

NEBRASKA

Magazine

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November 2021

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**Volume 75
Number 11
November 2021**



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Published monthly by the Nebraska Rural Electric Association, 1244 K Street, Box 82048, Lincoln, Nebraska 68501, (402) 475-4988.

Advertising in the *Nebraska Magazine* does not imply endorsement for products by the Nebraska Rural Electric Association. Correspondence should be sent to Wayne Price, Editor, *Nebraska Magazine*, Box 82048, Lincoln, NE 68501.

The *Nebraska Magazine* is printed by the Aradius Group, 4700 F Street, Omaha, NE 68117. Form 3579 should be sent to *Nebraska Magazine*, Box 82048, Lincoln, NE 68501.

Periodicals postage paid at Lincoln, Neb. POSTMASTER: send address changes to *Nebraska Magazine*, 1244 K Street, Box 82048, Lincoln, NE 68501.

Publication numbers are USPS 071-630 and ISSN 0193-4937.

Subscriber Services: Cost of subscription for consumers of participating member-systems is \$2.14 per year (17.8 cents per month), plus periodicals postage paid from equity accruing to the consumer. For nonmembers, a subscription is \$10 per year or \$20 for three years, plus local and state tax. Single copy, \$2.50.

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Wayne Price

NREA Welcomes Interim GM

Rick Nelson named as Interim General Manager

The Nebraska Rural Electric Association Executive Committee has named Rick Nelson as the Interim General Manager.

Rick brings over 30 years of organizational leadership and industry expertise to the NREA. Rick is the General Manager at Custer Public Power District in Broken Bow, Neb., and he will continue serving in this position. Prior to joining Custer Public Power District in 2001, Nelson spent 12 years in the operations department at Central Iowa Power Cooperative.

Nelson said “I look forward to providing leadership for the NREA and focusing on the core values of our statewide organization. Staying connected to the industry at Custer PPD will bring that insight to my role at NREA and furthering our relationships with our industry partners both statewide and at the federal level.”

The Nebraska Rural Electric Association is the private non-profit statewide trade association for 34 rural electric systems that provide electric service to consumers in most of the rural areas and many small towns in the great state of Nebraska. Together, the more than 1,000 dedicated employees of NREA member-systems serve 249,000 meters across more than 87,700 miles of line to impact the lives of rural Nebraskans and improve the Nebraska economy.

Over the years, NREA's mission has evolved to include a broad range of activities to assist our member-systems as they face the many challenges of providing low-cost, reliable electric service to the sparsely populated regions of Nebraska. The organization exists to represent the rural electric systems in public policy at the state and federal levels, create coordinate mutual aid assistance, manage educational programming, assist with regulatory compliance and legal issues, provide Nebraska youth with industry education, and partner with electrical industry and agricultural organizations. NREA publishes the *Nebraska Magazine* that services the residents of rural Nebraska.



Rick Nelson



Trent Loos

Trent Loos is a sixth generation United States farmer, host of the daily radio show, Loos Tales, and founder of Faces of Agriculture, a non-profit organization putting the human element back into the production of food. Get more information at www.LoosTales.com, or email Trent at trentloos@gmail.com.

Let's Keep the Lights On!

Growing up in Nebraska, I didn't think much about having a wind-powered water supply that filled a big cistern below the windmill. It wasn't until I had cows in a pasture watered only by a windmill that I thought about the benefits of that storage tank. While there are still windmills in Nebraska, ranchers are investing in equipment that guarantees water all the time.

Reliability is top of mind in our state following attendance at a "listening tour" hosted by the Nebraska Public Power District. The tour was a presentation by the hired consulting team to tell us what the board, driven by a green agenda and outside influencers, wants to do with our power supply so that NPPD can be Net Zero on carbon emissions by 2050.

The NPPD serves 403 of the 530 communities in the state and 2022 will mark the fifth year without a price increase for electric consumers, giving us the 8th lowest energy costs in the nation. Those are impressive statistics. From 2005 to 2020, NPPD modified their electrical generation mix and went from 29.5% carbon free to 45.4% carbon free. However, in doing so, they were forced to increase purchased power from 2.9% to 8.4%, thus relying on others for electricity.

Last winter, rolling blackouts in Texas caused major power problems for thousands but it didn't affect just Texans. NPPD is part of the Southern Power Pool that connects power districts from Montana to Texas over 65,000 miles of transmission lines. Energy officials say we narrowly escaped an even larger national disaster during those blackouts. We were minutes away from a major Midwestern power outage that would have taken months to resolve. While connecting power in such a large area allows those with power to temporarily help those without, the fact that it's all tied together also creates gigantic potential problems.

What is NPPD up to? It seems that some recently elected board members are jumping on the "evils of carbon" bandwagon and looking to remove reliability from our power system by forcing the state to scrap coal-fired power plants in place of wind and solar. Perhaps they don't realize that Nebraska is not only the beef state but also a major corn state. To raise that corn and other plants, we need carbon dioxide. CO₂ is not the great evil; it is an energy supply for crop production. An acre of 210-bushel corn, requires 11 ton of CO₂ per acre just to grow so if our electrical generation produces carbon dioxide, it's an essential nutrient for every green plant in the state.

The number one concern for everyone in attendance at that meeting was RELIABILITY! For those who think we should "go green" without a lot of research, planning and data to support it, I have a little suggestion for you: Go home and shut off the power. You can't leave to eat or watch TV or sleep where the temperature is comfortable, just deal with a little discomfort. When you wake up and can't take a shower or make your coffee, think about how small that discomfort was compared to that of people forced to go days, weeks, or months without power due to reliability issues. As uncomfortable as it might have been without heat or AC or a charge for your cell phone, thousands of animals rely on electricity for water to drink and heat to keep their babies alive in nursery barns. For animals, it's not just uncomfortable, it's a matter of life and DEATH!! While farmers have generators for emergencies, they are not suitable for long term use.

Celebrate Nebraska Industry



Efficiency key to competitive ethanol market

by **Chelsea Gengenbach**

Selling corn ethanol is a competitive business. It's essentially the same product no matter who makes it. How can one company stand out from the rest? The answer: efficiency.

KAAPA has invested nearly \$50 million in its Ravenna facility to improve efficiency – and the investments are paying off. Today, the company is one of the leading suppliers of ethanol for Western markets.

“In a commodity business, it makes sense to be the most efficient producer and to serve your customers well,” explained Mitch Feldman, KAAPA Ethanol

Ravenna Plant Manager. “The state of California pays a premium based on how environmentally friendly each gallon of ethanol is. KAAPA is where we are today because of the steps we have taken to improve our overall efficiency; from the electric energy used to the amount of time producers spend delivering corn to the plant.”

Nebraska is the nation's second largest ethanol producer, according to the Nebraska Ethanol Board. The state's 25 ethanol plants have a total production capacity of more than two billion gallons annually.

The Nebraska Corn Board states that the amount of thermal energy required to make a gallon of ethanol has fallen 36 percent since 1995, and electricity use is down 38 percent. At the same time, producers are squeezing 12



KAAPA Ethanol of Ravenna is located just over a mile east of Ravenna and is electrically served by Dawson Public Power District.

Above: Mitch Feldman, KAAPA Ethanol of Ravenna Plant Manager, (right) discusses the facility with Dawson PPD Lineman Jerry Folck from the top of its largest grain bin.

Photographs by Chelsea Gengenbach

percent more ethanol out of every bushel of corn.

By improving the facility's energy efficiency, KAAPA Ethanol Ravenna has increased its ethanol production since 2017 from 88 million gallons to over 130 million gallons annually without increasing its electric use.

The plant uses over 70 million kilowatt hours of energy annually and is the largest electric consumer for its provider, Dawson Public Power District. The annual energy used by KAAPA Ethanol Ravenna is the equivalent to more than 6,100 homes.

Working together with Dawson PPD, KAAPA Ethanol Ravenna has made several energy efficient improvements that have qualified for rebates under the EnergyWise program. The EnergyWise program is sponsored by Nebraska Public Power District in partnership with its wholesale utility customers. The goal of the program is to reduce overall energy use at the commercial, agricultural

and residential levels for a cleaner energy future.

"The rebates have made the difference between a project that may get done and a project that will get done," Feldman said. "These upgrades have made us one of the most efficient ethanol plants in the nation in terms of thermal energy."

The first EnergyWise rebate occurred in 2014 with the improvement to the facility's cooling system. When making ethanol, maintaining optimal temperature is key to a high-quality product. The overhaul of the existing equipment saved an estimated 4.5 million kilowatt hours in seven years.

The second incentive involved a new air compressor

Continued on Page 8

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system to power tools, control systems, and machinery. Before 2020, KAAPA Ethanol Ravenna had two smaller air compressors. After one failed, the facility invested in upgrading to one large system with variable frequency drives and saved about 790,000 kilowatt hours annually.

The most recent incentive occurred in 2021 and was one of the largest energy efficient investments to date. KAAPA Ethanol Ravenna replaced its chillers with a new cooling tower. By investing in this improvement, the facility is estimated to reduce its electrical energy use by one million kilowatt hours annually, the equivalent to the electrical use of 85 homes.

“We are glad to work with Dawson PPD,” Feldman said. “They understand that reliable electrical power is important for our business. We don’t have a big green button to push after a power outage; it’s not easy to start and stop production. Dawson PPD understands that and has made improvements to our service to ensure that interruptions are kept to a minimum.”

Ethanol is considered to have a positive energy balance. According to the United States Department of Agriculture, one British Thermal Unit of energy in the production of corn ethanol production results in 2.3 BTUs of usable energy in the form of ethanol. The improvements in overall technology, in addition to some strategic energy efficient upgrades, have helped KAAPA Ethanol become a leader within its industry.

How is Ethanol Made?

Ethanol can be made by a dry mill process or a wet mill process. Most of the fuel ethanol in the U.S. is made using the dry mill method. The major steps in this process are:

1. Milling. The feedstock (corn, wheat, barley, etc.) passes through a hammer mill which grinds it into a fine powder called meal. The vast majority of ethanol in the U.S. is produced from corn.

2. Liquefaction. The meal is mixed with water and alpha-amylase then passed through cookers where the starch is liquefied. Heat is applied at this stage to enable liquefaction. Cookers with a high temperature stage (120-150 degrees Celsius) and a lower temperature holding period (95 degrees Celsius) are used. High temperatures reduce bacteria levels in the mash.

3. Saccharification. The mash from the cookers is cooled and the secondary enzyme (gluco-amylase) is added to convert the liquefied starch to fermentable sugars (dextrose).

4. Fermentation. Yeast is added to the mash to ferment the sugars to ethanol and carbon dioxide. Using a continuous process, the fermenting mash is allowed to flow through several fermenters until it is fully fermented and leaves the final tank. In a batch process, the mash stays in one fermenter for about 48 hours before the distillation process is started.

5. Distillation. The fermented mash, now called

beer, contains about 10% alcohol plus all the non-fermentable solids from the corn and yeast cells. The mash is pumped to the continuous flow, multi-column distillation system where the alcohol is removed from the solids and the water. The alcohol leaves the top of the final column at about 96% strength, and the residue mash, called stillage, is transferred from the base of the column to the co-product processing area.

6. Dehydration. The alcohol from the top of the column passes through a dehydration system where the remaining water will be removed. Most ethanol plants use a molecular sieve to capture the last bit of water in the ethanol. The alcohol product at this stage is called anhydrous ethanol (pure, without water) and is approximately 200 proof.

7. Denaturing. Ethanol that will be used for fuel is denatured, or made unfit for human consumption, with a small amount (2-5%) of gasoline at the facility which produces the ethanol.

8. Co-Products. There are two main co-products created in the production of ethanol: distillers grain and carbon dioxide. Distillers grain, wet or dry, is a valuable livestock feed. Carbon dioxide is given off in great quantities during fermentation and many ethanol plants collect, compress, and sell it for use in other industries.

Information provided courtesy of American Coalition for Ethanol, all rights reserved.

<https://ethanol.org/>

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The very best hunting knives possess a perfect balance of form and function. They're carefully constructed from fine materials, but also have that little something extra to connect the owner with nature.

If you're on the hunt for a knife that combines impeccable craftsmanship with a sense of wonder, the **\$79 Huntsman Blade** is the trophy you're looking for.

The blade is full tang, meaning it doesn't stop at the handle but extends to the length of the grip for the ultimate in strength. The blade is made from 420 surgical steel, famed for its sharpness and its resistance to corrosion.

The handle is made from genuine natural bone, and features decorative wood spacers and a hand-carved motif of two overlapping feathers—a reminder for you to respect and connect with the natural world.

This fusion of substance and style can garner a high price tag out in the marketplace. In fact, we found full tang, stainless steel blades with bone handles in excess of \$2,000. Well, that won't cut it around here. We have mastered the hunt for the best deal, and in turn pass the spoils on to our customers.

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Ten Chicks Gather to Sing in Northeast Nebraska

by LaRayne Topp

Ten hens congregate each week in Northeast Nebraska. Like other hens, they might cackle about this or that, or crow about their little brood's latest achievements, but these hens are Heavenly, and the music they can warble is divine.

Nine women from the towns of Beemer, Snyder, West Point and Wisner come together each week to practice, getting ready to perform a selection of Christian songs and hymns, all under the direction of Brenda Nissen of Allen. The triple trio known as the Heavenly Hens have led the singing at county fairs; put on performances at

various schools, senior centers and other venues; given outdoor concerts such as "Gospel on the Grass"; and even started a surprise flash mob at a women's guest night.

"We sing wherever the Lord takes us," explained one of the Hens, Nancy Nelson.

There's only one type of performance they won't do. "We won't be background music," Nissen said. "We share our faith; it's like a Bible study with music. And we have fun!"

Conversation at practices is lively, and the Hens can be honest although never fowl-mouthed. "Someone's off key," someone might say, or "Have we sung this one before?" If someone complains about this or that,



Above: Nancy Nelson, right, points out dynamics of a particular song to Beverly Meyer before one of their performances.

Opposite: The Heavenly Hens are a Northeast Nebraska women's triple-trio. They include, front row from the left: Kerri Bockelman and Ann Norgard; second row seated: Nancy Nelson, accompanist and director Brenda Nissen, Beverly Meyer, Lori Schutte; and back row: Gloria Wellman, Peg McAllister, Marcia Summers and Jean Schlickbernd.

Nissen asks if they're whining. Then, the next time through the song, the whiner gets a solo.

Nissen might advise the group to watch Marsha Summers' foot as she's often weaving the beat in the air. Others tap a hand on the knee, seated at the edge of a chair. Some bounce along in time to the music.

"Good job, girls," Nissen might say. "There should be dancing."

Many of the Heavenly Hens' songs are praise music, some are patriotic or fit a particular holiday, others are Sunday School songs that kids recognize, and still others are familiar hymns. Nissen gets the final say on song choices. After all, she's the head hen.

Typically singing soprano, although the group sings in three- and even four-part harmony, are Ann Norgard, Gloria Wellman and Lori Schutte. Peg McAllister, Beverly Meyer and Nancy Nelson join in on second soprano, and rounding out the harmony are altos: Jean Schlickbernd, Marcia Summers and Kerri Bockelman.

The group first began to harmonize in the fall of 2017. Nissen was a member of Trinity United Methodist Church at the time, a triple parish

combining churches from West Point, Beemer and Wisner. She planned to get a group together for one performance, and asked the church secretary for a list of nine women who sing. Although none of them had ever met Nissen, when she called them, each one responded with an enthusiastic "Yes."

After that first performance, the group decided to continue on.

In the beginning their name was formal and lengthy, comprised of six words. They were looking for something shorter, punchier and catchy while practicing songs at the Nissen farm home one day. Jean Schlickbernd noticed a black and white chicken scratching in the grass nearby and announced to the group, "We should be the Heavenly Hens." Several members didn't see eye to eye with giving themselves a name connected with chickens, but Schlickbernd was persistent and they were soon outvoted. Now since the idea's been hatched, Schlickbernd noted, they all enjoy being known as the Heavenly Hens. Although they don't wear choir robes or uniforms, their performance shirts give a nod to chickens.

The majority of the members are from the original group, although they've seen a change of three singers through the years. Today, they are from a variety of area churches, all with the goal of spreading the love of Jesus, Nissen said.

Appropriately, for a group of Hens, some are empty nesters. A few are retired, while others continue to work full-time. The one trait all share in common is their supportive spouses. The Hens reach each other to set up times to practice and perform through phone texts. When their cell phones begin to ding ding, Gloria Wellman said, the husband are sure to remark, "It's the Hens again."

In whatever life situation they find themselves, the group fills a void for the musicians in some way. Wellman, for example, says the group has been a blessing to her. Once a week, they turn their cell phones off, and for one and a half hours they meet to practice. It's fellowship. It's a safe place to share concerns. And most importantly, they say with a grin, whatever happens in the coop, stays in the coop.

To learn more about these Christian singers, check them out at [TheHeavenlyHens](#) on Facebook.

Don't Let Ductwork Loss Rob Your Home of Energy and Money

Pop quiz: What could be wasting up to 20% of your home's energy use each year? Here's a hint. It's not your children's video gaming systems or cell phone chargers. Rather, it's something you rarely see and likely wouldn't consider unless you have heating and/or cooling problems.

Give up? It's your ductwork! About 90% of Nebraska homes have a furnace, air conditioner or heat pump connected to a centralized ductwork system. According to EnergyStar, up to 30% of the heated or cooled air that moves through ducts could be lost to leaks, improperly sealed joints, or a lack of insulation. Leaks and seams are responsible for inefficient heating and cooling, but something called heat conduction also shoulders some of the blame. According to the Department of Energy, this phenomenon, in combination with air leaks and gaps, can reduce the efficiency of heating and cooling systems by as much as 40%. Since about half of the energy used in Nebraska homes is attributed to space conditioning, that equates to an overall annual energy loss of 20%.

Why? Your home's duct system is a branching network of rectangular and/or round tubes in the walls, floors and ceilings that carries heated or cooled air from the home's heat pump, furnace, or central air conditioner to each room. Duct sections are usually made of sheet metal, fiberglass or other construction materials. Duct loss occurs when conditioned air in a home escapes the duct system through holes, loose connections or improperly sealed junctions between sections. Loss also occurs as heat transfers directly through the walls of the duct itself. These losses are usually from the effects of poor duct installation, insulation and/or design practices.

How would you know if you have duct problems? Here are common symptoms:

- Rooms that are hard to heat or cool – Rooms that are not cooling or heating properly usually means that the ducts are not transporting sufficient amounts of conditioned air to and from them.
- Dust can be found on flat surfaces after running the furnace or air conditioner – Dust can

be drawn into leaky air return ducts, make it passed the filter and blow the dust into conditioned rooms.

- Higher utility bills – If ducts cannot transport air properly through a home, the heating and cooling system has to run longer, which requires more energy and costs more money.

Fix Duct Issues Inexpensively

Before contacting a certified HVAC technician, there are some simple, inexpensive steps you might try to resolve duct issues:

Step 1. Turn on your furnace or air conditioning system.

Step 2. Locate air ducts (typically found under floors, in ceilings, and in attics and crawl spaces).

Step 3. Feel along the sides of ducts to spot escaping air. Leaks are found at connections to vents and registers where they meet the floor, walls and ceiling. Remember that the s-cleats (where sections of duct connect) are also notorious for leaking.

Step 4. Seal with mastic-type sealant and/or butyl, foil or other heat-approved tapes that are labeled with the Underwriters Laboratories (UL) logo. Mastic sealants are applied with a paint brush and work great for leaks less than one-quarter inch wide. Heat-approved tapes are great for wider gaps and holes in ductwork.

Step 5. If any of your ductwork runs through areas not heated or cooled, remember it requires proper insulation. When uninsulated ductwork extends through unconditioned attics, basements or crawlspaces, heat can easily transfer directly through the duct wall. Thus, cooled air will heat up during the summer and heated air will be cooled during the winter before it gets to the room being conditioned. Also, uninsulated ductwork running through warm, humid areas will cause moisture problems since humidity will condense into liquid water on the duct's surface.

Finally, if you are unable or prefer not to resolve your system's concerns through the steps above, it is best to contact an HVAC technician certified through an accredited organization such as the North American Technician Excellence (NATE) program. This helps provide assurance your duct problems are appropriately resolved the first time.

Grain Bins: Harvesting Safely

By Larry Oetken



As rewarding as it may be, farming is an extremely difficult job—and it ranks among the top 10 most

dangerous professions in the United States.

Farmers work hard to get the job done, and sometimes it's easy to forget all the necessary steps to take when practicing safe

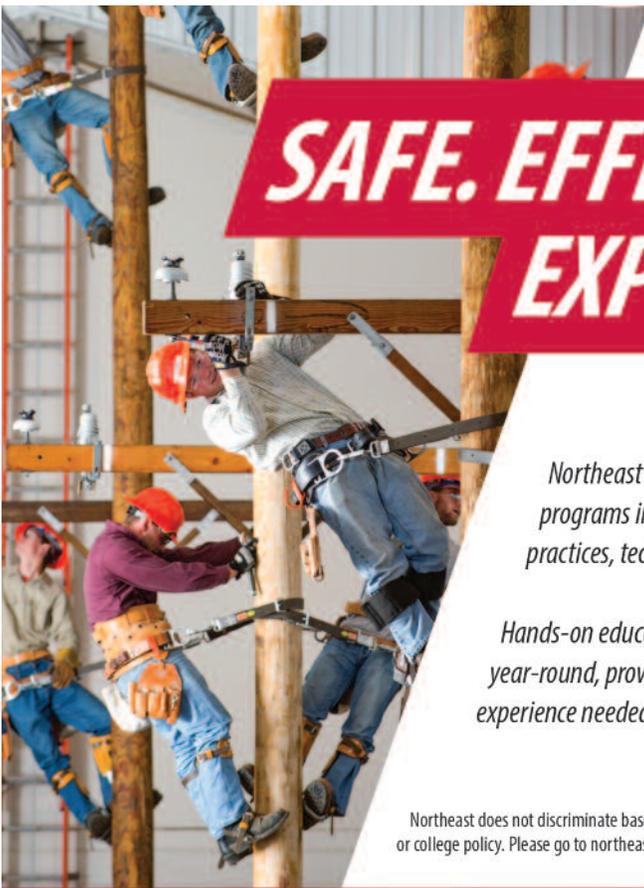
operations. Grain bins are siloed spaces built for storing grain and fermented feed known as silage. These bins play an integral role in the efficiency and profitability of farm and ranch operations, and safety regulations should always be considered when working around these structures.

Whether you're purchasing new grain bins or remodeling areas that contain existing ones, proximity to overhead power lines must be a considered factor.

The National Electrical Safety Code requires an 18-foot minimum vertical clearance from the highest point of the filling port

of the grain bin to nearby high-voltage wires and a 55-foot minimum distance from the power line to the grain bin wall. Changes to landscaping and drainage work can affect clearance heights of power lines, so remember to check these measurements regularly. Accidents can happen in a split-second, which is why you should always use caution when working near power lines.

Larry Oetken is the Job Training & Safety Coordinator for the Nebraska Rural Electric Association.



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Normally when the topic of electronics and children comes up, the conversation gravitates toward the pros and cons of screen time or maybe trading tips on the best educational apps. However, an often-overlooked topic is how to talk to your children about the potential safety hazards associated with electronics, sources of electricity and their environment in general. As soon as children can walk, parents and caregivers should discuss with them how to be safe around electricity, both inside the home and when playing outdoors.

Share these outdoor safety tips with children of all ages:

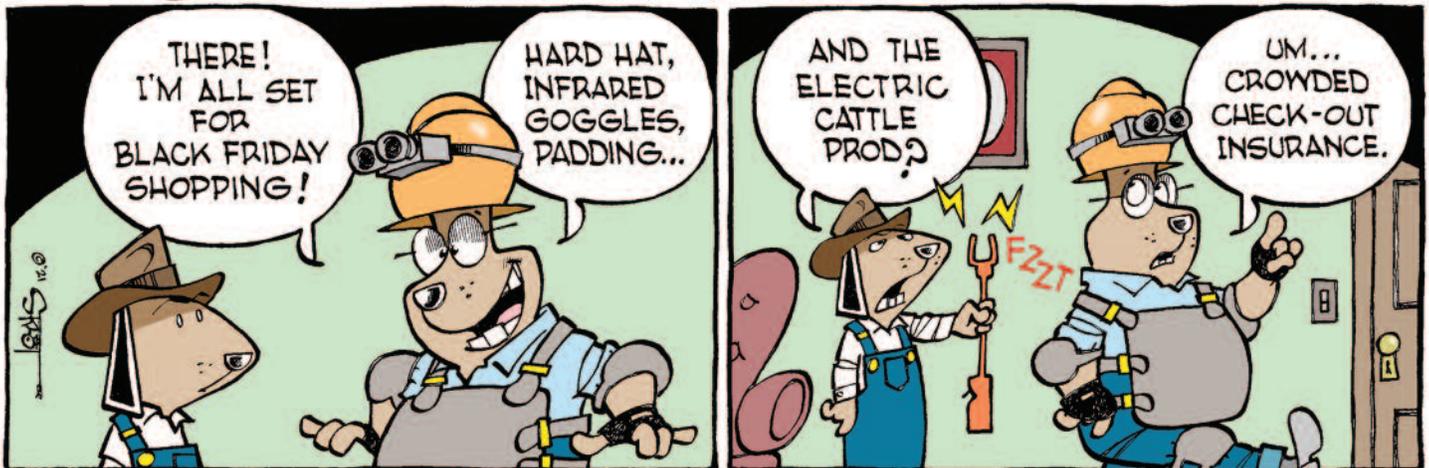
- Do not touch or go near a sagging or downed power line. Instead, tell an adult to call the electric utility to report it.
- Fly kites, model airplanes, remote-control flying toys and drones in large, open areas, such as parks or fields, far away from power lines. If any of these items (or any item or object) gets caught in a power line, never try to retrieve it. Tell an adult to call the electric utility for help.



Do not play with electrical cords or plugs. Younger children should ask an adult before plugging in or unplugging something. In addition, never pull or tug on cords. Instead, gently pull the plug out of the wall by grasping the plug (and not the cord).

- Never climb trees near power lines.
- Never climb a utility pole or tower. The electricity carried through this equipment could kill you.
- Never go into an electric substation for any reason. Electric substations contain high-voltage equipment, which can kill you. Never rescue a pet or retrieve a ball or toy that goes inside the fenced area surrounding a substation. Tell an adult to call the electric utility instead.
- Always stay away from outdoor electrical equipment marked “keep out,” “high voltage” or “danger.”
- Do not play, sit or climb on a padmount transformer, a.k.a. green box. (Note to adults: While green boxes are typically safe to be around, it is better to leave this equipment alone just in case a box has become unlocked or vandalized, or the contents or box have become damaged in some way. Please report an unlocked cabinet or any signs of damage to your local electric utility.)

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Solar-Powered Fun For the Home

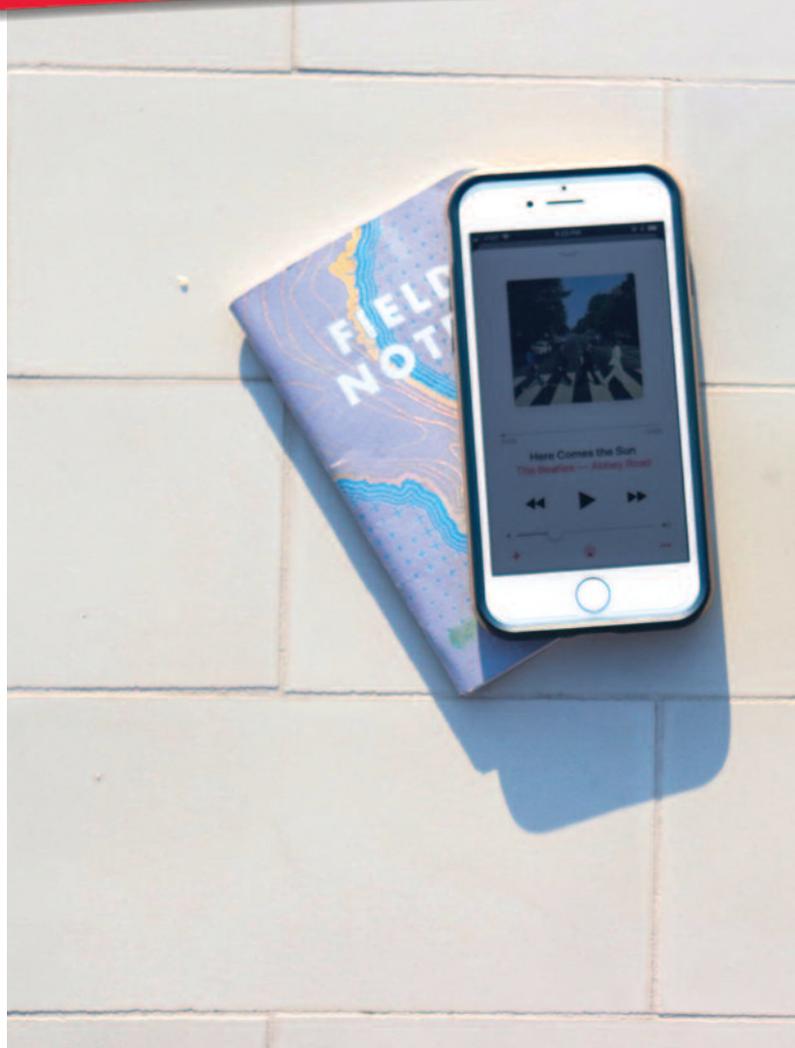
by **Maria Kanevsky**

The sun has an incredible amount of energy—more than we could ever fully harness. Fortunately, there's an array of solar-powered gadgets and devices available to help you take advantage of this free source of energy. These technologies are a great way to power everyday things for free, by simply using energy from the sun!

When you want to bring your music outdoors, solar-powered Bluetooth speakers are the perfect solution. Many Bluetooth speakers can be recharged with a USB port and electrical outlet, but solar-powered speakers are easily recharged by sunlight. As long as the sun is shining, the speaker will never run out of power. Most solar-powered speakers include a backup battery that allows the speaker to run long after the sun goes down. When shopping for a solar-powered speaker, be sure the speaker can handle the proper outdoor terrain. For example, if you're planning to bring the speaker to the beach, make sure it's water-resistant.

For an easy, low-maintenance approach to light up your lawn and walkways, solar pathway lights (and other solar décor) are a great addition. Outdoor solar lights come in a variety of styles and can be used to decorate your outdoor space in different ways. They can be used as an alternative to traditional lights and offer several benefits. Once installed, solar lights run on their own and work relatively maintenance-free. Solar lights are powered by batteries that can run all night if the panels receive enough sunlight during the day. Solar lights are wireless, so there's no need to search for an electrical outlet. You can purchase solar lights for about \$5 to \$20 depending on the size and design.

If you're looking to engage your children, there are several DIY kits available for kids to learn more about solar energy. These kits typically include a small solar panel, connecting wires and the end-use device which varies depending on the kit. From powering a small fan, to lighting a light bulb, these interactive kits provide an educational opportunity for kids to learn more about solar.



As an alternative to a charcoal or gas-powered grill, the solar-powered grill is another great way to cook meals outdoors. One of the most popular solar-powered grills is by GoSun, which uses a solar vacuum tube to absorb light while also providing insulation. Using solar heat, the parabolic reflectors focus sunlight onto the vacuum tube. The tube can then convert about 80% of the solar energy into heat. There are plenty of occasions for using a solar-powered grill, such as traveling, camping or even during a power outage. The internal temperature can typically reach up to 550 degrees, while the insulation makes it cool to the touch on the outside—an important safety feature. Prices for solar-powered grills range from \$150 to \$300, making them comparable to gas-powered grills.



Above: Most batteries for solar-powered watches can last up to 10 years. Photograph by Dennis Amith

Left: Many solar-powered Bluetooth speakers, like the Sunfox Solar Speaker shown here, include a backup battery that allows the speaker to run long after the sun has gone down. Photograph by LuminAID



One of the most popular solar-powered grills is by GoSun, which uses a solar vacuum tube to absorb light while also providing insulation. Photograph provided by GoSun

A gadget to help you keep track of time is the solar-powered watch. A small solar cell underneath the dial converts the solar energy into electrical energy, with excess energy stored into the rechargeable battery. As long as the watch receives a moderate amount of sunlight, the battery doesn't need to be replaced for up to 10 years, which is much more convenient than replacing the battery roughly every year for conventional watches. Solar-powered watches can cost anywhere from \$50 to \$1,000 depending on their design.

The sun provides an endless amount of energy, and these gadgets are a great way to power everyday devices. As more solar-powered technologies are developed, you may find yourself considering a solar-powered gadget for your next purchase.

Q : I read your recent article about electric trucks and SUVs, and I'm excited that some electric vehicle options are now better suited to rural areas. Can you tell me more about how the battery system and charging works in an electric vehicle?

A : We've been hearing more buzz about electric vehicles (EVs) in rural America, so it's a good time to know more about EV batteries and charging options.

Batteries, like the vehicles they power, come in different sizes that provide different mileage ranges. Most people charge their EVs at home, but if you take a cross-country trip, you can charge your EV at one of the rapidly growing number of charging stations around the country. The Department of Energy estimates there are currently 50,000 EV charging sites in the U.S.

Electric vehicles will tell you how many miles are remaining before a charge is needed, and many models offer in-car navigation to the next charger. For EVs without this feature, there are many smart phone apps available to help you navigate to the next charging site.

We often refer to three levels of electric vehicle charging. A new EV comes equipped for Level 1 (L1) charging, which simply plugs into a regular electrical outlet. This is the slowest option for charging, but if you don't travel many miles per day or your EV is a plug-in hybrid (PHEV) with a small battery, L1 charging will likely meet your needs. L1 requires less than 1.5 kilowatts, which is about the same as a hair dryer, and will give the battery 3 to 5 miles of range per hour of charging. If you drive your car 40 miles or less during the day and can charge it for 10 hours every night, this method should work for your daily driving needs. But if

you have an all-electric EV with a 60-kWh battery, it would take more than 40 hours to fully charge with L1.

Level 2 (L2) is the most common type of charging because it operates on 240-volt power, which nearly every home has. Level 2 can supply roughly 6 to 19 kW of power, depending on what your vehicle can accept and your electric circuit's amperage. L2 can provide 100 miles of charge in several hours, and fully charge a large battery in eight to 10 hours. You may need to install a new circuit if there isn't a 240-volt circuit near the area you park. L2 is the most common type of charging at public sites, like grocery stores, libraries and workplaces.

Level 3 (L3) chargers, often called DC Fast Chargers (DCFC), require much more current and are not installed in homes. L3 chargers are typically seen at specific EV charging sites and some gas stations. These chargers have power levels from 50 kW to 350 kW, depending on the charging station. Some new EVs can accept 250 kW or more and charge a battery from 10% to 80%

in less than 20 minutes. Some older EV models may take an hour or more to achieve 80% at 50 kW. When selecting an EV, the charge time from 10% to 80% can be an important factor if you regularly head out on road trips.

"Vehicle to home" is an exciting new technology that enables EVs to power a home or shop during a power outage. Ford's upcoming F-150 Lightning Pro (2022), Hyundai's Ioniq5 and Kia's EV6 crossovers, and the 2022 Volkswagens are slated to offer this option.

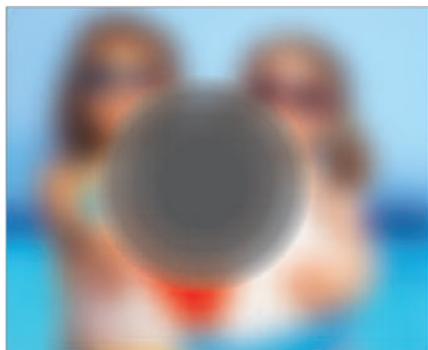
Public power districts and electric co-ops around the country are working on programs to prepare for more EV home charging, so reach out to your utility if you have questions about EVs, charging or specific programs and rates.



*A variety of new EV models will be available to drivers soon, including the 2022 Ford Mustang Mach-E.
Photograph provided by Ford*

Advanced Technology Allows Macular Degeneration Patients To See Again

And Allows Many Low Vision Patients To Drive Again



*A scene as it might be viewed
by a person with age-related
macular degeneration*



*Same scene of Grandchildren
as viewed through telescope
glasses.*

For many patients with macular degeneration and other vision-related conditions, the loss of central visual detail also signals the end to one of the last bastions of independence - driving. Nebraska optometrist, Dr. Robert Stamm is using miniaturized telescopes which are mounted in glasses to help people who have lost vision from macular degeneration and other eye conditions.

“Some of my patients consider me their last chance or people who have vision loss” said Dr. Stamm, one of only a few doctors in the world who specializes in fitting bioptic

telescopes to help those who have lost vision due to macular degeneration, diabetic retinopathy, and other eye diseases.

Imagine a pair of glasses that can improve your vision enough to change your life. Bioptic telescopes may be the breakthrough in optical technology that will give you back your independence. Patients with vision in the 20/200 range can many times be improved to 20/50.

Bioptic telescopes treat both dry and wet forms of macular degeneration as well as other vision limiting conditions.

While there is currently no cure, promising research is being done on many fronts. “My job is to figure out everything and anything possible to keep a person functioning” says Dr. Stamm “Even if it’s driving”. “The major benefit of the bioptic telescope is that the lens automatically focuses on whatever you’re looking at,” said Dr. Stamm. “It’s like a self-focusing camera, but much more precise.”

For more information and to schedule an appointment today, call:

Robert Stamm, O.D.
Low Vision Optometrist
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(877) 393-0025



Simple Sides for Holiday Entertaining

Preparing side dishes can be time consuming. Save those precious minutes to enjoy the holidays by using refrigerated, never-frozen options like mashed potatoes, mashed sweet potatoes, baked apples and even macaroni and cheese that can be heated in the microwave and ready to serve in minutes.

Like many hosts, you are likely searching for perfection in your holiday get-togethers. With an ever-expanding guest list, each year may seem more and more difficult to pull off the perfect gathering. Make things easier and still delicious by serving ready-to-eat options like refrigerated macaroni and cheese made with real milk and cheese.

Find more ideas to make your holiday sides simply delicious at bobeansgrocery.com.

Perfect Holiday Potatoes

Mashed potatoes are a staple on many holiday menus, but all that peeling and mashing can take hours. This year, save time by using refrigerated, ready-to-eat mashed potatoes, such as Bob Evans Original Mashed Potatoes, which taste just like homemade.

Add your family's special ingredient, like sage butter, and no one will know they aren't homemade.



Sweet Potato Cookies

- 3/4 cup vegetable shortening**
- 3/4 cup brown sugar**
- 1 large egg**
- 1 cup Bob Evans Mashed Sweet Potatoes**
- 2 cups all-purpose flour**
- 1 teaspoon baking soda**
- 1 teaspoon kosher salt**
- 1 teaspoon pumpkin pie spice**
- 1 cup butter, unsalted**
- 3 cups powdered sugar**
- 1/2 teaspoon maple extract**
- chopped honey roasted pecans (optional)**
- mini marshmallows (optional)**

Heat oven to 350 F.

In large bowl, using hand mixer or paddle attachment, cream shortening and brown sugar. Add egg and sweet potatoes; mix until combined.

In small bowl, combine flour, baking soda, salt and pumpkin pie spice. With mixer on low speed, slowly add flour mixture to egg mixture until well mixed. Using small cookie scoop, drop rounds onto greased baking sheets.

Bake 10-12 minutes, or until golden brown. Cool completely before frosting.

In separate bowl, beat together butter, powdered sugar and maple extract until frosting is light and fluffy. Frost each cooled cookie with maple butter cream frosting.

Sprinkle with pecans and mini marshmallows, if desired. Carefully toast marshmallows with culinary torch, if desired, while avoiding melting frosting.



Bacon-Wrapped Jalapeno Poppers

- 2 packages Bob Evans Thick Sliced Hardwood Smoked Bacon, slices cut in half
- 1 package Bob Evans White Cheddar Mashed Potatoes
- 1 package garlic herb cheese spread
- 20 jalapeno peppers, halved, seeded with membranes removed
- 1/4 cup brown sugar
- 1 teaspoon ground cayenne pepper

Heat oven to 400 F. Set bacon out to thaw to room temperature so it is pliable.

In mixing bowl, use rubber spatula to combine mashed potatoes and garlic herb cheese. Stir until incorporated. Spread 1 teaspoon mashed potato mixture in each jalapeno half; level each with butter knife or spatula.

Wrap each jalapeno with bacon; use three half slices for large jalapenos or two halves for smaller sizes. Be sure bacon is wrapped sealing in mashed potato mixture tightly.

In small mixing bowl, combine brown sugar and cayenne pepper. Generously sprinkle over bacon and pat gently to make it stick.

Line cookie sheet with piece of parchment paper so sugar does not burn to pan. Bake until bacon reaches desired crispiness, around 25-35 minutes.

Let peppers cool slightly before serving, about 5 minutes.

Wild Rice & Sausage Casserole

- 1 box Uncle Ben's long grain wild rice
- 1 lb. sausage
- 1 onion, diced
- 2 cups celery, diced
- 8 slices toasted bread cubes
- 2 regular size cans chicken rice soup (undiluted)
- 1 13 oz. can chicken broth
- 1 4 oz. can mushroom (more if you like)

Prepare rice per directions on box. Brown sausage and drain. Saute onions and celery in butter. Mix all together well and pour into greased baking dish. Bake uncovered at 325 degrees for 45 minutes to 1 hour. Very delicious!!!

Nancy Schmitz, Wellfleet, Nebraska

Delicious Potatoes

- 8 medium potatoes
- 1 large onion
- 1 8 oz. sour cream
- 2 cups milk
- 1/2 envelope Lipton onion soup mix
- 1 stick oleo
- 1/2 lb. Velveta Cheese, cubed
- 1 1/2 cups cheddar cheese, shredded

Boil potatoes with skins, grind with onion. Combine sour cream, milk, soup mix, mixing well. Pour over potatoes. Add oleo and cheeses. Bake at 375 degrees until bubbly.

Dolores Florian, Ord, Nebraska

Pumpkin Torte

- | | |
|---|--|
| <ul style="list-style-type: none"> 1 (2-layer size) package yellow cake mix 1 15 oz. can pumpkin 1/2 cup milk 1/3 cup vegetable oil 4 large eggs | <ul style="list-style-type: none"> 1 1/2 tsp. pumpkin pie spice 1 8 oz. package cream cheese 1 cup powdered sugar 1 8 oz. tub Cool Whip, thawed 1/4 cup caramel topping 1/2 cup chopped pecans |
|---|--|

Preheat oven to 350 degrees and flour and spray 2 – 9" round cake pans. Beat cake mix, 1 cup pumpkin, milk, oil, eggs and 1 teaspoon of the pumpkin pie spice in a large bowl with electric mixer on medium speed until well blended. Pour into pans. Bake 30 – 35 minutes until toothpick comes out clean. Cool completely on wire racks. Meanwhile, beat cream cheese with mixer until creamy. Add powder sugar, remaining pumpkin and 1/2 teaspoon pie spice, mix well. Stir in Cool Whip. Remove cake from pans, put filling between layers and a dollop on top. Drizzle the cake with caramel and nuts.

Jo Munderloh, Pender, Nebraska

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