



California Department of Food and Agriculture

Dairy Digester Research and Development Program (DDRDP)

2014-15

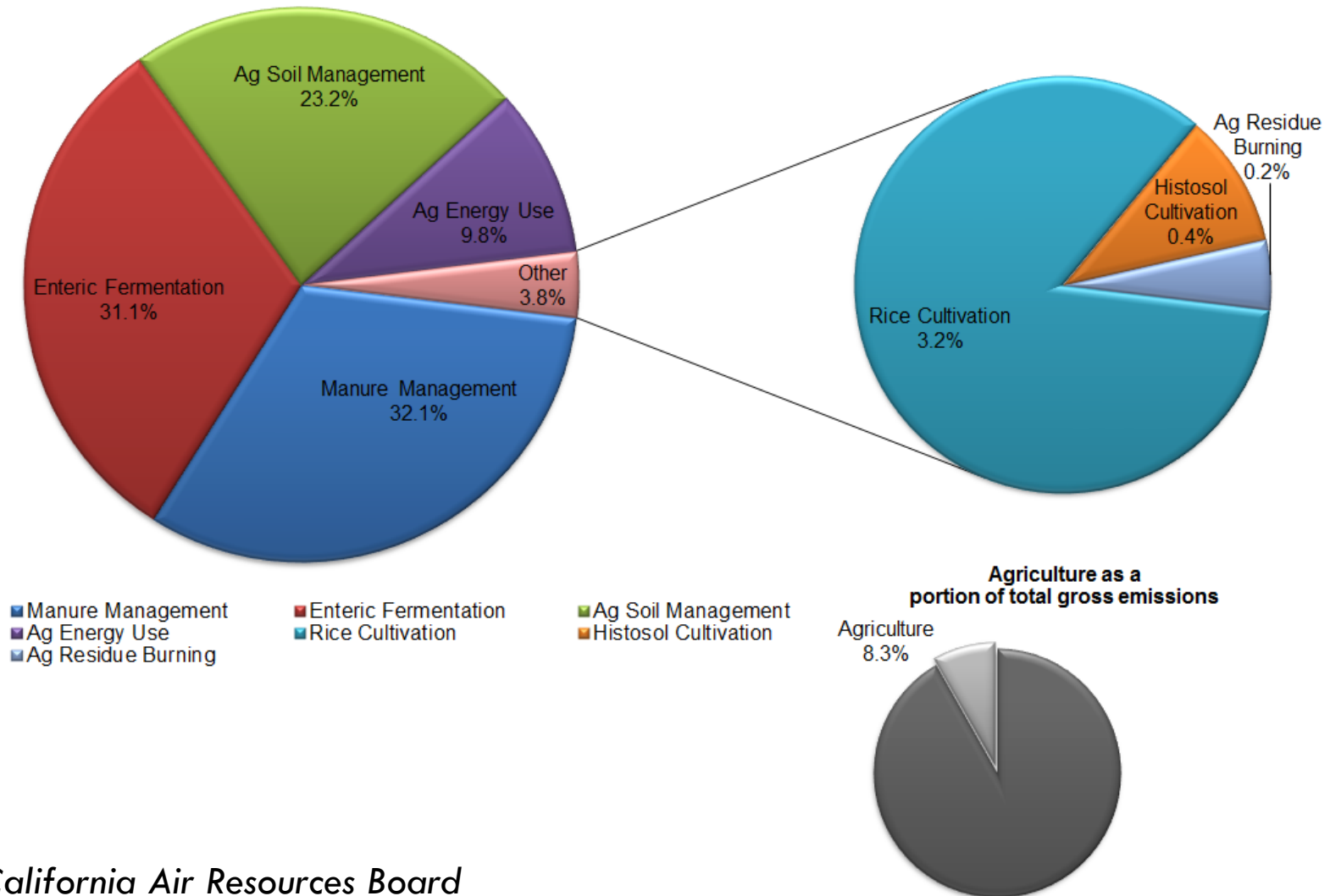
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Environmental Scientist

GHG EMISSIONS BY SECTOR

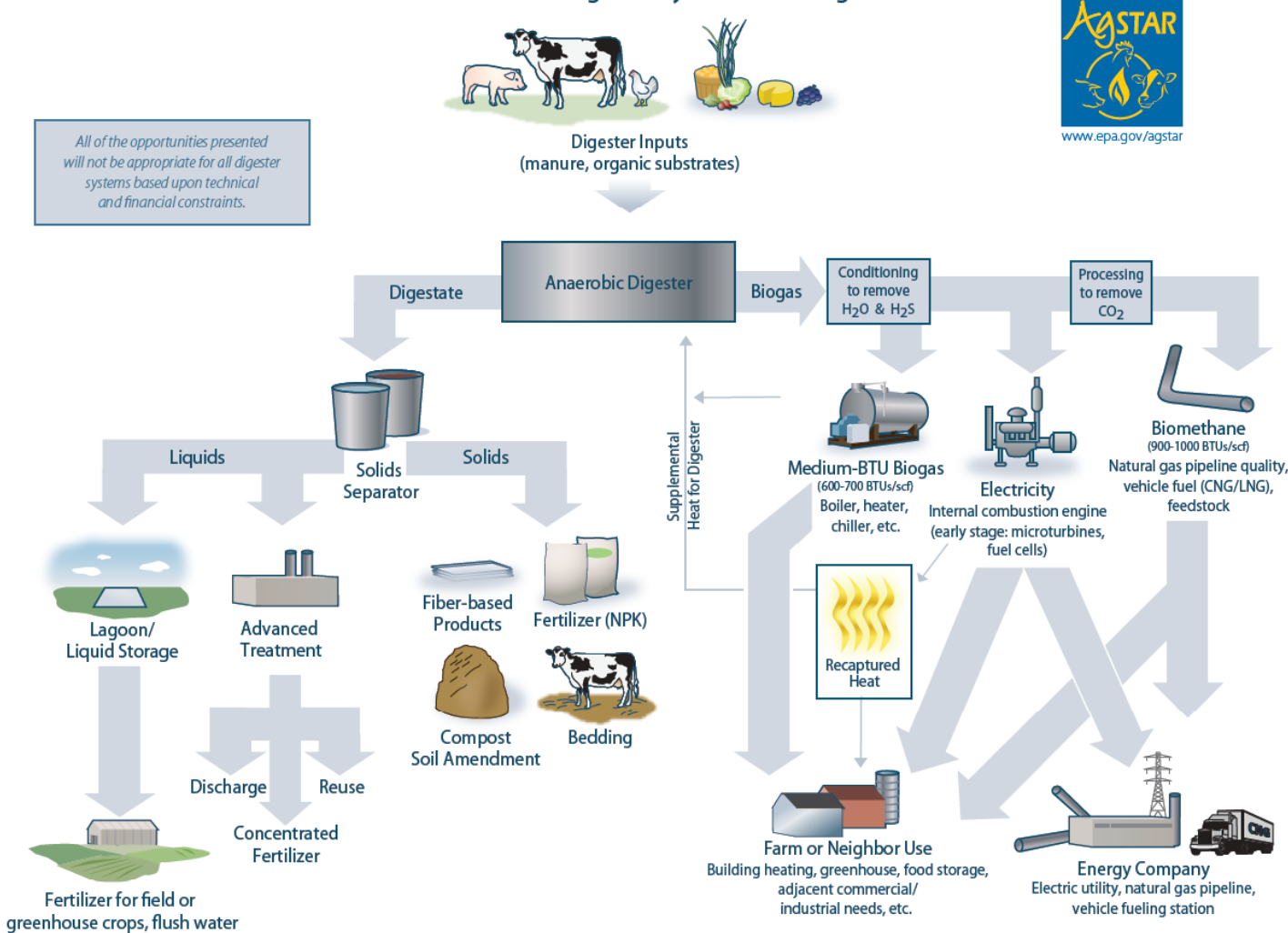
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Source: California Air Resources Board

ANAEROBIC DIGESTERS

Basic Anaerobic Digester System Flow Diagram



ANAEROBIC DIGESTERS

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- 1496 dairies in CA (in 2013) and ~20 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.
- Until 6/30/16 to expend or encumber the funds.

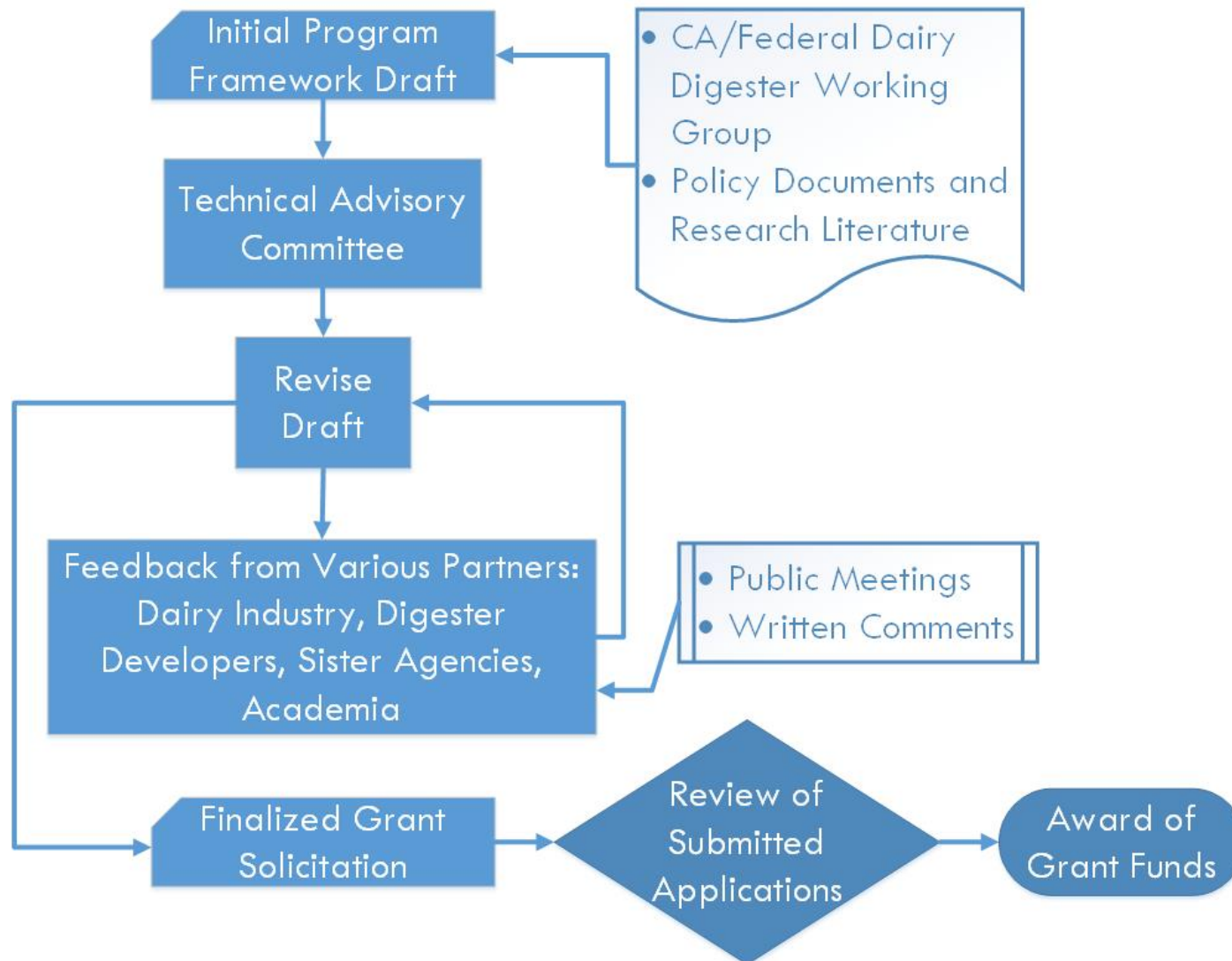
DDRDP TECHNICAL ADVISORY COMMITTEE

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- Subset of the DDWG – designees from each agency
- Roles:
 - ▣ Advising: DDRDP program framework development
 - ▣ Review team for evaluation of submitted grant applications

THE DDRDP PROCESS FOR PROGRAM FRAMEWORK DEVELOPMENT

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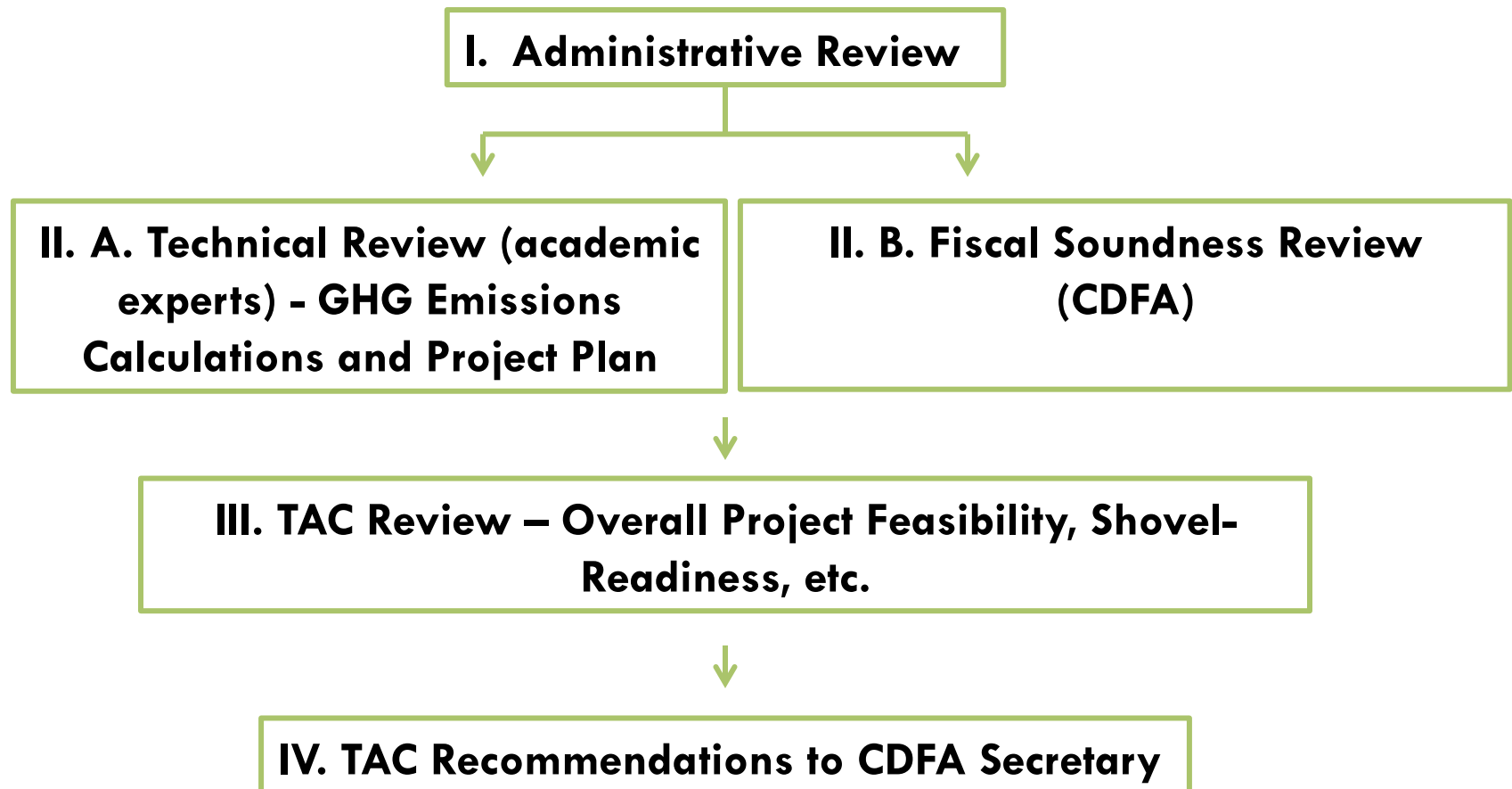
PHASE I: FRAMEWORK

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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

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PHASE I: OUTCOMES

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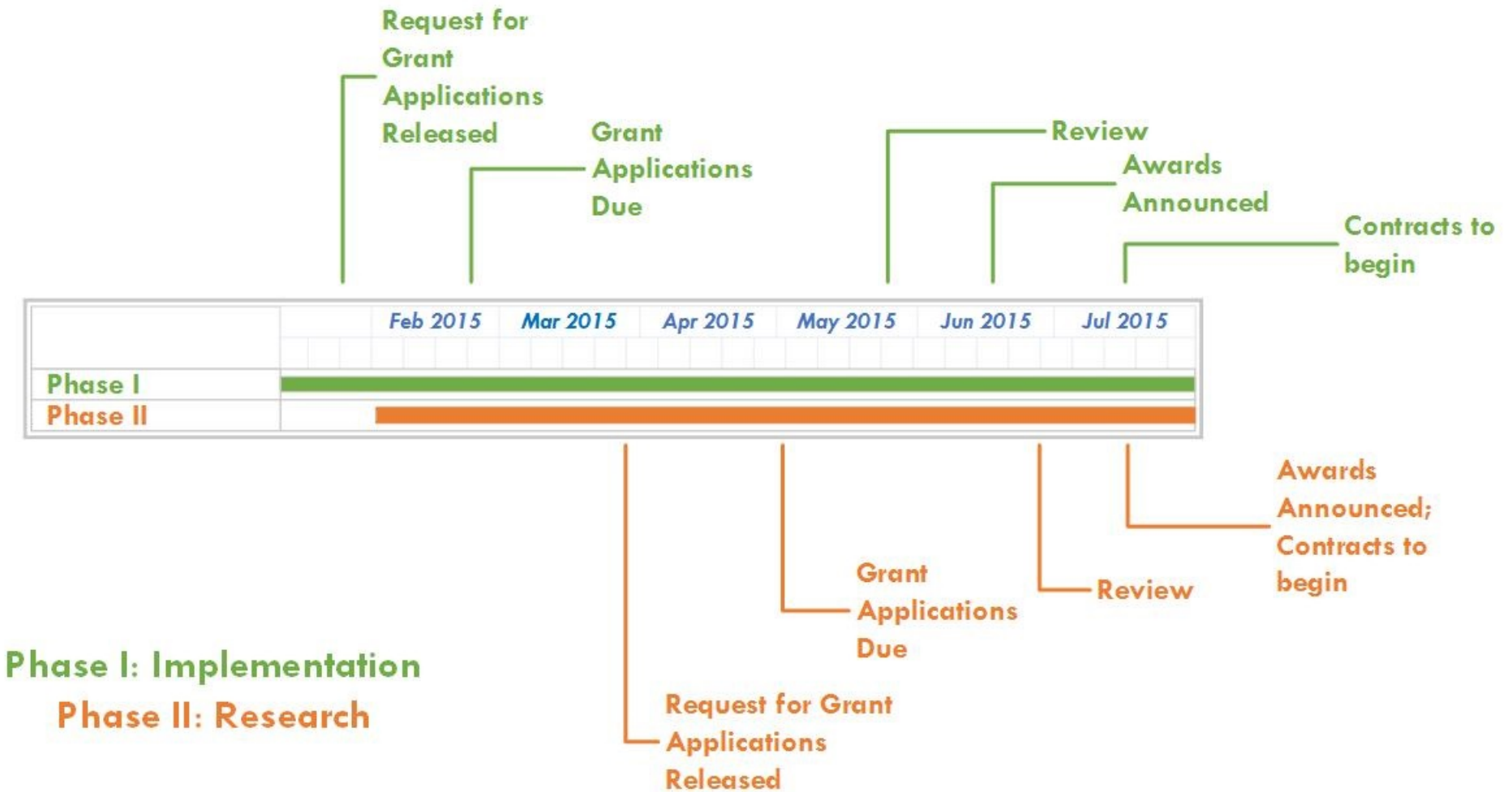
- Environmental Quality
 - ▣ Air Quality Minimum Standard – with San Joaquin Valley Air Pollution Control District
 - *Total NO_x emissions no greater than 0.50 lb/ MW-hr.*
 - *BACT available to meet standard*
 - ▣ Water Quality Minimum Standard – with State and Regional Water Quality Control Boards
 - *(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.*
- Defunct Digesters
- Electronic application submission procedure

PHASE II: FRAMEWORK AND OUTCOMES

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- Total funds: \$500,000; max \$250,000 per project
- Eligibility: CA research institutions and non-profit organizations
- Research priorities –
 - Amendments for crop nutrient recovery systems from digester byproducts, and their effects on stored soil carbon, soil nitrogen and GHG (CO₂, CH₄ and N₂O) emissions in California cropping systems, such as:
 - Characterization of digestate
 - Analysis for nitrogen speciation and salts
 - Decision support tools - project feasibility with regards to quantified GHG emission reductions, co-digestion feedstocks, and environmental benefits from dairy digesters, such as :
 - Comparison and monitoring of GHG emissions among dairy management practices, e.g. scrape and lagoon systems versus digesters.
- Work in progress – RFP yet to be released.

DDRDP : CURRENT STATUS



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 POLLUTION CONTROL FINANCING AUTHORITY

PROGRAM CONTACTS

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