MEETING AGENDA
November 18, 2016

9 AM to 11:30 AM (Science Panel members only)
Field Tour

Public Meeting
1 PM to 5 PM
Stanislaus County Agricultural Commissioner Office
3800 Cornucopia Way, Room A
Modesto, CA 95358
916-654-0433

REMOTE ACCESS
Webinar information
Registration URL: https://attendee.gotowebinar.com/register/7931335202038825730
Webinar ID: 646-622-027
Call-in information
1-877-238-3903
Passcode: 6655460

Presentation materials will be posted at the following link prior to the meeting:
https://www.cdfa.ca.gov/EnvironmentalStewardship/Meetings_Presentations.html

EFA SAP MEMBERSHIP
Don Cameron, Terranova Ranch, Member and Chair
David Bunn, PhD, Resources Agency, DOC, Member
David Mallory, CalEPA, ARB, Member
Vicky Dawley, Tehama RCD, Member
Jocelyn Bridson, MSc, Rio Farms, Member
Jeff Dlott, PhD, SureHarvest, Member
Judith Redmond, Full Belly Farms, Member
Julie Alvis, Resources Agency, Member
Luana Kiger, MSc, Subject Matter Expert
Doug Parker, PhD, Subject Matter Expert

1. Introductions
   Chair Cameron
2. Minutes from previous meeting
   Chair Cameron
3. Healthy Soils Initiative and Program
   Dr. Joshi
   • Update on program and new funding
   • Proposed program timeline for program implementation
4. The State Water Efficiency and Enhancement Program (SWEEP)
   Scott Weeks
   • Update on program and new funding
   • ARB QM methodology
   • Proposed program timeline for new funding
5. DWR-CDFA Joint Pilot Project
   Carolyn Cook and Martin Berbach (DWR)
   Bailey Smith (ARB)
   • ARB QM methodology
6. Habitat Exchange Program
   Environmental Defense Fund
7. Public Comments on SWEEP
   Chair Cameron
8. Next meeting and location
   Chair Cameron

Amrith (Ami) Gunasekara, PhD, CDFA Liaison to the Science Panel
All meeting facilities are accessible to persons with disabilities. If you require reasonable accommodation as defined by the American with Disabilities Act, or if you have questions regarding this public meeting, please contact Amrith Gunasekara at (916) 654-0433.
More information at: http://cdfa.ca.gov/Meetings.html and http://www.cdfa.ca.gov/EnvironmentalStewardship/Meetings_Presentations.html
UPDATE: FUNDING

- CDFA appropriated $7.5 million in FY 2016-17 to develop and administer a new incentive and demonstration program on the CA Healthy Soils Initiative from the Greenhouse Gas Reduction Fund.

- Funds must be encumbered by June 30, 2018 and expended/liquidated by June 30, 2020 (AB 1613, Section 13).
UPDATE: QUANTIFICATION METHODOLOGY FOR GHG EMISSION REDUCTIONS

- ARB, in collaboration with CDFA, is evaluating COMET-Planner, published research, assessment reports and other possible approaches to develop a quantification methodology for the Healthy Soils Incentives Program.
  - Process is ongoing.
  - QM tool will have a public comment period.

FRAMEWORK PROPOSED FOR DISCUSSION: INCENTIVES PROGRAM TENTATIVE TIMELINE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ESTIMATED DATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program framework development including Quantification Methodology</td>
<td>September – November 2016</td>
</tr>
<tr>
<td>Public Stakeholder Meetings for Program Design Feedback</td>
<td>November 2016 – January 2017</td>
</tr>
<tr>
<td>Development of grant solicitation</td>
<td>February – April 2017</td>
</tr>
<tr>
<td>Grant solicitation released and Grant Application Workshops</td>
<td>May 2017</td>
</tr>
<tr>
<td>Applications proposals due</td>
<td>June 2017</td>
</tr>
<tr>
<td>Proposal evaluation (Technical Review)</td>
<td>June – September 2017</td>
</tr>
<tr>
<td>Announce grant awardees</td>
<td>September 2017</td>
</tr>
<tr>
<td>Project Implementation to begin</td>
<td>October 2017</td>
</tr>
</tbody>
</table>
EFA SAP MEETINGS PROPOSED TO GET FEEDBACK ON PROGRAM DEVELOPMENT

- 4 Meetings in January, March, May and July 2017 to discuss program framework development and receive feedback.

- Proposed dates: 3rd Thursday of the month.
  - January 19, 2017 – Sacramento
  - March 16, 2017 – Location TBD
  - May 18, 2017 – Location TBD
  - July 20, 2017 – Location TBD

PROGRAM CONTACTS

Geetika Joshi, Ph.D.
Senior Environmental Scientist
Geetika.Joshi@cdfa.ca.gov

Amrith Gunasekara, Ph.D.
Science Advisor to CDFA Secretary
Manager, Office of Environmental Farming and Innovation
Amrith.Gunasekara@cdfa.ca.gov

Visit us at: https://www.cdfa.ca.gov/oefi/healthysoils/
Subscribe for updates: https://www.cdfa.ca.gov/subscriptions/#environmental
Send comments to: cdfa.oefi@cdfa.ca.gov
SWEEP UPDATE

EFA
SCIENTIFIC ADVISORY PANEL

November 18th 2016

Scott Weeks
Environmental Scientist

SWEEP BACKGROUND

• $10 million: Emergency Drought Legislation Bill - SB 103 signed by Governor Brown on March 1, 2014

• $10 million: AB 91 allocated additional funds March 27, 2015


“...to invest in irrigation and water pumping systems that reduce water use, energy use and greenhouse gas emissions.”
SWEEP AUTHORITY

• Environmental Farming Act of 1995
  Division 1, Part 1, Chapter 3, Article 8.5, Sections 560-568, Section 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”

PROJECT TYPES

Water Conservation
  • Sensors for Irrigation Scheduling (weather, soil or plant based)
  • Micro-Irrigation or Drip Systems

AND

GHG Reductions
  • Fuel Conversion
  • Improved Energy Efficiency
  • Low Pressure Systems
  • Variable Frequency Drives
  • Reduced Pumping
MOST RECENT ROUND OF FUNDING – SWEEP ROUND I

FUNDING
- $16 million awarded
- $9.5 million in matching funds

ACREAGE
- 128 projects
- 27,300-acres impacted
- 213-acres average project size

BENEFITS
- GHG Reductions: 5,635 MT CO₂e/yr
- Water Savings: 22,267 ac-ft/yr

USDA-NRCS TECHNICAL ASSISTANCE WORKSHOPS

23 Workshops
11 Organizations
$50,000 Funding
These Fresno Technical Assistance Workshops were taught in three languages (Hmong, Spanish, and English) Incorporated Univision TV and directly impacted 60 individuals.

AWARDED PROJECT EXAMPLE

Henry Pruitt Anderson, III SWEEP Project
$150,000 - Tulare CA

- 80 Acres of almonds
- Changing from flood to drip irrigation
- Installation of soil moisture sensors and weather stations
- Solar array and VFD and flowmeter

- Estimated Water Savings of 23.9 acre in/year/acre
- GHG Savings of 0.0130 MT CO2e/year/acre
COLLABORATION WITH RESOURCE CONSERVATION DISTRICT

• Contracted with the RCDs to conduct onsite project verifications

• RCDs verify projects were implemented in accordance with the Grant Agreement SOW and take photos of project components

Brian Hockett, NW Kern RCD

CONTRACTED STATEWIDE with RCDs
128 Projects for Verification

RCD Partners
1. Butte County
2. Coastal San Luis
3. East Merced
4. East Stanislaus
5. Greater San Diego
6. Loma Prieta
7. Monterey County
8. North West Kern
9. San Joaquin
10. Santa Cruz
11. Sloughhouse
12. Sonoma
13. Tehama County
14. Upper Salinas Las Tables

# SWEEP Projects
- 16 - 20
- 10 - 15
- 5 - 9
- 1 - 4
SWEEP 2016 Round II

2nd solicitation of total $40 million ~ $21 million

• Announced the application period in June 2016
• Completed August 5th 2016

• Solicitation changes include: the use of an updated GHG Quantification Methodology and GHG Calculator developed by CA Air Resources Board.
  http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/quantification.htm

• Technical assistance workshops were be made available to applicants thanks to funding from USDA NRCS
  https://www.cdfa.ca.gov/oeef/sweep/docs/2016-C DFA-NRCSTechnicalAssistanceWorkshops RFP.pdf

SWEEP 2016 Round II

• 268 submitted grant applications
• Totaling $34,330,134
• Average amount requested is $128,000

• 126 incomplete Applications
• Totaling $5,276,629
• Average amount requested is $42,000
SWEEP 2016 Round II

• Of the 268 submitted applications 207 had required information to go to Technical Review

• After Technical Review
  • Total potential Acres: 36,470 Acres
  • Total potential GHG reductions: 11,453.5 MTCO2e
  • Total Funds Requested: $26.2 Million
  • Total Funds Matched: $14.4 Million

APPLICATION REQUIREMENTS

• Applicants must establish a baseline water use and GHG emissions from the current system and project savings due to the project. Supporting documentation is required including:
  • Energy bills
  • Water Use Calculator Tool
  • Pump Tests

• Awardees must maintain records for 3 years and agree to verifications site visit
Background

- ARB is required by statute to develop quantification methods (QM) for Greenhouse Gas Reduction Fund projects. QMs provide a mechanism to estimate the GHG reductions from project implementation.

- Quantification Methodology Principles:
  - Apply at the project-level.
  - Align with the project measures proposed for funding.
  - Estimate GHG emission reductions from direct, on-site energy savings.
  - Default values provided, where applicable

- Updates made for FY 2016-17 to improve usability and address comments from applicants, reviewers, and CDFA.
Resources Available
https://www.arb.ca.gov/cc-quantification

- Document + Excel-based tool to guide users in applying the methodology
- Quantification assistance available – questions about the tool can be directed to GGRFprogram@arb.ca.gov
- Open for comment today (Nov 18 – Dec 2)

GHG Emission Reductions

- Calculator estimates GHG emission reductions from on-farm reductions in energy use.
- This energy use reduction correlates to a reduction in pumping demand; pumping demand can be a result of:
  - Replacing inefficient pumps and motors;
  - Repairing systems leaks;
  - Reducing amount of water delivered to the system; or
  - Changing to less-carbon intensive fuels, including renewable energy.
- The QM incorporates each of these measures to estimate post-project energy use and reports estimated GHG emission reductions.
QM Updates for FY 2016-17

- Overall pumping efficiency
- Usability
  - Simplified inputs for total project cost and total project acreage.
  - Ranch/Field name by sheet.
  - Inputs replaced with default values for project life and VFD efficiency.
- Groundwater depth limits
- NRCS Water Savings Tool

<table>
<thead>
<tr>
<th>Input Data</th>
<th>Pre-Project</th>
<th>Post-Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field or Ranch Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Irrigated Project Area (acres)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total GGRF funds requested ($)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Rated Horsepower (hP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational Hours (hr) (if Known)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Emissions Factor</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Pump and Motor Enhancement and Replacement</td>
<td></td>
<td>This Section required for all applicants</td>
</tr>
<tr>
<td>System Pressure (ft)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Discharge pressure (ft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Pumping Efficiency (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pumping depth (ft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friction losses (ft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you installing a VFD?</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Irrigation System Enhancement (for systems utilizing pumps)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water savings (from NRCS) (%)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Fuel Conversions and Renewable Energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewable energy capacity (kW)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New fuel type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Emissions Factor</td>
<td>N/A</td>
<td>No change</td>
</tr>
<tr>
<td>Fuel conversion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversion Factor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
AB 1613 BUDGET ACT 2016

• Appropriates 65,000,000 to CDFA from GHGRF
  • $7,500,000 for SWEEP

SWEEP

• Propose to reduce total grant award amount from $200,000 to $100,000
• CDFA hopes to fund ~50-80 projects from this funding cycle

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PROPOSED DATES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request for Applications released</td>
<td>January 2017</td>
</tr>
<tr>
<td>Grant Application Workshops</td>
<td>January - February 2017</td>
</tr>
<tr>
<td>Applications Due</td>
<td>February 2017</td>
</tr>
<tr>
<td>Application Review period</td>
<td>February - April 2017</td>
</tr>
<tr>
<td>Announce grant awardees</td>
<td>May 2017</td>
</tr>
<tr>
<td>Project Implementation begins</td>
<td>May 2017</td>
</tr>
</tbody>
</table>

*Subject to change

STAKEHOLDER FEEDBACK

Suggested improvements to SWEEP

• Maintain Technical Assistance

• Simplify the Quantification Methodology
  • Create a web form
  • Develop simplified QM for applications under $50,000

• Coordinate with the Healthy Soils Program
  • Encourage and allow for applicants to apply for both funding sources
MEDIA PROJECT

- Producing videos that highlight SWEEP
- Highlight large and small farms as well as innovative projects
- Increase SWEEP’s visibility

Thank you for the time and your attention

Scott Weeks – Environmental Scientist, CDFA
Scott.Weeks@cdfa.ca.gov
Carolyn Cook – Senior Environmental Scientist, CDFA
Crystal Myers – Office of Grants Administration, CDFA
Sarah Weaver – Office of Grants Administration, CDFA
Bailey Smith - Air Resources Engineer, ARB
Amrith (Ami) Gunasekara – Manager, OEFI, CDFA
Agricultural Water Use Management Program & SWEEP

A Joint Department of Water Resources and Department of Food and Agriculture Project
Update to the EFA Science Advisory Panel
November 18, 2016

DWR's Role in Agricultural Water Management

- The Department of Water Resources (DWR) is responsible for managing and protecting California’s water.
- DWR works with other agencies to benefit the state’s people, and to protect, restore and enhance the natural and human environments.
- Responsible for the conveyance of water to farmers through irrigation districts
- Implementation of SBX7-7, Water Conservation Act of 2009
Proposition 1 (DWR)

- For 2015, $33 million was budgeted for agricultural water use efficiency grants to implement Proposition 1 §79746(a)(2).
- $3 million will be available for ag water suppliers for joint grant with CDFA to implement a pilot project targeting agricultural water supplier water use efficiency improvements in conjunction with on-farm improvements.
- 50% Cost Share is required for all projects unless Disadvantaged Communities (DAC) or Economically Distressed Areas (EDA) status is claimed and documented.

CDFA’s Role in Agricultural Water Management

- The State Water Efficiency and Enhancement Program (SWEEP) began in 2014 to incentivize on-farm water conservation and GHG emission reductions from irrigation systems.
- Department of Water Resources and State Water Control Board are key partners in the development of the program.
SWEEP (CDFA)

- **$10 million**: Emergency Drought Legislation Bill - SB 103 signed by Governor Brown on March 1, 2014

- **$10 million**: AB 91 allocated additional funds March 27, 2015

- **$40 million**: Budget Act of 2015, Item 8570-001-3228

- **$7.5 million**: Budget Act of 2016, Item 8570-101-3228

  - $3 million have been set aside for this joint program with DWR to invest in irrigation and water pumping systems that reduce water use, energy use and greenhouse gas emissions.

The Joint Program

The grant funding provided in this joint program is intended to address multiple goals including:

1) Water use efficiency, conservation and reduction
2) Greenhouse gas emission reductions
3) Groundwater protection
4) Sustainability of agricultural operations and food production.

It is also anticipated that there will be benefits to water and air quality, groundwater security, surface water conservation, and improved nutrient management and crop health through this program.
The Joint Program

A program to:

1. Incentivize the pressurization of the delivery of water to farms
2. Facilitate the use of surface water on farms where currently groundwater is the main source for irrigation
3. Incentivize efficient on-farm irrigation systems that increase water use efficiency and reduce greenhouse gases
4. Encourage the use of on-farm water management tools such as soil moisture sensors, plant sensors and weather stations.

The Joint Program - DWR
The Joint Program - CDFA

Funded by DWR
Prop 1 funding - $3 million

The Joint Program and Funding

Conveyance
Funded by DWR
Prop 1 funding - $3 million

Farms
Funded by CDFA
GGRF - $ million
Application Process

1. One application from agricultural water supplier with farmer applications included
2. Show significant decrease in use of on-farm groundwater pumps to reduce GHGs
3. Water and GHG savings to be quantified by agricultural water supplier through the use of a GHG Calculator developed by the CA Air Resources Board

Quantification Methodology for CDFA Sweep - DWR (Prop 1) Joint Project for FY 2015-16 (PDF)
CDFA SWEEP - DWR (Prop 1) Joint Project GHG Emission Reduction Calculator for FY 2015-16 (xlsx)
Background

- ARB is required by statute to develop quantification methods (QM) for Greenhouse Gas Reduction Fund projects. QMs provide a mechanism to estimate the GHG reductions from project implementation.
- Quantification Methodology Principles:
  - Apply at the project-level.
  - Align with the project measures proposed for funding.
  - Estimate GHG emission reductions from direct, on-site energy savings.
  - Default values provided, where applicable
- Solicited public comment

Resources Available

https://www.arb.ca.gov/cci-quantification

- Document + Excel-based tool to guide users in applying the methodology
- Water supplier completes the QM on behalf of the growers.
- Quantification assistance available – questions about the tool can be directed to GGRFprogram@arb.ca.gov
DWR Joint Project QM

- Calculator estimates net GHG emission reductions from the reduced energy use as a result of the project.

- The energy use considered as a part of the QM:
  - Elimination of on-farm pumping;
  - Irrigation delivery system enhancements (including pressurization);
  - Changing to less-carbon intensive fuels, including renewable energy.

- Water supplier completes the QM on behalf of the growers.

DWR Joint Project Calculator

https://www.arb.ca.gov/cci-quantification
## DWR Joint Project Calculator

**California Air Resources Board (ARB)**

Greenhouse Gas Emission Reduction Calculator for the
California Department of Food and Agriculture (CDFA)

State Water Energy Efficiency Program (SWEEP) DWR (Prop 1) Joint Project

Greenhouse Gas Reduction Fund

**Fiscal Year 2016-17**

### Agricultural Operation Information

<table>
<thead>
<tr>
<th>Name, Location</th>
<th>GGRF Funds Requested ($)</th>
<th>Engine / Motor Make</th>
<th>Engine / Motor Model</th>
<th>Engine / Motor Serial Number</th>
<th>Rated Horsepower</th>
<th>Annual Pump Fuel or electricity use (gallons, scf, kWh)</th>
<th>Fuel Type</th>
<th>Fuel Emissions Factor</th>
<th>Annual Emissions (MTCO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft Request for Applications Released</td>
<td>August 26, 2016</td>
</tr>
<tr>
<td>Public Comment Workshops</td>
<td>September 27, 28, &amp; 29, 2016</td>
</tr>
<tr>
<td>Public Comment Period Closed</td>
<td>September 30, 2016</td>
</tr>
<tr>
<td>Anticipated Release of Final Request for Applications</td>
<td>November/December 2016</td>
</tr>
<tr>
<td>Project Closeout</td>
<td>June 30, 2018</td>
</tr>
</tbody>
</table>
http://www.water.ca.gov/wuegrants/AgWUEPilot.cfm

Contacts
Carolyn Cook, CDFA Carolyn.Cook@cdfa.ca.gov
Bailey Smith, ARB
Fethi Benjemaa, DWR Fethi.Benjemaa@water.ca.gov
Marty Berbach, DWR Martin.Berbach@water.ca.gov
Amrith Gunasekara, CDFA Amrith.Gunasekara@cdfa.ca.gov