

Capital Electric Cooperative Energy Services Manager Josh Schaffner is working on a geothermal project that could help freeze Alaska's melting permafrost. Learn more about it in this month's feature story.



Jim Tyler (left), EAPC Architects Engineers, and **Josh Schaffner** (right), Capital Electric Cooperative, appreciate the Alaska scenery during a trip to inspect a permafrost project.

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Employee's expertise could help freeze Alaska's melting permafrost

BY KRISTA RAUSCH



Above is one of two tunnel entrances the team hopes to keep frozen. The tunnels extend hundreds of yards underground.

Kurt Fleck and Josh Schaffner are on a mission to save Alaska, and they hope to accomplish it using a common resource in an uncommon way.

Alaska is sinking, and it's a real threat. According to the Alaska Department of Natural Resources, permafrost is found beneath nearly 85% of the Frontier State. Defined as ground that has remained frozen through the heat of at least two summers, permafrost is a far-north phenomenon that is slowly disappearing under much of the state. With recent warming air temperatures, Alaskans are noticing not only the occasional hole, but an overall sinking of the ground as water freed from permafrost drains away. And thawing permafrost is more than a headache for locals. A major hazard of warming and thawing permafrost is that ground ice degrades, and the soil surface collapses.

"Buildings and roads are set up on permafrost, and if it collapses, it could be a big catastrophe," Schaffner says.

In November, Fleck, CEO of Prairie Plains Professional Services, and Schaffner, Capital Electric Cooperative (CEC) energy services manager, traveled to Alaska to visit the U.S. Army Corps of Engineers' Permafrost Tunnel Research Facility (PTRF). Excavated in the 1960s, the facility is comprised of a series of tunnels that are used to study permafrost, geology, ice science, and mining and construction techniques specific to permafrost environments.

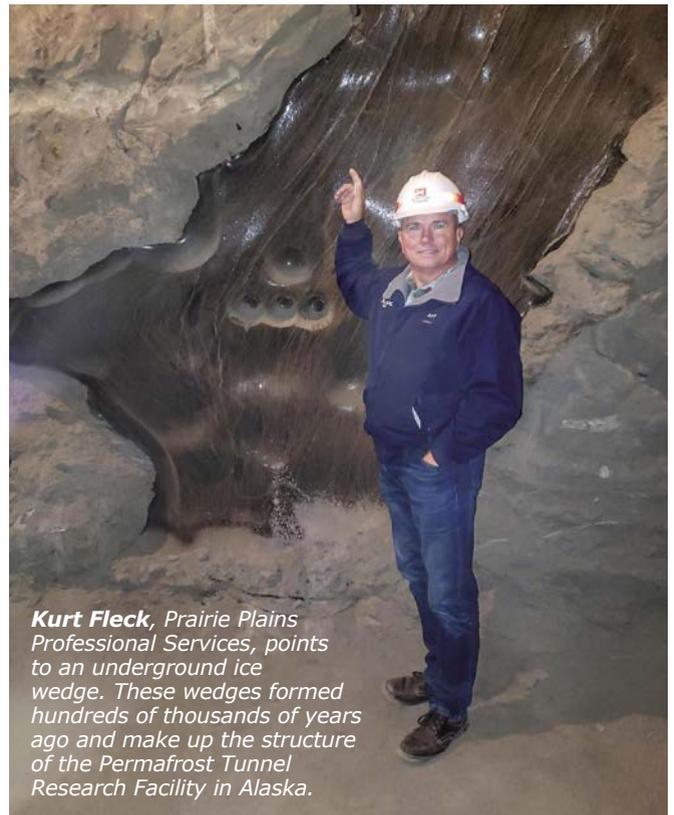
"When you see the ice formations inside of the tunnel,

you can understand their concern," Schaffner says. "When you see how much of it has already melted back, you can understand why they are trying to come up with some sort of solution — if not to stop it, to at least slow it down."

Schaffner and Fleck will be working with the research team to identify that solution. Earlier this year, Fleck signed a contract to assist the team on a geothermal energy project that, if successful, could be adapted for use in other areas of the state or even the world. He immediately brought Schaffner on board.

"The gentleman that I wanted to drag along into that type of contract is Josh, because of his expertise," Fleck says. "It was a no brainer for me to have him come along and be a part of it, as long as Capital Electric was OK with it."

The project focuses on drawing heat from the warming earth around the tunnel entrance and transferring it to another location. What sets it apart from other



***Kurt Fleck**, Prairie Plains Professional Services, points to an underground ice wedge. These wedges formed hundreds of thousands of years ago and make up the structure of the Permafrost Tunnel Research Facility in Alaska.*

geothermal projects is that the primary goal is to keep the soil around the tunnel entrance frozen.

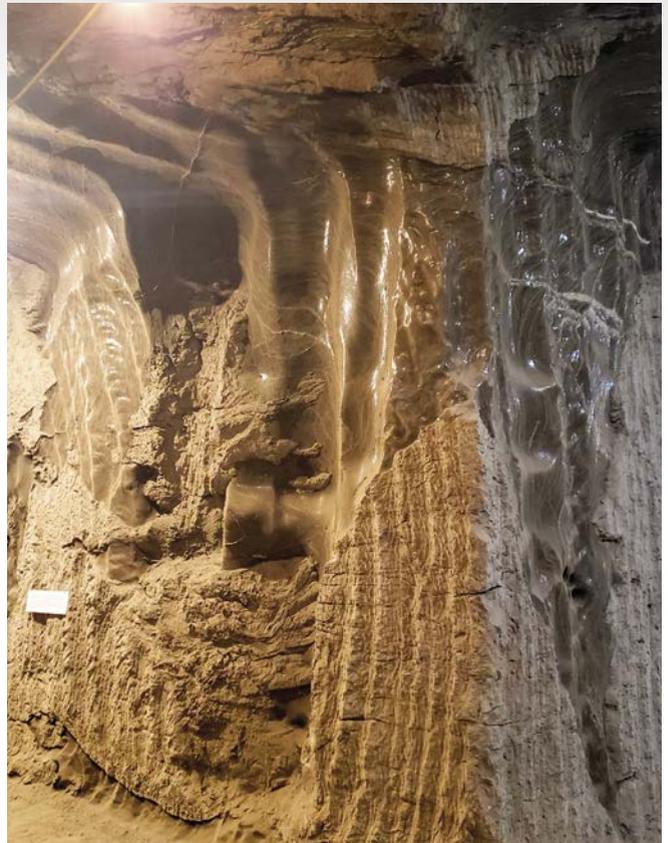
“We’re going to have sensors in the soil, and we’re going to keep our machine running until it freezes,” Schaffner explains. “We’ll take the heat drawn from that location and put it somewhere else. Initially, it’s going to heat a visitors’ center and potentially another shack. And then, they have another large building they plan to build. That’s where we’re going to be trying to get rid of the heat. We’re going to be making more heat than they need — the buildings aren’t big enough to utilize it all — but we need to keep the tunnel entrances frozen. Part of our goal is finding a good use for the excess heat.”

The team is currently in the design and planning phase. Fleck and Schaffner hope to return to Alaska next summer to begin work on the project, which is being designed by a local mechanical engineer, Jim Tyler, EAPC Architects Engineers.

“[Tyler’s] going to finish the design with his team, and then he and I are going to sit down and start organizing the equipment and shipping everything we need to have up there. And then, the team in Alaska will let us know when we can get started based on the weather,” Fleck says.

It’s not the first project Fleck and Schaffner have worked on together — the two men have teamed up on projects across North Dakota and as far away as Abu Dhabi — but it might be the one with the biggest impact.

“One design is able to do all of this, and it takes a fraction of the resources,” Schaffner says. “We’re going to be able to heat a building, cool a tunnel and make as much hot water as they can possibly need with our geothermal equipment. So, hopefully, it will open some eyes to what this particular piece of science is capable of doing.” **CEC**



The ice wedges continue to decline through sublimation (transition of a substance directly from a solid to a gas) without melting.

Josh Schaffner is the energy services manager at CEC. If you have questions on how geothermal energy can be used to heat your home, please contact him at (701) 712-7920 or josh@capitalelec.com.



Capital Electric offers student scholarship

Capital Electric Cooperative (CEC) is offering a \$1,000 student scholarship, in partnership with Basin Electric Power Cooperative.

To qualify for the scholarship, seniors must be enrolled or planning to enroll in a full-time undergraduate or graduate course of study at an accredited two-year or four-year college, university or vocational/technical school. Their parent(s) or guardian(s) must be members of CEC.

Our cooperative will assemble a panel of impartial judges to review all applications. The judges will select the winning application based on academic performance, potential to succeed, leadership and participation in school and community activities, honors, a statement of education and career goals, work experience and an outside referral. The scholarship will be awarded without regard to other awards, loans or financial assistance the applicant may have obtained.

Application forms may be downloaded at www.capitalelec.com or picked up at co-op headquarters at 4111 State St. N. in Bismarck. **Applications need to be completed and returned to CEC on or before Friday, Feb. 14.**



Papkes earn Tree Care Award

BY WES ENGBRECHT

Each year, the Burleigh County Soil Conservation District chooses someone in Burleigh County to receive the Tree Care Award. The recipient is recognized for their commitment to growing and maintaining trees for soil protection and wildlife habitat. This year, the award was given to Drew and Megan Papke of Baldwin. Drew and Megan own All Seasons Outdoor, a local irrigation company.

In response to the award, Drew says, “As a business owner in the green industry, I have always had a lot of pride in making our client’s landscapes and lawns something special and enjoyable. I have learned a lot in the trade over the last 11 years and always enjoy learning more about different varieties of trees and plants. When you see the result and impact of trees, it makes every minute of research and hard work worth it.”

Megan adds, “I love to watch the trees grow throughout the years. It’s really cool to see all the different wildlife that they bring into our yard.”

We all understand how the drought has been affecting vegetation in our area. Drew explains how they have handled the drought, “Each year, we replant any trees that do not survive the previous seasons. Keeping on top of replants prevents bare areas in the rows and makes for a functional shelterbelt. We have had to replace up to 350 trees by hand after years of drought.”

In total, the trees take up around 9.5 acres of land. The Papke’s have planted several different varieties of trees, including bur oak, Colorado blue spruce, lilac,

hackberry and crabapple. The total footage of the tree rows is 21,150 feet, which is made up of 2,835 trees (not including replants).

Capital Electric Cooperative is proud to sponsor this award annually. The co-op congratulates Drew and Megan on receiving the award, as well as on the addition of their son, Jett, who was born on Nov. 29, 2021. **CEC**



Capital Electric Cooperative Manager of Communications and IT **Wes Engbrecht** (right) presents the Tree Care Award to **Megan and Drew Papke**.

Capital Electric Cooperative employees celebrate years of service

BY WES ENGBRECHT

One thing you can count on at an electric cooperative is a commitment on the part of its employees to devote much of their careers to serving our members. Working for Capital Electric Cooperative (CEC) has been a positive experience for many employees throughout the co-op's 75-year history.

In 2021, CEC had multiple employees reach milestones in their co-op service. Leading this list with 25 years is Crew Leader John Frey. Not far behind with 20 years, you will find Staking Engineer Beau Townsend and Lead Lineworker Brad Johnson. At 15 years of service is Energy Services Manager Josh Schaffner and Work Order/GIS Technician Michelle Starck. Five-year employees round out this year's list with Business Manager Luke Steen and Journey Metering Technician Charles Atkinson reaching that milestone.



John Frey, 25 years

As a 25-year CEC veteran, *John Frey* has seen a lot of people come and go.

"I went from being the young guy when I started to one of the older guys now. I have seen a lot of staff changes throughout the years. During that time, I worked with a lot of good guys who have become my friends," Frey says. "I started out my college career with the possibility of getting an accounting degree. I changed course to go into line work partly because my grandpa, Dick Maier, was a long-time CEC lineman and line supervisor."

As crew leader, Frey manages the day-to-day processes of the lineworkers, keeping them focused on what needs to be done to keep the lights on.

He offers this advice to new lineworkers: "Work hard, but be smart about it. And, always put safety first."



Beau Townsend, 20 years

"Your first twenty years goes by quickly," according to *Beau Townsend*.

Townsend, a staking engineer and former lineworker and meter technician, has been providing outstanding service to CEC's members since he started at the co-op in 2001.

"It's amazing how quickly we have grown. We serve almost twice the members as when I started. I have thoroughly enjoyed working with them and my fellow employees," Townsend says. "Technology has advanced at an incredible rate as well, streamlining our work in many ways."

As a staking engineer, Townsend works directly with developers, builders and co-op members to plan how services will take shape on our system.

Brad Johnson, 20 years

Brad Johnson joined CEC 20 years ago, and he sees a lot of similarities from then until today. His sense of humor is well-known in the office.

"We used to be the young guys, now we're the old guys,"



**BRAD
JOHNSON**

Johnson jokes. “Other than the use of new technology and more advanced equipment, the work and service to our members remains the same. We are dedicated to what we do, and we take it seriously.”

In his spare time, Johnson continues to farm on his family farm near Minnewaukan. As a lead lineworker, Johnson uses his many years of experience to keep projects going and train the younger lineworkers.

“We have a great team in our department, and I enjoy my job every day,” he concludes.

CEC thanks the employees who reached milestones during 2021. We appreciate your hard work and dedication to the members, always putting them first to keep the lights on! ■

15 years of service



JOSH SCHAFFNER
Energy Services Manager



MICHELLE STARK
Work Order/GIS Technician

5 years of service



CHARLES ATKINSON
Journey Metering Technician



LUKE STEEN
Business Manager
5 years

What to do during an outage



Capital Electric Cooperative (CEC) strives to provide you with reliable, uninterrupted service every day of the year, but sometimes Mother Nature creates unavoidable power outages. CEC wants you to remain safe during severe winter weather, so consider these tips.

To report an outage

- Confirm the outage. Check your own fuses and circuit breakers first.
- Check with a neighbor to confirm if he or she is also experiencing an outage before you call the cooperative. This will help your cooperative determine the extent of the outage.
- Call the cooperative. If the outage is widespread, the phone lines may be busy, but keep trying. Your cooperative will send a line crew to find the problem and restore power as quickly as possible.

Operate generator safely

- If your standby electric generator has been in storage since last winter, make sure it is still operating properly – before an outage occurs.
- Always follow the manufacturer's recommendations on how to use your generator.
- Most important is the transfer switch that disconnects the farm or home from the power line and connects it to the generator. It must be a double-throw transfer switch which prevents the generator from feeding electricity back onto the power line. This protects the lineworkers who may be working to restore your service.
- Do not operate a portable generator in your home, basement or garage. Generators can

quickly produce high levels of carbon monoxide, which can be deadly.

Assume downed lines are energized

- Always assume fallen power lines are energized. Stay at least 10 feet away from a downed power line and any nearby objects it may be touching, such as a fence or a tree limb.
- Contact your electric cooperative immediately to report downed power lines outside your home.
- Never attempt to move a downed power line. Call CEC.

During a power outage

- Only use flashlights for emergency lighting. Candles can cause fires.
- Keep refrigerator and freezer doors closed. Most food requiring refrigeration can be kept safely in a closed refrigerator for several hours. An unopened refrigerator will keep food cold for about four hours. A full freezer will keep the temperature for about 48 hours.
- Never burn charcoal for heating or cooking indoors.
- Turn off or disconnect appliances and other equipment in case of a momentary power "surge" that can damage computers and other devices. Consider adding surge protectors. ■

Board minute excerpts **NOV. 19, 2021**

The Board of Directors of Capital Electric Cooperative (CEC) held its regular meeting on Friday, Nov. 19, 2021. The meeting was held in person at CEC headquarters, 4111 State Street, Bismarck, North Dakota, pursuant to due notice to all directors. Remote teleconference for the meeting was available. All directors were present at that time.

Also present were Manager Paul Fitterer, Business Manager Luke Steen, Operations Manager Rick Dressler, Engineering Services Manager Greg Owen, Energy Services Manager Josh Schaffner and Attorney Zachary Pelham of Pearce Durick, PLLC, who acted as recording secretary.

Minutes and Agenda: President Sheri Haugen-Hoffart called the meeting to order. Without objection, the minutes of the Oct. 20, 2021, board meeting were approved. The agenda was approved as presented.

Financial Review: Prior to the board meeting, Directors Kyle Hilken and David Straley reviewed the October 2021 check register and expenditures. They advised that all checks were in order. The financial review was approved.

Management Reports (Business Department, Operations Department, Engineering Services, Energy Services and Public Relations/Communications/IT):

Business Department Report: Steen presented the October 2021 financial and statistical report to the Board.

Total kilowatt hour (kWh) sales for October were behind budget by -3.2%. The monthly electric revenue was behind budget by -0.8%.

CEC's load factor was above the budget for October.

The operating margin for October was \$252,832, ahead of the budgeted \$37,132. The total margin for October was \$348,343, which is ahead of the budgeted \$134,299. The operating margin is ahead by \$368,788, and the year-to-date (YTD) total margins are ahead of budget by \$22,285.

CEC began billing 41 new services in October, bringing active services to 21,587 versus 21,253 at this time last year, or a net increase of 334 accounts over the last 12 months.

The monthly power cost and cash flow statement were reviewed. Accounts receivable balances as of Nov. 18, 2021, were reviewed.

Estate Retirements: Following review of the financial condition of the cooperative and recommendation by management, payment of capital credits was authorized in the amount of \$8,038.97 to five members' estates.

Operations Report: Dressler reviewed the written report from the operations department.

Dressler reported the completion of the underbuild burial project from the east Bismarck substation to the Lincoln substation, which includes retirement of the overhead line, crossarms and insulators. Dressler reported the system fared very well with recent high winds, and there was only one minor line outage in the Wing area due to high winds.

Safety Report: There were no lost time accidents in November.

Mike Koenig, safety instructor with the North Dakota Association of Rural Electric Cooperatives (NDAREC), met with line crews on Nov. 8, 2021, for a field visit. NDAREC Safety Instructor Brian Lakoduk met with line crews on Nov. 18, 2021, for a field visit. CEC System Supervisor Jeff Holzer attended a virtual safety coordinator's meeting held by NDAREC on Nov. 18, 2021.

Without objection the safety report was approved.

Engineering Services Report: Owen reviewed the written report from the engineering services department.

There were 31 work orders completed in October.

Owen discussed ongoing and upcoming projects.

Property Update: Owen reported on meetings with the City related to the replating and rezoning of the existing headquarters property. Preliminary approval was received of the proposed plat and zoning from the Planning and Zoning Commission on Nov. 17, 2021. The City will vote on final approval of the replat and rezoning of the headquarters property in late December.

Owen reported that marketing efforts for the sale of the remaining parcels continues.

Following review of a resolution affirming the sale of the east lot property, it was approved to execute a resolution affirming the sale.

New Facility Modifications: Owen reviewed EAPC Architect Engineers' proposal for completion of professional design services for the new headquarters building. After discussion, the board approved to a contract with EAPC for completion of professional design services for the new headquarters building.

Energy Services: Schaffner reviewed the Energy Services Report.

Thirty-four service orders were completed in October. An increase in call volume on CEC's electric heat programs has occurred due to high propane prices.

Schaffner reported coordination with NDAREC and Basin Electric Power Cooperative to implement electric vehicle (EV) fire response training for the North Dakota Fire School.

Communications, Public Relations and IT: Fitterer reviewed topics of interest. Preliminary proposals on a new logo have been presented, and designs will be reviewed before presentation to the Board. Various in-person community events were recently attended, including the Bismarck-Mandan Chamber EDC's State of the Cities event, a Chamber EDC energy subcommittee meeting and the Burleigh County Soil Conservation District's annual dinner.

COVID-19 Update: Fitterer reported continued monitoring of potential impacts of federal COVID-19 regulations for entities that contract with the federal government.

2022 Budget: Fitterer and Steen presented the 2022 budget, and the Board discussed. Following discussion, the budget was approved as presented.

Strategic Planning Follow-Up: Steen presented on administrative issues that arise when members divorce and plans to administratively lessen the burden on CEC by amending the terms and conditions on the membership application.

Basin Electric Power Cooperative: Fitterer reported on Basin Electric matters, including the annual meeting.

Industry Update: Fitterer reviewed materials related to power markets and general cooperative news.

Central Power Electric Cooperative: Haugen-Hoffart attended the board meeting on Nov. 16, 2021. The report was discussed.

Western Area Power Administration (WAPA) South

Central Contract: Fitterer presented on the proposed contract for administrative services with Basin Electric, Central Power, CEC, the South Central Regional Water District (SCWD) and WAPA. The proposed contract outlines the roles of each entity to work together to provide power to SCWD. After discussion, it was approved to execute the contract.

North Dakota Association of Rural Electric Cooperatives (NDAREC): Director Deon Vilhauer reported on the November meeting.

Fitterer received NDAREC's vote for National Information Solutions Cooperative (NISC) director.

Discussion occurred on the election of CEC representatives to the NDAREC Board of Directors. Following a call for nominations, Vilhauer was nominated and elected to serve as CEC's representative. Director Dave Charles was nominated and elected to serve as CEC's alternate representative.

CEC's nine directors were selected as voting delegates for NDAREC's annual meeting, with the general manager and department managers selected as alternates.

Discussion occurred on the manner in which directors would cast ballots at the meeting for the election of the president of NDAREC's Board of Directors, and consensus was reached that each CEC director would vote for the candidate of their choice.

National Rural Electric Cooperative Association (NRECA):

Fitterer reported on NRECA's summary of the federal infrastructure bill.

Midwest Electric Annual Meeting: Fitterer reported on the upcoming annual meeting to be held Dec. 7-9, 2021, in Denver.

Federated Insurance: Fitterer discussed the November 2021 Federated board report.

Next Board Meeting: The next board meeting will be held on Dec. 17, 2021, at 12 p.m.

Adjournment: There being no further business, the meeting was adjourned at 2:19 p.m. **CEC**

CAPITAL ELECTRIC COOPERATIVE

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BOARD OF DIRECTORS:

Sheri Haugen-Hoffart, Pres. Bismarck
 Dave Charles, V. Pres. Bismarck
 David Straley, Sec.-Treas. Bismarck
 Deon Vilhauer, Asst. Sec.-Treas. Bismarck
 Kyle HilkenWilton
 Rex Hollenbeck..... McClusky
 Dwight Wrangham..... Bismarck
 Arlene Olson Wing
 Kyle Tschosik..... Bismarck

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