



## YOUR ENERGY COLORADO NEWSLETTER

Issue 76

June 2019

Welcome to the 76th issue of CSU Extension's 'Your Energy Colorado' Newsletter. The mission of Your Energy Colorado is to facilitate sustainable energy decisions in the state. As the name implies, we put the power to shape Colorado's energy future in **your** hands.

This newsletter gives the public and our partners updates on our work and its context among all things energy. Please forward this newsletter to anyone you think might be interested. Also feel free to send us your organization's energy-related news and events for listing in future newsletters. **And don't forget to follow us on social media to get energy tips, fast facts, and commentaries on emerging energy news.**



### 60 Farm Assessments for Solar Energy: Lessons Learned

Although farms make up a small percentage of the state's overall electricity use, electricity costs for essential activities such as irrigation can make up a large fraction of an individual farm's expenses. As such, installing solar has the potential to help make farms more profitable while reducing greenhouse gas emissions and stimulating economic activity in rural Colorado. In conducting 60 economic feasibility assessments for on-farm solar in Colorado (through our [Farm Assessments for Solar Energy](#), or FASE, program), CSU Extension has learned a thing or two about this potential.

First, it's important to understand that most utility electricity rates for agriculture have two components: energy and demand. Energy is power used over time and is measured (and billed) in kilowatt-hours (kWh). Demand refers to the peak power used over any 15-minute increment in a monthly billing period and is measured (and billed) in kilowatts (kW). Because of this structure, even though bills for farm activities such as irrigation may be large overall, the energy component may be limited. This is significant because solar can only be trusted to offset energy charges, not demand charges. (Imagine irrigating at night or on a cloudy day - the demand charge would be totally or mostly unaffected by solar power.) So, solar might be able to offset a portion of a farm's electricity bill, but not all of it.

Second, rural electric cooperatives must "true up" the solar electricity generated by a farm once per year. Even though any excess solar electricity generation can be rolled over on a monthly basis, at the end of a designated 12 month period that excess is

typically cashed out and paid to the customer at the utility's avoided cost of energy. The avoided cost of energy may be as low as 3 or 4 cents per kWh, versus a typical retail rate of 7 to 14 cents. When a utility trues up in March or April (as is common in order to maximize benefits for net metered *residential* customers), this can negatively impact irrigated farms. This is because irrigated farms only use electricity from spring through early fall. Therefore and solar electricity generated between say October and March (for example) will be credited at 3-4 cents, not 7-12 cents.

Another barrier to the economic feasibility of on-farm solar revolves around taxes. Many farms do not carry much (or any) tax liability and so would not be able to take advantage of the 30% federal tax credit. In addition, commercial solar in Colorado is generally exposed to property taxes and the farm business can no longer deduct as much in electricity expenses after solar.

On the plus side, grants available through USDA and the Colorado Department of Agriculture can help reduce upfront costs significantly. Largely because of these grants, the average farm studied over the last 30 economic feasibility assessments saw a 7.2% ROI and only 2 years of negative cumulative cashflow. (These are typically the years when a loan is still being paid off but after the financial incentives have been drawn down.) While only one participant in CSU's initial 30 assessments applied for (and received) a grant to install on-farm solar, 4 of this latest round of 30 have done the same.

To present these results, CSU Extension joined the Colorado Energy Office (CEO), CDA, and other partners on an ag energy roadshow. The roadshow aimed to educate ag producers and organizations about cost-effective opportunities for energy efficiency and renewables. Programs such as the CEO Ag Energy Efficiency program, the CDA Advancing Colorado's Renewable Energy & Energy Efficiency (ACRE3) program, and FASE were highlighted over a series of workshops on the western slope.



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## Solar Calculator and Payback Map Updated

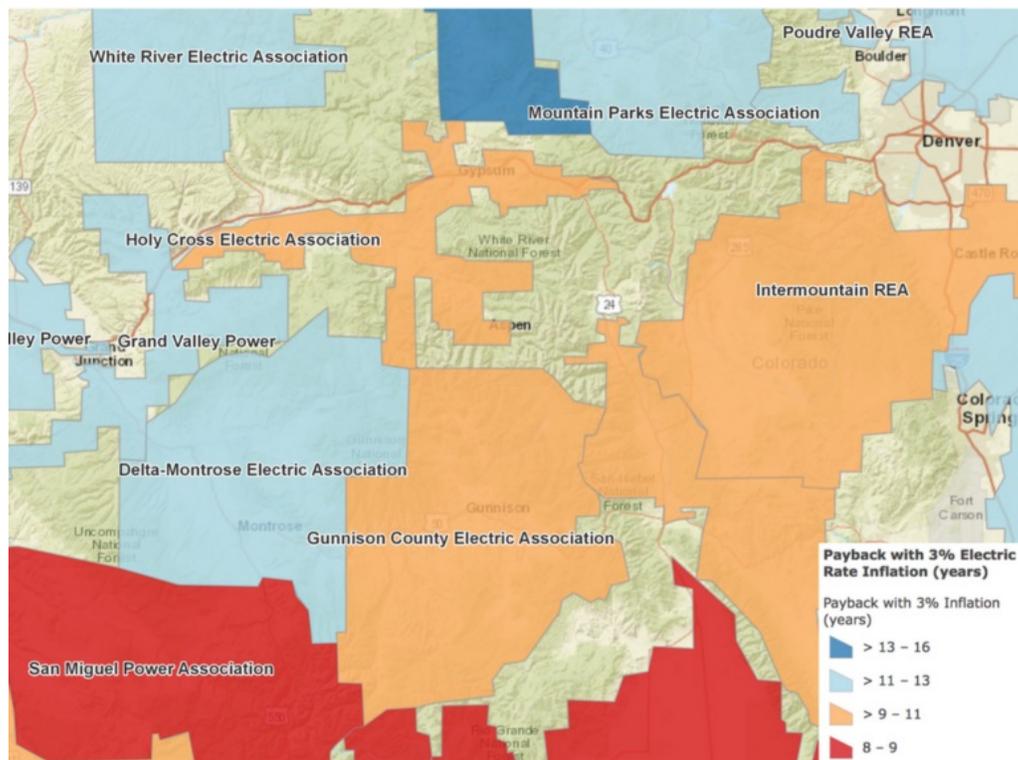
Last year, 470 solar assessments were conducted with CSU Extension's online solar calculator. To ensure that this tool remains relevant for those considering a solar

investing, we've gone through the annual update process. The current version of the calculator now contains the most recent residential electricity rates for Xcel, Black Hills, all rural electric cooperatives, and the largest municipal utility in the state (Colorado Springs Utilities). The calculator can be used by citizens or installers to provide in-depth financial results for a potential solar investment, including a 20-year cash flow table and graph, ROI, and a comparison of current monthly electricity bills versus bills "after solar". Inputs could be kept at simple default values or they could be used to customize results based on a certain rooftop orientation, loan terms, and more. The results page of the calculator also now includes a link to a list of contractors (including solar installers) maintained by the Colorado Energy Office.

As a companion to the updated calculator, we've also updated our Solar Payback Map of Rural Colorado with the most recent residential electricity rates for rural electric cooperatives. As in previous years, the map shows that the quickest paybacks for residential solar tend to be in southern Colorado where rates are generally higher and the solar resource is greater. Users can turn on or off different layers to see how solar investments play out in over 20 rural electric cooperative service territories in the state.

[Go to the solar calculator](#)

[Go to the solar payback map](#)



## 'Know Before You Go' Workshops Going Strong

CSU Extension's 'Know Before You Go' series of workshops on solar and electric vehicles continue to be popular throughout Colorado. A recent KBYG Electric workshop in Pueblo was hosted by the Renewable Energy Owners Coalition of America and attracted a capacity crowd of 70 existing and potential EV owners. In Steamboat Springs, our Know Before You Go Solar workshop hosted by the Yampa Valley Sustainability Council was also well attended. Upcoming KBYG workshops will be held in Centennial, Westminster, and Rifle - see the Events section of the newsletter for details!



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## Project Sneak Previews

### **Community Energy Assessment: Town of Hayden**

CSU Extension's energy program has received funds from the College of Engineering to host an intern for the summer. Sydney Hardacre will be conducting a community energy assessment (CEA) for the Town of Hayden, CO. Sydney will assess the energy use of public facilities in Hayden, conduct lighting assessments of those facilities and select small businesses, support a stakeholder meeting to gather input from community members on energy opportunities, identify potential funding sources for energy initiatives, and present findings to town leaders. Read more about previous CSU Extension community energy assessments [here](#).

### **Rural Colorado's Opportunities for Residential Electrification (R-CORE)**

Residential electrification offers Colorado an opportunity to reduce health and safety issues associated with indoor combustion while reducing carbon emissions associated with natural gas and propane heating. However, home electrification may or may not offer cost savings to consumers. Cold climate heat pumps (HPs) and heat pump water heaters (HPWHs) have not yet become established as reliable and proven. The availability of products and qualified installers may be limited in some parts of the state. CSU Extension's R-CORE project would provide residents, utilities, and other stakeholders with an overview of current and potential cost-effective opportunities for residential electrification in rural Colorado along with recommendations for growing the market for HPs and HPWHs. The study would build off the Southwest Energy Efficiency Project's [deep dive](#) into the potential for HPs and HPWHs in Denver (Xcel service territory).

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## Energy Fast Fact

### **Recent Colorado EV Legislation: *watch where you park!***

The 2019 session of the Colorado legislature resulted in the passage of numerous

energy-related bills. One of those bills extends a reduced tax credit for the lease or purchase of EVs to 2025. Another bill would penalize the owner of an internal combustion engine (ICE) vehicle if parked in a space designated for EV charging. ICE owners would be subject to a \$150 fine plus a \$32 surcharge. Better watch where you park!



[Read more: Colorado Public Radio's List of 2019 Energy Legislation](#)

## In the News:

- [Guzman Energy proposal would finance retirement of Tri-State coal plants, add 1.2 gigawatts of new wind and solar power, CleanCooperative.com, 5/28/19](#)
- [Colorado Is Entering A New Environmental Era...Maybe, Grace Hood, CPR, 5/13/19](#)
- [Demand For Coal Slides As Renewable Energy, Natural Gas Fill In The Gaps, The Associated Press, CPR, 5/9/19](#)
- [EIA: Renewables to top coal generation for first time in April/May, Utility Dive, 5/6/19](#)
- [Colorado New Electric Vehicle Laws 2019, Colorado Sun, 5/6/19](#)
- [Conservationists Want Judge To Halt Trump Admin Drilling Plans For Sage Grouse Lands, The Associated Press, CPR, 4/23/19](#)
- [Transmission Line Project That Runs Through Colorado Receives Wyoming Approval, The Associated Press, CPR, 4/21/19](#)
- [Judge Orders Trump Admin Into Negotiations Over Coal Sales On Public Lands, The Associated Press, 4/20/19](#)
- [Polis Signs Colorado's Oil And Gas Overhaul Into Law. Now Comes The Hard Part, Grace Hood, CPR, 4/16/19](#)
- [Aspen's electric buses may be on road by fall, Jason Auslander, The Aspen Times, 4/15/19](#)
- [Report: Pollution From Cars, Livestock, Oil And Gas Is Still Drifting Into Rocky Mountain Park, The Associated Press, CPR, 4/11/19](#)
- [What Questions Do You Have About Climate Change?, Kelly Griffin, CPR, 4/8/19](#)

- [90-Day Exemption Allows Oil And Gas Drillers To Pollute Without Federal Emissions Permit, The Associated Press, CPR, 4/8/19](#)
  - [Tri-State Generation Change Could Bring More Wind, Solar To Rural Utilities, Grace Hood, CPR, 4/4/19](#)
  - [Trump Admin Eases Oil And Gas Rules On Sage Grouse Lands, The Associated Press, CPR, 3/15/19](#)
  - [Colorado is a top electric vehicle state without a mandate. So why can't locals buy most of the EVs for sale?, Colorado Sun, 3/12/19](#)
  - [It's 2050 and This is How We Stopped Climate Change, NPR, 3/11/19](#)
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## Upcoming Events

### **June 12: Beneficial Electrification Conference - Electrify Colorado!**

- Hosted by the Beneficial Electrification League in partnership with the National Rural Electric Cooperative Association and the Natural Resources Defense Council
- Denver
- [Register here](#)

### **June 13: Renewable Energy 101, 7:00-8:30pm**

- Hosted by the City of Centennial, CSU Extension, and Xcel Energy
- [Register here](#)

### **June 25: Renewable Energy 101, 6:30-8:00pm**

- Hosted by the City of Westminster, CSU Extension, and Xcel Energy
- [Register here](#)

### **August 14: Know Before You Go Electric**

- Hosted by CLEER, featuring CSU Extension and others
  - Rifle, CO
  - Registration available soon
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## Your Energy Colorado Resources

- Follow the [Your Energy Colorado Facebook page](#) for energy tips, news commentaries, and more
- Visit our [Energy-In-Briefs blog](#)
- Download and/or print CSU Extension energy [fact sheets](#)
- Download and/or order printed copies of our [Home Energy Guide](#)
- [Calculate your savings](#) from switching light bulbs, a new furnace, a low-flow showerhead, adding insulation and more
- Assess your [solar potential, costs, and benefits](#)
- Conduct a [DIY home energy audit](#)
- Watch [energy webinars](#)
- [Borrow an energy kit](#) to teach youth, for a public demonstration, or to conduct a home energy assessment
- Teach one of our many hands-on, standards-based [energy lesson plans](#)
- Ask an [energy expert](#) a question
- Track energy legislation in Colorado and nationwide using the CSU Center for the New Energy Economy's [Advanced Energy Legislation Tracker](#)
- [Contact us](#) to request an energy efficiency, solar, electric vehicle, or rural energy workshop



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