

# 2022 Annual Report

## *Total Greenhouse Gas Emissions from Dairies and Feedlots for 2021*



Board of Supervisors  
May 2, 2023

Presented by the  
Tulare County Resource Management Agency





## Summary

- On August 2, 2019, a Stipulated Settlement Agreement was entered into by the Sierra Club, the Association of Irrigated Residents, the Center for Biological Diversity, and Tulare County for the purpose of completely resolving Case No. 272380 – challenging the Final Environmental Impact Report for the Animal Confinement Facilities Plan and the Dairy Climate Action Plan.
- The Settlement requires the Tulare County to prepare an Annual Report of Total Dairy Greenhouse Gas Emissions from 2019–2024. The 2022 Annual Report (see Attachment No. 1) is required to include:
  1. Total estimated dairy GHG emissions reduced to date compared to the 1.05 million MT/yr by 2023 Dairy and Feedlot CAP reduction goal, and the total dairy GHG emissions reduced to date compared to the maximum projected SB 1383 potential target.
  2. Report on the State's measures pursuant to SB 1383, including but not limited to digester funding and the Alternative Manure Management Program ("AMMP").
  3. Provide an updated Digester Project list for digesters within the County that lists; the operation name; project title; total project cost; CDFA funding award; additional Federal or State public funding awards; project description; project construction stage; location; GHG emission reductions over ten years; and how captured methane is being used.



## Summary

- The Settlement requires Annual Reports to be completed by May 1<sup>st</sup> of each year, beginning in 2020, and made available for public review not less than ten (10) calendar days prior to a duly-noticed public meeting, where the report is considered by the Board of Supervisors following a staff presentation and an opportunity for public comments.
- The 2022 Annual Report was completed on March 29, 2023, and posted on the Tulare County RMA website on April 19, 2023.
- There are additional implementation measures of the Settlement Agreement which will be addressed later in this presentation.
- The provisions will automatically expire upon the State's implementation of SB 1383 regulations or by May 1, 2025, whichever occurs first.
- It should be noted that the 2022 Annual Report presents the 2019 GHG emissions inventory for dairies and feedlots in Tulare County. It also evaluates the voluntary GHG emission reduction projects implemented at dairies and feed lots since 2013 and quantifies the reductions.



# 2022 Annual Report

## (1) PROGRESS OF GHG REDUCTIONS

- Total estimated dairy GHG emissions reduced to date compared to the 1.05 million metric tons per year Dairy CAP reduction target set for 2023, and total dairy GHG emissions reduced to date compared to the maximum projected SB 1383 potential goal of 40 percent below 2013 CH<sub>4</sub> levels by 2030.
- Sections 6.4 and 7.1 of the 2022 Annual Report satisfy Item 1.





Table 6-2. Progress of Voluntary GHG Emissions in Relation to the 2023 Dairy CAP Target

Year	Dairy CAP Emission Reduction Trajectory (MT CO <sub>2</sub> e/yr) <sup>(1)(2)</sup>	Actual Emission Reductions Achieved (MT CO <sub>2</sub> e/yr) <sup>(1)(3)</sup>	Deviation from the Target Trajectory (MT CO <sub>2</sub> e/yr) <sup>(4)</sup>	Additional Reductions Needed to Reach the 2023 Target (MT CO <sub>2</sub> e/yr) <sup>(1)</sup>	Percent of Target Reached
2017	0	-23,990	23,900	-1,026,010	2%
2018	-175,000	-49,964	-125,036	-1,000,036	5%
2019	-350,000	-162,822	-187,178	-887,178	16%
2020	-525,000	-303,618	-221,382	-746,382	29%
2021	-700,000	-592,131	-107,869	-457,869	56%
2022	-875,000	TBD	TBD	TBD	TBD
2023	-1,050,000	TBD	TBD	TBD	TBD

Legend: MT CO<sub>2</sub>e/yr = metric tons of carbon dioxide equivalent per year; TBD = to be determined in a future analysis.

Notes:

1. Reductions are shown as negative values.
2. The Dairy CAP trajectory assumes a linear path from 2017 to 2023. The value of -1,050,000 metric tons per year in 2023 is the Dairy CAP target.
3. CY 2021 emission reductions were obtained from Table 6-1 and represent actual reductions from solar, digester, and AMMP projects that operated in 2021. Reductions from changes in cattle population are not included. Prior year emissions were obtained from the *2021 Interim Report of Total Greenhouse Gas Emissions from Dairies and Feedlots for 2020* (County of Tulare, 2022). Emissions for projects that began operating part-way through the year reflect only that portion of the year the projects operated.
4. A positive value means ahead of schedule; a negative value means behind schedule.

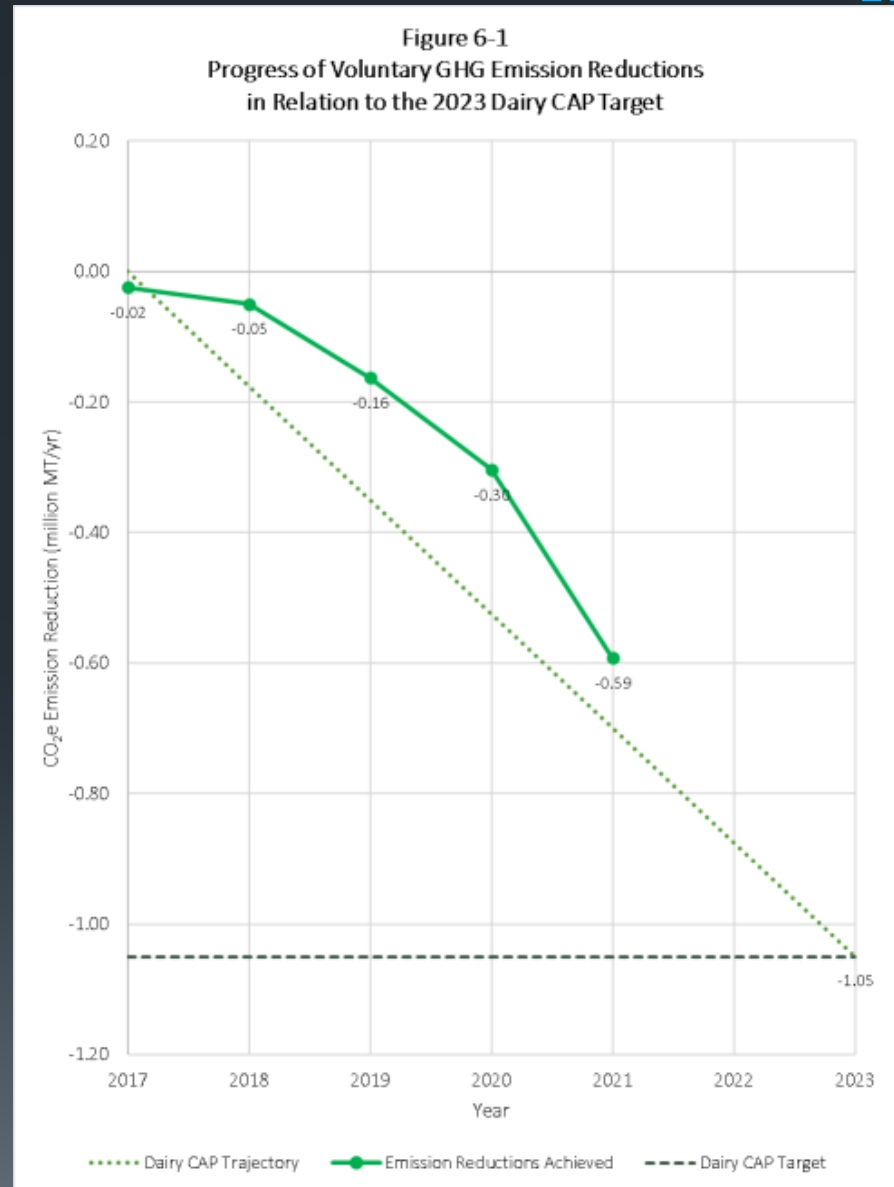


## Figure 6-1 Progress of GHG Emissions in Relation to the 2023 Dairy CAP Target

- Figure 6-1 shows the progress of the Tulare County dairies and feedlots toward meeting the 2023 Dairy CAP target in graphical format. The short line near the top left of the figure shows the actual emission reductions by year. The diagonal dotted line represents the reference trajectory that would meet the target by 2023. The horizontal dashed line across the bottom of the figure represents the Dairy CAP target.



Curtimade Dairy, Waukena October 2011





**Table 7-5 Progress of Methane Emissions in Relation to the 2030 SB 1383 Target**

Year	SB 1383 Emissions Trajectory (MT CO <sub>2</sub> e/yr) <sup>(1)(2)</sup>	BAU Emissions (MT CO <sub>2</sub> e/yr) <sup>(1)</sup>	Actual Emissions (MT CO <sub>2</sub> e/yr) <sup>(1)</sup>	Percent Above/Below 2013 Emissions <sup>(3)</sup>	Deviation of Actual from Target Trajectory (MT CO <sub>2</sub> e/yr) <sup>(4)</sup>	Additional Reductions Needed to Reach 2030 Target (MT CO <sub>2</sub> e/yr) <sup>(5)</sup>
2017	6,050,406	6,050,406	6,039,528	4%	10,879	-2,569,528
2018	5,852,000	6,050,406	6,017,583	4%	-165,583	-2,547,583
2019	5,653,000	5,328,594	5,183,929	-10%	469,071	-1,713,929
2020	5,455,000	5,365,738	5,083,865	-12%	371,135	-1,613,865
2021	5,256,000	5,475,125	4,902,137	-15%	353,863	-1,432,137
2022	5,058,000	TBD	TBD	TBD	TBD	TBD
2023	4,859,000	TBD	TBD	TBD	TBD	TBD
2024	4,661,000	TBD	TBD	TBD	TBD	TBD
2025	4,462,000	TBD	TBD	TBD	TBD	TBD
2026	4,264,000	TBD	TBD	TBD	TBD	TBD
2027	4,065,000	TBD	TBD	TBD	TBD	TBD
2028	3,867,000	TBD	TBD	TBD	TBD	TBD
2029	3,668,000	TBD	TBD	TBD	TBD	TBD
2030	3,470,000	TBD	TBD	TBD	TBD	TBD

*Legend:* MT CO<sub>2</sub>e/yr = metric tons of carbon dioxide equivalent per year; TBD = to be determined in a future analysis.

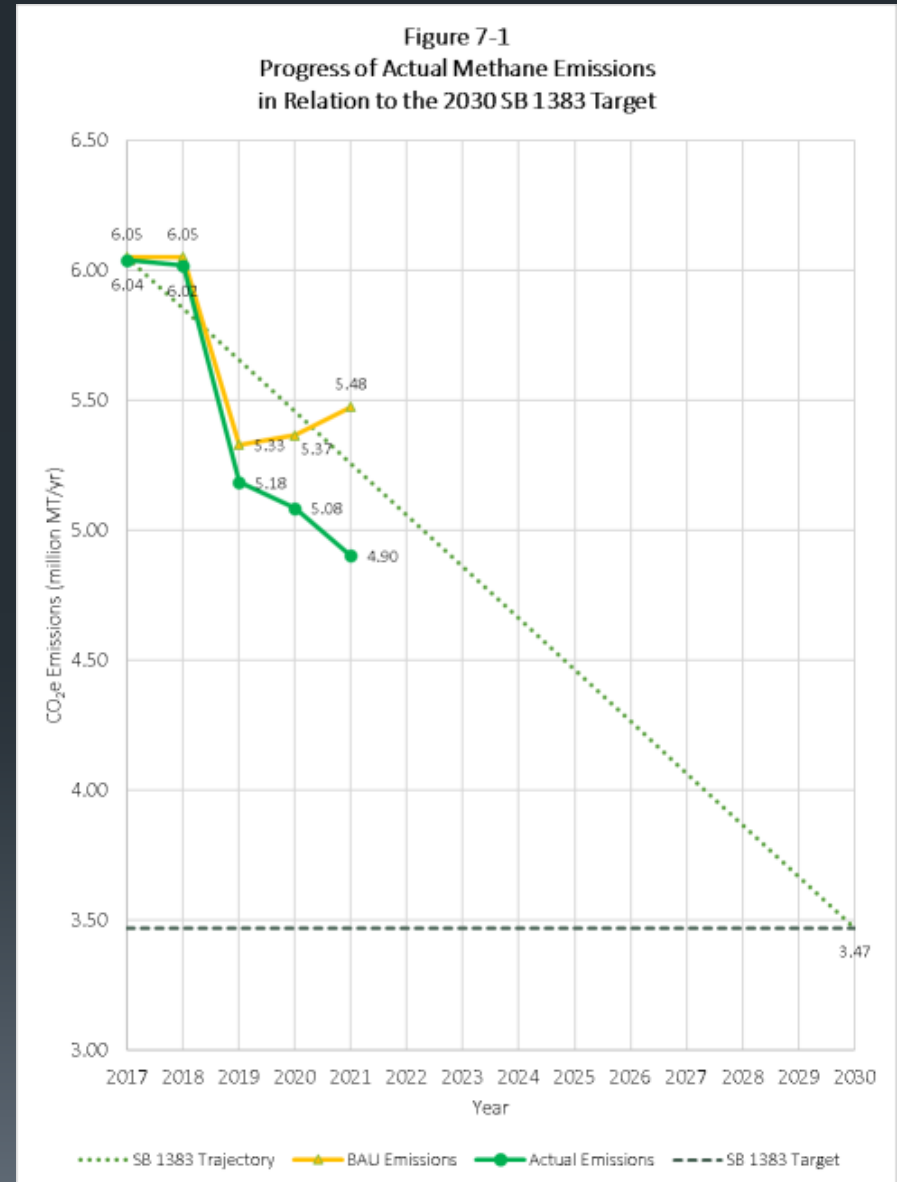
*Notes:*

1. Emissions are methane presented as CO<sub>2</sub>e; manure decomposition and enteric digestion emissions only.
2. The SB 1383 trajectory assumes a linear path from 2017 to 2030. The value of 3,470,000 metric tons in year 2030 is the SB 1383 target of 40 percent below the 2013 baseline emissions.
3. The 2013 baseline methane emissions were 5,783,068 metric tons as CO<sub>2</sub>e (see Table 4-2). A positive percentage means the year's emissions were above 2013 levels; a negative percentage means the year's emissions were below 2013 levels. The SB 1383 target is -40% by 2030.
4. A positive value means ahead of schedule; a negative value means behind schedule.
5. Reductions are shown as negative values.



## Figure 7-1 Progress of Actual Methane Emissions in Relation to the 2030 SB 1383 Target

- Figure 7-1 shows the progress of the Tulare County dairies and feedlots toward meeting the SB 1383 goal in graphical format. The two short lines near the top left of the figure show the BAU CH<sub>4</sub> emissions by year (higher line) and actual CH<sub>4</sub> emissions by year (lower line). The diagonal dotted line represents the reference trajectory that would meet the goal by 2030. The horizontal dashed line across the bottom of the figure represents the SB 1383 goal, which is 40 percent below 2013 CH<sub>4</sub> emissions.





# 2022 Annual Report

## (2) ALTERNATIVE MANURE MANAGEMENT PROGRAM

- A report on the State's measures pursuant to SB 1383, including but not limited to digester funding and the Alternative Manure Management Program ("AMMP").
- Resource Management Agency ("RMA") staff completed an AMMP List with this information on February 14, 2023. This list, together with Section 2.4 of the 2022 Annual Report, satisfies Item 2.





# 2022 Annual Report

## ALTERNATIVE MANURE MANAGEMENT

### AMMP

- Twenty-one (21) projects (+8 )
  - Eight (8) operational
  - Six (6) under construction
  - Seven (7) yet to apply for Building Permits

### Total Cost

- Total cost of AMMP projects - \$ 22,494,399
- CDFS Funding Awarded - \$ 13,651,501
- Matching Funding - \$ 8,842,899

### Greenhouse Gas Reductions

- Once the twenty-one (21) facilities are all operating for five (5) years after completing improvements, the Greenhouse Gas (GHG) reductions will total 268,932 MTCO<sub>2e</sub>.





# 2022 Annual Report

## (3) DIGESTER PROJECT LIST

- An updated Digester Project list for digesters within the County that lists: 1) the operation name, 2) project title, 3) total project cost, 4) CDFA funding award, additional Federal or State public funding awards, 5) project description, 6) project construction state, 7) location, 8) GHG emission reductions over ten years, and 9) how captured methane is used.
- RMA staff completed the Updated Digester Project List (Exhibit “C”) with this information on March 16, 2023, and a summary is presented on the next slide.
- The report must also include any reported problems with completed digesters within the County.
  - Specific problems were not reported on the CDFA database, however, conversations with digester installers revealed that bringing projects to full operations has taken longer than originally expected due to several reasons.
  - At the time of this analysis, data show that there were approximately 414,991 additional metric tons of annual CO<sub>2</sub>e reductions from digester and AMMP projects that are planned to begin operating sometime after 2021.
  - Further details in Section 6.5 of the Annual Report.



# 2022 Annual Report

## DIGESTER PROJECT LIST

### Total Digesters

- Fifty-five (55) Digesters
  - Thirty-five (35) operational (+20)
  - Seventeen (17) under construction
  - Three (3) cancelled.

### Total Cost

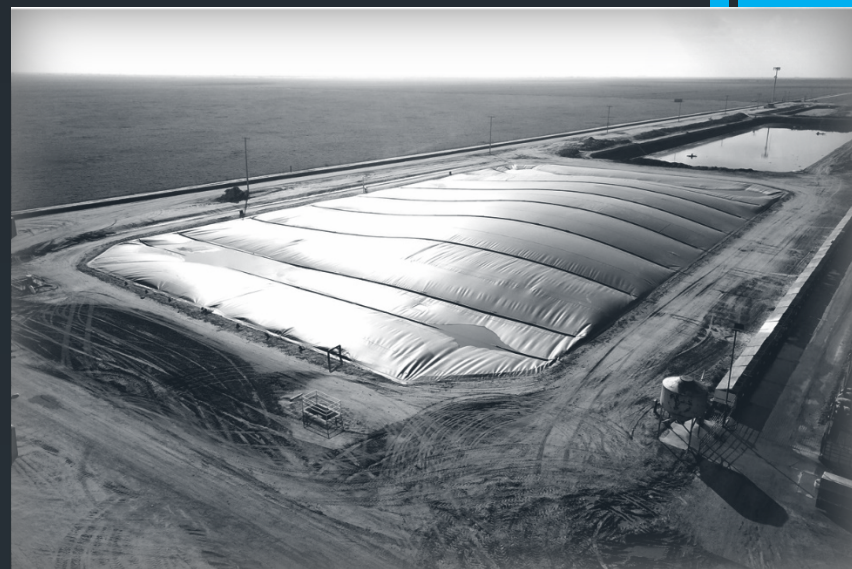
- Total cost of Digester projects - \$232,365,046
- CDFS Funding Awarded - \$78,077,715
- Matching Funding - \$154,287,331

### Methane Use

- Electrical Generation – Three (3) Digesters
- Renewable / Compressed Natural Gas – Forty-nine (49) Digesters (-3)

### Greenhouse Gas Reductions

- Ten (10) year Greenhouse Gas (GHG) reductions – 8,482,606 MTCO<sub>2e</sub>.



*Riverview Dairy, Pixley*

*Online – December 2019*



# 2022 Annual Report

## BASELINE YEAR (2013) EMISSIONS

- The table below presents the dairy and feedlot emissions for the 2013 baseline years and match the tables in the FEIR for the ACFP and Dairy CAP. The 2013 GHG emissions represent the baseline to which the actual 2019 emissions are compared.

Source Category	CO <sub>2</sub> (MT/yr)	CH <sub>4</sub> (MT/yr)	N <sub>2</sub> O (MT/yr)	HFCs (MT/yr)	CO <sub>2</sub> e (MT/yr)
Farm Equipment Exhaust	38,054	3	0	0.0	38,129
Farm Agricultural Soil	0	0	2,725	0.0	812,050
Farm Electricity Consumption	79,107	3	01	0.0	79,480
Dairy Equipment Exhaust	99,106	12	0	0.0	99,406
Truck Trips	23,137	0	0	0.0	23,137
Automobile Trips	14,882	3	3	0.0	15,851
Dairy Electricity Consumption	144,792	6	1	0.0	145,335
Dairy Refrigeration	0	0	0	4.3	63,640
Dairy Manure Decomposition	0	123,329	1,385	0.0	3,496,077
Dairy Enteric Digestion	0	98,523	0	0.0	2,463,071
Feedlot Manure Decomposition	0	388	67	0.0	29,898
Feedlot Enteric Digestion	0	9,083	0	0.0	227,068
<b>Total Emissions</b>	<b>399,078</b>	<b>231,350</b>	<b>4,182</b>	<b>4.3</b>	<b>7,492,873</b>

*Legend:* CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; HFCs = hydrofluorocarbons;  
CO<sub>2</sub>e = carbon dioxide equivalent; MT/yr = metric tons per year.



# 2022 Annual Report

## DAIRY AND FEEDLOT 2021 ACTUAL GHG EMISSIONS

Source Category <sup>(1)</sup>	CO <sub>2</sub> (MT/yr)	CH <sub>4</sub> (MT/yr)	N <sub>2</sub> O (MT/yr)	HFCs (MT/yr)	CO <sub>2</sub> e (MT/yr)
Farm Equipment Exhaust	40,392	4	4	0.0	41,549
Farm Agricultural Soil	0	0	961	0.0	286,262
Farm Electricity Consumption	60,684	4	0	0.0	60,908
Dairy Equipment Exhaust	115,654	11	10	0.0	118,967
Truck Trips	21,391	0	3	0.0	22,409
Automobile Trips	11,228	1	1	0.0	11,403
Dairy Electricity Consumption	75,611	6	1	0.0	75,962
Dairy Refrigeration	0	0	0	4.9	71,818
Dairy Manure Decomposition	0	87,173	1,382	0.0	2,591,217
Dairy Enteric Digestion	0	88,231	0	0.0	2,205,767
Feedlot Manure Decomposition	0	881	167	0.0	71,683
Feedlot Enteric Digestion	0	19,801	0	0.0	495,033
Total Emissions	324,960	196,110	2,528	4.9	6,052,979

*Legend:* CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; HFCs = hydrofluorocarbons; CO<sub>2</sub>e = carbon dioxide equivalent; MT/yr = metric tons per year.

*Notes:*

1. Emission reductions from solar panels and solar thermal hot water systems were subtracted from the BAU dairy electricity consumption CO<sub>2</sub> emissions. Emission reductions from digesters and AMMP projects were subtracted from the BAU dairy manure decomposition methane emissions.



# Settlement Implementation

## HIRE AT LEAST ONE FULL-TIME EQUIVALENT PERSON(S)

- A full-time Planner IV was hired on November 13, 2019, and began work on December 9, 2019, to monitor and enforce the Animal Confinement Facilities Plan.

## DEVELOP AND MAINTAIN ACFP LIST

- The dedicated Planner IV completed the ACFP list in May 2020, and maintaining the list is an ongoing activity.

## TRACK EXISTING DAIRIES COMPLIANCE

- The County sends out Annual Compliance Report forms to each facility every July and requires completed forms by the end of September.

## TRACK ESTIMATED GHG REDUCTIONS

- The task is ongoing and the County plans to continue utilizing an air quality consultant as part of the Annual Reports.

## SITE INSPECTIONS

- The County conducts inspections at a minimum of 15% of dairies in Tulare County annually, resulting in 45 inspections out of 295 operating dairies. 48 inspections were completed in 2021, which exceeded the 15% requirement.



# Settlement Implementation

## CODE ENFORCEMENT ACTIONS

- This task is ongoing, Failure of dairies to submit Annual Compliance Reports and site inspections which find a dairy to be out of compliance with mitigation measures and/or any permit conditions, that are applicable to GHG reductions, will result in the initiation of Code Enforcement actions for those facilities.

## REPORT ALL ENFORCEMENT AND INSPECTIONS ACTIONS

- This task is ongoing, report all enforcement and inspection actions as well as any reports of noncompliance with applicable County permits, rules and regulations from the prior year to the County Board as part of Annual, Interim, and Final Reports.
- There are no noncompliance enforcement actions were taken this year.

## ANNUAL REPORTS

- Annual Reports are required to be completed by May 1<sup>st</sup> of each year. The 2022 Annual Report was completed on March 29, 2023, and was posted on the County's website on . There will be additional Annual Reports each year.



# Settlement Implementation

## ACFP AND DAIRY CAP IMPLEMENTATION WEBPAGE

- The County has developed an ACFP and Dairy CAP webpage to publicly post relevant information including the ACFP, Dairy CAP, 2019 Annual Report, EIR and links to resources for state grants & programs:

<https://tularecounty.ca.gov/rma/index.cfm/permits/dairy/>

## ADOPT AMENDMENTS TO ACFP AND DAIRY CAP

- Board adopted the amendments to the ACFP and Dairy CAP on July 21, 2020.

## DAIRY MITIGATION EDUCATION PROGRAM

- The County has established a Dairy Mitigation Education Program which identifies and promotes methods to reduce GHG emissions, reaches out to dairy industries, and conducts training meetings on Annual Compliance Report requirements.
- COVID-19 has caused some delays in fully implementing this ongoing task. The Dairy Sustainable Conference was postponed and the County has delayed the Annual Compliance training. Staff continues to directly reach out to individual dairy owners, consultants and agents to assist in filling out forms and documentation and will proceed with larger events once past COVID-19 restrictions



# Summary

## ENVIRONMENTAL

- Preparation of the 2022 Annual Report makes no physical change to the environment because it only involves gathering information to prepare a written report. As such, it is exempt from the California Environmental Quality Act (CEQA) based on the Common Sense Exemption consistent with CEQA and the State CEQA Guidelines pursuant to Title 14, Cal. Code Regulations Section 15061(b)(3) and a Categorical Exemption pursuant to Section 15306, Class 6, Information Collection.
- A Notice of Exemption has been prepared and will be filed with the Tulare County Clerk.

## PUBLIC MEETING NOTICE

- The 2022 Annual Report was posted on the County's webpage for the Dairies and Feedlots Program for the May 2, 2023, Board of Supervisors meeting.



## Board of Supervisor Request:

1. Hold a public meeting to receive a presentation to consider the 2022 Annual Report of Total Greenhouse Gas Emissions from Dairies and Feedlots for 2021 and provide an opportunity for public comment.
2. Accept a Categorical Exemption consistent with the California Environmental Quality Act ("CEQA") Title 14 California Code of Regulations, Section 15061(b)(3) Common Sense Exemption and Section 15306, Information Collection.

