



Sussex Rural Electric Cooperative, Inc.

A Touchstone Energy® Cooperative

Currents

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1 Flashes of lightning between a thunderstorm and the earth are called cloud to ground.

2 There is roughly 5 to 10 times more intra-cloud lightning than cloud-to-ground lightning.

3 The vertical extent of cloud-to-ground lightning averages 3 to 4 miles.

4 Lightning often strikes up to 10 miles away from rainfall.

5 Lightning can occur in winter during heavy snowfalls.

6 Lightning can strike in the same place twice.

7 Lightning has 100 million to 1 billion volts and contains billions of watts.



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 Sussex Rural Electric Cooperative
 64 County Route 639, Sussex, NJ 07461
 p: 973.875.5101 f: 973.875.4114
 website: www.sussexrec.com
 email: currents@sussexrec.com

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Going Underground

By: Chris Reese, President & CEO
contacttheceo@sussexrec.com



It is never a good feeling when your power goes out. To best serve our members, Sussex Rural Electric Cooperative invests a lot of time and money into mitigating outages. Unfortunately, not all of them can be easily prevented. Most outages occur when trees or branches cause damage to overhead power lines which, as you all know, is a common factor in a heavily wooded area like ours no matter how much we trim.

Following an outage, one of the most common things we hear from members is the same suggestion: put the power lines underground. This certainly makes sense as an idea. Converting to underground lines can make outages less likely by protecting electric wire from common overhead threats like trees or small animals. Underground lines also have more protection from most weather events.

However, going underground is very costly. The material is more expensive to purchase and install, and when an outage does occur, it may last longer due to the additional time needed to locate faults and excavate the wire. Sussex Rural Electric Cooperative has over 700 miles of power lines throughout its hilly service territory. If you have tried planting something in your yard, you know that our rocky terrain is not conducive to putting miles of line underground. To make something like this work would cost hundreds of millions dollars. Converting all, or even just a large portion, of SREC's lines to underground would end up increasing service costs and, as a result, your monthly bills.

Despite the logistical and budgetary concerns, these requests have not fallen on deaf ears. As part of its mission to provide the highest quality of service at the lowest possible cost, Sussex Rural Electric Cooperative has a history of undertaking ambitious projects to improve the reliability and resiliency of our system. While we won't be undergrounding all of our lines, we have been exploring strategic uses of underground power lines that can support our existing infrastructure.

Recently, we undertook a major project to add underground lines to a critical portion of the system. This was touched on briefly in the Annual Report that was sent out as May's issue of *Currents*. Here, I aim to share more details of this plan designed to give SREC more options in preventing outages, rather than just fixing them.

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Going Underground

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This project was focused not just on adding secure, underground power lines to a sensitive area, but creating a redundant feed to the same areas as an existing overhead transmission line. The preexisting overhead transmission line runs through a particularly remote, mountainous, and tree-lined region of Vernon. This means that making repairs here in the event of damage is particularly difficult and time-consuming.

The overhead line was originally built in the 1970s and the time is coming to replace its poles and hardware. Doing so would be difficult due to lack of access and no easy way to deenergize the line for our crews to work on it safely. Adding a redundancy in this location means we can more easily make the needed updates while keeping the majority of our system powered on.

This is why we devised the plan to install a new underground line that would run within the same rights-of-way as the existing overhead line. Phase one of this project involved creating a new underground 34.5kV transmission line that runs through Vernon between two of our delivery points, where we receive power from the wider electric grid.



Having this in place allows for easier replacement of the aging poles and maintenance of existing overhead components without having to use an extended planned outage to get the work done safely. In addition, the underground lines will keep our members powered on even if there is damage to the overhead lines in the future. The overhead lines will also give us coverage if any potential faults occur underground, so excavation time would not add to total outage time.

The process of installing these new power lines underground was complicated and required the use of large crews and rented equipment such as a directional boring machine. The new underground line had to be directionally bored from Mott Drive to the top of the mountain and then trenched to a riser pole in the woods behind our Vernon substation. Tree removal in these areas was also required in order to best complete the work.

Work on this project began in October of 2021 and the lines were energized on March 29, 2022. The new underground line is now immune from trees and the elements and is sized large enough to allow for future expansion if needed. This will become the primary feed for our substations in Vernon and Barry Lakes. It represents an investment of about \$1.5 million into the security of our system.

This project was a big undertaking for a small cooperative like SREC but it was a necessary step in ensuring that we can properly maintain our system and keep power flowing under the harshest conditions. We are now planning for phase two of this project in which we will be rebuilding the aged overhead lines. This will take place across the next five years or so. After

phase two is completed, both the underground and overhead transmission lines will be able to back each other up for decades to come.



This type of long-term planning is very important to keeping our service as high quality as possible. This project was a lot of work, but it was completed smoothly thanks to the dedication and talent of our crews and the planning our management team put into the project. While SREC may not be able to put all of its lines underground, we do actively look for opportunities to add an additional level of security in areas where it makes the most sense for our system. This will allow us to keep delivering on our mission of providing the highest quality of service at the lowest possible cost!

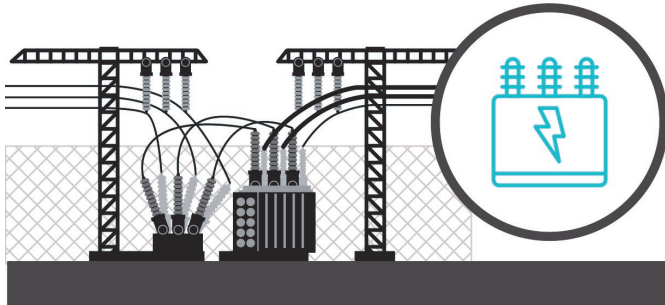
A handwritten signature in cursive script, appearing to read "Chris".

The Steps to Restoring Power

When a major outage occurs, our crews restore service to the greatest number of people in the shortest time possible – until everyone has power.



1. High-Voltage Transmission Lines
These lines carry large amounts of electricity. They rarely fail but must be repaired first.



2. Distribution Substations
Crews inspect substations, which can serve hundreds or thousands of people.



3. Main Distribution Lines
Main lines serve essential facilities like hospitals and larger communities.



4. Individual Homes and Businesses
After main line repairs are complete, we repair lines that serve individual homes and businesses.

Energy Efficiency

Tip of the Month

If you're looking to add smart technology to your home, consider smart plugs. Smart plugs are inexpensive and can be used to control lighting and other electronic devices through a smart phone app.

With smart plugs, you can conveniently manage lighting, home office equipment, video game consoles and more. By powering off unused devices when you're away, you can save energy (and money!).

Source: energystar.gov



Lightning was powering through the clouds outside. Thanks to your planning, their story time, and life as you know it, continued inside.



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Member Appreciation at the Fair

By: Steve Sokolowski, Marketing Associate
ssokolowski@sussexrec.com



Sussex Rural
Electric Cooperative, Inc.
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**2022 ANNUAL
MEETING EVENT**

Member Appreciation at the Fair Monday, August 8th

Receive up to two free tickets to the Fair for Monday, August 8th when you register at www.sussexrec.com/annual-meeting

Find our tent on Park Road to meet with us, receive member appreciation gifts and a \$10 bill credit, and enter our prize drawing!

This year, Sussex Rural Electric Cooperative's Annual Meeting has been split into a two-part Annual Meeting Event – a prerecorded Online Meeting shared on our website on Monday, June 6th and an in-person Member Appreciation Event held on Monday, August 8th at the NJ State Fair. To learn how you can receive two free tickets to the Fair (and more!), keep reading!

At the beginning of June, we are hosting our Online Business Meeting at www.sussexrec.com/annual-meeting. If you're reading this on or after June 6th, you can visit our website to find prerecorded videos sharing the results of our 2022 board election, an address from our board's chairman, a financial report from our board's treasurer, and a Q&A video where our president and CEO answers questions submitted by members like you.

Also on the Annual Meeting webpage, you will find the registration form for the next part of our event: the in-person Member Appreciation Event that we will be holding at the NJ State Fair. On Monday, August 8th, Sussex Rural Electric Cooperative will have a booth on Park Road at the Sussex County Fairgrounds which will be staffed throughout the day by employees, directors, and our CEO. We encourage all members to stop by and chat with us!

Members who have registered ahead of time at www.sussexrec.com/annual-meeting will receive up to two free tickets to the Fair for the date of our event. Registration will be available on our website until the second week of July. Make sure you sign up in order to receive your member appreciation gift and bill credit at our tent! Members who have no or limited internet access are encouraged to call our office at 973-875-5101 to register. Mention registration for the Annual Meeting Event and our staff will make sure you are registered. You will be contacted directly when we have secured your tickets.

Registering early will also make you eligible for another great prize. All members who register before the end of June will be automatically entered into a special drawing to receive a family four-pack of tickets to the Fair's Demolition Derby! The randomly selected winner will receive these tickets and will be able to choose which Demolition Derby event they would like to attend, either on Sunday, August 7th or Monday, August 8th.

Remember to visit www.sussexrec.com/annual-meeting after Monday, June 6th to view the contents of our Online Meeting and register for our in-person event. We are excited about this opportunity to meet in public with our members once again, with the added benefit of taking part in one of the largest celebrations of our community – the NJ State Fair. We hope to see you there!



**Register Early
For a Chance
To Win!**

Register by Thursday, June 30th for a chance to win a free 4-pack of tickets to the Fair's Demolition Derby event!