RURAL ELECTRIC DBBBBASSING

September 2017

Drug Companies Fear Release of the New AloeCure

Big Pharma stands to lose billions as doctors' recommend drug-free "health cocktail" that adjusts and corrects your body's health conditions.

by David Waxman Seattle Washington:

Drug company execs are nervous. That's because the greatest health advance in decades has hit the streets. And analysts expect it to put a huge crimp in "Big Pharma" profits.

So what's all the fuss about? It's about a new ingredient that's changing the lives of people who use it. Some call it "the greatest discovery since penicillin"!

The name of the product is the AloeCure. It's not a drug. It's something completely different. And the product is available to anyone who wants it, at a reasonable price. But demands may force future prices to rise.

TOP DOC WARNS: DIGESTION DRUGS CAN CRIPPLE YOU!

Company spokesperson, Dr. Liza Leal; a leading integrative health specialist recommends AloeCure before she decides to prescribe any digestion drug. Especially after the FDA's stern warning about long-term use of drugs classified as proton pump inhibitors like **Prilosec®**, **Nexium®**, **and Prevacid®**. In a nutshell, the FDA statement warned people should avoid taking these digestion drugs for longer than three 14-day treatment periods because there is an increased risk of bone fractures. Many people take them daily and for decades.

Dr. Leal should know. Many patients come to her with bone and joint complaints and she does everything she can to help them. One way for digestion sufferers to help avoid possible risk of tragic joint and bone problems caused by overuse of digestion drugs is to take the AloeCure.

Analysts expect the AloeCure to put a huge crimp in "Big Pharma" profits.

The secret to AloeCure's "health adjusting" formula is scientifically tested Acemannan, a polysaccharide extracted from Aloe Vera. But not the same aloe vera that mom used to apply to your cuts, scrapes and burns. This is a perfect strain of aloe that is organically grown under very strict conditions. AloeCure is so powerful it begins to benefit your health the instant you take it. It soothes intestinal discomfort and you can avoid the possibility of bone and health damage caused by overuse of digestion drugs. We all know how well aloe works externally on cuts, scrapes and burns. But did you know Acemannan has many of other health benefits?...

HELPS THE IMMUNE SYSTEM TO CALM INFLAMMATION

According to a leading aloe research, when correctly processed for digesting, the Aloe plant has a powerful component for regulating your immune system called Acemannan. So whether it's damage that is physical, bacterial, chemical or autoimmune; the natural plant helps the body stay healthy.

RAPID ACID AND HEARTBURN NEUTRALIZER

Aloe has proved to have an astonishing effect on users who suffer with digestion problems like bouts of acid reflux, heartburn, cramping, gas and constipation because it acts as a natural acid buffer and soothes the digestive system. But new studies prove it does a whole lot more.

SIDE-STEP HEART CONCERNS

So you've been taking proton pump inhibitors (PPI's) for years and you feel just fine. In June of 2015 a major study shows that chronic PPI use increases the risk of heart attack in general population.

UNLEASH YOUR MEMORY

Studies show that your brain needs the healthy bacteria from your gut in order function at its best. Both low and high dosages of digestion drugs are proven to destroy that healthy bacteria and get in the way of brain function. So you're left with a sluggish, slowto-react brain without a lot of room to store information. The acemannan used in AloeCure actually makes your gut healthier, so healthy bacteria flows freely to your brain so you think better, faster and with a larger capacity for memory.

Doctors call it "The greatest health discovery in decades!"

SLEEP LIKE A BABY

A night without sleep really damages your body. And continued lost sleep can lead to all sorts of health problems. But what you may not realize is the reason why you're not sleeping. Some call it "Ghost Reflux". A low-intensity form of acid reflux discomfort that quietly keeps you awake in the background. AloeCure helps digestion so you may find yourself sleeping through the night.

CELEBRITY HAIR, SKIN & NAILS

Certain antacids may greatly reduce your



body's ability to break down and absorb calcium. Aloe delivers calcium as it aids in balancing your stomach acidity. The result? Thicker, healthier looking hair...more youthful looking skin... And nails so strong they may never break again.

SAVE YOUR KIDNEY

National and local news outlets are reporting Kidney Failure linked to PPI's. Your Kidney extracts waste from blood, balance body fluids, form urine, and aid in other important functions of the body. Without it your body would be overrun by deadly toxins. Aloe helps your kidney function properly. Studies suggest, if you started taking aloe today; you'd see a big difference in the way you feel.

GUARANTEED RESULTS OR DOUBLE YOUR MONEY BACK

Due to the incredible results people are reporting, AloeCure is being sold with an equally incredible guarantee.

"We can only offer this incredible guarantee because we are 100% certain this product will work for those who use it," Says Dr. Leal.

Here's how it works: Take the pill exactly as directed. You must see and feel remarkable improvements in your digestive health, your mental health, in your physical appearance, the amount inflammation you have throughout your body – even in your ability to fall asleep at night!

Otherwise, simply return the empty bottles with a short note about how you took the pills and followed the simple instructions and the company will send you...Double your money back!

HOW TO GET ALOECURE

This is the official nationwide release of the new AloeCure pill in the United States. And so, the company is offering our readers up to 3 FREE bottles with their order.

This special give-away is available for readers of this publication only. All you have to do is call TOLL-FREE **1-800-746-3210** and provide the operator with the Free Bottle Approval Code: JC025. The company will do the rest.

Important: Due to AloeCure's recent media exposure, phone lines are often busy. If you call and do not immediately get through, please be patient and call back.



"The Rural Voice of Nebraska"

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Backed By Big Service

Writer Derrill Holly explains how Nebraska's public power districts and electric cooperatives are supported by finance, information services, insurance and technology specialists working for member-owned utilities across the country. It's not just the line crews you see repairing wires, or the member services clerks who greet you when you pay your bills who make a difference.

What Does the Future Hold?

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NPPD President & CEO Pat Pope reports on why NPPD is taking a more near-term look at its energy resources as they update what is called an "integrated resource plan." The 2018 integrated resource plan will focus on the best use of the current resources, while exploring the use of alternative resources.

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On the cover

Photograph by Wayne Price

EDITOR'S PAGE



by Wayne Price

Electric utilities still struggle with copper theft

I f you've watched any television late at night you probably know that copper can be worn in just about everything, from socks to sleeves for your knees, elbows, back, wrist, ankle...the list just goes on and on. It's also very popular with artists who have been using it to enhance jewelry and other decorative art for thousands of years. It's also an excellent conductor of electricity.

In addition to Brett Favre the popularity of copper has been seen among another group: thieves. Whether it's the tough economy or methamphetamine users needing money to pay for their next fix, the relatively high price of the metal has led to a wave of copper theft. The Electric Safety Foundation International (ESFI) estimates that there are more than 50,000 copper thefts from electrical utilities each year.

Copper is swiped from many places, including construction sites, warehouses, and abandoned homes. In some areas, crooks drag away entire air-conditioning units so that they can remove the copper tubing at their leisure.

But copper theft from utility poles and substations carries a particular concern. Copper energizes current-carrying conductors (wires) as well as playing a key role in grounding.

Substations—which contain expensive equipment for controlling the flow of electricity from high-voltage transmission lines to your home—must be grounded to the earth to prevent damage from lightning strikes and fault currents. When your rural electric utility grounds equipment in a substation, it makes an electrical connection to a buried network of wires, called a ground grid, that dissipates the excess charge safely over a wide area.

A substation or pole that's left ungrounded becomes a dangerous place. Sometimes the thieves touch or cut the wrong conductors, exposing themselves to lethally high voltages. Errant currents can damage electrical equipment, taking the substation or line "down" and interrupting power to consumers. The electricity can even endanger utility employees, causing injury or death. ESFI estimates about 35 Americans die each year because of copper or other metal theft.

In the past months, Nebraska Public Power District has seen a significant jump in thefts of copper from its locked substations. Individuals have entered several substations illegally and have taken grounds. There is no way to know by looking at the ground rod and wiring whether it is carrying electricity or not at any given time.

"We are asking the public to be our 'eyes and ears' and be on the lookout for the potential theft of copper wiring from transmission poles and substations across the state," said NPPD Vice President and Chief Operating Officer Tom Kent. "The substations targeted are located in rural areas as opposed to those located in communities. Stealing copper or other metals from substations or electric facilities is a crime."

NPPD works with law enforcement agencies across the state to make them aware of the signs of potential copper theft and their personal safety when investigating these thefts. Some of the signs of copper theft to watch for include:

• Loose or broken wires;

• Broken utility pole attachments;

• Open gates at unattended substations or holes in the security fence;

- Burn marks on utility equipment; and
- Electrical arcing

NPPD urges anyone who may see suspicious activity at electric substations to contact their local law enforcement agency with a description of the individuals and vehicles involved. Kent emphasized that individuals should not attempt to apprehend the intruders.

He also stressed that NPPD's service vehicles are well-marked with bright orange bumpers. Other utilities serving specific areas have wording or logos on their vehicles identifying them as an electric utility, too. "The public should alert local law enforcement of any vehicles that are not identified as being from a utility and activities that appear to be unusual, or individuals that appear to be acting suspicious around electric facilities including power line poles," he added.

Efficiency upgrades that make sense

S urveys show that only about 15 percent of folks actually take steps to enhance the energy efficiency of their home. In most cases, people feel that energy efficiency improvements are too complicated or too expensive to tackle.

However, there are several simple upgrades you can consider that won't break your household budget.

Heating and Air Conditioning

The U.S. Energy Information Administration estimates that heating and air conditioning account for 22 percent of a typical home's annual electric bill. While an airsource heat pump or a geothermal heat pump can be 20 percent to 45 percent more efficient than an existing central heating and cooling system, up-front installation costs are



Install foam gaskets behind switchplates and electric outlet covers on exterior walls to plug air leaks.

often a barrier.

Simple solutions such as changing air filters at least every three months will increase airflow to rooms, increase the life of your central heating and cooling unit's motor, and improve air quality. Sealing and insulating ductwork can be done in a weekend and result in energy savings of up to 20 percent.

To lessen the amount of work that heating and cooling systems need to do, it's important to find and fix air leaks. Walk around your house on a cold day and feel for drafts around exterior doors and windows, electric outlets, and entrance points for TV and telephone cables. In basements, target dryer vents, natural gas lines, or any opening in the wall. To fix leaks, apply caulk, spray foam, or weather stripping.

Simple acts such as cooking outdoors on a hot summer day and drawing curtains closed to block the summer sun will keep the interior of your home cooler and reduce the amount of time your air conditoning units need to operate.

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September 2017

by Derrill Holly

Backed by big zervice

Co-op members benefit from a national network of unseen partners.



Stacie Young, a customer service representative at Elkhorn Rural Public Power District in Battle Creek, Neb., monitors a load management system.

M ember-owned electric cooperatives and public power districts belong to a nationwide network that touches millions of families each day. Besides providing electricity to keep homes, farms, ranches, businesses and schools well lighted, comfortable and running efficiently, those co-ops and districts help make communities better while finding ways to meet their members needs.

It's not just the line crews you see on the roads or up the poles repairing wires, or the member services clerks who greet you when you pay your bills who make a difference. They're supported by finance, information services, insurance and technology specialists working for member-owned utilities across the country.

Keeping safety in mind

"Safety is first and foremost, for our members and for our members' members," said Chad Ogren, vice president of sales and marketing at Federated Rural Electric Insurance Exchange.

The Shawnee, Kansas insurance cooperative provides insurance for electric cooperatives. It also of risk maintains а team management specialists who constantly analyze the challenges faced by co-ops serving rural and exurban communities.

Federated is a proud sponsor of Safe Electricity, the multi-media public awareness program of the Energy Education Council. Safe provides life-saving Electricity information through development of brochures and website materials that co-ops distribute on topics like safe landscaping, farm safety around power lines, and working and playing safely near power lines energized and other electric components.

"The training and education materials and information that we provide along with the support of our safety and loss prevention team supports an overall culture of safety," " said Ogren. "This allows our members to focus on their



Rachel Manley, a work order accountant at High West Energy in Pine Bluffs, Wyoming, processes purchases.

business of providing safe, affordable and reliable energy to their members."

Smoother service silently

Busy signals and unanswered phones can be frustrating for consumers, but digital communications is helping to make that a thing of the past.

"Serving customers through web and mobile apps such as SmartHub® allows for bill payment and leadingedge customer communications 24 hours a day and seven days a week," said Jasper Schneider, vice president of member and industry at National Information Solutions Cooperative (NISC).

St. Louis-based NISC is a technology support cooperative that helps rural electric utilities with innovative technology solutions like apps members use to communicate with their electric co-ops, public power districts and telecommunications cooperatives.

"We're their technology partners," said Schneider. "When members can pay their bills with a touch of a button, monitor their usage, report an outage and check the status of restoration without saying a word, life gets easier."

Electric co-op and public power district as well as telecom co-op account holders across the country now enjoy that option with their products.

"As service evolves and communications change, we work with our member co-ops and power districts to come up with solutions before they become real problems," said Schneider. "Members we serve are represented on advisory committees and regularly help set NISC's developmental priorities. They're committed to adding value for consumers, so it's key to everything we do."

Powerful partners

As the only lender created and owned by electric cooperatives, Dulles, Virginia-based National Rural Utilities Cooperative Finance Corporation (CFC) provides member borrowers with the capital and industry-leading financial products they need to succeed in an increasingly complex utility environment.

"We take our lead from the electric co-op network," says Joel Allen, CFC senior vice president of member services. "When our members come to us with ideas and projects, we

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listen and respond with flexible solutions."

Beyond core lending, CFC also plays a key role in preserving USDA's Rural Economic Development Loan and Grant Program (REDL&G). Through fees paid on federal loans, CFC has provided nearly \$120 million to REDL&G, enabling cooperatives to essential community assist services—from helping local companies grow to improving rural hospitals, schools, ambulances and fire stations.

Throughout the year, CFC offers members a diverse range of complimentary world-class educational opportunities, including CFC Forum, CFC Independent Borrowers Executive Summit and statewide financial workshops.

In addition, CFC helps promote virtues of the cooperative business model through its Educational Fund, which has distributed more than \$11 million to statewide associations for programs such as communicator training, youth camps, scholarships or teaching new employees about cooperatives.

Community investment

Financial support is essential to keeping infrastructure projects moving along – projects that create jobs and sustain economic growth – and that's the role CoBank helps to fill for rural power, water and communications providers throughout the United States.

"Our mission is to serve as a dependable provider of credit and other value-added financial services to agriculture and rural infrastructure businesses for the benefit of rural America," said Jo Solonika, vice president of corporate communications for Denver-based CoBank.

With 14 regional offices across the nation, CoBank's analysts and field



Garland Goracke, a warehouse clerk at Elkhorn Rural Public Power District, assembles a 3-phase meter loop.

representatives often visit the sites of proposed projects to see how funding and investment could bring life to community solutions.

"We consistently demonstrate our focus on rural America and do our utmost to be a trusted advisor and partner for our customers who are responsible for keeping folks all across the country warm, nourished and connected to the critical services they need," said Solonika.

To give a few examples, those partnerships have resulted in delivering reliable power vital to Alaskan fishing villages that put seafood on American tables, building community solar farms nestled in forest clearings in Vermont and upgrading former investor-owned electric systems acquired by electric co-ops in Minnesota.

"But our commitment doesn't stop there" Solonika said. "We believe in good corporate citizenship in ways that make communities stronger and help people in need."

In 2016 alone, CoBank contributed more than \$8 million to charitable organizations operating in the communities their customers serve. It also maintains a \$3 million dedicated fund providing matching contributions to boost the nonprofit donations made by CoBank borrowers.

Keyless entry

Doing business with your electric utility by telephone can be more convenient than visiting a member services office, and adding voice communication to the process can make it painless.

Southeastern Data Cooperative (SEDC) is helping electric cooperatives of all sizes harness interactive voice response technology to improve member services. The Atlanta-based information technology co-op's cloud-based AutoCue IVR ® service dramatically expands a utility's communications capabilities.

"IVR can handle any number of consumer calls simultaneously so customer service can easily handle even high-call events, such as major outages," says Robin Vogt, director of communications with SEDC.

That not only means no wait times for accountholders handling billing issues, but it also logs outage calls and seamlessly transfers vital information to a subscribing cooperative's operations department to help get repairs under way.

"Co-ops can allow their IVR to accept incoming outage reports, and then use the notification part of the system to send out service status updates," said Vogt. "With the phone system handling routine outage calls and updating the utility's customer information as well as its outage management system, utilities are able to provide a higher level of customer service and devote more resources to restoring service more quickly."

SEDC's software solutions and technology services are primarily "plug-in-play" for the nearly 500 utilities nationwide that use them to stay connected to their 6 million consumers and accountholders.

Derrill Holly writes on cooperative issues for the National Rural Electric Cooperative Association, the Arlington, Va.-based service arm of the nation's 900-plus consumerowned, not-for-profit public power districts and electric cooperatives.

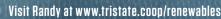
We're seeing sunshine in a whole new light



Tri-State Generation and Transmission Association, power supplier to six electric cooperatives and public power districts in Nebraska, delivers more solar energy to its members than any other G&T in the country. That's un-renew-a-believable! #generatepossibilities

Randy





Not all air filters are created equal



F orced air heating, ventilating and air conditioning (HVAC) systems require effective air filtration for optimum energy efficiency, maintaining clean(ish) ductwork and good indoor air quality. Air filters should be changed regularly. How often they need changing depends upon a number of factors including, but not limited to:

• Presence of pets that shed

• Amount of carpeted versus hardwood floors

• Where you live – amounts of dust, pollen, etc.

• Use of wood-burning supplemental heat sources

• Presence of cigarette smoke

The air inside our homes is full of particles originating from inside and outside sources. As the name "forced air" implies, conditioned air is blown into the house through ductwork. In order to operate efficiently, the air supplied is returned to the system for reconditioning, taking with it all the particles in the air and the occasional "tumbleweed" of pet hair that many of us are familiar with.

This junk-laden air flows through a filter before encountering the HVAC equipment. For cooling, there is usually an A-frame arrangement of what look like car radiators. For heating, it is generally a combustion chamber. Without a filter, the cooling coils would get clogged and the heating side would burn off whatever

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was in the air. Ah, the smell of burnt hair in the morning...

Air filters trap a lot of debris that otherwise would end up back in the house, stuck in ductwork, clogging HVAC equipment – or in our lungs. But enough with the HVAC and air quality primer. Let's tackle types of air filters.

Filters have more choices than you can shake a stick at. Fortunately, they can be broken down into two nicely defined categories, making the selection process manageable. The two are:

• Permanent or disposable

• Flat or pleated media (with a handy MERV rating)

Disposable are the most prevalent. Some in the flat media group look like they will stop only particles larger than a golf ball. They have flimsy cardboard frames and a thin, flat mesh you can easily see through. While they are cheap, don't waste your money. Your HVAC system and lungs deserve better.

Pleated filters perform better using media you cannot see through. While they look impervious, air can move through under pressure leaving its airborne cargo trapped. Pleated filters are better, in my experience.

Remember MERV? That is a rating system that tells you how effective a filter is at trapping particles. Standing for Minimum Efficiency Reporting Value, it's a measure of efficiency. The scale runs from one to 16 (higher is better) and is based on trapping particles 3-10 microns in diameter. Research shows that residential filters with a MERV rating between seven and 13 are likely to be as effective as true HEPA (high-efficiency particulate arrestance) filters. This class of filter is used in clean room manufacturing and at the extreme end can trap particles much smaller than the diameter of a human hair, as small as 1 micron.

So, should you jump in and grab a supply of high MERV filters? Not without some research. All filters increase resistance to air flow. HVAC systems are designed to operate at a particular pressure and should support MERV ratings of one to four. A higher MERV value increases resistance, making the system work harder. It loses efficiency and increases wear on operating components.

So, how do you decide which level of filter to use? If you have your system's operating manual or can grab it online, check for recommendations. Otherwise, my advice is to go with a decent (MERV three to five) pleated filter and check it once a month to see how it is performing. Also check to see if the dust inside abates.

Spend a little more and breathe a lot easier with a regular schedule of air filter replacement. A simple change that pays big dividends.

Tired of struggling on the stairs?



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Revolutionary elevator can give youand your home's value- a lift

Elevators have been around since the mid 19th century, and you can find them in almost every multistory structure around... except homes. That's because installing an elevator in a home has always been a complicated and expensive home renovation project... until now.

Innovative designers have created a home elevator that can be easily installed almost anywhere in your home by our professional team

"We are tickled about our new elevator. This is the first time I've seen the second floor of my home! It's like an early Christmas present."

> Stan W. US war veteran and retired professor

without an expensive shaft-way. Its small "footprint" and self-contained lift mechanism adds convenience and value to your home and quality to your life. It's called the Easy Climber[®] Elevator. Call us now and we can tell you just how simple it is to own.

For many people, particularly seniors, climbing stairs can be a struggle and a health threat. Some have installed motorized stair lifts, but they block access to the stairs and Can be placed virtually anywhere in your home.



Imagine the possibilities

- No more climbing up stairs
- No more falling down stairs
- Plenty of room for groceries or laundry
- Perfect for people with older pets
- Ideal for Ranch houses with basements

are hardly an enhancement to your home's décor. By contrast, the Easy Climber[®] Elevator can be installed almost anywhere in your home. That way you can move easily and safely from floor to floor without struggling or worse yet... falling.

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Easy Climber

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WHAT KIND OF CAR WILL YOU BE DRIVING?

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WHAT WILL YOUR COMMUNITY



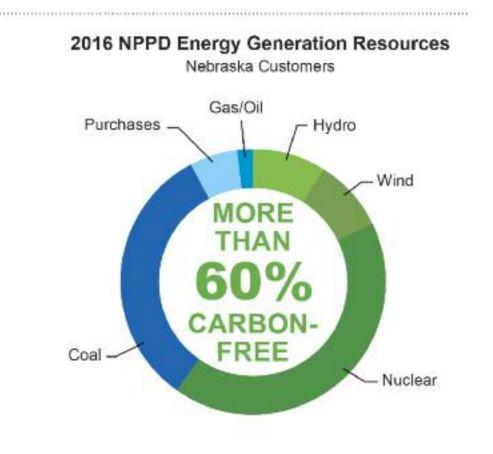
By Patrick Pope NPPD PRESIDENT & CEO

It's hard to know what our lives will look like in 20 years, and from my experience in the energy business, my bet is 2037 will look dramatically different than today. That's why NPPD is taking a more near-term look at our energy resources as we update what is called our "integrated resource plan."

For instance, in 1997, NPPD generated electricity for our customers using three primary resources: nuclear, coal, and hydro-power. Twenty years ago, our carbon-free energy resources were only 39 percent.

Today, we generate with five, different fuel types and purchase power from a regional energy market.

As a result, NPPD's fleet of generation facilities reflects one of the highest, carbon-free portfolios in the region.



Since we last updated our integrated resource plan in 2013, NPPD;

 Announced plans to use hydrogen instead of coal to generate electricity in one boiler at Sheldon Station.

 Launched community solar projects in Kearney, Scottsbluff, and Venango and is discussing community solar projects with several other towns we serve.

 Revamped our energy efficiency programs, installed more environmental controls at our fossil-fueled power plants, and is pursuing electric vehicle incentives.

 Signed a contract allowing our wholesale Nebraska utilities, such as Custer PPD and others that buy power from us, to add renewable generation facilities for themselves, while still relying upon us to provide around-the-clock power.

And speaking of wind, NPPD now has eight of the state's 20 operating wind farms in its energy portfolio. We take advantage of it and reduce the power output of our fossil facilities when the wind is available; the challenge is there simply isn't enough wind to provide electricity to the 600,000 Nebraskans we supply power to 24x7, 365 days a year.

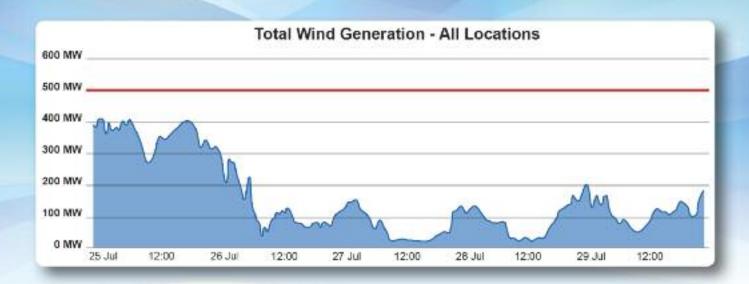
Type **"Wind Watch"** in the search feature on www.nppd.com, and you will get real time data from the past five days from all eight of our facilities. Below is an example of what you will see. The chart is July 25-29, 2017, when temperatures were hot and air conditioners and irrigation pivots were running. The red line indicates the maximum amount of megawatts which could be generated if sufficient wind was available. The blue squiggly line shows how much wind energy was actually produced.

Wind generation certainly contributes, but we have to have other resources to meet our Nebraska customers' needs.

In 20 years, battery storage could be available or an entirely new resource may be introduced. Energy policy from Washington D.C. will certainly be different and perhaps the regulations which govern many of our business decisions as a utility will cost less to implement.

That's why our 2018 integrated resource plan will focus on doing what we can in the next five years to best use the resources we have, while exploring the use of hydrogen as a fuel, pursuing community solar projects in the towns we serve, and supporting the renewable generation projects our wholesale customers install.

During the months of September, October and November, we will be asking for your thoughts on our plan. Please look for information about this on our website and social media, and take advantage of the opportunity to complete a survey NPPD will make available online at www.nppd.com.



Bringing the Power to You

F rom the power plant to your home or business, the electricity we use every day travels through a complex system of poles, wires, and substations before it provides heat and light to your home. Nebraska incorporates a diverse mix of resources into its generation portfolio which include the use of coal, nuclear, hydroelectric, natural gas, and renewable energy resources.

More than 60 percent of Nebraska's electricity is generated at coal-fired power plants. The process for this generation resource starts in Wyoming where low-sulfur coal is mined. At these mines, dirt and clay is stripped away to reveal the coal. The coal is collected with large cranes and trucks. Once the resource is removed, the land is reclaimed back to its original state and the coal is loaded on rail cars and shipped to a power plant.

Once the coal arrives at the power plant it is burned to heat water and create steam. The pressurized steam spins a turbine converting mechanical energy into electricity. A generator is mounted at one end of the

Transmission Lines

Like an interstate, these high-voltage lines move a lot of energy efficiently over long distances.

Transmission Substations

Like traffic circles, these banks of electrical equipment allow energy to access other high-voltage transmission lines, control voltage and protect lines and equipment from damage.

Power Generating Facilities

A diverse mix of fuels is used to generate energy in Nebraska. Transformers near the power plants increase generator voltage so electricity can travel long distances.

Rural Electric Nebraskan

turbine shaft and consists of carefully wound wire coils. Electricity is generated when these are rapidly rotated in a strong magnetic field. After passing through the turbine, the steam is condensed and returned to the boiler to be heated once again.

Once the electricity is generated, its voltage is increased by a transformer and it begins its journey on high voltage transmission lines. In Nebraska, these lines carry as much as 345,000 volts of electricity. Next, the electricity flows through a substation where the voltage is reduced, allowing the electricity to flow on to smaller distribution lines. These distribution lines carry electricity closer to its destination where once again the voltage is stepped down by a transformer to the 120 volts that you use in your home.

Delivery of electricity is a complex process that requires constant monitoring so that when you hit the light switch, electricity is delivered at the speed of light from the generation plant and into your home. To avoid overloading the system, electric generation has to be balanced simultaneously to match consumer needs. At any given moment, the electricity generated from power plants has to match consumer demand. Too much or too little generation could result in blackouts. This means that every minute of every day your electric suppliers are monitoring the electric generation and delivery process to ensure you receive a reliable electric supply.

Distribution Substations Transformers decrease voltage for distribution over short distances or delivery to large industrial customers

Distribution Lines

Like city streets, these lines move electricity to smaller transformers for delivery to residential. commercial, and agricultural customers.

Service Drop

Like your driveway, these lines deliver energy from the pole transformer to your meter.

Sub-Transmission Lines Like county roads, these lines carry lower

voltages and deliver energy to towns, neighborhoods, and large industrial customers. Illustration provided by Nebraska Public Power District

Nebraska Rural

Electric Association member-systems maintain more than

miles of powerlines across the state.

RELIABILITY

Maintaining a reliable electric supply is no easy task

eliable electric service is a luxury we often take for granted. Unfortunately, we may not think about how important a reliable energy supply is to us until we have to go without it, like during a severe storm. For Nebraska's public power providers, reliability has many components. Reliability is considered at every step of the electric delivery process, from the point of generation to delivery into our homes and businesses. Reliability can be impacted bv the different generation resources used, by the age and maintenance of utility infrastructure. bv security concerns, and by the ability to deploy a trained workforce to restore power in the event of an outage.

Reliability begins by choosing the best generation resource for our system needs. Nebraska's generation mix is a diversified portfolio of resources which include coal (73 percent), nuclear (17 percent), natural gas (4 percent), hydroelectric (4 percent), and renewable resources (2 percent). Each of these generation resources provides its own positive and negative attributes which can include costconsiderations. environmental impact, and the availability of that resource. In regards to relatability, not every resource is created equally. Base load resources like coal, nuclear. natural gas, or hydroelectric power can run continuously and can be actively controlled to follow load



and meet consumer demand. Variable resources like wind and solar. however. relv on environmental conditions which can be hard to reliably predict. As wind speeds vary or cloud cover changes, the electric output from these generation resources can fluctuate dramatically and in an manner. unpredictable This complicates an already difficult load-balancing process. Unfortunately, most power plants were not built to be continuously ramped up and down. Unlike your light switch, they cannot be turned on and off at a moment's notice.

From the power plant, electricity travels at the speed of light through transmission and distribution lines to end users. What many don't know is that there is currently no economical way to store large amounts of electricity. There are no large battery systems capable of storing excess capacity for a later time when that power is needed. The moment we turn on the light switch, a generator must be running at that instant to meet that demand. This means that Nebraska's electric providers must balance the energy needs of consumers with the generation supplied. This requires а complicated balancing process which takes into account customer trends weather usage and forecasting to help predict demand. Load control centers monitor electric generation and demand at every minute of every day, relaying

NEBRASKA'S ELECTRIC RATES ARE AMONG THE TOP 15 LOWEST IN THE U.S. Visit the website at: www.workingfornebraska.org



Above: Norris Public Power District crews work together to build a power line in Gage County.

Left: Ice and wind brought down a section of power line during a winter storm.

messages to power plants telling them to increase or decrease generation to match consumer demand. If demand exceeds the amount of generation available, blackouts could occur.

Reliable electricity is also the result of a complex infrastructure of substations, transformers, and miles of transmission and distribution lines. The electric grid must be constantly monitored, controlled, and maintained to ensure reliability. Some of the most common causes of electric outages are related to animals and trees

coming into contact with power lines and weather related incidents. The electric grid has many safeguards designed to isolate these outages. Circuit breakers along the power lines will trip isolating an outage and in many cases electricity can be redirected along a secondary path keeping the lights on for customers. Electric providers have also incorporated new advances in technology which can help to pinpoint the cause of outages, decreasing the time needed to identify the source, make repairs and reenergize electric



lines.

Despite all efforts to maintain electric infrastructure and provide reliable service, Nebraska's severe weather can take a toll of our electric system. In the event of an outage, rural electric membersystems work together and employ a workforce of dedicated men and women that are called into action. These individuals often work in extreme and dangerous weather conditions to ensure you continue to have electricity.

Often working at night during severe storms, lineman must travel through flooded roads identifying storm damage. Once damages have been assessed and the source of an outage identified, rural electric systems have developed emergency response plans to restore service as fast as possible. This usually means that individuals work in a way that will get electricity restored to the most people as soon as possible. Major repairs involving substations and transmission lines may affect thousands of people and will need to be repaired before distribution lines and individual outages will be fixed.

Nebraska's energy experts are managing the demands of a electric grid complex while responsibly increasing the use of environmentally friendly renewable energy resources and doing so with fewer outages than our neighboring states. A reliable electric supply is a result of a complex system of multiple generation resources, miles transmission of and distribution lines, a complex load monitoring system, and a dedicated workforce willing to work in extreme conditions to keep your lights on. Nebraska's rural electric member-systems are working hard to keep your lights on and we are proud of our record.

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Is your refrigerator running up your electric bill?

osting a big party where your guests are all bringing a dish? It would probably be good if the chilled foods stay chilled. Do you have enough space in your refrigerator to hold everything? If you just had a vigorous workout or a hot day in the sun, wouldn't a cold refreshing beverage sound good? Most people do not consider that after space conditioning, water heating and lighting, refrigerators and freezers are usually the fourth largest consumer of energy in a home.

A 2015 appliance survey revealed that nearly half of the homes in greater Nebraska have more than one refrigerator. In addition, nearly 80 percent of homes in the same area have one or more separate freezers. Most of these additional units are located outside the kitchen, being found in basements, garages, utility rooms, pantries or other areas. While these extra units are a great convenience, they also take extra energy to run. It is easy to overlook this fact until the electric bill arrives. If this operating period coincides with the higher summer rate period and increased air conditioning use, the cost can leave you wondering if the extra refrigeration is worth it.

What can you do to reduce this cost? Here are some ideas:

1. Refrigerators manufactured before 1990 often consume three-tofour times more energy than new energy efficient models. If your second unit is more than 10 years old, try moving all your refrigerated items into one unit; preferably, your newest. Refrigerators are the most efficient when they are kept full. However, confirm that air inside the refrigerator can flow around all items to ensure proper cooling.

2. Only plug-in and operate the second refrigerator when you know it is needed. If you are hosting a large celebration, turn the unit on a few hours before the event and unplug it after it is no longer needed.

3. Consider loading a cooler up with

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ice if the extra room is needed for a brief period. The cost of running your old refrigerator over a 48 hour period can often be offset by the cost for a bag of ice.

4. Clean the coils on all of your refrigeration annually. Clean them more frequently if the unit is in a dusty or dirty environment. Do it for your new unit, too!

5. If you really need a second unit, consider purchasing a compact unit that is ENERGYSTAR-qualified.

These units will consume only a minor portion of the energy a 30-year-old clunker will.

6. If you have moved your old refrigerator to an uninsulated location, such as a garage, it will use even more energy during hot weather. A fridge in a 90 degree environment, for example, uses nearly 50 percent more power than one in a 70 degree environment.

Source: Nebraska Public Power District

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NEBRASKA

FARM BUREAU

Beneficial electrification for the home

o you enjoy waking up to the rumble of your neighbor's lawn mower on a Saturday morning? The days of mowers and other devices making a rumbling noise and spewing exhaust into the air may be coming to an end.

The concept. known as "environmentally beneficial electrification," is gaining traction among a growing number of groups in the U.S. including local electric utilities. Frequently promoted as a means to reducing greenhouse gases and helping the environment, beneficial electrification also helps consumers by providing products that are cleaner, quieter and easier to maintain.

Beneficial electrification is a departure from the conventional wisdom, which held that appliances fueled on-site, like natural gas water heaters, were more efficient and easier on the environment. The natural gas industry argues that generating and distributing electricity is less efficient than burning fuel on-site.

But that old argument is crumbling, and one of the biggest drivers of this trend is the flexibility of the electric grid itself. As utilities shift to renewable technologies and make existing generation technologies cleaner, electricity uses less fossil fuel per kilowatt-hour of energy produced. Electric appliances become "greener." Electric appliances themselves are also becoming more efficient due to technological improvements increased and government standards, and gas appliances aren't keeping up.

"Over their life, electric products can support the integration of renewable energy generators, on-site renewable generation, and thermal

Environmentally beneficial electrification is a concept that is gaining traction among a growing number of U.S. groups, including electric utilities. Beneficial electrification suggests that the use of more all-electric appliances, machinery and equipment – like lawnmowers, water heaters, stove tops and vehicles – provides consumers with quieter, "greener" products.



and battery storage programs. The same cannot be said of appliances that require fossil fuel on-site," says Keith Dennis, NRECA senior principal of end-use solutions and standards. "This applies to electric vehicles, systems that heat and cool homes and many other end-use technologies."

So, what will change around the home and how will it impact you? Four changes you're likely to see are to your water heater, stove tops, lawnmowers and vehicles.

First, hybrid heat pump water heaters are far more efficient than standard electric water heaters and still offer the benefits of an electriconly system, such as quiet operation and greater durability.

Electric stove tops have long been disliked because they take a long time to heat, and will often heat pans unevenly. However, new induction stovetops heat faster than gas stoves and are more efficient than electric resistance stoves. The price has fallen tremendously over recent years – from hundreds of dollars per induction stove to well under \$100.

The third major change will be to small motors around your home, like the one in your lawnmower or leaf blower. Already there are corded and cordless models available and as batteries continue to improve and fall in cost, consumers can expect to see cordless models dominate.

Lastly, the car in your driveway may change out its gas tank for a battery. Electric vehicles are widely praised for being safer, easier to maintain (no oil changes!) and performing better on the road with more acceleration and torque. Currently more expensive than their gas-fueled counterparts, electric vehicles will fall in price as more companies enter the market and battery technology improves.

Change is often overestimated in the short term and underestimated in the long term. With that in mind, don't expect to see the electrification of your home unfold completely in the next year or two, but rather over the next five to 10 years.

Public power energizes local economies.

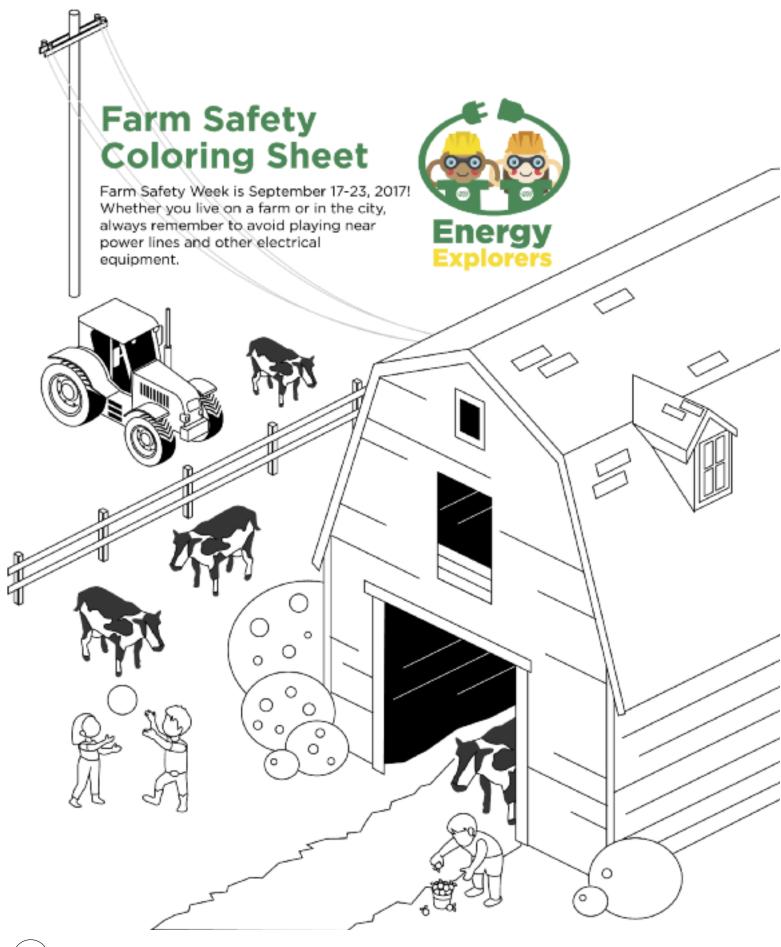
City officials and electric utility managers often work together to create economic development programs and incentives. Many public power communities are proud to offer special rates that entice businesses to expand or set up shop.



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— J. Fitzgerald, VA



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Teach children the importance of school bus safety

The greatest risk to your child is not riding a bus, but approaching or leaving one. Before your child goes back to school or starts school for the first time, it's important for you and your child to know traffic safety rules. Teach your child to follow these practices to make school bus transportation safer.

Safety Starts at the Bus Stop

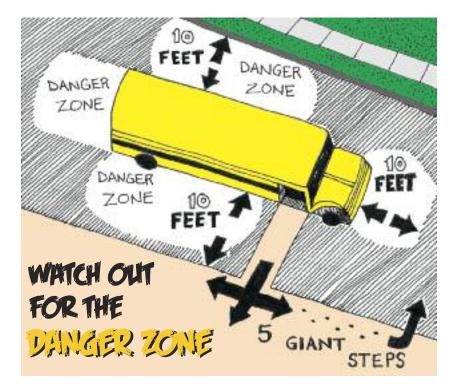
Your child should arrive at the bus stop at least five minutes before the bus is scheduled to arrive. Visit the bus stop and show your child where to wait for the bus: at least three giant steps (six feet) away from the curb. Remind your child that the bus stop is not a place to run or play.

Get On and Off Safely

When the school bus arrives, your child should wait until the bus comes to a complete stop, the door opens, and the driver says it's okay before approaching the bus door. Your child should use the handrails to avoid falling.

Use Caution Around the Bus

Your child should never walk behind a school bus. If your child must cross the street in front of the bus, tell him/her to walk on a sidewalk or along the side of the street to a place at least five giant steps (10 feet) in front of the



bus before crossing. Your child should also make eye contact with the bus driver before crossing to make sure the driver can see him/her. If your child drops something near the school bus, like a ball or book, the safest thing is for your child to tell the bus driver right away. Your child should not try to pick up the item, because the driver might not be able to see him/her. Source: National Highway Traffic Safety Administration



Advanced Technology Allows Macular Degeneration Patients

And Allows Many Low Vision Patients To Drive Again



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

For many patients with macular degeneration and other visionrelated 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



Same scene of Grandchildren as viewed through telescope glasses.

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:

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The benefits of air source heat pumps

by Pat Keegan

Q : It looks like we'll be needing to replace our furnace soon, and we're wondering if a heat pump would help us save some money. Do you have any suggestions?

A : Your question is an excellent one, since for most of us, heating and cooling accounts for the largest part of our household energy use. An electric air source heat pump can be a good alternative to a furnace system that runs on propane or fuel oil. A heat pump is also a cost-effective alternative to electric resistance heat that is used in electric furnaces and in baseboard and wall units.

How heat pumps work

In the summer, an air source heat pump acts as an air conditioner (AC) that draws heat from your home's air and transfers it outside. In the winter, the system's direction is reversed so that heat is pulled from the outside air and moved into your home.

The heat pump has two major components: the condenser (also called the compressor) that circulates refrigerant through the system; and an air handler that distributes the conditioned air. Most heat pumps are split systems, with the condenser located outside and the air handler inside. A packaged system contains both components in one unit that is placed outside your home. Heat pumps usually distribute the hot or cold air through the duct system. Ductless mini-splits, which can serve as many as four rooms, will be covered in next month's column.

In the past, heat pumps weren't efficient enough to work in colder climates. In recent years, however, technology has advanced to make them viable in climates with long periods of sub-freezing temperature, such as the Northeast U.S.

If your old furnace has an air conditioner (AC) attached, replacing both the heating and cooling system with the all-in-one solution of a heat pump might produce significant cost savings. If you are currently cooling with window units, or have an older central AC, moving to an air source heat pump could reduce your summer energy bills.



In recent years, technology has advanced to make heat pumps viable in climates with long periods of subfreezing temperatures. Photograph provided by Rays Heating, Plumbing and Electric

Heat pumps not only reduce energy costs, they can also eliminate the risk of carbon monoxide poisoning and problems that can occur with on-site storage of propane or heating oil.

Heat pumps must work harder to extract heat as the outside temperature drops. At some point the heat pump switches to resistance mode, which operates the same way a toaster or an electric baseboard heater works. If your area has very cold winters, you should consider a dual fuel system, which utilizes a heat pump along with a gas or propane furnace.

Selecting and installing

If you live in a cold climate, look for a unit with a higher HSPF rating, which measures heating efficiency; if you live in a warm climate, you probably want to focus more on the SEER rating, which measures cooling efficiency. The minimum standard heat pump is SEER 14 and HSPF 8.2 . An easy way to compare options is to look for the ENERGY STAR® label. This indicates the unit is at least 15 SEER and 8.5 HSPF . Visit www.energystar.gov to learn more about equipment, installation and qualified contractors.

How much can a heat pump reduce your energy costs? This depends upon the size and efficiency of your home, local energy prices and local climate. You can find calculators online that can help you predict energy savings. One entry with sample data found that the cost of heating in South Carolina, using a new heat pump and national average fuel costs, was less than half the cost of heating with a typical propane furnace or an electric resistance system.

Energy auditors can predict energy savings with greater precision, and they can offer advice on choosing a specific brand and size of the unit. More importantly, energy auditors can suggest other ways to improve comfort or reduce energy use such as duct sealing or insulating the building envelope.

Your local HVAC dealer, if they have heat pump experience, can be very helpful. Many heat pumps are not installed correctly, so be sure to ask how they will ensure a quality installation. Contact your local public power district or electric co-op to find out what they recommend. They may even offer rebates, free audits or discounted rates for electric heat. Perfect Choice HD Ultra[™] is simple to use, hard to see and easy to afford...

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Grill Like a Pitmaster With Flavorful Pork

S ummertime meals are all about the grill. This year, give your grill and your family a break from hamburgers and hot dogs, and heat things up with the flavor and versatility of fresh pork.

From tender Sweet Sriracha Pork Skewers to Memphis-Style Dry Baby Back Ribs, the possibilities are endless. Make your cookout the best on the block with these tips and recipes from world champion pitmasters Tuffy Stone and Darren Warth:

• Start with a fresh and highquality meat like Smithfield Fresh Pork, which is available in a variety of cuts and seasonings perfect for any cookout occasion.

• Don't lift the lid of your grill unless you are checking for doneness or turning the food to avoid letting the heat escape or interrupt the cooking process.

• Check for proper doneness with a meat thermometer and use tongs to turn the meat instead of a fork. Cutting into the meat can cause flavorful juices to escape.

• If you're short on time, try a preseasoned option like Smithfield Marinated Fresh Pork, so that the prep work is already done for you.

Find more great grilling tips, videos and recipes at SmithfieldGetGrilling.com.



Memphis-Style Dry Baby Back Ribs

Dry Rub:

- 1/4 cup brown sugar
- 1/4 cup kosher salt
- 2 teaspoons chili powder
- 1 1/2 teaspoons dry mustard
 - 1 teaspoon black pepper
 - 1 teaspoon celery salt
 - 2 slabs Smithfield Fresh Pork Back Ribs, membrane removed
 - 1/4 cup prepared yellow mustard apple juice or water, in spray bottle barbecue sauce (optional)

To make dry rub: In small bowl about 30 minutes before grilling,

combine brown sugar, kosher salt, chili powder, dry mustard, black pepper and celery salt; mix well.

Spread both sides of ribs with yellow mustard and sprinkle dry rub on top. Let stand at room temperature 30 minutes. Heat charcoal or gas grill to 250 F for indirect cooking.

Place ribs, meaty side up, over drip pan and cook 4-6 hours until tender. Spritz ribs occasionally with water or apple juice using spray bottle.

If using charcoal grill, add about 12 coals approximately every 45 minutes to maintain heat. Let ribs stand 10-15 minutes before serving. If desired, serve with barbecue sauce.

Reader Submitted Recipes

3 eggs

1 1/2 cups sugar

3/4 cup vegetable oil

1 teaspoon vanilla extract

2 teaspoons baking powder

ginger, cloves mixture

3 cups all purpose flour

2 teaspoons cinnamon,



Sweet Sriracha Pork Skewers

- 1 Smithfield Fresh Pork Tenderloin
- 1/2 cup agave nectar
 - 2 tablespoons Sriracha sauce
 - 1 teaspoon minced garlic
 - 1 tablespoon soy sauce
 - 1 tablespoon rice vinegar
 - 1 pint fresh pineapple chunks wood skewers, soaked in water

Trim skin off pork tenderloin and cut into 1-inch cubes.

To make marinade: In bowl, combine agave, Sriracha sauce, garlic, soy sauce and rice vinegar, and whisk thoroughly.

Pour marinade into re-sealable bag and add cubed pork tenderloin. Marinate for up to 24 hours in refrigerator. Place tenderloin and pineapple chunks on skewers, alternating so pineapple is tight against tenderloin.

Heat charcoal or gas grill to medium heat. Grill skewers, turning every 5 minutes, until all sides are grilled. Cook until tenderloin chunks have reached internal temperature of 145 F.

Pear Bread

- 1 teaspoon baking soda
- 1 teaspoon salt
 - 4 cups ripe, peeled, chopped pears
 - 1 teaspoon lemon juice
 - 1 cup chopped pecans or walnuts

In a bowl combine eggs, sugar, oil and vanilla, mix well. Combine flour, baking powder, cinnamon mix, baking soda and salt. Stir into the egg mixture just until moistened. Toss pears with lemon juice. Stir pears and nuts into batter. Spoon into two greased 9" X 5" loaf pans. Bake at 350 degrees for 50 minutes or until toothpick comes out clean. Cool 10 minutes before removing from pans to wire racks.

Sheila Pekarek, Garland, Nebraska

Cucumber Relish					
9	large cucumbers	1/4	cup flour		
2	large sweet onions	1	teaspoon turmeric		
1	green pepper	1	teaspoon ginger		
1	red pepper	1	teaspoon celery seed		
3	cups sugar	3	cups vinegar		
1/4	cup salt	1	cup water		

Grate cucumbers, onions, and green and red peppers. Sprinkle with salt and cover and let set for two hours. Squeeze all liquid out of cucumber mix and set aside. Whisk together sugar, flour, turmeric, ginger and celery seed. Heat vinegar and water. Whisk in sugar mix until smooth. Stir in cucumber mix. Bring to a boil and cook till thickened slightly, 15 - 20minutes. Put in hot jars and seal tightly. Makes 4 - 5 pints. Delicious and good way to use up extra large cucumbers.

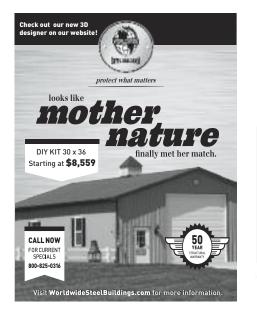
LaJeanne Boehler, Hastings, Nebraska

Hasselback Apple

One apple halved and cored. Make vertical slices in each apple, stopping 2 centimeters from bottom of each apple half. Baste with mixture of: 1 tablespoon melted butter, 1 tablespoon brown sugar, 1/2 teaspoon cinnamon. Bake in 400 degree oven for 20 minutes. Optional crumble topping: Cut 1 tablespoon cold butter broken in small pieces, toss in combination of 2 tablespoons flour, 1 tablespoon white sugar until flour and sugar clumps around the butter. Bake an additional 15 minutes after adding topping. Ingredients listed are for a one apple per person serving, so adjust when using more apples. It is great served with ice cream!

Maureen Wesseln, Norfolk, Nebraska

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SUPERIOR QUALITY, MORE CHOICES. WITH RDCRAF

JUST RELEASED! 2017 CATALO **REDESIGNED** so we can show you **EVERYTHING**.

30 new kitchens with all their details, 800 cabinets, 25 pantry ideas, smart home innovations and all **NEW** options and plans with optional layouts. The MUST HAVE for any new home buyer! **OPEN HOUSE:** Sat Sept 30th 10-3:00 both locations

NEW! Preston 4 BR, 2 Baths 1,860 sq ft



NEW! Tecumseh 3 BR, 2 Baths 2,100 sq ft

THE BETTER WAY TO BUILD

NEW! McPherson



- ·2x6 construction
- •Over 800 cabinets
- ·Custom build
- •R-23/R-49 blown insulation standard ·Optional R-32/R-60

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