

California Department of Food and Agriculture  
ENVIRONMENTAL FARMING ACT SCIENCE ADVISORY PANEL

MEETING AGENDA

April 8, 2014  
10 AM to 4 PM

(Science Panel members only)  
10 am to 1 pm  
Farm Tour  
Rio Farms, Gill Ranch  
King City, CA 93930

(Public meeting)  
1 pm to 4 pm  
San Lorenzo Park  
Irrigation Museum Conference Room  
1160 Broadway  
King City, CA 93930  
916-508-7993

Call in information:  
Please call 1-877-238-3859  
Participant passcode - 3964856#

Don Cameron, Member and Chair  
Mark Nechodom, PhD, Member  
Mike Tollstrup, Member  
Jocelyn Gretz, MSc, Member  
Jeff Dlott, PhD, Member  
Luana Kiger, MSc, Subject Matter Expert  
Doug Parker, PhD, Subject Matter Expert

- |   |                  |
|---|------------------|
| 1. Introductions and updates                                  | Don and Amrith   |
| • Science Panel membership                                    |                  |
| • 2 year report   |                  |
| 2. Water Efficiency and Enhancement Program review            | Amrith           |
| 3. Recognition System for Ecosystem Services - GEELA language | Amrith and Nilan |
| 4. Environmental Goals and Policy Report (if time permits)    | Amrith           |
| 5. Public comment   |                  |
| 6. Next meeting and adjournment                               | Don              |

Amrith Gunasekara, PhD, CDFA Liaison to the Science Panel

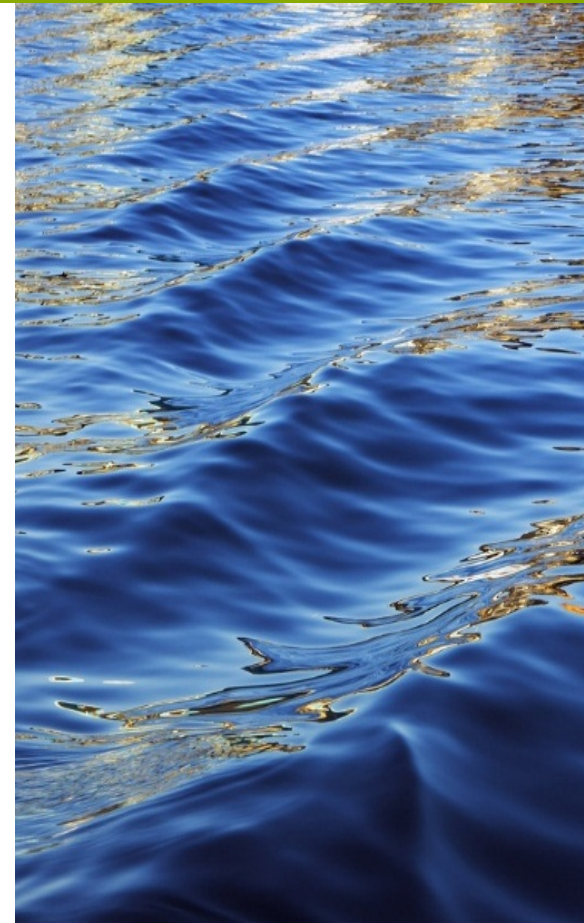
# CDFA WATER EFFICIENCY AND ENHANCEMENT PROGRAM

EFA SAP Meeting

April 8, 2014



CALIFORNIA DEPARTMENT OF  
FOOD & AGRICULTURE



 CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY  
STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA DEPARTMENT OF  
**WATER RESOURCES**

# PRESENTATION OUTLINE

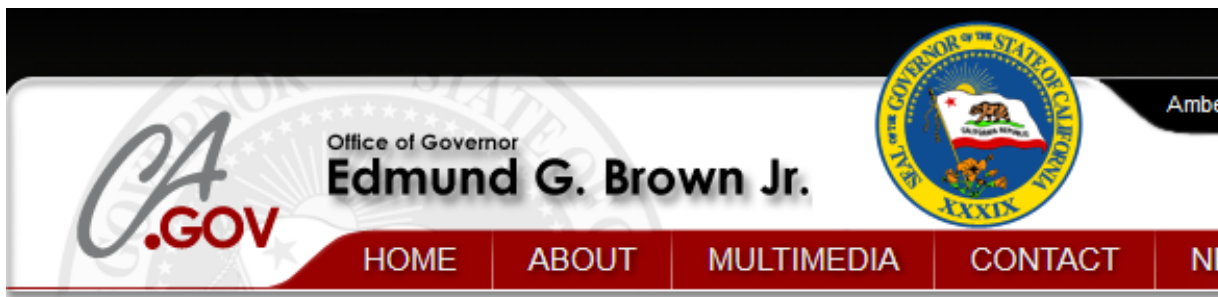
- BACKGROUND
- OBJECTIVES AND GOAL
- CONCEPT AND FRAMEWORK
- TIMELINE (attachment)
- GRANT FLOW SCHEMATIC (attachment)
- PUBLIC MEETINGS

**INFORMATION ON PROGRAM POSTED @ -**

[http://www.cdfa.ca.gov/EnvironmentalStewardship/H2O\\_EandE.html](http://www.cdfa.ca.gov/EnvironmentalStewardship/H2O_EandE.html)

# BACKGROUND

- Emergency drought legislation bill (SB 103) signed by Governor Brown on March 1, 2014.



## GOVERNOR BROWN SIGNS DROUGHT LEGISLATION

3-1-2014

SACRAMENTO – As California grapples with the driest period in its history, Governor Edmund G. Brown Jr. today signed legislation to assist drought-affected communities and provide funding to better use local water supplies.

"Legislators across the aisle have now voted to help hard-pressed communities that face water shortages," said Governor Brown. "This legislation marks a crucial step – but Californians must continue to take every action possible to conserve water."

The legislation had broad, bipartisan support. SB 103 passed 34-2 in the Senate and 64-3 in the Assembly. SB 104 passed 33-3 in the Senate and 68-1 in the Assembly. The bills provide \$687.4 million to support drought relief, including money for housing and food for workers directly impacted by the drought, bond funds for projects to help local communities more efficiently capture and manage water and funding for securing emergency drinking water supplies for drought-impacted communities.

**\$10 million from the Greenhouse Gas Emissions Fund for the California Department of Food and Agriculture to invest in irrigation and water pumping systems that reduce water use, energy use and greenhouse gas emissions.**

# BACKGROUND

The bill language for CDFA as the lead agency states;

“\$10,000,000 shall be available for encumbrance until June 30, 2015, for consultation and coordination with the Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB), to establish and implement a program, on or before July 1, 2014....”

“...to provide financial incentives to agricultural operations to invest in water irrigation treatment and distribution systems that reduce water and energy use, augment supply and increase water and energy efficiency in agricultural applications.”

“Incentives shall be ranked and distributed based on financial need, immediacy of water supply increased and efficiency gained to address water shortages, and reduction in water pumping or treatment that uses energy causing greenhouse gas emissions.”

# BACKGROUND

Fits well under the Environmental Farming Act of 1995;

566. (a)

The department shall establish and oversee an environmental farming program. The program shall provide incentives to farmers whose practices promote the well-being of ecosystems, air quality, and wildlife and their habitat.

Act posted online at;

<http://www.cdfa.ca.gov/EnvironmentalStewardship/pdfs/CannellaEnvironmentalFarmingAct.pdf>

# ...A NOTE ON "FINANCIAL NEED"

CDFA does not want the financial information of farmers. CDFA is subject to public requests and it is important for the Department to protect growers' confidential information;

"...to provide financial incentives to agricultural operations to invest in water irrigation treatment and distribution systems that reduce water and energy use, augment supply and increase water and energy efficiency in agricultural applications."

CDFA has obtained clarification that the drought has, in general, prompted "financial need".

Further, the program should be designed to evaluate projects based on quantifiable water savings/efficiencies and greenhouse gas reductions.



# SUMMARY AND GOAL

The money is intended to provide financial assistance to farmers to implement water conservation and energy saving measures on farms.

CDFA is utilizing the funding to establish a grant program called the Water Efficiency and Enhancement Program which is aimed at increasing water conservation by improving water management and efficiencies on farms while at the same time reducing emissions of greenhouse gases through energy efficiency.

Water conservation will play an important role in helping the agricultural sector address current drought conditions and impact on our food supply.



# FIVE MAJOR COMPONENTS

1. Irrigation system design
2. Implementation (by grower)
3. Verification that system is working as specified
4. Financial accountability (invoicing)
5. Quantification of water savings/efficiency and greenhouse gas reductions

# FRAMEWORK

- Grant program directly to growers
- Establish a funding cap and farm size categories
- Assistance for design component (third party)
- Funding criteria and scoring matrix
- Verification component (third party)
- Quantitative reporting of water efficiency and greenhouse gas reductions

# GRANT PROGRAM FOR GROWERS

In process of developing application

- User friendly
- Electronic and hardcopy (FAAST)
- Assistance for greenhouse gas quantification
- Assistance for quantification for water savings/ energy efficiency
- Description of existing system and water use efficiency
- Description of proposed system and quantification of expected water and energy efficiencies/savings
- Budget (at least two bids if from irrigation companies)
- Location of project and crop
- Long term maintenance of project (15 years?)
- Ensure irrigation scheduling can be accommodated.

Will have a application guidance document.

Working to establish review committee.

Action item - What else should be consider in application? Timeline

# FUNDING CAP and FARM SIZE

Funding cap is important to promote cost share \$

Funding cap is essential to ensuring \$ are widely distributed by farm size.

Proposed using USDA designation of farm size - small/medium/large with 30% of funds dedicated to each category

Funding cap is proposed between \$50,000 and \$100,000; with former...will fund 190 grants and with latter will fund 95 grants.

Action item - need recommendation from EFA SAP on funding cap/farm sizes.

# ASSISTANCE FOR DESIGN

Proper design is key to establishing water efficiency.

Techniques for optimizing irrigation system and events

Need to determine effective distribution uniformity (DU) - Cited in May 2012 report to legislature;  $> DU = > \text{Water efficiency/savings}$

Assistance with ET;

ET<sub>o</sub> (reference ET from CIMIS and K<sub>c</sub> is crop coefficient)

Establishing baseline water use/efficiency

Establishing baseline greenhouse gas emissions

Action item - need recommendation from EFA SAP on using third party for design, application development and verification. CA RCD?

# CRITERIA FOR RANKING APPLICATIONS

1. Use of soil moisture sensors and irrigation scheduling, including off-peak irrigation.

Benefits are effective irrigation based on crop moisture needs. Quantified baseline is water use and crop yields prior to implementation of system. Quantified benefit is potential reduction of water or use of water based on crop needs to maximize efficiency.

2. Use of renewable energy sources (e.g., solar or wind) for pumps to facilitate reduction of greenhouse gases from fuel combustion.

Benefits are the quantified reduction in GHG from fuel combustion to operate pumps. Quantified baseline is energy use to operate pumps from non-renewable energy sources (e.g., fuel use) and resulting GHG emissions.

# CRITERIA FOR RANKING APPLICATIONS

3. Use of micro-irrigation or drip systems to replace flood or furrow irrigation. Must follow NRCS Conservation Practices 441, 443, and 440.

Quantified baseline is water use from current flood and furrow irrigation and GHG emissions from pumping. Quantified benefits are reduction of water use or more efficient use of water to maximize crop yields and potential GHG reductions from reduced pumping.

4. Use of low pressure drip or micro-irrigation system nozzles to reduce pumping and energy use (if they change out their pumps).

Quantified baseline is current non-low pressure system and its energy and water use. Quantified benefit is the energy reduction and GHG emission reductions from the low pressure system and potential water savings.



# CRITERIA FOR RANKING APPLICATIONS

5. Use of Variable Frequency Drives to reduce energy use and match pump flow to load requirements.

Quantified baseline is the energy use and GHG emissions from existing non-variable frequency drivers to pump water for irrigation. Quantified benefit is the energy use and GHG reductions from variable frequency drives and potential water savings.

6. Use of ET and CIMIS information with software such as CropManage to optimize water efficiency for crops.

Quantified benefit is water saving/efficiencies including the co-benefit of efficient nitrogen application.

# CRITERIA FOR RANKING APPLICATIONS

7. Must be in area of drought designation - refer to drought website.

<http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA>

8. Relationship to disadvantaged communities.

Overlay disadvantaged community map with location of application as a criteria for scoring. Benefit is consistent with funding source requirements. Potentially overlay drought data with disadvantage community data with application. OEHHA can help with this - use of CalEnviro screen.

<http://oehha.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=5e1542837d4246b282ddbbaa92b0e790f>

9. Other with explained water savings? Leave option open?

Action Item - Criteria ok? How should be use this criteria to score applications? All first, 5 out of 8 second...?

# VERIFICATION COMPONENT

CDFA does not have the resources to verify irrigation systems have been implemented as specified in the grant application.

Recommended using third party such as RCDs. Benefits include;

- Familiarity with NRCS conservation practices
- Growers are familiar with RCDs
- On farm accessibility
- County level resources
- Mobile labs
- Has CA Association of RCDs which CDFA can work through

Action Item - Third party organization for verification and component?

# QUANTIFICATION OF DATA

Verifier should be able to assist in this task

Use of utilities to assist with this task (e.g., SCE, PGE)

Data flows to RCD Coordinator and then to CDFA

CDFA will put together a final report on the data gathered

Recommend that systems be implemented in six months to accommodate invoicing, emergency status of funding and reporting out of findings.

Action Item - Timeline of activities - see attachment. Need EFA SAP recommendation.

# PUBLIC STAKEHOLDER MEETINGS

Two public stakeholder meetings are planned. Will give this presentation.

Sacramento - April 11th

Modesto - April 18th

Present framework, timeline and schematic. Obtain feedback and comments. Inclusion of comments and feedback into the program development.

## Criteria for scoring and ranking applications;

1. Use of soil moisture sensors with electronic data output for growers to ensure efficient irrigation scheduling (must specify if with new or existing system); new systems get higher ranking.

Benefits are effective irrigation based on crop moisture needs. Quantified baseline is water use and crop yields prior to implementation of system. Quantified benefit is potential reduction of water or use of water based on crop needs to maximize efficiency.

**Off peak irrigation scheduling – energy companies will incentivize.**

2. Use of renewable energy sources (e.g., solar or wind) for pumps to facilitate reduction of greenhouse gases from fuel combustion

Benefits are the reduction in GHG from fuel combustion to operate pumps. Quantified baseline is energy use to operate pumps from non-renewable energy sources (e.g., fuel use) and resulting GHG emissions. Quantified potential benefit is reduction of fuel use from implementing renewable energy sources, including biofuels and on-farm byproducts, to operate pumps.

**Off peak irrigation scheduling – energy companies will incentivize. Tied in with first one in most instances.**

3. Use of micro-irrigation or drip systems to replace flood or furrow irrigation. Must follow NRCS Conservation Practices 441, 443, and 440.

Quantified baseline is water use from current flood and furrow irrigation and GHG emissions from pumping. Quantified benefits are reduction of water use or more efficient use of water to maximize crop yields and potential GHG reductions from reduced pumping.

4. Use of low pressure drip or micro-irrigation system nozzles to reduce pumping and energy use (if they change out their pumps).

Quantified baseline is current non-low pressure system and its energy and water use. Quantified benefit is the energy reduction and GHG emission reductions from the low pressure system and potential water savings.

5. Use of Variable Frequency Drives to reduce energy use and match pump flow to load requirements.

Quantified baseline is the energy use and GHG emissions from existing non-variable frequency drivers to pump water for irrigation. Quantified benefit is the energy use and GHG reductions from variable frequency drives and potential water savings.

6. Use of ET and CIMIS information with software such as CropManage to optimize water efficiency for crops.

7. 7. Must be in area of drought designation - refer to drought website <http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA>

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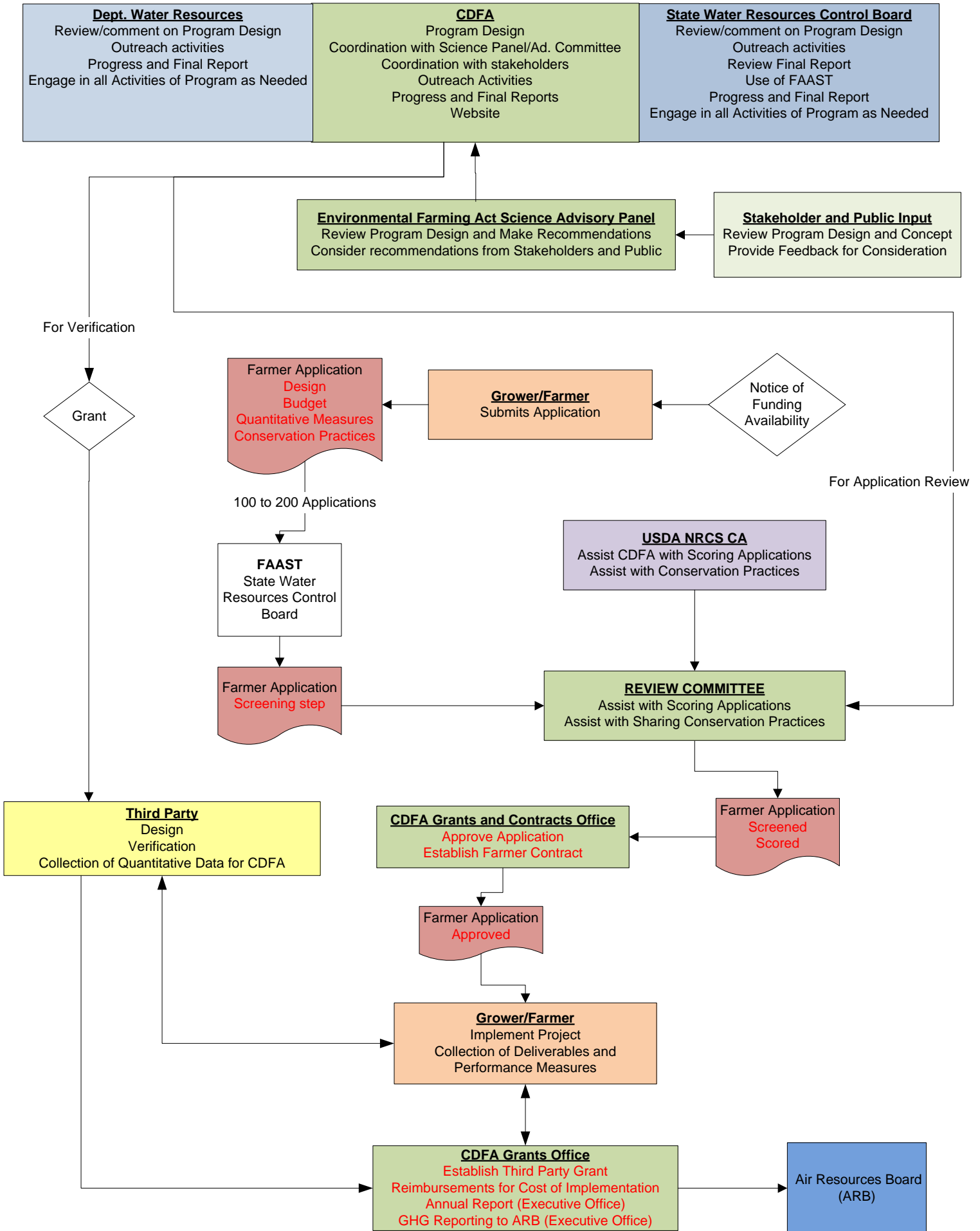
9. Other.



# CDFA Water Efficiency and Enhancement Program Timeline

ID	TASK	Start	Mar 2014			Apr 2014				May 2014				Jun 2014				Jul 2014											
			2/23	3/2	3/9	3/16	3/23	3/30	4/6	4/13	4/20	4/27	5/4	5/11	5/18	5/25	6/1	6/8	6/15	6/22	6/29	7/6	7/13	7/20	7/27				
1	Establish Concept Proposal with Timeline for Internal Review	2/24/2014	█																										
2	Establish Contact Person for DWR and SWRCB	2/24/2014	█																										
3	List of Water and GHG Conservation Practices	2/24/2014	█																										
4	Meetings with NRCS (ongoing)	2/24/2014	█																										
5	Meetings with Stakeholders including Tribal Leaders (2)	3/13/2014				█																							
6	Meetings with Science Panel (2-3)	3/24/2014				█																							
7	Evaluate Water and Energy Conservation Practices for Multiple Benefits	2/24/2014	█																										
8	Develop Application for Growers	4/21/2014							█																				
9	Establish Application Review Committee	4/21/2014							█																				
10	Establish CDFA Grant with Third Party for Verification and Data	4/16/2014							█																				
11	Meetings with Third Party on Project Implementation and Verification	5/6/2014										█																	
12	Establish Electronic and Paper Application Submission Pathways	4/1/2014				█																							
13	Meetings with Review Committee	5/5/2014										█																	
14	Evaluate Grants and Contracts Office Workload and Staff Required	2/24/2014	█																										
15	Develop Outreach Activities for Grant Announcement	4/22/2014							█																				
16	Establish Screening and Scoring Matrix	2/24/2014	█																										
17	Annual Report on Progress	7/7/2015																											
18	Program Implementation – Begin Excepting Applications from Growers	6/16/2014																█											
19	Establish Contracts with Growers and Third Party -	6/30/2014																█											

# CDFA Water Efficiency and Enhancement Program



GEELA

Award Category

Agricultural Ecosystem Services or Ecosystem Services in Agriculture

Farms and ranches that provide, in addition to food production and jobs, other benefits to society and the environment. These benefits are termed Ecosystem Services and include efforts to promote wildlife habitats, enhance nutrient cycling, biodiversity and soils, efficient water use, quality and cycling, innovative pest management strategies in consideration of the environment, novel pollination strategies, efforts to limit air quality impacts and on-farm recreational and cultural opportunities. For a full list of Ecosystem Services and examples, see CDFA website ([link](#)).

Could also state: Farmer and ranchers that provide, in addition to food production and jobs, benefits to enhance water cycling and conservation efforts to assist with the 2014 drought. The 2014 drought has led to statewide water conservation and efficiency needs including on-farm use of effective sensors and irrigation systems that maximize and reduce water conservation.

What selection criteria do we want to use?

- **Results:** Steps taken to achieve results are described; results are defined in measurable terms; environmental and economic benefits are identified and documented.
- **Transferability/Scalability:** Project concept can be scaled and/or transferred to other parties such that impact (or could have potential impact) on State environmental and economic goals is measurable and significant.
- **Environmental/Resource Conservation Impact:** Accomplishment includes more than one environmental media or resource; project or program has long lasting and sustainable impact; magnitude of impact is described and significant.
- **Economic Progress:** California's economy is enhanced; measurable benefits are identified and realized; new/better jobs are created and new markets developed.
- **Innovation/Uniqueness:** Demonstrates basic practice to unique, innovative practice; a paradigm shift in approach; demonstrates a "pioneer" spirit; ahead of the marketplace and profitability.
- **Pollution Prevention:** Achieves measurable reductions in the generation of waste through source reduction; increased public-private awareness of pollution prevention; exemplifies best practices with a cross-media focus.
- **Public Health:** Achieves measurable improvements to community environments (social, economic, physical, and services) that result in tangible benefits to public health.
- **Environmental Justice:** Significantly raises the awareness and addresses environmental issues in areas adversely affected by environmental pollution and hazards; builds and/or raises the involvement of local/grassroots communities and/or California tribal communities in the project or program; builds community leadership/stewardship to address environmental issues.

EGPR Language. Would be added to Chapter 1 on page 3 titled “Chapter 1 - A Vision for California’s Future”

**Ensuring Food Security** California is one of the most productive agricultural states in the nation with a diversity of highly nutritious, safe, reliable, affordable food crops, some of which are grown solely in the state. With increased population growth at the local, national and international levels, great pressures will be placed on California agriculture to produce more food with limited land and environmental resources. These pressures will exponentially increase with climate change. Ensuring food production in a sustainable manner will contribute to a robust economy and high quality of life for all Californians.