

**SB 1383 –
Dairy & Livestock
Greenhouse Gas Reduction
Working Group**

Joint Subgroup Meeting

July 26, 2018

10:00 am to 4:00 pm



Main Meeting at
San Joaquin Valley APCD Office - Fresno
with video teleconferencing at
Modesto and Bakersfield branches

Dairy Subgroup #1: Fostering Markets for Non-Digester Projects

Oversight Group
(Agency Heads)



Subgroup #1:
Non-Digesters



Subgroup #2:
Digesters



Subgroup #3:
Research



Committee Membership Breakdown

CO-CHAIRS

- J.P. Cativiela (Dairy Cares)
- Ryan Flaherty (Sustainable Conservation)

11 Subgroup committee members represent:

- dairy farmers (pasture and non-pasture)
- academic expertise on livestock waste management
- environmental justice groups
- environmental/conservation groups
- private sector dairy design engineering
- private sector environmental crediting
- dairy industry organizations

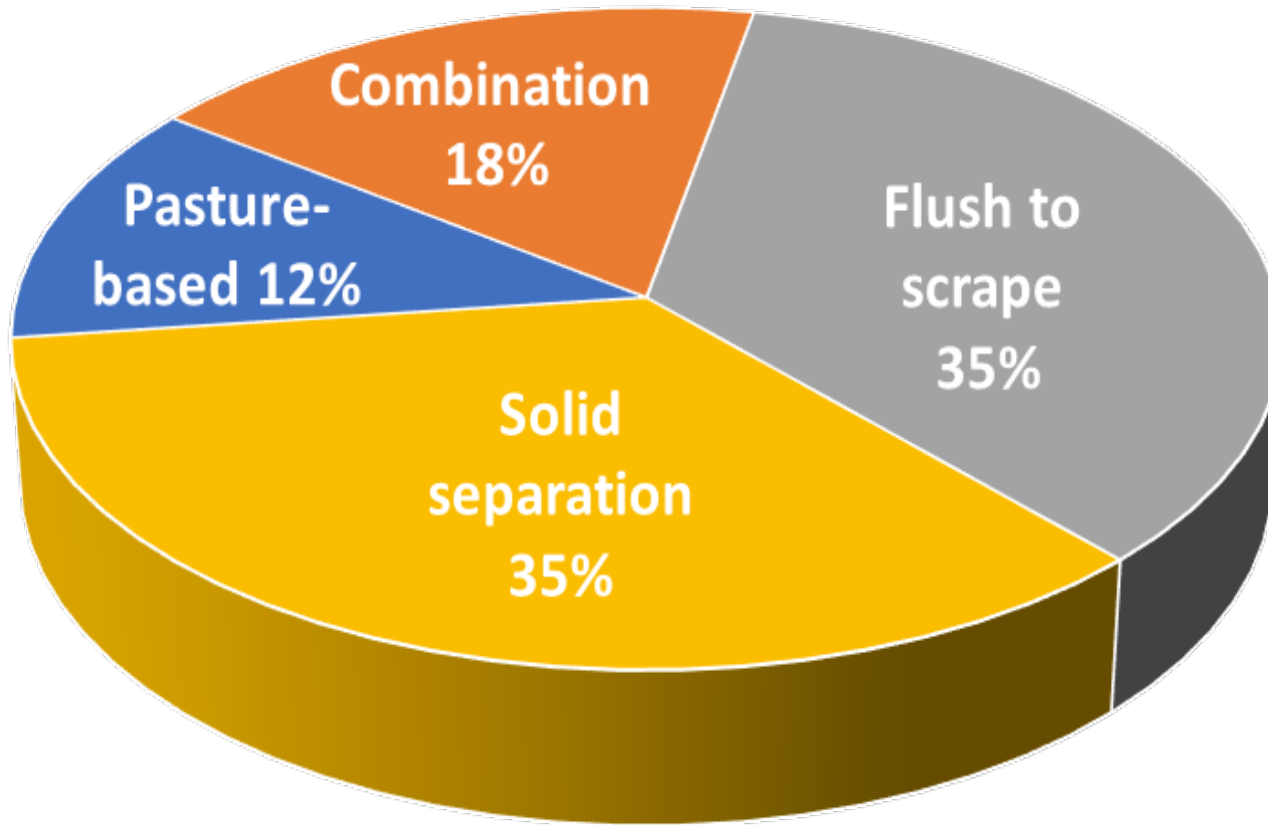
Overview of Alternative Manure Management Practices (AMMP) Projects in California

- 18 projects received funding in 2017 totaling nearly \$9.9 million (3 North Coast, 15 Central Valley)
- 63 active solicitations seeking the available \$19-\$33 million
- \$2.7 million in-kind/match
- 365,476 total MTCO₂e reduction (5 years) as estimated by project applicants
- Herd size ranging from 250 to 7,000
- Majority (62%) of applications were solid separation followed by scrape (21%) and pasture-based (8%)

**Subgroup #1:
Non-Digesters**

Types of projects

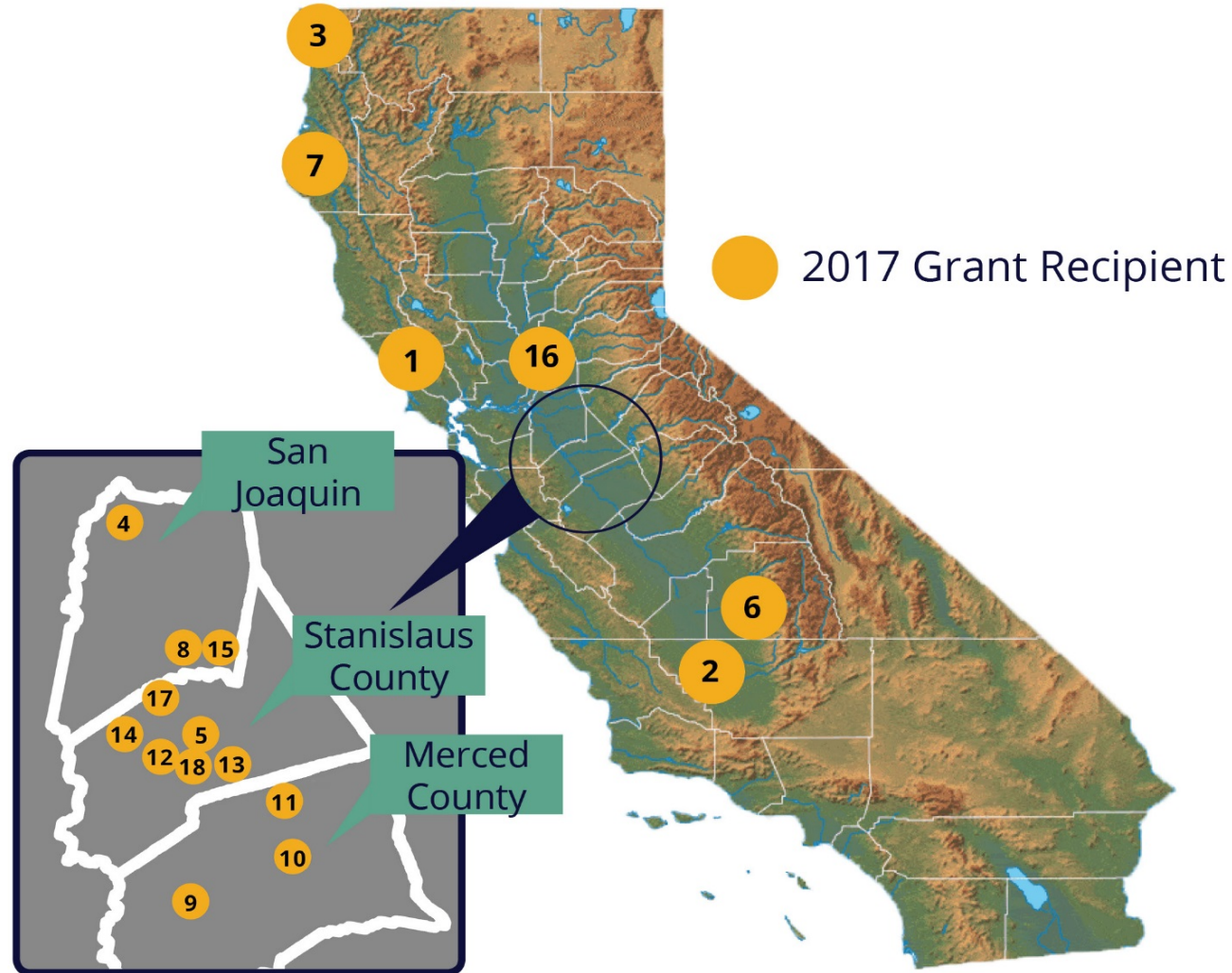
- Applications Selected for Awards (source: CDFA)



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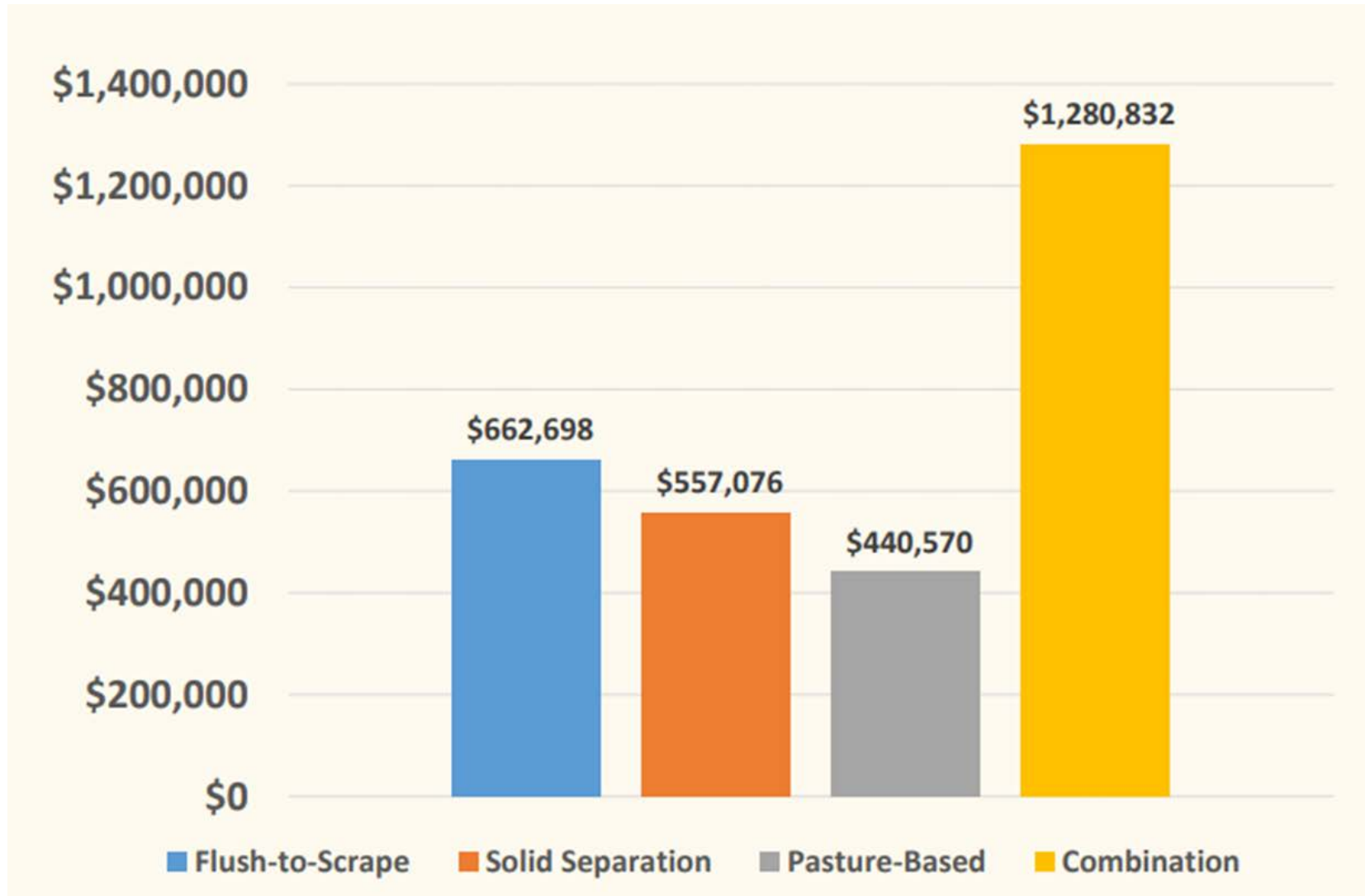
AMMP Project Locations

Alternative Manure Management in California



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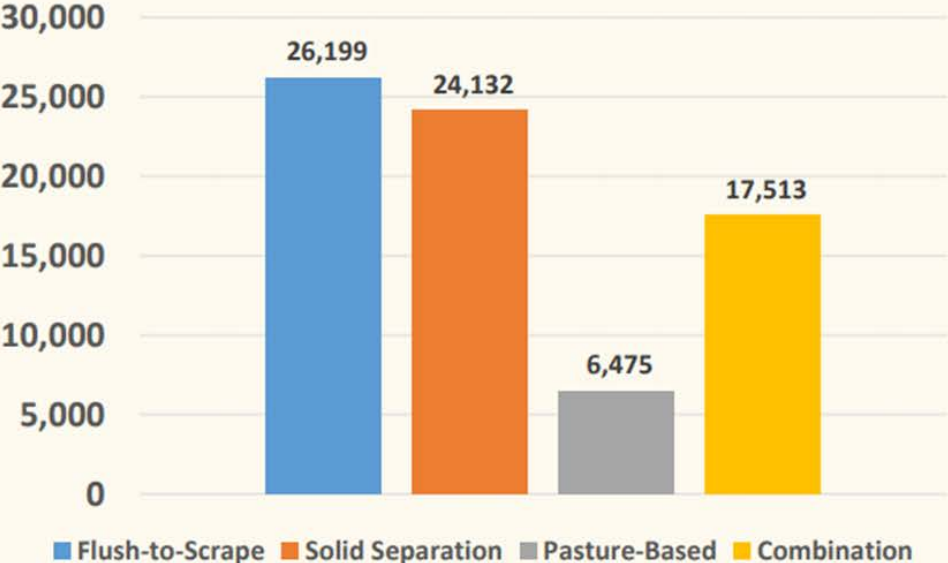
Average Total Cost Per Practice Type



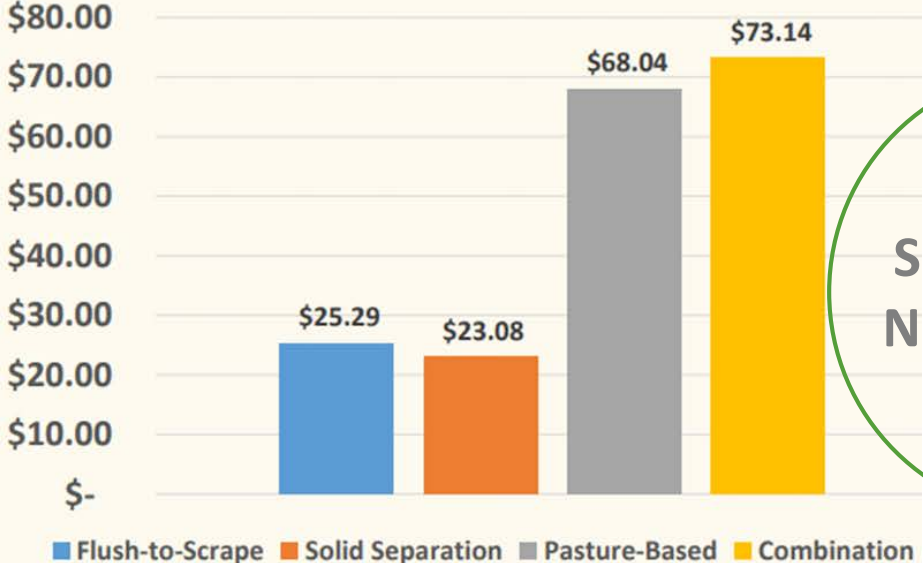
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GHG Reductions, Costs by Project Type

Average GHG Reduction per Practice (mtCO₂e)



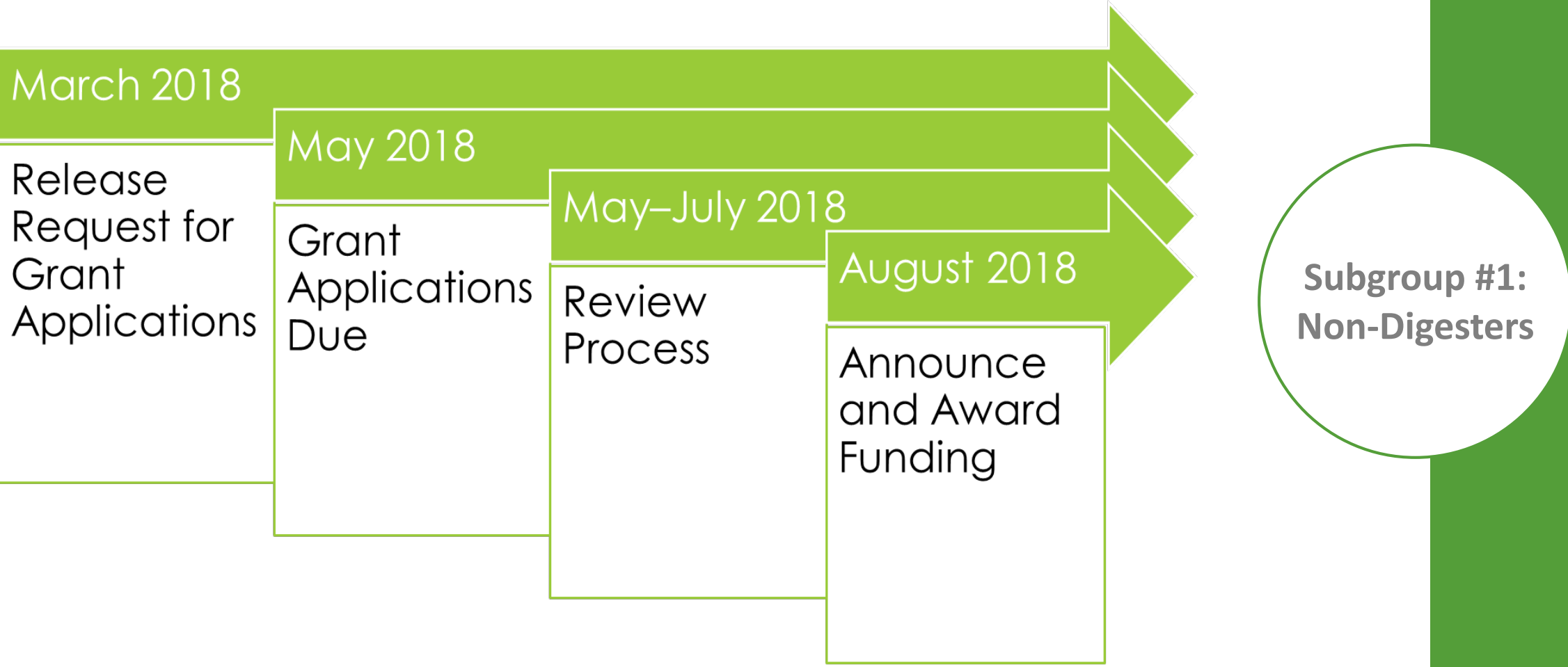
Average Cost per ton CO₂e per Practice



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Submitted by applicant/not actual reductions

Timeline for Funding 2018



Potential Barriers to Broader Adoption

- Costs to build and operate (increased fuel, energy, labor, etc.)
- Lack of revenue streams and/or market uncertainty for resulting manure products (or lack of economic information related to their on-farm use)
- Lack of revenue streams related to environmental credits to support ongoing operational costs
- Knowledge gaps related to environmental impacts and benefits for GHGs, other air emissions, water quality, transportation, etc.
- Performance limitations on currently funded technology and practices (inability to solve multiple environmental problems, economic performance, unacceptable impacts, etc.)
- Lack of research, development and data to support adoption of newer technology and practices
- Lack of consistent, reliable information about options for technology, practices and incentives to support decision-making by dairy operations

Subgroup #1 has identified six recommendation areas to address these barriers

**Subgroup #1:
Non-Digesters**

Recommendation Area #1

Need: Continue funding for currently eligible non-digester practices going forward

- Evidence for methane reductions is strong, though quantification needs improvement
- Impacts expected to be relatively minimal, though more verification needed
- Producer interest and adoption rates appear high
- Currently eligible: increased time on pasture, compost pack barns, solid separation followed by drying or composting, convert to scrape followed by drying or composting

Recommendations:

- **Conduct research to establish a solid baseline of current manure management practices on California dairies.**
- **Continue funding via AMMP for those non-digester practices that are already approved for funding.**
- **Continue to improve implementation of AMMP (producer awareness, ease of application process, etc.)**



**Subgroup #1:
Non-Digesters**

Recommendation Area #2

Need: Better quantify environmental benefits and impacts of current and future non-digester practices; address environmental justice concerns related to non-digester practices

Recommendations:

- **Develop, through cross-agency coordination:**
 - **Common methodology for evaluating cross-media impacts (air, water, GHG)**
 - **Consistent emissions measurement protocols**
- **Conduct high-level assessment of expected environmental benefits and impacts of currently eligible practices** (magnitude of increases/decreases and impacts to communities)
- **Articulate benefits/impacts of individual practices and technologies** (so that applicants don't have to)
- **Continue/expand research in whole-farm emissions changes related to non-digesters**



**Subgroup #1:
Non-Digesters**

Recommendation Area #3

Need: Increase our understanding of the market for value-added manure products

- Less anaerobic storage of manure reduces methane emissions while opening opportunities to export more manure/manure components off of dairies to benefit water quality, soil health, etc.
 - Central Valley agriculture represents a potential huge market for manure-based products (millions of acres of crops)
 - There is a large range of potential products, including raw manure, compost, custom fertilizers, biochar, and even fuels. But little is known about demand.
 - Understanding which products and markets are most promising, the size and scale and logistics of serving those markets, is vital to informing technology development, incentives, and other policies
- **Recommendation:**
- **Agencies, industry and others should collaborate on a comprehensive market analysis for manure-based products, focusing on the largest and closest potential markets**



**Subgroup #1:
Non-Digesters**

Recommendation Area #4

Need: Evaluate new non-digester technologies and practices through commercial-scale research and development

- New technologies and practices (currently non-fundable through AMMP, not in use in California, or considered experimental) for manure management are being developed
- There is a lack of independently verified data to evaluate economic and environmental performance of emerging manure management technology under California conditions at commercial scale

Recommendation:

- **Create a non-digester research and development program with the purpose of advancing emerging technologies**
 - Systematically evaluate technology options and identify those that appear most promising
 - Invite and fund pilot commercial-scale projects
 - Independently verify economic and environmental performance



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Recommendation Area #5

Need: Develop additional data to identify economic incentives for methane reduction from non-digesters practices

- Non-digester practices currently are disadvantaged compared to digesters by a lack of saleable products (such as electricity and fuel) and environmental credits
- A parallel system is needed that:
 - Recognizes value for methane reductions in non-digester projects (carbon offsets or similar)
 - Helps add value to resulting products (e.g. market incentives for production and sale of value-added manure products resulting from use of non-digester methane-reducing technologies)
- As it does with digesters, such a system could help spur broader development and deployment of non-digester practices
- Transaction costs are high and would likely need to be lowered to be feasible

Recommendations:

- **Conduct an economic analysis of various methane reducing technologies and practices within a carbon offset framework to evaluate if the offset sale can be economically feasible**
- **If deemed economically feasible, develop recommended changes to carbon offset framework rules and act on regulatory changes identified**



**Subgroup #1:
Non-Digesters**

Recommendation Area #6

Need: Expanded education and outreach to dairy operators is essential for promoting non-digester practices

- Dairy operators need a trusted, unbiased source of information to understand which practices and technologies actually reduce methane and other emissions, along with information about operational and economic feasibility

Recommendation:

- **Develop a formal education and outreach program to serve as a trusted, non-biased resource for dairy producers. Program should include:**
 - Independent, scientifically verified information to help dairy operators better evaluate vendor claims
 - Information and training on how to successfully implement practices and technology under California environmental, regulatory, and operational conditions
 - Outreach led by trusted partners such as UCCE, RCDs, CDQAP, producer associations, etc.
 - A centralized clearinghouse for information and resources



**Subgroup #1:
Non-Digesters**

Next steps

- Subgroup #1 co-chairs drafted recommendations; these were reviewed by the subgroup member in June
- Subgroup #1 co-chairs received comments from subgroup members and agencies and are in the process of making a new revision for final review by the subgroup
 - *Policy discussions and informational presentations have concluded; additional changes expected to be largely editorial in nature to ensure document accurately reflects the discussions that already occurred*
 - *We anticipate concluding this process in August 2018*



**Subgroup #1:
Non-Digesters**