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ELECTRIC COOPERATIVE LIVING



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nominees announced**

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UNDERSTANDING WIND ENERGY

BY GARRETT THOMPSON



This month's topic in our "All-of-the-Above" newsletter series is wind energy. Iowans are very familiar with wind energy and have been for a

while. This form of electric generation has been, and currently is, extremely polarizing. We at Franklin REC see and understand the arguments made from all sides.

Before moving to north central Iowa, my wife and I lived in southwest Iowa where MidAmerican Energy and multiple investor groups had turbines placed all around us. When we bought our house, the nearest wind turbine was a few miles away, but after a few years, a wind farm popped up right across the road from us. Our house was 1/8 of a mile from the closest turbine, which meant we could hear the "whooshing" sound from the blades anytime we were outside trying to enjoy our property. The tower went up, in what seemed like overnight, and we were completely unaware that it was being built right next to us

(due to a hill). It was a shock to come home from work to see a wind turbine towering next to our house.

Working in the electric industry, I also see the advantages of wind turbines for their efficient energy costs, as well as the taxes they bring from outside the county, or sometimes state, to our local neighborhoods. In January 2023, we wrote an article geared toward the economics of wind turbines based on a member question about how wind energy helps keep costs down. I won't be covering that topic in today's article, but if you want to learn more about the economics, visit www.franklinrec.coop, and under the Member Perks tab, you can find the Franklin REC Newsletter's January 2023 edition.

Below is a brief overview of how wind turbines work and some common questions we hear surrounding wind farms.

How wind turbines work

Blades turn kinetic energy from the wind into rotational energy (angular kinetic energy). Those blades are connected to an internal shaft, which

turns a generator and puts the generated electricity onto the power grid.

Three primary factors determine how much a wind turbine can produce:

- 1 Size and orientation of the blades
- 2 The aerodynamic design of the blades
- 3 The amount of wind turning the shaft/rotor

Blades on a turbine look much like an airplane wing, as this shape allows wind to travel faster over its surface. This creates a low-pressure pocket of air above the blade that forces it upward. The amount of lift depends on the angle of the blade, so engineers include a twist within the blade to maximize the amount of lift a blade can produce.

Why do wind turbines only have three blades?

The three-blade design is a happy medium between energy output, durability, noise and economics. For a good video explaining this more



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MOVE OVER, SLOW DOWN: IT'S THE LAW

Move over, slow down. It is that straightforward and easy to do – and it is the law in every state. By following these two simple road rules when approaching a stationary vehicle with flashing lights or utility personnel working along roads, you can avoid a traffic ticket and potentially save a life.



in-depth, perform an internet search for “Why do (most) wind turbines have three blades?”

Do wind turbines have a negative impact on wildlife?

Unfortunately, there is no large-scale energy source available that can claim it has no environmental impact. One of the challenges facing the wind industry is the potential for turbines to negatively affect wild animals directly, via collisions, and indirectly due to noise pollution and habitat loss.

The Iowa Department of Natural Resources issued an article on this topic. It shares that if wind farms are properly planned and sited, their impact on wildlife is reduced. Part of the planning includes understanding and avoiding the migratory corridors and pathways, such as bluffs, ridgetops and large rivers. According to the article, “Fortunately for birds, the annual mortality rate at most Midwestern wind farms appears to remain relatively low and probably insignificant.”

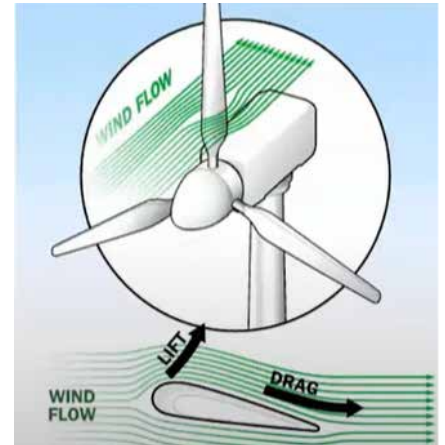
Why are wind turbines stationary when the wind is blowing?

When you see wind turbines stationary on a windy day, it can generally be one of the following four reasons:

- 1 Maintenance.
- 2 Safety or durability. Wind turbines are built to sustain winds up to 50-55 mph. Once wind speeds reach that level, the blades are locked into position to prevent the turbine from damaging itself.
- 3 The demand for power is low. Strangely enough, there are times when the price of energy on the open market goes negative. This means those producing electricity must pay the market to take the energy they are generating.
- 4 Lack of transmission capacity. More transmission lines could be built; however, the cost to build those high-voltage electric lines would be hundreds of millions of dollars.

The biggest turbine on Earth

Most turbines are well over 100 meters tall (109 yards). However, the largest turbine in the world is more than three times as big! According to Electrek.co, that turbine is an offshore turbine commissioned in July 2023 off the southeastern shore of China. It's a 16-megawatt generation plant that stands 480 feet high, with each blade measuring 404 feet in length. The blades are longer than a football field, and each weighs 54 tons. The turbine is built to withstand typhoon



The shape of wind turbine blades creates a low-pressure pocket of air above the blade that forces it upward.

Photo Source: ECO Snooki.

conditions of up to 178.5 mph gusts. It set a world record for the most power produced by a single turbine in a day, 384.1 megawatt hours. This is roughly the equivalent of powering 170,000 homes.

I hope you have been enjoying our journey through the diverse electric generation landscape. If you have questions or comments, please don't hesitate to reach out. If we don't know the answer to your questions, we are more than happy to research and get back to you in a timely manner.

Garrett Thompson is the General Manager/CEO of Franklin REC.

WHO'S LINE IS IT ANYWAY?

Prior to starting any outdoor project, make sure to call 811 for free locating of public underground utility lines, including water, communications, gas and electric. Franklin REC and fellow utility providers offer this service for FREE. Underground utilities will be located within three business days following the locating request.

The utility only locates the public underground lines entering the location. For example, Franklin REC only locates electric power lines up to the meter. If locating additional underground services beyond the meter is necessary, the location owner must hire a private entity to locate the underground line.



FROM YOUR BOARD ROOM

During the June board meeting, Franklin REC directors:

- Approved work orders and special equipment capitalization of \$62,851.65
- Approved a casting vote for the Rural Electric Supply Cooperative manager-director candidate

CERTIFICATION BENEFITS MEMBERS

BY SCOTT HAGENSON

For the last year, Franklin REC Lead Lineman Chace Klein and I attended Power Line Design & Staking classes to learn how to best build and design the infrastructure of Franklin REC's power grid.

Throughout the series, we received a total of 96 hours of classroom training, in addition to multiple hours of hands-on skills training. As of this April, we both received our certification from Utility Training Services, Inc., for completing the Power Line Design & Staking course.

The course's mission is to educate attendees on the history of line design and the theory behind the design layout of staking a work plan. "Staking" is the term used when a Franklin REC representative measures, plans and executes a new line build, addition of service or retirement of service at a specific location, and then relays this pertinent information to the line crew.

Long-term benefits for reliability

With two certified distribution Power Line Design & Staking personnel, Franklin REC ensures the successful implementation and improvement of the co-op's primary asset – the electric power distribution system. As a core principle of Franklin REC, providing continued education opportunities to staff and crew is a top priority, thus ensuring Franklin REC is putting the best foot forward to provide great service to our members.

The many benefits from attending the Power Line Design & Staking course include choosing and utilizing the correct size of utility poles, wire and material for the specific section of Franklin REC's service territory. Prior to the line crew undertaking a job order, Chace or I will assess the proposed project and stake the necessary work to be completed. We consider all factors of the job



site, such as terrain, size of equipment and necessary material. By using the correct material, it increases the cooperative's reliability, lifespan and strengthens our service to our membership.

With the knowledge gained from this course, Chace and I are looking forward to planning and designing an even stronger, more reliable distribution grid for years to come.

Scott Hagenson is the line superintendent at Franklin REC.

OFFICE CLOSING

Franklin REC's office will be closed Monday, Sept. 2, in observance of Labor Day. Beginning Tuesday, Sept. 3, office hours will resume to M-F, 7 a.m.-3:30 p.m.



VOLUNTEER CHALLENGE WINNER

Congratulations to Franklin REC Board President Gordon Greimann for winning the Touchstone Energy Volunteer Challenge! Greimann elected to donate \$100 to the West Fork Pantry on his behalf.



BLOOD DRIVE SAVES LIVES

During our Blood Drive on July 3, we saved 36 lives!

Join our next blood drive pop-up at Franklin REC on Tuesday, Sept. 3, from 11 a.m. to 3 p.m. Let's save lives together!



CLEARING THE PATH TO RELIABILITY

Trees are majestic, beautiful and good for the soul. However, our members depend on us to deliver reliable power to their homes and businesses. That is why Franklin REC strives to balance preserving the beautiful surroundings we all cherish while ensuring reliable electricity.

Improves reliability

Keeping power lines clear of overgrown vegetation improves service reliability. After all, we've seen the whims of Mother Nature during severe weather events, with fallen tree limbs taking down power lines and utility poles. While many factors can impact power disruptions, about half of all outages can be attributed to overgrown vegetation. This is why you sometimes see Franklin REC crews or contractors trimming trees near power lines. Our trimming crews have been trained and certified based on the latest industry standards.

In fact, all U.S. electric utilities are required to trim trees that grow too close to power lines. Scheduled trimming throughout the year keeps lines clear from overgrown or dead limbs that are likely to fall, and we can better prepare for severe weather events. Plus, we all know it's more cost-effective to undertake preventative maintenance than to make repairs after the fact.

Enhances safety

Working near power lines can be dangerous, and we care about your safety and the safety of our line workers. For example, trees touching power lines in our members' yards can pose a grave danger to families. If children can reach those trees, they can potentially climb into a danger zone. Electricity can arc, or jump, from a power line to a nearby conductor such as a tree.

Any tree or branch that falls across a power line creates a potentially dangerous situation. A proactive approach lessens the chances of fallen trees during severe weather events, which makes it more complicated and dangerous for line workers to restore power.

Impacts affordability

As a co-op, Franklin REC always strives to keep costs down for our members. If trees and other vegetation are left unchecked, they can become overgrown and expensive to correct. A strategic vegetation management program helps keep costs down for everyone.

When it comes to vegetation management, there are ways you can help, too. If you're planting new trees, make sure they're planted a safe distance from overhead power lines.

Medium-height trees (40 feet or smaller) should be planted at least 25 feet from power lines. Taller trees (over 40 feet) should be planted at least 50 feet from power lines.

You can also practice safe planting near pad-mounted transformers. Plant shrubs at least 10 feet from the transformer door and 4 feet from the sides. If your neighborhood has underground lines, contact 811 before you begin any project requiring digging.

Additionally, if you spot an overgrown tree or branch dangerously close to overhead lines, please call our office at 641-456-2557.

We have deep roots in our community, and we love our beautiful surroundings. It takes a balanced approach, and our vegetation management program is a crucial tool in ensuring service reliability.

Franklin REC has contracted third-party services to assist in the abundance of tree clearance service orders.

If you have questions or concerns regarding work completed, please contact our office at 641-456-2557.





IOWA ELECTRIC COOPERATIVE LIVING

The magazine
for members of
Iowa's electric
cooperatives.

August 2024

Visit our website at www.franklinrec.coop



WHERE
WE HAVE MEMBERS
WE
ACTIVELY
LIVE
OUR COMMITMENT

We're not just a service provider – we're active members of our community. We take pride in serving our members and going the extra mile in everything we do. Get closer to your **local cooperative** for ways we support you and strengthen our community.

