

WOODBURY COUNTY BOARD OF SUPERVISORS AGENDA ITEM(S) REQUEST FORM

Date: 6/10/21 Weekly Agenda Date: 6/15/21

ELECTED OFFICIAL / DEPARTMENT HEAD / CITIZEN: David Gleiser, CED Director

WORDING FOR AGENDA ITEM:

Set the Date/Time for 3 Public Hearings to Approve a Commercial Wind Energy Conversion Systems Ordinance

ACTION REQUIRED:

- Approve Ordinance
- Approve Resolution
- Approve Motion
- Public Hearing
- Other: Informational
- Attachments

EXECUTIVE SUMMARY:

This item requests the Board to set the date and time for 3 public hearings, to review, discuss, and consider to approve or disapprove the proposed Commercial Wind Energy Conversion Systems (C-WECS) Ordinance

BACKGROUND:

Iowa is a national leader in wind energy. Wind energy is good for Iowa's economy and job market as it provides good-paying jobs; attracts companies such as Google, Apple, and Facebook; generates millions of dollars in annual lease payments to landowners; and helps counties capture millions of dollars in new property tax revenue. With the high demand and potential for more wind growth in Iowa, and considering recent large-scale wind energy projects in nearby counties, Woodbury County staff have developed a proposed ordinance addressing the site plan review and application approval process for the construction and ongoing maintenance of large-scale commercial wind energy conversion systems proposed to be erected in unincorporated Woodbury County.

FINANCIAL IMPACT:

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IF THERE IS A CONTRACT INVOLVED IN THE AGENDA ITEM, HAS THE CONTRACT BEEN SUBMITTED AT LEAST ONE WEEK PRIOR AND ANSWERED WITH A REVIEW BY THE COUNTY ATTORNEY'S OFFICE?

Yes No

RECOMMENDATION:

Set the date and time for 3 public hearings for the proposed C-WECS Ordinance:
Tuesday, 6/22/21, 4:40 PM.....Public Hearing, 1st Reading of Ordinance
Tuesday, 6/29/21, 4:45 PM.....Public Hearing, 2nd Reading of Ordinance
Tuesday, 7/6/21, 4:45 PM.....Public Hearing, 3rd Reading and Adoption of Ordinance

ACTION REQUIRED / PROPOSED MOTION:

Motion to set the date and time for 3 public hearings for the proposed C-WECS Ordinance:
Tuesday, 6/22/21, 4:40 PM
Tuesday, 6/29/21, 4:45 PM
Tuesday, 7/6/21, 4:45 PM



Iowa Environmental Council

IOWA WIND ENERGY FACT SHEET

Updated: March, 2021

IOWA IS A WIND ENERGY LEADER

- Iowa is a national leader in wind energy, producing the highest percentage of electricity by wind of any state – 60%. [1] Iowa now generates more electricity from wind than any other single source. [2]
- Iowa's total wind capacity is 11,660 MW and growing. Iowa currently ranks second nationally in installed capacity. [3]
- Wind projects under construction or in active development will bring Iowa over 12,000 MW in the next few years. [4]
- Iowa's older wind turbines are being repowered to extend their operating life and generate more energy. Iowa has over 2,500 MW of wind capacity that was recently repowered or is in the process of being repowered. [5]

WIND ENERGY IS GOOD FOR IOWA'S ECONOMY AND JOB MARKET

- The wind industry directly employed 3,909 Iowans in 2019, including manufacturing, operations and maintenance, and engineering professionals. [6]
- There are 53 Iowa companies in the wind industry supply chain. [7]
- Wind energy accounts for at least \$19 billion in capital investment in Iowa. [8]
- Wind turbines generate \$78 million annually in lease payments to landowners in Iowa. [9] These landowners are in rural Iowa and throughout much of the state.
- Google, Apple, and Facebook are among the companies that have identified the availability of low-cost Iowa wind energy as one of the reasons to locate new facilities in Iowa. [10]
- Wind provides significant property tax revenue to local governments. Wind projects contributed approximately \$60 million in tax revenue in 2020. [11] MidAmerican's Wind XI project alone is estimated to generate \$12.5 million annually in local property tax revenue and \$500M over the life of the project. [12]
- Three examples of 2016 county property tax revenue from wind: Adair County received \$5.9M, Cass County received \$2.7M, and Franklin County received \$3M. [13] This revenue supported schools, roads and bridges, hospitals, and more.
- Nationally, wind turbine service technicians are projected to be the fastest-growing occupation in the 2019-2029 time frame. [14]

WIND ENERGY FACT SHEET: CONTINUED

WIND ENERGY IS AFFORDABLE ENERGY

- As wind energy grew from about 800 MW in 2005 to over 10,900 MW today, Iowa's electric rates remain below the national average. [15]
- New wind energy in Iowa is the cheapest new source of electricity generation, even without incentives, and is cheaper than new natural gas, nuclear, or coal. [16]
- New wind energy is now capable of competing on cost with existing conventional plants, including existing coal, gas, and nuclear. [17]
- Building more wind energy in Iowa will create substantial savings for Iowa customers in future years: Adding another 10,000 MW of wind energy to bring Iowa to 20,000 MW of wind would save Iowa consumers \$12.6 billion over 25 years with average annual savings of over \$500 million. Average households would save \$3,200 on electric bills during this time while average industrial customers would save \$825,000. [18]
- Other Midwest state electricity rates are higher than Iowa's. For example, Iowa's electricity rates are 30 percent lower than Wisconsin's electricity rates. Wisconsin gets only two percent of its energy from wind (compared to 34 percent for Iowa). [19]

WIND ENERGY IS RELIABLE AND STABLE

- Effectively integrating renewable energy while maintaining grid reliability is already being achieved.
- Many studies "show that renewables can be integrated at high levels without significant issue" including the Renewable Energy Futures Study, the Western Wind and Solar Integration Study, the Wind Vision Study (all NREL) and the PJM Renewable Integration Study (GE). [20]
- The nation's major grid operators have found that wind and solar energy need very little backup power. [21] MISO, the grid operator for the middle part of the country, needs almost no additional fast-acting power reserves to back up its 10,000-plus MW of wind power on the system. [22]

POTENTIAL FOR MORE WIND GROWTH

- Iowa installed more wind energy capacity in 2019 than in any previous year, at 1.7 GW. [23] Iowa continues to be capable of significant year-over-year growth.
- Iowa has enormous potential to add more wind generation, with estimates ranging from 280 GW to 571 GW depending on factors like technology and land area types used. [24]
- The wind energy production potential in Iowa is more than 20 times the total Iowa retail load in 2018. [25]
- Iowa needs to add between 20 GW and as much as 50 GW to reach 100% renewable energy by 2050. [26]
- The regional grid operator, MISO, is currently studying over 666 MW of wind projects proposing to interconnect in Iowa. [27]
- Just under half of Iowa's 99 counties still have little or no wind development.

SOURCES

1. [Electricity data browser - Net generation for electric power](#) (eia.gov) (accessed March 2021).
2. Id.
3. [ACP_MarketReport_4Q2020.pdf](#) (cleanpower.org).
4. Id.
5. IEC estimate based on utility announcements. MidAmerican is repowering 1,059 MW of GE turbines and 1,175 MW of Siemens turbines. Allete Clean Energy is repowering 186 MW of Zond turbines. NextEra Energy Resources is repowering 340 MW under PPAs for Alliant Energy.
6. [Clean Jobs Midwest](#)
7. [ELPC, Iowa Wind Power & Solar Energy Supply Chain Businesses](#) (2021 Update).
8. Information provided to IEC by ACP. [Wind energy is now Iowa's largest source of electricity, report says](#) (desmoinesregister.com).
9. Id.
10. <http://www.desmoinesregister.com/story/money/business/2014/04/03/facebook-google-green-wind-energy-greenpeace/7239627>; <https://www.radioiowa.com/2017/08/24/iowas-wind-power-paramount-to-apples-decision-on-new-data-centers/>.
11. Information provided to IEC by ACP.
12. MidAmerican Energy, Request for Approval of Ratemaking Principles, Iowa Utilities Board Docket No. RPU-2016-0001 (filed April 14, 2016).
13. Data from fiscal year 2015-2016, compiled by the Iowa Environmental Council.
14. Bureau of Labor Statistics, Fastest Growing Occupations (for years 2019-2029) at <https://www.bls.gov/ooh/fastest-growing.htm>.
15. U.S. Energy Information Administration, 1990-2019 Average Price by State by Provider, available at https://www.eia.gov/electricity/sales_revenue_price/. See also Iowa Policy Project, Iowa Rates Lower With Wind Growth (March 2017) at <https://www.iowapolicyproject.org/2017docs/170330-windprices-bgd.pdf>.
16. See Lazard, Levelized Cost of Energy Analysis – Version 14.0 (October 2020) at 2, available at <https://www.lazard.com/perspective/levelized-cost-of-energy-and-levelized-cost-of-storage-2020/>.
17. Lazard, Levelized Cost of Energy at 7.
18. [A Renewable America and AWEA, The Consumer Benefits of Wind Energy in Iowa \(2016\)](#).
19. U.S. EIA, Wisconsin – State Energy Profile Analysis (May 21, 2020), available at <https://www.eia.gov/state/analysis.php?sid=WI>.
20. AWEA & SEIA, A Handbook for States: Incorporating Renewable Energy into State Compliance Plans for EPA's Clean Power Plan, Version 1.0, February 2015, at 98. Available at: [Handbook for States final_0.pdf](#) (seia.org).
21. NRDC, Transforming the Power Grid with Clean Energy.
22. NRDC, Transforming the Power Grid with Clean Energy, citing Nivad Navid, MISO, Reserve Requirement Identification with the Presence of Variable Generation, presentation to the Utility Variable Generation Integration Group (2012).
23. [WIND Exchange: U.S. Installed and Potential Wind Power Capacity and Generation](#) (energy.gov).
24. Studies by DOE and NREL including 20% by 2030 Wind (2008); Wind Vision (2015); and Renewable Energy Futures (2012).
25. Iowa Environmental Council, Iowa's Road to 100% Renewable (2020).
26. Id.
27. Midcontinent Independent System Operator, Generator Interconnection Queue, at https://www.misoenergy.org/planning/generator-interconnection/GI_Queue/ (last accessed Mar. 15, 2021).

Wind turbine project rising

Wind farm with ties to Google boosts Cherokee County's economy, tax rolls

Mason Dockter Jul 20, 2019 Updated Jul 22, 2019 0



Section of towers are shown Tuesday, July 9, 2019, in a staging area at Glacier's Edge Wind Project, near Marcus, Iowa, in rural Cherokee County. The project, in the Marcus and Cleghorn areas, is 200 megawatts and expected to be completed this year.

Tim Hynds, Sioux City Journal



[Mason Dockter](#)

CLEGHORN, Iowa -- Google's search for more renewable energy has led to construction of a \$246 million wind farm in eastern Cherokee County.

Eighty-two wind turbines sprawled out over 30,500 acres began rising from farm fields near the small towns of Cleghorn and Marcus in April. The Glacier's Edge Wind Project has created 150 new construction jobs and scores of other economic benefits for the rural community.

The wind farm also will generate \$1.5 million in annual property taxes for local government entities.

The turbines, which will generate 200 MW of electricity, enough to power about 60,000 average-size homes, should be up and running toward the end of this year.

EDF Renewables North America, a subsidiary of the French-based renewable energy company EDF Renouvelables, is building Glacier's Edge for search engine titan Google, which will purchase all the power.

Google [announced](#) in 2017 that it generates 100 percent of its power from renewable sources. The Mountain View, California-based company, a subsidiary of Alphabet, has been purchasing wind power from Iowa farms since 2010 and has done business with EDF since 2012.

"Renewables from projects like Glacier's Edge bring value to our business as we scale and accelerate investment in the communities where we operate," Gary Demasi, Google's director of global infrastructure, said in a 2017 [press release](#). "With solar and wind declining dramatically in cost and propelling significant employment growth, the transition to clean energy is driving unprecedented economic opportunity and doing so faster than we ever anticipated,"

EDF operates, or is in the process of building, nine wind farms throughout Iowa with combined nameplate capacities of roughly 1.25 GW. The company operates wind and solar installations throughout the U.S., along with a couple of biogas plants and a battery storage project in Illinois.

The Glacier's Edge name is borrowed from history. The area where the wind project is situated is roughly the site of the western edge of the Des Moines lobe, part of the so-called Wisconsin Glacier of roughly 12,000 to 14,000 years ago.

Once Glacier's Edge is complete, about 25 employees will stay in the community to maintain the turbines, Sandi Briner, a vice president of corporate communications with EDF, wrote in an email.

A Speer Financial Inc. report commissioned by Cherokee County estimated the project's net acquisition costs at about \$246 million. Based on that total, Cherokee County Auditor Kris Glienke calculated the total taxable valuation of the property at about \$73 million.

After seven years of operation, the wind farm would begin paying roughly \$1.5 million in property taxes to the county and local school districts, said Rick Mongan, the chairman of the Cherokee County Board of Supervisors.

"Out of that \$1.5 million, the county's portion would be about 40 percent, which would be about \$600,000 a year," Mongan said.

"\$330,000 going to the general fund, and then \$270,000 going to the rural fund."

Once complete, Glaciers Edge would become the largest taxpayer in the county.

Kris Glienke cautioned not to make any hard assumptions about future tax revenues on a project that isn't yet complete.

"IF (all the) towers are built and IF they are assessed at \$3 million of taxable value and IF school, county, township levy rates stay stable and aren't lowered; then they should produce approximately \$1.5 million of property tax revenues in year 7, when they reach maximum allowable assessment," Glienke said in an email to the Journal. "As you can see, there are far too many IF's to make solid financial predictions."

EDF is pumping money into the county in other ways -- paying landowners to put the turbines on the land, plus the general stimulus of having all those workers in the area spending money.

"They all have to get their gas here, they shop here, they rent houses, motels," Mongan said. "It's a pretty good boon to the economy."

Darrell Downs, the head of the Marcus Area Economic Development Corporation, said EDF has been a good corporate citizen in Cherokee County. He noted they've paid to help repair and maintain county roads their crews use.

"At the end of this program, if everything works out right for them, in most cases we'll have really good roads in the county," Downs said. "So far so good -- the wheels can always fall off, but to this point they haven't."

In the early days of planning the project several summers ago, Downs said area farmers -- on whose land the turbines are being installed -- were among the project's biggest boosters. The landowners are being reimbursed for EDF's use of part of their land, and they will be able to continue farming around the turbines.

"I'm glad that happened the way it did, because it was actually the farmers that put that together," he said.

Which isn't to say every person in the county likes wind turbines. That's seldom the case.

"I'm not going to say that everybody in the area is for it, that would be -- it wouldn't be true," Downs said. "But more were for it than against it."

Cherokee County isn't alone in getting in on the wind action. According to the [American Wind Energy Association](#), an industry group, Iowa is second in the nation (Texas being number one) in terms of installed wind energy capacity, with roughly 8.9 GW. Somewhere between 9,000 and 10,000 people in Iowa are employed in the wind industry, and all told, the industry pays \$58 million per year in state and local taxes, along with \$20 to \$30 million in land leases.

200 MW Iowa Wind Project Remains on Track

By **Loren Flaugh** - March 16, 2021



With a unanimous 5 to 0 vote in September 2020, the Plymouth County Board of Adjustment approved an application for a conditional use permit (CUP) submitted from Chicago-based

wind energy developer Invenergy LLC for its 200 MW Plymouth Wind Energy Center – the first wind farm in the county.

Northwest Iowa overall continues to experience steady wind farm development, construction and economic growth, with one or two projects developed and built each year.

Chairperson for the Board of Adjustment, Nancy Anderson, presided over the hearing. Zoning administrator Alan Lucken responded via email to several questions with answers and additional information.

When asked if anyone had spoken out against Invenergy's project, Lucken replied, "There wasn't any opposition other than one person who said he wasn't in favor of the project."

He noted that Plymouth County has approved Invenergy's other county permits.

Lucken explained that Invenergy had expected to get started with construction in the fall of 2020, but there was an unexpected delay related to the engineering studies for the transmission line interconnection substation. Invenergy hopes to get started early this spring, with the project generating electricity by the end of 2021.

MidAmerican Energy Co.'s (MEC) nearby 345 kV transmission line has been the point of wind energy connection for several wind farms built recently in northwest Iowa. MEC's Geoff Greenwood reported via email, "MidAmerican plans to put the interconnection substation in service in September to accommodate the wind farm's collector substation."

A significant statement at the bottom of the CUP's cover document further advises, "In the event the applicant shall sell or transfer ownership of the project, all conditions and

requirements identified in the application, all agreements with Plymouth County, this CUP and all conditions of this CUP shall be transferable upon the new owner of the project.”



Invenergy’s Ben Lambrecht said it is possible that the company could still sell and transfer ownership of the wind farm to MEC.

“These conversations are ongoing,” he noted.

Invenergy recently developed 750 MW of wind energy utilizing 318 Siemens wind turbines in nearby O’Brien County. Upon approval of the construction permit from the O’Brien County Board of Supervisors, Invenergy then transferred the project to MEC for ownership, construction and operation.

As proposed in the CUP application, the project is located in the northeastern portion of Plymouth County and will encompass an area within the unincorporated areas of Meadow, Fredonia, Remsen and Henry townships. Approximately 24,000 acres of land are currently under contract with landowners to host project facilities.

As described in the application, the project is to consist of 73 primary turbine sites. In addition, 10 other sites are identified as alternate sites in the event that an unforeseen technical issue prevents a primary turbine site from being developed. The project will consist of a mix of GE 2.8 MW and 2.3 MW turbines with a total nameplate generating capacity of 200 MW.

Other significant wind farm infrastructure identified includes graveled 16-foot-wide, low-profile access roads; above-ground ancillary electrical equipment; and below-ground electrical cables for gathering the power generated from each turbine and then routed underground to the project interconnection substation southeast of Remsen.

Regarding that substation’s exact location, Lucken said, “The interconnection substation will be built in the southwest quarter of Section 21 in Remsen Township.”

Several meteorological towers with a height of 300 feet are also planned. And lastly, included in the project will be an O&M building and yard, where 10 wind turbine technicians will be based.

This project has enjoyed strong landowner support going back to 2016, when Invenergy first started talking to landowners about signing wind turbine lease agreements.

Lambrecht summed up Invenergy’s hopes for the project by stating, “We are excited to build on Invenergy’s track record here in Plymouth County, and we are grateful for the support the project enjoys. We look forward to bringing this project online and to start delivering the benefits to the community.”

Invenergy’s CUP also estimated how much Plymouth County could potentially realize in financial benefits in the years ahead. Invenergy expects that the project not only will support state policy, but it will also provide extensive local benefits: up to \$52 million in new property tax revenue to the county over the life of the project; approximately \$65

million in payments to Plymouth County landowners over the life of the project; and approximately 200 construction jobs.



Loren G. Flaugh is a freelance writer based in Iowa.

[Photo source](#)

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Successful County Wind Siting Practices in Iowa



Introduction and Summary of Recommendations

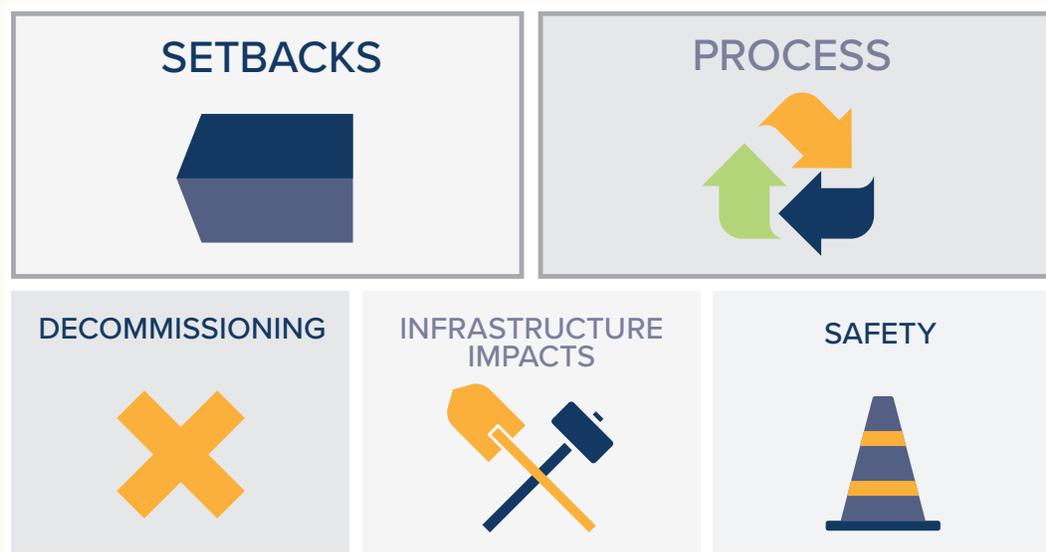
For counties interested in the benefits of utility-scale wind projects, a well-drafted wind ordinance will protect the health and safety of the county and its residents while still enabling developers to build workable, cost-effective wind projects. Under Iowa's home rule policy, counties have adopted a wide range of ordinance provisions related to wind development. These county ordinances allow wind development but impose a variety of restrictions or requirements for wind development and a variety of processes for wind project approval.

By the end of 2017, Iowa had utility-scale wind in operation or in active development in approximately half of Iowa's 99 counties. Our research indicates that well more than half of Iowa counties have also adopted some type of ordinance to guide wind development. Counties have used a wide variety of approaches in these ordinances during adoption over the past 15-20 years. We have reviewed many of these ordinances and identified specific provisions that can be viewed as successful practices.

We encourage counties that have not adopted an ordinance, or that are updating an ordinance, to use this document as a reference to support the development and adoption of a well-designed ordinance rooted in existing successful practices.

This is not legal advice and users of this guide should consult an attorney with specific legal questions.

BEST PRACTICES OF WIND SITING



Successful County Wind Siting Practices in Iowa

A summary of our recommendations for wind ordinances to enable wind development – and the benefits that come with it – includes the following:



- **Setbacks.** Counties should ensure that setbacks balance multiple interests and support cost-effective wind development. We recommend setbacks from residential dwellings of between 1,000 feet and 1,250 feet at the most. Setbacks for property lines and other rights of way should be approximately 1.1 times the turbine height, or about 600 feet. Counties can consider longer setbacks for a small number of other areas, such as natural resource areas. Counties should provide for waivers for voluntary reductions in setbacks.



- **Application and approval process.** We recommend that counties establish a clear and well-defined application process and a set of known application requirements. Wind turbines should be treated either as a permitted use or as a conditional use in established zoning districts. If the application and associated wind development meet the clearly identified conditions, the application and project should be approved.



- **Decommissioning.** Counties may require a decommissioning plan to support potential decommissioning as part of the application and approval process.



- **Infrastructure.** Counties may require a pre-construction plan for handling potential impacts to roads and other infrastructure from wind project construction as well as a post-construction review to identify impacts and provide for repairs.



- **Safety.** There is a basic set of minimal safety standards regarding wind projects, which make sense for counties to include in an ordinance.
- **Optional additional standards on shadow flicker and noise.** We do not recommend adding standards for handling shadow flicker or noise. We discuss the provisions that some counties have adopted and why setbacks and other requirements should sufficiently address these issues without adding specific, separate provisions for noise or shadow flicker.

Context for Iowa and at the County Level: Benefits from Wind Development and Future Potential

Iowa is a national leader in wind energy, ranking first among states in the percentage of electricity from wind and third in total installed wind capacity. Iowa has significant potential for additional wind development, with studies providing a range of 276,000 MW to 570,000 MW of technical potential for wind.

With about 8,900 MW installed at the end of 2018, Iowa has just begun to tap the potential for wind development. While parts of Iowa have some of the best wind resources in the U.S., technology improvements in wind turbines are leading to successful wind development in less windy parts of the state. This means that most Iowa counties could benefit from utility-scale wind development.

Successful County Wind Siting Practices in Iowa

In recent years, wind energy in windier states like Iowa has also become the lowest cost new source of electricity – even without considering tax incentives like the federal production tax credit. These positive economics, combined with significant opportunities for more wind projects, means Iowa can and should see significant wind development for years to come.

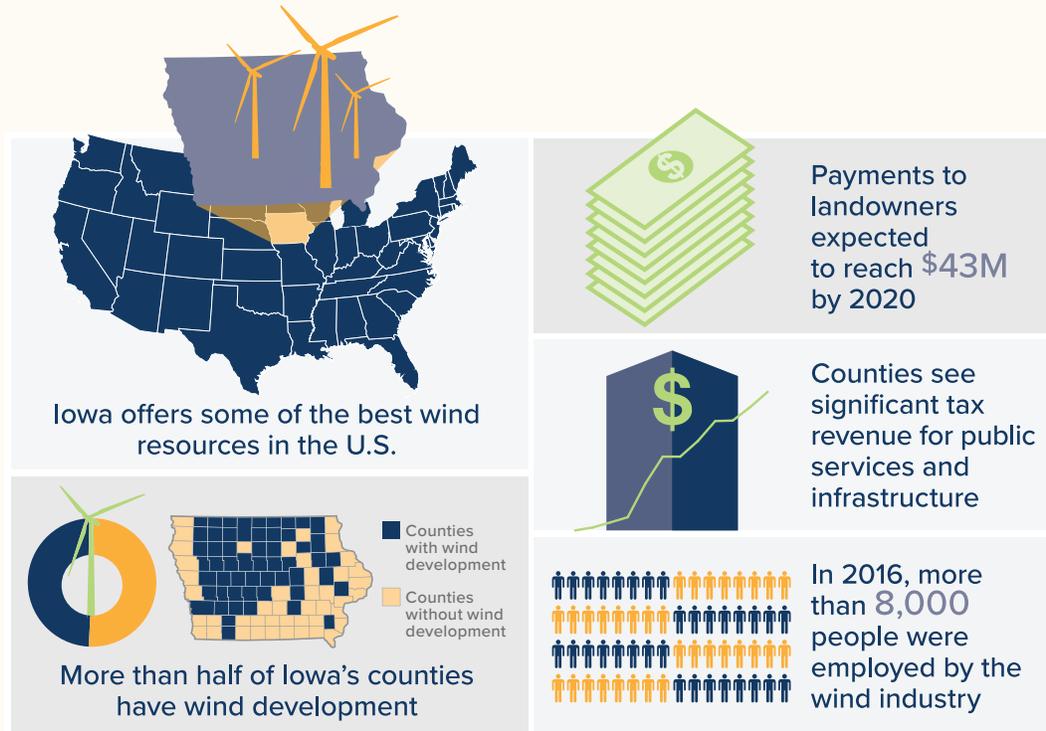
Counties play an important role by reviewing and approving specific wind projects at the local level. County policies that guide review and approval need to strike a balance between the needs of the county and its residents and successful, cost-effective wind development. We believe that this balance is being achieved in parts of Iowa already and can be achieved in every Iowa county. The ordinance that a county adopts to guide wind siting and approval is a critical part of achieving that balance and seeing maximum local benefits from wind generation.

Wind development offers a number of benefits to county residents and the county itself.

These benefits include:

- **Lease or easement payments to landowners.** In 2018 alone, wind turbines in Iowa resulted in payments to landowners of between \$20M and \$25M.¹ That annual amount is expected to grow as more wind projects come on-line, with Iowans estimated to receive \$43M annually by 2020.²
- **Property tax revenue to counties.** Wind turbines generate property tax revenue paid to counties that can support a range of public benefits, including roads and bridges, health services, schools, debt service and reduced need for revenue from other sources. In Iowa counties that have had significant wind development, property tax revenue from wind projects is one of the largest sources of such revenue.
- **Clean energy resources.** Unlike fossil fuel-fired power plants, wind turbines do not produce air pollutants such as sulfur dioxide, nitrogen oxide, greenhouse gases, particulates or mercury and thus do not contribute to acid rain, smog, or public health impacts such as pulmonary and heart disease and asthma where they are located. Wind turbines also do not use water or produce water pollution in the process of generating electricity (e.g., for cooling or steam production) or produce hazardous waste that threatens public health, unlike fossil and nuclear power plants.
- **Local economic development.** In 2018, Iowa had between 8,000 and 9,000 jobs supported by the wind industry. These jobs are located across the state in a range of sectors, including manufacturing, installation, operations and maintenance. Wind farm construction brings significant local construction jobs as well as some permanent operations jobs. Iowa's wind development has also attracted significant employment in wind manufacturing and businesses in the wind supply chain to communities across the state. Iowa's supply of low-cost wind energy also attracts companies with renewable energy goals to locate new facilities or expand operations in Iowa.

ECONOMIC BENEFITS OF WIND



FULL DISCUSSION OF MAJOR PROVISIONS FOR COUNTY WIND ORDINANCES



Establishing Setbacks from Neighboring Properties

Nearly all counties that have adopted a wind ordinance have included provisions that set minimum distances between wind turbines and residential dwellings.³ Most counties have also adopted such setbacks for certain types of occupied buildings or public buildings, such as schools and hospitals. Many ordinances also specify setbacks for a range of other categories such as property lines, roads and other rights of way, municipal town limits, and natural areas. A range of required setback distances in these various categories across Iowa and industry best practices are discussed below.

Appropriate setbacks should strike a balance between enabling cost-effective wind development and the additional interests of the county and its residents, including non-participating landowners (landowners who do not have a turbine on their property). Very large setbacks from homes, property lines, and other categories of properties or areas will restrict the number of sites available for wind development. This can raise the cost of wind development by eliminating the windiest sites and limit the total investment in wind that a county can attract. Setbacks that are particularly restrictive can go so far as eliminating any

Successful County Wind Siting Practices in Iowa

opportunity for wind development. Conversely, setbacks that are too small may not successfully minimize sound or visual impacts to nearby properties. Setbacks are a primary regulatory tool that counties use both for safety considerations and for sound or visual impacts, which we also discuss later in this paper.

Our review of existing ordinances indicates that this balance is possible and has been struck in many county ordinances. As discussed in more detail below, it is important for counties to provide flexibility in setbacks by allowing voluntary waiver or negotiation below the setbacks included in an ordinance.

Residential properties and occupied structures

Counties require the largest setback distances for turbines from residential dwellings and human-occupied buildings (e.g., schools and hospitals). Most ordinances' required setbacks from these structures are in the range of 1,000 to 1,250 feet, although a few fall outside of this typical range — either smaller (e.g., Boone) or larger (Kossuth and Palo Alto). Most counties' setbacks for this category are expressed in feet rather than a percentage of the total height of the turbine. Some ordinances do include a setback related to the total height of the turbine, such as two times the height.

It is crucial that counties establish setbacks for such structures that will protect occupants from unlikely but hazardous events such as the collapse of a turbine tower or the “throwing” of a turbine blade.

As explained by the American Planning Association (APA):

There is now enough operating history in enough locations around the world that reasonable probabilities can be established for these events. The probability of injury or property damage from any of these events is extremely small, but the residual risk can be minimized with reasonable setbacks. The 1,000-foot setback became a standard in part because it creates a substantial margin of safety.⁴

Therefore, a minimum setback of 1,000 feet from occupied structures is recommended for safety purposes. Wind developers have indicated that a setback of 1,500 feet represents the upper limit of what is typically workable for designing a utility-scale wind project; most counties have considerably smaller minimum setbacks for occupied structures.

RECOMMENDATION: We recommend setbacks from residential dwellings of between 1,000 to 1,250 feet, which is within the typical range of most county ordinances in Iowa. Setbacks within this range protect public safety and the quality of life of rural residents while allowing workable project footprints and minimizing impacts to productive agricultural land.

Property Lines

In addition to mandating minimum setback distances from residential dwellings, most counties also specify minimum setbacks from neighboring property lines. Unlike the requirements for dwellings, these required setback distances are usually expressed in terms of the height of the wind turbine: for example,

Successful County Wind Siting Practices in Iowa

in Clay County, where the required distance is 110% or 1.1 times the turbine’s “total height.” A turbine’s total height is generally defined as the vertical distance from the ground to the tip of the turbine blade when at its highest point.

Utility-scale wind turbines of the type currently being installed in Iowa have tower heights of between 80 and 100 meters, measured at the hub. As technology improves, it is possible that taller towers will be installed in the near future, such as 125 meters. The blade length of newer Vestas and GE turbines installed in Iowa is in the range of 54 to 64 meters. The total height of such turbines, using a tower height of 100 meters, results in a total height of 154 to 164 meters, or approximately 510 to 540 feet. Most counties require setbacks from property lines of 1.1 times to 1.25 times the turbine’s total height.

Using the dimensions described, the resulting setbacks would range from approximately 560 to 675 feet. Kossuth County’s mandated setback from property lines of 600 feet (one of the only counties to specify a distance in feet for this type of setback) is also within this range.

Summary Table of Setbacks in Counties – Most With Operational Wind Farms

COUNTY	RESIDENTIAL DWELLING SETBACK	PROPERTY LINE SETBACK
Black Hawk	n/a	1.5x total height of turbine (about 600 – 800 feet)
Boone	750 feet	1.25x total height of turbine
Cass	1,200 feet	1x total height of turbine
Clay	1,200 feet	1.1x total height of turbine
Carroll	1,000 feet	Not less than the rotor radius from non-participating properties
Dickinson	Greater distance of 1,200 feet or 2x total height of turbine	Turbines may not overhang adjacent property lines without securing appropriate easements
Emmet	1,250 feet	1.1x total height of turbine
Greene	1,000 feet	Not less than the rotor radius from non-participating properties
Grundy	1,200 feet	1.25x total height of turbine
Ida	1,250 feet	1.1x total height of turbine
Madison	Greater distance of 1,000 feet or 2x total height of turbine	No overhang of adjoining property line without an easement
O’Brien	1,200 feet (includes accessory structures)	[None specified]
Osceola	1,250 feet	1.1x total height of turbine
Pottawattamie	100% of tower height	Manufacturer’s fall distance
Poweshiek	Greater distance of 1,000 feet or 2x total height of turbine	1.1x total height of turbine
Story	Greater distance of 1,000 feet or 2x total height of turbine	No overhang of adjoining property line without an easement
Webster	1,000 feet	150 feet

Unoccupied Structures and ROWs

Most counties also have specified minimum setbacks for unoccupied structures (such as animal confinement buildings); for roads and other public rights of way; and for utility lines. Mandated setbacks for these categories of property are generally either identical or comparable to the setbacks described above for property lines.

Natural Areas

Some counties require minimum setback distances from specified natural resources and/or public lands, which vary widely. For example, Kossuth County requires that a turbine be sited at least 600 feet from any public conservation area, while Palo Alto County mandates setbacks of 1,500 feet from all public lands and public waterways. Boone County requires a setback of 1,320 feet from river bluffs; 600 feet from public conservation areas; and 600 feet from certain types of wetlands, specified in its county zoning ordinance.

Adequate setback distances for protecting a county's natural resources will necessarily vary depending on local site-specific factors such as the type of resource being protected and the ecological sensitivity of the area and its wildlife.

Some counties, rather than mandating setback distances by type of resource, approach the issue of protecting natural areas on a project-by-project basis by requiring applicants to consult with the Iowa Department of Natural Resources before applying for a permit. The developer must then include the Department's siting recommendations with its submitted site plan and other application materials. The ordinances of Dickinson and Ida Counties provide examples of this approach. (Palo Alto County requires both a preliminary pre-application review by IDNR and the minimum setbacks distances described above.)

Waivers or Negotiated Setbacks

Many county ordinances include waiver provisions allowing either the property owner or the controlling governmental authority to waive the mandated setback distance for that property type. Written waiver agreements must be executed pursuant to the specific requirements set forth in the ordinance. A few counties require waiver agreements to be approved by the county permitting authority. Some ordinances only allow waivers in certain setback categories, while others (such as Kossuth and Palo Alto counties) allow setbacks for any property type to be waived.

Waivers are an important tool to improve flexibility and allow for the potential for additional land area to become available for wind development. However, providing a waiver is not a substitute for a strong setback policy that can enable cost-effective wind development.

RECOMMENDATION: We recommend that counties adopt recommended setback distances above of 1,000-1,250 feet from residential dwellings, and also include waiver provisions to reduce such setbacks when appropriate.

Height Restrictions

Few of the county ordinances we reviewed include a limit for a specified number of feet for the total height of turbines. Many counties do require that wind developers ensure that turbine heights do not extend into approach zones and other restricted air space, and/or that the project complies with any applicable Federal Aviation Administration (FAA) requirements. (Several ordinances specify that a copy of any FAA permit or approval must be included in the list of application materials submitted to the county's permitting authority.) Such a requirement, along with appropriate setback distances from residences and other structures at ground level, addresses any potential concerns posed by the height of a commercial wind turbine.

RECOMMENDATION: We do not recommend establishing a separate, distinct height restriction.

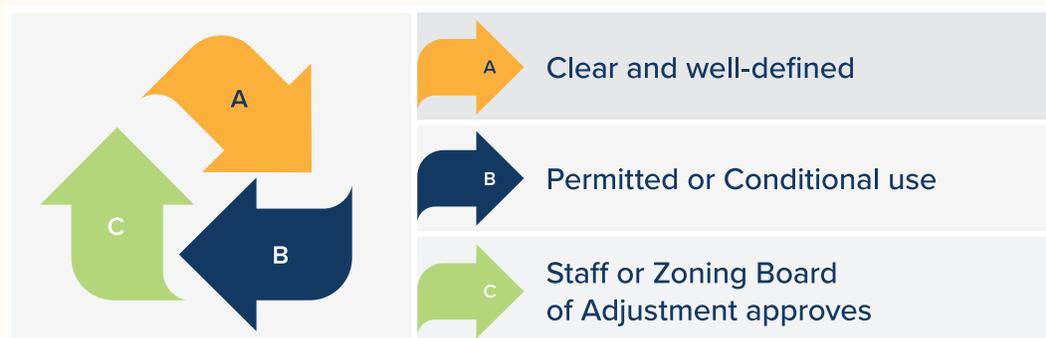


Application and Approval Process

Options for a Clear Application Process

The procedural requirements for owners and developers seeking county approval to build a commercial wind project vary significantly across Iowa. Some counties require a lengthy and detailed application process (or even pre-application process) while others have few requirements beyond submitting a site plan and application materials for review. Most counties require a public hearing before the permitting authority decides whether to approve the project. Iowa Code does constrain to some extent the procedural options available to counties and the best practices recommended below apply primarily to counties which have adopted zoning and may not apply to counties without zoning.

PROCESS



RECOMMENDATIONS:

- We recommend that county officials prioritize creating a clear application and review process with well-defined steps and conditions for approval. This allows a wind developer to clearly identify the application requirements for a wind project which, if met, will result in county approval of the application. The setback provisions above would be one of the clear application requirements, while the additional provisions discussed below can comprise the balance of those requirements (e.g. decommissioning, road impact plan, etc.).
- We recommend that counties adopting a wind ordinance also adopt an amendment to their Comprehensive Plan with a statement about their intentions for wind development in the County, the benefits of investments in wind, and the key considerations around regulating wind siting.

OPTIONS:

Counties can use various processes to govern wind siting. The two most straightforward options are to make wind a permitted use (also sometimes called an “allowed” or “principal” use) in specific zones or designating wind as a conditional use (also called a “special exception”). In the case of a conditional use, the supervisors should define the conditions that the project must meet to be approved.

Wind as a Permitted Use

If a county ordinance designates wind as a permitted use, County staff reviews projects to determine compliance with objective ordinance requirements. County staff would be able to determine if a project meets required setbacks, but would not be able to decide on subjective requirements – for example, asking if a particular project “fits the area.” If the project complies with the ordinance, it can move forward. County staff typically issue a building or construction permit under this approach.

EXAMPLE: GRUNDY COUNTY

D. District Regulations 1. WECS [Wind Energy Conversion Systems] may be permitted as a Principal Permitted Use in the “A-2” Agricultural District, as set forth in Section X of this Ordinance, so long as bulk requirements and setback requirements are addressed.⁵

Wind as a Conditional Use

The term “conditional use” in a zoning code usually means that a use may be allowed or permitted in a specified district (or districts) on condition that certain requirements are met. Conditional use permitting decisions depend on the applicant’s compliance with the standards specified in the zoning code as conditions for permit approval. These conditions may be more subjective, but the decision criteria must be included in the ordinance. Conditional uses can only be permitted subject to review and approval of a county Zoning Board of Adjustment (ZBA) after a public hearing. The ZBA must base its decision on evidence presented in the public meeting and evaluate the project based on the project’s compliance with the conditions in the ordinance. If the conditions are met, the conditional use permit will be issued.

Uses permitted on this basis are generally those that a county considers not generally adverse to the public interest but requiring some special review and precautions, as well as an opportunity for public input.

EXAMPLE: WEBSTER COUNTY, ARTICLE 5, CONDITIONAL USE REGULATIONS

Below are several key provisions from the Webster County ordinance provisions regarding conditional uses. Section 5.06 is not excerpted below, but is an important part of the ordinance as it includes specific development criteria that the Zoning Board of Adjustment uses in reviewing proposed developments. The categories of development criteria include compatibility, transition, traffic, parking and loading, signs and lighting, and environmental protection. The development criteria and steps in the Webster County ordinance provide for a clear and transparent process with an appropriate balance of discretion regarding conditional uses.

Section 5.08 Board of Adjustment Action on Application

“In considering whether to approve an application for a conditional use permit, the Board of Adjustment shall proceed according to the following format:

- 1) The Board of Adjustment shall establish findings of fact based upon information contained in the application, the staff report and information gathered at the Board of Adjustment hearings.
- 2) The Board shall *consider such reasonable requirements or conditions to the permit* as will ensure the development will satisfy the requirements of this chapter ...
- 4) If the Board of Adjustment concludes that *all such criteria have been met, the application shall be approved* unless it adopts a motion that the application fails to meet any of the approval standard set forth in 5.06 ...

Without limiting the foregoing, the Board of Adjustment *may attach to a permit conditions it deems necessary to protect the health, safety, and general welfare of the public.*” (emphasis added)⁶

Counties may wish to include detailed plans for items such as road repair and emergency management as conditions for approval. This is described in more detail below.

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If a county opts for conditional use permitting through the Zoning Board of Adjustment, we recommend providing applicants with the opportunity for a preliminary review and pre-application process. Iowa law provides that appeals of a final decision of the Zoning Board of Adjustment go to court for review.⁷ Allowing for preliminary review and a pre-application process helps provide applicants with a more predictable process and can minimize the potential for time-consuming or expensive judicial review.

Poweshiek County recently added a pre-application option to its ordinance:

Pre-Application Review. A Conditional Use Permit applicant may submit preliminary matters to the Board of Adjustment for review prior to making application for a permit. The review must occur no more than 60 days prior to submission of the application.⁸

Comprehensive Plan Update

Iowa code specifies that zoning ordinances and decisions “shall be made in accordance with a comprehensive plan...”⁹. For this reason, we also recommend a county looking to attract wind and other renewable energy development adopt an amendment to align a county comprehensive plan with a county’s intentions to attract such development.

EXAMPLE: CEDAR COUNTY

“Goal III. Encourage the creation and use of alternative and renewable energy sources.

Objective 1: increase alternative and renewable energy sources in the county

Strategies:

Review and modify the zoning ordinance and other relevant county regulations as necessary to remove barriers to the use of renewable energy systems such as solar, wind, and geothermal.

The County should promote the use of renewable and inexhaustible energy sources over non-renewable energy sources. . .”¹⁰



Decommissioning

Wind ordinances often include a provision requiring the project owner to take responsibility for and bear the costs of decommissioning at the end of a wind project’s useful life. These provisions ensure safety for turbines that are no longer operational and ensure the county and landowner do not bear the cost of removing the turbines. Wind project life for early wind projects in Iowa (e.g., built in 2000 or 2005) was typically twenty or twenty-five years. New wind projects being built now are projected to have a forty year useful life. In addition, many of Iowa’s early wind projects are now being repowered, which extends the operating life by up to twenty years. As a result of longer lives and repowering, few wind turbines in Iowa have been decommissioned in practice. Planning for the responsibility and cost of decommissioning, however, is a prudent step for a county ordinance.

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Ordinance provisions related to decommissioning tend to be substantively similar across most counties. The following recent example is from Poweshiek County's ordinance, updated in March of 2017:

Discontinuation and Decommissioning. A C-WECS shall be considered a discontinued use after one (1) year without energy production, unless a plan is developed and submitted to the Zoning Administrator outlining the steps and schedule for returning the C-WECS to service. Discontinued use does not apply to the pre-construction or construction period and shall be measured from the initial commercial energy production and operation of the C-WECS project. All C-WECS and accessory facilities shall be removed to a depth of four (4) feet below ground level within one year of discontinuation of use.

1. Decommissioning Plan. Each C-WECS shall have a Decommissioning Plan outlining the anticipated means and cost of removing the C-WECS at the end of their serviceable life or upon becoming a discontinued use. The cost estimates shall be made by a professional engineer licensed in the State of Iowa. The plan shall also identify the financial resources that will be available to pay for the decommissioning and removal of the C-WECS and accessory facilities. The County reserves the right to verify that adequate decommissioning terms are contained in the landowner's lease or easement.
2. Decommissioning Fund. Commencing on the fifteenth (15th) year after commencement of commercial operations, and annually thereafter, the operator shall continuously maintain a financial assurance mechanism(s) in the form of performance bond, letter of credit, and/or other security approved by the County Attorney, for the remaining life of the facility. The amount of the security shall be equal to the total decommissioning cost, net of reasonable residual value of the C-WECS, as determined by a professional engineer licensed in the State of Iowa. If a bond is posted to meet this requirement, or if a letter of credit is issued to meet this requirement, the issuing entity must be agreed upon by both the operator and the County. This requirement can be waived by the Board of Adjustment.¹¹



Impacts to Roads and Other Public Infrastructure

The transportation of turbine components and heavy equipment during the construction phase of a wind development project can cause impacts to county roads and other infrastructure. To address these potential impacts, several counties have adopted requirements similar to the following example, also from Poweshiek County's recently revised ordinance. While the language below is similar to provisions in other ordinances, the following provision requires both a pre-construction and post-construction survey of roads used, and a post-construction meeting to address impacts.

Putting such a process in place before construction begins helps clarify for all parties what specific impacts a developer will be held responsible for and what steps must be taken to mitigate damages to roads and other infrastructure.

PUBLIC INFRASTRUCTURE PROTECTION PROVISIONS

FROM POWESHIEK COUNTY ORDINANCE:

1. **Roads.** Applicants shall identify all roads to be used for the purpose of transporting CWECS, substation parts, cement, and/or equipment for construction, operation or maintenance of the C-WECS and obtain applicable weight and size permits from the impacted road authority(ies) prior to construction.
 2. **Existing Road Conditions.** Applicant shall conduct a pre-construction survey, in coordination with the impacted local road authority(ies), to determine existing conditions of roads identified pursuant to subparagraph 1, above. The survey shall include photographs or video and written documentation of the condition of the identified road facilities. The applicant is responsible for on-going road maintenance and dust control measures identified by the Poweshiek County Engineer during all phases of construction.
 3. **Drainage System.** The applicant shall be responsible for immediate repair of damage to public drainage systems stemming from construction, operation or maintenance of CWECS.
 4. **Post Completion Survey.** Applicant and the Poweshiek County Engineer will meet upon completion of the project and agree as to the necessary action needed to return roads to the existing road conditions as identified in subparagraphs 1 and 2, above.
- p) **Required Financial Security.** The applicant shall be responsible for restoring or paying damages as agreed to by the applicable road authority(ies) sufficient to restore the identified road(s), bridge(s), and associated infrastructure to preconstruction conditions. Financial security in a manner approved by the County Attorney shall be submitted covering 130% of the costs of all required improvements. This requirement may be waived or modified by the Board of Adjustment upon recommendation from the Poweshiek County Engineer.¹²



Safety Issues

Standard Safety Requirements

While setbacks and other provisions above are intended to improve safety, utility-scale wind projects present county officials with an additional and unique set of safety concerns not typically encountered with more traditional types of building structures. A commonly recommended list of safety precautions has emerged to address these issues.¹³ These include:

- Posting of emergency contact information at various locations throughout the project;
- Posting warning signs about falling ice during winter;

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- Locking turbine doors to prevent unauthorized access;
- Preventive measures such as avoiding structures near turbines that would allow unauthorized people to climb them.

Many of the counties in Iowa with wind ordinances have similarly-worded provisions addressing such common safety concerns. The following section from Story County's ordinance is representative of these provisions:

SAFETY.

1. All wiring between wind turbines and the C-WECS substation shall be underground. If the developer can demonstrate the need for an overhead line and the acceptance of landowners for this line, such option may be approved conditionally by the Board of Adjustment.
2. Wind turbines and meteorological towers shall not be climbable up to 15 feet above ground level.
3. All access doors to wind turbines and meteorological towers and electrical equipment shall be locked when not being serviced.
4. Appropriate warning signage shall be placed on wind turbine towers, electrical equipment, and C-WECS entrances.
5. For all C-WECS, the manufacturer's engineer or another qualified engineer shall certify that the turbine, foundation and tower design of the C-WECS is within accepted professional standards, given local soil and climate conditions.

Meteorological Towers

An additional safety concern that is also addressed by several counties' safety requirements is the potential hazard posed to pilots of low-flying crop-dusting planes by temporary meteorological towers, or "met" towers. These towers, used to gather data that helps wind developers site turbines, are typically just under 200 feet high, and so are not currently subject to Federal Aviation Administration (FAA) regulations. The thin metal towers and their guy-wires are difficult for pilots to spot and fatal collisions have occurred in the U.S., prompting the National Transportation Safety Board to recommend that the FAA adopt new regulations requiring markings to improve safety.¹⁴

As of this writing, no such federal regulations have been adopted, although in 2015 the FAA issued new voluntary guidelines for met tower markings.¹⁵ In the absence of state- or federally-mandated markings for met towers, we recommend that counties include a requirement similar to the one below, adopted by

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Poweshiek County and some others. This ordinance is consistent with practices adopted by some wind developers who use large plastic orange balls on the guy-wires:

6. For all guyed towers, visible and reflective objects, such as plastic sleeves, reflectors or tape, shall be placed on the guy wire anchor points and along the outer and innermost guy wires up to a height of eight (8) feet above the ground. Visible fencing shall be installed around anchor points of guy wires.¹⁶

Emergency Conditions

The APA also recommends the development of a written emergency plan covering all reasonable scenarios, as local emergency response crews will likely not have plans in place for dealing with emergencies at wind turbines, or tall structures generally.¹⁷ Kossuth County's ordinance requires such a plan as one the "ancillary agreements" that are a condition of approval:

Issuance of a WECS Construction Permit is strictly conditioned on the Applicant executing the following: ...3. An Emergency Response Plan provided by Applicant and approved by the Board of Supervisors. Said Plan shall contain response procedures to be followed in the event of a fire, collapse, personal injury, or other emergency at a Project. The Plan shall contain 24 hour emergency contact information for the Project.¹⁸

Additional Siting Standards

Shadow Flicker

Shadow flicker is an effect that can appear on neighboring properties due to the movement of wind turbine blades between the sun and the property. Minimum setbacks can minimize such undesirable aesthetic impacts. According to the American Planning Association, "With reasonable setbacks, shadow flicker occurs only when the sun is low in the sky and for relatively few hours a year — typically a tiny fraction of daylight hours."¹⁹

In addition to requiring maximum setbacks from occupied structures, a few counties have incorporated specific standards for shadow flicker into their ordinances by adopting planning and/or operational requirements that set a minimum allowable threshold of shadow flicker caused at neighboring residences. As a planning requirement, at least two counties (Kossuth and Palo Alto) require applicants to submit computer modeling that demonstrates that shadow flicker impacts will be below the specified limit.

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For example, Kossuth County’s wind ordinance requires the owner or developer to submit the following with its application:

A report prepared by a qualified third party using the most current modeling software available establishing that no Occupied Residence will experience more than thirty (30) hours per year, or more than thirty (30) minutes per day, of shadow flicker at the nearest external wall based on real world or adjusted case assessment modeling. The report must show the locations and estimated amount of shadow flicker to be experienced at all Occupied Residences as a result of the individual Turbines in the Project.²⁰

Such a requirement has the advantage of including a specified limit and method of demonstrating compliance with that limit — the requirement is clear and does not allow for subjective discretion of the permitting authority. This approach is preferable over less-precisely worded provisions requiring owners to “minimize” shadow flicker for those counties seeking to reduce such impacts to acceptable levels.

RECOMMENDATION: We do not recommend that counties adopt a separate shadow flicker requirement as a standard practice, which is consistent with the approach in the vast majority of county ordinances that we have reviewed. However, if a county does adopt such a requirement, the requirement should enable wind development and provide a clear condition that wind developers can meet in the application process, such as the approach in Kossuth County.

Sound

Adequate setbacks can protect property owners from experiencing nuisance level noise from turbines. The APA recommends a setback of at least 1,000 feet to address sound issues, which is within the range of residential setback distances common in Iowa counties with successful wind projects.

Some Iowa counties have also included sound level limits in their standards for wind turbines aimed at keeping sound from turbines at nearby properties within acceptable levels. These limits, based on specific sound pressure levels measured in decibels, range from 50 dBA to 60 dBA when measured from the affected property.

Wind developers can perform a sound impact analysis for wind turbines using computer-based mapping and modeling and sound level data provided by turbine manufacturers. These models are useful in helping to ensure that turbine placement will comply with local sound level limits. However, while such models often reflect conservative assumptions, they may not always be able to take all of the nuances of a particular situation into account, particularly in project locations with complex terrain.²¹

Furthermore, while sound can be objectively measured, “human perception of sound is substantially subjective,”²² again underscoring the prudence of requiring adequate residential setbacks from turbines.

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RECOMMENDATION: We recommend that minimum setbacks from residential properties fall within the range of 1,000 to 1,250 feet (see “Setbacks” above). As the American Planning Association explains in its planning guidelines for commercial wind, the options for effectively mitigating sound levels after the fact (once a project has been built) are limited, so addressing sound impacts upfront with appropriate setbacks is prudent. If a decibel limit for turbine sound levels is also included in an ordinance, we recommend a standard no lower than 50 dBA, in keeping with the 50 dBA to 60 dBA range that has proven workable in counties that have successfully developed wind projects.

Conclusion

For counties interested in attracting all of the local benefits that come with wind generation, a well-drafted and balanced wind siting ordinance is an important initial step. Our review of county ordinances across Iowa shows that many counties have adopted workable ordinances resulting in successful local wind development. We have not identified a single model ordinance in any particular county that we recommend in total. Instead, we have identified the strongest parts of different ordinances to include in this paper. Most county ordinances have additional provisions in the adopted ordinances. We have focused on the major provisions critical to the success of an ordinance.

We do note that several Iowa counties have attracted wind development without adopting a specific ordinance. Those include Howard, Mitchell, and Adair counties. While this approach has worked in these counties, we believe the clarity and predictability that comes from adopting a wind ordinance is beneficial for the county, its residents, and wind developers.

About

The primary authors of this paper are Nathaniel Baer, Clare Kernek, and Kerri Johannsen with the Iowa Environmental Council. We appreciate the input and guidance provided by wind developers, county officials, and others as we researched and drafted this paper.

Appendix A: Main County Ordinances Reviewed

COUNTY	RESIDENTIAL DWELLING SETBACK	PROPERTY LINE SETBACK	TYPE OF PERMITTING PROCESS/ USE	PERMITTING AUTHORITY	DATE ADOPTED OR AMENDED	LINK TO COUNTY ORDINANCE
Black Hawk	n/a	1.5x total height of turbine	Special exception	Board of adjustment	2011	http://www.co.black-hawk.ia.us/227/Zoning-Ordinance
Boone	750 feet	1.25x total height of turbine	Conditional use	Board of adjustment	2009	http://www.co.boone.ia.us/index.aspx?page=256
Cass	1,200 feet	1x total height of turbine	Special exception	Board of adjustment	2015	http://www.atlanticiowa.com/county/county-government/county-ordinances/

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COUNTY	RESIDENTIAL DWELLING SETBACK	PROPERTY LINE SETBACK	TYPE OF PERMITTING PROCESS/ USE	PERMITTING AUTHORITY	DATE ADOPTED OR AMENDED	LINK TO COUNTY ORDINANCE
Clay	1,200 feet	1.1x total height of turbine	Special exception	Board of adjustment	2011	http://www.co.clay.ia.us/offices/auditor/policies.htm
Carroll	1,000 feet	Not less than the rotor radius from non-participating properties	Conditional use	County zoning administrator	2016	http://www.co.carroll.ia.us/Attorney/ordinances.htm
Dickinson	Greater distance of 1,200 feet or 2x total height of turbine	Turbines may not overhang adjacent property lines without securing appropriate easements	Conditional use	Board of adjustment	2008	https://dickinsoncountyiowa.org/wp-content/uploads/2013/03/ZONING-ORDINANCE-102-ORIGINAL4.pdf
Greene	1,000 feet	Not less than the rotor radius from non-participating properties	Conditional use	Board of adjustment	2011	https://greencounty.municipal-cms.com/pView.aspx?id=15466&catid=659
Grundy	1,200 feet	1.25x total height of turbine	Principle use	County zoning commissioner	2009	https://www.grundycounty.org/departments/zoning/development-ordinance
Ida	1,250 feet	1.1x total height of turbine	Conditional use	Board of adjustment	2016	n/a
Kossuth	1,600 feet	600 feet	Conditional use	Board of supervisors	2017	http://www.co.kossuth.ia.us/windfarms.php
Madison	Greater distance of 1,000 feet or 2x total height of turbine	No overhang of adjoining property line without an easement	Conditional use	Board of adjustment	Pending	n/a
O'Brien	1,200 feet (includes accessory structures)	[None specified]	n/a	Board of supervisors	2015	http://www.obriencounty.org/board-of-supervisors/ordinances/
Osceola	1,250 feet	1.1x total height of turbine	Conditional use	Board of adjustment	2013	http://www.osceolacountyia.org/county/office/9
Palo Alto	1,500 feet	1.2x total height of turbine		Board of supervisors	2016	https://www.paloaltocountyiowa.com/board-of-supervisors/wind-energy-ordinance/
Pottawattamie	100% of tower height	Manufacturer's fall distance	Principle use	Director of planning and development	2008	https://pottcounty-ia.gov/resources/county-code/
Poweshiek	Greater distance of 1,000 feet or 2x total height of turbine	1.1x total height of turbine	Conditional use	Board of adjustment	2017	http://poweshiekcounty.org/sanitarian-zoning/
Story	Greater distance of 1,000 feet or 2x total height of turbine	No overhang of adjoining property line without an easement	Conditional use	Board of adjustment		http://www.storycountyiowa.gov/115/Code-of-Ordinances
Webster	1,000 feet	150 feet	Conditional use	Board of adjustment		http://www.webstercountyia.org/

Successful County Wind Siting Practices in Iowa

- 1 American Wind Energy Association, *Iowa Wind Facts* (2017) available at <https://www.awea.org/state-fact-sheets>.
- 2 Navigant Consulting/AWEA, *Economic Development Impacts of Wind Projects* (2017) at https://www.navigant.com/-/media/www/site/insights/energy/2017/awea-study-1-031017_v2.pdf.
- 3 The only exception we have found is Black Hawk County, which does not require a minimum setback from residential properties but does include a setback requirement for all non-participant property lines.
- 4 American Planning Association. (2011). *Planning for Wind Energy* (Planning Advisory Service Report No. 566). Chicago, IL: American Planning Association, at 98.
- 5 Grundy County Development Ordinance, Section VI, Subsection V., paragraph D. <https://grundycounty.org/images/pdf/Development-Ordinance/Grundy%20County%20Development%20Ordinance.pdf>
- 6 Webster County Zoning Ordinance, Section 5.08. <http://www.webstercountyaia.org/Departments/P&Z/2009WebsterCountyZoningRegulations.pdf>, http://www.webstercountyaia.org/departments/planning_and_zoning.php#outer-509
- 7 Iowa Code § 335.18.
- 8 Poweshiek County Zoning Ordinance of 2011 (as amended in 2017), Article XX, “Conditional Use Permits,” Sec. 5.1(q).
- 9 Iowa Code § 335.5.
- 10 Cedar County: Comprehensive Plan 2038 (2018), available online at https://www.cedarcounty.org/offices/environmentalhealth/CedarCountyComprehensivePlan_FINALpdf_reduced.pdf (last visited August 1, 2019), at 47.
- 11 Poweshiek County Zoning Ordinance, Article XX, “Conditional Use Permits,” Sec. 5.1 (n).
- 12 Poweshiek County Zoning Ordinance, Article XX, “Conditional Use Permits,” Sec. 5.1 (o)-(p).
- 13 American Planning Association. (2011). *Planning for Wind Energy* (Planning Advisory Service Report No. 566). Chicago, IL: American Planning Association, at 98.
- 14 Brent McDonald, *For crop-dusters, towers pose a hidden and growing danger*, N.Y. Times, Oct. 3, 2014, at A19. Electronic version retrieved from <https://www.nytimes.com/2014/10/03/us/for-crop-dusters-a-hidden-danger-in-the-fields.html?mcubz=0> (last visited Sept. 12, 2017).
- 15 FAA’s recommended markings for met towers are in Sec. 2.7 of Advisory Circular 70/7460-1L (originally published on Dec. 4, 2015, updated Oct. 8, 2016.) To obtain a pdf of the circular, go to www.faa.gov. Once at the home page, click on the Regulations & Policies tab. In the search bar, type in “70/7460-1L.” Click on “Obstruction Marking and Lighting with Change 1.”
- 16 Poweshiek County Zoning Ordinance, Article XX, “Conditional Use Permits,” Sec. 5.1 (m)(6).
- 17 American Planning Association. (2011). *Planning for Wind Energy* (Planning Advisory Service Report No. 566). Chicago, IL: American Planning Association, at 99.
- 18 Kossuth County Ordinance #310, Section V—Ancillary Agreements.
- 19 Kossuth County Ordinance #310, Section V—Ancillary Agreements.
- 20 Kossuth County Ordinance #310, Section II—Permit Application and Review, No. 2(J).
- 21 American Wind Energy Association. *The Wind Energy Siting Handbook* (Feb. 2008) at 5-35, available online at <https://www.awea.org/Issues/Content.aspx?ItemNumber=5726>; Kenneth Kaliski et al. 2011. “Improving predictions of wind turbine noise using PE modeling,” paper presented to NOISE-CON 2011, Portland, Oregon, July 25-27, 2011.
- 22 American Wind Energy Association. *The Wind Energy Siting Handbook* (Feb. 2008) at 5-37.



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WOODBURY COUNTY, IOWA
ORDINANCE # _____

**AN ORDINANCE REGULATING COMMERCIAL
WIND ENERGY CONVERSION SYSTEMS
IN UNINCORPORATED WOODBURY COUNTY**

WHEREAS, it is deemed advisable and recommended by the Woodbury County Board of Supervisors to create and enforce an ordinance in Woodbury County addressing the site plan review and application approval process for the construction and ongoing maintenance of large-scale commercial wind energy conversion systems proposed to be erected in unincorporated Woodbury County; and

WHEREAS, the Woodbury County Board of Supervisors wish to adopt and enforce this Commercial Wind Energy Conversion Systems Ordinance to better promote the County’s comprehensive plan and its economic development goal of fully exploring alternative renewable energy sources, particularly wind generation facilities both as a contribution to the total energy needs of the country and as a new source of income for property owners; and

WHEREAS, this Commercial Wind Energy Conversion Systems Ordinance is a separate county ordinance and shall be a “stand alone” enactment authorized under County Home Rule under Iowa Code Section 331.302(1). These provisions only relate to the application for a wind energy conversion systems project with a total nameplate generating capacity of more than 100kW.

NOW, THEREFORE, BE IT HEREBY RESOLVED, that this Commercial Wind Energy Conversions Systems Ordinance is hereby adopted within Woodbury County, Iowa and includes the following provisions:

Section 1 - Purpose

The purpose of this Ordinance is to establish guidelines for the effective and efficient use of large-scale Commercial Wind Energy Conversion Systems (C-WECS) projects by regulating and requiring a permit for the siting, design, construction, operation, and decommissioning of these wind energy conversion systems (WECS) to protect the public health, safety, and general welfare of the County’s residents and businesses. The requirements of this Ordinance shall apply to all C-WECS after the effective date of this Ordinance.

Because of the significant, long-lasting impacts on the County’s residents and infrastructure resulting from large-scale C-WECS projects, the Woodbury County Board of Supervisors believes it is in the public’s best interest that the Supervisors retain the final authority over the issuance of any permit for large-scale C-WECS projects and shall adhere to all the standards, procedures and fees as set forth in this Ordinance.

Section 2 – Jurisdiction

This Ordinance is adopted by the Woodbury County Board of Supervisors and governs all lands within the unincorporated areas of Woodbury County, Iowa. This Ordinance and its provisions shall not apply to those properties or projects occurring within the incorporated cities of Woodbury County.

Section 3 – Definitions

For use in this Ordinance, certain terms or words used herein shall be interpreted or defined as follows:

Wind Energy Conversion System (WECS) shall mean any device, such as a wind charger or wind turbine, which converts the kinetic energy of wind to a form of usable electric energy.

Commercial Wind Energy Conversion Systems (C-WECS) A large-scale WECS or a group of WECS in the same location with a generating nameplate capacity of 100 kW or greater and is used for production of electric power to be interconnected into the local utility electrical grid and built to produce energy primarily for on-grid utility customers located off the property. Individual turbines are usually interconnected to a power collection system and then connected to an existing or proposed high voltage transmission system. C-WECS projects may consist of a single WECS or multiple wind turbines, and cover small areas to extended areas of many square miles.

Applicant shall mean the person or entity submitting the application under this Ordinance, which is normally expected to be the owner or operator of a WECS, or the owner of the C-WECS development project.

Components shall mean all the physical facilities comprising a WECS; including turbines (i.e. – the tower, nacelle, hub, motor, and blades), turbine foundations, transformers, crane pads, feeder lines, and any accessory buildings and equipment. Components shall include any substations that are constructed in conjunction with a C-WECS project.

Confinement Feeding Operation Building shall have the same meaning as found in Iowa Code §459.102(15).

Feeder Line shall mean any above or below-ground line that carries electrical power from one or more turbines.

Meteorological (“MET”) Tower shall mean a tower which is erected primarily to measure wind speed and directions, plus other atmospheric/weather data relevant to siting and operating a WECS. Meteorological towers do not include towers and equipment used by airports, the Iowa Department of Transportation, or other applications to monitor weather conditions.

Non-Participating Landowner shall mean any landowner not under agreement with the owner or operator of the WECS.

Occupied Non-Residential Building shall mean any building (other than a residence) that is regularly occupied by humans, and that is open to the public, sells goods or services, or a public, religious, or other non-profit institution.

Occupied Residence shall mean a building designed for, and occupied on a regular basis as an abode.

Operator shall mean the entity responsible for the day-to-day operation and maintenance of the WECS.

Owner shall mean the entity or entities with an interest in the WECS, including their respective successors and assigns. Owner does not mean (1) the property owner from whom a lease, easement or other property rights are acquired for locating the WECS (unless the property owner has an equity interest in the WECS; or (2) any person holding a security interest in the WECS solely to secure an extension of credit, or a person foreclosing on such security interest provided that after foreclosure, such person seeks to sell the WECS at the earliest practical date.

Participating Landowner shall mean a landowner under lease, easement or other property agreements with the owner or operator of the WECS.

Professional Engineer shall mean a qualified individual who is licensed in the State of Iowa as a professional engineer.

Project Area shall mean the geographic area encompassing all components of a C-WECS project.

Property Line shall mean the legal boundary between separately-owned real estate parcels, and between privately-owned parcels and publicly-owned land or public right-of-way.

Public Conservation Areas shall mean land owned by County, State or Federal agencies and managed for conservation/preservation purposes, including but not limited to Wildlife Management Areas, Conservation Areas, Parks, Preserves, Wildlife Refuges, and Waterfowl Production Areas. For purposes of this Ordinance, Public Conservation Areas also include land owned by non-profit conservation organizations and other privately-owned lands upon which permanent conservation easements have been granted to public agencies or non-profit conservation organizations. Public Conservation Areas do not include land enrolled in the Conservation Reserve Program.

Rotor Diameter shall mean the diameter of the circle described by the turbine's moving rotor blades.

Setback shall mean the minimum required distance from a certain object, structure or point to the center point of the foundation of the wind turbine at the natural ground level.

Structure shall mean anything constructed or erected on the ground or attached to the ground,

including but not limited to antennas, buildings, sheds, cabins, residences, signs, storage tanks, towers, wind turbines, and other similar objects.

Substation shall mean the apparatus that connects the electrical connection system of the WECS and increases the voltage for connection with the utility's, transmission owner's or WECS owner's transmission lines.

Tower shall mean the vertical structure that supports the electrical generator, rotor blades, or meteorological equipment.

Tower Height shall mean the total height of a turbine as measured from the ground to the tip of the blade when fully extended.

Transmission Line shall mean those electrical power lines that carry voltages of at least 69,000 volts (69 kV) and are primarily used to carry electrical energy over medium to long distances rather than directly interconnecting and supplying electrical energy to customers.

Turbine shall mean any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy using airfoils, blades, or similar devices to capture the wind.

Occupied Residence shall mean a building designed for, and occupied on a regular basis as an abode.

Section 4 – Applicability

It shall be unlawful to construct, erect, install, alter or locate any WECS within unincorporated Woodbury County, without first obtaining a C-WECS permit from the Woodbury County Board of Supervisors as outlined in this Ordinance.

1. No application for a C-WECS permit shall be granted without first submitting all required information, obtaining necessary permits, certifications and documentation, and paying all associated fees to the County.

Section 5 – C-WECS Permit Application Review, Amendment, and Approval Process

1. **General.** Before any construction activities related to a C-WECS project can begin in unincorporated Woodbury County, a C-WECS permit must be issued by the Woodbury County Board of Supervisors. For purposes of this paragraph, the installation of MET towers and access roads associated with a C-WECS project shall not be deemed construction activities requiring a C-WECS permit; provided that any such tower or road must be installed in compliance with all other applicable county ordinances and regulations.

2. **Application.** The Woodbury County Community and Economic Development (CED) Department will supply a permit application form to be used by any person seeking to construct a C-WECS project. Each project shall require a separate application. The application shall contain:
- A. The name, address, W-9 and EIN of the applicant, as well as the proposed owners or operators of the project, including the contact information (name, address, telephone and email) of their authorized representatives. The application shall designate the entity who will be the permit holder of the C-WECS permit.
 - B. A Certified Abstractor's list of the names and addresses of all property owners (i) located within the project area, and (ii) located within 5,280 feet of any turbine in the project.
 - C. A final development plan for the project, which shall contain aerial photographs of the entire proposed project area, showing the approximate proposed location of the turbines, private access roads, feeder lines, substations and all other components of the project. The plan shall show property lines and setback distances under Section 6, as well as all public roads and public drainage district facilities (i.e. – ditches and underground tiles) in the project area. The plan shall also identify any other turbines, communication antennae, and airports (including private airstrips) located within five (5) miles of the project area; and all lakes, permanent water courses and Public Conservation Areas within three (3) miles of the project area boundaries. In providing the above information, the plan shall use a GPS coordinate system that is compatible with the County's geographical information and data systems. The plan shall also include a mailing address for the owner of each communication antennae identified.
 - D. Project details, including the name of the project, anticipated number, generating capacity, tower height, and rotor diameter of the turbines. The final number, generating capacity, tower height, and rotor diameter must be provided in the final development plan.
 - E. Documentation of applicant's legal control over the private property necessary for the project, signed by the property owner. Such legal control must vest in the permit holder of the C-WECS permit at the time of its issuance.
 - F. A description of the public roads anticipated to be used during all phases of construction, as well as for access to material storage sites and staging areas. As set forth in Section 6, before construction commences on a project, all public road and public drainage district crossings must be provided to the County Engineer, and approved for compliance with the County's Road Use and Public Drainage System Protection Agreements

- G. A permit fee equal to \$1,000.00 for each turbine in a C-WECS project, to be paid upon receipt of the final C-WECS permit application.
- H. Any FAA, FCC, or other state or federal permits or approvals that are necessary for the project. Applicant shall submit a copy of the actual permit application, or proof that the permit has been filed with the appropriate agency.
- J. A decommissioning plan pursuant to Section 7.
- K. Such additional information as the County may request due to the unique circumstances with the project. Applicants are encouraged to have on-going discussions with the County CED staff and County Engineer during preparation of the application.

3. **County Staff Review.** Completed C-WECS permit applications shall be filed with the CED Department. The CED staff shall promptly provide a copy of the application to the County Engineer, County Finance Controller, County Emergency Management Director, and any other relevant county staff for review. Upon determination by the CED Director that the requirements of this Ordinance have been satisfied, the completed C-WECS permit application and any/all necessary supporting documentation shall be presented to the Woodbury County Board of Supervisors for approval. If the CED Director determines that the application lacks the required information provided in Section 5, the CED Director shall then provide the applicant's authorized representative written Notice of the deficiency. The applicant may refile an amended application once the deficiencies have been resolved.
4. **Public Hearing Required.** Upon completion of the County's review of the application, the County shall schedule a public hearing to be held no later than thirty (30) days after the County has deemed the application complete. Representatives of the C-WECS permit holder who are familiar with all aspects of the project must be present at the public hearing.
5. **Notice of Public Hearing.** In accordance with Iowa Code Chapter 21, the CED Department shall provide a notice of the filing in substantially the following form for each public hearing:

PUBLIC NOTICE

Notice is hereby given that (name of applicant) has filed a completed application with Woodbury County to build a commercial windfarm to be located in (list Township names and section numbers). The windfarm is projected to have _____ individual turbines that are being reviewed by the County. The Woodbury County Board of Supervisors shall hold a Public Hearing on this application in the Woodbury County Courthouse, Board of Supervisors Meeting Room, located in the basement of 620 Douglas Street, Sioux City, IA 51101, on: (Day, Month, Year) at (Time).

The Notice of Filing shall be:

- A. Published by the CED Department once for two consecutive weeks in one or more newspapers, as defined in Iowa Code Section 618.3, published in and having general

circulation in Woodbury County, which has been identified as the following currently existing newspaper: Sioux City Journal; and

- B. Mailed by the CED Department to each landowner identified in the application pursuant to paragraph 2. B. and to each city located within one (1) mile of the project area; and
- C. Mailed by the CED Department to the owners of the Public Conservation Areas and all communication and other antenna identified in the application.
- D. All costs of mailing and publication shall be paid by applicant to the CED Department in advance.

6. **Approval by Board of Supervisors.** In considering whether to approve an application for a C-WECS permit, the Board of Supervisors shall proceed according to the following format:

- A. Within thirty (30) days following the C-WECS permit application being deemed complete, the Supervisors shall review it for completeness and compliance with this Ordinance.
- B. The Supervisors shall establish findings of fact based upon information contained in the application, the staff report and information gathered at the public hearings.
- C. The Supervisors shall consider such reasonable requirements or conditions to the C-WECS permit as will ensure the development will satisfy the requirements of this Ordinance.
- D. If the Supervisors conclude that all such criteria have been met, the application may be approved by Resolution.
- E. Without limiting the foregoing, the Supervisors may attach to a C-WECS permit conditions it deems necessary to protect the health, safety, and general welfare of the public; and, if the applicant is agreeable to such conditions, the Supervisors may approve the application by Resolution.
- F. The Resolution shall direct the CED Director to issue an approved C-WECS permit.

7. **Modifications.** The location of components may be modified from the final development plan when necessary to address exigencies encountered during construction, subject to the following limitations:

- A. Any such modification shall remain subject to all setbacks and other requirements set forth in this Ordinance and the Ancillary Agreements in Section 8; and

- B. The location of turbines and project substations can only be modified from the final development plan with approval of the CED Director if the proposed relocation is 300 feet or less; or, for such modifications exceeding 300 feet, with the approval of the Board of Supervisors. Approval of a turbine or project substation modification by the CED Director or the Board of Supervisors shall be deemed an approved amendment to the final development plan and automatically amend the C-WECS permit; and
- C. Within 30 days from the completion of the project, the C-WECS permit holder shall revise the final development plan to show the exact “as-built” coordinates for all components, including any modifications. Failure to timely provide such coordinates shall be a material violation of this Ordinance.

Section 6 – Siting and Design Standards

- 1. **Setbacks.** All turbines and project substations shall observe the following setbacks:

[Note – all measurements shall be from the center point of the tower (or from the nearest above-ground non-fence structure at a substation site) to the nearest point on any occupied residence, occupied non-residential building, or confinement feeding operation building; or to the nearest property line of any other protected area.]

A.

<u>Protected Area</u>	<u>Set Back Requirement</u>
Adjacent Property Lines	110% of total height
Occupied Residence	600 feet or 110% of total height (whichever is greater)
Unoccupied Non-Residential Building	110% of total height
Confinement Feeding Operation Building	110% of total height
Public Road Right-of-Way	600 feet or 110% of total height (whichever is greater)
Public Drainage District Right-of-Way	
Open Ditch	300 feet
Tile (centerline)	100 feet
Public Conservation Area	600 feet or 110% of total height (whichever is greater)
Cemetery	600 feet
City Limits	600 feet
Airports (public and private)	FAA consultation and determination required

B. Public and Private Airport Setbacks.

- 1. The following landing areas shall be considered for purposes of this Ordinance airports if, prior to the initial filing date of the Notice, are in operation or to which a sponsor has a valid Certificate of Site Approval as set forth in Iowa Administrative Code Rules 761-720.4 and 761-720.5:
 - A. A public-use airport as defined in Iowa Code Sections 329.1(1) and Iowa Administrative Code Rule 761-720.2; or
 - B. A private-use airport as defined in Iowa Code Section 329.1(1) and Iowa Administrative Code Rule 761-720.2 that had: (i) obtained all necessary local,

state, and federal approvals to construct and operate as a private-use airport; and
(ii) received an airport identification assignment from the Federal Aviation Administration (“FAA”) pursuant to Federal Aviation Regulations Part 157.

2. The setback distance for airports shall be governed by the rules and regulations of the Federal Aviation Administration (“FAA”) and/or any laws or rules of the State of Iowa that are applicable. An applicant shall not construct a turbine in violation thereof.

2. **Setback Waivers.** Property owners and municipalities may request a waiver from the setbacks as established in this Ordinance, except for the following protected areas: airports, cemeteries, public conservation areas, and public road rights-of-way.

PROVIDED, a waiver shall not alter any other non-waived setback requirement.

To effectuate such a waiver, the applicant must provide the CED Department with a recordable instrument signed by all owner(s) (or the controlling governmental entity) of the affected protected area that specifically identifies the nature and extent of the waiver. All waivers must be approved by the Board of Supervisors for compliance with this Ordinance; and upon such approval, shall be recorded in the office of the Woodbury County Recorder by the applicant.

3. **Color and finish.** All turbines and towers that are part of a C-WECS shall be white or grey. Finishes shall be matte or non-reflective.
4. **Lighting.** Lighting, including lighting intensity and frequency of strobes, shall adhere to but not exceed requirements established by the FAA permits and regulations. Red strobe lights shall be used during nighttime illumination to reduce impacts on neighboring uses and migratory birds. Red pulsating incandescent lights are not permitted.
5. **Signage.** All turbine sites shall be required to have individual 911 rural address signs at each access road. All other signs except those required for safety and directional purposes (or otherwise authorized by the County) shall be prohibited in the project area.

Section 7 – Discontinuance/Decommissioning

A WECS shall be considered a discontinued use after one (1) year without energy production, unless a plan is developed and submitted to the CED Director outlining the steps and schedule for returning the WECS to service. Discontinued use does not apply to the pre-construction or construction period and shall be measured from the initial commercial energy production and operation of the C-WECS project. All C-WECS and accessory facilities shall be removed to a depth of four (4) feet below ground level within one (1) year of discontinuation of use.

1. Each project shall have decommissioning plan approved by the Board of Supervisors. Such plan shall contain:

- A. A description of the project components, sequence and description of the activities and cost estimates required to remove same in compliance with this Section.
- B. The cost estimates shall be made by a professional engineer licensed in the State of Iowa. The plan shall also identify the financial resources that will be available to pay for the decommissioning and removal of the C-WECS and accessory facilities. The County reserves the right to verify that adequate decommissioning terms are contained in the landowner's lease or easement.
- C. Cash, an irrevocable letter of credit, or a performance bond running in favor of the County in an amount no less than the total estimated net removal/restoration costs as determined by said report. Said security must be in place at the time the project is completed, and must remain in effect until decommissioning is completed. No such security shall be cancelable without notice to the Board of Supervisors. Each year, the C-WECS permit holder shall provide proof that such security is in effect at the same time as the annual report to the County Assessor is made for purposes of the real estate tax assessment.
- D. The report prepared under c.) above shall be updated and provided to the Supervisors (i) at least every five (5) years, and (ii) upon any proposed transfer of the C-WECS permit. Should any update indicate a change in the decommissioning costs, the security required under c.) above shall be adjusted accordingly.
- E. No transfer/assignment of the C-WECS permit shall be effective without a corresponding transfer/assignment of the obligations and financial security required under the decommissioning plan, as approved by the Board of Supervisors.

Section 8 – Ancillary Agreements/Procedures

Issuance of a C-WECS permit is strictly conditioned on the applicant executing and adhering to the following:

1. **Roads.** Applicants shall adhere to the Woodbury County Road Use and Repair Agreement, and in doing so, shall identify all roads to be used for the purpose of transporting WECS, substation parts, cement, and/or equipment for construction, operation or maintenance of the WECS and obtain applicable weight and size permits from the impacted road authorities prior to construction.
2. **Existing Road Conditions.** Applicants shall conduct a pre-construction survey, in coordination with the impacted local road authorities to determine existing conditions of roads identified pursuant to Section 8.1. The survey shall include photographs or video and written documentation of the condition of the identified road facilities. The applicant is responsible for on-going road maintenance and dust control measures identified by the County Engineer during all phases of construction.

3. **Drainage System.** Applicants shall adhere to the Woodbury County Public Drainage System Protection Agreement, and in doing so, shall be responsible for immediate repair of damage to public drainage systems stemming from construction, operation or maintenance of WECS (where required).
4. **Post Completion Survey.** Applicants and the County Engineer will meet upon completion of the project and agree as to the necessary action needed to return roads to the existing road conditions as identified in Section 8.1 and 8.2.
5. **Required Financial Security.** Applicants shall be responsible for restoring or paying damages as agreed to by the applicable road authority sufficient to restore the identified roads, bridges, and associated infrastructure to preconstruction conditions. Financial security in a manner reviewed by the County Financial Controller and the County Engineer, and approved by the Board of Supervisors, shall be submitted covering 130% of the costs of all required improvements. This requirement may be waived or modified by the Board of Supervisors upon recommendation from the County Engineer.
6. **Safety.** All wiring between wind turbines and the C-WECS substation shall be underground. If the developer can demonstrate the need for an overhead line and the acceptance of landowners for this line, such option may be approved conditionally by the Board of Supervisors. Wind turbines and meteorological towers shall not be climbable up to fifteen (15) feet above ground level. All access doors to wind turbines and meteorological towers and electrical equipment shall be locked when not being serviced. Appropriate warning signage shall be placed on wind turbine towers, electrical equipment, and C-WECS entrances. For all WECS, the manufacturer's engineer or another qualified engineer shall certify that the turbine, foundation and tower design of the WECS is within accepted professional standards, given local soil and climate conditions.
7. **Guyed Towers.** For all guyed towers, visible and reflective objects, such as plastic sleeves, reflectors or tape, shall be placed on the guy wire anchor points and along the outer and innermost guy wires up to a height of eight (8) feet above the ground. Visible fencing shall be installed around anchor points of guy wires.
8. **Emergency Response Plan.** An Emergency Response Plan (ER Plan) provided by applicant shall be reviewed by the County's Director of Emergency Management and the Director of Emergency Services, and shall be approved by the Board of Supervisors. Said ER Plan shall contain response procedures to be followed in the event of a fire, collapse, personal injury, or other emergency at a project. The ER Plan shall contain 24-hour emergency contact information for the project
9. **Electrical Codes and Standards.** All WECS and accessory equipment and facilities shall comply with the National Electrical Code and other applicable standards.
10. **Uniform Building Code.** All WECS shall comply with the State Building Code adopted by the State of Iowa.

Section 9 – Effect and Transferability of C-WECS Permit

1. No construction activities on a project may begin until a C-WECS permit has been issued, except as permitted in Section 5.1.
2. Any material violation of any provision of this Ordinance that remains uncured after thirty (30) days' written notice from the County to the permit holder shall be grounds for revocation of the C-WECS permit.
3. If construction on the project has not begun within eighteen (18) months from the issuance date of the approved C-WECS permit, the C-WECS permit shall be automatically revoked without further action by the County. In such event, no work on the project may take place unless and until a new C-WECS permit is issued, and any portion of the project then completed shall be deemed a discontinued use.
4. Only the holder of the C-WECS permit shall own the project, and such holder shall be the entity responsible for observing all requirements of this Ordinance. The permit holder shall be responsible to maintain all components of the C-WECS project in good repair, and in compliance with this Ordinance and the Ancillary Agreements listed in Section 8.
5. No C-WECS permit shall be transferred or assigned, voluntarily or involuntarily, without the written approval of the Woodbury County Board of Supervisors, which consent may be withheld unless and until the Board is satisfied that a proposed transferee has the financial and operational responsibility to assume all obligations required of the permit holder under this Ordinance and the Ancillary Agreements listed in Section 8. Requests for approval of a C-WECS permit transfer shall be directed to the CED Director.

Section 10 – Miscellaneous

1. **Condemnation Waiver.** Issuance of a C-WECS permit shall be conditioned on the permit holder's enforceable promise, supported by the consideration of the issuance of the C-WECS permit, that the permit holder shall never use, or seek to use, eminent domain to acquire any real property interests to construct or operate the project.
2. In any action brought by the County against the permit holder of a C-WECS permit to enforce the provisions of this Ordinance, the County shall be entitled to recover its reasonable attorney fees and court costs as may be awarded by the decision-making tribunal.

Section 11 – Severability Clause

If any of the provisions of this Ordinance are for any reason illegal or void, then the lawful provisions of this Ordinance, which are separable from said unlawful provisions shall be and remain in full force and effect, the same as if the Ordinance contained no illegal or void provisions.

Section 12 – Repealer

All ordinances or parts of ordinances in conflict with the provisions of this Ordinance are hereby repealed.

Section 13 – Date of Effect

This Ordinance shall become effective upon its passage by the Board at three meetings and published as required by Iowa Code §331.302(8).

Adopted and passed by the Woodbury County Board of Supervisors on this ____ day of _____ 2021.

THE WOODBURY COUNTY, IOWA BOARD OF SUPERVISORS:

ATTEST:

Rocky De Witt, Chairman

Patrick Gill, Woodbury County Auditor

Matthew Ung, Vice Chairman

Mark Monson

Keith Radig

Justin Wright

Adoption Timeline

- _____ : Public Hearing and 1st Reading
- _____ : Public Hearing and 2nd Reading
- _____ : Public Hearing, 3rd Reading, and Ordinance Adoption
- _____ : Published/Effective Date