

Wind Energy Convergence and Solar Energy Systems



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7.1 General Information

A. Purpose. The purpose of this section is to:

1. Provide for the orderly growth and development of the county.
2. Assure that any development and production of wind- or solar-generated electricity in Pulaski County is safe and effective;
3. Facilitate economic opportunities for local residents; and
4. Support Indiana's alternative-energy efforts as a source of increased energy supply and as an economic-development tool.

B. Intent. The intent of this Ordinance is to provide a regulatory scheme for the construction and operation of Wind Energy Convergence Systems (WECS) and Solar Energy Systems (SES) in the county; subject to reasonable restrictions, these regulations are intended to preserve the health and safety of the public.

C. Applicability.

1. The provisions of this Section are applicable to those districts which allow WECS and/or SES, govern the siting of WECS, SES, and substations that generate electricity to be sold to wholesale or retail markets, or that generate electricity for private use. A reasonable attempt shall be made to notify all property owners within the defined area of the WECS or SES project prior to making application for a WECS permit. Notification may be done by media, separate mailings, or through the public notice requirements prescribed by IC 5-3-1 as amended from time to time. Said notice shall inform land owners of the intent to build a WECS and/or SES. Any recorded plat or any part of any recorded plat may be vacated by the owner(s) of the premises at any time before the sale of any lot therein, by a written instrument, to which a copy of such plat shall be attached, declaring the same to be vacated. The vacation of a plat is subject to the approval of the Plan Commission. The modification will not in any manner contravene provisions of this Ordinance, the Comprehensive Plan, or the Official Zoning Map, as determined by the Plan Commission.

D. Prohibition.

language Change

1. No applicant shall construct, operate, or locate a WECS or SES within Pulaski County without having fully complied with the provisions of this Ordinance.
2. In the name of protecting and promoting the health, safety, and general welfare of the residents of Pulaski County; in light of concerns regarding negative impact on the value of property; and because of threats to migratory birds and bats, commercial WECS shall be a prohibited use within the planning and zoning jurisdiction of Pulaski County.
 - a. Incidents relating to impacts on persons' health caused by shadow flicker and noises created by the rotation of turbine blades; the possibility of blade fragments from damaged turbines flying significant distances and striking persons, animals, or property; and the potential for flying ice chunks in the event of an equipment malfunction during a freezing-weather event, among other threats, create concern for the health, safety, and general welfare of persons in the vicinity of "wind farms."
 - b. Many studies have shown an inverse relationship between the number of wind turbines in an area and the direction of trend of property values in said area. While a number of factors may contribute to the nature and degree of such an impact, it is in the interest of the Pulaski County Government to protect property values, both as sources of public revenue and as investments held by landowners.
 - c. Sandhill cranes are a tourist attraction in Pulaski County, and other flying animals, some with endangered or protected status, are known to inhabit this area. Because of the threats that rapidly rotating blades at the heights at which commercial WECS are built pose to these animals, particularly cranes, which attract transient dollars to the community, it is in the interest of the Pulaski County government to act proactively to protect these species.

E. Conflict With Other Regulations.

1. Nothing in this Section is intended to preempt other applicable state and federal laws or regulations, including compliance with all Federal Aviation Administration rules and regulations and shall comply with the notification requirements of the FAA. Nor are they intended to interfere with, abrogate, or annul any other ordinance, rule, or regulation, statute or other provision of law. In the event that any provision of these regulations imposes restrictions different from any other ordinance, rule, regulation, statute, or provision of law, the provisions that are more restrictive or that imposes higher standards shall govern.

F. Definitions.

1. All definitions for WECS and SES are located within Section 8, 'Definitions'.

G. Fee Schedule.

1. Fee Schedule is regulated by separate ordinance. Please contact the Administrator for specific details.

7.2 General Regulations**A. Location.**

1. Non-commercial and micro-WECS and SES will be permitted, or not permitted, in various districts as prescribed in Section 4, Use Standards, specifically as detailed in Tables 4.1 and 4.2.
2. **Language Change** Neither WECS nor SES may be located within the front yard of a property upon which a primary-use structure sits (*i.e.*, they may not be constructed between a principal building and any street fronting the lot.) Additionally, roof-mounted SES should be installed on the rear-facing side of the roof, or on the back half of rooves that run perpendicular to the fronting street, but the administrator may waive, partially or fully, this roof-placement restriction when solar tiles are used in place of roofing or other construction materials.

B. Height.

1. Any NON-COMMERCIAL WECS or meteorological tower greater than two hundred (200) feet in height shall require a special exception use permit. No Micro-WECS shall exceed sixty (60) feet in height.
2. All building- and roof-mounted SES shall meet the height restrictions applicable to the zoning districts in which they are built, pursuant to Section 3 of this ordinance, 'Zoning Districts'. Ground- and pole-mounted SES shall not exceed twenty (20) feet in height at maximum tilt.

C. Horizontal Extension.

1. The furthest horizontal extension of a WECS (including guy wires) or SES shall not extend into a required setback in the zoning district or a setback stipulated by this chapter or be closer than twelve (12) feet to any primary structure, or right-of-way easement for any above-ground telephone, electrical transmission or distribution lines.

D. Quantity

1. WECS towers/turbines shall be limited to a maximum of one per primary use.
2. The number of solar panels constructed for an accessory-use/personal-use solar array shall be limited to the largest whole-number quantity of panels required to provide power to the parcel where installation occurs. (*i.e.*, if meeting power demand requires 3.4 panels, then a maximum of four (4) may be installed.) This restriction shall apply equally to ground-/pole- and roof-/building-mounted panels, but the administrator may waive, partially or fully, this restriction when solar tiles are used in place of roofing or other construction materials.

7.3 Liability

Language Change

7.3.A.1

7.3.A.2

- A. The owner or operator of any WECS or SES shall maintain a current general liability policy covering bodily injury and property damage and may be required to name Pulaski County as an additional insured with dollar amount limits per occurrence, in the aggregate, and a deductible, which is suitable to the County. Home owners that have electrical power generating equipment of 10 kw or less on their property are required to carry \$100,000.00 of liability insurance. The owner of any electrical power generating equipment over 10 kw that is directly connected to the local utility provider is required to carry liability insurance with limits of a minimum of \$2-million per occurrence and \$5-million in aggregate, with a deductible of no more than \$5,000.**
- B. The applicant, owner, and/or operator of a WECS or an SES shall defend, indemnify, and hold harmless Pulaski County and its officials from and against any and all claims, demands, losses, suits, cause of action, damages, injuries, costs, expenses, and liabilities whatsoever, including attorney's fees, without limitation, arising out of acts or omissions of the applicant, owner, and/or operator associated with the construction and/or operation of the WECS or SES.**

7.4 Decommissioning Plan

A. Plan Outline.

1. Any WECS or SES declared to be unsafe by the Pulaski County Building Inspector by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, damage or abandonment is hereby declared to be a public nuisance and shall be abated by repair, rehabilitation, demolition or removal in accordance with the approved Decommissioning Plan.

B. Effective Date

1. A signed and executed plan must be in place prior to the start of construction.

C. Content.

1. A decommissioning plan shall include, at a minimum, language to the following:
 - a. Written assurance guaranteeing that the facilities will be properly decommissioned upon the project life or in the event that the facility is abandoned; detailing how funds will be distributed; ensuring that Pulaski County and/or its contracted agents shall be granted access to the site, pursuant to reasonable notice, to effect or to complete decommissioning; granting the County the right to injunctive relief to effect or to complete decommissioning and the right to seek reimbursement from the applicant or applicant's successor(s) for decommissioning costs in excess of the amount deposited in the account or to file a lien against any real estate owned by the applicant or applicant's successor(s), or in which they may have an interest, for the amount of the excess, and to take all steps allowed by law to enforce said lien.
 - b. The applicant shall provide a contractor cost estimate for demolition and removal of the WECS or SES facility. The cost estimates shall be made by a competent party: such as a professional engineer, a contractor capable of decommissioning or a person with suitable expertise or experience with decommissioning WECS or SES, as applicable.
 - c. Financial assurance in an amount at least equal to said demolition and removal contractor cost estimate, through the use of a bond, escrow deposit, or other security acceptable to the County, for the cost of decommissioning each tower or solar array and related improvements constructed under the permit.
 - 1) Said security will be released when each tower or solar array and improvements are properly decommissioned as determined by the Pulaski County Building Commissioner.
 - 2) The applicant or applicant's successor(s) will have the decommissioning costs and financial assurance re-evaluated at the end of years five (5), ten (10), and (15). Every five years after the start of construction, updated proof of acceptable financial assurance will be required prior to the start of operations.
 - d. A description of the means by which decommissioning/demolition will occur and the timeline for such work.

Language Changes

7.4 A-D

add

after the project has been completed and is operable,

D. Discontinuation and Abandonment.

1. All WECS and SES shall be considered a discontinued use after one (1) year without energy production, unless a plan is developed and submitted to the Pulaski County Building Department outlining the steps and schedule for returning the WECS or SES to service within 24 months of the initial cessation of operations. If such a plan for renewal of operations is not made to Pulaski County's satisfaction, then the decommissioning must be initiated within eighteen months of the cessation of operations.
2. In the event of abandonment by the owner or operator, the applicant will provide an affidavit to the Pulaski County Building Department representing that all easements for wind turbines or solar arrays shall contain terms that provide financial assurance, including access to the salvage value of the equipment, for the property owners to ensure that facilities are properly decommissioned within one (1) year of expiration or earlier termination of the project.

E. Removal.

1. An applicant's obligations shall include removal of all physical material pertaining to the project improvements on the ground and to no less than a depth of four (4) feet below ground level within three hundred sixty-five (365) days of the discontinuation or abandonment of the facility, and restoration of the project area to as near as practicable the condition of the site immediately before construction of such improvements by the owner, or by Pulaski County at the owner's expense. Any hazardous materials shall be removed in accordance with federal and state law.

Refer to 7.7.i.2

F. Written Notices.

1. Prior to implementation of the existing procedures for the resolution of such default(s), the appropriate County body shall first provide written notice to the owner and/or operator, setting forth the alleged default(s). Such written notice shall provide the owner and/or operator a reasonable time period not to exceed sixty (60) days, for good faith negotiations to resolve the alleged default(s).

G. Costs Incurred by the County.

1. If the County removes a tower or solar array and appurtenant facilities, it may sell the salvage to defray the costs of removal. By approval, the permitted or grantor grants a license to Pulaski County to enter the property to remove a tower or solar array pursuant to the terms of an approved decommissioning plan.

H. Continuity of Decommissioning Plan

1. The terms of the decommissioning plan shall be binding upon the owner/operator and any of their successors, assignees, or heirs, and the plan's language shall reflect this.

7.5 Application Procedures

A. Permits and variances shall be applied for and reviewed under the procedures established by this UDO and the application procedures application for a WECS or SES Improvement Location Permit.

1. See section 2.3.Q, 'Applications for Micro/Non-commercial Energy Conversion Systems (WECS)', for application procedures.
2. See section 2.3.R, 'Applications for All Solar Energy Systems (SES)', for application procedures.

7

7.6 WECS Setback Requirements

Table 7.1 Minimum Setback for NON-COMMERCIAL WECS and MICRO WECS

Distance from A...	Minimum Setback Distance
Property line, measured from the center of the WECS to the property line (non-participant)	1.5 times the total height (where the blade tip is at its highest point). May be waived for micro WECS
Road right-of-way, measured from the center of the WECS to the edge of the right-of-way	1.5 times the total height (where the blade tip is at its highest point), provided that the distance is no less the required yard setback prescribed for that district; applies to future right-of-way if planned road improvement/expansion is known at time of construction
Other rights-of-way (including, but not limited to, utilities and ditches)	1.5 times the total height (where the blade tip is at its highest point), provided that the distance is no less than the required yard setback prescribed for that district; no restriction on micro WECS
Jasper-Pulaski Fish & Wildlife Area	6 miles; no restriction on micro WECS
Public conservation lands, measured from the center of the WECS to the nearest point of the public conservation land in question	1/2 mile
Wetlands, as defined by the U.S. Army Corps of Engineers, measured from the center of the WECS to the nearest point of the wetland in question	As determined by a permit obtained from the Army Corps of Engineers
Tippecanoe River measured from the center of the WECS to the shoreline	1 mile
Incorporated municipal limits/village boundaries	1.5 times the total height (where the blade tip is at its highest point)

Table 7.2 Minimum Setback for METEOROLOGICAL TOWERS

Distance from A...	Minimum Setback Distance
Property line, measured from the center of the WECS to the property line (non-participant)	1.5 times the total height (where the blade tip is at its highest point). May be waived for micro WECS
Road right-of-way, measured from the center of the WECS to the edge of the right-of-way	1.5 times the total height (where the blade tip is at its highest point), provided that the distance is no less the required yard setback prescribed for that district; applies to future right-of-way if planned road improvement/expansion is known at time of construction
Other rights-of-way (including, but not limited to, utilities and ditches)	1.5 times the total height (where the blade tip is at its highest point), provided that the distance is no less than the required yard setback prescribed for that district; no restriction on micro WECS

7.7 Safety, Design and Installation Standards for WECS

A. Equipment Type.

1. Turbines: ALL turbines shall be constructed of commercially available equipment.
2. Meteorological Towers: Meteorological towers may be guyed.
1. Experimental, or Proto-type Equipment: Experimental or proto-type equipment still in testing which does not fully comply with industry standards, may be approved by the Board of Zoning Appeals per the variance process established by this Ordinance.

B. Industry Standards and Other Regulations.

1. ALL WECS shall conform to applicable industry standards, as well as all local, state and federal regulations. An applicant shall submit certificate(s) of design compliance that wind turbine manufacturers have obtained from Underwriters Laboratories, Det Norske Veritas, Germanischer Lloyd Wind Energie, or an equivalent third party.
2. Operation Mode: ALL Mechanical brakes shall be operated in a fail-safe mode.

Controls and Brakes

3. Braking systems: All WECS shall be equipped with a redundant braking system. This includes both aerodynamic over speed controls (including variable pitch, tip, and other similar systems) and mechanical brakes. Stall regulation shall not be considered a sufficient braking system for over speed protection.
4. Operation mode: All mechanical brakes shall be operated in a fail-safe mode.

C. Electrical Components.

1. Standards: All electrical components of ALL WECS shall conform to applicable local, state and national codes, and any relevant national and international standards.
2. Collection Cables: All electrical collection cables between each WECS shall be located underground wherever possible.
3. Transmission Lines: ALL transmission lines that are buried should be at a depth consistent with or greater than local utility and telecommunication underground lines standards or as negotiated with the land owner or the land owner's designee until the same reach the property line or a substation adjacent to the property line.

D. Color and Finish: In addition to all applicable FAA requirements, the following shall also apply.

1. Wind Turbines and Towers: ALL wind turbines and towers that are part of WECS shall be white, grey, or another non-obtrusive color.
2. Blades: ALL blades shall be white, grey, or another non-obtrusive color. Blades may be black in order to facilitate deicing.
3. Finishes: Finishes shall be matte or non-reflective.
4. Exceptions: Exception may be made for meteorological towers, where concerns exist relative to aerial spray applicators.

E. Warnings.

1. Towers, transformers, and substations: For all WECS, a sign or signs shall be posted on the tower, transformer and substation warning of high voltage. Signs with emergency contact information shall also be posted on the turbine or at another suitable point.
2. Guy wires and anchor points: For ALL guyed towers, one of the following warning mechanisms shall be used for each anchor point:
 - a. Visible or Reflective Objects: Visible and reflective objects, such as flags, plastic sleeves, reflectors, or tape placed on the anchor points of guy wires and along the innermost guy wires up to eight (8) feet above the ground.
 - b. Visible Fencing: Visible fencing not less than four (4) feet in height installed around anchor points of guy wires.
3. Non-commercial WECS and Micro-WECS: The following notices shall be clearly visible on all Non-commercial WECS, and Micro-WECS towers and accessory facilities.
 - a. "No Trespassing" signs shall be attached to any perimeter fence.

- b. "Danger" signs shall be posted at the height of five (5) feet on WECS towers and accessory structures
 - c. A sign shall be posted on the tower showing an emergency telephone number
 - d. The manual electrical and/or overspeed shutdown disconnect switch(es) shall be clearly labeled.
4. Meteorological towers
- a. Consideration shall be given to paint aviation warning on all Meteorological Towers.

F. Climb Prevention.

- 1. All WECS tower designs shall include features to deter climbing or be protected by anti-climbing devices.
 - a. Fences with locking portals at least six (6) feet in height; or
 - b. Anti-climbing devices fifteen (15) feet vertically from the base of the WECS tower; or
 - c. Locked WECS Tower doors.

G. Blade Clearance.

- 1. The minimum distance between the ground and any protruding blades(s) utilized on all WECS shall be a minimum of fifteen (15) feet, as measured at the lowest point of the arc of the blades, provided the rotor blade does not exceed 20 feet in diameter. In either instance, the minimum distance shall be increased as necessary to provide for vehicle clearance in locations where over-sized vehicles might travel.

H. Lighting.

- 1. ALL lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by Federal Aviation Administration permits and regulations.
- 2. Except with respect to lighting required by the FAA, lighting may require shielding so that no glare extends substantially beyond any WECS structure.

I. Materials Handling, Storage and Disposal.

- 1. All solid wastes whether generated from supplies, equipment, parts, packaging, operation or maintenance of the facility, including old parts and equipment related to the construction, operation and/or maintenance of any WECS shall be removed from the site promptly and disposed of in accordance with all federal, state, and local laws.
- 2. All hazardous materials or waste related to the construction, operation and/or maintenance of any WECS shall be handled, stored, transported and disposed of in accordance with all applicable local, state and federal laws.

7.8 Other Applicable WECS Standards

A. Guyed Wire Anchors.

- 1. No guyed wire anchors shall be allowed within any required road right-of-way setback.

B. Sewer and Water.

- 1. ALL WECS facilities shall comply with the existing septic and well regulations as required by the Pulaski County Health Department and/or the State of Indiana Department of Public Health.

C. Noise, Vibration, and Flicker.

- 1. The noise level of non-commercial and micro WECS shall be no greater than fifty-one (51) decibels measured from the nearest residence during daytime hours and no greater than forty (40) decibels between 9:00p.m. and 7:00a.m.. This level may only be exceeded during short-term events such as utility outages and/or severe wind storms. All other noise and vibration

levels shall be in compliance with all county, state and federal regulations. Shadow flicker shall be limited to 30 minutes per day and 30 days per year.

D. Utility Interconnection.

1. The WECS, if interconnected to a utility system, shall meet the requirements for interconnection and operate as prescribed by the applicable regulations of the electrical utility, as amended from time to time.

E. Signage.

1. The following signage regulations and standards apply. In the event that one of the following regulations or standards conflicts with another sign regulation or standard prescribed by this ordinance, the most restrictive regulation or standard shall apply.
 - a. No sign shall exceed sixteen (16) square feet in surface area.
 - b. No sign shall exceed eight (8) feet in height.
 - c. A sign not to exceed (1) square feet in surface area may be placed upon the compartment containing the electrical equipment.
 - d. A sign may be located on each side of the total project area, provided that there are no more than four (4) signs located on any one project site.

F. Feeder Lines.

1. With the exception of minimum setback distances, feeder lines installed as part of any WECS shall not be considered an essential service. To wit, all communications and feeder lines installed as part of any WECS shall be buried underground wherever possible.

G. Other Appurtenances.

1. No appurtenances other than those associated with the wind turbine operations shall be connected to any wind tower except with express, written permission by the Board of Zoning Appeals.

7.9 WECS Operations and Maintenance

A. Physical Modifications.

1. In general, any physical modification to any WECS that alters the mechanical load, mechanical load path, or major electrical components shall require re-certification. Like-kind replacements shall not require re-certification. Therefore, prior to making any physical modification, the owner or operator shall confer with the Building Department and Advisory Plan Commission to determine whether the physical modification requires re-certification.

B. Interference.

1. Prior to construction, a communications study to minimize interference with public or public serving utility microwave transmissions shall be completed. If necessary, the applicant, owner and/or operator shall mitigate interference with electromagnetic communications, such as radio, telephone, microwaves, or television signals caused by any WECS. In addition, the applicant, owner, and/or operator shall comply with the following:
 - a. Pre-Construction
 - 1) The applicant shall complete a communications study prior to construction so as to minimize interference with any public or public serving utility microwave transmissions.
 - b. Post-Construction
 - 1) If, after construction of the WECS, the owner or operator receives a written complaint related to interference with the broadcast of residential television, telecommunication, communication or microwave transmissions, the owner or operator shall take reasonable steps to mitigate said interference. Interference with private telecommunications systems such as GPS shall be between the company and the complainant.

c. Failure to Remedy a Complaint

- 1) If an agreement to remedy a known interference is not reached within ninety (90) days, appropriate action will be taken, which may result in requiring the WECS to become inactive. This does not apply to interference with private telecommunications systems.

C. Declaration of Public Nuisance.

1. Any WECS thereof declared to be unsafe by the Pulaski County Building Inspector by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, damage or abandonment is hereby declared to be a public nuisance and shall be abated by repair, rehabilitation, demolition or removal in accordance with the approved Decommissioning Plan.

7.10 WECS Pre-Construction Requirements

A. Prior to the issuance of any Building Permit, the following shall be submitted to and reviewed by the Building Inspector, who shall certify that the following are in compliance with all applicable regulations.

1. An FAA permit application when tower height or other circumstances require it.
2. A decommissioning plan as prescribed in this Ordinance.
3. An erosion control plan developed in consultation with the Natural Resources Conservation Services (NRCS), and any storm water quality management plan adopted by the applicable jurisdiction.
4. A utility plan drawn to the same scale as the site plan illustrating the location of all underground utility lines associated with the total WECS project, if applicable.
5. Provide a copy of the Final Site Layout Plan illustrating the final location of all that is required in the preliminary site layout plan, as approved by the landowner.
6. An applicant, owner, or operator proposing to use any county road(s), for the purpose of transporting WECS and/or equipment for construction, operation or maintenance of a WECS or substation, shall comply with the following pre-construction requirements.
 - a. Identification of Roads and Services. Identify all roads and services, to the extent that any proposed routes that will be used for construction and maintenance purposes shall be identified. If the route includes a public road, it shall be approved by the Pulaski County Highway Department.
 - b. Pre-construction Survey. The applicant shall conduct a pre-construction baseline survey acceptable to the Highway Superintendent to determine existing road conditions for assessing potential future damage. The survey shall include photographs, or video, or a combination thereof, and a written agreement to document the condition of the public facility.

7.11 WECS Construction Requirements

A. During construction, the applicant shall demonstrate that the following requirements are being met.

1. Reasonable dust control measures shall be required by the County during construction of a WECS.
2. Reasonable storm water best management practices.

7.12 WECS Post-Construction Requirements

A. Post-construction, the applicant shall comply with the following provisions.

1. Any road damage caused by the construction of project equipment, the installation of the same, or the removal of the same, shall be repaired to the satisfaction of the Pulaski County Highway Superintendent. The superintendent may choose to require either remediation of road repair upon completion of the project or are authorized to collect fees for oversized load permits. Further, a corporate surety bond in an amount to be fixed by a professional engineer may be required by the superintendent to insure the county that future repairs are completed to the satisfaction of the unit of local government. The cost of bonding is to be paid by the applicant.
2. Where upon completion of all development, the exact measurements of the location of utilities

and structures erected during the development are necessary for public record and shall therefore be recorded. The applicant, owner, or operator shall submit a copy of the Final Construction Plans (as-built plans), as amended, to the Building Inspector with the exact measurements thereon shown. The Building Inspector, after being satisfied that the measurements are substantially the same as indicated on the originally approved final plan(s), shall approve, date and sign said Construction Plans for the project, which the applicant, owner, or operator shall then record.

3. It is the responsibility of the owner or operator listed in the application to inform the Administrator of all changes in ownership and operation during the life of the project, including the sale or transfer of ownership or operation.

7.13 Regulations on Accessory-Use SES

A. Rules Applicable from Elsewhere in this Ordinance

1. See Section 7.2, "General Regulations," for rules applying to all SES, as well as Section 2.3.R., "Applications for Solar Energy Systems (SES)." Additionally, any regulation pertaining to SES in this chapter not explicitly noted as pertaining solely to CSES also pertains to Accessory Use SES.
2. Setbacks, building separation distances, and lot-coverage limitations established in Section 3 of this Ordinance, "Zoning Districts," apply to Accessory Use SES developed in any zoning district, as appropriate. Additionally, ground-mounted and pole-mounted SES shall not extend beyond the side-yard or rear-yard setback when oriented at minimum tilt design.

B. Site-specific Regulations

1. As appropriate to the site of the proposed installation, its zoning district, and its neighboring uses and distances therefrom, visual buffering in the form of evergreen landscaping and/or an earthen berm shall be installed, unless the neighboring resident/property owner waive this requirement, or the administrator waive any or all of these requirements based on the district and neighboring uses. Security measures to limit risks to health and welfare, including but not limited to fencing, shall be installed around the accessory-use SES to the administrator's satisfaction.
2. The panel surface and mounting devices for roof-mounted systems shall not extend beyond the exterior perimeter of the building on which the system is mounted or built unless the panel or mounting system has been engineered to extend beyond the edge safely and setback requirements are not violated.
3. SES shall be located in such a manner as reasonably to minimize view blockage and shading for surrounding properties while still providing adequate solar access for panels.

7.14 Safety, Design, and Installation Standards for SES

~~A. Flood Plains~~

1. ~~Rules and requirements pertaining to building or not building in a flood plain apply to the construction of an SES.~~

7.14.A B. Equipment Type and Industry Standards

1. Panels: All SES shall be constructed of commercially available equipment with a UL listing or approved equivalent.
2. ~~Experimental, or Proto-type Equipment: Experimental or proto-type equipment still in testing which does not fully comply with industry standards may be approved by the Board of Zoning Appeals per the variance process established by this Ordinance.~~
3. All SES shall conform to applicable industry standards, as well as all local, state and federal regulations. ~~An applicant shall submit certificate(s) of design compliance that the CSES manufacturer(s) has/have obtained from an accredited registrar/safety certification company/testing laboratory.~~ This is addressed in 7.1.E.1
4. ~~The manufacturer specifications for the key components of the SES shall be submitted with the application~~

5. ~~All SES shall be installed by a qualified solar installer.~~
6. ~~Preference is given to American-manufactured components for all CSES, but not required. MSDS for all equipment with evidence of the suitability of all proposed equipment with respect to environmental and public safety concerns and comparability to similar American products must be provided prior to the issuance of required local permits so as to show that all components meet appropriate government standards and requirements.~~

C. Perimeter buffer

- 7.14.B.1 1. All ground-mounted electrical and control equipment for CSES shall be surrounded by a fence no shorter than six (6) feet to prevent unauthorized access. Such fencing shall not include barbed wire but shall be permeable for wildlife passage and within guidelines of state and federal wildlife agencies. Alternative fencing can be used if the site is incorporating agrivoltaics and an agreement is made between the neighboring property owner(s) and the site developer and recorded at the Pulaski County Courthouse.
- 7.14.B.2 2. The solar array and/or modules shall be designed and installed to prevent access by the public, and access to same shall be through a locked gate.
- 7.14.B.3 3. The planting of evergreens, construction of an earthen berm, or both along the perimeter of the CSES shall be required on the outside of the perimeter fencing along road frontage and facing all occupied residential structures on non-participating properties within a half (1/2) mile of a CSES. Such planting of foliage screening, a property placed berm, or combination of both shall be of a sufficient height, density, and layout to screen the solar site immediately; i.e., planting trees young enough that the objectives of this ordinance cannot be met by the time the project is operational is not acceptable.
 - 7.14.B.3.a a. ~~Along property lines, this shall be left to the negotiation process between the developer/owner and the individual neighboring land owner.~~
 - 1) All property owners subject to the benefits of 7.14.C.3 retain the right to waive the planting requirements; such waiver shall be recorded at the Pulaski County Courthouse.
 - 7.14.B.3 b. ~~While evergreen trees are understood to be the default form of screening, topographical concerns, homeowner preference, developers' willingness to acced to requests made by homeowners or to County preferences, and the plan administrator's preference or approval may lead to alternative forms of visual screening, such as deciduous trees.~~
 - 1) ~~If an individual homeowner would prefer the use of deciduous trees, then the developer/owner would not be responsible for the presence of the solar site in the homeowner's viewshed during period of time in which said trees have shed their leaves.~~
 - 7.14.B.3.b 2) This alternative does not relieve the developer/owner of the obligation to replace any deciduous or evergreen trees that may lose their ability to grow as the result of disease, damage, or other harm for the life of the project.

D. Lighting

- 7.14.C.1 1. All lighting shall adhere to but not exceed any legal requirements established elsewhere and shall be limited to that required for safety, inspection/repair/maintenance, and operational purposes. Lighting may require shielding so that no glare extends substantially beyond any SES structure.

E. Warnings and Safety

1. "No Trespassing" signs shall be attached to any perimeter fence.
- 7.14.D.2 2. "Danger" and "High Voltage" signs shall be posted at the height of five (5) feet on [on/near arrays] and on accessory structures
3. At the locked entrance to the facility, the following shall be provided:
 - a. a sign showing the names and phone numbers of the electric utility provider, the site operator, and an emergency contact, as well as the facility's 911 address and GPS coordinates;
 - b. a lock box with keys.

F. Wind resistance

- 7.14.E.1 1. All solar panels shall be built to resist wind speeds of at least 112 miles per hour.

G. Electrical Components.

- 7.14.F.1 1. Standards: All electrical components of all SES shall conform to applicable local, state, national, and international codes and standards, including National Electrical Code (NEC) (NFPA-70), the American National Standards Institute (ANSI), the Underwriters Laboratories (UL), the American Society for Testing and Materials (ASTM), the Institute of Electric and Electronic Engineers (IEEE), the Solar Rating and Certification Corporation (SRCC), the Electrical Testing Laboratory (ETL), and other similar certifying organizations, the Federal Aviation Administration (FAA), the Indiana Building Code (IBC), and any other standards applicable to solar energy systems
- 7.14.F.2 2. Collection Cables: All electrical collection cables between and within each SES shall be located underground wherever possible.
- 7.14.F.3 3. Transmission Lines: All transmission lines that are buried should be at a depth consistent with or greater than local utility and telecommunication underground lines standards or as negotiated with the land owner or the land owner's designee until the same reach the property line or a substation adjacent to the property line.

H. Materials Handling, Storage and Disposal.

- 7.14.G.1 1. All solid wastes whether generated from supplies, equipment, energy storage, parts, packaging, operation or maintenance of the facility, including old parts and equipment related to the construction, operation and/or maintenance of any SES shall be removed from the site promptly and disposed of in accordance with all federal, state, and local laws.
- 7.14.G.2 2. All hazardous materials or waste related to the construction, operation and/or maintenance of any SES shall be handled, stored, transported, and disposed of in accordance with all applicable local, state and federal laws.

7.14.H I. Ground Cover

- 7.14.H.1 1. Ground area shall be covered with low-growing native perennials, with an emphasis on pollinators, and shall be established and maintained at the project site around and under solar panels and in buffer areas for the life of the CSES project. Consultation with (a) biologist(s) and/or other relevant experts approved by the administrator shall be part of the development process to ensure that plantings and tracker/panel layout at each solar-energy site accomplish the following:
- a. ~~minimize the "lake effect" impact on birds flying overhead to the greatest extent practicable as judged by a qualified professional;~~
 - b. ~~encourage nesting grassland birds;~~
 - c. ~~limit the number of times the property is mowed during the year to the fewest number of times reasonable as judged by a qualified professional;~~
 - 7.14.H.1.a d. induce frequenting of the site by bees for pollination;
 - 7.14.H.1.b e. in conjunction with required screening measures, ensure the property's appearance creates as little contrast as possible relative to nearby environs;
 - 7.14.H.4 f. control chemical and pesticide management; and
 - 7.14.H.1.c g. allow the property to be maintained free of invasive or noxious species, such as listed by the Indiana Department of Natural Resources (DNR).
2. The ground-cover guidelines of the UDO should not be construed as to limit or to discourage the dual use of any solar-energy site, when possible, for the purposes of allowing livestock grazing, apiaries, or other compatible, agricultural uses.
3. Plantings within the 75' setback to any ditch (150' for property-line ditches) shall comply with USDA Farm Services Agency guidelines for appropriate plantings for filter strips.

7.15 Other Applicable SES Standards

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A. Noise and Glare

1. Noise from a CSES shall not exceed 50 dBA measured from the nearest ~~property line~~. This restriction is not expected to be met during project construction of short-term periods of maintenance, including groundskeeping (such as mowing), except between 7:00 p.m. and 7:00 a.m. ~~Third-party study evidence of the project's ability to comply with this condition shall be provided prior to issuance of improvement-location and building permits.~~ This limit may be waived by any adjoining property owner in writing and recorded at the Pulaski County Courthouse. All other noise and vibration levels shall be in compliance with all state and federal regulations. All CSES shall be designed, and reflection angles oriented, to avoid concentrated and prolonged glare into abutting structures and roadways

B. ~~Water, Sewer, and Tile~~

see drainage agreement

~~1. ALL CSES facilities shall comply with the existing septic and well regulations as required by the Pulaski County Health Department and/or the State of Indiana Department of Health, and no CSES may be built over drainage tile unless arrangements for reconstruction/relocation have been made with the owner thereof.~~

C. Feeder lines and utility interconnections

7.15.B.1

1. To the ~~greatest~~ practical extent, all electrical wires and utility connections for CSES shall be installed underground, except for transformers, inverters, switchyards/substations, and controls. The Planning Director will take into consideration prohibitive cost and site limitations in making his or her determination. The CSES, if interconnected to a utility system, shall meet the requirements for interconnection and operate as prescribed by the applicable regulations of the electrical utility, as amended from time to time.

D. Signage

7.15.C.1

1. All signs, other than the manufacturer's or installer's identification, appropriate warning (including safety and trespassing) signs, or owner identification on a solar panel array and/or modules, building, or other structure associated with the CSES, shall be prohibited.
2. The following signage regulations and standards apply. In the event that one of the following regulations or standards conflicts with another sign regulation or standard prescribed by this ordinance, the most restrictive regulation or standard shall apply.

7.15.C.2.C

a. No sign shall exceed sixteen (16) square feet in surface area or eight (8) feet in height.
b. A sign not to exceed two (2) square feet in surface area may be placed upon any compartment containing the electrical equipment.
c. A sign may be located on each side of the total project area, provided that there are no more than four (4) such signs located on any one project site.

7.16.C.1

E. ~~Communications Disturbances~~

~~1. All SES shall be installed so as not to cause significant wire or wireless communication signal disturbance for such transmission to include, but not to be limited to, GPS, television, microwave, agricultural-GPS, military defense systems, and radio reception.~~

7.16 SES Operations and Maintenance

A. Physical Modifications.

7.16.A.1

1. In general, any physical modification to any SES that alters the major electrical components or mechanical movement of a panel/array shall require re-certification. Like-kind replacements shall not ~~require re-certification~~. Therefore, prior to making any physical modification, the owner or operator shall confer with the Building Department and Advisory Plan Commission to determine whether the physical modification requires re-certification.

B. Outdoor Storage

1. Only materials, vehicles, and equipment that directly support the operation of a CSES shall be allowed to be stored outdoors on the site.

C. Interference.

7.16.C

1. Operation of an SES shall minimize interference with public or public-serving utility microwave transmissions. If necessary, the applicant, owner and/or operator shall mitigate interference with electromagnetic communications, such as radio, telephone, microwaves, television, GPS, agricultural GPS, or military defense systems signals caused by any SES. In addition, the applicant, owner, and/or operator shall comply with the following:

FCC,
Dept
Of
Defense,
NTIA

- a. ~~Pre-Construction. The applicant shall complete a communications study prior to construction so as to minimize interference with any public or public-serving utility microwave transmissions.~~
- b. ~~Post-Construction. If, after construction of the SES, the owner or operator receives a written complaint related to interference with the broadcast of radio, telephone, microwave, television, GPS, agricultural GPS, or military defense systems transmissions, the owner or operator shall take reasonable steps to mitigate said interference. Interference with private telecommunications systems such as GPS shall be between the company and the complainant.~~
- c. ~~Failure to Remedy a Complaint. If an agreement to remedy a known interference is not reached within ninety (90) days, appropriate action will be taken, which may result in requiring the SES to become inactive. This does not apply to interference with private telecommunications systems as described above.~~

D. Declaration of Public Nuisance.

1. Any SES thereof declared to be unsafe by the Pulaski County Building Inspector by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, damage or abandonment is hereby declared to be a public nuisance and shall be abated by repair, rehabilitation, demolition or removal in accordance with the approved Decommissioning Plan.

7.17 Commercial SES Setbacks

Table 7.3 Minimum Setbacks

7.17
table
7.3

Distance from A...	Minimum Setback Distance
From any CSES component to an internal ditch	75'
From any CSES component to a non-participating/non-included property line or any right-of-way	150'
From an inverter or converter to a communications tower	1.1 times the total height of the tower

7.18 Commercial SES Pre-Construction Requirements

7.18.A

A. Prior to the issuance of any Building Permit, the following shall be submitted to and reviewed by the Building Inspector, who shall certify that the following are in compliance with all applicable regulations.

1. A decommissioning plan as prescribed in Section 7.4 of this Ordinance.
2. An Economic Development Agreement (EDA), a Drainage Agreement (DA), and a Road Use and Maintenance Agreement (RUMA) approved by the County Commissioners.

7.18.2.a

- a. The EDA shall be developed in conjunction with the Pulaski County economic-development director

as amended, the Pulaski County Board of Commissioners and County Council, and Pulaski County's attorney. The EDA shall address property-tax abatements offered as incentive for development; economic-development payments to be made to the County and its units, and the distribution thereof; and any other related issues deemed necessary. This agreement must be signed before any Building Permit is issued; the applicant may withhold building-permit payment and any payment guaranteed by the EDA until the Pulaski County Council has noticed and conducted a public hearing pertaining to tax-abatement incentives and adopted the resolutions required awarding such incentives.

7.18.A.2.b

b. The DA must prescribe or reference provisions to address well, crop, field-tile, County-maintenance-ditch, and culvert damages, as well as responsible storm-water management practices during construction and operation. The DA shall be developed in conjunction with the Pulaski County Drainage Board and the attorney therefor, the Pulaski County Surveyor, the Pulaski County Highway Department (County Highway) Superintendent, and Pulaski County's attorney. This agreement must be signed before any Building Permit is issued. The DA shall show evidence of compliance with storm-drainage, erosion, and sediment-control regulations (Rule 5).

7.18.A.2.c

c. The RUMA shall assure Pulaski County that a CSES developer shall to the greatest extent possible limit road closures and potential safety hazards to motorists, pedestrians, neighboring residents and land users, and laborers; to the greatest extent possible avoid disruption of power or other utility services to surrounding areas; abide by other parts of this ordinance pertaining to road-use and road-closure notification; to the greatest extent possible avoid any damage to County-maintained roads, rights-of-way, signage, and ditches; provide, prior to construction, adequate financial assurance to the County pertaining to the developer's/owner's ability to repair any damages done to County-maintained roads and rights-of-way; and repair, after construction completion, any and all damages done to County-maintained road, rights-of-way, signage, and ditches to the approval of the County Highway Superintendent and, if appropriate, Surveyor. The RUMA shall be developed in conjunction with the County Highway Superintendent, the County Surveyor, and Pulaski County's attorney.

7.18.A.2.b

~~3. An erosion control plan developed in consultation with the Natural Resources Conservation Services (NRCS), and any stormwater quality management plan adopted by the applicable jurisdiction.~~

7.19.A.2

2.3.R.2.a

7.18.A.5

~~4. A utility plan drawn to the same scale as the site plan illustrating the location of all underground and above-ground utility lines associated with the total CSES project.~~

7.18.A.5

5. Provide a copy of the Site Layout Plan illustrating the expected location of all that is required in the preliminary site layout plan, as approved by the landowner.

7.18.A.3

6. In addition to complying with the approved RUMA, an applicant, owner, or operator proposing to use any county road(s), for the purpose of transporting CSES or substation parts and/or equipment for construction, operation or maintenance of a CSES or substation, shall comply with the following pre-construction requirements.

7.18.A.3.a

a. Identification of Roads and Services. The CSES operator shall identify all State highways and local roads to be used in the transport of equipment and parts for construction of the CSES. It shall also prepare a timeline and phasing plan for construction and identify any known road closures. This information shall be released to the local newspapers as notice to persons who may be affected. This information shall also be conveyed to local law enforcement, emergency services, public school corporations, the United States Postal Service, the regional office of the Indiana Department of Transportation (INDOT), and County Highway. INDOT and County Highway may require alterations of the plan as they judge appropriate to limit obstruction of daily circulation patterns.

7.18.A.3.b

b. Pre-construction Survey. The applicant shall conduct a pre-construction baseline survey acceptable to the Highway Superintendent to determine existing road conditions for assessing potential future damage. The survey shall include photographs, or video, or a combination thereof, and a written agreement to document the condition of the public facility. The Highway Superintendent shall have 10 business days to respond to the base line survey.

- Compliance reference
7.1.E
- ~~7. Proof of correspondence and cooperation with wildlife/environmental agencies to include, but not limited to, DNR, IDEM, and NRCS.~~
- ~~8. (A) copy/ies of any communication study/ies providing evidence of compliance with state and federal agencies with jurisdiction requiring such studies.~~

7.19 Commercial SES Construction Requirements

A. During construction, the applicant shall demonstrate that the following requirements are being met.

- 7.1.9.A.1 1. Reasonable dust-, noise-, and lighting-control measures shall be required by the County during construction of a CSES.
- 7.19.A.2 2. Reasonable stormwater best-management practices as required by the approved Drainage Agreement.
3. During construction, roads shall remain open at all times except for periods of time less than twenty (20) minutes unless notice is provided as required herein. Expected loss of capacity (*i.e.*, temporary closures) greater than twenty (20) minutes shall require notice to neighboring and affected property owners at least twenty-four (24) hours prior to the temporary closure, and either a detour to be established or personnel to redirect traffic to alternate routes during the temporary closure unless closed for the day by County Highway. Any necessary temporary closures and proposed detours shall be made known to the County at least twenty-four (24) hours prior to the temporary closure or as otherwise agreed.
- OSHA
7.1.E ~~4. The developer/owner shall adhere to best practices regarding worker and public safety.~~
- ~~5. The developer/owner shall adhere to any and all federal, state, and local laws regarding construction, generally, and of utility infrastructure, specifically.~~

7.20 Commercial SES Post-Construction Requirements

A. Post-construction, the applicant shall comply with the following provisions.

1. Any road damage caused by the construction of project equipment, the installation of the same, or the removal of the same, shall be repaired pursuant to all expectations and requirements set forth in the RUMA.
2. Upon completion of all development, the exact measurements of the location of utilities and structures erected during the development are necessary for public record and shall therefore be recorded. The applicant, owner, or operator shall submit a copy of the Final Construction Plans (as-built plans), as amended, to the Building Inspector with the exact measurements thereon shown. The Building Inspector, after being satisfied that the measurements are substantially the same as indicated on the originally approved final plan(s), shall approve, date and sign said Construction Plans for the project, which the applicant, owner, or operator shall then record.
3. It is the responsibility of the owner or operator listed in the application to inform the Building Inspector/Plan Administrator of all changes in ownership and operation during the life of the project, including the sale or transfer of ownership or operation.
- 7.20.A.4 4. Maintenance Records. Annually, the CSES developer/owner shall provide to the Building Department, as amended, proof of required and periodic maintenance with proof of safe maintenance. If the Building Department does not receive required verification within 30 days of their requested notice, the Building Department may hire a qualified external inspector to perform CSES system inspections at the developer's/owner's expense.
- 7.20.A.5
Q-C.

