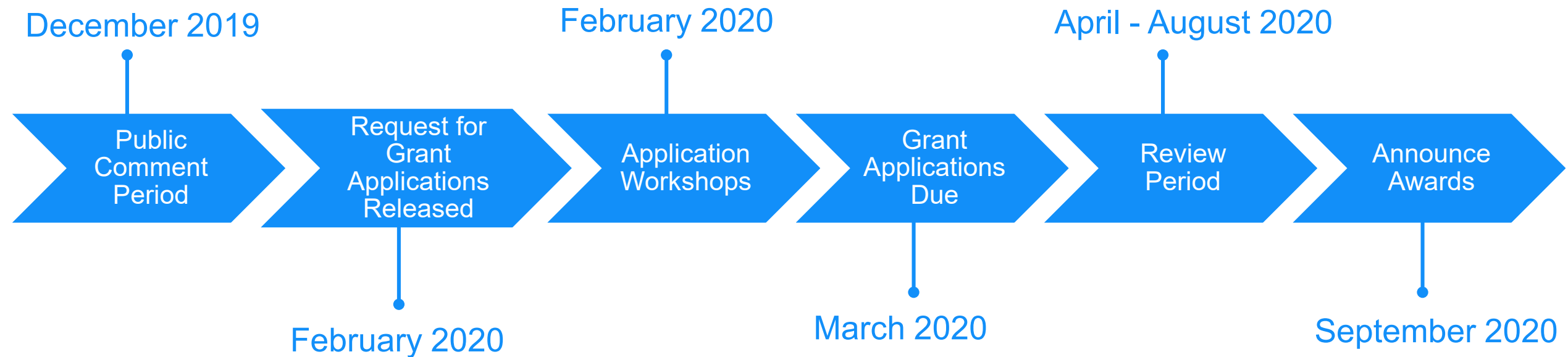
CALGREN DAIRY: MAAS ENERGY WORKS- TULARE CO.

Private pipeline to Pixley Ethanol plant where fuel will be cleaned up and used to lower carbon intensity of ethanol production.



2020 DDRDP Solicitation

CDFA received \$34 million from California Climate Investments for methane emission reduction from dairy and livestock operations
65% - 80% of the funds to support digester projects in CA dairy operations





THANK
YOU!