living with energy IN IOWA

MARCH 2021

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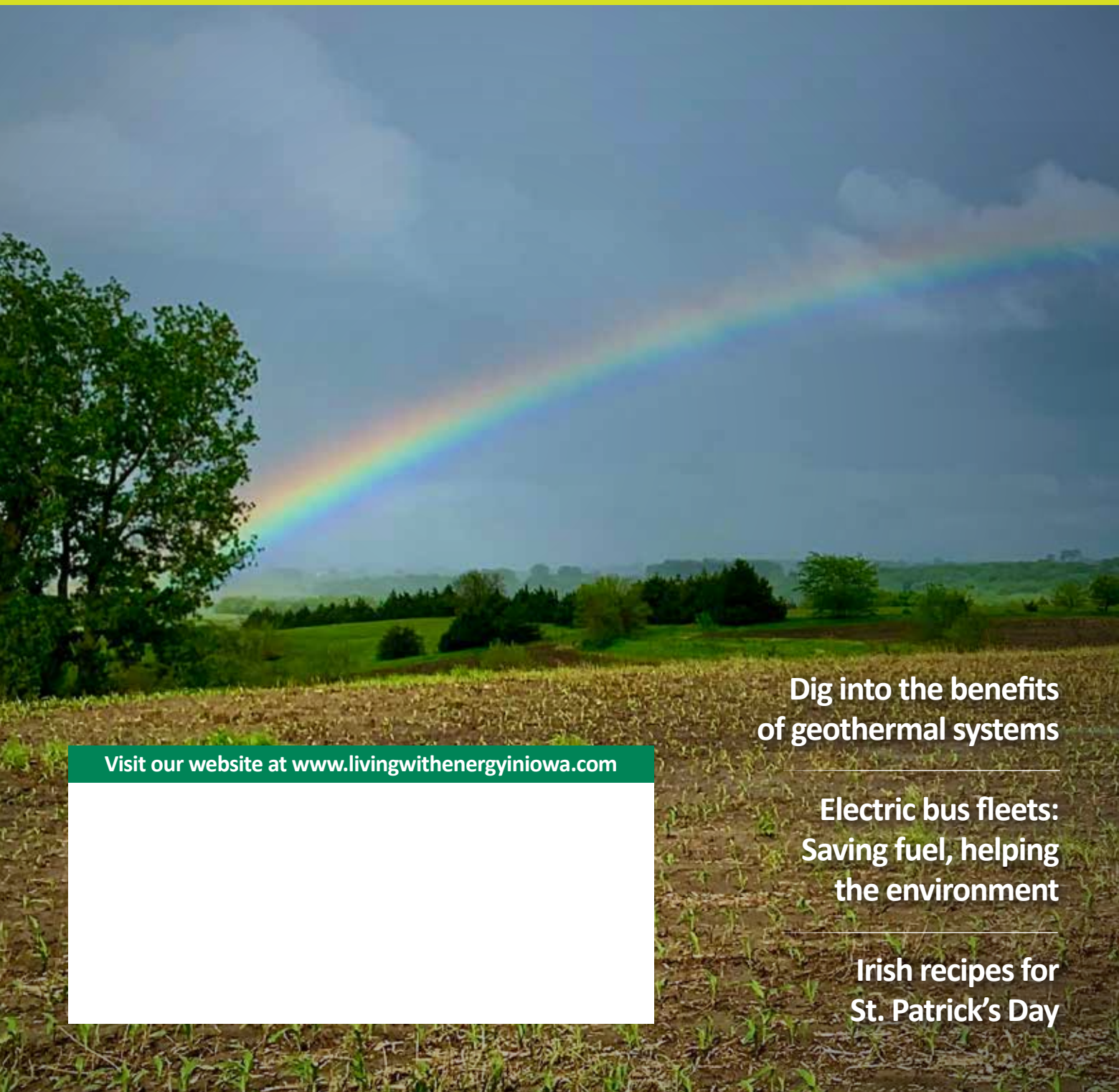
Win a smart home technology package ▶ See Page 3



Dig into the benefits of geothermal systems

Electric bus fleets: Saving fuel, helping the environment

Irish recipes for St. Patrick's Day

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Iowa Association of Electric Cooperatives
A Touchstone Energy® Cooperative

Volume 74 • Issue 3

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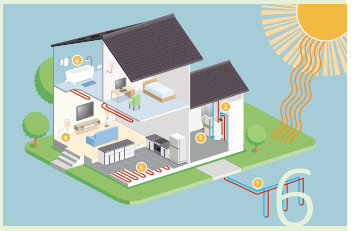
CONTENTS MARCH 2021

Features



Favorites

ON THE COVER

Congratulations to Kim Scharfenkamp, a Southwest Iowa Rural Electric Cooperative member, for providing the cover image for this month's issue! She captured this beautiful image of a rainbow in Ringgold County. To have your photo considered for a future cover, email high-quality images (in high resolution) to editor@livingwithenergyiniowa.com. If we select your photo, you'll be awarded with $100.

Setting realistic expectations for renewable electric generation

BY CHUCK SODERBERG

There has been a lot of talk lately about when America will transition to a 100% renewable electric grid. Some utilities, states and cities have announced plans to be fully powered by renewable sources by a specific date. Reducing carbon emissions is also a major focus of the presidential administration. As we talk about a clean energy economy, it's important to set realistic expectations about the timeline.

Iowa's locally owned electric cooperatives have been balancing the need for safe, reliable, affordable and environmentally responsible power for decades. Our state's electric co-ops have long promoted energy efficiency efforts with the belief that the greenest kilowatt-hour is the one you never use. From 2010-2019, Iowa's electric co-ops invested more than $120 million in energy efficiency measures, saving at least 4.9 billion kilowatt-hours. That's enough energy to power more than 490,000 homes for a full year.

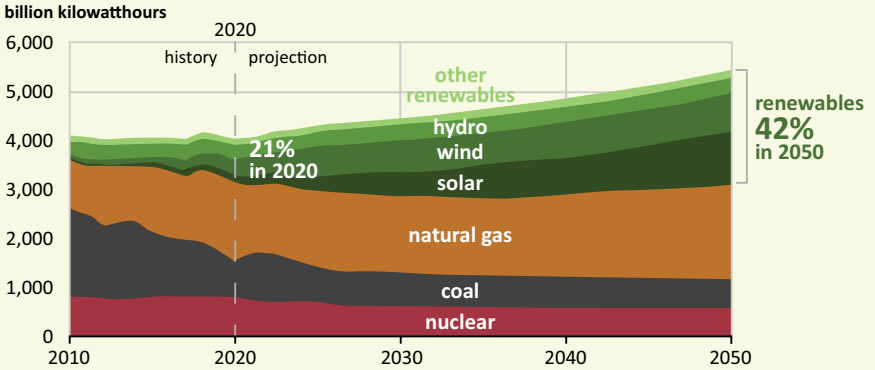
Incorporating more renewable energy

As economic conditions allow, electric co-ops are incorporating more renewable sources of generation into the energy mix. Moving toward higher renewable percentages will take time as we are also responsible for balancing the needs of safety, reliability and affordability for the member-consumers we serve. While renewable energy continues to grow, it will take decades before that category outpaces natural gas and coal generation nationwide.

In its Annual Energy Outlook 2021, the U.S. Energy Information Administration (EIA) projects that the share of renewables in America's electricity generation mix will increase from 21% in 2020 to 42% in 2050. Wind and solar generation are responsible for most of that growth. By 2030, renewables will collectively surpass natural gas to be the predominant source of generation in the U.S.

According to the EIA report, the share of natural gas-fired generation in the U.S. will remain relatively constant through 2050, and the contribution from the coal and nuclear fleets will drop by half. Technological advances in battery storage will make intermittent renewable sources like wind and solar more reliable and dependable, which are the top reasons why natural gas and coal have been stalwart baseload generation sources.

U.S. electricity generation from selected fuels
AEO2021 Reference case (2010-2050)



Sources: U.S. Energy Information Administration, *Annual Energy Outlook 2021* (AEO2021)

Electric cooperatives are making great strides

Because electric cooperatives are owned and governed by the member-consumers we serve, it's important to keep you informed on how power supply decisions are made and why. Electric cooperatives are making great strides in reducing greenhouse gas emissions and incorporating more renewable energy sources into the generation mix. Like all things, change will take time. Be assured that we are moving in the right direction as we transition to a clean energy economy.

Chuck Soderberg is the executive vice president and general manager of the Iowa Association of Electric Cooperatives.

EDITOR'S CHOICE CONTEST

Win a smart home technology package

Smart home devices can add comfort and convenience to your life while helping to save energy. This smart home starter set features an all-new Echo Dot smart speaker with clock and Alexa, four smart bulbs and four smart plugs. The package is valued at $115. Learn more about these technologies on Page 14 of this issue.

Visit our website and win!

Enter this month's contest by visiting www.livingwithenergyiniowa.com no later than March 31, 2021. You must be a member of one of Iowa's electric cooperatives to win. There's no obligation associated with entering, we don't share entrant information with anyone and multiple entries from the same account will be disqualified. The winner of the Fitbit Charge 4 from the January issue was Mary Eller, Consumers Energy.

New state funds available to support innovative rural projects and housing assessments

Gov. Reynolds and the Iowa Economic Development Authority (IEDA) recently announced two competitive funds available for rural communities with a population under 20,000. Specifically, funding of up to $400,000 has been allocated to the following two funds for current fiscal year (FY) 2021 through FY 2022:

- **Rural Innovation Grant Program** – Provides up to $300,000 in grants supporting creative, non-traditional ideas that focus on current issues and challenges faced by rural communities associated with the themes of community investment, growth and connection.
- **Rural Housing Assessment Grant Program** – Provides up to $100,000 to support the use of publicly available online information through the "Profile of Iowa" tool and rural community efforts to interpret this hard data with supplemental information, as well as to implement through changes to development codes, local ordinances and housing incentives specific to their community needs in partnership with Iowa State University Extension and Outreach.

Guidelines and scoring rubric for both programs are available on the Office of Rural Revitalization's website. The programs, defined in Iowa Administrative Code, are administered by the Center for Rural Revitalization, a division of IEDA, in consultation with the Governor's Empower Rural Iowa Initiative Task Forces.

Applications for FY 2021 are currently being accepted via iowagrants.gov and are due by April 16, 2021. Applications will be scored by a volunteer panel that will include the Governor's Empower Rural Iowa Initiative Task Force members and expert professionals. Successful applicants will be informed in June.

For additional program parameters and information, contact Liesl Seabert at rural@iowaeda.com.

QUOTE OF THE MONTH

"Co-ops really are about constructive, positive ideas to help the communities that they serve. That's how we're going to look at the tough days ahead in terms of the pandemic and everything else."

– National Rural Electric Cooperative Association CEO Jim Matheson speaking at the U.S. Energy Association's State of the Energy Industry Forum held virtually Jan. 28.

POWERFUL IMAGE

This month's "Powerful Image" comes to us from western Iowa, where Jeff Ten Napel, Osceola Electric Cooperative's general manager, captured a photo of beautiful sun dogs. According to the Old Farmer's Almanac, sundogs are formed by moisture filtering the sunlight. Sundogs appear when sunlight hits clouds of ice crystals, and the ice acts as prisms.

A sundog is seen about 22 degrees to the left or right of the sun. Sundogs often form in pairs on either side of the sun. While they frequently appear white, sometimes they are quite colorful, looking like patches of rainbow. The colors usually go from red closest to the sun, to blue on the outside of the sundog.

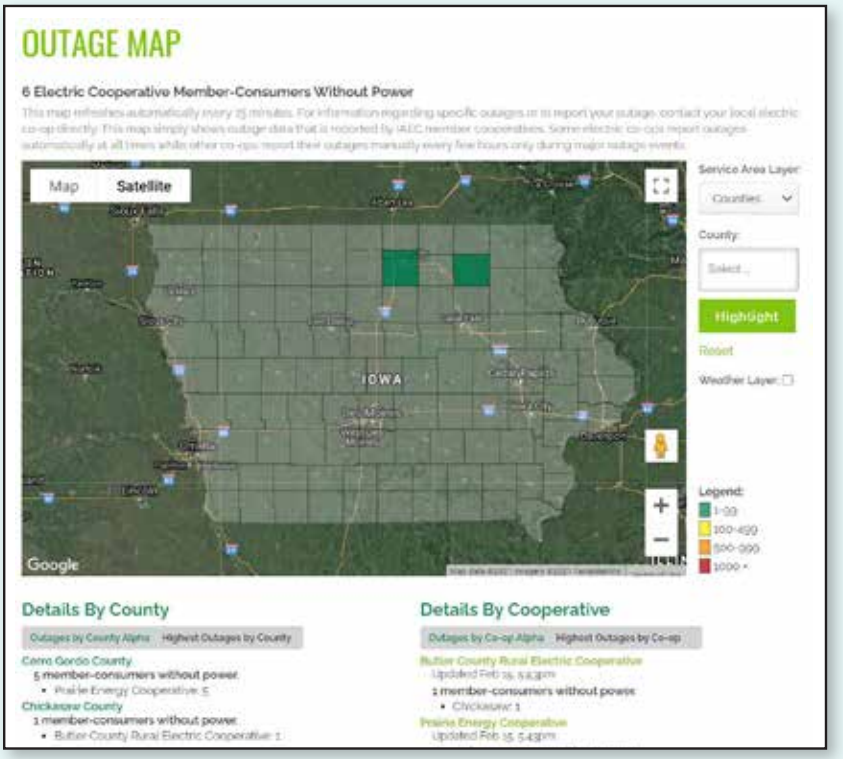
DID YOU KNOW?

The Iowa Association of Electric Cooperatives maintains a statewide outage map online at www.iowarec.org/outages. The map refreshes automatically every 15 minutes and shows outage data that is reported by IAEC member cooperatives.

Some electric co-ops report outages automatically while other co-ops report their outages manually every few hours only during major outage events.

For information regarding specific outages or to report your outage, always contact your local electric co-op directly. It's also important that your local co-op is notified if your phone number or other contact information changes.

If you see downed power lines, always stay away from the lines and poles. Always assume the lines are energized and report any damage to your local electric cooperative.



Digging into the benefits of

BY ERIN CAMPBELL

Later this spring, we'll see farmers out in the fields digging into the earth to plant crops. The ground beneath us has incredible benefits. In fact, you can also harness the power of the earth to heat and cool your home renewably and efficiently.

Geothermal heating and cooling systems – also referred to as ground source heat pumps – use underground loops to take advantage of the constant temperature below ground to keep you comfortable. In the winter, the loop system removes heat from the ground and transfers it into your living space. In the summer, the loop system transfers warm energy from your home to be absorbed by the cooler ground.

A proven technology

Geothermal technology isn't new; in fact, Iowa's electric cooperatives have been promoting geothermal systems to members since the 1980s. Jim Sayers was one of those co-op employees who worked to educate members about the many benefits of geothermal throughout his 34-year career in communications and energy services at Corn Belt Power Cooperative. Headquartered in Humboldt, Corn Belt Power Cooperative is a generation and transmission electric cooperative owned by its member systems.

Sayers retired from the co-op in 2018 and found an opportunity to continue educating others about geothermal technology's advantages as the cooperative engagement coordinator for the Geothermal Exchange Organization (GEO).

"You retire from a job, but you don't retire from your passion. And my passion includes Iowa's electric cooperatives and geothermal," says Sayers.

Efficient, renewable energy

Geothermal systems are supremely efficient, renewable and will save homeowners substantially on heating and cooling costs, according to Sayers. The average savings of geothermal compared to an aging conventional HVAC system is around $1,400 annually, accounting for 40%-70% savings. And while the installation cost of a geothermal system is higher than conventional HVAC systems, it is so efficient that it can pay for itself in as little as five to seven years. Rates and incentives are important in determining payback.

"The good news is that there are federal and state tax credits available to help defray the installation costs," says Sayers. "Currently, the federal tax credit for geothermal installation is 26%, and the Iowa tax credit is 20% of the federal credit, for a total tax credit of just over 31% of the geothermal installation cost in 2021."

So why is the installation of a geothermal system higher than installing a conventional HVAC system? It comes down to the loops. An underground loop system needs to be trenched or drilled in your yard to take advantage of the earth's constant temperature. Once installed, a water-based solution circulates through the loop system to transfer the heat energy. Electricity is needed to operate the heat pump, ground loop pump and distribution fan or pump.

Because it uses the earth, a geothermal system is the most efficient heating and cooling system. In fact, it is 400% more efficient than conventional HVAC systems. Geothermal systems are also known for having low maintenance costs.

Sayers says, "With all the attention on wind and solar these days, we often forget about geothermal as a renewable option. If a homeowner is considering investing in a solar array, I would encourage them to first think about energy efficiency measures and then consider installing a geothermal heating and cooling system because it uses stored, renewable thermal energy all day, every day, year-round."

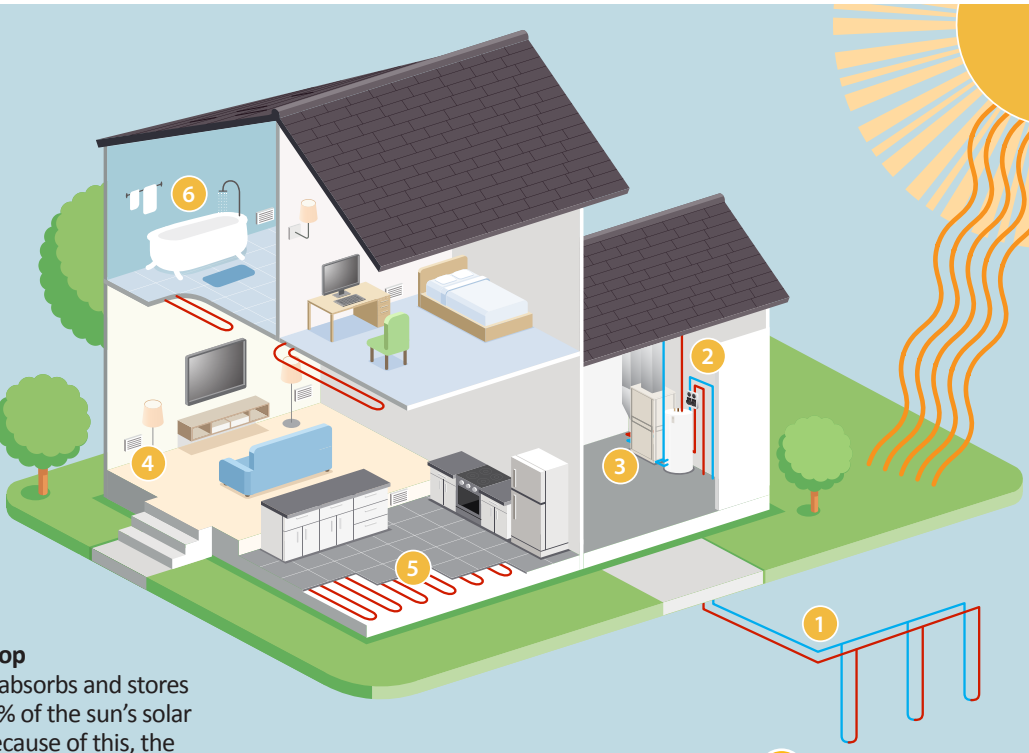
geothermal systems

Resources for more information

The cost of installing a geothermal system will vary by location, the size of your home, equipment installed and local incentives. GEO, a non-profit trade association that promotes the manufacture, design and installation of geothermal heating and cooling systems, maintains a list of geothermal system professionals you can contact at www.geoexchange.org/directory/.

Learn more about geothermal at GEO's consumer education website at www.geothermalforall.com. In addition to the tax credits, many of Iowa's electric cooperatives offer special geothermal electric rates and incentives to make the system even more affordable. Contact the member services staff at your co-op to learn more.

Erin Campbell is the director of communications for the Iowa Association of Electric Cooperatives.



House graphic: Enertech Global

1 Ground loop
The earth absorbs and stores almost 50% of the sun's solar energy. Because of this, the temperature four to six feet below ground is consistently between 45-70 degrees F. A geothermal system transfers heat from one place to another using a ground loop field buried in the yard. The loop field circulates a water-based solution through a series of pipes.

2 Flow center
The flow center resides on your unit or a wall near the geothermal system. It pumps the water-based solution in the ground loop to the house or building unit to disperse heating or cooling.

3 Indoor heat pump
The loop field transfers heat to the home through an indoor geothermal heat pump kept indoors through forced air and radiant heating and cooling.

4 Forced-air heating and cooling
In a forced-air system, an air-handler disperses the ground's heat to air in a home or building through ductwork and vents. In the cooling mode, the process is simply reversed.

5 Radiant heating (optional)
Known as the most comfortable type of heating, radiant heating uses a series of pipes under a home or building's floor to circulate warm water, which heats the entire space evenly.

6 Hot water
A hot water assist, known as a desuperheater, allows the system to capture excess heat to assist a water heater. This cuts hot water costs 25-40%. Geothermal systems can also provide 100% of the hot water needed for a home.

Sausage Coddle

- 1 pound beer-flavored brats or pork sausages, cut into bite-sized slices
- ½ pound smoked bacon, cubed
- 2 onions, thinly sliced
- 3 carrots, chopped
- 4 large potatoes, peeled and sliced
- salt and pepper to taste
- 1 teaspoon parsley, dried
- 1 cup beef stock
- 1½ cups Guinness beer
- ½ cup heavy cream

Cook the sausages and bacon in a large skillet on medium heat for 10 minutes until browned on both sides. Spray or butter a 9x13-inch baking dish. Place ⅓ of the onions, carrots, potatoes and the meats in the baking dish, sprinkle with salt and pepper, if desired, and ⅓ of the parsley. Repeat layers two more times. Warm the beef stock in a medium saucepan over medium heat, add beer and cream. Do not boil. Once warm, pour over the casserole. Bake at 325 degrees F for 1½ hours until the vegetables are tender. *Serves 6*

Christine Mimick Keller • Norfolk
North West Rural Electric Cooperative

FUN FACTS

POTATO FAMINE
Potatoes transformed the Irish diet when they were introduced from the New World in the late 16th century. Ireland's cheap and plentiful food source was later decimated when potato harvests were hit by blight in the 19th century.

Champ

- 3 pounds potatoes, about 12
- 8 scallions
- 6 tablespoons butter
- salt and pepper to taste
- 6 tablespoons milk

Cut potatoes in chunks, boil in large pot with salted water to cover. Cook until tender, about 25 minutes, drain. Slice scallions, including some of the green tops. Melt butter in the pot used to cook the potatoes. Add the scallions, cook on low heat about 10 minutes. Peel potatoes and mash with salt, pepper and milk. Stir into scallions and heat through. *Serves 8*

Francene Holstein • Persia
Harrison County Rural Electric Cooperative

Corned Beef Casserole

- 1 large onion, sliced
- 1 medium/large head cabbage, shredded
- 2 cans corned beef hash
- 2 cans cream of mushroom soup
- salt and pepper to taste

Spray a deep sided baking dish (can use cast iron Dutch oven) with non-stick spray. Layer all ingredients evenly starting with the onions, then cabbage, corned beef hash, mushroom soup, salt and pepper. This usually makes 2 or 3 layers depending on size of baking dish. Bake covered at 350 degrees F for 45 minutes, uncover and bake another 15 minutes or until cabbage is tender. *Serves 8*

Robin J. Koob • Alexander
Franklin Rural Electric Cooperative

2-Cup Stew

- 2 cups stew meat
- 2 cups onion, chopped
- 2 cups potatoes, diced in 1-inch pieces
- 2 cups carrots, sliced in 1-inch pieces
- 2 cups celery, sliced in ½-inch pieces
- 1½ teaspoons salt
- 2 cups frozen peas
- 2 cups frozen whole kernel corn, optional

Bring meat to a boil, lower heat and simmer for 5 minutes. Strain broth; return to pan bringing meat and broth to a simmer. Add onions, potatoes, carrots, celery and salt. Cook until tender. Add peas and corn the last 5 minutes.

Vickie Johnson • Osceola
Clarke Electric Cooperative, Inc.

Irish Muffins

- 3 cups flour
- 1 cup raisins
- ½ cup plus 2 tablespoons sugar
- 1 tablespoon caraway seeds
- 1 tablespoon baking power
- 1 teaspoon salt
- ¼ teaspoon baking soda
- 1 egg
- 1¾ cups buttermilk
- ¼ cup butter, melted

Mix flour, raisins, sugar, caraway seeds, baking powder, salt and baking soda in large bowl. Beat egg and buttermilk together in a small bowl. Stir into flour mixture. Fold butter in batter. Spoon batter in a muffin tin (with paper liners). Bake at 400 degrees F for 20-30 minutes, until toothpick comes out clean.

Annalee Buffington • Marshalltown
Consumers Energy

Reuben Bake

- 2 tubes crescent rolls
- 1 pound Swiss cheese, sliced
- 1½ pounds deli corned beef
- 8 ounces sauerkraut
- ⅔ cup Thousand Island salad dressing
- 1 egg white, lightly beaten
- 3 teaspoons caraway seeds, optional

Unroll one tube of dough, press into greased 9x13-inch pan and bake at 375 degrees F for 8-10 minutes. Layer half of the cheese and all the corned beef. Combine sauerkraut and dressing, spread over corned beef. Top with remaining cheese. Put the second crescent roll over cheese. Brush with egg white. Top with caraway seeds if desired. Bake at 375 degrees F for 12-16 minutes. *Serves 4-6*

Melissa Schultes • Dedham
Raccoon Valley Electric Cooperative

Irish Stew

- 1 cup carrots
- 1 cup potatoes
- 1 cup cabbage
- 1 cup onions
- salt and pepper to taste
- 1 tablespoon sugar
- 2-inch thick brisket
- 1 cup water

In a large bowl, peel and cut carrots, potatoes, cabbage and onions. Add salt, pepper and sugar. Set aside. In a deep-dish, oven-durable pan place cut brisket, water, salt and pepper (can use cast iron pan). Bake brisket at 400 degrees F for 1 hour making sure water level stays 1 inch or more deep. Add veggies and bake covered at 350 degrees F for another hour. Check liquid level and keep at 1 inch or more at all times or veggies will burn. Can be cooked in a large oval slow cooker, adjusting heat as needed.

Betty Sorden • Webster • T.I.P. Rural Electric Cooperative

Blarney Bundt Cake

- 1 yellow cake box mix
- 1 package pistachio instant pudding
- 4 eggs
- 1 cup water
- ½ cup vegetable oil
- ½ teaspoon almond flavoring
- ¼ cup chocolate syrup
- powdered sugar

Beat cake mix, pudding, eggs, water, oil and almond flavoring together for 2 minutes at medium speed. Pour ⅔ of the batter into a greased and floured Bundt pan. Add chocolate syrup to the remaining batter. Pour this into the pan and swirl a bit with a knife. Bake at 350 degrees F for 50 minutes, test for doneness. Glaze with a thin frosting or dust with powdered sugar.

Carol DeJong • Sibley • Osceola Electric Cooperative, Inc.

TRADITIONAL STEW
Soups and stews are popular Irish dishes. A traditional Irish stew is very hearty and filling, with ingredients like potatoes, onions, carrots, diced lamb chops and Canadian bacon.

FUN FACTS

BILLIONS OF POUNDS
More than 41.5 billion pounds of beef is produced each year for St. Patrick's Day. About 2.5 billion pounds of cabbage is also produced for the same event.

FUN FACTS

SODA IS A BREAD
Soda bread is a classic Irish bread, often served with soup. This brown bread is made with whole wheat flour and buttermilk.

FUN FACTS

INVENTED IN AMERICA
Like St. Patrick's Day, corned beef and cabbage is strictly an American invention. In Ireland, cabbage is often paired with bacon or with lamb.

FUN FACTS

Wanted: Sweet Corn Favorites!
The Reward: $25 for every one we publish!

Iowa-grown sweet corn is a summertime favorite! Share your delicious recipes that use sweet corn as an ingredient. If we run yours in the magazine, we'll send a $25 credit for your electric co-op to apply to your power bill. Recipes submitted also may be archived on our website at www.livingwithenergyiniowa.com.

The deadline is March 31, 2021. Please include your name, address, telephone number, co-op name and the recipe category on all submissions. **SERVINGS: Please also provide the number of servings per recipe.**

EMAIL:
recipes@livingwithenergyiniowa.com
(Attach your recipe as a Word document or PDF to your email message.)

MAIL:
Recipes
Living with Energy in Iowa
8525 Douglas Ave., Suite 48
Des Moines, IA 50322-2992

Electric bus fleets:
Saving fuel and helping the

BY MARIA KANEVSKY

Millions of Americans and thousands of Iowans depend on public bus transportation every day. Whether you're an adult on your way to work or a child going to school, you can rely on a bus to take you where you need to go.

But most buses in America are diesel-powered, which produce harmful exhaust fumes when breathed in and greenhouse gas emissions that contribute to climate change.

Electric buses are an emerging technology that can help address some of the issues caused by diesel-powered buses while still providing the same quality of transportation to many Americans.

Electric school bus programs are in progress in a few states such as Virginia, Maryland and Minnesota, but California leads the transition with a goal of replacing all of the state's school buses with electric buses by 2040 – a total of 30,000 buses.

Applications and technologies for electric buses

There are two main applications for electric bus fleets: school buses and public transit. For each application, there are three types of electric bus technologies that can be used: hybrid electric buses, fuel cell electric buses and battery electric buses.

A hybrid electric bus uses both an electric motor and a gasoline engine to power the bus. Electricity is generated through regenerative braking to charge a battery connected to the electric motor, which lessens the need for gasoline.

Fuel cell electric buses contain hydrogen fuel cells, which need to be refueled with hydrogen to charge the battery that powers the bus.

A battery electric bus is plugged directly into the grid to charge the battery that fully powers the bus.

Pros and cons with each technology

Each of these technologies has pros and cons. Hybrid electric buses are the easiest transition since they are closest to traditional diesel-powered buses. However, hybrid electric buses are heavier than traditional buses since they carry both an electric motor and a gasoline engine, which can reduce passenger vehicle capacity. Fuel cell electric buses have no tailpipe emissions and hydrogen is a renewable resource, but the cost is higher than any other electric bus technology type. Battery electric buses have no tailpipe emissions, are the most energy efficient and have low operating costs; however, they have a more limited driving range than other electric bus technology types.

Generally, electric bus fleets provide many benefits, such as fuel cost savings, maintenance cost savings and emissions reductions. Since there are fewer fuel costs and maintenance costs, school districts and transit agencies can save money over time by switching to electric buses. Electric bus fleets have fewer diesel emissions, or none at all, which improves overall public health by making the air cleaner for the surrounding community or school.

That said, there are still several barriers to overcome before making the full transition to electric bus fleets. For any electric bus technology, the main barrier is cost. For example,


One of the main challenges of transitioning diesel-powered bus fleets to electrified fleets is the current lack of charging infrastructure. New charging infrastructure will be crucial to support increased use of electric buses.

environment

battery electric school buses can cost up to $200,000 more than a comparably sized diesel school bus. If a school district or transit agency doesn't receive any outside financial support, the purchase can be difficult to justify. Additionally, new charging infrastructure will be necessary to support the electric buses, which will add to the overall cost.

Expanding use of electric bus fleets

Several areas of the country, like Seattle and Los Angeles, are making commitments to electrify their bus transit fleets in the next 20 years or so. Even smaller cities are moving toward electrification of buses. Iowa's first electric buses, a zero-emissions alternative to the current diesel-powered fleet, debuted in the Des Moines metro in October 2020.

Electric school bus programs are in progress in a few states, such as Virginia, Maryland and Minnesota. Still, California leads the transition with a goal of replacing all of the state's school buses with electric buses by 2040 – a total of 30,000 buses.

Many electrified fleet pilot projects show that electric buses can provide cost-effective and clean transportation to Americans, although there will be challenges along the way. While electrified fleets aren't mainstream yet, one thing is clear: partnerships between utilities, transit agencies and school districts will be crucial for success.

The shift toward electric buses will take time, but as progress is made, we can all expect to benefit from cleaner air and a more environmentally friendly future.

Maria Kanevsky is a program analyst for the National Rural Electric Cooperative Association, the national trade association representing more than 900 local electric cooperatives.

Iowa: Expanding the use of alternative fuels

The Clean Cities program coordinated at Iowa Economic Development Authority is a designated member of the U.S. Department of Energy's Clean Cities program. Public and private stakeholders work together to increase adoption of alternative fuels, advanced vehicle technologies and energy-efficient transportation strategies.

Iowa Clean Cities Coalition stakeholders include local governments, metropolitan planning organizations, private fleets, non-profits, associations, industry representatives, colleges and universities, and businesses committed to sustainable practices. Collaborative efforts include educating fleets, developing infrastructure to support alternative fuel vehicles, disseminating technical information, and raising awareness through meetings, workshops and webinars.

To learn more, visit www.iowaeda.com/iowa-energy-office/clean-cities.

- Fuel economy
- Idle reduction
- Biodiesel
- Natural gas
- Hydrogen
- Propane
- Electricity
- Ethanol

Prepare and make a plan

BY ANN THELEN AND DERRILL HOLLY

The spring season will soon usher in changing weather. In Iowa, March 22-26 is Severe Weather Awareness Week.

The week is designed to refresh, remind and educate everyone about the seasonal threats from severe weather and how to avoid them. It's also a great time to make and practice your emergency plan and build or update your emergency preparedness kit.

As many Iowans have experienced firsthand, families always need to be prepared for emergencies, and ongoing concerns triggered by the COVID-19 pandemic have prompted several new recommendations for evacuation planning, emergency supply kits and community shelter operations.

Updated CDC guidance

"We did a lot of work in 2020 to update our guidance for natural disasters to include COVID-19 guidance," says Capt. Renee Funk, DVM, of the Centers for Disease Control and Prevention (CDC). Funk received her Doctorate of Veterinary Medicine from Iowa State University and her Masters of Public Health and Tropical Medicine from Tulane University.

Many of the precautions and revisions implemented as part of the pandemic response are expected to be among the CDC's recommendations in place for 2021. Some are likely to remain in place permanently.

Funk, who serves as the CDC's associate director of emergency management, says personal protective gear, hygiene items and cleaning products are among the most prominent additions to every family's emergency supply preparation lists.

"We recommended a hand sanitizer that's at least 60% alcohol, disinfectant wipes and two masks for each person," Funk says. "Those things should be considered permanently added to your go kit, and you need to check for expiration dates for these products regularly."

Funk recommends that those items be included in personal go kits and the family's cache of emergency supplies. She also suggests that when you review the expiration dates of perishables, like canned goods, other foods and medications, you replace any cleaning items or protective gear that might also be out-of-date.

Importance of early preparation

The CDC is stressing the importance of early preparation. Checking and updating supplies before they are needed can prevent the need for shopping trips during the run-up to threatening storms or other emergencies. If shopping excursions are needed, officials recommend that a limited number – one or two people, considered low risk be designated to make all necessary shopping runs.

In the event of any emergency or natural disaster, you'll want to be prepared to shelter in place for several days if necessary. FEMA recommends having an emergency kit stocked with all essential supplies in one or two containers that are easy to access. Visit ready.gov/kit for a full checklist of disaster kit items and additional recommendations.

Spring and summer often bring severe storms, so now is the time to make a kit, make a plan and stay informed. That's the best way to care for yourself in your family.

Ann Thelen is the editor of *Living with Energy in Iowa.* Derrill Holly writes on consumer and cooperative affairs for the National Rural Electric Cooperative Association.

Extreme weather leads to unprecedented measures to protect electric grid

BY ERIN CAMPBELL

The word "unprecedented" has been used often over the past 12 months, but there really is no other way to describe what happened in the electric industry last month.

On Feb. 15 and 16, utilities across the Midwest, including several local electric cooperatives in western and north-central Iowa, implemented load control measures and temporary power disruptions to reduce electric demand on the grid. These highly unusual control measures were needed to prevent a catastrophic system-wide blackout. Electric demand reached historic highs due to electric heat use during record-breaking arctic weather that lingered over a large portion of the country. To put it simply, there was not enough available generation/supply to meet this exceptionally high electric use.

The grid's "air-traffic controllers"

Many electric utilities across the country are members of regional transmission organizations (RTOs) and independent system operators (ISOs), also referred to as power pools. These federally regulated entities work on a regional scale to coordinate, control and monitor supply and demand on the electric grid. RTOs do not own the power grid, but they do work as "air-traffic controllers" of the grid to ensure reliable supplies of power, adequate transmission infrastructure and competitive wholesale electricity prices on behalf of their member utilities. Most Iowa electric utilities are members of one of two RTOs: Southwest Power Pool (SPP) or Midcontinent Independent System Operator (MISO).

SPP issued unprecedented Energy Emergency Alert (EEA) Level 2 and Level 3 orders to its member utilities across several states on Feb. 15 and 16, calling for high levels of electric demand reduction/curtailment to match available supply.

Impacted electric co-ops in Iowa

Utilities that are members of SPP, including several Iowa electric distribution cooperatives served by Corn Belt Power Cooperative, L&O Power Cooperative and Northwest Iowa Power Cooperative (NIPCO), needed to shed specific amounts of electric load at particular times to maintain a safe and functional electric grid under the EEA Level 2 and Level 3 orders. The SPP-related outages that affected some Iowans were part of a larger electric demand management effort that impacted several states in the Midwest.

SPP issued the EEA orders to prevent a damaging regional blackout which could have taken days to restore. EEA Level 3 orders are extremely rare and are only implemented when absolutely necessary. In fact, these are the first Level 2 and Level 3 orders issued in the power pool's 80-year history.

To comply with the Level 3 orders, some local electric cooperative substations were taken offline for about an hour at a time on average. Unfortunately, these outages occurred with almost no advanced warning as SPP manages electric supply and demand minute-by-minute in real time. Local electric distribution cooperatives had just minutes to initiate substation outages and they worked to avoid interrupting service to critical facilities.

These load control measures were unprecedented in our region, stemming from historically frigid weather impacting a vast portion of the country over a prolonged period. While extremely rare, this is another example of how your local electric co-op works to protect the electric grid.

Erin Campbell is the director of communications for the Iowa Association of Electric Cooperatives

Smart home tech for your budget

BY MARIA KANEVSKY

Smart home devices can add comfort and convenience to your life, but the price tag for some of these devices can be another story. Since many smart home technologies are new and cutting-edge, the cost of owning these devices can sometimes be a major barrier. Luckily, there are several inexpensive options for smart home devices that won't break the bank while still offering nearly all the same benefits.

Smart home speakers, like the Amazon Echo Dot shown here, offer a wide range of features that provide consumers convenient control of smart home devices.

Photo Source: Abby Berry, NRECA

1. **Smart home speakers.** Smart home speakers provide a wide range of features, such as playing music, calling friends or family, or even locating a misplaced smartphone. One of the most useful aspects of smart home speakers is that they act as a smart home hub for your other smart devices. Each smart speaker comes with a voice assistant, like Amazon Alexa or Google Assistant, which can be used to control additional smart devices in your home.

   When choosing a smart home speaker, make sure your other smart devices are compatible with the system. For example, Google Assistant works best with other Google products, rather than Amazon or Apple products. Several smart home speakers, especially smaller, entry-level types like the Amazon Echo Dot and Google Home Mini, can cost as little as $30 or less. This makes them more affordable than the larger versions, like Amazon Echo and Google Home, while still offering nearly all the same features.

Smart plugs can make any device "smart" by connecting it to your Wi-Fi. Smart plugs can be controlled through a smartphone app and can also be used with smart home speakers.

2. **Smart plugs.** This technology works by directly inserting the smart plug into an outlet, then plugging your device into the smart plug. This can make any device "smart" by connecting it to your Wi-Fi through the smart plug. They can also be used with smart home speakers. One of the best features of a smart plug is that it can help you reduce your monthly energy use. This can be done by programming automatic shut-off times to prevent devices from drawing energy when they're not in use. There are plenty of inexpensive and well-performing smart plugs available under $20.

3. **Smart light bulbs.** Smart light bulbs can be controlled through your phone or by voice if connected to your smart home speaker. Some features include the ability to choose different lighting colors and shades, dimness levels and the ability to turn them on or off entirely. There is an extensive market for smart LED bulbs, but some of the less expensive options are the Wyze Bulb, the Lifx Mini and the Ikea Tradfri, with prices ranging from about $8 to $20 per bulb. For multi-bulb fixtures, an alternative to buying several smart bulbs is to buy a smart light switch to control the entire fixture.

If you're looking to buy more than one smart home device, make sure the devices are compatible with your smart home hub (Google Home Mini with Google products, or Amazon Echo Dot with Amazon products) to ensure the best performance of all devices. As with any smart home device, access to a secure and stable Wi-Fi connection will be crucial to properly use the technology.

Maria Kanevsky writes on consumer and cooperative affairs for the National Rural Electric Cooperative Association.

Tiny huts on the farm

BY VALERIE VAN KOOTEN

A while back on Facebook, an acquaintance posted a picture of a field with little, peaked buildings dotting its surface. "What are these tiny huts?" she asked. "Are they some kind of tiny houses?"

Those of us who had grown up on farms chimed in immediately – they were A-frames, built for "free range" hogs but used more and more infrequently in the present when most porcine entities are now gathered in large confinement sheds.

A-frames were a huge part of my growing up on a hog farm, where we raised thousands of hogs annually. Each hut held a mama sow and her piglets, which made for strong, healthy pigs growing up in fresh air and able to move where they wanted. However, this also made the care of these hogs much more labor-intensive, as they would escape through the smallest of cracks in fences and gates and needed to have their houses replenished with straw in cold and wet weather.

Early morning chores

Many was the rainy early morning that my sister and I huddled under the blankets, savoring the last few minutes of warmth, fully expecting at any moment my father to yell up the steps: "Get up, girls. We need to bed A-frames."

Depending on the direction that the rain or snow was coming from, bedding up A-frames was a necessity to keep the animals dry and was a process that entailed riding on a cart or wagon behind the tractor with several straw bales on board. At each A-frame, my dad would stop the tractor, and Amber and I would throw a few "paragraphs" of straw into the hut, knowing that the sow would trample it down into a nest for her young.

Bedding A-frames was cold and wet but relatively safe and easy. Vaccinating the piglets was another story. Dad would spread ground corn out several hundred yards from the A-frames and the sows would, understandably congregate there. As fast as we could, we'd zip from one A-frame to another, catch the piglets by the back leg and hand them to my dad, who would jab them with the syringe and then drop them into a bushel basket so we'd know which had been inoculated.

Protective mothers

The mothers may have been otherwise occupied, but they were Tamworths and Durocs – strong, hearty stock but also fiercesome mothers. One squeal from a piglet and they were headed our way with a "woof" that was intimidating and a bite that could maim. We were equipped with a fence panel to hold up, if needed, to divert the angry assault. For a couple of tweenagers, though, the panel might as well have been a hula hoop. We didn't have the strength to hold it against a raging sow and knowing that made the entire process an exercise in speed and anxiety. We were, in effect, the weakest link.

The age of A-frames may be finished, and though I may wax nostalgic for them, I'll pass on fending off enraged sows, thank you.

Valerie Van Kooten is a writer from Pella who loves living in the country and telling its stories. She and her husband Kent have three married sons and two incredibly adorable grandsons.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