

COUNTY BOARD
LAKE COUNTY, ILLINOIS

MAY 9, 2023

CHAIR AND MEMBERS OF THE COUNTY BOARD:

Pursuant to State Statutes and following proper publication of public notice, a public hearing has been held by the Lake County Zoning Board of Appeals on April 3, 2023 relative to a Resolution adopted by the Lake County Board on March 14, 2023, directing the Lake County Zoning Board of Appeals to conduct a public hearing to consider certain amendments to the text of Chapter 151 of the Lake County, Illinois Code of Ordinances.


The proceedings of this public hearing were electronically recorded and are available for public review at the office of the Lake County Zoning Board of Appeals.

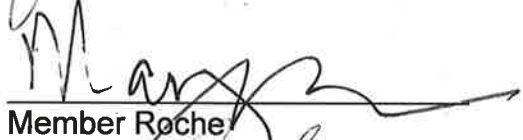
At the close of the hearing held on April 3, 2023, after a final review of all evidence and testimony presented on this matter, a motion was made by Member Starkey, and seconded by Member Bell to recommend that the amendments attached hereto as Exhibit A be adopted. Voting "Aye" on this motion were Members Starkey, Bell, Roche, Henderson, and Chair Koeppen. Voting "Nay", none. The motion passed by a vote of 5-0.

At the direction of the Chair of the Lake County Zoning Board of Appeals, this report is herewith forwarded to your Honorable Body with the recommendation it be adopted.


Chair


Member Bell


Member Henderson


Member Roche


Member Starkey

Dated this 19th day of April, 2023.

Exhibit A: Amendments to Chapter 151 of the Lake County, Illinois Code of Ordinances

Underline and ~~Strikethrough~~ = staff recommendations

Underline and ~~Strikethrough~~ = ZBA recommendations

I. Solar Facilities

Amendment #1

Amend Section 151.050(E)(2) to read as follows:

(c) *County Board review and action.* After receiving the required recommendations, the County Board shall review the application and act to approve, approve with conditions, or deny the application based on the conditional use approval criteria of subsection (F).

COMMENTARY: Public hearings for commercial solar energy systems and commercial wind energy systems must be held not more than 45 days after the filing of the application for the facility. Counties must make siting and permitting decisions not more than 30 days after the conclusion of the public hearing.

Amendment #2

Amend Section 151.050(F)(3) to read as follows:

(3) The proposed use in its proposed location will not have a substantial adverse impact on any of the following, either as they exist at the time of application or as they may be developed in the future due to implementation of the Regional Framework Plan:

- (a) Adjacent property;
- (b) The character of the neighborhood;
- (c) Natural resources;
- (d) Infrastructure;
- (e) Public sites; or
- (f) Any other matters affecting the public health, safety, or general welfare.

COMMENTARY: Conditional use permit applications for commercial solar energy systems and commercial wind energy systems shall be approved if found to be in compliance with the requirements of Sections 151.112 (WW) and 151.112 (CCC).

Amendment #3

Amend Section 151.070(A)(2)(i) to read as follows:

§ 151.070 SITE CAPACITY CALCULATIONS/SITE PLAN REVIEW PROCEDURES.

This section sets out the procedures for site capacity calculations and site plan review. No site development permit or building permit shall be issued for a development that is subject to the site capacity calculation and site plan review procedures of this section until the Planning, Building and Development Director has approved the application.

(A) *Applicability.*

(1) All of the following shall be subject to the site capacity calculation and site plan review procedures of this section unless otherwise expressly exempted:

- (a) Any conservation development;
 - (b) Any mobile home park and any recreational vehicle park;
 - (c) Any conventional residential development consisting of three or more dwelling units or lots;
 - (d) Any nonresidential development on any parcel that is 40,000 square feet in area or larger; and
 - (e) Any site development activity on any parcel with an area of 200,000 square feet or more, except when the parcel is being developed with no more than two single family dwellings.
- (2) All of the following shall be subject to the site plan review procedures of this section regardless of the size of the subject parcel, unless otherwise expressly exempted:
- (a) Service stations;
 - (b) Any nonresidential use with drive-through service;
 - (c) Convenience stores;
 - (d) Car washes;
 - (e) Motor vehicle display, sales, rental, or service;
 - (f) Shopping centers;
 - (g) Taverns;
 - (h) Marinas; and
 - (i) ~~Medium and large-scale~~ Commercial, accessory large-scale, and accessory medium-scale solar energy systems.

Amendment #4

Amend Section 151.112/Use Table to read as follows:

		Residential												Nonresidential									
Use Category	Use Types	AG	RE	E	R1	R2	R3	R4	R4a	R5	R6	RR	GO	LC	RC	GC	LI	II	OS	Use Standard	CUP Decision		
Solar Energy Systems	Solar Energy System, Commercial	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	§151.112(WW)	ZBA		
	Solar Energy System, Accessory Large-Scale ⁸	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	P	P	C	§151.112(WW) §151.113(U)	ZBA		
	Solar Energy System, Accessory Medium - Scale ⁸	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	P	P	C	§151.112(WW) §151.113(U)	ZBA		
	Solar Energy System, Accessory Small - Scale ^{8,9}	C	C	C	C	C	C	C	C	C	C	C	C	P	P	P	P	P	P	§151.112(WW) §151.113(U)	ZBA		

⁸ Accessory use ground-mounted solar energy systems of all sizes (small, medium, or large) shall be permitted in all zoning districts for those institutional, commercial, or industrial uses with campuses comprised of 5 acres or more.

⁹ ~~Accessory small-scale solar energy systems that meet the exceptions of Section 151.113 (U)(1)(d)1 shall not require a conditional use permit. Small-scale energy systems are permitted as an accessory use in all residential zoning districts.~~

Amendment #5

Amend Section 151.112/Use Standards to read as follows:

(WW) ~~Commercial~~ Solar energy systems. ~~Medium and large-scale Commercial~~ solar energy systems ~~are permitted as a principal use in the LI and II districts and~~ shall require a conditional use permit in all other zoning districts. ~~Small-scale solar energy systems are permitted as a principal use in all nonresidential zoning districts and require a conditional use permit in all residential zoning districts.~~ ~~Except as expressly provided for in this section, the~~ The following standards shall apply to all ~~principal use-commercial~~ solar energy systems:

(1) *Approval.* ~~Medium and large-scale Commercial~~ solar energy systems in all zoning districts shall be subject to the site capacity calculation/site plan review procedures of § 151.070. Site capacity/site plan review shall be conducted concurrently with ~~any required the~~ conditional use permit review.

(2) *Fencing.* ~~Medium and large-scale Commercial~~ solar energy systems shall be enclosed with an approved fence that restricts access to the public. Such fencing shall, at a minimum, encompass the entire system's facility, contain a locking mechanism, and be subject to the fence regulations of § 151.113(L)(1).

(3) *Height.* The total height of the panels shall not exceed ~~45~~20 feet, as measured from grade to the highest point of the solar arrays when the solar energy facility's arrays are at full tilt.

(4) *Lot coverage.* Ground-mounted solar panels are not subject to impervious surface ratio (ISR) calculations of §§ 151.125, 151.233(C)(1)(e), and 151.233(C)(2)(f).

(5) *Site development permits.* A site development permit may be required, per regulations set forth in § 151.145(B), depending on proposed foundation, footings, and/or site disturbance.

(6) *Location and setbacks.* ~~Principal-use Commercial~~ solar energy systems must meet the setback requirements for a principal structure in the underlying zoning district.

(a) The setback requirements may be waived by the written consent of the owner(s) of each affected nonparticipating property. The Applicant does not need to obtain a variance from the County upon waiver by the property owner of any of the above setback requirements. Any waiver agreement of the above setback requirements shall be in the form of a covenant or deed restriction and require approval from the Director of Planning, Building and Development. Once approved, the agreement shall be recorded with the Recording Division of the Lake County Clerk's Office and shall run with the land.

(7) *Concentrated solar technology.* No solar energy system may utilize concentrated solar thermal technology in any zoning district.

Amendment #6

Amend Section 151.113/Accessory Uses to read as follows:

1) *Fences and walls.* Fences and walls shall be permitted in any required setback (except within required visibility triangles, see § 151.172). The finished/ornamental side of the fence shall face outward; however, this requirement may be waived by the Planning, Building and Development Director if it is determined no practical benefit is served based upon an assessment of site conditions. The maximum height of walls and fences shall be six feet, or six feet six inches when the fence is required to be elevated due to the drainage requirement. In instances when greater height is deemed necessary to provide adequate visual screening, buffering and security, the Planning, Building and Development Director shall be authorized to allow a maximum fence or wall height of eight feet. However, an eight-foot high fence or a wall may be allowed separating residential and nonresidential uses without the Planning, Building and Development Director's authorization. The finished/ornamental side of the fence shall face

outward. Fences for tennis courts, volleyball courts, or similar recreational purposes located at or beyond all required setback lines shall not exceed the maximum height provided in subsection (C)(1). If a recreational fence is greater than six feet in height, it shall be a minimum of 90% open. The maximum height of fences surrounding commercial solar energy systems shall be eight feet. Fences and walls shall be permitted in any required setback (except within required intersection, visibility triangles, see § 151.172, or within designated open space areas, unless otherwise permitted pursuant to § 151.072(A)(1).

Amendment #7

Amend Section 151.113/Accessory Uses to read as follows:

(U) *Accessory solar energy systems.*

(1) *Types.*

(a) *Roof-mounted.* Building-mounted solar energy systems may be mounted on accessory or principal structures in all zoning districts. All applicable accessory or principal structure requirements apply to building-mounted solar energy systems.

(b) *Building-integrated.* Building-integrated solar energy systems may be integrated into accessory or principal structures in all zoning districts. Solar energy systems that are integrated into any structure shall be regulated as architectural features, including applicability of setback exceptions of § 151.131(C)(3)(l).

(c) *Ground-mounted.* Ground-mounted solar energy systems ~~which meet the definition of an accessory structure~~ that meet the definitions of accessory solar energy systems as defined in § 151.271 shall be ~~permitted as an accessory use based on the underlying zoning district~~ regulated as follows:

1. *Residential districts.* ~~Small-scale solar energy systems are permitted as an accessory use in all residential zoning districts. Accessory use medium and large-scale solar energy systems shall require a conditional use permit in all residential zoning districts.~~ Accessory use medium and large-scale solar energy systems shall require a conditional use permit in all residential zoning districts. Accessory use small-scale solar energy systems in all residential zoning districts shall require a conditional use permit unless exempted as follows:

a. Accessory small-scale solar energy systems that are accessory to a nonresidential use shall be permitted by right.

b. Accessory small-scale solar energy systems that are accessory to a residential use that do not exceed 5% of the net buildable area of a lot, or 500 square feet, whichever is less, shall be permitted by right.

2. *Nonresidential districts.* Small-scale solar energy systems are permitted as an accessory use in all nonresidential districts. Medium- and large-scale solar energy systems are permitted by right as an accessory use in the II and LI zoning districts and shall require a conditional use permit in all other nonresidential zoning districts.

3. *Campus settings.* Accessory use ground-mounted solar energy systems of all sizes (small, medium, or large) shall be permitted by right in all zoning districts for those institutional, commercial, or industrial uses with campuses comprised of five acres or more.

(2) *Approval.* Accessory use medium- and large-scale solar energy systems in all zoning districts shall be subject to the site capacity calculation/site plan review procedures of § 151.070. Site capacity/site plan review shall be conducted concurrently with any required conditional use permit review.

(3) *Street setbacks.* Accessory use ground-mounted solar energy systems located in residential zoning districts shall not be located between the principal building and any road right-of-way. In the case of an unimproved right-of-way, this provision may be modified by the Planning, Building and Development Department Director in consultation with the appropriate local roadway authority.

(4) *Location.* Accessory use ground-mounted solar energy systems must meet the setback requirements for an accessory structure in the underlying zoning district.

(5) *Height.*

(a) Residential. The total height of any ground-mounted solar energy system accessory to a residential use shall not exceed ten feet, as measured from grade to the highest point of the solar arrays. In instances when greater height is deemed necessary to allow for maximum efficiency of the solar energy system, or when necessary to address site constraints such as topography, the Planning Director shall be authorized to allow a maximum height of 15 feet.

(b) Nonresidential. The total height of any ground-mounted solar energy system accessory to a nonresidential use shall not exceed fifteen feet, as measured from grade to the highest point of the solar arrays.

(6) *Lot coverage.* Ground-mounted solar panels are not subject to impervious surface ratio (ISR) calculations of §§ 151.125, 151.233(C)(1)(e), and 151.233(C)(2)(f).

(7) *Site development permits.* A site development permit may be required, per regulations set forth in § 151.145(B), depending on proposed foundation, footings, and/or site disturbance.

(8) ~~*Maximum Area.*~~

~~—(a) Residential. Accessory use ground-mounted solar energy systems accessory to residential uses located in residential zoning districts shall not exceed 5% of the net buildable area of a lot, or 500 square feet, whichever is less.~~

~~—(b) Nonresidential. There shall be no limit to the area or number solar panels in relation to a nonresidential development for those uses which meet the definition of accessory structure as defined in § 151.271~~

~~—(9) Concentrated solar technology.~~ No solar energy system may utilize concentrated solar thermal technology in any zoning district.

Amendment #8

Amend TABLE 151.167 (G) to read as follows:

<i>Table 151.167(G): Perimeter Transition Landscape Requirements (Plant Units Per 100 Linear Feet, Based on a 30-foot Transition Area)</i>													
<i>Proposed Developing Site</i>	<i>Existing Site</i>												
	<i>Residential</i>			<i>Nonresidential</i>							<i>Vacant</i>		
	<i>Class 1</i>	<i>Class 2</i>	<i>Class 3</i>	<i>GO</i>	<i>LC</i>	<i>RC</i>	<i>GC</i>	<i>LI</i>	<i>II</i>	<i>OS</i>	<i>Vac. Res.</i>	<i>Vac. Non-Res.</i>	<i>AG</i>
Class 1	-									A*	-	2	2
Class 2	2	-								A*	-	2	2
Class 3	3	2	-							A*	-	2	2
GO	3+B or D	3+B or D	3+B or D	-						A	3	-	2
LC	3+B or D	3+B or D	3+B or D	1	-					A	3	-	2
RC	3+B or D	3+B or D	3+B or D	1	1	-				A	3	-	2
GC	3+B or D	3+B or D	3+B or D	2	1	1	-			2A	3	-	2
LI	3+C or E	3+C or E	3+C or E	2	2	2	2	-		2A	3	-	3
II	3+C or E	3+C or E	3+C or E	2	2	2	2	1	-	2A	3	-	3
OS	-	-	-	-	-	-	-	-	-	-	-	-	-
Notes:													
Nonresidential uses allowed in the Agricultural and Residential Districts shall be subject to the transition landscape requirements of the LC Zoning District.													
Class 1 = Detached house, village house or lot line house													
Class 2 = Duplex, patio house, atrium house, twinhouse, multiplex, townhouse													
Class 3 = Multi-dwelling													
A = Split rail fence or other fence not to exceed 10% opacity													
B = Fence (minimum 95% opacity), 6-foot minimum height													
C = Wood fence (minimum 95% opacity), 8-foot minimum height with concrete footings													
D = Earthen berm, 3-foot minimum height; not required for commercial solar or wind facilities.													
E = Earthen berm, 5-foot minimum height; not required for commercial solar or wind facilities.													
Plant units: one plant unit is comprised of all of the following: 1 canopy tree; 2 understory trees; 2 evergreen trees; and 7 shrubs.													
* Fence permitted at the property line and no transition yard required, provided that no parking lot, active recreational area, or other structure is currently located within 30 feet of the adjoining property line on the OS-Zoned parcel.													

Amendment #9

Amend Section 151.259/Violations, Penalties, and Enforcement to read as follows:

§ 151.259 SOLAR ENERGY SYSTEMS, [ACCESSORY](#).

(A) *General.* The provisions in this section are in addition to the general violation, penalties, and enforcement provisions of this subchapter. Lake County shall retain authority to enforce the height and setbacks for solar energy systems in ~~§§ 151.112(UU) and 151.113(U)~~, and additional requirements and standards for solar energy systems as identified in Appendix ~~R~~[T](#).

(1) *Decommissioning plan and assurances.*

(a) Prior to permit issuance, the operator shall prepare a decommissioning plan which shows the final site conditions after a ~~principal-use~~ [accessory](#) medium/large scale ground-mounted solar energy

system has been removed from the property. Decommissioning shall include the removal of all elements listed in § 121.259(A)(2)(a) below. Access roads, fencing, groundcover, and landscaping may remain only if it can be shown to be compatible with the future use of the property.

(b) Prior to permit issuance, the operator shall submit an engineer's estimate of probable cost for decommissioning the ~~principal-use~~ accessory medium/large scale ground-mounted solar energy system and restoring the site in accordance with the approved decommissioning plan. Upon review and approval of the estimate by the Planning Director, the operator shall obtain a bond, letter of credit, or other form of surety that meets the requirements of § 151.203(A) in the amount of 130% of the engineer's estimate.

(2) *Removal requirements.*

(a) Any ground-mounted solar energy system which has reached the end of its useful life or has been abandoned shall be removed. The owner or operator shall physically remove the installation no more than 150 days after the date of discontinued operations. The owner or operator shall notify the county by certified mail of the proposed date of discontinued operations and plans for removal. Decommissioning shall consist of:

1. Physical removal of all solar energy systems, structures, equipment, security barriers and electrical wiring lines from the site; and
2. Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations; and
3. Stabilization or re-vegetation of the site as necessary to minimize erosion. The county may allow the owner or operator to leave landscaping or designated below-grade foundations or electrical wiring in order to minimize erosion and disruption to vegetation.

(b) Absent notice of a proposed date of decommissioning or written notice of extenuating circumstances, an ~~principal-use~~ accessory use medium/large scale ground-mounted solar energy system shall be considered abandoned when it fails to operate for more than one year without the written consent of the county. If the owner or operator of the solar energy system fails to remove the installation in accordance with the requirements of this section within 150 days of abandonment or the proposed date of decommissioning, the county may seek a court order to require the property owner to remove an abandoned, hazardous, or decommissioned ground-mounted solar energy system. The county also retains the right, after the receipt of an appropriate court order, to enter and remove the ground-mounted solar energy system and lien the property for such costs. As a condition of site plan and/or special/conditional use permit approval, the applicant and landowner shall agree to allow entry to remove an abandoned or decommissioned installation.

Amendment #10

Create Section 151.260/ Violations, Penalties, and Enforcement to read as follows:

§ 151.260 SOLAR ENERGY SYSTEMS, COMMERCIAL

(A) General. The provisions in this section are in addition to the general violation, penalties, and enforcement provisions of this subchapter. Lake County shall retain authority to enforce the height and setbacks for solar energy systems in §§ 151.112(WW) and additional requirements and standards for solar energy systems as identified in Appendix T.

(1) Decommissioning plan and assurances.

(a) Applicant (or owner, if different from applicant) must submit a decommissioning plan with cost estimation to the County as part of the siting application and provide testimony supporting the calculation of costs provided in said plan during the public hearing on the application. Prior to receiving any building permit for the commercial solar energy facility, the applicant or owner shall provide a decommissioning agreement and post the required financial assurances for the benefit of the County. Periodically, and as required by the Agricultural Impact Mitigation Agreement, the owner must update the decommissioning plan, cost estimations, and provide updated financial assurances to the benefit of the County.

COMMENTARY: The Decommissioning Agreement and financial assurances shall comply with 55 ILCS 5/5-12020 and the Agricultural Impact Mitigation Agreement.

(2) Removal requirements.

(a) Any ground-mounted solar energy system which has reached the end of its useful life or has been abandoned shall be removed. The owner or operator shall physically remove the installation no more than 150 days after the date of discontinued operations. The owner or operator shall notify the county by certified mail of the proposed date of discontinued operations and plans for removal. Decommissioning shall consist of:

1. Physical removal of all solar energy systems, structures, equipment, security barriers and electrical wiring lines from the site; and

2. Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations; and

3. Stabilization or re-vegetation of the site as necessary to minimize erosion. The county may allow the owner or operator to leave landscaping in order to minimize erosion and disruption to vegetation.

(b) Absent notice of a proposed date of decommissioning or written notice of extenuating circumstances, a commercial ground-mounted solar energy system shall be considered abandoned when it fails to operate for more than one year without the written consent of the county. If the owner or operator of the solar energy system fails to remove the installation in accordance with the requirements of this section within 150 days of abandonment or the proposed date of decommissioning, the county may seek a court order to require the property owner to remove an abandoned, hazardous, or decommissioned ground-mounted solar energy system. The county also retains the right, after the receipt of an appropriate court order, to enter and remove the ground-mounted solar energy system and lien the property for such costs. As a condition of site plan and/or special/conditional use permit approval, the applicant and landowner shall agree to allow entry to remove an abandoned or decommissioned installation.

Amendment #11

Amend Section 151.271/Terms Defined to read as follows:

NONPARTICIPATING RESIDENCE. A residence that is located on nonparticipating property and that is existing and occupied on the date that an application for a conditional use permit application to develop the commercial solar energy system is filed with the County.

OCCUPIED COMMUNITY BUILDING. Any one or more of the following buildings that is existing and occupied on the date that the application for a conditional use permit to develop the commercial solar energy system is filed with the County: a school, place of worship, day care facility, public library, or community center.

PARTICIPATING RESIDENCE. A residence that is located on participating property and that is existing and occupied on the date that a conditional use permit for a building permit to develop the commercial solar energy system is filed with the County.

SOLAR ENERGY SYSTEM, COMMERCIAL. A ground-mounted solar energy system for the primary purpose of wholesale or retail sale and not primarily for consumption on the property.

SOLAR ENERGY SYSTEM, ACCESSORY LARGE-SCALE. A ground-mounted solar energy system that occupies at least 40,000 square feet of surface area and whose power generation is primarily for consumption on the property~~(equivalent to a rated nameplate capacity of about 250kW DC or greater).~~ An

accessory large-scale solar energy system is considered accessory regardless of its size in relation to the principal use and/or buildings on the property.

SOLAR ENERGY SYSTEM, ACCESSORY MEDIUM-SCALE. A ground-mounted solar energy system that occupies more than 1,750 square feet but less than 40,000 square feet of surface area and whose power generated is primarily for consumption on the property ~~(equivalent to a rated nameplate capacity of about 10 to 250 kW DC)~~. An accessory large-scale solar energy system is considered accessory regardless of its size in relation to the principal use and/or buildings on the property.

SOLAR ENERGY SYSTEM, ACCESSORY SMALL-SCALE. A ground-mounted solar energy system that occupies 1,750 square feet of surface area or less and whose power generation is primarily for consumption on the property ~~(equivalent to a rated nameplate capacity of about 10 kW DC or less)~~. An accessory large-scale solar energy system is considered accessory regardless of its size in relation to the principal use and/or buildings on the property.

Amendment #12

Amend Appendix T: Solar Energy Systems to read as follows:

§ 1.0 APPLICATION REQUIREMENTS FOR SOLAR ENERGY SYSTEMS

See § 151.112(WWUU) Solar Energy Systems and § 151.113(U) Accessory Solar Energy Systems for information on height, setbacks and lot coverage requirements. See §§ 151.250 through ~~151.259~~ 151.260 for violations, penalties and enforcement. Other local and state regulations shall apply.

A. Project proposal.

- 1) Owner name, address, and phone number.
- 2) Photos of existing site conditions for proposed facility
- 3) Project summary including the manufacturer information, number of proposed solar modules, and proposed height of the solar arrays.

B. Site plan (drawn to scale).

- 1) Existing and proposed contours, at a minimum of two-foot intervals.
- 2) Location, setbacks, exterior dimensions, and square footage of all structures on the owner's property and abutting properties within 100 feet.
- 3) Location and size of existing waterways, wetlands, 100-year floodplain, sanitary sewers, field drain tiles, storm sewer systems, and water distribution systems.
- 4) Location of any overhead or underground power lines and utility easements. All power lines used to collect power and all communication lines shall be buried underground at a depth in accordance with the Agricultural Impact Mitigation Agreement and the current adoption of the NFPA 70 National Electrical Code, whichever is more restrictive, until same reach the property line or a substation adjacent to the property line.

C. Waivers.

- 1) All setback or landscape transition yard waiver agreements shall be submitted with the application for the solar energy system.
- 2) Any setback or landscape transition waiver agreement between the property owner and adjacent property owner shall be recorded against the impacted properties with the Lake County Recorder of Deeds Recording Division of the Lake County Clerk's Office.

D. Engineering plans, drawings, and schematics.

1) Manufacturer's specifications of the solar modules, foundation, and detailed drawing of electrical components and installation details.

2) All electrical wire and lines connecting modules and any related structures.

E. *Utility connection.*

1) Developers of ~~principal-use~~ commercial and accessory medium and large-scale solar energy systems connected to the utility grid must provide written authorization from the local utility company acknowledging and approving such connection prior to building permit issuance.

F. *Native plantings.*

1) In order to prevent erosion, manage run-off, and provide ecological benefit, [commercial and accessory](#) medium and large-scale ground-mounted solar energy systems shall be planted with "low-profile" native prairie species, and use a mix appropriate for this region and site-specific soil conditions.

COMMENTARY: Pollinator Friendly Solar Site Act, 525 ILCS 55/1, establishes a scorecard for solar site vegetation that provides foraging habitat for game birds, songbirds, and pollinators, and prevents weeds, reduces storm water runoff, and erosion.

G. *Signage.*

1) Signs on ground-mounted solar energy systems shall comply with the signage requirements of the underlying zoning district. A sign consistent with the standards of § [151.173](#) shall be required to identify the owner and provide a 24-hour emergency contact phone number.

H. *Lighting.*

1) Lighting of ground-mounted solar energy systems shall be consistent with § [151.168](#). Lighting of other parts of the installation, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties. Where feasible, lighting of the solar energy system shall be directed downward and shall incorporate full cut-off fixtures to reduce light pollution.

I. *Agriculture Impact Mitigation Agreement.*

1) For commercial solar energy system projects, applicants shall provide an Agricultural Impact Mitigation Agreement (AIMA) executed between the applicant and the Illinois Department of Agriculture.

J. *Natural Resource Protection.*

1) For commercial and large-scale solar energy system projects, applicants shall provide a copy of the consultation application to the Illinois Department of Natural Resources pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/11) and the Illinois Natural Areas Preservation Act (525 ILCS 30/17).

II. Wind Facilities

Amendment #1

Amend Section 151.111 USE TABLE to read as follows:

		Residential												Nonresidential								
Use Category	Use Types	AG	RE	E	R1	R2	R3	R4	R4a	R5	R6	RR	GO	LC	RC	GC	LI	II	OS	Use Standard	CUP Decision	
Wind Energy Facility	Accessory Building Mounted	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	\$151.113(P)	Co-Bd	
	Accessory Tower Mounted	C ³	C ³	C ³	C ³	C ³	C ³	C ³	C ³	C ³	C ³	C ³	P	P	P	P	P	P	P	\$151.113(P)	ZBA	
	Commercial	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>\$151.112(CCC)</u>	Co Bd	

³ However, tower-mounted wind energy facilities on residentially used or zoned parcels shall be permitted by right up to the height of: a) 45 feet on parcels less than 40,000 square feet, b) 75 feet on parcels 40,000 to 200,000 square feet, and c) 100 feet on parcels greater than 200,000 square feet.

Amendment #2

Create Section 151.112 (CCC) Use Standards for Wind Energy Systems, Commercial to read as follows:

(CCC) Wind energy systems, Commercial. Commercial wind energy systems shall require a conditional use permit in all zoning districts. Except as expressly provided for in this section, the following standards shall apply to all principal use commercial wind energy systems:

- (1) Approval. Commercial wind energy systems (WECS) in all zoning districts shall be subject to the site capacity calculation/site plan review procedures of § 151.070. Site capacity/site plan review shall be conducted concurrently with any required conditional use permit review.
- (2) Fencing. All WECS towers must be unclimbable by design or protected by anti-climbing devices such as:
 - a. Fences with locking portals at least six (6) feet high; or
 - b. Anti-climbing devices twelve (12) feet vertically from the base of the WECS Tower.
- (3) Height. Height is measured as the distance from the rotor blade at its highest point to the top surface of the WECS foundation.

Commentary: The turbine height may not exceed FAA height limits under 14 CFR Part 77 pursuant to a Determination of No Hazard to Air Navigation.

- (4) Site development permits. A site development permit may be required, per regulations set forth in § 151.145(B), depending on proposed foundation, footings, and/or site disturbance.
- (5) Location and setbacks. WECS Towers shall be sited as follows, with setback distances measured from the center of the base of the WECS Tower;
 - a. Occupied Community Buildings: 2.1 times the maximum blade tip height of the WECS Tower to the nearest point on the outside wall of the structure.
 - b. Participating Residences: 1.1 times the maximum blade tip height of the WECS Tower to the nearest point on the outside wall of the structure;
 - c. Nonparticipating Residences: 2.1 times the maximum blade tip height of the WECS Tower to the nearest point on the outside wall of the structure;

- d. Boundary Lines of Participating Property: No setback required.
 - e. Boundary Lines of Nonparticipating Property: 1.1 times the maximum blade tip height of the WECS Tower to the nearest point on the property line of the nonparticipating property.
 - f. Public Road Rights-of-Way: 1.1 times the maximum blade tip height of the WECS Tower to the center point of the public road right-of-way.
 - g. Overhead Communication and Electric Transmission and Distribution Facilities (Not Including Overhead Utility Service Lines to Individual Houses or Outbuildings): 1.1 times the maximum blade tip height of the WECS Tower to the nearest edge of the property line, easement, or right of way containing the overhead line.
 - h. Overhead Utility Service Lines to Individual Houses or Outbuildings: No setback required.
 - i. Fish and Wildlife Areas and Illinois Nature Preserve Commission Protected Lands: 2.1 times the maximum blade tip height of the WECS Tower to the nearest point on the property line of the fish and wildlife area or protected land.
- (6) Operating requirements. The following are requirements for the operation of WECS. Additional requirements and standards for WECS shall apply as identified in Appendix Q. Provisions for violations, penalties and enforcement shall apply as identified under §§ 151.250 through 151.261.
- a. Sound level limitation for commercial wind energy facilities. Noise levels from each WECS or WECS Project shall be in compliance with applicable Illinois Pollution Control Board (IPCB) regulations. The Applicant shall submit manufacturer's wind turbine sound power level characteristics and other relevant data regarding wind turbine noise characteristics necessary for a competent noise analysis. The Applicant, through the use of a qualified professional, shall appropriately demonstrate compliance with the applicable noise requirements in its conditional use permit application. Any waiver of any of the above sound level requirements shall be set forth in a written waiver executed by the occupied community building owner(s) or non-participating residence owner(s) and be recorded with the Recording Division the Lake County Clerk's Office.
 - b. Shadow Flicker. The Applicant shall appropriately demonstrate through industry standard modeling that no occupied community building or non-participating residence will experience 30 hours or more per year of shadow flicker under planned operating conditions.
 - c. Sun glint. The facility's surface finish shall be flat or matte, so as to reduce incidence of sun glint.
 - d. Electronic Interference. Facilities shall not cause electromagnetic interference with communications systems. The determination of degradation of performance and of quality and proper design shall be made in accordance with good engineering practices as defined in the latest principles and standards of the American Institute of Electrical Engineers, the Institute of Radio Engineers or Electrical Industries Association.
- (7) Waivers. Wind energy facility requirements for setbacks, sound level limitations or shadow flicker may be waived by impacted occupied community building owner(s) or non-participating residence owner(s). The written waiver shall notify non-participating property owner(s) of the requirements established by this chapter and how the proposed wind energy facility is not in compliance. The Applicant does not need obtain a variance from the County upon waiver by the property owner of the setback requirement. The waiver shall be signed by the non-participating property owner(s) giving consent to exceed the limits for setback, sound level limitations, or shadow flicker on his or her property. Waivers shall be recorded with the Recording Division of the Lake County Clerk's Office against title to the affected real property.

(8) Signage.

- a. A reasonably visible warning sign concerning voltage shall be placed at the base of all pad-mounted transformers and substations, and at all entrances to Wind Towers.
- b. Visible, reflective, colored objects, such as flags, plastic sleeves, reflectors, or tape shall be placed on the anchor points of guy wires and along the guy wires up to a height of fifteen (15) feet from the ground.

Amendment #3

Amend Section 151.258/Wind Energy Facilities to read as follows:

§ 151.258 WIND ENERGY FACILITIES, ACCESSORY.

- (A) *General.* The provisions in this section are in addition to the general violation, penalties and enforcement provisions of this subchapter. Lake County shall retain authority to enforce the height and setbacks and operating requirements for accessory wind facilities in § 151.113(P), and additional requirements and standards for wind energy facilities as identified in Appendix Q.
- (B) *Violation, cessation and remedy.*
 - (1) Should an accessory wind energy facility, or should any part of (the facility, violate the Operating Requirements of this section, or become inoperable, the owner shall cease operations immediately.
 - (2) Upon receipt of a complaint or the notice of a complaint from the owner, the Director of Planning, Building and Development shall make a determination as to whether there is a violation of the permit or Operating Requirements requiring immediate cessation of operation.
 - (3) Once violations have been remedied, as determined by the Director of Planning, Building and Development, the facility may resume operations.
- (C) *Finding of default and abandonment.*
 - (1) The owner must remedy any condition in which the accessory wind energy facility has become inoperable, or otherwise violated the operating requirements defined under § 151.113(P) for accessory wind energy facilities within 180 days of the issue date on written notice from Lake County or be considered to be in default and the facility considered to be abandoned.
 - (2) The Planning, Building and Development Director may authorize an extension based on extenuating circumstances. All requests for extension must be made in writing, prior to the expiration of the 180-day remedy period, and provide the basis for the request and the amount of additional time requested.
- (D) *Decommissioning of wind facilities.* If an accessory wind energy facility is not completely removed within 90 days of the finding of abandonment, Lake County may remove all facility components at the owner's expense. In the case of such removal, Lake County has the right to file a lien for reimbursement, for any and all expenses incurred by Lake County without limitation, including attorney fees and accrued interest.

Amendment #4

Create Section 151.261/ Violations, Penalties, and Enforcement to read as follows:

§ 151.258 WIND ENERGY FACILITIES, COMMERCIAL.

- (A) General. The provisions in this section are in addition to the general violation, penalties and enforcement provisions of this subchapter. Lake County shall retain authority to enforce the height

and setbacks and operating requirements for commercial wind facilities in § 151.112 (CCC), and additional requirements and standards for wind energy facilities as identified in Appendix Q.

(B) *Violation, cessation and remedy.*

(1) Should a commercial wind energy facility, or should any part of (the facility, violate the operating requirements of this section, or become inoperable, the owner shall cease operations immediately.

(2) Upon receipt of a complaint or the notice of a complaint from the owner, the Director of Planning, Building and Development shall make a determination as to whether there is a violation of the permit or operating requirements requiring immediate cessation of operation.

(3) Once violations have been remedied, as determined by the Director of Planning, Building and Development, the facility may resume operations.

(C) *Finding of default and abandonment.*

(1) The owner must remedy any condition in which the commercial wind energy facility has become inoperable, or otherwise violated the operating requirements defined under § 151.112 (CCC) for commercial wind energy facilities within 180 days of the issue date on written notice from Lake County or be considered to be in default and the facility considered to be abandoned.

(2) The Planning, Building and Development Director may authorize an extension based on extenuating circumstances. All requests for extension must be made in writing, prior to the expiration of the 180-day remedy period and provide the basis for the request and the amount of additional time requested.

(D) *Decommissioning of wind facilities.* Applicant (or owner, if different from applicant) must submit a Decommissioning Plan with cost estimation to the County as part of the siting application and provide testimony supporting the calculation of costs provided in said plan during the public hearing on the application. Prior to receiving any building permit for the commercial wind energy facility, the applicant or owner shall provide a Decommissioning Agreement and post the required financial assurances for the benefit of the County. Periodically, and as required by the Agricultural Impact Mitigation Agreement, the owner must update the Decommissioning Plan, cost estimations and provide updated financial assurances to the benefit of the County.

COMMENTARY: The Decommissioning Agreement and Financial Assurances shall comply with 55 ILCS 5/5-12020 and the AIMA.
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Amendment #5

Amend Section 151.271/Terms Defined to read as follows:

WIND ENERGY FACILITY, COMMERCIAL. A wind energy conversion facility of equal or greater than 500 kilowatts in total nameplate generating capacity. Also referred to as “Wind Energy Conversion System” or “WECS” or “WECS Project”.

WIND ENERGY FACILITY, ACCESSORY. A wind energy conversion facility less than 500 kilowatts in total nameplate generating capacity. Can be either building mounted or tower mounted.

SUPPORTING FACILITIES. The transmission lines, substations, access roads, meteorological towers, storage containers, and equipment associated with the generation and storage of electricity by the WECS.

TOWER. A tall structure, mounted in the ground, on which a wind turbine, nacelle and blades are is mounted. Also referred to as “Wind Tower” or “WECS Tower”.

TURBINE. The parts of a wind energy facility including the blades, nacelle and tail, or any piece of electrical generating equipment that converts the kinetic energy of moving wind into electrical energy through the use of airfoils or similar devices to capture the wind.

Amendment #6

Amend APPENDIX Q: Wind Energy Facilities as follows:

§ 1.0 APPLICATION REQUIREMENTS FOR WIND ENERGY FACILITIES.

See [§ 151.112 \(CCC\)](#) and § 151.113(P) Wind Energy Facilities for information on Height and Setbacks and Operating Requirements. See §§ 151.250 through 151.258 ~~261~~ for Violations, Penalties and Enforcement. See ~~3.0~~ below ~~in Appendix Q~~ for Additional Standards for Wind Energy Facilities. Other local and state regulations shall apply.

A. Project proposal.

- 1) Owner name, address, and phone number.
- 2) Photos of existing conditions for proposed facility.
- 3) Project summary including the manufacturer information, number of proposed turbines, and proposed height to the top of the turbine, including tower height and length of the blades.

B. Site plan (drawn to scale).

- 1) Existing and proposed contours, at a minimum of two foot intervals.
- 2) Location, setbacks, exterior dimensions and square footage of all structures on the owner's property and abutting properties within 100 feet.
- 3) Location and size of existing waterways, wetlands, one hundred-year floodplains, sanitary sewers, field drain tiles, storm sewer systems, and water distribution systems.
- 4) Location of any overhead or underground power lines and utility easements.
- 5) The locations and the expected duration of shadow flicker caused by the facility.

C. Waivers.

- 1) Any waiver for setbacks, sound level limitations or shadow flicker signed by nonparticipating property owners shall be recorded against the impacted property with the ~~Lake County Recorder of Deeds~~ [Recording Division of the Lake County Clerk's Office](#).

- 2) All waivers shall be submitted with the application for the wind energy facility.

D. Engineering plans, drawings, and schematics.

- 1) Manufacturer's engineering specifications of the tower, turbine and foundation, detailed drawing of electrical components and installation details, and expected sound level production (see Sound Level standards below).
- 2) For turbines greater than 20 kW of nameplate capacity, an Illinois licensed structural engineer's seal shall be required.
- 3) All facilities shall be designed to withstand a minimum wind velocity of 100 miles per hour.
- 4) Each facility shall conform to applicable industry standards, including those of the American National Standards Institute (ANSI). Applicants shall submit certificates of design compliance that equipment (inverter) manufacturers have obtained from Underwriters Laboratories (UL), National Renewable Energy Laboratories (NREL), Det Norske Veritas (DNV), Germanischer Lloyd Wind Energie (GL), or an equivalent third party.
- 5) All electrical wires and lines connecting each facility shall be installed underground.

6) To reduce potential bird perching and nesting, towers shall be a monopole rather than a lattice structure. External platforms/landings and ladders shall not be permitted on towers, unless mitigation strategies to avoid bird roosting or nesting are employed.

E. Soil studies. Tower-mounted facilities greater than 75 feet total height OR greater than 5,000 lbs. structural weight shall require a stamped drawing by an Illinois licensed Structural Engineer and may require, as determined by relevant building officials, a soil analysis at the base of the tower, demonstrating that the soils are able to support the structural weight of the facility. Structural weight shall include the tower, wind turbine generator, and any other component(s) otherwise supported by the base foundation. [An Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture may be required by the County for a commercial wind energy facility as a part of the conditional use permit Application.](#)

COMMENTARY REGARDING WIND AND WILDLIFE IMPACTS:

Lake County will consult with the Illinois Department of Natural Resources and U.S. Fish and Wildlife Service on proposals for tower-mounted wind facilities over 75 feet in height, in accordance with applicable statutes. Applicants for wind energy are encouraged to work with the Lake County Soil and Water Conservation District, the Illinois Department of Natural Resources and U.S. Fish and Wildlife Service to initiate natural resource reviews in order to identify potential environmental issues before submitting the application. The Illinois Department of Natural Resources and U.S. Fish and Wildlife Service may request a wildlife study evaluating the potential impact of the proposed construction and operation of a wind energy facility on any species of concern or high quality wildlife habitat on or near the subject property. For turbines proposed with a height of over 75 feet, within 1.5 miles of Lake County Forest Preserve District, Illinois State Park, Illinois Nature Preserve, or Illinois Natural Area Inventory lands, Lake County will provide notice to and solicit comments from those appropriate agency(ies).

F. Wildlife impacts. Lake County may require the applicant to develop and implement an environmental plan that adequately mitigates or eliminates any potentially adverse impacts, identified through consultations, comments from noticed parties, and environmental studies. [The Applicant, at its expense, shall have a third party, qualified professional \(after submission of resume and relevant work experience\) conduct an avian and wildlife impact study and submit said study to the County as part of the conditional use permit application or building permit application if no conditional use permit is required. Each WECS or WECS Project shall be located, designed, constructed, and operated so as to avoid and if necessary mitigate the impacts to wildlife.](#)

G. Installation. Facilities must be installed according to manufacturer specifications and permitting requirements. Electrical connections must be made by a licensed electrician.

H. Climb prevention. The base of any facility tower shall not be climbable for a vertical distance of 15 feet from the base, unless enclosed with an ~~8-foot~~ ~~feet~~ tall locked fence.

I. Braking systems. [All WECSs shall be equipped with a redundant braking system. This includes both aerodynamic overspeed controls \(including variable pitch, tip, tilt, and other similar systems\) and mechanical brakes. Mechanical brakes shall be operated in a fail-safe mode. Stall regulation shall not be considered a sufficient braking system for overspeed protection. Wind facilities shall be equipped with automatic and manual braking systems.](#) The owner shall immediately cease operations as deemed necessary by Lake County.

J. Signage.

1) Facilities shall have no advertising material, writing, picture, or signage other than warning, turbine tower identification, or manufacturer or ownership information.

2) This prohibition shall include the attachment of any flag, streamers, ribbons, spinners or waving, fluttering or revolving devices, but not including meteorological/weather devices or bird flight diverters on guy wires.

3) Tower-mounted facilities shall have one warning sign that shall include a notice of no trespassing, a warning of high voltage, and the phone number of the owner to call in case of emergency.

K. Lighting.

1) The facility shall not be artificially lighted, except as required by the Federal Aviation Administration (FAA) or necessary for workers involved in maintenance or repairs. Any required lighting shall be shielded so that no glare extends beyond the property line of the facility.

2) Security lighting and any emergency lighting should be kept to the minimum required.

3) To reduce potential wildlife impacts, the facility should employ only red, or dual red and white strobe, strobe-like, or flashing lights, not steady burning lights to meet FAA requirements for visibility lighting of wind turbines, permanent meteorological towers, and communication towers.

L. Historic districts and landmarks. Wind facilities within 500 feet of the local historic district or landmark or a National Historic District or Landmark must receive a recommendation from the Historical and Architectural Sites Commission prior to submitting an application to the Plan Commission and County Board.

§ 2.0 SOUND LEVEL MEASUREMENT.

~~—The Wind Energy Facilities Sound Measurement Worksheet is intended to determine the average sound level (i.e. Source Sound Level) from operating wind energy facilities by correcting for the ambient sound levels. This measurement will determine whether the sound exceeds the limits stipulated in Section 6.4 for wind facilities.~~

~~—Sound Level Meters (SLM) must meet the Type 2 grade or better per the latest revision of ANSI S1.4 American National Standard Specification for Sound Level Meters and must have an integrating feature that meets ANSI S1.43 American National Standard Specifications for Integrating Averaging Sound Level Meters.~~

~~—The procedures outlined here are based in essence on applicable portions of ANSI S12.9 American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound and Part 910 of Title 35: Environmental Protection, Subtitle H: Noise, Chapter 1: Illinois Pollution Control Board.~~

~~—Frequency Measurement~~

~~—The A-weighted scale is most often utilized for the measurement of tonal or audible sound levels. These are sounds that range from 20 to 20,000 Hz. and that the human ear can typically hear. The C-weighted scale is utilized especially for measurement of low frequency sound, i.e. more bass tones or infrasound, which may or may not be audible to the human ear. Low frequency sounds can travel farther and may be enhanced in different locations such as in buildings.~~

~~—Instrumentation Set-Up:~~

~~—Ensure the battery is in good condition.~~

~~—Ensure that the Sound Level Meter is calibrated according to manufacturer's instructions. Measurements may be taken at any location on a nonparticipating property, provided the location is not within:~~

~~5 feet of small surfaces (e.g., trees, posts, etc),~~

~~25 feet of a large reflective surface (e.g., shed, building, etc), or~~

~~50 feet of a large reflective surface if the sound is tonal in nature.~~

~~—A tripod for the microphone or SLM is required if the sound is high-pitched. If the sound is low frequency in nature, a hand-held meter is acceptable as long as the arm is extended.~~

~~—The microphone on the SLM must be aimed toward the noise source and oriented at an angle recommended by the manufacturer (usually 45-70 feet off the ground).~~

~~—Sound Level Limit Regulations for Wind Energy Facilities:~~

~~—The average sound level from wind facilities shall not exceed fifty-five (55) dB(A) during daytime hours or forty-five (45) dB(A) during nighttime hours at any point within neighboring, residentially zoned or used property. The different limits for daytime and nighttime sound levels are consistent with standards established by the Illinois Pollution Control Board. These sound level limits on residential properties are stricter than those established by the Illinois Pollution Control Board, because of the typical tonal, modulating and/or bass sounds experienced with wind facilities. The average sound level from wind facilities shall not exceed sixty-five (65) dB(A) on neighboring industrial properties and sixty (60) dB(A) on other neighboring nonresidential properties, at any time of the day.~~

~~• No wind facility shall operate with an average sound level that is more than 5 dB(A) above the non-operational ambient level, as measured within 100 ft. of any residential dwelling on a neighboring property.~~

~~• To limit the level of low-frequency sound, the average C-weighted sound level during wind facility operation shall not exceed the A-weighted ambient sound level by more than twenty (20) dB.~~

~~—SOUND MEASUREMENT WORKSHEET INSTRUCTIONS~~

~~—Source and Receiver Location:~~

~~—Identify the types of property from which the sound is coming (Source) and on which the sound is being measured (Receiver).~~

~~—Nature of Sound:~~

~~—Identify what is the Source of the sound being measured.~~

~~—Weather Conditions:~~

~~—Measurements should not be made when ground level winds exceed 10 mph.~~

~~—Use an anemometer and compass to measure wind speed and direction and identify them on the Worksheet.~~

~~—Use a thermometer to determine temperature and a hygrometer to measure relative humidity to identify any adverse conditions. All instruments must be used in accordance with the manufacturer's recommended procedures.~~

~~—As an alternative, weather conditions can be obtained from an airport or weather station reporting local conditions through an internet site.~~

~~—Equipment:~~

~~—Identify the type of sound level meter being used and whether measurements will be using the A-weighted scale to measure tonal or audible sound (20 to 20,000 Hz) or the C-weighted scale to measure low frequency sound (Below 200 Hz).~~

~~—Calibration Check:~~

~~—Follow manufacturer's instructions to ensure that the Sound Level Meter is properly calibrated. Place the calibrator on the SLM microphone and adjust the meter as necessary so that it displays the rated output of the calibrator (usually 94.0 dB). This must be repeated before and after each series of measurements to ensure SLM stability.~~

~~—Measured Sound Levels:~~

~~—1. Total sound level. Collect a 1-2 minute sample of the sound with the wind energy facilities operating. Wait at least one minute collect a second sample. If the samples are within 2 dB, there is repeatability and the two levels can be averaged for a total sound level. If there is more than a 2 dB difference, repeated samples should be taken to determine which levels are most in common and can be averaged. This is repeated for the C scale if low frequency sound is a concern.~~

—2. Ambient sound level. Ambient Sound represents the background sound level observed when the source is not operating. Collect a 10-15 second sample of the Ambient Sound during a period when there are no nearby distinct or prominent sounds, such as dogs barking, a plane flying over, or a car passing by. Wait over one minute to collect a second sample. If the samples are within 2 dB, there is repeatability and the two levels can be averaged. This is repeated for the C scale if low frequency sound is a concern.

—3. Correction. This figure calculates how to correct the Total Sound Level measurement for Ambient Sound.

—a. Enter the difference between the Total and Ambient Sound Levels [Line 1 – Line 2]

—b. If the Ambient sound is not at least 2 dB lower than the Total Level on 3a, a determination of violation cannot be made. If the difference is 2 dB enter a “4”; for a difference of 3, enter a “3”; for a difference of 4-5, enter a “2”; for a difference of 6-9, enter a “1”; and for a difference of 10 or more, enter a “0”.

—4. Source sound level. The average sound level from the operating Wind Energy System (Source) is the Total Sound Level minus the Correction factor. [Line 4 = Line 1 – Line 3b]

—5. Increase above ambient sound. An A-weighted sound level from a sound source that is more than 5 dB above the ambient level represents a significant increase in noise and is an objective indicator of annoyance. This is the difference between Line 4 and Line 2 and is used to assess compliance with the noise ordinance on residential properties. This measurement is intended for use on neighboring properties and should only be taken within 100 feet of a residential dwelling.

—6. Low frequency measurement (if indicated). Low frequency sound can impact neighbors over a longer distance than more tonal sounds and is possibly perceived indoors. A C-weighted sound level with the turbine(s) operating that is more than 20 dB above the A-weighted ambient sound level is an objective indicator of annoyance due to a significant increase in low frequency noise. If the difference between the C-weighted level of Line 4 and the A-weighted level of Line 2 is less than 20 then Wind Energy System is considered to be in compliance with the noise ordinance.

Wind Energy Facilities Sound Measurement Worksheet

Source Property: ☐ Residential ☐ Nonresidential ☐ Industrial

Receiving Property: ☐ Residential ☐ Nonresidential ☐ Industrial

Nature of Sound: _____

Location of Instruments: _____

Wind Speed and Direction: _____

Equipment: _____

Date: _____

Time: _____

Examiner: _____

Calibration Check:

Sound level with calibrator in place:

Before	Cal. Level	After
_____ dB	94.0 dB	_____ dB

Measured Sound Levels:

	Sample 1	Sample 2	Average
1 Total Sound Level (source on):	dB(A)	dB(A)	dB(A)
	dB(C)	dB(C)	dB(C)
2 Ambient Sound Level (quietest level with source off):	dB(A)	dB(A)	dB(A)
	dB(C)	dB(C)	dB(C)

3 Correction for the ambient background sound

3a. Enter the difference between lines 1 and 2: _____ dB(C) _____ dB(A)

If Line 3a = 0 or 1 dB the source level cannot be determined

3b. If Line 3a = 2 dB → enter 4 dB; 3 dB → enter 3 dB

= 4-5 dB → enter 2 dB; 6-9 dB → enter 1 dB

= 10 dB or more → enter 0 dB

4 Source Sound Level (line 1 minus line 3b): _____ dB(C) _____ dB(A)

5 Increase Above Ambient Sound (A-wtd level in line 4 minus A-wtd level in line 2): _____ dB(A)

Measured within 100 ft of residential dwelling

6 Low Frequency = C_{Source} - A_{Ambient} (C-wtd level of line 4 minus A-wtd level of line 2): _____ dB

Sound Limits (dB) on Receiving Properties:

	Industrial	Nonresidential	Residential Day / Night
Source Sound Level (A-wtd) - Line 4	65	60	55 / 45
Increase Above Ambient Sound (A-wtd) - Line 5			5
Low Frequency, C _{Source} - A _{Ambient} - Line 6	20	20	20

Amendment #7

Amend Section 151.113/Accessory Uses to read as follows:

(P) *Wind energy facilities, Accessory.* Wind energy facilities include building-mounted and tower-mounted turbines, less than 200 feet in height, and are considered to be an accessory use to principal residential and nonresidential uses. It is permissible to sell excess electricity produced by a wind energy facility to an electric utility company, provided that the majority of energy produced is intended to serve the principal use on site.

(1) *Height.*

(a) *Residential Zoning Districts.*

1. As measured from its highest point, accessory building-mounted turbines shall be allowed up to the height of 15 feet above the highest point of the building structure, but in no case shall exceed 45 feet above the structure's average ground elevation in a residential zoning district.

2. Accessory T-tower-mounted turbines shall be permitted by right up to the heights of: 45 feet on parcels less than 40,000 square feet; 75 feet on parcels 40,000 to 200,000 square feet; and 100 feet on parcels larger than 200,000 square feet, as measured from the base of the tower to the top of a fully extended blade. Proposed turbines over these limits shall require a delegated conditional use permit. Turbines shall be limited to 125 feet in height if located within 500 feet of a nonparticipating residentially zoned property.

3. The blade tip of a tower-mounted horizontal axis turbine shall have ground clearance of not less than 25 feet at its lowest point. The blade tips of a vertical access turbine shall have ground clearance of not less than 15 feet at their lowest point.

(b) *Nonresidential Zoning Districts.*

1. As measured from its highest point, accessory building-mounted turbines shall be allowed at the height of 15 feet above the highest point of the building structure, in a nonresidential zoning district.

2. The turbine height for ~~a~~ an accessory tower-mounted turbine (as measured at its highest point) shall be less than 200 feet in a nonresidential zoning district. Accessory T-tower-mounted turbines shall be limited to 125 feet in height if located within 500 feet of a nonparticipating residentially zoned property.

3. The blade tip of ~~a~~ an accessory tower-mounted horizontal axis turbine shall have ground clearance of not less than 25 feet at its lowest point. The blade tips of a vertical access turbine shall have ground clearance of not less than 15 feet at their lowest point.

(2) *Setbacks.*

(a) Accessory T-tower-mounted turbines shall be set back a minimum distance equal to 150% of (1.5 times) the turbine height, from the exterior surface of the base of the tower to nonparticipating property lines.

(b) Accessory T-tower-mounted turbines for which the generated electricity is exclusively used on-site shall be set back a minimum distance equal to 110% of (1.1 times) the turbine height, from the exterior surface of the base of the tower to nonparticipating property lines.

(c) Accessory T-tower-mounted turbines shall be set back a minimum distance equal to 110% of (1.1 times) the turbine height, from third party transmission lines and communication towers.

(3) *Operating requirements.* The following are requirements for the operation of accessory wind energy facilities. Additional requirements and standards for wind energy facilities shall apply as identified in Appendix Q. Provisions for violations, penalties and enforcement shall apply as identified under §§ 151.250 through ~~151.258~~ 151.261.

(a) *Sound level limitations for accessory wind energy facilities.*

1. The sound level limits identified below shall apply. Measurement procedures are outlined in [Appendix Q section 2.0](#). Measurements can be taken at any location on nonparticipating properties and must account for ambient sound contributions.

Receiving Property	Hours of Operation	Sound Level Limits
Residential	10:00 p.m. - 7:00 a.m.	45 dB(A)
Residential	7:00 a.m. - 10:00 p.m.	55 dB(A)
Other non-residential	24 hours	60 dB(A)
Industrial	24 hours	65 dB(A)

2. No facility shall operate with an average sound level more than five dB(A) above the non-operational ambient level, as measured within 100 feet of any residential dwelling on a neighboring property.

3. To limit the level of low-frequency sound, the average C-weighted sound level during facility operation shall not exceed the A-weighted ambient sound level by more than 20 dB.

(b) *Shadow flicker.* The facility's shadow flicker shall not fall on any nonparticipating residential building, built at the time of approval, for more than one hour a day. The owner must commit to a schedule for turning the turbine off during periods exceeding that limit.

(c) *Width.* As measured at its widest point, the width of building-mounted turbine(s) shall not exceed 20% of the shortest width of the building's front or side elevation, for residential buildings and non-residential buildings abutting residentially used properties. The width of the building-mounted turbine shall not exceed 50% of the shortest width of the front or side elevation of a nonresidential building, not abutting residentially used properties.

(d) *Sun glint.* The facility's surface finish shall be flat or matte, so as to reduce incidence of sun glint.

(e) *Electronic interference.* Facilities shall not cause electromagnetic interference with communications systems. The determination of degradation of performance and of quality and proper design shall be made in accordance with good engineering practices as defined in the latest principles and standards of the American Institute of Electrical Engineers, the Institute of Radio Engineers or Electrical Industries Association.

(4) *Waivers.* Requirements for setbacks, sound level limitations or shadow flicker from wind energy facilities may be waived by impacted nonparticipating property owners. The written waiver shall notify nonparticipating property owner(s) of the requirements established by this chapter and how the proposed wind energy facility is not in compliance. The waiver shall be signed by the nonparticipating property owner(s) giving consent to exceed the limits for setback, sound level limitations, or shadow flicker on his or her property.