SWEEP

2018 State Water Efficiency and Enhancement Program

PROP 68 State of California Parks & Water Bond 2018

California Climate Investments Cap and Trade Dollars at Work

University of California Agriculture and Natural Resources

cdfa California Department of Food & Agriculture

Resource Conservation District of Tehama County

Workshop

- Timeline

  11:00- 9:00 - SWEEP Overview

Presenters

Mike Cahn, UCCE- Monterey County

Laura Murphy, RCD of Monterey County

Valerie Perez, UCCE- Santa Cruz County

Jim Leap, Santa Cruz Farm Bureau

Daniele Zaccaria - Agricultural Water Management Specialist, UC Davis

Khaled Bali - Irrigation Water Management Specialist, UCCE

About the Program

- A competitive grant application process administered by the California Department of Food and Agriculture (CDFA)
- Funded through Proposition 68
- Purpose is to provide financial incentives for California agricultural operations to invest in irrigation systems that save water and reduce greenhouse gas (GHG) emissions

Funding and Duration

- SWEEP funding is authorized by Budget Act of 2018
- $20 million available
  - Two solicitations are planned
- Project Grant Amounts: Not to exceed $100,000
- Project Duration: 18 months

  September 2019 – March 2021

Solicitation Timeline

Release Request for Grant Applications (RGA)	December 2018
CDFA grant application workshops and webinar	January 2018
Grant applications due	March 8th 2019
Announce and award funding	Spring 2019

https://www.cdfa.ca.gov/oefi/sweep/

SWEEP Website and Resources

- Budget
- GHG Calculator
- Irrigation water savings assessment tool
- Videos
- Previously awarded project
- FAQ

https://www.cdfa.ca.gov/oefi/sweep/

Eligibility

California farmers, ranchers and Federal and California Recognized Native American Indian Tribes are eligible to apply.

- The irrigation project must be on a California agricultural operation.
- For the purposes of this program, an agricultural operation is defined as row, vineyard, field and tree crops, commercial nurseries, nursery stock production, and greenhouse operations producing food crops or flowers as defined in Food and Agricultural Code section 77911.
- An agricultural operation entity cannot receive a total cumulative SWEEP award amount of more than $600,000.
- Applications cannot build upon any previously funded SWEEP projects directly affecting the same Assessor's Parcel Numbers (APNs).
- An applicant must be at least 18 years old.
- Project must save water and reduce GHG.

Exclusions

- Academic University research institutions and state governmental organizations are not eligible for funding.
- SWEEP funding cannot be combined with NRCS EQIP to fund the same components

Priority Funding

Applicants with a minimum technical review score of 30 will receive funding priority.

1. Benefits to Severely Disadvantaged Communities (SDACs)

http://www.parksforcalifornia.org/communities

2. Socially Disadvantaged Farmers as defined by the Farmer Equity Act of 2017

"Socially disadvantaged group" means a group whose members have been subjected to racial, ethnic, or gender prejudice because of their identity as members of a group without regard to their individual qualities. The Farmer Equity Act of 2017 identifies the following as socially disadvantaged groups: African Americans; Native Indians; Alaskan Natives; Hispanics; Asian Americans; and Native Hawaiians and Pacific Islanders

Severely Disadvantage Community (SDAC)

Defined as a community whose annual household income is below 60% of the statewide average

http://www.parksforcalifornia.org/communities

Project Types

- Improved irrigation water management
- Soil, Weather, Plant Sensors
- Micro-irrigation
- Improved energy efficiency - Pump replacement or retrofit
- Fuel conversion – Including renewable energy installations
- Variable frequency drives
- Low pressure systems
- Reduced Pumping
- Other projects that combine water savings and GHG reductions

Program Requirements

- Only submit one application using the operation's legal business name and unique tax identification number. If submitting as a sole proprietor, use the last four digits of the individual's social security number
- Cannot build upon any previously funded SWEEP project affecting the same Assessor's Parcel Number(s)
- Must include flow meters or demonstrate actual water will be measured with existing flow meters or by the water supplier

Program Requirements

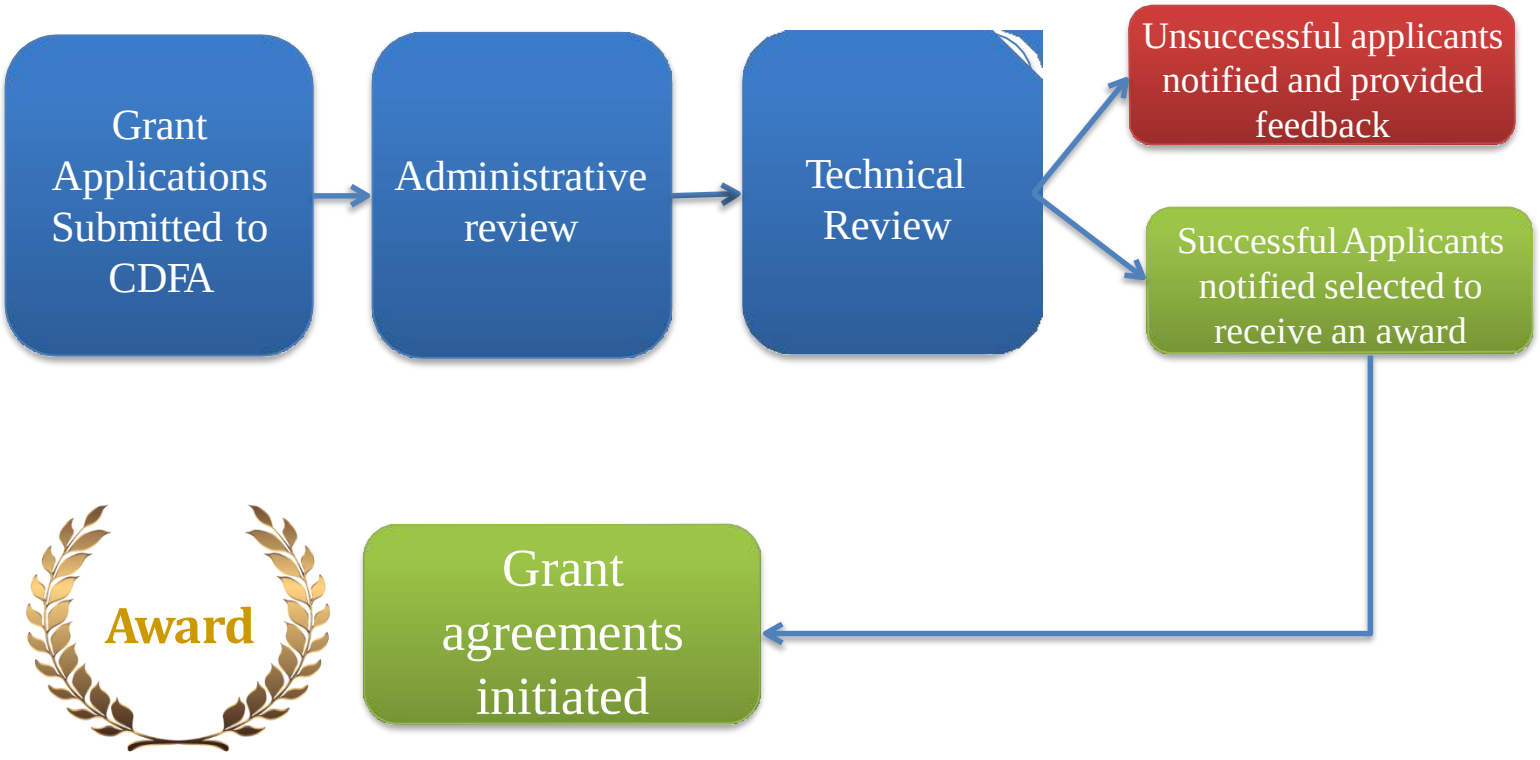
- Must use the SWEEP Irrigation Water Savings Assessment Tool to estimate water savings
- Must use the Air Resources Board GHG Quantification Methodology and GHG Calculator Tool
- SWEEP GHG Calculator Tool is intended to assist applicants in determining GHG reductions from estimated on-farm energy savings as a result of project implementation
- To complete this tool, applicants must attach a pump efficiency test from existing irrigation pumps impacted by the proposed project and provide additional supporting documentation such as baseline energy records and water savings calculator.

Program Restrictions

SWEEP grant funds cannot be used to:

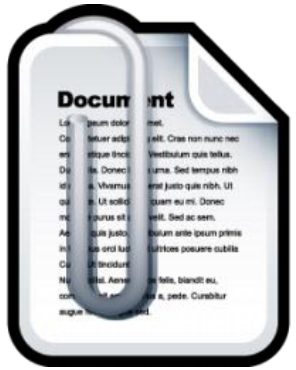
- Expand existing agricultural operations (i.e., additional new acreage cannot be converted to farmland)
- Install new groundwater wells or increase well depth
- Test experimental technology or perform research
- Pay for engineering costs associated with the project design, development and planning
- Lease weather, soil and irrigation water based sensors for irrigation scheduling
- Purchase tools and equipment with a useful life of less than two years

Solicitation Process



Application Attachments

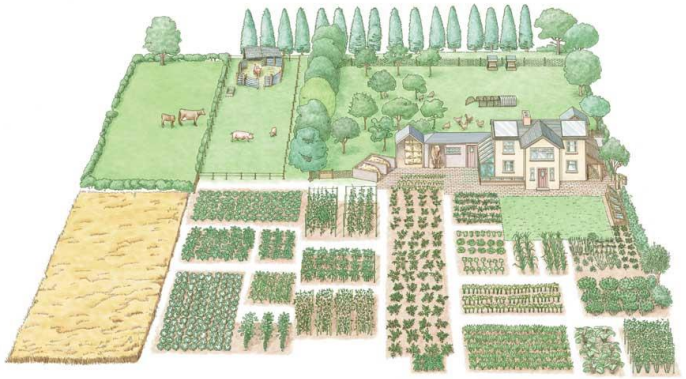
- Project design
- Completed Budget Worksheet
- Solar system quote if the applicant is proposing a solar
- Completed SWEEP Irrigation Water Savings Assessment Tool
- Completed ARB GHG Calculator Tool
- Twelve consecutive months of baseline GHG emission documentation for any pumps that are impacted by the project (e.g., fuel receipts or utility bills)
- Pump efficiency tests and pump specification documents as required by the ARB Quantification Methodology.

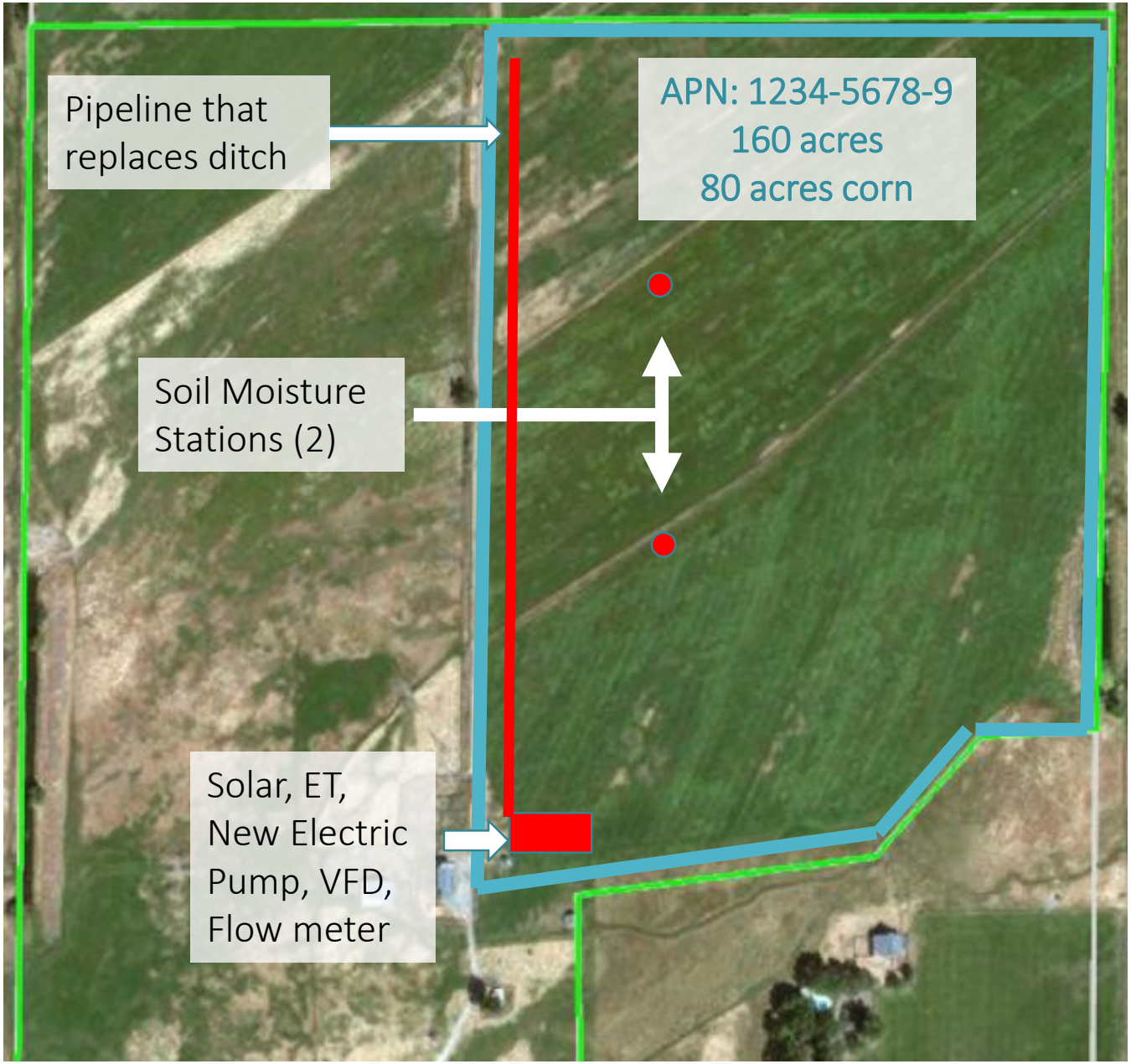


Project Design

Project designs must include the following, as applicable:

- Labeled Assessor's Parcel Numbers;
- Detailed schematic of the locations of proposed or improved infrastructure and technology including irrigation piping, reservoirs, pumps, and sensors;
- Pertinent agronomic information, such as the crop and water distribution uniformity value of the irrigation system;
- Holistic project overview using aerial imagery software (e.g., online or electronic mapping tools).





Example of project design

Budget Worksheet

Itemize all allowable costs related to project in categories

- Supplies
- Equipment
- Labor
- Other

Must be consistent with project design

Use the USDA NRCS EQIP Payment schedules as a guide, to the extent feasible, to determine reasonable costs

See the Draft Request for Applications for a list of allowable and unallowable costs

Budget

BUDGET CATEGORY	Irrigation System Improvements		$0.00	Irrigation Water Management		$0.00	Pump and Energy Improvements		$0.00
	Include all supplies, equipment, labor and other costs in the appropriate rows related to Irrigation System Improvements. This project type can include costs such as the drip or microsprinkler system or central pivot irrigation, etc.			*Include all supplies, equipment, labor and other costs in the appropriate columns related to Irrigation Water Management and Scheduling. This section can include costs such as flowmeter, soil moisture sensors, ET sensors, weather station, telemetry, etc and one year of subscription fees if needed.*			*Include all supplies, equipment, labor and other costs in the appropriate rows related to Pump and Energy Improvements. This project type can include costs such as installing a new motor, retro-fitting pump / bowl, VFD, etc.*		
	Description	QTY	Subtotal	Description	QTY	Subtotal	Description	QTY	Subtotal
$0.00 Total Supplies									
SUPPLIES: *Itemize cost to purchase materials (<$5,000/unit) necessary for project implementation with an acquisition cost of less than 2 year.*									
$0.00 Total Equipment									
EQUIPMENT: *Itemize cost to purchase equipment (≥$5,000/unit) necessary for project implementation.*									

https://www.cdfa.ca.gov/oefi/sweep/docs/2018-SWEEP-BudgetWorksheet.xlsx

SWEEP Irrigation Water Savings Assessment Tool

Field or Ranch Name:

Impacted Acres:

Predominant Soil: Sand, Loamy Sand, Sandy Loam, Fine Sandy Loam, Loam, Silt, Clay Loam, Clay

Crop: Alfalfa, Almonds, Apple, Artichokes, Asparagus, Avocado, Barley (planting 11/30), Barley (planting 4/30)

Baseline, Township, Range: Humboldt, Mt. Diablo, San Bernadino; 21S, 22S, 23S, 24S; 15E, 16E, 17E, 18E

Practice:
- SURFACE IRRIGATION (Under optimal conditions (lined ditch, tailwater recovery, good DU))
- SURFACE IRRIGATION (With an Unlined ditch)
- SURFACE IRRIGATION (With a leaky pipeline)
- SURFACE IRRIGATION (With a Low DU)
- SURFACE IRRIGATION (Without a tailwater recovery system)

Estimated "before" water use 105.0 Ac-in/Ac

ET Zone 16

Notes:
The outputs of this tool are intended as estimates only for the purpose of understanding the potential for various irrigation practices and management techniques to save water.

Before and after practice water use estimated as crop ET adjusted by appropriate system efficiencies. Water provided by effective rainfall and water required for other beneficial uses are not considered because the effect on water savings is negligible.

Data Sources:
Crop ET from NRCS CA Consumptive Use database, representative planting and harvesting dates, UC crop coefficients and CIMIS normal ETo data.

"Predominant Soil" menu: If the actual infiltration rate of a soil at a practice site is significantly different than would be expected for its texture, then select a soil texture that best represents the actual infiltration rate.

For a more detailed explanation of how this tool works, see the "**Background Info and Assumptions**" tab.

Instructions | **Before** | After | Water Savings Estimate | Background Info and Assumptions

https://www.cdfa.ca.gov/oefi/sweep/docs/IrrigationWaterSavingsAssessmentTool.xlsm

GHG Calculator Tool & Support

Application must include:

A completed copy of the GHG Calculator Tool

An explanation of inputs used in the calculator

GHG supporting documents (pump tests, pump specifications, energy records)

- Actual baseline GHG emission value provided in an application must be supported by documentation (i.e., on- farm energy use records).
- Must cover at least twelve months from the prior peak irrigation and growing season.
- A pump efficiency test and information on pump/motor specification must also be attached.

*NOTE: * denotes a value that was Assumed or Provided by Customer*	**Measured Pump Condition**	**Assumed Condition After Retrofit**	**Notes**
1. Overall pumping efficiency:	**57 %**	**67 %**	
2. Nameplate Horsepower:	100.0 hp	100.0 hp	
3. Motor Efficiency:	92 %	92 %	
4. Actual Motor Input Horsepower:	107.3 hp	108.1 hp	
5. Motor loaded at:	98 %	99 %	
6. Flow rate (gpm):	1,710 gpm	2,000 gpm	
7. Pumping Level (ft):	20 ft	21 ft	
8. Discharge Pressure (psi):	53 psi	53 psi	
9. Total Dynamic Head (feet):	142 ft	143 ft	*Rounded TDH = line 7. + (2.31 x line 8.)*
10. Acre-feet Pumped/yr:	314.85 af/yr*	314.85 af/yr*	*Same af/yr AFTER*
11. Average Cost per kWh:	$0.134 /kWh*	$0.134 /kWh*	*Same $/kWh AFTER*
			Estimated Savings from Retrofit
12. Estimated Total kWh per Year:	80,060 kWh/yr	68,970 kWh/yr	11,090 kWh/yr
13. Hours of Operation/yr:	1,000 hr/yr*	855 hr/yr	145 hr/yr
14. Kilowatt-hours per acre-foot:	254 kWh/af	219 kWh/af	35 kWh/af

Pump test example

- Overall Pumping Efficiency (OPE)
- Horsepower

California Air Resources Board
Greenhouse Gas Emission Reduction Calculator for the
California Department of Food and Agriculture
State Water Energy Efficiency Program
Greenhouse Gas Reduction Fund
Fiscal Year 2016-17

General Project Information		
Input Data	Pre-Project	
Field or Ranch Name		
Pump fuel or electricity use (gallons, scf, kWh)		
Fuel type		
Fuel Emissions Factor	#N/A	
Pump and Motor Enhancement and Replacement - This Section required for all applicants		
Input Data	Pre-Project	Post-Project
Motor Rated Horsepower (hP)		
Operational Hours (hr) (if Known) - If unknown, leave cell blank		
Overall Pumping Efficiency (%)		
System Pressure (ft)	User may override system pressure if known.	User may override system pressure if known.
Pumping depth (ft)		
Discharge pressure (ft)		
Friction losses (ft)		
Are you installing a VFD?	N/A	
Irrigation System Enhancement (for systems utilizing pumps)		
Input Data	Pre-Project	Post-Project
Water Savings (SWEEP Water Savings Tool) (%)	N/A	
Fuel Conversions and Renewable Energy		
Input Data		Post-Project
Renewable energy capacity (kW)		
New fuel type		
Fuel Emissions Factor		#N/A
Fuel conversion		No change
Conversion Factor		1

https://www.cdfa.ca.gov/oefi/sweep/docs/GHG_CalculatorTool.xlsx

Review and Evaluation Process

Multiple Levels of Review:

- Administrative Review – Internal
- Technical Review – External

CDFA will select applications for funding based upon the following:

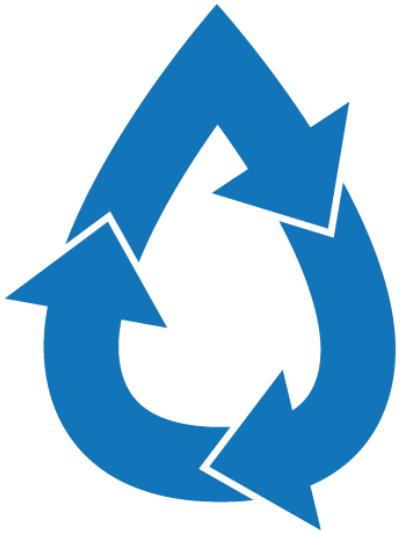
- Score provided by technical reviewer including Number of additional considerations
- Level of water savings (per acre)
- Level of GHG reductions (per acre)

Scoring Categories

Scoring Criteria	Maximum points
Merit and Feasibility	12
Estimated Water Savings	12
Estimated GHG Savings	12
Budget	8
Additional Considerations	6
Total	50

Additional Considerations

- Previously unawarded applicant
- Provision of cost share
- Commitment to irrigation training
- Reduction of groundwater pumping in a critically over-drafted groundwater basin
- Implementation of soil management practices
- Storm water capture and reuse, use of recycled water - *NEW



How To Apply

Working on a new application platform

- Applicants will access the application from the SWEEP webpage
- Log in to access application and submit
- https://www.cdfa.ca.gov/oefi/sweep/

<u>Have on hand:</u>

- Project design
- Budget
- Water Calculator
- GHG Calculator
  - Pump test
  - 12 months energy records

Awardee Requirements

If selected for an award, execution of the Grant Agreement is conditional upon applicants agreeing to the following program requirements:

- Pre-Project consultation conducted by a CDFA Environmental Scientist to confirm project information and discuss implementation plans. During the pre-project consultation the awardee will provide an assessor's map and/or aerial map of impacted acreage to verify the location and acreage of the project;
- Post-project verification site visit conducted by a CDFA Environmental Scientist, or in partnership with a local RCD, to evaluate the completed project;
- Post-project quantification conducted by a CDFA Environmental Scientist or a third-party representative to evaluate project outcomes;
- Expectation to use and maintain the installed system for a minimum of 10 years.

STATE WATER EFFICIENCY & ENHANCEMENT PROGRAM

The State Water Efficiency and Enhancement Program (SWEEP) provides financial assistance in the form of grants to implement irrigation systems that reduce greenhouse gases and save water on California agricultural operations. Eligible system components include (among others) soil moisture monitoring, drip systems, switching to low pressure irrigation systems, pump retrofits, variable frequency drives and installation of renewable energy to reduce on-farm water use and energy.

Solicitation Documents

SWEEP is Now Accepting Applications! Applications are Due March 8th 2019 by 5 pm PST.

- **Click Here to APPLY**
- **Request for Grant Applications**
- **Frequently Asked Questions – Updated 1/18/19**
- **Flyer (English) | (Spanish) | (Portuguese) | (Punjabi) | (Hmong)**

ITEM	TIMEFRAME
Notification of funding (solicitation release)	December 28, 2018
Grant Applications Due	March 8, 2019
Review Process	March – June 2019
Announce and Award Funding*	June 2019
* Subject to change.	

CDFA Workshops

EMAIL SUBSCRIPTIONS

Sign up for Email Notifications

PROGRAM STATUS

OPEN
The SWEEP Program is currently accepting applications

RESOURCES

Budget Worksheet
SWEEP Irrigation Water Savings Assessment Tool
GHG Calculator Tool
GHG Quantification Methodology
Critically Overdrafted Groundwater Basins
Irrigation Training Resources
Community Fact Finder

SWEEP VIDEOS

Climate Smart Agriculture: Rossow Farms

CDFA has conducted three informational workshops. A link to the webinar is found below.

- **Recorded Technical Workshop Webinar**
- **SWEEP Technical Workshop Presentation (PDF)**

Technical Assistance

CDFA has contracted with technical assistance providers to assist individuals interested in applying for SWEEP. Some providers will conduct regional workshops. Contact a provider in your area for more information.

- **List of Technical Assistance Providers (PDF) – Updated on 1/24/19**
- **How to Apply to the California State Water Efficiency and Enhancement Program**
- **On Farm Water Use Efficiency: Irrigation Management Practices That Save Water and Save Energy**

Farms

Episode 1: SWEEP has had a positive effect on Seth Rossow's family owned farm, Rossow Farms which is located in Merced, San Joaquin County. (4:06)

Previous 1 of 4 Next

RECIPIENT INFO

Recipient Resources

2014 Grant Awards (Round 1) (PDF)

2014 Grant Awards (Round 2) (PDF)

2015 Grant Awards (PDF)

2016 Grant Awards (Round 1) (PDF)

2016 Grant Awards (Round 2) (PDF)

2017 Grant Awards (PDF)

Start Here
Also FAQ

https://www.cdfa.ca.gov/oefi/sweep/

California Department of Food and Agriculture 2018 State Water Efficiency Enhancement Program (SWEEP) Frequently Asked Questions Updated January 18, 2019

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

General Questions

1. Is the maximum grant award $100,000 per agriculture operation or per application?
The maximum grant award is $100,000 per agricultural operation, which is determined by the operation's legal business name and associated tax identification number.

2. Can an agricultural operation submit more than one application?
No, agricultural operations can only submit one application using a unique tax identification number. An agricultural operation is determined by its distinct legal business name and associated tax identification number provided in an application.

3. Can an organization apply on behalf of the agriculture operation?
Yes, organizations may submit an application on behalf of the agricultural operation. However, the application must include the agricultural operation's legal business name and tax

Tips for Strong Projects

- Review SWEEP YouTube videos
- FAQ
- Review previously funded projects
- Multiple practices (soil moisture, CIMIS, Plant health indicators, etc)
- Reasonable cost ($/acre) for the crop and region
- Only approved practices to conserve water
- Simple explanation (energy bill for several fields combined; fraction of cost)
- Matching funds (cash, consider in-kind matching ex. Labor cost +OH)
- Reasonable water savings and GHG reductions (ton/ac)

Tips for Strong Projects

- Review SWEEP YouTube videos
- FAQ
- Review previously funded projects
- Multiple practices (soil moisture, CIMIS, Tule, Plant health indicators, etc)
- Reasonable cost ($/acre, $100k/12 ac vs $100k/50 ac)
- Only approved practices to conserve water
- Simple explanation (energy bill for 3 fields while applying for one field) fraction of cost
- Matching funds (cash, consider in-kind matching ex. Labor cost+OH, other sources like grants)
- Reasonable water savings and GHG reductions (ton/ac)

UC ANR Statewide Irrigation Training

Almond, Citrus, Grapes, Pistachio, and Walnut

Khaled M. Bali and Daniele Zaccaria

kmbali@ucanr.edu

Irrigation Water Management Specialist

UC Kearney Agricultural Research and Extension Center

Parlier, CA

Agricultural Water Management Specialist, UCD

UC CE | University of California
Agriculture and Natural Resources | Cooperative Extension

Irrigation Training

- Team effort (UC, USDA, crop commodities, CDFA, DWR, and other partners)

- ANR proposal- Identified 76 irrigation training topics and over 40 experts

- CDFA Specialty crops proposal- Targeting five commodities (almond, citrus, grapes (all), pistachio, and walnut)

- Statewide training (+8 locations for ANR, major production regions)

Certificate of Completion

Flow Measurement Devices and Methods

Clarifying reporting requirements, understanding appropriate flow meters, measurement accuracy, and calculating and reporting volume from flow data

Is Awarded To

First Name and Last Name

Santa Rosa, California

May 7, 2018

Allan Fulton
Allan Fulton
Irrigation and Water Resources Advisor
UC ANR

Larry Forero
Larry Forero
Livestock and Natural Resources Advisor
UC ANR

Khaled Bali
Khaled Bali
Irrigation Water Management Specialist
UC ANR

Daniele Zaccaria
Daniele Zaccaria
Agricultural Water Management Specialist
UC Davis

University of California
Agriculture and Natural Resources

ANR-Statewide Irrigation Training Survey

Please return the survey to Khaled Bali, Email: kmbali@ucanr.edu, fax: 559-646-6015, or mail: 9240 South Riverbend Ave, Parlier, CA 93648

Instructions:

We are asking for your help in identifying irrigation training needs to help you manage irrigation and water related training needs at your farm, please circle the irrigation training topics of most interest to you in Table 1 below. If you are interested in more specific irrigation training activities, please circle the topics of interest to you in Tables 2-6.

Table 1. General irrigation training topics

	General topic	Specific training topic are presented in Tables 2-6
1	Irrigation systems	13 topics (Table 2)
2 3	Flow measurements	2 topics (Table 2)
4	Evaluation and troubleshooting of irrigation systems	8 topics (Table 2)
5	Irrigation scheduling	13 topics (Table 3)
6	Soil moisture methods	2 topics (Table 4)
7	Plant stress methods	3 topics (Table 4)
8	Crop residue management	1 topic (Table 4)
9	Water quality	2 topics (Table 5)
10	Soil salinity	6 topics (table 5)
11	Drainage systems and shallow water table	2 topics (Table 5)
12	Reuse of recycled water	3 topics (Table 5)
13	Climate change	2 topics (Table 6)
14	Greenhouse Gas Emissions	1 topic (Table 6)
15	Alternative energy sources for pumping	1 topic (Table 6)
16	Groundwater recharge	2 topics (Table 6)
17	Drought tolerant crops	3 topics (Table 6)
18	Variable rate irrigation	1 topic (Table 6)
19	Deficit irrigation strategies	3 topics (Table 6)
20	Groundwater and environment	3 topics (Table 6)

*Languages: English (and Spanish if needed based on the region needs assessment)

2. Please list additional irrigation training needs not listed in this survey

3. Irrigation training needs in languages other than English, if so please list the language here:

Questions

Technical assistance available upon request