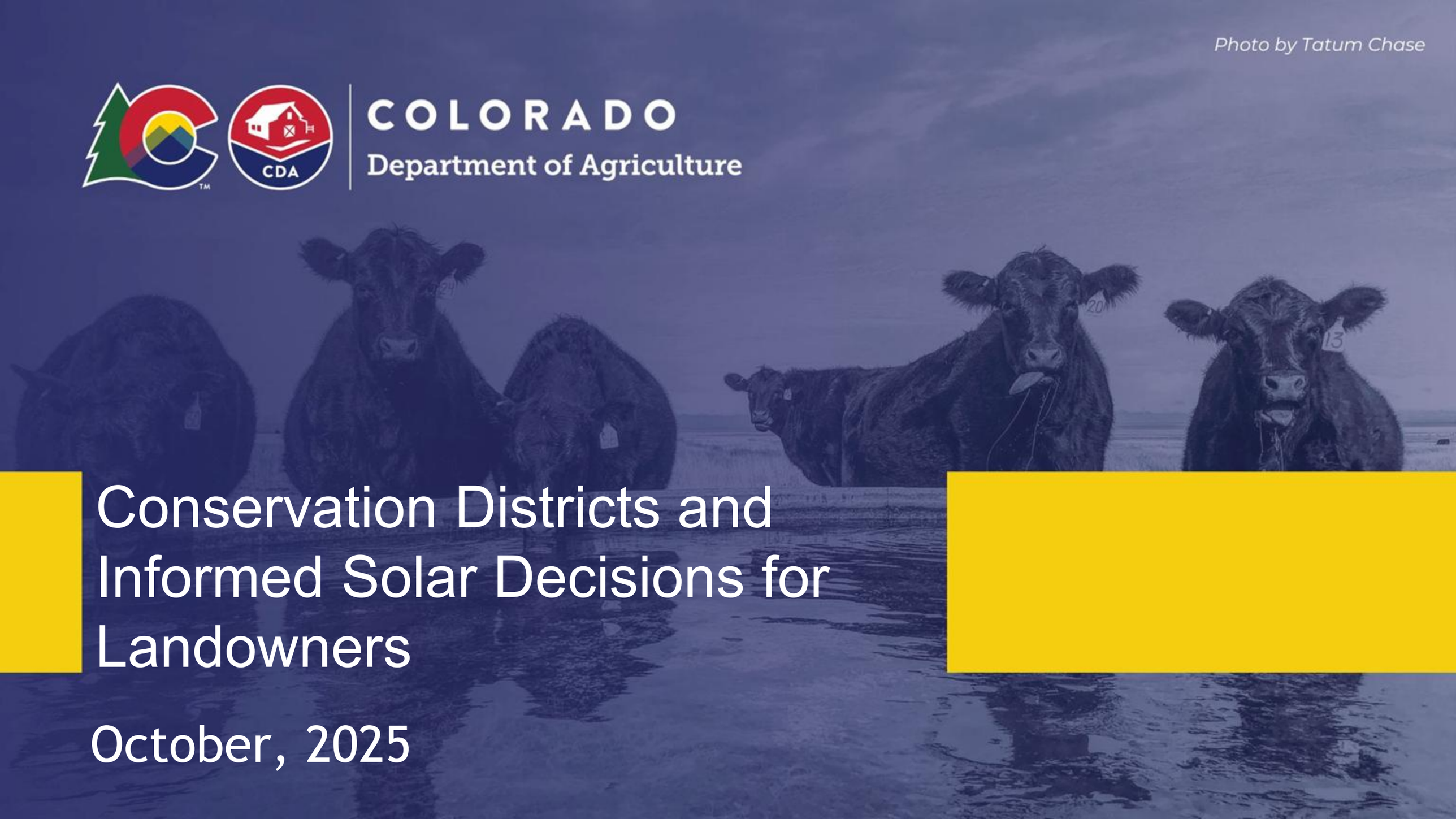


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Conservation Districts and Informed Solar Decisions for Landowners

October, 2025

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Photo: Colorado Agrivoltaic Learning Center

The Evolving Landscape of Land Use

Colorado is consistently ranked as one of the sunniest states in the U.S. Along with our high elevation and thin air, this makes Colorado a prime location for renewable energy.

- 10% of Colorado's energy comes from 4,200 megawatts installed solar capacity.
  - This is expected to double by 2030
- Goals from our Governor and passed state legislature are mandating fast adoption.

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Challenges of the Solar Industry

- **Loss of Agricultural Land.** Converting agricultural land for solar development can lead to loss of productive farmland.
  - **High Land Use:** Solar farms can use a lot of acreage to produce a lot of energy.
- **Costs**
  - **Initial Investment:** Significant upfront costs are associated with solar installation.
  - **Long-Term Maintenance:** Ongoing maintenance expenses can add to the overall cost.
  - **Decommissioning costs:** Who is responsible for removing the solar panels at the end of their lifespan or after a hail storm? Who will be responsible for their recycling?
- **Agricultural Impact.** Farmers may need to adjust crop selections as certain species might not thrive in shaded environments created by solar arrays.



Photo by CleanCyclers

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Opportunities for Solar & Agriculture

Siting & Management of Solar Arrays

- Solar arrays should be built in locations that minimize impact to working farms and rangeland
- Solar arrays can be built and managed to support native vegationation, wildlife habitat, and conserve soil
- It is a best practice for solar developers to have a remediation plan at the end of a project lifecycle
- **Conservation districts can work with land use planners and county commissioners to make sure solar developers do these best practices**

Agrivoltaics

- Solar arrays can be designed specifically to allow grazing or crop growing under the panels
- This creates multiple benefits (crops and energy) from the same parcel of land
- Some crops and livestock benefit from the shade created by the panels
- Agrivoltaics requires compromising from both the energy developer and the farmer/rancher.
- **Conservation districts can help farmers, ranchers, and landowners navigate agrivoltaic opportunities**

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Agrivoltaics Benefits

Dual Land Use

- Allows for continued agricultural activities like grazing or certain crop cultivation alongside energy generation.
- Enables the productive use of less suitable or depleted land.

Additional Income Generation

- Community Solar Gardens: Landowners can earn income by selling energy credits to commercial customers.
- Lease Payments: Leasing land for solar development provides a steady stream of income.
- Decreased Operating Costs: Reduced costs once the solar system is installed.

Improved Conditions

- Solar panels provide shade for animals and workers, offering protection from the sun.
- Improved soil health
- Improved water conservation



Photo by AgriSolar Clearinghouse

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The Colorado State Conservations Board 2024 Summer Board Meeting



Photo: CSCB Board and Staff, By Garth Schaefer

Recognizing producers are likely overwhelmed and unsure of what questions to ask.The CSCB set an objective: to connect landowners with local conservation districts for informed guidance on solar energy.

Recognizing the growing interest in renewable energy, The Colorado State Conservation Board (CSCB) focused its 2024 Summer meeting on visiting solar farms. This experience highlighted the vital role Conservation Districts play in land-use discussions.



Jack's Solar Garden, Owner and Executive Director, Byron Kominek, Photo by: Rakel Sanchez

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CSCB's Collaborative Approach

The board developed a letter and sent it to every partner advocating for collaboration with local Conservation Districts.

The board allocated $30,688.59 to help Conservation Districts host agrivoltaic tours and workshops.

Staff hosted informational “coffee hours” on grant opportunities and educational information.



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This letter, sent to all partners and stakeholders

- supports thoughtful energy development integrated with land use planning
- stresses the importance of long-term conservation
- encourages collaboration between local conservation districts and land-managing entities.

Marc Etchart
President
North Platte, White, Yampa Rivers Watershed Representative

Brian Neufeld
Vice President
Rio Grande River Watershed Representative

Maggie Hanna
Secretary
Upper Arkansas River Watershed Representative

Margaret Lenz
Lower South Platte, Republican Rivers Watershed Representative

Raymond Langstaff
Colorado, Gunnison-Dolores Rivers Watershed Representative

Emmett Jordan
Member-at-large, Governor's Appointee

Tammy Ridennoure
Lower Arkansas River Watershed Representative

Quint Redmond
Upper South Platte River Watershed Representative

Alysen Tarrant
San Juan Basin River Watershed Representative

December 19, 2024

Dear Conservation Partners,

The Colorado State Conservation Board (CSCB) is writing to express our support for thoughtful integration of energy development into land use planning. We believe careful implementation of all energy development can offer a sustainable solution that benefits both agricultural production and renewable energy generation.

However, the CSCB would like to emphasize the importance of long-term conservation planning in any development implementation strategy. It is crucial that these projects are developed with a comprehensive understanding of their potential impacts on soil health, water resources, wildlife habitats, and overall ecosystem functions for the future of all communities.

We believe collaboration between the local conservation districts and entities that own, plan, and manage land can help ensure that land development projects are designed and managed in a way that protects and enhances the long-term ecological health of Colorado's lands.

Conservation districts play a crucial role in ensuring the responsible and sustainable use of Colorado's land resources. These districts work closely with landowners, local communities, and government agencies to develop and implement conservation plans that address a wide range of environmental concerns. Their expertise in soil health, water management, and wildlife habitat preservation is invaluable in guiding land development projects towards outcomes that benefit both the environment and the economy. By promoting sustainable agricultural practices, protecting water resources, and preserving wildlife habitats, conservation districts help maintain the ecological balance necessary for the long-term health and prosperity of Colorado's communities.

The CSCB is committed to working to support responsible and sustainable land use practices in Colorado. Through careful planning and collaboration in partnership with the local conservation districts, we can successfully integrate energy development into our state's landscape while ensuring the long-term health of our natural resources.

Sincerely,

The Colorado State Conservation Board
C.R.S. 35-70-100

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The Conservation Districts Role

Conservation Districts serve as trusted local resources for land management, connecting landowners with new agricultural technologies and practices. To further support landowners, the board allocated $30,688.59 to Conservation Districts. This funding facilitated agrivoltaic tours and educational workshops, providing essential technical assistance and educational components to address landowner questions.



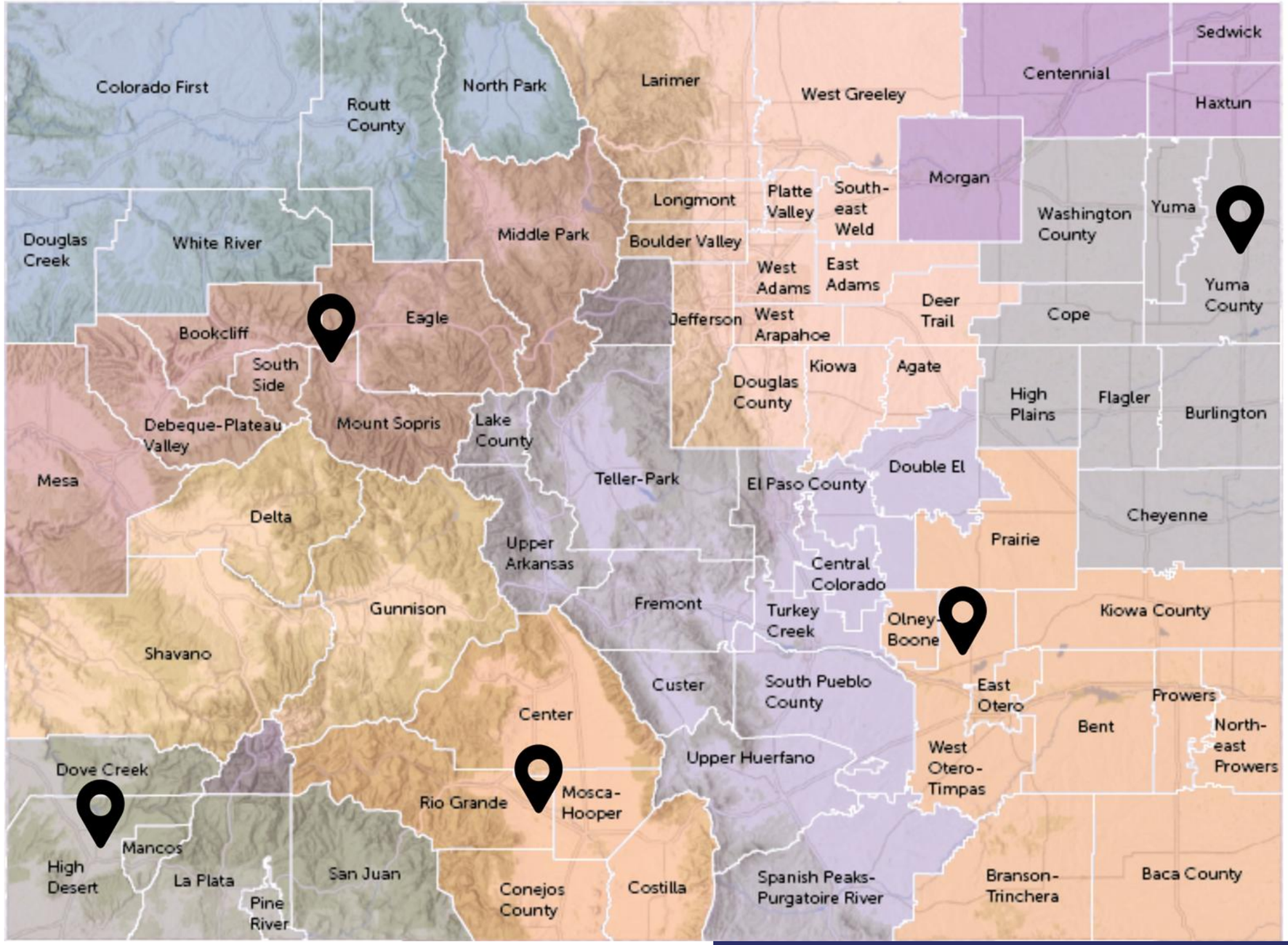


Photos by Garth Schaefer
L-R-Conservation Districts presenting to landowners on Agrivoltaics and Soil health

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Five conservation districts from diverse Colorado watersheds partnered with neighboring districts for the events:

- Center CD (Rio Grande),
- Bookcliff CD (Colorado),
- Olney Boone CD (Lower Arkansas),
- Yuma County CD (Republican),
- High Desert CD (San Juan).



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Center CD Workshop

Besides hosting a workshop they also set aside funding for legal/contract consultations for landowners who are approached by solar companies or are interested in converting



Photo by Garth Schaefer



LIMITED FUNDING AVAILABLE FOR LEGAL/CONTRACT CONSULTATION

8.45 INTRODUCTION / COFFEE
CSU EXT., CENTER CONSERVATION DISTRICT, COLORADO DEPT. OF AG.

9:15 REVEGETATION BEST PRACTICES
MANDY BENGTSON & NATE WOJCIK , SWCA

10:15 CONTRACTING WITH DEVELOPERS
ANGELA BURKE, PIVOT ENERGY

11:30 TRANSMISSION LINE UPDATE
COMISSIONER LORI LASKE, ALAMOSA COUNTY

12:00 LUNCH

12:30 SAGUACHE COUNTY UPDATE
SAGUACHE COUNTY COMISSIONERS

1:00 COMMUNITY VALUES SESSION
MADELINE WILSON & STEPHEN LAUER, CSU EXT.

1:45 ASK YOUR NEIGHBOR: LANDOWNER PANEL
MODERATED BY: CENTER CONSERVATION DISTRICT & CSU EXT.

COLORADO Department of Agriculture
SWCA ENVIRONMENTAL CONSULTANTS
Center Conservation District
COLORADO STATE UNIVERSITY EXTENSION
COLORADO STATE CONSERVATION BOARD

RSVP: MATTEA FREEL CENTERCD1@GMAIL.COM 719-754-3400 EXT. 3022

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High Desert CD Workshop

High Desert workshop is covering the basics of how agrovoltaics work, potential benefits for farmers and ranchers, and what the opportunities are in their region of Colorado.



Photo by the Colorado Agrivoltaic Learning Center



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Olney Boone CD Workshop

Partnering with neighboring districts, Olney Boone had a county commissioner panel, and a Q & A with an attorney on how to deal with Solar Contracts



Photo by the Colorado Agrivoltaic Learning Center

Agrivolt

Agrivoltaics involves the co-location and integrated use of land for both solar energy generation and agricultural purposes, such as crop farming or livestock grazing, on the same parcel of land.

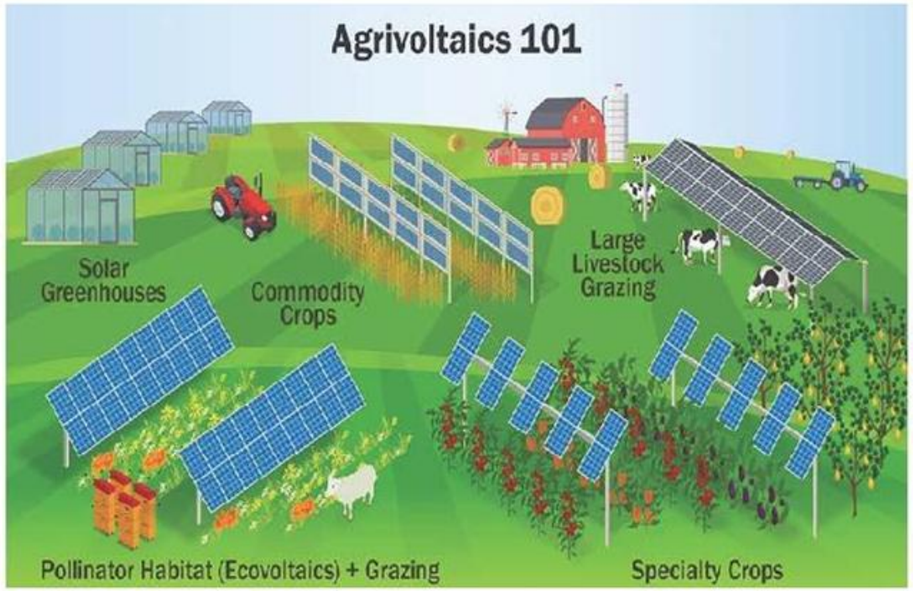
WHO: All Ag folks who are interested in learning more about farming and ranching with solar panels.

KEYNOTE: **Byron Kominek, Jack's Solar Farm**
Colorado Agrivoltaic Learning Center

WHAT: Agrivoltaics Workshop

WHRE: Cottonwood Links Golf Course, Fowler, CO

WHEN: October 22, 10:00 to 2:30



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Olney Boone CD Speaker- Byron Kominek

Byron Kominek, owner and executive director of Jack’s Solar Garden, was a highlight of the CSCB's June 2024 tour. Jacks Solar Garden, the most visited solar array in the USA, is a premier site for agrivoltaics. Facing the potential loss of his family farm, Kominek diversified his income streams to create this spectacular enterprise. His achievements demonstrate innovative approaches for producers to generate income.

- Education & Outreach: Offers educational tours, workshops, outreach, research sites, and webinars.
- Community Supported Agriculture (CSA): Provides fresh produce to the community.
- Energy Sales: Sells energy to residents, businesses, and local governments via Xcel Energy's Solar*Rewards Program.
- Low-Income Support: Donates 2% of electricity to low-income households through the Boulder County Housing Authority.
- Agricultural Partnership: Collaborates with Sprout City Farms to cultivate crops, supply food to the community, and train young farmers in agrivoltaic techniques.



Photo by Jacks Solar Garden

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Yuma County CD Workshop

In addition to hosting a workshop for Agrivoltaics, Yuma County developed a ‘concerns to consider and best practices’ document that they have shared with other districts on what to do if you are approached by a Solar company.



Photo by the Jacks Solar Garden

AGRIVOLTAICS 101 WORKSHOP

You’re invited! producers; county commissioners; city leaders; city & county planning commissions; and conservation districts.

Speakers:
Jeff Risley, Executive Director, Renewable Energy Farmers of America

Jordan Macknick, Lead Energy-Water-Land Analyst, National Renewable Energy Laboratory (NREL)

OBJECTIVE

- **WHAT IS AGRIVOLTAICS?**
- **AGRIVOLTAICS IN ACTION: GRAZING, SPECIALTY CROPS, POLLINATOR HABITAT**
- **CONSERVATION BENEFITS FOR RURAL AREAS**
- **KEY CONCERNS: SOIL EROSION, SOIL COMPACTION, WATER RETENTION, WEED CONTROL & INVASIVE SPECIES, WILDLIFE IMPACTS**
- **POLICY, PERMITTING, AND PARTNERSHIPS—WHAT TO KNOW IF PRODUCERS ARE APPROACHED ABOUT PROJECTS**

Lunch will be offered- Register in advance

247 N CLAY STREET
WRAY, CO 80758
970-332-3107 EXT. 9002
www.ycconservation.com

Conservation District Solar Farm Project Concerns

From a conservation district perspective, a new solar farm project brings both opportunities and concerns. While renewable energy aligns with long-term sustainability goals, conservation districts focus on the wise use and protection of natural resources, and that means thoroughly evaluating the potential impacts of land-use changes like solar installations.

Here are the key conservation-related concerns associated with new solar farm projects:

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1. Soil Health and Erosion

- **Concern:** Land clearing and grading can disturb soil structure, remove vegetation cover, and lead to wind or water erosion.
- **Implication:** Without adequate vegetative ground cover or soil stabilization, the site may experience soil degradation and runoff.

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2. Weed and Invasive Species Management

- **Concern:** Disturbed soils and reduced maintenance areas may become vectors for invasive weeds if not properly managed.
- **Implication:** Weeds can spread to adjacent farmland, rangeland, and natural ecosystems, requiring ongoing monitoring and control.

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3. Water Management

- **Concern:** Compaction, grading, and installation of impervious surfaces (e.g., inverter pads, access roads) can alter water infiltration and drainage patterns.
- **Implication:** Increased risk of localized flooding, sediment transport, or interference with natural hydrology and aquifer recharge.

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4. Impacts on Native Vegetation and Wildlife Habitat

- **Concern:** Solar farms can fragment or remove native habitats, particularly in grasslands, shrublands, or migratory corridors.
- **Implication:** Displacement of species, loss of biodiversity, and challenges for pollinators, birds, or threatened species.

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5. End-of-Life and Decommissioning

- **Concern:** Lack of long-term planning for site restoration after the solar array reaches the end of its useful life (usually 20–30 years).
- **Implication:** Risk of abandoned infrastructure, contaminated materials, or land left in a degraded state if decommissioning is not guaranteed.

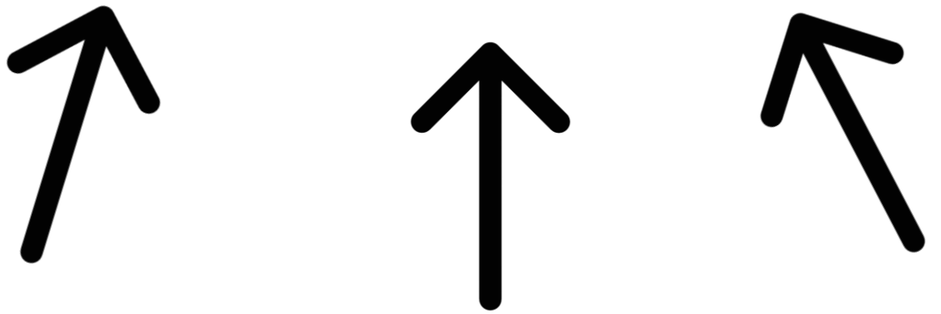
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6. Local Economic and Community Impacts

- **Concern:** While solar projects can bring economic benefits, there may be concern about who benefits, especially if projects are out-of-state owned or displace local agricultural jobs.
- **Implication:** Conservation districts often advocate for land uses that support local economies and community resilience.

Recommendations from a Conservation District Perspective:

- Encourage dual-use solar (agrivoltaics) that allows for grazing or pollinator habitat beneath panels.
- Require erosion and sediment control plans and native vegetation reestablishment.
- Ensure decommissioning bonds are in place to guarantee restoration.
- Involve local landowners and resource professionals early in the planning process.
- Coordinate with NRCS or local conservation planners for best management practices (BMPs).



Moffat County Planning Department
1198 W. Victory Way, Suite 107 Craig, CO 81625
www.moffatcounty.colorado.gov | 970-824-9148

BATTERY STORAGE FACILITY (BESS) CONDITIONAL USE PERMIT

APPLICATION SUBMITTAL REQUIREMENT

_____ Application form. (See attached).

_____ Project Narrative, see attached instructions.

_____ Sketch plan, see attached instructions.

_____ Elevation drawings of the proposed facility showing all structures, fencing, equipment, and other improvements related to the facility, including specific materials, placement and colors

_____ Dust and Wind Erosion Control Plans

_____ Weed and invasive species management Plan.

_____ Grazing, Farming and or Wildlife plan

_____ Storm water management and erosion controls: Please specify what permit(s) you are acquiring for your project. If your site is not regulated by a State or Federal Agency please document how you will protect your site and neighboring lands from storm water runoff and water erosion.

_____ Utility Company Interconnection Agreement. If proposing to interconnect to a utility company, copy of a "letter of intent to interconnect" or interconnection agreement signed by the utility company or cooperative.

_____ Alternatives Statement. Reasonable alternatives to the proposed location shall be adequately assessed, and the proposed action shall be consistent with the best interests of the people of the County and shall represent a balanced use of resources in the affected area.

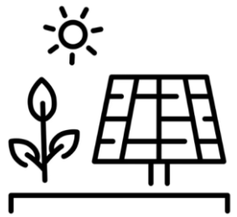
_____ Emergency Services Plan-Renewable projects should demonstrate ability to handle spill containment, fire and personnel emergencies within their project area.

_____ Statement of Transportation Construction Impacts, see attached instructions.

_____ Proof of approved Decommissioning-Reclamation Plan

_____ Landscaping Plan and/or Fencing Plan, if proposing encroachment into five hundred (500) residential setbacks for visual mitigation.

_____ Authorization form, if applicable. (See attached).



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Colorado First Conservation District board members worked with Moffat county planning department to update conditional use permit application for Solar Facility & Battery Storage!

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Conditional Use Permit (CUP) Application
Submittal Requirements with Soil Conservation in Mind

Wind, Dust & Erosion Control Plan

Grazing, Farming and/or Wildlife plan

Weed & Invasive Species Management Plan

Long-term Reclamation Plan

Moffat County Planning & Colorado First Conservation District
Soil Health Management Recommendations

Colorado Conservation Districts recommend revegetating disturbance areas rather than graveling or bare grounding site disturbance. Maintaining ground cover under wind turbines and solar panels offers numerous benefits, ranging from environmental conservation and improved energy production, to cost savings and enhanced community relations.

Manage soils more, by disturbing them less. Local area soil conservation agencies recommend minimal soil disturbance be utilized for affected areas, especially when disturbing new areas. The less soil is disturbed the more soil microbes and food webs, as well as other retained nutrients will survive to aid in vegetative growth.

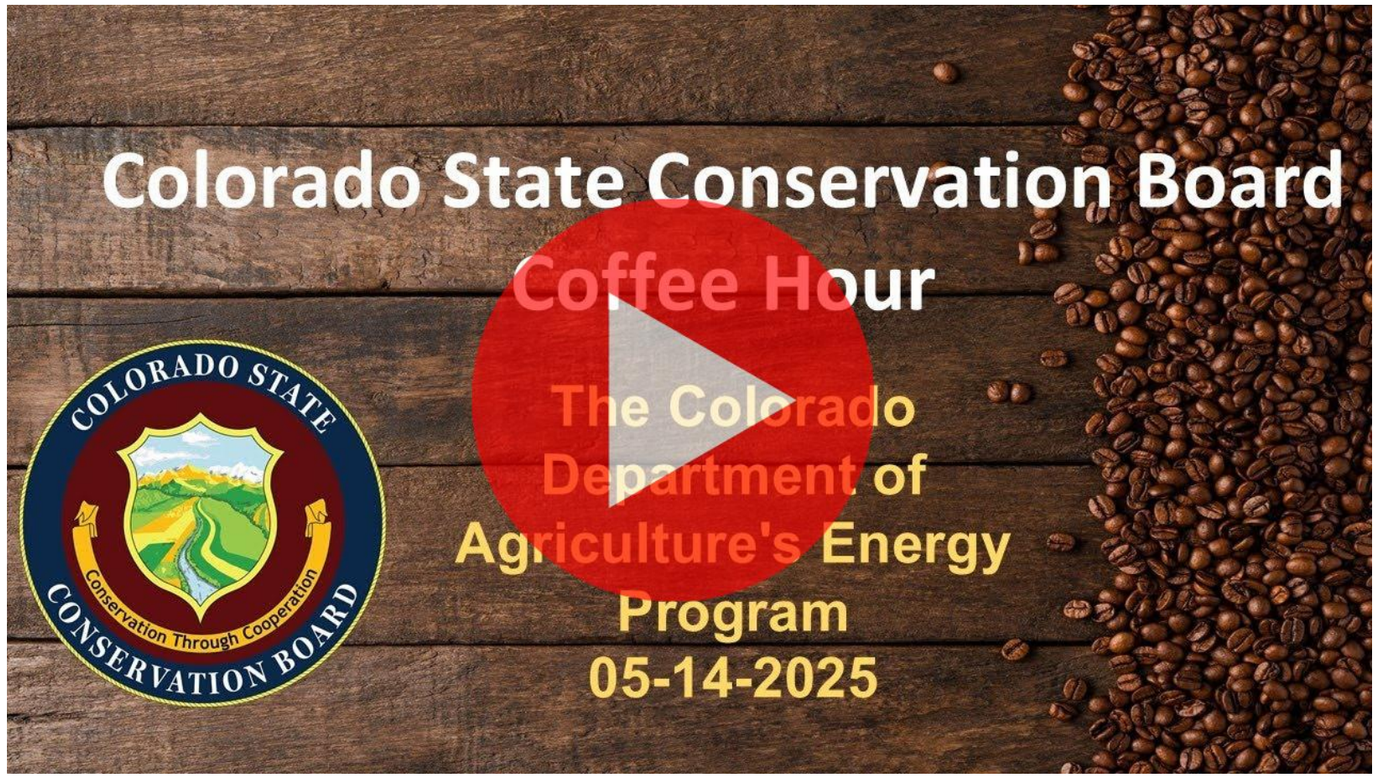
Keep plants growing throughout the year by utilizing a variety of species in your seed mix to continually feed the soil. One way to keep continual live plants/roots is through a crop rotation or cover crops to avoid fallow periods when the soil lies dormant for a period of time.

Keep the soil covered as much as possible to avoid surface water and/or wind erosion problems. Incorporating responsible ground cover practices is an important aspect of sustainable wind and solar energy development.

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The Colorado Department of Agriculture's (CDA) Agricultural Drought and Climate Resilience Office (ADCRO) offers renewable energy and energy efficiency programs. These programs help agricultural producers and processors reduce energy costs, improve business sustainability and profitability, and adopt climate-smart agricultural practices.

CSCB Staff hosted “coffee hours” on grant opportunities and educational information on CDA’s energy programs.



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CDA's ACRE3 Program

provides financial and technical assistance and education to help agricultural producers and processors cut energy costs, develop their own energy resources, and create markets for agriculturally derived energy and fuels.

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Colorado State Representative Karen McCormick, Colorado State Senator Chris Hansen, Agriculture Commissioner Kate Greenberg stand in agrivoltaic solar garden while Governor Jared Polis signs Senate Bill 23-092.

CDA's Agrivoltaics Research and Demonstration Grant

Senate Bill 23-092 established a $500,000 grant program for agrivoltaics in Colorado. These grants support producers and the clean energy transition by funding projects that study agrivoltaics' potential, benefits, and tradeoffs.

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Department of Agriculture

Photo by Flip Dalfonso

Thank you!

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Western Regional Field Specialist-Colorado
State Conservation Board
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