



COLORADO
Department of Agriculture

From: Colorado Department of Agriculture
To: Colorado Senate Agriculture and Natural Resources Committee
Colorado House Agriculture, Livestock, and Water Committee
Re: SB21-235 ACRE3 and Soil Health Stimulus Funding Update
Date: January 14, 2022

Overview

SB 21-235 provided \$5M in General Fund to support existing programs and initiatives within the Colorado Department of Agriculture, the Advancing Colorado Renewable Energy and Energy Efficiency (ACRE3) program, and the Soil Health initiative.

ACRE3 - 3M

- \$3M General Fund was transferred to the Agriculture Value Added Cash Fund in FY 2020-21 with roll forward authority to FY 2021-22
 - SB 21-235 requires that at least \$150,000 be allocated to research, guidance, technical assistance, feasibility studies and projects related to agrivoltaics.
 - The Department is allowed 2% administrative costs

Soil Health - 2M

- \$2M General Fund was appropriated to the Department in FY 2020-21 with roll forward authority to FY 2021-22 and FY 2022-23 though the bill requires all funds to be spent by December 31, 2022.
 - The bill also requires at least \$1 million of the funding to go to grants to Conservation Districts

Program Backgrounds

ACRE3

The ACRE3 program promotes the development and implementation of renewable energy and energy efficiency projects for Colorado's agricultural producers and processors under the direction of the Colorado Agricultural Value-Added Development Board. The ACRE3 program bases its current strategic plan and award review process on a series of studies conducted by CDA and the Colorado Energy Office between FY2012 and FY2014. The Board meets with the program administrator twice a year to review the program status and budget, address administrative questions, and approve program strategies recommended to the Board for the coming year.

Every grant application requires a detailed technical report that evaluates the energy and economic performance of the proposed project. The Colorado Energy Office or ACRE3 grants provide these reports at no cost to agricultural producers. The program administrator thoroughly reviews all applications and refers qualifying projects to an ad hoc Awards Review Committee for approval. The Awards Review Committee usually includes at least two members of the Value-Added Board. The program administrator then administers the grant contracts for all approved projects and coordinates technical assistance and project management.

The ACRE3 program is funded solely through legislative appropriations to the Agriculture Value Added Cash Fund. CDA has authorized all funds in this account to be used specifically for the ACRE3 program. The previous revenue stream was eliminated through a sunset in FY 2016-17 and the remaining cash reserves have been supporting ACRE3 programs and staff since that time. Given that this is an existing program and the stimulus funding was deposited into the existing program's account, the new funding is allowing the Department to expand funding opportunities for additional agricultural renewable energy and energy efficiency projects for FY 2021-22.

In the ACRE3 program, the requisite renewable energy feasibility studies and energy efficiency audits provide detailed estimates of the energy and cost savings of the projects funded by the stimulus money. The benefits are verified upon project completion, including

- Annual, on-farm energy savings, and renewable energy generation
- Annual energy cost savings and the economic value of renewable energy generation
- Other benefits, when possible, such as improvements to water quantity, water quality, soil quality, value-added, customers served, etc.

GHG emissions reductions are estimated from these numbers using the USDA's COMET Farm COMET-Energy tool. This tool links to an EPA database of GHG emissions from power plants that supply power to the project ZIP code to estimate the emissions reductions from the energy offsets provided by the project.

As ACRE3 projects are completed, CDA will report stimulus funding expenditures together with these metrics sorted by project, project type, producer type (dairy, greenhouse, irrigation, poultry, etc.), and cumulative benefits.

Soil Health

The Colorado Association of Conservation Districts in 2018 and 2019 voted to support CDA's Soil Health Initiative, which started as a grassroots effort in partnership with the State's Conservation Districts. The Colorado Department of Agriculture (CDA) spent more than two years engaging in a robust stakeholder process through the leadership of the Colorado Collaborative for Healthy Soils (CCHS) to gather input from agricultural groups and individual farmers and ranchers from across the state.

The Saving Tomorrow's Agricultural Resources (STAR) Program is the basis for a Colorado soil health program framework. In its basic form (with no incentive payments), STAR is a self-assessment tool that addresses local resource concerns and adapts to regional differences while maintaining comparability across states. STARplus, offered through the conservation districts and other eligible entities, uses stimulus and grant money incentives. The STAR Science Committee spent ten months developing Field Assessment Forms and scoring sheets for soil health practices in Colorado's diverse cropping systems. Field forms and scoring sheets are currently available for eight crop production types and grazing lands. Colorado State University's (CSU) Soil and Crop Sciences Department will monitor water quality and soil moisture-holding capacity for the next three years as affected by the soil health program. The COMET Planner tool will be used to calculate climate benefits. In addition, CSU and CDA will collaborate to create an inventory of participating farms and ranches. Due to the long-term nature of soil health improvements, CDA and CSU will report on aggregated benefits of enhanced cropping methods after three years.

The Department has actively engaged in numerous federal and private grant applications that the stimulus funding is leveraging to help fund soil health work in Colorado. Funding that the Department is managing related to Soil Health includes:

- \$2.4M from USDA's Natural Resources Conservation Service Conservation Innovation Grant (CIG) program
- \$450K from the Colorado Department of Health and Environment and the Environmental Protection Agency (Section 319)
- \$298K from the Colorado Water Conservation Board Water Plan Grant
- \$265K from the National Fish and Wildlife Foundation's Conservation Partners Program (CPP)
- \$75K from the Gates Family Foundation

State Stimulus Spending

ACRE3

Projects funded under the ACRE3 program can take years to complete with the required feasibility studies, financing, permitting, engineering, construction, and commissioning. To support quicker turnaround on projects to meet the bill timelines, the Department, with approval of the Value-Added Board, increased grant cost-share up to 65% of project cost and increased the maximum project award from \$100,000 to \$500,000.

Our interpretation of SB-235 indicates that the \$3,000,000 must be disbursed by June 30, 2022. Under this constraint, most of the projects that are currently eligible for this stimulus funding are in jeopardy due to supply chain delays, lack of equipment and labor, and the inability to complete the projects by June.

CDA requests the approval of roll-forward authority to FY 2022-23 for stimulus funding in the Value Added Cash Fund and an extension of the deadline to disburse the ACRE3 stimulus funding through Dec 31, 2022, to ensure the successful completion of these projects.

As of Jan 14, 2022, there are 18 ACRE3 projects under contract for \$791,282 in grants. In addition, the ACRE3 program has received 40 applications for 85 renewable energy and energy efficiency projects. Out of this number, 18 projects are under contract, and 55 projects have pending agreements or are under final review, representing an additional \$2,354,365 in eligible grants

In total, these applications represent more than \$6.7 million in total project costs. However, the available information shows that these projects would save 40,648 MMBtu per year in energy savings (more than 4.8 million kWh in electricity alone) and \$375,425 per year in energy cost savings. In addition, they represent more than 5,994 short tons per year in CO₂e reductions.

The following is a summary of projects currently under contract.

Energy Efficiency

- Altman Plants, \$331,893 grant (pending)
Upgrade two boilers, 49.1 MMBH total, in a large greenhouse. This project will save 11,383 MMBtu per year in natural gas consumption.
- BrushCo Farms, \$271,455 grant
27.0 MMBH boiler upgrade in a large greenhouse. This project will save 12,225 MMBtu per year in natural gas consumption.
- Bar 7 Ranch/Dannon Bolton, \$106,112 grant
1,610 ft, 12" irrigation pipeline. This is part of a 396-acre irrigation energy and water efficiency project that includes \$61,647 in EQIP funding from USDA-NRCS. The total project will save 307.4 MMBtu per year in net energy savings (diesel and electric).
- 3JF (John Fortmeyer Farm), \$20,162 grant
100 HP premium efficiency motor on irrigation pump and 100 HP Variable Frequency Drive. This project will save 164.9 MMBtu per year in electricity.

19 other agricultural energy efficiency grant contracts are in final review.

Irrigation Energy-Recovery Hydropower

- Lempka Family Farm, \$3,000 grant
Electrical control system engineering to support a 4.8 kW hydroelectric system that will be installed this Spring. An additional grant for project installation, including a 4,900-ft pipeline and on-site solar array, is anticipated for approximately \$100,000—annual electric energy savings 65.7 MMBtu/year. NRCS-EQIP provided additional funding.
- Ute Mountain Ute Farm & Ranch Enterprise, \$7,500 grant
Electrical control system engineering to support three hydroelectric systems, 48.3 kW total, that will be installed this Spring. An additional grant for project installation is anticipated for approximately \$100,000. Annual electric energy savings 474.2 MMBtu/year. NRCS-EQIP provided additional funding.

One other irrigation hydropower project grant is under final review.

Conventional Solar PV

- Eight feasibility studies, \$2,500 each (\$20,000 total)
Feasibility studies representing more than 3,000 kW of proposed solar electric projects. The eight applicants include: Great Western Dairy, HP Bar Ranch, Long Meadow Dairy, Long's Peak Dairy, Monte Vista Dairy, Native Hill Farm dairy, Strand Farm, and Sugar Hill Dairy.
- Native Hill Farm dairy, \$27,760 grant
15.6 kW solar PV array installation. Annual electric energy savings 85.1 MMBtu/year. Grants to install the other seven projects are in final review. These projects represent at least \$465,881 in pending grants. Most of these projects are at risk of not proceeding because supply chain delays prevent these projects from being completed within 12 months, let alone by June 2022.

Dairy Solar Hot Water Demonstration Projects

- Monte Vista Dairy, \$3,000 grant
Feasibility study to offset propane consumption for hot water needs in the milkhouse.
- Sugar Hill Dairy, \$3,000 grant
Feasibility study to offset propane consumption for hot water needs in the milkhouse.

Two other dairy solar hot water projects are under review.

Dairy Bio-digesters, manure management systems

The ACRE3 program is tracking more than 24 new dairy digester projects in Colorado that cost more than \$20 million each. According to discussions with the project developers and dairy operators, the dairies do not need assistance with the digester projects. Still, they need help with the cost of new manure management systems to support the digester projects. ACRE3 is reviewing grants for proposed manure management projects at eight dairies. Unfortunately, funding for these projects is in jeopardy due to timeline constraints.

Agrivoltaics

The ACRE3 program has been discussing grants for agrivoltaic projects at seven sites, including Jack's Solar Garden, Denver Botanic Gardens-Chatfield, a proposed community greenhouse project with agrivoltaics at the Southern Ute reservation, two large project sites in Weld County that are owned and operated by Silicon Ranch, and two large project sites in Weld County that are owned and operated by Cloudbreak Energy.

Grant contracts are in process for Jack's Solar Garden and Denver Botanic Gardens to install or bury crop irrigation lines and install a shed and produce storage building. In addition, the Silicon Ranch and Cloudbreak Energy projects would retrofit existing solar facilities to support forage production and host sheep or poultry at the sites. The existing facilities are 30 MW, 8.5 MW, 8.0 MW, and 2.5 MW.

Funding for the other projects is in jeopardy due to timeline constraints.

The following table shows the total number of project applications by category with eligible grant amounts and the estimated savings associated with the projects.

Project Category	Project Type	# of Proj ects	Total Grant Awards	CO2e reductions (s tons)	Energy Savings (MMBtu/yr)	Cost Savings (\$/yr)	Total Project Cost
Solar PV	Feasibility	8	\$ 20,000	N/A	N/A	N/A	N/A
Solar PV	Installation	8	\$ 465,881	4,078	14,598	\$236,404	\$ 4,269,657
Solar Hot Water	Feasibility	4	\$ 12,000	N/A	N/A	N/A	N/A
Solar Hot Water	Installation	4	\$ 200,000	TBD	TBD	TBD	TBD
Agrivoltaics	Installation	7	\$ 430,000	TBD	TBD	TBD	TBD
Biodigester	Manure Mgt	8	\$ 900,000	TBD	TBD	TBD	TBD
Hydropower	Technical Assist	3	\$ 13,500	N/A	N/A	N/A	N/A
Hydropower	Installation	5	\$ 207,090	152	543	\$ 18,313	\$ 680,794
Energy Efficiency	Installation	26	\$ 897,176	1,764	25,507	\$120,708	\$ 1,756,154
Total		73	\$3,145,647	5,994	40,648	\$375,425	\$6,706,605

The following table represents the initial plan proposed by CDA for spending the ACRE3 stimulus funding.

Category	Target Expenditure	Estimated # of Contracts
Admin 2% max	\$60,000	-
Agrivoltaics	\$150,000 (minimum)	5
Hydro - feasibility	\$130,000	26
Hydro - projects	\$1,300,000	20
Ag Energy Efficiency	\$340,000	17
Solar - feasibility	\$109,000	27
Solar - PV	\$280,000	7
Solar - Hot Water	\$100,000	5
Solar Walls	\$30,000	2
Bio-digesters	\$500,000	1
Contingency	\$1,000	-
Totals	\$3,000,000	110

Soil Health

The Department's plan to spend the soil health funding is to:

- Provide a total of \$1,232,000, or up to \$62,000 per eligible entity to 17 conservation districts and three grower groups, to deliver the STARplus program to five local landowners each for a period of three years.
 - This funding includes:
 - Incentive payments for 100 producers
 - Capacity funds to provide technical assistance for STARplus
 - Capacity funds to run STAR/STARplus

- Spend \$93,750 as a grant match to leverage \$768,000 in USDA-NRCS funding to support 5 soil health specialists.
- Provide soil testing for 100 independent producers who wish to participate in the “STAR” program. This testing allows producers who are not connected with a conservation district or grower group to complete the STAR forms and receive a rating based on the cropping methods they employ.
- Grad student time (data collection / COMET, year-long half-time) to enter implementation data into COMETPlanner tool to generate climate mitigation impacts of STAR, conservation easements, and Matching Grants programs.
- \$50,000 in soil health testing equipment
- \$500,000 in grants for equipment (25 vouchers of \$20,000)
- \$50,000 to partner with the CSU Center for Science Communication to create an educational video on Colorado’s soil health priorities, successes, and partnerships