NEBRASKA Magazine

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June 2023

THREE SURPRISING FACTS ABOUT ENERGY EFFICIENCY

Inside:

• Emerging Technologies for Generating Power • Nebraska Inventions • Take Steps for Ladder Safety


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Vice Chancellor for Business and Finance
University of Nebraska-Kearney
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Contents

6 Three Surprising Facts About Energy Efficiency

We're more energy efficient than you might think. And you may also be surprised to learn that we can do even better with a little innovative thinking, and by controlling hidden power users. Freelance writer Paul Wesslund shares three surprising facts about energy efficiency that can help you make the best use of your electricity.

14 Nebraska Inventions

It's fascinating to learn that many everyday items and services originated in Nebraska. Every tool, innovation, food product, and service started with an idea, a need. Freelance writer Marilyn Jones writes about some of Nebraska's inventions recognizable nationwide and, for some, worldwide.

Departments

Editor's Page
Safety Briefs/Murphy
Energy Sense
Down Home Recipes
Marketplace

The latest energy intensity index shows that we're getting better at creating more economic activity with less energy. Energy intensity is down, and productivity is up. See the related article on Page 6. Photograph by Peter Magera

Editor's Page

Wayne Price

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SCAN ME

Help Us Battle Copper Crime

Metal theft—the crime that endangers lives and can result in thousands of dollars in damages ultimately paid for by you—continues to plague electric utilities all over America.

Copper wire is appealing to thieves who look to sell it for scrap. Burglars often climb power poles, scale fences, and break into buildings to steal the precious metal—almost always endangering themselves and others in the process. Scrap copper prices were $3.85 per pound on April 26, 2023.

Thieves are willing to go to almost any length to steal metal, especially copper. They have stripped sheets of metal from building rooftops, stolen memorial decorations from cemeteries, ripped apart air conditioners for the copper coils within, and stripped homes and buildings of wiring and piping. Construction sites are frequent victims because metal is often left on-site unguarded and relatively unsecured.

Farm equipment such as irrigation pipes and fixtures are also targeted. The thieves can endanger the safety of themselves and those in the surrounding community, and weaken the infrastructure vital to our everyday lives. Unoccupied buildings have exploded due to gas lines being stolen. Stretches of highway have been left dark and tornado warning sirens have been rendered inoperable due to wiring being stolen.

Thieves have removed wiring from traffic and railway signals and even posed as utility workers in order to remove large sections of utility cable from the sewers beneath city streets. Electrical substations are frequently targeted and some thieves have been electrocuted trying to steal live electrical wiring.

Some public power districts and electric cooperatives stamp copper and aluminum wire with an ID number to deter theft. Stolen wire is commonly brought to recycling centers and traded for cash. Although many state laws require recycling centers to keep records of transactions, enforcement can be difficult. Without identifying marks, stolen wire is hard to track and rarely recovered.

Please help us prevent these thefts. If you notice anything unusual, call your local electric utility immediately. If you see anyone other than electric utility personnel around substations or other electric facilities, call the police.

Guest Editorial

Colyn Suda

Colyn Suda is the General Manager of Southwest Public Power District, headquartered in Palisade, Nebraska

The Value of Unfiltered Historical Knowledge

The challenges that are faced by your electric utility continue to occur at a rapid pace. Reliable, safe, and inexpensive energy used to be the three keywords to measure all major decisions in the electric energy industry. Today, those words now include: Renewable Distributed Generation Integration; Transportation Plant Adaptation; Smart Grid Technology: Supply Chain Constraints; Geopolitical instability; Federal Regulations and the list goes on and on.

I would argue that succession planning is at the top of the list of challenges we face and deserves high-level planning and preparation from management. Within that path of planning, I have found that the best advice usually comes from an experienced and trusted source. A source I like to refer to as: **"Unfiltered Historical Knowledge."** Unfiltered communication requires direct and sometimes aggressive language to accurately transmit information and make a strong point. Historical knowledge can be communicated from an individual within your organization or field with experience that can help you avoid making the mistakes of the past and explain previous decisions.

There is a quote attributed to motivational speaker Jim Rohn that goes: "You're the average of the five people you spend the most time with." If that is true then we should all agree that it is important to give more consideration to those we surround ourselves with in order to become better, more productive and more successful people. One could also speculate that perhaps it's more than just five.

Even as artificial intelligence and other new technologies emerge, they will never replace someone telling you to "Put on your big boy britches and get back to work." Open discussions and brutal honesty are infinitely more important than the concern of offending someone and remaining silent at a time that requires valuable input.

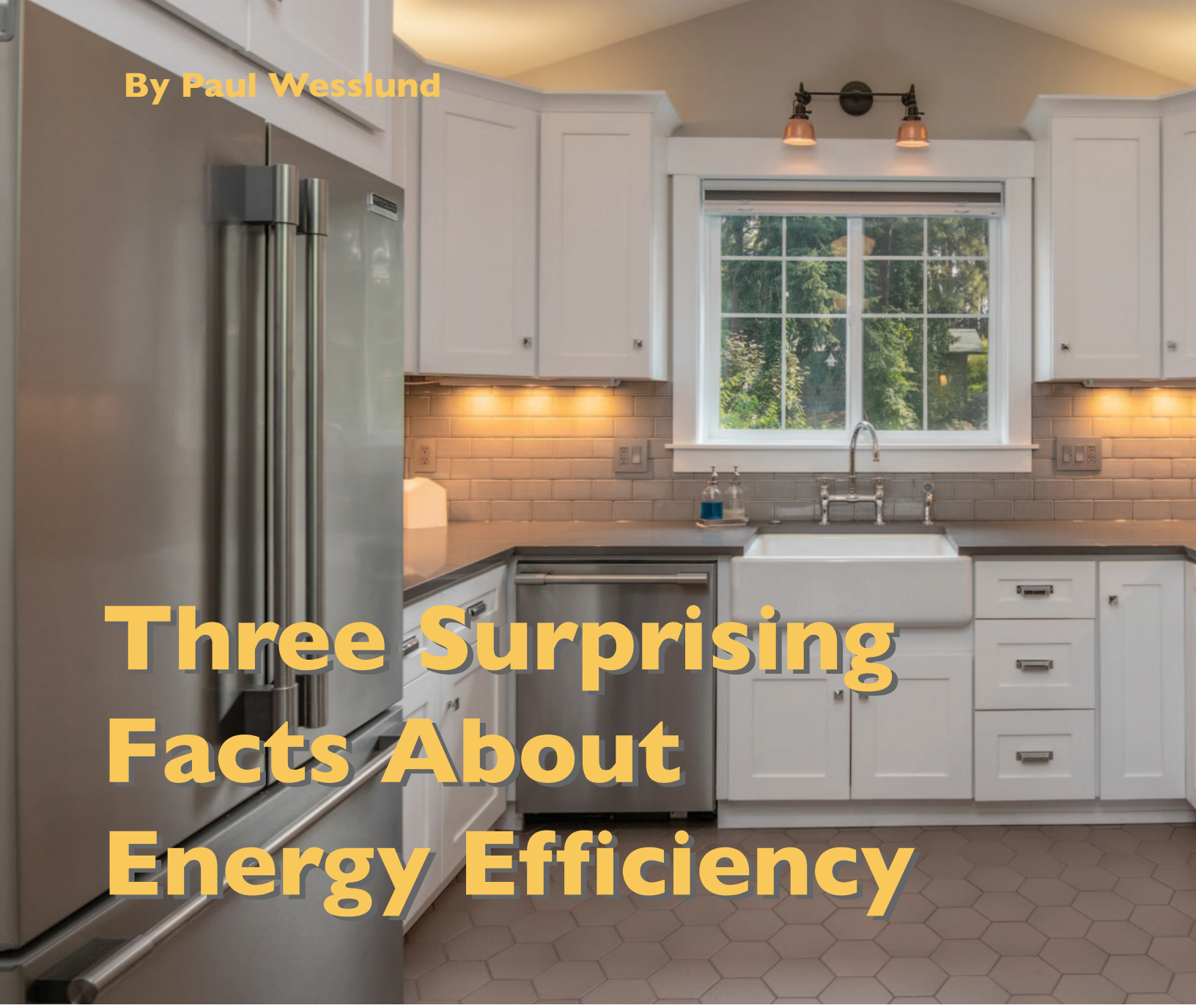
Do not allow yourself to be surrounded by "yes" men or women who only tell you what they think you want to hear. Demand it from those you associate with and accept the challenge of considering a different point of view. If you currently have a source of Unfiltered Historical Knowledge, do everything you can to maintain and build on that relationship.

Successful succession planning demands that you surround yourself with individuals who will give you the most accurate, relevant and usable information without fear of offending or misleading in the decision-making process. Having those people in your lives is becoming increasingly rare and valuable regardless of occupation.

Entering my 4th year as a general manager of Southwest Public Power District, I have found myself joining yet another group of peers to learn from. Many are soon to be retired and will face their own succession planning. I hope they all understand how valuable their Unfiltered Historical Knowledge has been to me and to the rest of the employees they surround themselves with. Congrats on your retirement Dave.

This month, as we celebrate Father's Day, we should also recognize one of our original and most valuable resources for many of us, our fathers. On that final note, give your father a call on June 18th if you are still fortunate enough to do so, and thank him for providing that tough love and Unfiltered Historical Knowledge when it was needed the most.

Thank you Dad.



By Paul Wesslund

Three Surprising Facts About Energy Efficiency

We're more energy efficient than you might think. And you may also be surprised to learn that we can do even better with a little innovative thinking, and by controlling hidden power users.

Electricity touches our lives nearly every minute of every day and makes up about 5 percent of the nation's Gross Domestic Product. So, it makes sense to use it wisely, whether you're concerned about how it affects the environment or you want to save money. Or both.

Here are three surprising facts about energy efficiency that can help you make the best use of your electricity.

1. Proof of efficiency

A little-known way of measuring efficiency is with a statistic called the energy intensity index. It shows how much energy it takes to produce a dollar of the economy's Gross Domestic Product (GDP.) Another term that's been used for that idea is energy productivity.

Whichever term you use, the indexes show that we're getting better at creating more economic activity with less energy—energy intensity is down, and productivity is up. Way up.

The numbers show that energy intensity is about half of what it was 30 years ago. That's because we're making

Photograph by Clay Elliot

strides in a range of ways from building codes, to light bulbs, to motor vehicle mileage. And these improvements are expected to continue. The Department of Energy projects energy intensity will decline by 30 percent over the next 30 years.

2. Out with the old, in with the new

The old phrase "you have to spend money to make money" is catchy because at first, it sounds like it doesn't make sense. But when it comes to appliances that consume a lot of energy, it can make dollars and sense.

From dishwashers to computers, energy efficiency is improving dramatically every year as technology, federal rules and plain old competition give you a better bang for your buck. In fact, if your refrigerator or dishwasher is more than 10 years old, the money you can save on energy use for a new appliance could pay for itself in just a few years.

The yellow Energy Guide labels found on products at your appliance store will tell you how much you can save with a new purchase. Another way to compare the old to the new is to Google "flip your fridge." That will take you to an EnergyStar calculator that will compare the energy use of your current appliances to what's available in stores.

3. Slaying vampires

Did you know you could be spending $100 to $400 a year on energy you don't even need? That frightening fact even comes with scary names—phantom power, or vampire electronics. It's the TV and video games that draw power so they're ready to turn on instantly. It's the digital clocks. It's the computers and phones plugged in even though they're fully charged.

Getting rid of phantom power can be tricky. You probably don't want to regularly shut off your wireless router or constantly reboot your smart TV. But you can plug several devices into a power strip and turn it off when you're not using them. Or smart power strips are available that will do that for you. When you're shopping for new electronics and appliances, look for the latest EnergyStar-rated models that take vampire loads into account. To start exorcising the phantoms, take a notepad through each room of your home to list anything that's plugged in, so you can figure out which energy-users you might be able to control without causing too much inconvenience.

Phantom power costs do add up, but it's also true that your home has much bigger energy users. If you're concerned about energy costs, make sure you're heating and cooling system is up to date and working efficiently, and that your windows and doors aren't leaking air. Your public power district or electric co-op can advise you on the most effective steps for energy savings—they're your local leading authority on home energy use. And that's no surprise.

Emerging Technologies for Generating Power

The ways public power districts and electric cooperatives power communities have changed over time. These changes will continue as advantageous economic conditions and increasing technologic innovation keep moving the nation's electric grid toward increased use of renewable energy sources.

The electric grid's efficacy and durability depend on several sources of power generation, and electric utilities have invested in cutting-edge technologies to meet and predict consumer-members' energy needs.

Rural electric utilities continuously monitor new technology, develop strategies for adapting to them, and share best practices with fellow electric utilities to better serve their consumers.

Several revolutionary technologies for creating electricity are reshaping the future of power generation. Let's take a look at a few that are currently on electric utilities' radars.

Offshore Wind

Offshore wind farms provide many of the same benefits as land-based wind farms, including renewable energy production for domestic use and new employment opportunities. Offshore wind also provides environmental benefits, like no greenhouse gas emissions. And because the ocean provides more than enough space to install several turbines, offshore wind is positioned miles out at sea, barely visible from the land and away from sea routes and ecologically sensitive areas.

An offshore wind farm consists of several turbines dispersed across a vast area of ocean. Each is solidly attached to a foundation piece on the seafloor and has a tower that extends into the air, where the blades may take advantage of greater wind speeds.

Often wind speeds offshore are higher than on land. The wind is stronger, steadier and less turbulent than on land. This means more energy can be consistently produced.

Slight changes in wind speed result in substantial improvements in energy production: a turbine operating in winds of 15 mph can produce twice as much energy as one operating in winds of 12 mph.

Additionally, advancements in energy storage near wind farms will allow wind to deliver electricity when it is most needed.

Opposite: Offshore wind farms provide many of the same benefits as land-based wind farms, including renewable energy production for domestic use and creating new employment opportunities—with the added bonus of no environmental pollutants or greenhouse gas emissions. Photograph by Nina Ali

Above: Developers and power plant owners plan to increase utility-scale battery storage capacity in the U.S. nearly fourfold in the next three years, reaching 30 GW by the end of 2025, according to the U.S. Energy Information Administration. Photograph provided by MTU Solutions

Battery Energy Storage

Of course, renewable energy solutions have their challenges. We need electricity around the clock, yet we don't have sunlight and wind 24 hours a day. This means we need greater investments in energy storage projects to store the electricity created through renewable sources. Energy storage will play an important role in enabling the grid to be more flexible and resilient.

Energy storage is expected to expand significantly in 2023 following robust growth in 2022. As governments at all levels and companies broaden their carbon reduction goals, demand is rising for storage to hold energy produced by intermittent resources like wind and solar. Developers and power plant owners plan to increase utility-scale battery storage capacity in the U.S. nearly fourfold in the next three years, reaching 30 GW by the end of 2025, according to the U.S. Energy Information Administration.

Small Nuclear

Nuclear energy has been a source of power generation for a long time, constituting approximately 15% of the fuel mix for 661 electric utilities in the U.S. In total, 93 commercial nuclear reactors are operational in 28 states.

As the nation and the world work toward new sources of always-available electricity, many in the industry are keeping an eye on the development of a new wave of nuclear power plants that may be on the horizon, known as small modular reactors, or SMRs.

SMRs can generate carbon-free, reliable baseload power on a footprint comparable to that of a conventional coal-fired power plant. SMRs that are currently being developed in the U.S. come in a variety of sizes, technological options, capabilities and deployment situations. These advanced reactors, ranging in sizes from 10 MW to 300 MW (or more) can be utilized for power generation, process heat, desalination and other industrial applications. SMRs also provide numerous other benefits, including lower capital expenditures, the flexibility to be sited in regions inaccessible to larger nuclear facilities and the capacity for additional power expansions.

As our nation's energy sources continue to shift, rural electric utilities remain committed to exploring the best sources and technologies for their local communities and the consumers they serve.

UPGRADE TO ELECTRICITY AND SAVE IN YOUR HOME

Make the switch to electricity and keep money in your pocket with more efficient household appliances and systems. From heat pumps to electric vehicles, these proven technologies have the potential to run your home and life more simply, efficiently and cost-effectively.

LEARN MORE AT WWW.TRISTATE.COOP/ELECTRIFY-AND-SAVE

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YOUR HOME, ELECTRIFIED

HEATING & COOLING WITH HEAT PUMPS

According to the U.S. Department of Energy, when paired with proper insulation, an electric heat pump can save over 30 percent on your heating and cooling bills compared to conventional HVAC systems. Here are some advantages of a heat pump:

- One system to heat your home (even in sub-zero temperatures) and cool during warmer months
- Eliminate potential carbon monoxide exposure from combustion byproducts
- Costs substantially less to heat your home than propane or electric baseboard heat

POWER UP YOUR GARDENING TOOLS

Electric garden tools can last longer and are emissions-free, meaning you'll smell the scents of summer, not the smell of exhaust. Plus, with modern technology, they are just as effective as gas-powered alternatives. Just charge the battery and go!

- Low maintenance – no oil changes or need to treat fuel, change spark plugs or filters.
- No need to purchase and store gasoline
- Electric models are lightweight and easy to handle

SAVE WITH AN ELECTRIC VEHICLE (EV)

Sales of light-duty electric vehicles rose by 43% in 2020. On average, EVs have a lower cost of operation over their lifespan, and buyers are taking notice.

- Less maintenance
- Increased savings compared to gasoline
- Fun to drive because of torque

REBATES FOR YOUR HOME

Contact your local electric co-op or public power district to find out more on available rebates and incentives

by James Dukesherer, NREA Director of Government Relations

Electric industry continues to deal with supply chain delays

This past month the NREA was proud to lead a small delegation of our membership to our nation's capital where we were able to meet with our state's congressional members and their staff. Although, we tend to focus this column on state legislative activity, the NREA does keep a close eye on national energy policy as well. Each year we make several trips to Washington, D.C. where we meet with our elected officials in an effort to strengthen our relationships with these leaders and to advocate for energy policy that will keep Nebraska's electricity affordable and reliable.

James Dukesherer

This year a theme arose as we discussed energy policy with our members of Congress. Much of what we discussed revolved around the issue of a reliable electric supply and keeping the lights on for our member-owners. Reliable electricity is vital for the economic development of our state. Yet, the world is changing. Electric usage is on the rise, our industry is being asked to electrify the transportation sector and this is happening while we are being challenged with reducing the industry's carbon footprint. As our industry confronts this challenge, we asked policymakers to be mindful of the impact of federal policy on the reliability of our electric grid. As the electric industry transitions to meet the future demands of an electric economy, we highlighted the need for technology development and permitting reform all while supporting policies that are inclusive of all generation resources.

One issue our group raised to our congressional delegation concerned the supply chain issues we are experiencing and how labor and material shortages could impact our ability to provide reliable electric service to Nebraska's customers. Across the country electric utilities are facing significant supply chain delays. These delays, if not resolved, could impact our ability to quickly restore power and meet the growing demand for electricity.

Whether it is access to electric transformers, replacement poles, or utility trucks, our industry is seeing significant delays. Transformers, for example, are common devices used to step down electric voltage from the high-voltage levels used on transmission and distribution lines, down to levels that can be used in your home or business. In prior years one could expect pole-mounted transformers (those bucket looking devices hanging on either side of your utility pole) to be ordered and received within 14 days. Today, these transformers cost three times as much and they can be on order for more than a year before we receive shipment. Lead times for large power transformers, like those in our substations, have grown to more than three years! Utility wood poles are also up 30 percent in cost and can be on order for more than six months. Likewise, in past years we could expect a new utility bucket truck to be ordered and delivered within six months. Now, that same truck must be ordered three years in advance and will cost twice as much.

A great attribute of our public power system is that our power districts work together to keep the lights on across the state. If needed, power districts will provide mutual aid to one another. Mutual aid can include the use of neighboring line workers who show up after a storm to help restore power. We have also seen utilities share excess transformers while others wait for new transformers to be ordered and delivered. As stockpiles deplete, however, nationwide, electric utilities are concerned about their ability to respond to major storms if this problem is not addressed. As the NREA and our members work to bring this issue to the attention of lawmakers, we feel confident that we have the support of the good common-sense policymakers representing our state, and we will work with our delegation to help drive a solution to this problem.

Rep. Mike Flood, right, meets with a group of electric industy leaders. Photograph by Jennifer Adams

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Nebraska Inventions

It's fascinating to learn that many everyday items and services originated in Nebraska. Every tool, innovation, food product, and service started with an idea, a need. Here are some of Nebraska's inventions recognizable nationwide and, for some, worldwide.

Vise-Grip Locking Pliers
Danish immigrant and DeWitt blacksmith designed locking pliers in the early 1920s. Patented in 1924, he named his invention Vise-Grip. At first, DeWitt produced the pliers in his blacksmith shop and sold the pliers from the trunk of his car. Within four years, he had more than 600 employees. The tools were very popular. Mechanics and carpenters could grab a nut or a bolt and hold onto it, freeing their hands. Today, Vise-Grips are sold in almost every hardware store.

"The progressive development of man is vitally dependent on invention. It is the most important product of his creative brain."
Nikola Tesla, author
(1856-1943)

Butter Brickle Ice Cream
Butter brickle ice cream features high-quality butter brickle pieces whipped into vanilla bean ice cream. It was initially introduced to the world by Omaha's Blackstone Hotel restaurant in the 1920s.

TV Dinners
In the 1950s, Swanson created a meal that was easy to prepare and came in single portions. Other companies had already developed several different frozen dinner variations, but Omaha-based Swanson developed the idea nationally. The term "TV dinner" most likely came from families eating meals in front of the television at dinner time. Swanson executive Gerry Thomas claims that when the company found itself with a massive surplus of frozen turkeys in 1953, he conceived the idea. The dinners contained turkey and an assortment of vegetables and cornbread. The dinners came in aluminum packaging to be heated in the oven.

CliffsNotes
Cliff Hillegass, an employee at Nebraska Book Co. in Lincoln, met Canadian Jack Cole. Cole published study guides. Hillegass purchased the American rights and began producing them under the name CliffsNotes. Hillegass and his wife, Catherine, started the business in their basement at 511 Eastridge Drive with 16 William Shakespeare titles. By 1964 sales reached one million Notes annually. CliffsNotes now exist for hundreds of works. The company would go on to create reference guides for subjects other than literature.

The Chair Lift
The Omaha design company Union Pacific engineer James Curran created the ski chairlift in 1936. His inspiration came from hook-equipped banana conveyor systems that loaded cargo ships in the tropics. Later that year, the first chairlift was installed in Sun Valley, Idaho, a resort owned by Union Pacific. It turned out to be groundbreaking for the ski industry,

Raisin Bran
Skinner's Raisin-BRAN was created in 1926 by Lloyd M. Skinner and Paul Skinner, owners of Skinner Manufacturing Company in Omaha. For 17 years, Skinner owned the product's name until Kellogg's and Post began selling their raisin bran versions. Skinner filed a cease-and-desist to keep ownership of his raisin bran product, but the ruling was that a product description was not a trademark.

Top 40 Radio Stations
In 1949, radio was still many Americans' main form of entertainment. That may be why the Storz family decided to purchase a radio station in Omaha. They named Todd Storz as the manager of KOWH, and instead of playing soap operas or talk shows, he opted to play popular music. He made the decisions based on record sales, jukebox plays, and other data. His strategy resulted in KOWH's ratings making it the top independent station in the country.

Kool-Aid
Edwin E. Perkins began mixing up potential products in his mother's Hendley kitchen at age 12 or 13. Perkins sold several products, including a tobacco habit remedy, and moved with his wife to Hastings in 1920. In 1927, Perkins mixed up the first packet of what would become Kool-Aid. Inspired by a drink concentrate called Fruit Smack, he created a formula to remove the liquid from the drink until only a powder remained. The process would reduce shipping costs. Hastings celebrates its claim to fame by hosting "Kool-Aid Days" on the second weekend in August.

Cushman Model 53 Airborne Scooter
Cushman Motor Works, a Lincoln company, manufactured farm equipment engines. During WWII, they introduced the Cushman Model 53 Airborne Scooter. The scooter, designed to be dropped by parachute and airborne soldiers from a plane, ensured easy mobility and communication between units.

The Reuben Sandwich
It's widely believed that the Reuben Sandwich, corned beef and sauerkraut with melted Swiss cheese and Russian dressing on warm rye bread, was invented at Omaha's Blackstone Hotel by Reuben Kulakofsky. It first appeared on their menu at one of Blackstone's restaurants in 1925.

SAFER Barrier
The Steel and Foam Energy Reduction (SAFER) Barrier minimizes the danger of racing. It lowers the risk to drivers in the event of a crash and is used today on IndyCar and NASCAR circuit tracks. From 1998 to 2002, the Midwest Roadside Safety Facility at the University of Nebraska-Lincoln designed the race track safety wall.

Does this list make you want to invent something? Go for it; maybe you'll make the next list!

Take Steps for Ladder Safety

Most people at some point this summer will find themselves climbing up a ladder. Whether you're a contractor doing daily work or a weekend warrior trying to complete a DIY project, Safe Electricity wants to make sure you make the proper steps to stay safe.

Always take time to look up, and practice safety. When using a ladder, it is never safe to touch or get near a power line.

Ladders are tools that allow homeowners and construction workers to climb up closer to important tasks that they need to work on, but they can also put people dangerously close to overhead power lines. Knowing where power lines and other potential hazards are should be part of the planning process for any outdoor project involving ladders.

"It is a common myth that power lines are insulated," says Erin Hollinshead, Energy Education Council Executive Director. "Lines may be coated for weather protection but not to provide protection from the electrical current."

Safe Electricity recommends these steps to keep you safe when using a ladder:

• Carry ladders horizontally.

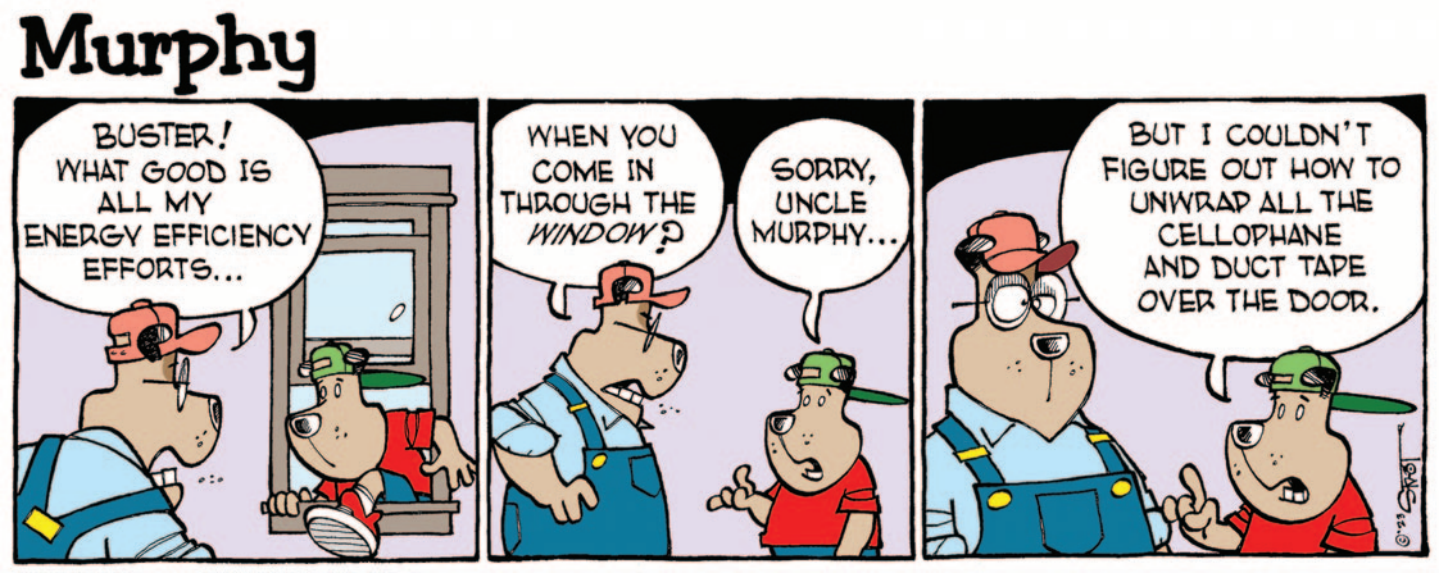
• Make sure the area above the ladder is clear before placing it upright.

• Long ladders may be hard to carry alone, so ask for help in carrying and setting them up.

• Always make sure that your ladder is on a solid, level surface before attempting to climb.

• Keep yourself and ladder far away- at least ten feet in all directions, at all times- from power lines, including service lines.

• Inspect your ladder before and after use to make sure there is no damage that could put yourself or other users in danger.



5 TIPS TO SAVE ENERGY ON YOUR WASHING & DRYING

Washing and drying laundry uses more energy than you may think. Not only are you running the machines, many times you are also using warm or hot water from your hot water heater. According to the U.S. Environmental Protection Agency, the average household does about 400 loads of laundry a year. Of those, 49 percent run with warm water, 37 percent with cold water, and 14 percent with hot. Depending on your energy source for making hot water, the average energy cost per load is about $1. It does not take long to see that this common chore provides a great opportunity to use energy more wisely and save on monthly energy bills.

Here are some ways you can reduce your energy costs while getting the wash done:

1 USE COLD WATER

According to Energy Star almost 90 percent of the energy consumed by the washing process is used to heat water. You can save a lot of energy by washing your clothes in cold water. Cold-water washing also keeps colors bright, reduces wrinkling, and will not set stains. Although you may find that regular detergent is sufficient, try out cold-water detergents that are specifically formulated to work in cooler temperatures.

2 USE THE WASHER'S ENERGY-SAVINGS SETTINGS

Be sure to start with the appropriate wash cycle for the fabrics being laundered and do not wash for longer than needed. Some loads only need 10 minutes of washing. Avoid the excessively hot "sanitary cycle," but do choose the "high spin" option to remove more moisture at the end and cut down on drying time.

3 USE THE DRYER'S ENERGY-SAVINGS SETTINGS

Select low temperature for delicates and medium for most clothes. Choose auto-dry instead of timed-dry to prevent over-drying. Use a cycle that includes a cool-down period, sometimes known as a "permanent-press" cycle. In the last few minutes of this cycle, cool air, not heated air, is blown through the clothes completing the drying process with less electricity and saving you money.

4 CLEAN THE LINT FILTER

Cleaning the lint filter after each dryer load will improve air circulation and reduce drying time. Periodically, use the long nozzle tip on your vacuum cleaner to remove the lint that collects inside the lint screen slot. Purchase a lint trap vacuum attachment if you cannot get your vacuum's nozzle into the trap. In addition, inspect your dryer vent a couple of times a year to ensure it is not blocked. This will save energy and may prevent a fire. Manufacturers recommend using rigid venting material -- not plastic vents that may collapse and cause blockages.

5 CONSIDER A CLOTHESLINE OR DRYING RACK

Drying clothes outside on a line or inside on a drying rack saves about 40 cents per load. Note that it is often recommended that fabrics like wool be laid flat to dry. Plus, line-dried clothes receive less wear and tear and will be static free without the use of dryer sheets.

Efficiency Tips for Residential Well Pumps

The energy a residential well system uses depends on the equipment and water use. The homeowner is responsible for maintaining the well, ensuring drinking water is safe and paying for the electricity needed to run the well pump. Here are steps to improve and maintain your residential well and use less electricity.

Get Your Well System Inspected

If you're concerned about how much you pay to pump water from your well, start with an inspection.

Similar to heating and cooling systems, well pumps are put to work daily, and parts will wear over time. Regular maintenance can improve efficiency and increase the lifespan of the system.

The proper system design and sizing can save energy. Oversizing equipment can waste energy. Ask a professional if your well equipment is properly sized for your needs. In some cases, adding a variable-speed drive can save energy. Keep in mind, well systems don't last forever. Consider design and sizing before the existing system fails.

Things can go wrong with your well that are hard to spot. The water system may even act normally with good water pressure and flow while using more energy and causing higher bills.

One of the most common causes of increased energy use is underground water line leakage between the pump and the home. Water lines can freeze and break or be damaged by digging or a vehicle driving over underground lines. Other issues can include waterlogged pressure tanks and malfunctioning equipment. Even if your well is in good working order, there are practices you can implement to save on your electric bill.

Save Money by Lowering Your Water Use

The less water you use, the less energy you use. Here's how you can conserve water and electricity with your home appliances:

Toilets. Check your toilet for leaks by putting a few drops of food coloring in the tank. If the color appears in the bowl without flushing, your toilet has a leak. This is likely caused by a worn flapper, which is an inexpensive and easy do-it-yourself fix.

If your toilets were installed before 1994, they are likely using more than 4 gallons per flush, which is well above new energy standards of 1.6 gallons. The average family can save nearly 13,000 gallons per year by replacing old, inefficient toilets with WaterSense-labeled models.

Instead of hand-washing, use your dishwasher to conserve water and energy. Eco mode on dishwashers is automatically programmed to optimum settings for reducing water and energy use. Photograph by Mark Gilliland, Pioneer Utility Resources

Another option is the tried-and-true plastic bottle method. Place sand or pebbles into a one- or two-liter bottle and place it in your toilet tank or buy toilet tank bags. This results in less water filling the tank and less water being flushed.

Dishwasher. If you wash dishes by hand, start using your dishwasher instead. Did you know new EnergyStar-certified dishwashers use less than half the energy it takes to wash dishes by hand? According to the Department of Energy, this simple change in habit can save more than 8,000 gallons of water each year.

Washing machine. Run your machine only with full loads to save water and energy. You may also consider upgrading to an EnergyStar-certified washing machine,

which uses about 20% less energy and about 30% less water than regular washers.

Showerheads and faucets. Get leaky showerheads and faucets fixed. According to the Environmental Protection Agency, a leaky faucet that drips at the rate of one drip per second can waste more than 3,000 gallons of water per year.

Faucet and shower aerators are inexpensive devices that reduce the amount of water flow. For maximum water efficiency, look for faucet aerators with no more than 1 gallon per minute flow rates and low-flow showerhead flow rates of less than 2 GPM.

Understanding proper well system design, maintenance and water conservation will help you save.

Larry's Safety Lesson

Leave Tree Trimming to the Professionals

By Larry Oetken

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

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

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

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

- Undergoing annual evaluations by licensed professionals to ensure continuous adherence to industry best practices.
- Requesting job briefings from employers and other crew members before starting a job or when environmental conditions change.
- Properly wearing approved personal protective equipment, including fall protection equipment when needed.
- Complying with material handling and mechanical equipment requirements.
- Working with a second line-clearance tree trimmer within voice range.
- Determining the voltages of lines before work begins or assuming that the line is operating at the highest possible voltage if it is not possible to determine voltage.
- Ensuring body parts and any ladders, platforms or aerial devices being used remain outside the minimum approach distance from any energized equipment.
- Using only insulated tools and equipment to remove branches and limbs that are in contact with, or are within the minimum approach distance of, energized lines or equipment.
- Determining if weather conditions are no longer safe to work in, such as the presence of high winds, ice, thunder or lightning that would make the work hazardous.

Please contact your power provider if you have any questions about line-clearance tree trimmers or tree trimming near power lines.

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

Tasty Food for a Delicious Summer Meal

As you plan your summer fun, think also about adopting healthy habits that can help keep your blood pressure under control. When your blood pressure is consistently high – a condition called hypertension – blood flows through arteries at higher-than-normal pressures. This can cause serious health problems not just for your heart, but also for your blood vessels, kidneys, eyes and brain.

Hypertension affects women and men of all ages but making small lifestyle changes can go a long way toward prevention. Start with updating your summer menu with delicious, heart-healthy recipes, like Hawaiian Huli Huli Chicken.

Next time you slept in a little too late or your family wants something more than the daily norm for breakfast, try this scrumptious and tasty Caramel Sticky Rolls recipe.

The rolls are fluffy, a little crunchy and drizzled with caramel topping.

Your family will love it and don't be surprised if you get a request or two for this breakfast again.

Hawaiian Huli Huli Chicken

Sauce:

- **2 tablespoons ketchup**
- **2 tablespoons light soy sauce**
- **2 tablespoons honey**
- **2 teaspoons orange juice**
- **1 teaspoon garlic (about 1 clove), minced**
- **1 teaspoon ginger, minced**

- **12 ounces boneless, skinless chicken breast (about 2 large breasts), cut into 1-inch cubes (about 24 cubes)**
- **1 cup fresh pineapple, diced (about 24 pieces)**
- **8 wooden skewers (6 inches each), soaked in water**

To make sauce: Combine ketchup, soy sauce, honey, orange juice, garlic and ginger; mix well. Separate into two bowls and set aside.

Preheat grill to medium-high heat. Preheat oven to 350 F.

Alternately thread three chicken cubes and three pineapple chunks on each skewer.

Grill skewers 3-5 minutes on each side. Brush or spoon sauce from one bowl onto chicken and pineapple every other minute. Discard remaining sauce from first bowl.

To prevent chicken from drying out, finish cooking to minimum internal temperature of 165 F in oven. Using clean brush or spoon, coat with sauce from remaining bowl before serving.

Caramel Sticky Rolls

- Nonstick cooking spray
- flour, for rolling pastry
- 1 frozen puff pastry, thawed
- caramel sauce, divided
- 1/2 cup walnuts, chopped
- powdered sugar

Heat oven to 400 F.

Spray muffin tin with nonstick cooking spray.

Sprinkle flour on work surface. Flatten pastry sheet and roll into rectangle.

Drizzle caramel sauce over pastry and spread within 1/2 inch of edges.

Sprinkle chopped walnuts over caramel sauce.

Starting on short end, evenly roll pastry with filling to other end.

Cut pastry into nine pieces. Place pastries cut side up into muffin cups.

Bake 22 minutes, or until golden brown. Immediately remove from pan to wire rack. Let cool 10 minutes. Drizzle with additional caramel sauce and dust with powdered sugar.

Swiss Steak

- 32 oz. tomatoes
- 1 med, onion chopped
- 1 tsp. Worcestershire sauce
- 1/2 cup ketchup
- 1 T. vinegar
- 1 T. margarine
- 1 tsp. prepared mustard
- 1/2 tsp. soy sauce
- 1/4 cup barbecue sauce
- 1/2 tsp. garlic powder
- 1/2 tsp. celery salt
- 1/4 tsp. chili powder
- 1/4 tsp. pepper
- 3/4 cup brown sugar
- 4 - 5 lb. round or sirloin steak, cut into serving size

Pound and flour steak. Brown meat in oil. Place in baking dish. Cover with the following sauce. Combine all the ingredients except steak in Dutch oven. Bring to a boil. Remove from heat and pour over meat. Bake at 350 for 1 hour or until meat is tender and the sauce has thickened. If you wish you may add fried onions and green pepper, brown in steak skillet.

Marilyn Meier, Pierce, Nebraska

Dill Refrigerator Pickles

- Cucumbers
- 1 cup vinegar
- 3 cups water
- 1/4 cup pickling salt
- 1/4 teaspoon alum (per quart jar)
- Dill 2 to 3 heads per jar
- Dill seed - 3 to 5 Tbsp. per quart of pickles
- Onion or garlic to taste - 1 slice onion or 1 garlic bud per jar

Cucumbers can be left whole or sliced. I slice the large ones and make a gallon at a time. (You can use the plastic ice cream buckets.) Boil the first 3 ingredients together. Pour over the cucumbers. Use enough liquid to cover; put on lids and cool. Place in the refrigerator; wait 3 to 5 days before using. Keep indefinitely! Triple liquid enough for at least 7 quarts.

Sandy Spence, Norfolk, Nebraska

Chinese Chicken Salad

- 2 lbs. Napa cabbage, cut up
- 4 chicken breasts cooked and cut-up
- 5 green onions, cut up
- 2 Top Ramen packages uncooked, use seasonings for dressing
- 1/2 cup slivered almonds
- 1 16 oz. frozen peas and carrots (uncooked)
- red and/or green peppers to taste

Salad dressing:

- 3/4 cup canola oil
- 1/4 cup sugar (can use Splenda)
- 6 Tablespoons rice vinegar
- Both packages of ramen seasoning

Combine all ingredients and break up noodles over salad. Then toss with dressing, mixing well. Chill before serving. This makes a large salad.

Mershon Franssen, Amelia, Nebraska

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