

EMPIRE ELECTRIC ASSOCIATION

Echoes of the Empire

APRIL 2024

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Roof Top Solar Primer

BY ANDY CARTER MEMBER ENGAGEMENT MANAGER



ANDY CARTER

There are many reasons to purchase a solar generation system. Paired with batteries, it can supply your home with electricity during an outage. If sized properly, it can reduce your monthly electric bill and be a good investment over the life of the system. Solar generation is emission free, and having generation supplied right where it is used may help reduce overall resources required.

Like all projects, thinking ahead, understanding the requirements to have it installed, and being certain of the financial impacts, can help ensure you are making a good decision for your individual situation.

IS MY HOME RIGHT FOR SOLAR?

The first thing to consider is if your home is suited to solar generation. Having a home where the panels will be mounted facing due south will maximize their exposure to sunlight. You will also need to consider vegetation or objects that may block sunlight during any portion of the day, or if shading will change from season to season, as is the case with deciduous trees. Knowing the age and condition of your roof is important too. Your roof and the underlying structure must be able to support the weight of the panels and additional stress placed on it by wind or snow loads. It is also expensive to remove the panels to replace the roof should it need to be replaced before the end of the life of the panels.

SIZING YOUR SYSTEM

The second consideration is determining how much electricity you use over one year. The amount of energy you use will drive the size and cost of the system. Empire Electric Association allows members to install a renewable generation system that can produce up to 120% of the energy that you use in one year. EEA allows members to oversize their system to allow for year-to-year variations in weather, the main driver in residential power consumption variability.



▲ Is solar right for you? Figuring out if your home is well suited for solar and performing a simple financial analysis will help you decide. *Photo by Denise Moore, EEA.*

EFFICIENCY IMPROVEMENTS

If you haven't taken the time to evaluate your home to make it more efficient, we recommend you take that step before you consider a solar generation system. It may have an impact on the size of system you need. Changing from electric resistance heat to an air-source heat pump will reduce the kilowatt-hours you use. Changing from a gas furnace to an air-source heat pump is energy efficient and will lower your overall

energy expenses, but it will increase the kWh you use. Making your home more efficient may also help achieve the goals of reducing your monthly energy bills and impact on the environment. In some cases, energy efficiency upgrades can be a better investment with smaller upfront costs, and many qualify for incentives from EEA and may reduce your federal income tax.

FINANCIAL CONSIDERATIONS

If your home is a good fit for solar generation, you have taken steps to reduce your energy use, and you know the size system you will need, the next step is to evaluate the financial

aspects of installing solar generation. It's a good idea to do this before contacting an installer. Knowing what you can afford before you go shopping makes good sense. A solar generation system can reduce your monthly EEA bill, but you will still have a bill to pay each month. Your home will still be connected to EEA's grid and will rely on it to provide energy when the sun is not providing enough power to your system to meet your needs. At a minimum, you will be billed EEA's grid access charge for your rate and any net-delivered kWh you did not have saved from prior month's excess generation. On EEA's time of use demand rate, you will also pay for your maximum demand. EEA must collect this revenue to pay for maintaining and operating the facilities you are still using.

Knowing that you will have a minimum EEA payment of \$40-45 per month, you can subtract that from your average monthly EEA bill to find the monthly dollar value you can spend on a generation system to break even. You can find your monthly bill payments on SmartHub.

Installation costs for solar generation vary based on many factors. The U.S. Department of Energy states residential solar generation systems cost about \$3 per watt installed.¹ The average EEA residence would need a 5-kilowatt system that can generate 8,400 kWh per year. This would cost approximately \$15,000. The Inflation Reduction Act provides a 30% federal income tax credit that can help reduce the initial cost of the system. We recommend you consult a tax professional to see if you qualify. If you do, your cost would be \$10,500.

If you choose to finance the system with a Colorado Residential Energy Upgrade loan² with a 30% down payment of \$3,150, a term of 12 years, and an interest rate of 8%, your monthly payment would be almost \$80 per month. Adding in your EEA bill of \$45, your estimated total monthly payments would be \$125 per month. An EEA member with an annual kWh usage of 8,400 kWh, or 700 kWh/month, on the current All Energy rate would have a monthly bill of \$119.09. In this scenario, the normal monthly bill is 5% less than the loan payment and minimum expected EEA payment.

So why would someone install roof top solar? First off, this is just one scenario used as an example and cannot represent every unique member EEA serves. For instance, if you paid cash for the system, you would pay yourself a 6.6% return over the 12 years you would have had loan payments. Second, it is also not the complete financial picture. Solar generation systems commonly produce power for 20 years or more. Once the loan was paid off, it would take less than one year to recoup the difference between the normal monthly bill and the loan plus the bill after solar generation was installed for the 12-year loan period. The remaining production life of the system would represent an annual savings of \$889.08 or 62%.

The decision to install solar generation is one that takes some forethought and planning. The steps we walked through and the financial overview provided are a good framework to start evaluating your unique situation. If you think you want to install solar generation, EEA encourages you to spend some time researching the idea before you take the plunge. Whether or not you decide to install your own generation, EEA will still be working to provide safe, reliable, and affordable energy for you and your family.

Do you have questions about solar for your home? We're here to help. Please call Brian Balfour at 970-564-4450.

The Co-op Way! Allocations are saved and retirements are paid.

EEA has paid consumer-members over \$39.3 million in capital credit retirements since 1939.



For 2024, the EEA Board of Directors elected to retire a total of \$1.68 million. Look for your Capital Credit in April.



COLORADO
LINEMAN
APPRECIATION
DAY
APRIL 18



¹ DOE website: [energy.gov/energysaver/residential-renewable-energy](https://www.energy.gov/energysaver/residential-renewable-energy) 2/23/2024 ² Colorado Clean Energy Fund website: [cocleanenergyfund.com/products/residential-products/renew/#colorado-renew-loan](https://www.cocleanenergyfund.com/products/residential-products/renew/#colorado-renew-loan) 2/24/2024

EEA Serviceman Ron Russell Retires

After more than 32 years of faithful service to Empire Electric Association members, Serviceman Ron Russell retired on March 1. Before Ron worked for EEA as an employee, he worked for a local business that performed vegetation management for EEA on a contract basis. He got to know several EEA employees and when a job as a meter reader became available, they recommended Ron apply. Ron started as a meter reader in September 1991 and then transitioned to being a meter technician as EEA implemented remote reading in July 1998. Ron was promoted to apprentice meterman in November 2005. In November 2008, Ron became a serviceman and learned the fine art of line locating among other skills required to fulfill the role of serviceman.

Ron said one of his favorite parts of the job was line locates — marking the location of underground power lines so that construction crews and members can safely work around them. Ron related “It’s tricky sometimes to find where the line actually runs. You would think they are always in a straight line but that isn’t the case.” Ron also enjoyed helping restore power during outages, being part of the team, and getting the lights back on as soon as possible.

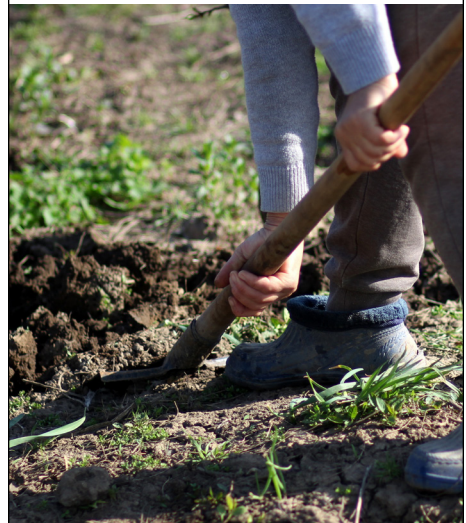
Ron has been an important part of our co-op family, and his smile and dedicated service will be missed. His plans for retirement include traveling, spending more time with family, and enjoying the opportunity to ride his horse in the mountains more. Please join us in congratulating Ron on a job well done and wishing him all the best in the next season of his life.



▲ Ron Russell retires after working more than three decades at the co-op.



**Know what's below.
Call before you dig.**



Spring is in the air and outdoor projects pop-up everywhere. Be sure to call 8-1-1 at least two business days before breaking ground to allow utility operators time to mark your underground lines.

Digging without knowing what is below could cause a serious injury and you will also be responsible for costly repairs. Avoid hassles and fines, call first! It is easy and free!

ANNOUNCING EEA

2024 YOUTH TRIP WINNERS

CONGRATULATIONS!



Washington D.C.
Youth Tour Winner

Cambree Chamberlain
Monticello High School



Steamboat Springs, CO Youth Leadership Camp Winners



Teagan Archer
Mancos High School



Randi Lewis
Mancos High School

ONLY CERTIFIED WORKERS CAN TRIM TREES NEAR POWER LINES

Can anyone trim trees near power lines? The answer is no. Specialized tree trimmers, certified by the Occupational Safety and Health Administration in utility clearance, are the only persons legally allowed to trim trees within 10 feet of power lines.

OSHA requires this certification because electricity is a serious and widespread hazard to tree workers. According to the Tree Care Industry Association, electricity is the leading cause of death among tree care workers, causing about 15% of all industry fatalities. Tree care industry workers do not have to directly contact a power line to be electrocuted; about half of all electrocution fatalities are the result of indirect contact.

Qualified line-clearance trimmers must be specially trained in how to work safely in proximity to energized lines. They must understand how an electrical grid functions; the effects of tree growth patterns and tree damage; and how to implement directional pruning, as required by the American National Standard for Arboricultural Operations' safety standards.

According to OSHA, the duties of line-clearance certified tree trimmers typically include the following:

- Undergoing annual evaluations by licensed professionals to ensure continuous adherence to industry best practices.
- Requesting job briefings from employers and other crew members before starting a job or when environmental conditions change.
- Properly wearing approved personal protective equipment, including fall protection equipment when needed.
- Complying with material handling and mechanical equipment requirements.
- Working with a second line-clearance tree trimmer within voice range.



▲ An OSHA certified worker trims a tree near high-voltage lines. Special care must be taken when performing vegetation management near high-voltage power lines. Always keep at least 10 feet away from power lines. Photo courtesy of SafeElectricity.org.

- Determining the voltages of lines before work begins or assuming that the line is operating at the highest possible voltage if it is not possible to determine voltage.
- Ensuring body parts and any ladders, platforms, or aerial devices being used remain outside the minimum approach distance from any energized equipment.
- Using only insulated tools and equipment to remove branches and limbs that are in contact with or are within the minimum approach distance of energized lines or equipment.
- Determining if weather conditions are no longer safe to work in, such as the presence of high winds, ice, thunder, or lightning that would make the work hazardous.
- Beginning work on storm restoration efforts in the aftermath of a storm if they have been trained in the special hazards involved with this type of work.

Please contact Empire Electric at 970-565-4444 if you have any questions about line-clearance tree trimmers or tree trimming near power lines. For information on electrical safety, visit SafeElectricity.org.



Monthly Calendar

April 12 – EEA's board meeting begins at 8:30 a.m. at its headquarters in Cortez. The agenda is posted 10 days in advance of the meeting at eea.coop. Members may attend in person or remotely. Instructions to attend remotely are included on the agenda.

April 18 – Lineman Appreciation Day

April 26 – Arbor Day



▲ **Co-op Photo Contest Winner April 2024** – *Windmill in the Sunset* by Rebekah Robindale