



California Department of Food and Agriculture

Dairy Digester Research and Development Program (DDRDP)

2014-15

www.cdfa.ca.gov/go/dd

Presentation to the State Board of Food and Agriculture

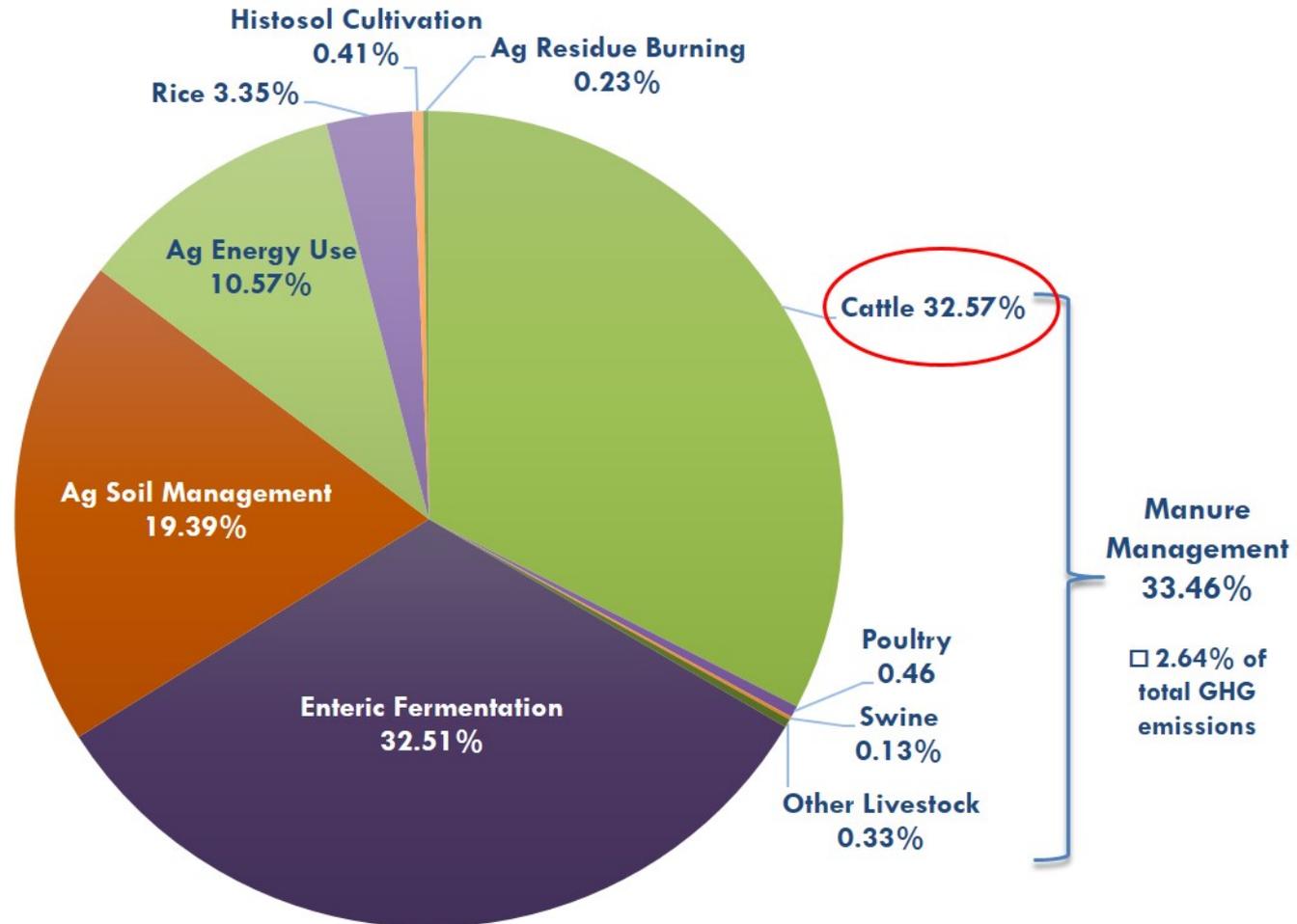
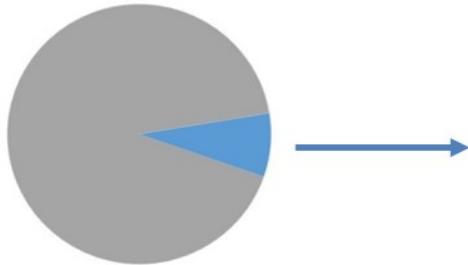
August 4, 2015

Sacramento, CA

GHG EMISSIONS BY SECTOR

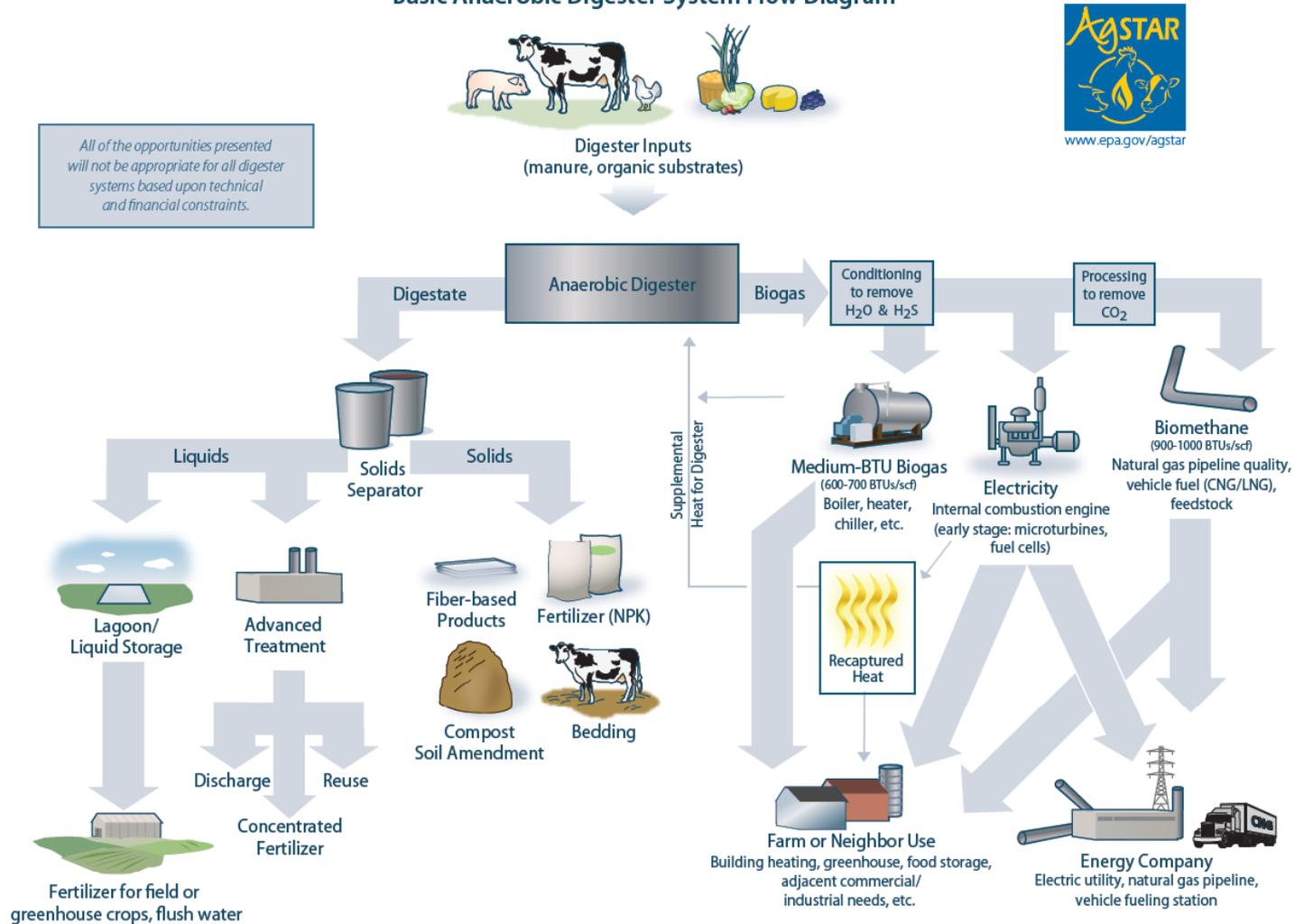
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**Agriculture as a
Portion of Total
Gross Emissions:
7.89%**



ANAEROBIC DIGESTERS

Basic Anaerobic Digester System Flow Diagram



ANAEROBIC DIGESTERS

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- 1496 dairies in CA (in 2013) and ~17 digesters
- Barriers:
 - Expensive, uncertain and complex interconnection and permitting obstacles,
 - High environmental compliance costs,
 - Lack of long-term economical energy purchase agreements,
 - High financing risk and costs, and,
 - Operation and maintenance of digesters, and tracking GHG Emissions needs technical professionals.

CA/FEDERAL DAIRY DIGESTER WORKING GROUP

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- Partnership of federal, state and local agencies
- Goal - identify and remove barriers to the wide spread adoption of dairy digester systems in California.
- Recommendations:
 - Consolidated permitting process and precertification of equipment and feedstocks to ease regulatory hurdles.
 - Digester Incubation Program: dedicated funding mechanisms to support digesters.
 - Protection of environmental quality.
 - Research on co-benefits of dairy digesters.

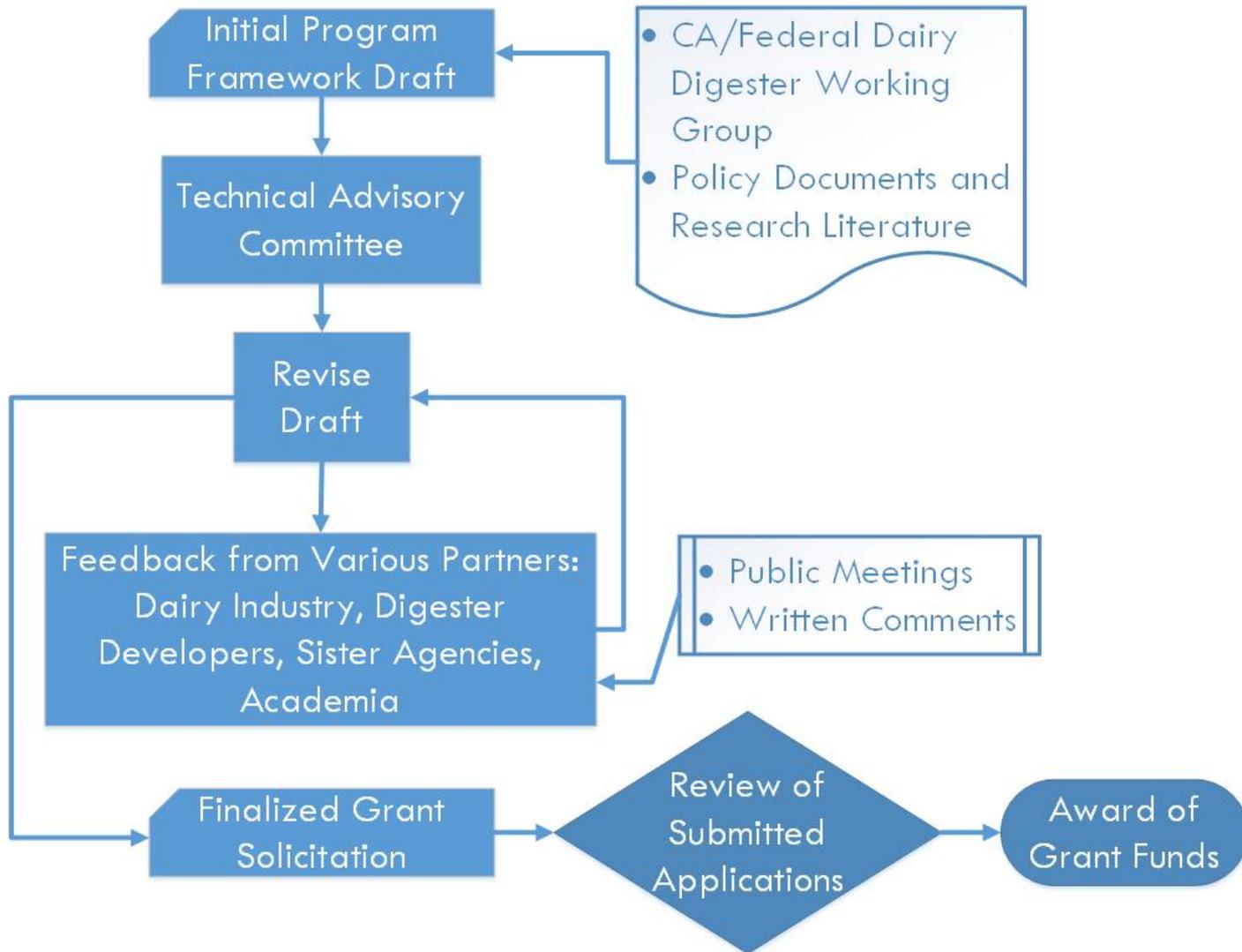
CDFA DDRDP

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- CDFA's Dairy Digester Research and Development Program (DDRDP) was authorized by the Budget Act of 2014 (Chapter 25, Statutes of 2014).
- Total funds: \$12 million
- *Objective:* 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.
- Two phases: Phase I - Development and Phase II - Research.

THE DDRDP PROCESS FOR PROGRAM FRAMEWORK DEVELOPMENT

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PHASE I: FRAMEWORK

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- Total funds available: \$11.1 million, \$3 million max per project with minimum 50% match.
- Eligibility: Milk producers and dairy digester developers
- Evaluation Criteria:
 - ▣ Greenhouse Gas Emissions Reductions Calculation and Reporting
 - ▣ Feasibility of the Digester Project
 - ▣ Financial Soundness and Budget
 - ▣ Project Readiness - Regulatory Information, Permits and CEQA
 - ▣ Environmental Benefits
 - ▣ Economic Benefits
 - ▣ Additional Co-Benefits
 - ▣ Benefits to Disadvantaged Communities
- Review Process: TAC and academic experts.

PHASE I: ENVIRONMENTAL QUALITY STANDARDS

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- Highest levels of water and air quality protections consistent with existing regulatory requirements:
 - Air Quality Minimum Standard – with San Joaquin Valley Air Pollution Control District
 - *Total NO_x emissions no greater than 0.50 lb/ MW-hr.*
 - *BACT available to meet standard*
 - Water Quality Minimum Standard – with State and Regional Water Quality Control Boards
 - *(i) double-lined ponds consistent with the Tier 1 specification of the Dairy General Order (R5-2013-0122) of the Central Valley Regional Water Quality Control Board, (ii) above-ground concrete tank, or, (iii) below-ground concrete lined tank.*

PHASE I: PROJECTS SELECTED FOR AWARDS

CDFA- DDRDP Round 1 (2014-15)

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- Announced on July 13, 2015
- 5 projects totaling approx. \$11.1 million to implement digester technology on CA dairies.
- Private investment: Recipients will provide approx. \$18.9 million in matching funds.
- 4 new digesters, 1 retrofit.
- Projects will generate renewable electricity.
 - ▣ Approximately 32 million kWh per year

PHASE I: PROJECTS SELECTED FOR AWARDS

Approximate Estimated GHG Emissions Reduction

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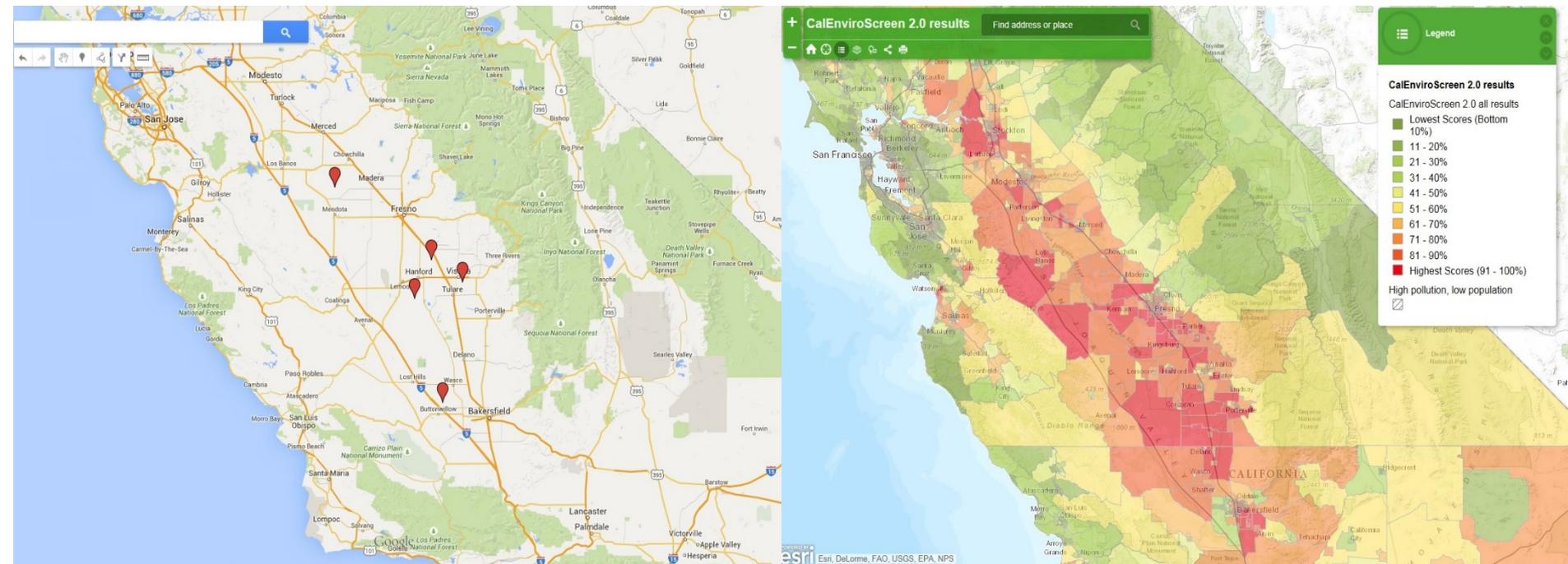
- Total GHG emissions reduction estimated at 1,377,111 MTCO₂e over 10 years.
- Annually:
 - ▣ 0.03% of the total GHG emissions in California
 - ▣ 1.1% of GHG emissions specifically from manure management on dairies
- MTCO₂e estimates calculated using Modeled Project Baseline Methane Emissions in the California Air Resources Board Compliance Offset Protocol-Livestock Projects (2011), with one exception: revised methane GWP of 25 was used instead of 21.

PHASE I: PROJECTS SELECTED FOR AWARDS

Disadvantaged Communities

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- SB 535 (De Leon, 2014): All 5 projects located in Disadvantaged Communities (DACs) in the Central Valley as identified by CalEnviroScreen 2.0.
 - ▣ DACs will benefit from improved air and water quality protection, job creation.



PHASE II: DAIRY DIGESTER RESEARCH FRAMEWORK AND OUTCOMES

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- Total funds: \$500,000
- Eligibility: CA research institutions and non-profit organizations
- Research priorities –
 - Study and facilitate changes in manure management practices at California dairies that will directly result in GHG emission reductions.**
 - ▣ Digestate utilization, characterization, and analysis
 - ▣ Co-digestion feedstocks
 - ▣ Comparison of manure management practices
- Applications due: May 15, 2015
- Review process: peer-review and TAC Review (currently ongoing).

CONCLUSIONS

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- CDFA's first Dairy Digester grants program.
- Strong inter-agency partnership – robust program:
 - ▣ Abreast with developments/regulations across various agencies as dairies span a large spectrum
- Industry-relevant program:
 - ▣ On-ground, visible impacts – GHG emissions reduction
 - ▣ Program responsive to current industry model
- High environmental quality standards.



CALIFORNIA ENERGY COMMISSION

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CALIFORNIA AIR RESOURCES BOARD

PROGRAM CONTACTS

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Carla Sanchez, Special Assistant, Climate Change Projects

916-654-0321

Casey Walsh Cady, Senior Environmental Scientist,

916-900-5154

Geetika Joshi, Environmental Scientist,

916-900-5150

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