

CASE NO. 895-AT-18

PRELIMINARY MEMORANDUM

February 22, 2018

Petitioner: Zoning Administrator

Request: Amend the Champaign County Zoning Ordinance to add “Solar Farm” as a new principal use under the category “Industrial Uses: Electric Power Generating Facilities” and indicate that Solar Farm may be authorized by a County Board Special Use Permit in the AG-1 Zoning District and the AG-2 Zoning District; add requirements and fees for “Solar Farm”; add any required definitions; and make certain other revisions are made to the Ordinance as detailed in the full legal description in Attachment A.

Location: Unincorporated Champaign County

Time Schedule for Development: As soon as possible

Prepared by: **Susan Burgstrom**
Senior Planner

John Hall
Zoning Administrator

BACKGROUND

There has been an increasing interest in solar farm (utility scale electrical generation using solar energy) development throughout the State of Illinois in 2017, and there are three pending Solar Farm cases on the current ZBA Docket.

The proposed amendment is based on the existing wind farm requirements (included with the 12/27/17 ELUC memo), so understanding the differences between wind farms and solar farms is essential to understanding what the amendment must include.

The Champaign County Environment and Land Use Committee discussed this proposed amendment at the January 4, 2018 meeting and approved opening a ZBA public hearing for the amendment at the February 8, 2018 meeting. Comments were received from ELUC and community members, and revisions were made based on that input. The Proposed amendment (annotated) indicates the changes made following the February 8, 2018, ELUC meeting.

There are a myriad of resources provided as attachments that may be useful to the Board. One that was not included due to its size is the Argonne Lab’s “An Overview of Potential Environmental, Cultural, and Socioeconomic Impacts and Mitigation Measures for Utility-Scale Solar Energy Development.” P&Z Staff have posted this document on the ZBA meetings webpage: http://www.co.champaign.il.us/CountyBoard/meetings_ZBA.php.

Due to time constraints, the Summary of Evidence and Finding of Fact for the proposed amendment will be distributed at the March 1, 2018 ZBA meeting.

As reviewed in the 1/4/18 memorandum to ELUC, it is hoped that the ZBA will be able to make a final determination for this text amendment at the March 29, 2018, meeting.

OVERVIEW OF A TYPICAL SOLAR FARM

The “Solar Farms in Illinois” PowerPoint presentation (Attachment F) by Delbert Skimmerhorn, Kankakee County Planning Director, identifies three types of solar facilities:

- A. Utility Scale Solar Farms (40% of facilities) are large scale facilities, usually 20+ acres, strictly for the production of electricity to be sold on the open market. These facilities must have or be near a sub-station.
- B. Community Solar Farms (50% of facilities) are smaller scale facilities, usually between 5 and 10 acres. They may be used for commercial generation or form community use such as a university, municipality, or other large land use or land use group. These do not need a substation and can be constructed anywhere a three phase line exists.
- C. Light Renewable Program (8% of facilities) are private, individual installations.

NO MODEL SOLAR FARM ORDINANCE

There is no model solar farm ordinance for Illinois communities. The Illinois Solar Energy Association (ISEA) provides specific recommendations for local zoning regulation of solar facilities in Illinois (Attachment B2) on the following topics:

- A. Applicability – which zoning districts, and whether by-right or Special Use Permit
- B. Process – project size and how complex approvals should be
- C. System Size
- D. Lot size
- E. System height
- F. Setbacks
- G. Fencing
- H. Equipment
- I. Glare/visibility
- J. Airport
- K. Installers
- L. Site Plan
- M. Environmental Impact
- N. Floodplain
- O. Storm water/Drainage
- P. Landscaping
- Q. Transportation
- R. Interconnection
- S. Transmission
- T. Operations and Maintenance
- U. Decommissioning
- V. Property Value
- W. Complaint Resolution
- X. Fees

LIKELY IMPACTS OF SOLAR FARM DEVELOPMENT

Some likely impacts of solar farm development have been identified in the following documents:

- A. From “The Top Five Large-Scale Solar Myths” (Attachment J):
 - (1) Solar farms should not be limited to just industrial zones;
 - (2) Glare will generally not be an issue if solar farms use photovoltaic panels, which have non-reflective glass;
 - (3) Noise generated by solar farms is generally not audible above ambient noise outside of the facility fence;
 - (4) As solar farms do not have the same impacts as wind farms, the impacts on property values caused by solar farms are anticipated to be less than the impacts of wind farms;
 - (5) Solar facilities generate electro-magnetic fields similar to household appliances within close proximity, which dissipate with increasing distance and pose no health risk to neighboring residents; and
 - (6) Benefits of solar farms include:
 - a. significant local employment and spending during construction;
 - b. increased property tax revenues with minimal drain on public services;
 - c. low water use; and
 - d. emission-free electricity generation.
- B. From “In Clash of Greens, a Case for Large-Scale U.S. Solar Projects” (Attachment K):
 - (1) New utility-scale solar installations are a sound investment, cheaper than new coal plants and frequently competitive with natural gas.
 - (2) Major solar projects will have to be built on a noticeable portion of the landscape, which will result in environmental impacts.
 - (3) Solar installations would have to occupy about 0.6 percent of the country’s total land area, equivalent to less than 2 percent of U.S. land now in crop production.
 - (4) Solar power produces none of the climate-altering carbon emissions or health-endangering air pollutants of coal or natural gas, and none of the hazards associated with nuclear power.
 - (5) Solar development can address habitat protection and wildlife concerns.
- C. From “Environmental impacts from the solar energy technologies” (Attachment L):
 - (1) Land use impacts can be due to the types of land use on which the solar farm is built and the uses surrounding the solar farm.
 - (2) During their normal operation, photovoltaic systems emit no gaseous or liquid pollutants, and no radioactive substances.

- (3) Proper site and design is necessary to mitigate possible visual impacts.
 - (4) Small amounts of scarce materials and large quantities of bulk materials are necessary to build a solar farm, which can deplete natural resources.
 - (5) Emissions of air pollutants depends on system performance and the energy efficiency of the manufacturing process.
 - (6) Noise intrusion is minimal.
 - (7) For photovoltaic systems, the batteries are responsible for most of the environmental impacts; manufacturers can produce systems that are easily recyclable to mitigate this impact.
- D. From “An Overview of Potential Environmental, Cultural, and Socioeconomic Impacts and Mitigation Measures for Utility-Scale Solar Energy Development” (on ZBA meetings website):
- (1) Due to time constraints, a summary of impacts from this report will be in the Summary of Evidence for this case.

ILLINOIS FUTURE ENERGY JOBS ACT

The “Solar Farms in Illinois” PowerPoint presentation (Attachment F) by Delbert Skimmerhorn, Kankakee County Planning Director, highlights this act:

- A. The "Future Energy Jobs Act" was enacted in December 2016 and went into effect June 1, 2017.
- B. It subsidizes nuclear power through credits from zero emission facilities, related to the fear of two nuclear plant closings: Clinton & Quad Cities.
- C. It expands the State’s renewable portfolio by requiring 3,000 MW of new solar and 1,300 MW of new wind power to be built in Illinois by 2030.
- D. Land consumption is estimated to be between 8,000 and 15,000 acres statewide.

USE OF BEST PRIME FARMLAND

Solar farms would not permanently convert prime farmland from agricultural production. Minimal concrete is used to mount each panel on a single post. P&Z Staff will prepare a summary of the use of prime farmland in solar farms.

REVIEW OF OTHER ILLINOIS COUNTY SOLAR FARM ORDINANCES

Other counties with solar farm ordinances include Kankakee, Christian, Fulton, Tazewell, and Whiteside. P&Z Staff will prepare a comparison table of these ordinances in the near future.

ATTACHMENTS

- A Legal advertisement
- B ELUC Memorandum dated December 27, 2017, with attachments:
 - 1 Outline of Proposed Solar Farm Amendment
 - 2 Illinois Solar Energy Association Recommendations
 - 3 Kankakee County Solar Farm Amendment (more or less adopted as proposed)
 - 4 Champaign County Wind Farm Requirements (Zoning Ordinance Section 6.1.4)
- C ELUC Memorandum dated January 31, 2018, with attachment:
 - 1 Proposed amendment
- D February 8, 2018, Comments on proposed amendment by Patrick Brown, Director of Development, BayWa-re Solar Projects, LLC
- E Comments on proposed amendment by Professor Scott Willenbrock, University of Illinois Department of Physics
- F Solar Farms In Illinois PowerPoint presentation courtesy of Delbert Skimmerhorn, Kankakee County Planning Director
- G Typical Solar Fields for Various Technology Types: Solar Parabolic Trough, Solar Power Tower, Dish Engine, and PV from An Overview of Potential Environmental, Cultural, and Socioeconomic Impacts and Mitigation Measures for Utility-Scale Solar Energy Development, Argonne National Laboratory ANL/EVS/R-13/5, June 2013
- H Agriculture Impact Mitigation Agreement (standard form) with Appendices A & B and standard details, Illinois Department of Agriculture
- I Agricultural Good Practice Guidance for Solar Farms by Ed J Scurlock, BRE National Solar Centre, 2014
- J Top Five Large-Scale Solar Myths by Megan Day, National Renewable Energy Laboratory (NREL), February 3, 2016
- K In Clash of Greens, a Case for Large-Scale U.S. Solar Projects by Philip Warburg, Yale Environment 360 (online magazine), August 24, 2015
- L Environmental impacts from the solar energy technologies, Theocharis Tsoutsos, Niki Frantzeskaki, Vassilis Gekas, Centre for Renewable Energy Sources (CRES) and Technical University of Crete, Greece, 2003.
- M Proposed amendment (annotated) dated February 22, 2018
- N Proposed amendment dated February 22, 2018

LEGAL PUBLICATION: WEDNESDAY, FEBRUARY 14, 2018

CASE: 895-AT-18

**NOTICE OF PUBLIC HEARING REGARDING A PROPOSED AMENDMENT TO THE
CHAMPAIGN COUNTY ZONING ORDINANCE.**

CASE: 895-AT-18

The Champaign County Zoning Administrator, 1776 East Washington Street, Urbana, has filed a petition to change the text of the Champaign County Zoning Ordinance. The petition is on file in the office of the Champaign County Department of Planning and Zoning, 1776 East Washington Street, Urbana, IL.

A public hearing will be held **Thursday, March 1, 2018, at 6:30 p.m.** prevailing time in the Lyle Shields Meeting Room, Brookens Administrative Center, 1776 East Washington Street, Urbana, IL, at which time and place the Champaign County Zoning Board of Appeals will consider a petition to:

Amend the Champaign County Zoning Ordinance as follows:

Part A. Amend Section 3 by adding definitions including but not limited to “NOXIOUS WEEDS” and “SOLAR FARM”.

Part B. Add paragraph 4.2.1 C.5. to indicate that SOLAR FARM may be authorized by County Board SPECIAL USE permit as a second PRINCIPAL USE on a LOT in the AG-1 DISTRICT or the AG-2 DISTRICT.

Part C. Amend Section 4.3.1 to exempt SOLAR FARM from the height regulations except as height regulations are required as a standard condition in new Section 6.1.5.

Part D. Amend subsection 4.3.4 A. to exempt WIND FARM LOT and SOLAR FARM LOT from the minimum LOT requirements of Section 5.3 and paragraph 4.3.4 B. except as minimum LOT requirements are required as a standard condition in Section 6.1.4 and new Section 6.1.5.

Part E. Amend subsection 4.3.4 H.4. to exempt SOLAR FARM from the Pipeline Impact Radius regulations except as Pipeline Impact Radius regulations are required as a standard condition in new Section 6.1.5.

Part F. Amend Section 5.2 by adding “SOLAR FARM” as a new PRINCIPAL USE under the category “Industrial Uses: Electric Power Generating Facilities” and indicate that SOLAR FARM may be authorized by a County Board SPECIAL USE Permit in the AG-1 Zoning DISTRICT and the AG-2 Zoning DISTRICT and add new footnote 15. to exempt a SOLAR FARM LOT from the minimum LOT requirements of Section 5.3 and paragraph 4.3.4 B. except as minimum LOT requirements are required as a standard condition in new Section 6.1.5.

Part G. Add new paragraph 5.4.3 F. that prohibits the Rural Residential OVERLAY DISTRICT from being established inside a SOLAR FARM County Board SPECIAL USE Permit.

Part H. Amend Subsection 6.1.1 A. as follows:

1. Add SOLAR FARM as a NON-ADAPTABLE STRUCTURE and add references to the new Section 6.1.5 where there are existing references to existing Section 6.1.4.
2. Revise subparagraph 6.1.1 A.11.c. by deleting reference to Section 6.1.1A. and add reference to Section 6.1.1A.2.

Part I. Add new subsection 6.1.5 SOLAR FARM County Board SPECIAL USE Permit with new standard conditions for SOLAR FARM.

Part J. Add new subsection 9.3.1 J. to add application fees for a SOLAR FARM zoning use permit.

Part K. Add new subparagraph 9.3.3 B.8. to add application fees for a SOLAR FARM County Board SPECIAL USE permit.

All persons interested are invited to attend said hearing and be heard. The hearing may be continued and reconvened at a later time.

Catherine Capel, Chair
Champaign County Zoning Board of Appeals

TO BE PUBLISHED: WEDNESDAY, FEBRUARY 14, 2018 ONLY

Send bill and one copy to: Champaign County Planning and Zoning Dept.
Brookens Administrative Center
1776 E. Washington Street
Urbana, IL 61802
Phone: 384-3708

**Champaign County
Department of
PLANNING &
ZONING**

**Brookens Administrative
Center
1776 E. Washington Street
Urbana, Illinois 61802**

(217) 384-3708

zoningdept@co.champaign.il.us
www.co.champaign.il.us/zoning

To: Environment and Land Use Committee
From: John Hall, Director & Zoning Administrator
Date: December 27, 2017
**RE: Zoning Ordinance amendment to add requirements for
“solar farm”**
**Request: Place on file for a 30-day review a proposed Zoning
Ordinance amendment to add requirements for “solar farm”**

BACKGROUND

There has been an increasing interest in solar farm (utility scale electrical generation using solar energy) development throughout the State of Illinois in 2017 and several solar farm developers contacted this Department inquiring as to Champaign County’s requirements for solar farms. By mid-summer it was clear that the Zoning Ordinance should be amended. The Kankakee County solar farm amendment seemed a good example to follow but the latter half of the year was occupied with dangerous structure enforcement issues and there was no time to present a proposed amendment to ELUC. On December 20, 2017, an application for a solar farm was received.

The applicant for the proposed solar farm will have the option of proceeding under the existing wind farm requirements or waiting until the Zoning Ordinance has been amended with specific requirements for a solar farm. I anticipate that the applicant will prefer to wait for the solar farm amendment and thus, it is essential to move forward. Any Zoning Ordinance amendment must go through a public hearing at the Zoning Board of Appeals but the Committee must authorize the public hearing.

PROPOSED TEXT AMENDMENT

An outline of the proposed amendment is attached. Also attached are recommendations of the Illinois Solar Energy Association; the Kankakee County solar farm amendment; and for reference, the existing Champaign County wind farm requirements.

TEXT AMENDMENT PUBLIC HEARING TIMELINE

The public hearing requires a legal advertisement in the newspaper and notice provided to all relevant municipalities. If the public hearing is authorized by ELUC on February 9 the anticipated timeline (*earliest possible dates) is as follows:

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- | | |
|---|----------------------------------|
| 1. Public Hearing opens at the Champaign County Zoning Board of Appeals (CCZBA) | *Thursday, March 1, 2018 |
| 2. Public Hearing closes with CCZBA recommendation | *Thursday, March 29, 2018 |
| 3. Environment and Land Use Committee (ELUC) affirms or amends CCZBA’s recommendation | *Thursday, April 5, 2018 |
| 4. Municipalities review ELUC recommendation | *April 6 – May 9 |
| 5. ELUC makes a recommendation to the Champaign County Board | *Thursday, May 10, 2018 |
| 6. Champaign County Board makes a final determination | *Thursday, May 24, 2018 |
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Zoning Administrator
DECEMBER 27, 2017

ATTACHMENTS

- A Outline of Proposed Solar Farm Amendment**
- B Illinois Solar Energy Association Recommendations**
- C Kankakee County Solar Farm Amendment (more or less adopted as proposed)**
- D Champaign County Wind Farm Requirements (Zoning Ordinance Section 6.1.4)**

**Attachment A. Outline of Proposed Champaign County Solar Farm Text Amendment based on
Kankakee County Solar Farm Ordinance
DRAFT December 27, 2017**

*= anticipated similar standard in Champaign County Solar Farm Text Amendment

NR= not anticipated in Champaign County Solar Farm Text Amendment

- *1. SUP in Kankakee A1 District (County Board SUP in Champaign County AG-1, AG-2; not in CR)
- *2. Suspension of Kankakee A1 District standards for min. lot area, etc.
3. Engineer certification of foundation design (NR)
- *4. NEC compliance
- *5. All wiring must be underground to the electrical substation
6. 5-acre minimum lot area (NR)
- *7. 30-foot maximum height (50-foot in Champaign County AG-1 District)
- *8. 100-foot setback (front) and 50-foot side and rear yards except 100 feet to residential property
- *9. Fencing required and shall be 8 feet tall or a 30 feet wide landscaped buffer and/or earth berms
- *10. Full-cutoff lighting
11. Noise limited to 50 decibels when adjacent to Residential District or residence (anticipated for Champaign County: same as wind farm Sec. 6.1.4 I. but no computer modeling required)
- *12. Detailed Site Plan
- *13. Weed/ grass control plan
14. Road use agreement with relevant road authorities including identification of routes (anticipated for Champaign County: road use plan with road use agreement if oversize road permits are necessary)
- *15. Itemized cost estimate of project
- *16. Must be in queue for an electrical distribution line interconnect agreement at time of application and have interconnect agreement at pre-operation or written explanation
- *17. Decommissioning plan at \$1,000 per acre minimum with updates every 3 years and requirement to decommission if no power produced in a 12-month period (anticipated for Champaign County: similar to Sec. 6.1.4 P. including minimum cash amount as letter of credit with conversion to escrow account in first 12 years (same as wind farm) and document adequacy of \$1,000 per acre)
- *18. SUP application fee of \$5,000 with requirement to reimburse if County's cost exceeds \$5,000
- *19. Building permit fee of \$6,526 for first \$1 million in value and \$3 per each additional thousand
20. Additional anticipated requirements for Champaign County:
 - a. "Solar Farm" defined to include all necessary components similar to "wind farm" definition
 - b. List of all included parcels and landowners to identify all parcels that are part of solar farm
 - c. Specification regarding creation of new lots for solar farm
 - d. Endangered species consultation and archaeological review w/ IDNR (Sec. 6.1.4 J., K. & L.)
 - e. Champaign County SWCD Natural Resources Report
 - f. A storm water management plan if necessary.
 - g. Standard Conditions to Mitigate Damage to Farmland (similar to Sec. 6.14 E.)
 - h. Coordination with Fire Protection District (similar to Sec. 6.1.4 G.)

**Attachment A. Outline of Proposed Champaign County Solar Farm Text Amendment based on
Kankakee County Solar Farm Ordinance
DRAFT December 27, 2017**

- i. An aviation impact analysis if within 500 feet of airport and/or within airport approach zone
- j. A visual analysis to illustrate anticipated visual impacts and an ongoing requirement for a complaint hotline and a requirement that any significant glare must be reduced.

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Local Zoning and Building Regulation of Solar in Illinois

As a result of the Future Energy Jobs Act, local government in Illinois can expect to see increased interest in solar development. By 2025, the demand for solar will result in the development of over 2,000 MW of solar. Solar development will provide many new jobs as well as hundreds of millions of dollars in new investment into the state. This amount of development will require between 10,000-15,000 acres of land or rooftop, which represents only a small fraction of Illinois' overall area. Projects will come in a variety of forms, and local governments should plan to see interest from solar developers in all of these categories. A short description of the different types of solar that will be built is in the table below, as well as the amount of MW that is likely to be developed by 2025 because of the Future Energy Jobs Act.

Generally, solar development has a very low-impact on the land that is hosting the equipment and the surrounding area. While local officials may have had experience with wind development in Illinois, these two clean energy sources have very different impacts on land and land use, and should be regulated differently.

The Illinois Solar Energy Association has developed this set of comments and principles as guidance for local governments that are confronted with the prospect of increased development. This document is the result of industry collaboration and is fully endorsed by members of the Illinois Solar Energy Association.

	Description	Probable MW of Development by 2025	Size Limit per Project, per the Future Energy Jobs Act
Residential Rooftop Solar	System is on the customer's roof (main building or accessory structure). In rare instances, a residential customer may want to put solar on the ground.	300	All behind-the-meter projects are limited to 2 MW in size, but each must be sized to appropriately meet the owner's electric need. A typical residential project is between 3-10 kW, whereas a commercial project could be 10 kW – 2 MW depending on the size of the business.
Commercial & Industrial Solar	System is on the customer's property (main building or accessory structure), either on the roof or the ground.	300	
Community Solar	Generally, a larger system where a combination of several entities (residents, businesses, governments) have a partial interest (subscription) in the output of a system. Systems can be located on a roof or on the ground, but do not have to be located near the subscribers. Projects are limited to 2 MW in size (10-12 acres).	275-325	The Future Energy Jobs Act limits each community solar project to 2 MW (10-12 acres), however developers may be allowed to locate more than one project at the same site (co-locate). Final rules on this provision are expected in early 2018.

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Brownfield Solar	System is located on blighted land that is not suitable for redevelopment, such as closed landfills or Superfund sites.	35-50	There is no minimum or maximum size for brownfield projects.
Utility Scale Solar	Large systems (2 MW-200 MW) that generally do not serve an individual customer and are located near electrical infrastructure.	750-1000	Systems must be larger than 2 MW, but have no upward limit. These projects could use anywhere from 10 acres to 100s of acres for a single project.

General Principles:

1. Solar projects provide local, clean energy generation as well as local investment. Projects of all sizes will have a positive impact on jobs, tax revenue and other forms of direct and indirect economic activity in local communities.
2. Solar developers will look to develop projects in areas where projects are encouraged and where the permitting process is clear and straightforward. Solar developers and solar owners want to work with communities in which they build and operate systems. Developers are interested in partnering with communities where their systems are installed, and are ready to address any concerns that communities or local authorities may have with the construction or operation of those systems.
3. Solar system developers and owners have a vested interest in making sure that the project is constructed in an efficient manner, and that the system operates for the full life of the panels. For developers to get financing for the construction and operation of the system, they need to prove that the system is not at risk of impacting endangered species and other wildlife, and that the system isn't at risk for flooding. Protecting the system from property damage and maintaining the site are key parts of maintenance that contribute to the continued efficient operation of the system.
4. Building solar is no more disruptive than any other typical development, and in many cases, is less impactful. Unlike other large-scale energy developments, solar has minimal impact on land, roads, water, and neighboring properties. The most significant disturbance is during construction, but the equipment needed is no different than equipment needed for other types of general construction. Residential rooftop solar can be installed in several days, and large-scale ground-mount systems can be installed in 6-9 months.
5. Solar systems operate with minimal impact to the area, and minimal maintenance. Once constructed, solar systems tend to blend into the surroundings, and are a positive compliment to agricultural and other existing land uses. Ground-mount systems sit between 10-20 feet tall, and are hard to see beyond the borders of the property. Neighboring properties are unlikely to even notice the system on a daily basis, and it will have no impact on property values or quality of life. Once operational, solar systems provide energy without any pollution, minimal noise, and few, if any, moving parts.

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Specific Recommendations:

Applicability: Solar should be permitted in all zones (accessory use for behind-the meter systems and principle use for other systems) as "by-right" if it meets certain requirements.

Process: Authorities should distinguish between projects. Smaller projects (behind-the-meter or community solar) should be evaluated separately from larger projects. Preferably all projects would be allowed "by-right" through administrative review if they meet the requirements, and subject to special use permit if not.

System Size: Authorities should distinguish between types of systems and have those systems track the size requirements in the Future Energy Jobs Act (see the table above). In this Act, distributed (roof-top or ground-mount behind-the meter) solar is limited to 2 MW AC. Community solar is also limited to 2 MW AC, though projects may be able to co-locate. Utility scale solar must be bigger than 2 MW AC, but has no upward limit. Brownfield solar has no size limit.

Lot Size: If systems meet the other requirements in the regulation and conform to the project size outlined in the regulation, there should be no limit (minimum or maximum) on the size of the lot or the number of parcels or lots the project covers. Community solar projects can be as small as 100 kW, which would take approximately 1/2 an acre of space, or may be able to co-located, thereby using upwards of 20 acres.

System Height: For ground-mount systems, a 20' limit is appropriate, however the authority should have a waiver or variance process for unique situations.

Setbacks: As discussed in the general principles above, ground-mount solar projects have minimal impact on the land used for development as well as surrounding properties, therefore setbacks should be minimal. At most, ground-mount solar projects should be subject to the same setbacks as other standard structures in the same zone or twenty-five (25) feet, whichever is less. It is appropriate to limit roof-mounted systems to the size of the roof with appropriate room for fire-fighting purposes.

Fencing: The owner of the ground-mount system has a vested interest in making sure the system is secure. In most instances, an 8' fence is appropriate, though the authority should allow for some waivers if there are natural borders or surrounding neighbors approve.

Equipment: Developers should use UL approved equipment for all projects.

Glare/Visibility: The majority of panel technology is antireflective, so glare risk is minimal to non-existent. If the authority wants to include glare guidance, it should be minimal, but should provide clear requirements; open-ended requirements provide risk to the developer. Per federal regulations, projects around airports need approval from the FAA.

Airport: Projects developed near airports are subject to approval from the FAA. Any additional regulation at the local level is unnecessary.

Installers: The Illinois Power Agency Act requires that all systems (utility-scale, distributed and community solar) are installed by qualified installers. This requirement is regulated by the Illinois Commerce Commission. Any additional requirements are unnecessary and burdensome.

Site Plan: A site plan is appropriate for all systems, and systems that meet the plan requirements should not need Planning Commission or Zoning Board approval.

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Environmental Impact: For large solar systems to secure financing, the developer will have to show that the system does not have an endangered species impact, wetland impact, or historical places impact. This is standard practice, and the developer should be able to provide the authority with this information.

Floodplain: All ground-mount systems will have a topo and hydro analysis that will be completed prior to issuance of a building permit. Additional requirements are unnecessary.

Storm water/Drainage: Ground-mount systems should be exempt from impervious surface requirements if the developer is doing minimal grading (i.e. less than 1 acre of soil disturbance) and will maintain vegetation or other regulatory approved surface application (i.e. gravel or synthetic surface liners) under and around the system. There will be some impact through pier placement and conduit trenching, but overall the impact is minimal. Impact to drainage tiles and other subsurface utility concerns are addressed in the arrangement with the landowner, and does not require additional oversight at the local level.

Landscaping: For ground-mount systems, native vegetation is typical, and mowing maintenance is common. In most instances topsoil will be minimally impacted during construction. There should not be additional requirements, and a clear path for variances if the development is atypical.

Transportation: In general, solar projects do not need the same level of heavy equipment as wind projects, and in most instances roads and access roads will only need to bear, at maximum, a 60,000-pound wheel load for construction. Developers will follow load limits for local roads and will apply for permits to use overweight vehicles if necessary, but road commissioner approval for general construction is unnecessary and burdensome.

Interconnection: Systems should show proof of application for interconnection, but not a final agreement with the utility. Developers will not go through the entire interconnection process before starting the local permitting process; these processes generally happen in parallel.

Transmission: In most instances, developers will bury many of the interior lines associated with the project. But it is impractical and in most cases impossible to bury the lines related to interconnection with the utility. If the authority requires interior lines to be buried, the developer should be able to apply for a waiver.

Operations and Maintenance: Solar system owners have a vested interest in making sure the system is operating efficiently. Many systems have ongoing O&M contracts that include system maintenance, mowing, etc. Proof of this maintenance is unnecessary.

Decommissioning: System owners have a vested interest in making sure the system operates for the full life of the panels, which are warranted for 25 years, but can often be much longer. Solar system owners will decommission the sites after they are no longer productive, and in most cases, developers include this provision in the agreement with the landowner. Therefore, it is duplicative to have this provision in the permitting process. If the authority decides to nonetheless require a decommissioning plan, a letter of credit or bond as well as an engineering cost estimate of decommissioning demonstrating feasibility should be required after 10-15 years, not at the outset, and cash should not be required. Requiring a bond at the beginning of the project is unnecessary and will only deter development. If the system is found to be inoperable, which is unlikely, there should be a limited amount of time for system owners to get the system back online before the authority forces decommissioning.

Property Value: Solar will not have an adverse effect on neighboring properties. Any requirement to protect neighboring properties will completely prevent development. If a LESA evaluation is required, it should be clear how the county will use the LESA score.

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Complaint Resolution: Many solar developers are members of the Illinois Solar Energy Association, and as such are required to comply with the association's codes of conduct. Solar systems should not be subject to any more stringent complaint processes than other types of development.

Fees: If the authority requires a fee for permit application, the industry prefers a clear delineation of such fees.

For more information, please contact Lesley McCain, Executive Director, Illinois Solar Energy Association at Lesley.mccain@illinoissolar.org.

SOLAR FARM
PROPOSED
Kankakee County Zoning Ordinance Amendment

Chapter 121 – ZONING

ARTICLE I. – IN GENERAL

Sec. 121-3. Rules and definitions

(b) Definitions.

Solar Farm - A solar panel or array composed of multiple solar panels on ground-mounted rack or poles which are one of the primary use(s) for the parcel of land on which it is located, or any solar energy system that has a primary purpose for wholesale or retail sales of generated electricity.

ARTICLE III. - ZONING DISTRICTS

DIVISION 2. – AGRICULTURAL DISTRICTS

Sec. 121-99. – Agricultural district (A1).

(c) *Special uses.*

(34) Solar farm. Solar farms, also known as solar power plants and solar energy generation facilities, shall be permitted in the A1 district as a special use, in accordance with the following minimal regulations and design standards.

(a) *Design standards.* The design standards and bulk regulations listed in the A1- Agriculture district for setbacks, lot size, lot coverage, lot area, height, and signage shall be suspended for all solar farms and the following regulations shall apply instead. All other design standards and bulk regulations of the district shall apply.

- 1. Foundations** - The manufacturer's engineer or another qualified engineer shall certify that the foundation and design of the solar panels is

within accepted professional standards, given local soil and climate conditions.

2. Other Standards and Codes- All solar farms shall be in compliance with any applicant local, state and federal regulatory standards, and the National Electric Code as amended.

3. Power and Communication Lines – Power and communication lines running between banks of solar panels and to electric substations or interconnections with buildings shall be buried underground. Exemptions or variances may be granted in instances where shallow bedrock, water courses, or other elements of natural landscape interfere with the ability to bury lines.

4. Minimum lot size – No solar farm shall be erected on any lot less than 20 5 acres in size.

5. Height – Systems, equipment and structures shall not exceed thirty feet (30) in height when ground mounted. Excluded from this height requirement, however, are electric transmission lines and utility poles.

6. Setbacks – Ground mounted solar energy systems as part of a solar farm shall have a setback for all equipment excluding fences a minimum of 100 feet on the front and 50 feet from all other property lines, with the exception of residential property lines, in which the solar energy system shall be setback 100 feet for residentially zoned lots and existing residential properties, with the setback distance to be measured from the property line of the solar farm to the property line of residentially zoned lots or existing residential properties. The zoning board of appeals may grant a variance to such setback requirement if the proposed or existing buffer is sufficient to screen the project from view from adjoining property or public rights-of-way, if the owners of the adjoining properties agree to waive these setback requirements. The zoning board of appeals granting of such a variance will be part of their recommendation to the county board.

7. Screening and Fencing – Systems equipment and structures shall be fully enclosed and secured by a fence with a minimum height of 8 feet. Knox boxes and keys shall be provided at locked entrances for emergency personnel access. The zoning board of appeals shall have the discretion to recommend or at the discretion of the county board, a thirty (30) foot

wide buffer of which part shall be consisting of a compact evergreen hedge or other type of evergreen foliage which shall be recommended along the entire perimeter of the facility, or an alternative buffer may also be considered. The buffer shall be planted at a minimum of three (3) feet tall and with the expectation that this hedge shall reach the height of at least eight (8) feet within three years and shall be maintained in good condition. If a vegetative buffer is to be part of the solar farm development, a landscape plan should be submitted for review and approval. The landscape plan shall take into account the type(s) of evergreens to be planted, along with the proposed spacing of the plantings, along with an evaluation of the soils. An alternative buffer may also be considered. Earth berms other topographical features and existing wooded areas may be accepted in lieu or in combination of the above requirements, if they conceal the use from public view and are maintained.

8. Lighting – If lighting is provide at the site, lighting shall be shielded and downcast such that the light does not spill onto the adjacent parcel.

9. Noise - Noise levels measured at the property line shall not exceed fifty (50) decibels when located adjacent to an existing residence or residential district.

~~10. Installation and Design – Individual arrays/solar panels shall be designed and located in order to prevent glare toward any inhabited buildings on adjacent properties as well as adjacent street rights of way.~~

11. Performance standards - All solar power plants must conform to the performance standards as listed in Sec. 121-207 of Chapter 121.

12. Signage – an appropriate warning sign shall be provided at the entrance to the facility and along the perimeter to the solar farm project. The sign at the entrance to the facility shall include the facilities 911 address and a 24 hour emergency contact number.

13. Outdoor storage - Only the outdoor storage of materials, vehicles and equipment that directly support the operation and maintenance of the solar farm shall be allowed with the exception of outdoor storage that is expressly allowed in the zoning district as specified

herein. The planning director or his or her designee shall have the discretion in determining whether the outdoor storage is in compliance with this provision. In any event all outdoor storage areas shall be paved with a bituminous surface and either fenced or screened to prevent viewing from adjoining properties and uses.

(b) Application Requirements (zoning). Due to the unique nature and special requirements of solar power plants and their potential impacts to adjoining properties and government services, solar power plants shall be required to submit and obtain approval on the following items in addition to any requirements specified in the special use section of the County Code or any special conditions required by the zoning board of appeals or the Kankakee County Board. The applicant shall provide 50 copies of all required submittals to the planning department. However, the applicant shall only be required to submit two copies of all documents proving ownership or interest in the property.

1. A site plan with existing conditions showing the following:
 - a. Existing property lines and property lines extending one hundred feet from the exterior boundaries, including the names of adjacent property owners and current use of those properties.
 - b. Existing public and private roads, showing widths of the roads and any associated easements.
 - c. Location and size of any abandoned wells, sewage treatments systems.
 - d. Existing buildings and any impervious surfaces.
 - e. A contour map showing topography at two (2) foot intervals. A contour map of surrounding properties may also be required.
 - f. Existing vegetation (list type and percent of coverage: i.e. cropland/plowed fields, grassland, wooded areas etc.)

- g. Waterways, watercourses, lakes and public water wetlands.**
 - h. Any delineated wetland boundaries.**
 - i. A copy of the current FEMA FIRM map that shows the subject property. And, the one hundred year flood elevation and any regulated flood protection elevation, if available.**
 - j. Floodway, flood fringe and/or general flood plain district boundary, if applicable and not provided on the copy of the current FEMA FIRM map.**
 - k. Mapped soils according to the Kankakee County Soil Survey.**
 - l. Surface water drainage patterns.**
 - m. The location of any subsurface drainage tiles.**
- 2. Site Plan of Proposed Conditions:**
- a. Location and spacing of solar panels.**
 - b. Location of access roads and access points.**
 - c. Planned location of underground or overhead electric lines connecting the solar farm to a building, substation or other electric load.**
 - d. New electrical equipment other than at the existing building or substation that is to be the connection point for the solar farm.**
 - e. Sketch elevation of the premises accurately depicting proposed solar energy conversion system and its relationship to structure on adjacent land.**
 - f. Weed/Grass control- Applicant must present an acceptable weed control plan for property inside and outside fenced area for entire property. The Operating Company during the operation of the Solar Farm must**

maintain the fence and adhere to the weed/grass control plan. If the operating company does not there can be a fine of \$500 per week if the fence is not secure or the weed/grass control plan is not followed, as per Sec. 121-7 of these regulations.

3. All solar power plant applications shall be accompanied by a preliminary map and plan showing the roads and rights-of-ways that will be utilized for both the construction and operation of the solar power plant. Prior to the issuance of a building permit, the applicant shall submit an executed agreement between the solar power plant owner/operator and all road district authorities with infrastructure affected by the solar power plant to the county. This agreement shall include at a minimum:
 - a. A final map identifying the routes that will be used.
 - b. A plan for maintaining and/or repairing the affected roads.
 - c. Other inclusions as specified by the zoning board of appeals, the county board or affected road authority.
4. Manufacturer's specifications and recommended installation methods for all major equipment, including solar panels, mounting systems and foundations for poles or racks.
5. ~~The number of panels to be installed.~~ An itemized cost estimate of the entire construction costs of the project.
6. A description of the method of connecting the array to a building or substation.
7. At the time of applying for the special use application a written demonstration shall be provided that the applicant is in the queue to acquire an interconnect agreement. Then pre operation of the project, a copy of an interconnect agreement with the

appropriate electric utility, or a written explanation outlining why an interconnection agreement is not necessary should be provided to the county.

8. A decommission plan shall be required to ensure that facilities are properly removed after their useful life. Decommissioning of solar panels must occur in the event they are not in use for twelve (12) consecutive months, the operating company and or land owner have six months to complete the decommission plan or the County will take the necessary decommission steps. The plan shall include provisions for removal of all structures (including equipment, fencing and roads) and foundations, restoration of soil and vegetation and a plan ensuring financial resources will be available to fully decommission the site. Decommissioning security financing shall be required by the county in order to assure the proper decommissioning of the site **and in no instance shall the finance security be less than \$1000.00 per acre.** This security financing should be in the form of an irrevocable letter of credit or cash placed in a County escrow account. The county board may, in its sole discretion, agree to accept security, or a portion thereof, in another form such as a bond or corporate guarantee. **The decommissioning plan and financial security must be presented to and accepted by the Kankakee County Board prior to the issuance of a building permit for the facility.**

An update to this decommissioning plan should be submitted to the county every three years. In addition any decommissioning plans signed by the party responsible for decommissioning and the landowner (if different) shall be submitted with the application.

The county reserves the right to require additional information or components to the plan as the county deems necessary to ensure that an adequate proposal is in place to decommission the facility in its entirety and that adequate funds are available.

(c) Fees and costs.

- (1) **[Applicable fees.]** The fees listed in section 121-38 are not applicable to solar farm special use permit applications and the following fees shall apply. No solar

farm special use permit application shall be accepted until the filing fee of \$5,000.00 is paid and accompanied by a notarized statement of the appropriate corporate officials or official legal representative of the applicant that the applicant will pay to the county additional fees to reimburse the county for moneys expended in excess of \$5,000.00 in preparing for, processing, reviewing and evaluating the application to its final resolution. The applicant shall also agree in said notarized statement to stop all proceedings if an invoice for reimbursement to the county is not paid to the county treasurer within ten days after the invoice has been presented to the appropriate corporate officer or official legal representative of the applicant.

- (2) *Remedial costs.* Applicants and/or owners of solar farms shall pay all costs associated with the remedy of any complaints deemed necessary and factual by the planning director or the Kankakee County Board.

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6.1.4 WIND FARM County BOARD SPECIAL USE Permit

A WIND FARM County BOARD SPECIAL USE Permit may only be authorized in the AG-1, Agriculture Zoning DISTRICT subject to the following conditions:

A. General Standard Conditions

- I. The area of the WIND FARM County Board SPECIAL USE Permit must include the following minimum areas:**
 - (a) All land that is a distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of that WIND FARM TOWER.**
 - (b) All land that will be exposed to a noise level greater than that authorized to Class A land under paragraph 6.1.4I.**
 - (c) All necessary access lanes or driveways and any required new PRIVATE ACCESSWAYS. For purposes of determining the minimum area of the SPECIAL USE Permit, access lanes or driveways shall be provided a minimum 40 feet wide area.**
 - (d) All necessary WIND FARM ACCESSORY STRUCTURES including electrical distribution lines, transformers, common switching stations, and substations not under the ownership of a PUBLICLY REGULATED UTILITY. For purposes of determining the minimum area of the SPECIAL USE Permit, underground cable installations shall be provided a minimum 40 feet wide area.**
 - (e) All land that is within 1.50 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of each WIND FARM TOWER except any such land that is more than 1,320 feet from any existing public STREET right of way.**
 - (f) All land area within 1,320 feet of a public STREET RIGHT OF WAY that is also within 1,000 feet from the base of each WIND FARM TOWER except that in the case of WIND FARM TOWERS in compliance with the minimum STREET separation required by paragraph 6.1.4C5, in which case land on the other side of the public STREET right of way does not have to be included in the SPECIAL USE Permit.**

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

2. The WIND FARM County Board SPECIAL USE Permit shall not be located in the following areas:
 - (a) Less than one-and-one-half miles from an incorporated municipality that has a zoning ordinance.
 - (b) Less than one mile from the CR, Conservation-Recreation Zoning DISTRICT.
 - (c) In any area leased for underground gas storage or under easement for same, unless the lease or easement requires that gas injection wells and other above-ground appurtenances be located in conformance with paragraph 6.1.4C9.

B. Minimum Lot Standards

1. There are no minimum LOT AREA, AVERAGE LOT WIDTH, SETBACK, YARD, or maximum LOT COVERAGE requirements for a WIND FARM or for LOTS for WIND FARM TOWERS, substations, and WIND FARM maintenance and management facilities.

C. Minimum Standard Conditions for Separations for WIND FARM TOWERS from adjacent USES and STRUCTURES.

The location of each WIND FARM TOWER shall provide the following required separations as measured from the exterior of the above ground portion of the WIND FARM TOWER:

1. At least 1,000 feet separation from the exterior above-ground base of a WIND FARM TOWER to any PARTICIPATING DWELLING OR PRINCIPAL BUILDING provided that the noise level caused by the WIND FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.
2. At least 1,200 feet separation from the exterior above-ground base of a WIND FARM TOWER to any existing NON-PARTICIPATING DWELLING OR PRINCIPAL BUILDING provided that the noise level caused by the WIND FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations and provided that the separation distance meets or exceeds any separation recommendations of the manufacturer of the wind turbine used on the WIND FARM TOWER.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

3. The above separations may be reduced to a distance no less than 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) upon submission of a PRIVATE WAIVER signed by the owner of said DWELLING or BUILDING or adjacent property. The PRIVATE WAIVER must specify the agreed minimum separation and specifically acknowledge that the grantor accepts the resulting noise level caused by the WIND FARM.
4. A separation distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest adjacent property line for property that is also part of the WIND FARM County Board SPECIAL USE Permit. This separation may be reduced upon submission of a PRIVATE WAIVER signed by the owner of the adjacent property. The PRIVATE WAIVER must specify the agreed minimum separation.
5. A separation distance equal to 1.50 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest public STREET RIGHT OF WAY unless the WIND FARM is located on both sides of the STREET in which case the minimum separation distance between a WIND FARM TOWER and the public STREET RIGHT OF WAY is equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade).
6. A separation distance equal to 1.50 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest non-participating property. This separation may be reduced upon submission of a PRIVATE WAIVER signed by the owner of said non-participating property. The PRIVATE WAIVER must specify the agreed minimum separation.
7. A separation distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest easement for a GAS PIPELINE or HAZARDOUS LIQUID PIPELINE, and easement for an underground water main or to the actual water main if there is no easement, third party electrical transmission lines, communication towers, or railroad right of way. This separation may be reduced upon submission of a PRIVATE WAIVER signed by the owner of said electrical transmission line or communication tower or the pipeline or the relevant public street maintenance jurisdiction. The PRIVATE WAIVER must specify the agreed minimum separation.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

8. Any PRIVATE WAIVER establishing an agreement for a lesser minimum separation as authorized above shall be submitted prior to the final determination by the Board and must be recorded as part of the chain of title in the deed to any relevant tract of land prior to authorization of any relevant ZONING USE PERMIT. No waiver of a standard condition shall be required in the event of a duly agreed and signed PRIVATE WAIVER.
9. At least 1,200 feet separation from the exterior above-ground base of a WIND FARM TOWER to any wellhead or other above ground fixture that is accessory to a GAS PIPELINE or to any valve or other above ground fixture for any HAZARDOUS LIQUID PIPELINE, provided however, that if the relevant PIPELINE IMPACT RADIUS required by paragraph 4.3.4H. is greater than 1,200 feet then that PIPELINE IMPACT RADIUS shall be the minimum separation of any of the above. This separation may be reduced upon submission of a PRIVATE WAIVER signed by the owner of said pipeline. The PRIVATE WAIVER must specify the agreed minimum separation.
10. At least 1,600 feet separation from the exterior above-ground base of a WIND FARM TOWER to any Liquefied Natural Gas Storage; or Liquefied Petroleum Gas Storage; or Gasoline and Volatile Oils Storage exceeding 10,000 gallons capacity in the aggregate.
11. For any legal RESTRICTED LANDING AREA that existed on or for which there had been a complete SPECIAL USE Permit application received by April 22, 2010, there shall be a separation from the runway to the nearest tip of a blade of the nearest WIND FARM TOWER as follows:
 - (a) The separation from the sides and ends of the runway shall be seven horizontal feet for each one foot of overall WIND FARM TOWER HEIGHT.
 - (b) An additional separation from the end of the runway shall be 15 feet for each one foot of overall WIND FARM TOWER HEIGHT in a trapezoidal shape that is the width of the runway approach zone based on the requirements of 92 Ill. Admin Code 14.520, except as follows:
 - (1) that part of the separation that is more than 3,000 feet from the end of the runway may be a consistent width based on the widest point of the runway approach zone.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

12. For any legal RESIDENTIAL AIRPORT that existed on or for which there had been a complete SPECIAL USE Permit application received by April 22, 2010 there shall be a separation from the runway to the nearest tip of a blade of the nearest WIND FARM TOWER as follows:
- (a) The separation from the sides and ends of the runway shall be seven horizontal feet for each one foot of overall WIND FARM TOWER HEIGHT.
 - (b) An additional separation from the end of the runway and for a distance of 50 feet on either side of an end of the runway, shall be 20 feet for each one foot of overall WIND FARM TOWER HEIGHT in a trapezoidal shape that is the width of the runway approach zone based on the requirements of 92 Ill. Admin Code 14.520, except as follows:
 - (1) that part of the required separation that is more than 3,000 feet from the end of the runway may be consistent width based on the widest part of the runway approach zone.
- D. Standard Conditions for Design and Installation of WIND FARM TOWERS.
- 1. Design Safety Certification
 - (a) WIND FARM TOWERS, turbines, and all related construction shall conform to applicable industry standards, including those of the American National Standards Institute ("ANSI"). Applicants shall submit certificates of design compliance that equipment manufacturers have obtained from Underwriters Laboratories ("UL"), Det Norske Veritas ("DNV"), Germanischer Lloyd Wind Energy ("GL"), or equivalent third party. Documentation of compliance must be submitted prior to receiving a Zoning Compliance Certificate for either the WIND FARM or for any single WIND FARM TOWER.
 - (b) Each Zoning Use Permit Application for a WIND FARM TOWER shall include a certification by an Illinois Professional Engineer or Illinois Licensed Structural Engineer that the foundation and tower design of the WIND FARM TOWER is within accepted professional standards, given local soil and climate conditions.
 - 2. Controls and Brakes
 - (a) All WIND FARM TOWER turbines 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.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (b) Mechanical brakes shall be operated in fail-safe mode.
 - (c) Stall regulation shall not be considered a sufficient braking system for over speed protection.
- 3. Electrical Components. All electrical components of the WIND FARM shall conform to applicable state and national codes including, any relevant national and international standards (e.g. ANSI and International Electrical Commission).
- 4. The WIND FARM TOWER must be a monopole construction.
- 5. The total WIND FARM TOWER height (measured to the tip of the highest rotor blade) must be less than 500 feet.
- 6. WIND FARM TOWERS, turbine nacelles, and blades shall be painted white or gray or another non-reflective, unobtrusive color as specified in the application and authorized by the Board.
- 7. The WIND FARM shall comply with all applicable Federal Aviation Administration (FAA) requirements which shall be explained in the application. The minimum lighting requirement of the FAA shall not be exceeded except that all WIND FARM TOWERS shall be lighted and unless otherwise required by the FAA only red flashing lights shall be used at night and only the minimum number of such lights with the minimum intensity and the minimum number of flashes per minute (longest duration between flashes) allowed by FAA.
- 8. Warnings
 - (a) A reasonably visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and Substations.
 - (b) Visible, reflective, colored objects, such as flags, reflectors, or tape shall be placed on the anchor points of guy wires and along the guy wires up to a height of 15 feet from the ground.
- 9. All WIND FARM TOWERS must be protected from unauthorized climbing by devises such as fences at least six feet high with locking portals or anti-climbing devices 12 feet vertically from the base of the WIND FARM TOWER.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- E. Standard Conditions to Mitigate Damage to Farmland**
1. All underground wiring or cabling for the WIND FARM shall be at a minimum depth of 4 feet below grade or deeper if required to maintain a minimum one foot of clearance between wire or cable and any agricultural drainage tile.
 2. Protection of agricultural drainage tile
 - (a) The applicant shall endeavor to locate all existing agricultural drainage tile prior to establishing any construction staging areas, construction of any necessary WIND FARM TOWER access lanes or driveways, construction of any WIND FARM TOWERS, any common switching stations, substations, and installation of underground wiring or cabling. The applicant shall contact affected landowners and tenants for their knowledge of the tile line locations prior to the proposed construction. Drainage districts shall be notified at least two weeks prior to disruption of tile.
 - (b) All identified drainage district tile lines shall be staked or flagged prior to construction to alert construction crews of the possible need for tile line repairs unless this requirement is waived in writing by the drainage district.
 - (c) Any agricultural drainage tile located underneath construction stage areas, access lanes, driveways, any common switching stations, and substations shall be replaced as required in paragraph 7.2 of the *Champaign County Stormwater Management Policy*.
 - (d) Any agricultural drainage tile that must be relocated shall be relocated as required in the *Champaign County Stormwater Management Policy*.
 - (e) Conformance of any relocation of drainage district tile with the *Champaign County Stormwater Management Policy* shall be certified by an Illinois Professional Engineer. Written approval by the drainage district shall be received prior to any backfilling of the relocated drain tile and a copy of the approval shall be submitted to the Zoning Administrator. As-built drawings shall be provided to both the relevant drainage district and the Zoning Administrator of any relocated district tile.
 - (f) All tile lines that are damaged, cut, or removed shall be staked or flagged in such manner that they will remain visible until the permanent repairs are completed.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (g) All exposed tile lines shall be screened or otherwise protected to prevent the entry into the tile of foreign materials, loose soil, small mammals, etc.
 - (h) Permanent repairs shall be made within 14 days of the tile damage provided that weather and soil conditions are suitable or a temporary tile repair shall be made. Immediate temporary repair shall also be required if water is flowing through any damaged tile line. Temporary repairs are not needed if the tile lines are dry and water is not flowing in the tile provided the permanent repairs can be made within 14 days of the damage.
 - (i) All damaged tile shall be repaired so as to operate as well after construction as before the construction began.
 - (j) Following completion of the WIND FARM construction the applicant shall be responsible for correcting all tile line repairs that fail, provided that the failed repair was made by the applicant.
3. All soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by WIND FARM construction shall be restored by the applicant to the pre-WIND FARM construction condition.
4. Topsoil replacement

For any open trenching required pursuant to WIND FARM construction, the topsoil shall be stripped and replaced as follows:

- (a) The top 12 inches of topsoil shall first be stripped from the area to be trenched and from an adjacent area to be used for subsoil storage. The topsoil shall be stored in a windrow parallel to the trench in such a manner that it will not become intermixed with subsoil materials.
- (b) All subsoil material that is removed from the trench shall be placed in the second adjacent stripped windrow parallel to the trench but separate from the topsoil windrow.
- (c) In backfilling the trench, the stockpiled subsoil material shall be placed back into the trench before replacing the topsoil.
- (d) The topsoil must be replaced such that after settling occurs, the topsoil's original depth and contour (with an allowance for settling) will be restored.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

5. Mitigation of soil compaction and rutting
 - (a) The applicant shall not be responsible for mitigation of soil compaction and rutting if exempted by the WIND FARM lease.
 - (b) Unless specifically provided for otherwise in the WIND FARM lease, the applicant shall mitigate soil compaction and rutting for all areas of farmland that were traversed with vehicles and construction equipment or where topsoil is replaced in open trenches.

6. Land leveling
 - (a) The applicant shall not be responsible for leveling of disturbed land if exempted by the WIND FARM lease.
 - (b) Unless specifically provided for otherwise in the WIND FARM lease, the applicant shall level all disturbed land as follows:
 - (1) Following the completion of any open trenching, the applicant shall restore all land to its original pre-construction elevation and contour.
 - (2) Should uneven settling occur or surface drainage problems develop as a result of the trenching within the first year after completion, the applicant shall again restore the land to its original pre-construction elevation and contour.

7. Permanent Erosion and Sedimentation Control Plan
 - (a) Prior to the approval of any Zoning Use Permit, the Applicant shall provide a permanent soil erosion and sedimentation plan for all WIND FARM TOWER sites and access roads that conforms to the relevant Natural Resources Conservation Service guidelines and that is prepared by an Illinois Licensed Professional Engineer.
 - (b) As-built documentation of all permanent soil erosion and sedimentation improvements for all WIND FARM TOWER sites and access roads prepared by an Illinois Licensed Professional Engineer shall be submitted and accepted by the Zoning Administrator prior to approval of any Zoning Compliance Certificate.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

F. Standard Conditions for Use of Public STREETS

Any WIND FARM applicant proposing to use any County Highway or township or municipal STREET for the purpose of transporting WIND FARM TOWERS or Substation parts and/or equipment for construction, operation, or maintenance of the WIND FARM TOWERS or Substation(s), shall identify all such public STREETS and pay the costs of any necessary permits and costs to repair any damage to the STREETS caused by the WIND FARM construction, as follows:

1. The Applicant shall enter into a Roadway Upgrade and Maintenance agreement approved by the County Engineer; or Township Highway Commissioner; or municipality where relevant. Agreements with the County Engineer shall not be forwarded to the County Board before the WIND FARM SPECIAL USE permit is forwarded. All other agreements shall be executed prior to the close of the public hearing before the BOARD. The signed and executed Roadway Upgrade and Maintenance agreements must provide for the following minimum conditions:
 - (a) The applicant shall agree to conduct a pre-WIND FARM construction baseline survey to determine existing STREET conditions for assessing potential future damage including the following:
 - (1) A videotape of the affected length of each subject STREET supplemented by photographs if necessary.
 - (2) Pay for costs of the County to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the WIND FARM construction.
 - (3) Pay for any strengthening of STREET structures that may be necessary to accommodate the proposed traffic loads caused by the WIND FARM construction.
 - (b) The applicant shall agree to pay for costs of the County Engineer to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the WIND FARM construction and pay for any strengthening of structures that may be necessary to accommodate the proposed traffic loads caused by the WIND FARM construction.
 - (c) The applicant shall agree upon an estimate of costs for any other necessary roadway improvements prior to construction.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (d) The applicant shall obtain any necessary approvals for the STREET improvements from the relevant STREET maintenance authority.
- (e) The applicant shall obtain any necessary Access Permits including any required plans.
- (f) The applicant shall erect permanent markers indicating the presence of underground cables.
- (g) The applicant shall install marker tape in any cable trench.
- (h) The applicant shall become a member of the Illinois state wide One-Call Notice System (otherwise known as the Joint Utility Locating Information for Excavators or "JULIE") and provide JULIE with all of the information necessary to update its record with respect to the WIND FARM.
- (i) The applicant shall use directional boring equipment to make all crossings of County Highways for the cable collection systems.
- (j) The applicant shall provide plans for the widening of any corner radius that is necessary to facilitate the turning movements of the transport trucks used by the applicant.
- (k) The applicant shall pay for the necessary temporary STREET improvements for the widened corner radii and pay for the cost to return the widened radii to their original lines and grades when no longer needed for the WIND FARM construction unless the STREET maintenance authority requests that the widened radii remain as improved.
- (l) The applicant shall notify the STREET maintenance authority in advance of all oversize moves and crane crossings.
- (m) The applicant shall provide the County Engineer with a copy of each overweight and oversize permit issued by the Illinois Department of Transportation for WIND FARM construction.
- (n) The applicant shall transport the WIND FARM TOWER segments and other oversize loads so as to minimize adverse impact on the local traffic including farm traffic.
- (o) The applicant shall schedule WIND FARM construction traffic in a way to minimize adverse impacts on emergency response vehicles, rural mail delivery, school bus traffic, and local agricultural traffic.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (p) The applicant shall provide as much advance notice as is commercially reasonable to obtain approval of the STREET maintenance authority when it is necessary for a STREET to be closed due to a crane crossing or for any other reason. Notwithstanding the generality of the aforementioned, the applicant will provide 48 hours notice to the extent reasonably practicable.
- (q) The applicant shall provide signs indicating all highway and STREET closures and work zones in accordance with the Illinois Department of Transportation Manual on Uniform Traffic Control Devices.
- (r) The applicant shall establish a single escrow account and a single Irrevocable Letter of Credit for the cost of all STREET upgrades and repairs pursuant to the WIND FARM construction.
- (s) The applicant shall notify all relevant parties of any temporary STREET closures.
- (t) The applicant shall obtain easements and other land rights needed to fulfill the applicant's obligations under this agreement.
- (u) The applicant shall provide written Notice to Proceed to the relevant STREET maintenance authority by December 31 of each year that identifies the STREETS to be upgraded during the following year.
- (v) The applicant shall provide dust control and grading work to the reasonable satisfaction of the County Engineer on STREETS that become aggregate surface STREETS.
- (w) The applicant shall conduct a post-WIND FARM construction baseline survey similar to the pre-WIND FARM construction baseline survey to identify the extent of repairs necessary to return the STREET to the pre-WIND FARM construction condition.
- (x) The applicant shall pay for the cost of all repairs to all STREETS that are damaged by the applicant during the construction of the WIND FARM and restore such STREETS to the condition they were in at the time of the pre-WIND FARM construction inventory.
- (y) All WIND FARM construction traffic shall exclusively use routes designated in the approved Transportation Impact Analysis.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (z) The applicant shall provide liability insurance in an acceptable amount to cover the required STREET construction activities.
 - (aa) The applicant shall pay for the present worth costs of life consumed by the construction traffic as determined by the pavement management surveys and reports on the roads which do not show significant enough deterioration to warrant immediate restoration.
 - (bb) Provisions for expiration date on the agreement.
 - (cc) Other conditions that may be required.
2. A condition of the County Board SPECIAL USE Permit approval shall be that the Zoning Administrator shall not authorize a Zoning Use Permit for the WIND FARM until the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, has approved a Transportation Impact Analysis provided by the applicant and prepared by an independent engineer that is mutually acceptable to the applicant and the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, that includes the following:
- (a) Identify all such public STREETS or portions thereof that are intended to be used by the applicant during construction of the WIND FARM as well as the number of loads, per axle weight of each load; and type of equipment that will be used to transport each load.
 - (b) A schedule of the access road culverts and bridges affected by the project and the recommendations as to actions, if any, required with respect to such culverts and bridges and estimates of the cost to replace such culverts and bridges.
 - (c) A schedule of the anticipated STREET repair costs to be made in advance of the WIND FARM construction and following construction of the WIND FARM.
 - (d) The applicant shall reimburse the County Engineer; or Township Highway Commissioner; or municipality where relevant, for all reasonable engineering fees including the costs of a third party consultant, incurred in connection with the review and approval of the Transportation Impact Analysis.
3. At such time as decommissioning takes place the Applicant or its successors in interest shall enter into a Roadway Use and Repair Agreement with the appropriate highway authority.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- G. Standard Conditions for Coordination with Local Fire Protection District**
1. The applicant shall submit to the local fire protection district a copy of the site plan.
 2. Upon request by the local fire protection district, the Owner or Operator shall cooperate with the local fire protection district to develop the fire protection district's emergency response plan.
 3. Nothing in this section shall alleviate the need to comply with all other applicable fire laws and regulations.
- H. Standard Conditions to Mitigate Electromagnetic Interference**
1. The applicant shall provide the applicable microwave transmission providers and local emergency service provider(s) (911 operators) copies of the project summary and site plan.
 2. To the extent that any relevant microwave transmission provider and local emergency service provider demonstrates a likelihood of interference with its communications resulting from the WIND FARM, the applicant shall take reasonable measures to mitigate such anticipated interference.
 3. If, after construction of the WIND FARM, the Owner or Operator receives a written complaint related to the above-mentioned interference, the Owner or Operator shall take reasonable steps to respond to the complaint.
 4. If, after construction of the WIND FARM, the Owner or Operator receives a written complaint related to interference with local broadcast residential television, the Owner or Operator shall take reasonable steps to respond to the complaint.
- I. Standard Conditions for Allowable Noise Level**
1. Noise levels from each WIND FARM TOWER or WIND FARM shall be in compliance with the applicable Illinois Pollution Control Board (IPCB) regulations (35 Illinois Administrative Code Subtitle H: Noise Parts 900, 901, 910).
 2. 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.
 3. The applicant, through the use of a qualified professional, as part of the siting approval application process, shall appropriately demonstrate compliance with the above noise requirements.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

4. The applicant shall submit a map of the relevant noise contours for the proposed WIND FARM and indicate the proposed WIND FARM TOWERS and all existing PRINCIPAL BUILDINGS within at least 1,500 feet of any WIND FARM TOWER or within the coverage of the relevant noise contours.
 5. If a computer model is used to generate the required noise contours the applicant shall clearly state the assumptions of the model's construction and algorithms so that a competent and objective third party can as simply as possible verify the noise contours and noise data.
 6. After construction of the WIND FARM the Zoning Administrator shall take appropriate enforcement action as necessary to investigate noise complaints in order to determine the validity of the complaints and take any additional enforcement action as proves warranted to stop any violation that is occurring, including but not limited to the following:
 - (a) The Zoning Administrator may seek authorization from the County Board to hire a noise consultant to determine the noise produced by the WIND FARM in a manner consistent with the Illinois Pollution Control Board (IPCB) regulations (35 *Illinois Administrative Code* Subtitle H: Noise Parts 900, 901, 910).
 - (b) The Zoning Administrator may require the WIND FARM owner to cooperate fully with the noise consultant in the enforcement action including shutting down all wind turbines to allow documentation of ambient noise levels.
 - (c) In the event that a violation of the IPCB noise regulations is identified the Zoning Administrator may require the WIND FARM owner to take whatever actions are necessary to stop the violation and comply with the noise regulations. The Zoning Administrator may seek direction from the Environment and Land Use Committee regarding the actions necessary to stop the violation.
 - (d) Further, in the event that a violation of IPCB noise regulations is identified the WIND FARM owner shall reimburse to the County the cost of the noise consultant.
- J. **Standard Conditions for Endangered Species Consultation**

The applicant shall apply for consultation with the Endangered Species Program of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report or, if applicable, a copy of the Detailed Action Report submitted to the Endangered Species Program of the Illinois Department of Natural Resources and a copy of the response from the Illinois Department of Natural Resources.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

K. Standard Conditions for Historic and Archaeological Resources Review

The applicant shall apply for consultation with the State Historic Preservation Officer of the Illinois Department of Natural Resources. The application shall include a copy of the Agency Action Report from the State Historic Preservation Officer of the Illinois Department of Natural Resources.

L. Standard Conditions for Acceptable Wildlife Impacts

1. The WIND FARM shall be located, designed, constructed, and operated so as to avoid and if necessary mitigate the impacts to wildlife to a sustainable level of mortality including the following:
 - (a) Avoid locating WIND FARM TOWERS in known bird and bat migration pathways and daily movement flyways and known hibernacula and flight paths between bat colonies and bat feeding areas.
 - (b) Site WIND FARM TOWERS and design mitigation measures in a manner that will achieve a level of mortality to birds and bats that will protect sustainability of populations.
2. A qualified professional, such as an ornithologist or wildlife biologist, shall conduct a pre-construction site risk assessment study to estimate the impacts of the construction and operation of the proposed WIND FARM on birds and bats. The pre-construction site risk shall be submitted with the application and shall include the following minimum information:
 - (a) A literature review of existing information on species and potential habitats and results of agency database queries or records of rare, threatened, and endangered species and important habitats in the vicinity of the proposed WIND FARM area.
 - (b) A mapping of the general vegetation and land cover types, wildlife habitat and quality, and physical characteristics of the proposed WIND FARM area.
 - (c) A field examination that verifies results of the literature review and agency queries and documents general site habitat conditions.
 - (d) A review of existing literature of avian and bat mortality field results within North America and in similar physiographic settings as the proposed WIND FARM.
 - (e) If the risk assessment indicated risk may be low, no further surveys are required.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (f) If the risk assessment indicates risk may be high enough to potentially adversely affect the sustainability of bird or bat populations, a full year of site specific bird and bat use surveys may be required to address those species and conditions representing high risk from the beginning of the spring migration for birds or bats, and extending through the end of the fall migration for birds or bats and include both the spring and fall migration for both birds and bats in the proposed WIND FARM area.
 - (g) The site specific bird and bat use surveys may include surveys focused upon state or federal threatened or endangered or sensitive-status species in the proposed WIND FARM area during the appropriate seasons to determine the potential adverse impact.
 - (h) The results of the surveys shall be used to design siting and mitigation measures to lower risk to a sustainable level of mortality.
3. A qualified professional, such as an ornithologist or wildlife biologist, shall also conduct a post-construction mortality monitoring study to quantify the mortality impacts of the WIND FARM on birds and bats. The post-construction mortality monitoring study shall consist of the following information at a minimum:
- (a) At least two full years of site specific mortality monitoring from the beginning of the spring migration for birds or bats, and extend through the end of the fall migration for birds or bats and include both the spring and fall migration for both birds and bats in the immediate vicinity of some or all of the WIND FARM TOWERS.
 - (b) The application shall include a specific proposal for the degree of precision of the mortality monitoring study including how many days the monitoring is done, at how many towers, for how long each day, and at what radius around the tower, and the extent of monitoring outside of the spring and fall migrations.
 - (c) A written report on avian and bat mortality shall be submitted to the Environment and Land Use Committee at the end of the first two full years of WIND FARM operations. The mortality rate estimates should reflect consideration of carcass removal by scavengers and predators.
 - (d) If the Environment and Land Use Committee determines the mortality level does not threaten the population of protected species, no further post-construction mortality monitoring will be required.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (e) If the Environment and Land Use Committee determines there are legitimate mortality to bird or bat species indicated by the post-construction mortality monitoring study shall continue in full year increments until the monitoring indicates that the mortality concerns are resolved. When mortality concerns cannot be resolved in any other way, the Environment and Land Use Committee may require particular WIND FARM TOWERS to be shut down to lower mortality of birds or bats to an acceptable level.
- M. Standard Conditions for Shadow Flicker
- 1. The applicant shall submit the results of a study on potential shadow flicker. The shadow flicker study shall identify the locations of both summer and winter shadow flicker that may be caused by the project with an expected duration of 30 hours or more per year.
 - 2. Shadow flicker that exceeds the above standards shall be mitigated by any means such as landscaping, awnings, or fencing.
- N. Standard Condition for Liability Insurance
- 1. The Owner or Operator of the WIND FARM shall maintain a current general liability policy covering bodily injury and property damage with minimum limits of at least \$5 million per occurrence and \$5 million in the aggregate. The amount of the limit shall be increased annually to account for the effects of inflation.
 - 2. The general liability policy shall identify landowners in the SPECIAL USE Permit as additional insured.
- O. Operational Standard Conditions
- 1. Maintenance
 - (a) The Owner or Operator of the WIND FARM must submit, on an annual basis, a summary of the operation and maintenance reports to the Environment and Land Use Committee and any other operation and maintenance reports as the Environment and Land Use Committee reasonably requests.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (b) Any physical modification to the WIND FARM that alters the mechanical load, mechanical load path, or major electrical components shall require a new County Board SPECIAL USE Permit. Like-kind replacements shall not require re-certification nor will replacement of transformers, cabling, etc. provided replacement is done in a fashion similar to the original installation. Prior to making any physical modification (other than a like-kind replacement), the Owner or Operator shall confer with a relevant third-party certifying entity identified in subparagraph 6.1.4D.1.(a) to determine whether the physical modification requires re-certification.

- 2. **Materials Handling, Storage and Disposal**
 - (a) All solid wastes related to the construction, operation and maintenance of the WIND FARM shall be removed from the site promptly and disposed of in accordance with all federal, state and local laws.
 - (b) All hazardous materials related to the construction, operation and maintenance of the WIND FARM shall be handled, stored, transported and disposed of in accordance with all applicable local, state and federal laws.

- P. **Standard Condition for Decommissioning Plan and Site Reclamation Plan**
 - 1. The applicant shall submit a signed site reclamation plan conforming to the requirements of paragraph 6.1.1 A.
 - 2. In addition to the purposes listed in subparagraph 6.1.1 A.4. the reclamation agreement shall also include provisions for anticipated repairs for any public STREET used for the purpose of reclamation of the WIND FARM and all costs related to removal of access driveways.
 - 3. The Site Reclamation Plan required in paragraph 6.1.1 A. shall also include the following:
 - (a) A stipulation that the applicant shall notify the GOVERNING BODY by certified mail of the commencement of a voluntary or involuntary bankruptcy proceeding, naming the applicant as debtor, within ten days of commencement of the proceeding.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (b) A stipulation that the applicant shall agree that the sale, assignment in fact or at law, or such other transfer of applicant's financial interest in the WIND FARM shall in no way affect or change applicant's obligation to continue to comply with the terms of this agreement. Any successor or assignee shall assume the terms, covenants and obligations of this Agreement and agrees to assume all reclamation liability and responsibility for the WIND FARM.
- (c) Authorization for the GOVERNING BODY and its authorized representatives for right of entry onto the WIND FARM premises for the purpose of inspecting the methods of reclamation or for performing actual reclamation if necessary.
- (d) A stipulation that at such time as decommissioning takes place, the Applicant or its successors in interest are required to enter into a Roadway Use and Repair Agreement with the relevant highway authority.
- (e) A stipulation that the Applicant shall provide evidence of any new, additional, or substitute financing or security agreement to the Zoning Administrator throughout the operating lifetime of the project.
- (f) A stipulation that the Applicant shall be obliged to perform the work in the site reclamation plan before abandoning the WIND FARM or prior to ceasing production of electricity from the WIND FARM, after it has begun, other than in the ordinary course of business. This obligation shall be independent of the obligation to pay financial assurance, and shall not be limited by the amount of financial assurance. The obligation to perform the reclamation work shall constitute a covenant running with the land.
- (g) The site reclamation plan shall provide for payment of any associated costs that Champaign County may incur in the event that decommissioning is actually required. Associated costs include all administrative and ancillary costs associated with drawing upon the financial assurance and performing the reclamation work and shall include but not be limited to attorney's fees; construction management and other professional service fees; and the costs of preparing request for proposals and bidding documents required to comply with State law or Champaign County purchasing policies.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (h) The depth of removal of foundation concrete below ground shall be a minimum of 54 inches. The depth of removal of foundation concrete shall be certified in writing by an Illinois Licensed Professional Engineer and the certification shall be submitted to the Zoning Administrator.
- (i) The hole resulting from the removal of foundation concrete during decommissioning shall be backfilled as follows:
 - (1) The excavation resulting from the removal of foundation concrete shall only be backfilled with subsoil and topsoil in similar depths and similar types as existed at the time of the original WIND FARM construction except that a lesser quality topsoil or a combination of a lesser quality topsoil and a subsoil that is similar to the native subsoil may be used at depths corresponding to the native subsoil but not less than 12 inches below grade.
 - (2) The native soils excavated at the time of the original WIND FARM construction may be used to backfill the concrete foundation excavations at the time of decommissioning provided that the soils are adequately stored throughout the operating lifetime of the WIND FARM. The methods for storing the excavated native soils during the operating lifetime of the WIND FARM shall be included in the site reclamation plan.
 - (3) If the excavated native soils are not stored for use for backfilling the concrete foundation excavations, a qualified soil scientist or Illinois Licensed Professional Engineer shall certify that the actual soils used to backfill the concrete foundation excavations are of equal or greater quality than the native soils or that, in the case of subsoil, the backfill soil meets the requirements of this paragraph. The certification shall be submitted to the Zoning Administrator.
 - (4) An Illinois Licensed Professional Engineer shall certify in writing that the concrete foundation excavations have been backfilled with soil to such a depth and with a minimum of compaction that is consistent with the restoration of productive agricultural use such that the depth of soil is expected to be no less than 54 inches within one year after backfilling.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (j) A stipulation that should the site reclamation plan be deemed invalid by a court of competent jurisdiction the WIND FARM SPECIAL USE Permit shall be deemed void.
 - (k) A stipulation that the Applicant's obligation to complete the site reclamation plan and to pay all associated costs shall be independent of the Applicant's obligation to provide financial assurance.
 - (l) A stipulation that the liability of the Applicant's failure to complete the site reclamation plan or any breach of the site reclamation plan requirement shall not be capped by the amount of the financial assurance.
 - (m) If the Applicant desires to remove equipment or property credited to the estimated salvage value without the concurrent replacement of the property with property of equal or greater salvage value or if the Applicant installs equipment or property increasing the cost of decommissioning after the WIND FARM begins to produce electricity, at any point, the Applicant shall first obtain the consent of the Zoning Administrator. If the Applicant's lien holders remove equipment or property credited to the salvage value the Applicant shall promptly notify the Zoning Administrator. In either of these events the total financial assurance shall be adjusted to reflect any change in total salvage value and total decommissioning costs resulting from any such removal or installation.
4. To comply with paragraph 6.1.1A.5., the Applicant shall provide financial assurance in the form of an irrevocable letter of credit and an escrow account as follows:
- (a) At the time of SPECIAL USE Permit approval the amount of financial assurance to be provided for the site reclamation plan shall be 210% of the decommissioning costs as determined in the independent engineer's cost estimate to complete the decommissioning work described in Section 6.1.1 A.4.a. and 6.1.1A.4.b and 6.1.1A.4.c.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (b) Net salvage value may be deducted from decommissioning costs as follows:
- (1) One of the following standards shall be met:
 - i. The Applicant shall maintain the WIND FARM TOWERS free and clear of liens and encumbrances, including financing liens and shall provide proof of the same prior to issuance of the SPECIAL USE Permit; or
 - ii. The Applicant shall deduct from the salvage value credit the amount of any lien or encumbrance on each WIND FARM TOWER; or
 - iii. Any and all financing and/or financial security agreements entered into by the Applicant shall expressly provide that the agreements are subject to the covenant required by Section 6.1.1A.2 that the reclamation work be done.
 - (2) The applicant shall provide proof of compliance with paragraph 6.1.4P4(b)(1) prior to issuance of any Zoning Use Permit and upon every renewal of the financial assurance and at any other time upon the request of the Zoning Administrator.
 - (3) The Applicant shall provide in the site reclamation plan for legal transfer of the STRUCTURE to the demolisher to pay the costs of reclamation work, should the reclamation work be performed.
 - (4) The net estimated salvage value that is deducted from the estimated decommissioning costs shall be the salvage value that results after all related costs for demolition and any required preparation for transportation for reuse or recycling or for simple disposal and other similar costs including but not limited to the decommissioning of the tower, the hub assembly, the bed plate, the nacelle, the turbine, the blades, the tower cabling and internal wiring, the transformers, the foundation, the access roads.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT – CONTINUED

- (5) Estimated salvage value shall be based on the average salvage price of the past five years as published in a reputable source for salvage values and shall reflect sound engineering judgment as to anticipated changes in salvage prices prior to the next update of estimated net salvage value.
 - (6) The deduction from the estimated decommissioning costs for net estimated salvage value shall be capped at 70% of the total net estimated salvage value even though the total actual salvage value shall be available in the event that decommissioning is actually required.
 - (7) The credit for net estimated salvage value attributable to any WIND FARM TOWER may not exceed the estimated cost of removal of the above-ground portion of that WIND FARM TOWER on the subject site.
- (c) The GOVERNING BODY has the right to require multiple letters of credit based on the regulations governing federal insurance for deposits.
- (d) The Applicant shall adjust the amount of the financial assurance to ensure that it reflects current and accurate information as follows:
- (1) At least once every three years for the first 12 years of the financial assurance and at least once every year thereafter the Applicant shall use an independent Illinois Licensed Professional Engineer to provide updated estimates of decommissioning costs and salvage value, by including any changes due to inflation and/or change in salvage price. The Applicant shall, upon receipt, provide a copy of the adjusted Professional Engineer's report to the Zoning Administrator.
 - (2) At all times the total combined value of the irrevocable letter of credit and the escrow account shall equal or exceed the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation since the WIND FARM was approved; and an amount for any future years left in the anticipated 25 year life span of the WIND FARM at an assumed minimum rate of inflation of 3% per year.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (e) The applicant or WIND FARM owner shall gradually pay down the value of the irrevocable letter of credit by placing cash deposits in an escrow account over the first 13 years of the WIND FARM operation as follows:
- (1) The applicant or WIND FARM owner and the GOVERNING BODY shall agree on a mutually acceptable financial institution at which an escrow account shall be established.
 - (2) The GOVERNING BODY shall be the beneficiary of the escrow account for the purpose of the reclamation of the WIND FARM in the event that the WIND FARM owner is incapable of decommissioning the WIND FARM.
 - (3) The applicant or WIND FARM owner shall grant perfected security in the escrow account by use of a control agreement establishing the County as an owner of record, pursuant to the Secured Transit Article of the Uniform Commercial Code, 810 *ILCS 9/101 et seq.*
 - (4) The applicant or WIND FARM owner shall make annual deposits to the escrow account over a 12 year period and shall simultaneously provide a replacement irrevocable letter of credit that is reduced accordingly.
 - (5) At all times the total combined value of the irrevocable letter of credit and the escrow account shall be increased annually as necessary to reflect actual rates of inflation over the life span of the WIND FARM and the amount shall be equal to or exceed the following:
 - i. the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation since the WIND FARM was approved; plus
 - ii. an amount for any future years left in the anticipated life span of the WIND FARM at an assumed minimum rate of inflation of 3% per year.
 - (6) Any interest accrued on the escrow account that is over and above the total value required by subparagraph 6.1.4 P.3.(b) (4) shall go to the WIND FARM owner.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (7) In order to provide funding for decommissioning at the time of decommissioning, the WIND FARM applicant or WIND FARM owner may exchange a new irrevocable letter of credit in an amount equal to the amount in the escrow account in exchange for the GOVERNING BODY agreeing to a release of the full amount of the escrow account in exchange for the GOVERNING BODY agreeing to a release of the full amount of the escrow account.
 - (f) Should the salvage value of components be adjusted downward or the decommissioning costs adjusted upward pursuant to paragraph 6.1.4P.4.(d), the amount to be placed in the escrow account pursuant to this paragraph 6.1.4P.4. shall be increased to reflect the adjustment, as if the adjusted estimate were the initial estimate.
- 5. In addition to the conditions listed in subparagraph 6.1.1A.9, the Zoning Administrator may also draw on the funds for the following reasons:
 - (a) In the event that any WIND FARM TOWER or component thereof ceases to be functional for more than six consecutive months after it starts producing electricity and the Owner is not diligently repairing such WIND FARM TOWER or component.
 - (b) In the event that the Owner declares any wind turbine or other component to be functionally obsolete for tax purposes.
 - (c) There is a delay in the construction of any WIND FARM TOWER of more than 6 months after construction on that WIND FARM TOWER begins.
 - (d) Any WIND FARM TURBINE appears in a state of disrepair or imminent collapse and/or creates an imminent threat to the health or safety of the public or any person.
 - (e) Any WIND FARM TURBINE is otherwise derelict for a period of 6 months.
 - (f) The WIND FARM is in violation of the terms of the WIND FARM SPECIAL USE permit for a period exceeding ninety (90) days.
 - (g) The Applicant has failed to maintain financial assurance in the form and amount required by the SPECIAL USE Permit or compromised the COUNTY's interest in the site reclamation plan.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (h) The COUNTY discovers any material misstatement of fact or misleading omission of fact made by the Applicant in the course of the SPECIAL USE Permit zoning case.
 - (i) The Applicant has either failed to receive a copy of the certification of design compliance required by paragraph 6.1.4D.1.(a) or failed to submit it to the COUNTY within 12 consecutive months of receiving a Zoning Use Permit regardless of the efforts of the Applicant to obtain such certification.
6. The Zoning Administrator may, but is not required to, deem the WIND FARM abandoned, or the standards set forth in Section 6.1.4P.5. met, with respect to some, but not all, of the WIND FARM TURBINES in the WIND FARM. In that event the Zoning Administrator may draw upon the financial assurance to perform the reclamation work as to those WIND FARM TURBINES only. Upon completion of that reclamation work, the salvage value and reclamation costs shall be recalculated as to the remaining WIND FARM TURBINES in the WIND FARM.
 7. The Site Reclamation Plan shall be included as a condition of approval by the BOARD and the signed and executed irrevocable letter of credit and evidence of the escrow account must be submitted to the Zoning Administrator prior to any Zoning Use Permit approval.

Q. Complaint Hotline

1. Prior to the commencement of construction on the WIND FARM and during the entire term of the County Board SPECIAL USE permit and any extension, the applicant and Owner shall establish a telephone number hotline for the general public to call with any complaints or questions.
2. The telephone number hotline shall be publicized and posted at the operations and maintenance center and the construction marshalling yard.
3. The telephone number hotline shall be manned during usual business hours and shall be an answering recording service during other hours.
4. Each complaint call to the telephone number hotline shall be logged and identify the name and address of the caller and the reason for the call.
5. All calls shall be recorded and the recording shall be saved for transcription for a minimum of two years.
6. A copy of the telephone number hotline log shall be provided to the Zoning Administrator on a monthly basis.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

7. The applicant and Owner shall take necessary actions to resolve all legitimate complaints.

R. Standard Condition for Expiration of WIND FARM County Board SPECIAL USE Permit

A WIND FARM County Board SPECIAL USE Permit designation shall expire pursuant to any time limit included in the Roadway Upgrade and Maintenance agreement required by paragraph 6.1.4 G. or in 10 years if no Zoning Use Permit is granted.

S. Application Requirements

1. In addition to all other information required on the SPECIAL USE Permit application and required by Section 9.1.1 A.2. the application shall contain or be accompanied by the following information:

(a) A WIND FARM Project Summary, including, to the extent available:

(1) A general description of the project, including its approximate name plate generating capacity; the potential equipment manufacturer(s), type(s) of wind turbines, number of wind turbines, and name plate generating capacity of each wind turbine; the maximum height of the WIND FARM TOWER(S); and the maximum diameter of the WIND FARM TOWER rotor(s).

(2) The specific proposed location of the WIND FARM including all tax parcels on which the WIND FARM will be constructed.

(3) The specific proposed location of all tax parcels required to be included in the WIND FARM County Board SPECIAL USE Permit.

(4) A description of the applicant; Owner and Operator, including their respective business structures.

(b) The name(s), address(es), and phone number(s) of the applicant(s), Owner and Operator, and all property owner(s) for the WIND FARM County Board SPECIAL USE Permit.

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SECTION 6.1.4 WIND FARM COUNTY BOARD SPECIAL USE PERMIT - CONTINUED

- (c) A site plan for the installation of all WIND FARM TOWERS indicating the following:
 - (1) The approximate planned location of each WIND FARM TOWER, other PRINCIPAL STRUCTURES, property lines (including identification of adjoining properties), required separations, public access roads and turnout locations, substation(s), electrical cabling from the WIND FARM TOWER to the Substation(s), ancillary equipment, third party transmission lines, maintenance and management facilities, and layout of all structures within the geographical boundaries of any applicable setback.
 - (2) The site plan shall clearly indicate the area of the proposed WIND FARM County Board SPECIAL USE Permit as required by subparagraph 6.1.4 A.1.
 - (3) The separation of all WIND FARM structures from adjacent NON-PARTICIPATING DWELLINGS OR PRINCIPAL BUILDINGS or uses shall be shown or dimensioned on the approved site plan for the SPECIAL USE Permit unless the Board authorizes a lesser separation in a special condition of approval or any required and duly authorized waivers of paragraph 6.1.4C. Authorization of a separation of less than 90% of that indicated on the approved site plan for the SPECIAL USE Permit shall require an updated noise study meeting the requirements of paragraph 6.1.4I. to be submitted with the Zoning Use Permit application. WIND FARM structures include WIND FARM TOWERS, substations, third party transmission lines, maintenance and management facilities, or other significant structures.
 - (d) All other required studies, reports, certifications, and approvals demonstrating compliance with the provisions of this Ordinance.
2. The applicant shall notify the COUNTY of any changes to the information provided above that occurs while the County Board SPECIAL USE Permit application is pending.

Champaign County
Department of

PLANNING &
ZONING

Brookens Administrative
Center
1776 E. Washington Street
Urbana, Illinois 61802

(217) 384-3708

zoningdept@co.champaign.il.us
www.co.champaign.il.us/zoning

To: **Environment and Land Use Committee**

From: **John Hall, Director & Zoning Administrator**

Date: **January 31, 2018**

RE: **Zoning Ordinance amendment to add requirements for
“solar farm”**

Request: **Approval to open a public hearing for the proposed Zoning
Ordinance amendment to add requirements for “solar farm”**

PROPOSED TEXT AMENDMENT

The proposed amendment is attached. Copies of the proposed amendment were distributed on 1/26/18 to ELUC members and the eight solar farm developers who have contacted Champaign County about solar farm development.

There are 10 numbered Parts to the proposed amendment and Part 8 (the proposed new Section 6.1.5) is the most substantive part of the amendment.

Note that several typographical errors were included in Section 6.1.5Q. of the amendment distributed on 1/26/18 and those errors have been corrected in the attached amendment.

REQUIREMENTS STILL TO BE ADDED TO THE PROPOSED AMENDMENT

Due to time constraints the following requirements were not able to be included in the proposed amendment by 1/26/18 and are proposed to be included in the amendment for the public hearing:

- **Solar farm to also be authorized in the AG-2 Agriculture Zoning District.** This will affect Parts 2, 4, and 8 of the proposed amendment.
- **Allow waiver of the Roadway Upgrade and Maintenance Agreement (Section 6.1.5F.) for a “community solar garden” upon signature by the relevant highway authority.** A “community solar garden” is a type of small solar facility that meets the definition of “community renewable generation project” as defined in the Illinois Future Energy Jobs Act (Public Act 99-0906). A “community renewable generation project” is any renewable energy electrical generating facility that is interconnected to the power grid and limited to less than 2,000 kilowatts (2 MW) nameplate capacity and that credits the value of electricity generated to subscribers of the facility. A “community solar garden” is such a small “solar farm” that the traditional Roadway Upgrade and Maintenance Agreement may not always be necessary.
- **Require \$1,000 per acre minimum value for the financial assurance.** This is a requirement in the Kankakee County solar farm requirements. This minimum value could be added in a new paragraph 6.1.5 Q.4.(b)(8).

ATTACHMENTS

- A **Proposed Amendment**

**Attachment A. Proposed Amendment
January 31, 2018**

1. Add the following to Section 3.0 Definitions (somewhat similar to the definition of WIND FARM):

NOXIOUS WEEDS: any of several plants designated pursuant to the Illinois Noxious Weed Law (505 ILCS 100/1 et seq.) and that are identified in 8 Illinois Administrative Code 220.

SOLAR FARM: A unified development intended to convert sunlight into electricity whether by photovoltaic (PV) devices, concentrating solar thermal devices (CST), or other conversion technology using other types of solar devices, for the primary purpose of wholesale sales of generated electricity. A SOLAR FARM is under a common ownership and operating control even though parts of the SOLAR FARM may be located on land leased from different owners. A SOLAR FARM includes all necessary components including access driveways, solar devices, electrical inverter(s), electrical transformer(s), cabling, a common switching station, maintenance and management facilities, and waterwells.

2. Add new subparagraph 4.2.1 C.4. as follows:

4. A SOLAR FARM may be authorized as a County Board SPECIAL USE permit in the AG-1, Agriculture Zoning District as a second PRINCIPAL USE on a LOT with another PRINCIPAL USE.

3. Add new subparagraph 4.3.4 H. 4. i. as follows (similar to existing 4.3.4H.4.h. for wind farms):

- h. SOLAR FARM except as PIPELINE IMPACT RADIUS regulations are required in Subsection 6.1.5.

4. Amend Section 5.2 as follows (similar to existing WIND FARM designation):

Add "SOLAR FARM" as a COUNTY BOARD Special Use Permit in the AG-1 District by a "B".

5. Add the following as footnote 15 under the Special Provisions for the AG-1 District in Section 5.3 (similar to existing footnote 14 for LOTS in a WIND FARM):

15. LOTS in a SOLAR FARM County Board SPECIAL USE Permit and intended for SOLAR FARM, related substations, and SOLAR FARM maintenance and management facilities are exempt from the requirements of Section 5.3 except as such regulations are required by Subsection 6.1.4.

6. Add new paragraph 5.4.3 F. as follows:

- F. The Rural Residential Overlay Zoning District is prohibited from being established within a SOLAR FARM County Board SPECIAL USE Permit.

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7. Amend Section 6.1.1 to read as follows:

A. Site Reclamation Plan for NON-ADAPTABLE STRUCTURES

1. In the course of BOARD review of a SPECIAL USE request, the BOARD may find that a proposed STRUCTURE is a NON-ADAPTABLE STRUCTURE. Any WIND FARM and any SOLAR FARM shall be a NON-ADAPTABLE STRUCTURE. The Applicant for the SPECIAL USE request for a NON-ADAPTABLE STRUCTURE shall submit a site reclamation plan to the BOARD for the subject site.
2. The site reclamation plan shall be binding upon all successors of title to the land. Prior to the issuance of a SPECIAL USE Permit for such NON-ADAPTABLE STRUCTURES, the landowner or applicant shall also record a covenant incorporating the provisions of the site reclamation plan on the deed subject to the LOT, requiring that the reclamation work be performed and that a letter of credit be provided for financial assurance.
3. Separate cost estimates for Section 6.1.1A.4.a., 6.1.1A.4.b., and 6.1.1A.4.c. shall be provided by an Illinois Licensed Professional Engineer.
 - a. Cost estimates provided shall be subject to approval of the BOARD.
 - b. Except as provided in Section 6.1.4P. and Section 6.1.5Q., the salvage value of the components of the NON-ADAPTABLE STRUCTURE shall not be credited to the cost estimates.
4. The site reclamation plan shall provide for:
 - a. removal of above-ground portion of any STRUCTURE on the subject site; site grading; and, interim soil erosion control;
 - b. below-ground restoration, including final grading and surface treatment;
 - c. any environmental remediation required by State or Federal law;
 - d. provision and maintenance of a letter of credit, as set forth in Section 6.1.1A.5.

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5. No Zoning Use Permit for such SPECIAL USE will be issued until the applicant provides the COUNTY with an irrevocable letter of credit to be drawn upon a federally insured financial institution within 200 miles of Urbana or reasonable anticipated travel costs shall be added to the amount of the letter of credit. The irrevocable letter of credit shall be in the amount of one hundred fifty percent (150%) of an independent engineer's cost estimate to complete the work described in Section 6.1.1A4.a., Section 6.1.1A.4.b., and Section 6.1.1A.4.c., except a different amount may be required as a standard condition in Section 6.1.4P. and Section 6.1.5Q. This letter of credit, or a successor letter of credit pursuant to Section 6.1.1A.6. or 6.1.1A.12. shall remain in effect and shall be made available to the COUNTY for an indefinite term or for a different term that may be required as a standard condition in paragraph 6.1.4P.

 6. One hundred eighty (180) days prior to the expiration date of an irrevocable letter of credit submitted pursuant to this Section, the Zoning Administrator shall notify the landowner or applicant in writing and request information about the landowner or applicant's intent to renew the letter of credit, or remove the NON-ADAPTABLE STRUCTURE. The landowner or applicant shall have thirty (30) days to respond in writing to this request. If the landowner or applicant's intention is to remove the NON-ADAPTABLE STRUCTURE, the landowner or applicant will have a total of ninety (90) days from the date of response to remove it in accordance with Section 6.1.1A.4.a. At the end of ninety (90) days, the Zoning Administrator shall have a period of sixty (60) days to either:
 - a. confirm that the bank has renewed the letter of credit; or
 - b. inspect the subject property for compliance with Section 6.1.1A.4.a.;
 - c. draw on the letter of credit and commence the bid process to have a contractor remove the NON-ADAPTABLE STRUCTURE pursuant to Section 6.1.1A.4.a.

 7. The Zoning Administrator may find a NON-ADAPTABLE STRUCTURE abandoned in place. Factors to be considered in making this finding include, but are not limited to:
 - a. the nature and frequency of use as set forth in the application for SPECIAL USE;
 - b. the current nature and frequency of use;

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- c. whether the **NON-ADAPTABLE STRUCTURE** has become a public nuisance, or otherwise poses a risk of harm to public health or safety;
 - d. whether the **NON-ADAPTABLE STRUCTURE** has been maintained in a manner which allows it to be used for its intended purpose, with no greater effects on surrounding properties and the public as a whole than was originally intended.
 - e. A court of law, an arbitrator, mediator, or any state or Federal agency charged with enforcing State or Federal law has made a finding that either said **NON-ADAPTABLE STRUCTURE** or the structures supporting said **NON-ADAPTABLE STRUCTURE** and/or any related site grading and soil erosion controls or lack of same, constitutes a public nuisance or otherwise violates State or Federal law, or any State or Federal agency charged with enforcing State or Federal law has made a final determination either imposing an administrative sanction on any person associated with the **NON-ADAPTABLE STRUCTURE** relating to its use or denying the **NON-ADAPTABLE STRUCTURE** a permit necessary for its lawful operation.
8. Once the Zoning Administrator has made a finding that a **NON-ADAPTABLE STRUCTURE** is abandoned in place, the Zoning Administrator shall issue notice to the land owner at the owner's last known address that the **COUNTY** will draw on the performance guarantee within thirty (30) days unless the owner appeals the Zoning Administrator's finding, pursuant to Section 9.1.8 or enters into a written agreement with the **COUNTY** to remove such **NON-ADAPTABLE STRUCTURE** in accordance with Section 6.1.1A.4. within ninety (90) days and removes the **NON-ADAPTABLE STRUCTURE** accordingly.
9. The Zoning Administrator may draw on the funds to have said **NON-ADAPTABLE STRUCTURE** removed as per Section 6.1.1A.4. of the reclamation agreement when any of the following occur:
- a. no response is received from the land owner within thirty (30) days from initial notification by the Zoning Administrator;

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- b. the land owner does not enter, or breaches any term of a written agreement with the COUNTY to remove said NON-ADAPTABLE structure as provided in Section 6.1.1A.8.;
 - c. any breach or performance failure of any provision of the reclamation agreement;
 - d. the owner of record has filed a bankruptcy petition, or compromised the COUNTY's interest in the letter of credit in any way to specifically allowed by the reclamation agreement;
 - e. a court of law has made a finding that a NON-ADAPTABLE STRUCTURE constitutes a public nuisance;
 - f. the owner of record has failed to replace an expiring letter of credit within the deadlines set forth in Section 6.1.1A.6.; or
 - g. any other conditions to which the COUNTY and the land owner mutually agree, as set forth in the reclamation agreement.
10. Once the letter of credit has been drawn upon, and the site has been restored to its original condition, as certified by the Zoning Administrator, the covenant entered pursuant to Section 6.1.1.A.2. shall expire, and the COUNTY shall act to remove said covenant from the record of the property at the Recorder of Deeds within forty-five (45) days.
11. The proceeds of the letter of credit may only be used by the COUNTY to:
- a. remove the NON-ADAPTABLE STRUCTURE and return the site to its condition prior to the placement of the NON-ADAPTABLE STRUCTURE, in accordance with the most recent reclamation agreement submitted and accepted in relation to the NON-ADAPTIVE STRUCTURE;
 - b. pay all administrative and ancillary costs associated with drawing upon the financial assurance and performing the reclamation work, which shall include, but not be limited to, attorney's fees; construction management and other professional service fees; and the costs of preparing request for proposal and bidding documents required to comply

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with state law or Champaign County purchasing policies;
and

- c. remove any covenants placed on the title in conjunction with Section 6.1.1.A.2.

The balance of any proceeds remaining after the site has been reclaimed shall be returned to the issuer of the letter of credit.

- 12. Upon transfer of any property subject to a letter of credit pursuant to this Section, the new owner or applicant of record shall submit a new irrevocable letter of credit of same or greater value to the Zoning Administrator, prior to legal transfer of title, and shall submit a new site reclamation plan, pursuant to Section 6.1.1A.4.a., and, for WIND FARMS, Section 6.1.4P., and for SOLAR FARMS, 6.1.5Q. Once the new owner or applicant of record has done so, the letter of credit posted by the previous owner or applicant shall be released, and the previous owner shall be released from any further obligations under the site reclamation plan.
- 13. The Applicant shall provide evidence of any new, additional, or substitute financial assurance to the Zoning Administrator throughout the operating lifetime of the NON-ADAPTABLE STRUCTURE.
- 14. Should the site reclamation plan, or any part of it, be deemed invalid by a court of competent jurisdiction, the associated SPECIAL USE permit shall be deemed void.

8. Add new subsection 6.1.5 as follows (NOTE: the following new subsection is based on the existing subsection 6.1.4 for "WIND FARM"):

6.1.5 SOLAR FARM County Board SPECIAL USE permit

A SOLAR FARM County Board SPECIAL USE permit may only be authorized in the AG-1 Zoning District subject to the following standard conditions.

A. General Standard Conditions

- 1. The area of the SOLAR FARM County Board SPECIAL USE permit must include the following minimum areas:
 - (a) All land that will be exposed to a noise level greater than that authorized to Class A land under paragraph 6.1.5 I.
 - (b) All necessary access lanes or driveways and any required new PRIVATE ACCESSWAYS. For purposes of determining the minimum area of the special use permit, access lanes or driveways shall be provided a minimum 40 feet wide area.

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1. There are no minimum LOT AREA, AVERAGE LOT WIDTH, SETBACK, YARD, or maximum LOT COVERAGE requirements for a SOLAR FARM or for LOTS for SOLAR FARM substations and/ or SOLAR FARM maintenance and management facilities.
 2. There is no maximum LOT AREA requirement on BEST PRIME FARMLAND.
- C. Minimum Standard Conditions for Separations for SOLAR FARM from adjacent USES and STRUCTURES

The location of each SOLAR FARM shall provide the following required separations as measured from the exterior of the above ground portion of the SOLAR FARM_STRUCTURES and equipment except for fencing:

1. A SETBACK of 100 feet from a MINOR STREET and a SETBACK of 120 feet from a COLLECTOR STREET and a SETBACK of 130 feet from a MAJOR STREET.
2. At least 100 feet from any existing DWELLING or existing PRINCIPAL BUILDING and not less than 50 feet from the property line and provided that the noise level caused by the SOLAR FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.
3. A separation of at least 500 feet from any of the following unless the SPECIAL USE permit application includes results provided from an analysis using the Solar Glare Hazard Analysis Tool (SGHAT) for the Airport Traffic Control Tower cab and final approach paths, consistent with the Interim Policy, Federal Aviation Administration (FAA) Review of Solar Energy Projects on Federally Obligated Airports, or the most recent version adopted by the FAA, and the SGHAT results show no detrimental affect with less than a 500 feet separation from any of the following:
 - (a) any AIRPORT premises or any AIRPORT approach zone; or
 - (b) any legal RESTRICTED LANDING AREA that existed on or for which there had been a complete SPECIAL USE permit application received by April 22, 2010, or any approach zone for any such RESTRICTED LANDING AREA; or
 - (c) any legal RESIDENTIAL AIRPORT that existed on or for which there had been a complete SPECIAL USE permit application received by April 22, 2010, or any approach zone for any such RESIDENTIAL AIRPORT.

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- D. Standard Conditions for Design and Installation of any SOLAR FARM.**
1. Any building that is part of a SOLAR FARM shall include as a requirement for a Zoning Compliance Certificate a certification by an Illinois Professional Engineer or Illinois Licensed Structural Engineer or other qualified professional that the constructed building conforms to Public Act 96-074 regarding building code compliance and conforms to the Illinois Accessibility Code.
 2. **Electrical Components**
 - (a) All electrical components of the SOLAR FARM shall conform to the National Electrical Code as amended.
 - (b) All power and communication wiring shall be buried underground except for connections that must be above ground.
 3. The SOLAR FARM shall comply with all applicable Federal Aviation Administration (FAA) requirements which shall be explained in the application.
 4. **Maximum height.** The height limitation established in Section 5.3 shall not apply to a SOLAR FARM. The maximum height of all above ground STRUCTURES shall be identified in the application and as approved in the SPECIAL USE permit.
 5. **Warnings**
 - (a) A reasonably visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and substations.
- E. Standard Conditions to Mitigate Damage to Farmland**
1. All underground wiring or cabling for the SOLAR FARM shall be at a minimum depth of 4 feet below grade or deeper if required to maintain a minimum one foot of clearance between the wire or cable and any agricultural drainage tile.
 2. **Protection of agricultural drainage tile**
 - (a) The applicant shall endeavor to locate all existing agricultural drainage tile prior to establishing any construction staging areas, construction of any necessary SOLAR FARM access lanes or driveways, construction of any SOLAR FARM STRUCTURES, any common switching stations, substations, and installation of underground wiring or cabling. The applicant shall contact affected landowners and tenants for their knowledge of tile line locations prior to the proposed construction. Drainage districts shall be notified at least two weeks prior to disruption of tile.

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- (b) All identified drainage district tile lines shall be staked or flagged prior to construction to alert construction crews of the possible need for tile line repairs unless this requirement is waived in writing by the drainage district.
- (c) Any agricultural drainage tile located underneath construction staging areas, access lanes, driveways, any common switching stations, and substations shall be replaced as required in Section 6.3 of the Champaign County Champaign County Storm Water Management and Erosion Control Ordinance.
- (d) Any agricultural drainage tile that must be relocated shall be relocated as required in the Champaign County Champaign County Storm Water Management and Erosion Control Ordinance.
- (e) Conformance of any relocation of drainage district tile with the in the Champaign County Champaign County Storm Water Management and Erosion Control Ordinance shall be certified by an Illinois Professional Engineer. Written approval by the drainage district shall be received prior to any backfilling of the relocated drain tile and a copy of the approval shall be submitted to the Zoning Administrator. As-built drawings shall be provided to both the relevant drainage district and the Zoning Administrator of any relocated drainage district tile.
- (f) All tile lines that are damaged, cut, or removed shall be staked or flagged in such manner that they will remain visible until the permanent repairs are completed.
- (g) All exposed tile lines shall be screened or otherwise protected to prevent the entry into the tile of foreign materials, loose soil, small mammals, etc.
- (h) Permanent repairs shall be made within 14 days of the tile damage provided that weather and soil conditions are suitable or a temporary tile repair shall be made. Immediate temporary repair shall also be required if water is flowing through any damaged tile line. Temporary repairs are not needed if the tile lines are dry and water is not flowing in the tile provided the permanent repairs can be made within 14 days of the damage.
- (i) All damaged tile shall be repaired so as to operate as well after construction as before the construction began.

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- (j) Following completion of the SOLAR FARM construction the applicant shall be responsible for correcting all tile line repairs that fail, provided that the failed repair was made by the Applicant.
- 3. All soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by SOLAR FARM construction shall be restored by the applicant to the pre- SOLAR FARM construction condition.
 - 4. Topsoil replacement

For any open trenching required pursuant to SOLAR FARM construction, the topsoil shall be stripped and replaced as follows:

 - (a) The top 12 inches of topsoil shall first be stripped from the area to be trenched and from an adjacent area to be used for subsoil storage. The topsoil shall be stored in a windrow parallel to the trench in such a manner that it will not become intermixed with subsoil materials.
 - (b) All subsoil material that is removed from the trench shall be placed in the second adjacent stripped windrow parallel to the trench but separate from the topsoil windrow.
 - (c) In backfilling the trench, the stockpiled subsoil material shall be placed back into the trench before replacing the topsoil.
 - (d) The topsoil must be replaced such that after settling occurs, the topsoil's original depth and contour (with an allowance for settling) will be restored.
 - 5. Mitigation of soil compaction and rutting
 - (a) The Applicant shall not be responsible for mitigation of soil compaction and rutting if exempted by the SOLAR FARM lease.
 - (b) Unless specifically provided for otherwise in the SOLAR FARM lease, the Applicant shall mitigate soil compaction and rutting for all areas of farmland that were traversed with vehicles and construction equipment or where topsoil is replaced in open trenches.
 - 6. Land leveling
 - (a) The Applicant shall not be responsible for leveling of disturbed land if exempted by the SOLAR FARM lease.

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- (b) Unless specifically provided for otherwise in the SOLAR FARM lease, the Applicant shall level all disturbed land as follows:
 - (1) Following the completion of any open trenching, the applicant shall restore all land to its original pre-construction elevation and contour.
 - (2) Should uneven settling occur or surface drainage problems develop as a result of the trenching within the first year after completion, the applicant shall again restore the land to its original pre-construction elevation and contour.
7. **Permanent Erosion and Sedimentation Control Plan**
- (a) Prior to the approval of any Zoning Use Permit, the Applicant shall provide a permanent soil erosion and sedimentation plan for the SOLAR FARM including any access road that conforms to the relevant Natural Resources Conservation Service guidelines and that is prepared by an Illinois Licensed Professional Engineer.
 - (b) As-built documentation of all permanent soil erosion and sedimentation improvements for the SOLAR FARM including any access road prepared by an Illinois Licensed Professional Engineer shall be submitted and accepted by the Zoning Administrator prior to approval of any Zoning Compliance Certificate.
- F. **Standard Conditions for Use of Public Streets**

Any SOLAR FARM Applicant proposing to use any County Highway or a township or municipal STREET for the purpose of transporting SOLAR FARM or Substation parts and/or equipment for construction, operation, or maintenance of the SOLAR FARM or Substations(s), shall identify all such public STREETS and pay the costs of any necessary permits and the costs to repair any damage to the STREETS caused by the SOLAR FARM construction, as follows:

- 1. Prior to the close of the public hearing before the BOARD, the Applicant shall enter into a Roadway Upgrade and Maintenance agreement approved by the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, and the signed and executed Roadway Upgrade and Maintenance agreements must provide for the following minimum conditions:
 - a. The applicant shall agree to conduct a pre- SOLAR FARM construction baseline survey to determine existing STREET conditions for assessing potential future damage including the following:

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- (1) A videotape of the affected length of each subject STREET supplemented by photographs if necessary.
 - (2) Pay for costs of the County to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the SOLAR FARM construction.
 - (3) Pay for any strengthening of STREET structures that may be necessary to accommodate the proposed traffic loads caused by the SOLAR FARM construction.
- b. The Applicant shall agree to pay for costs of the County Engineer to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the SOLAR FARM construction and pay for any strengthening of structures that may be necessary to accommodate the proposed traffic loads caused by the SOLAR FARM construction.
 - c. The Applicant shall agree upon an estimate of costs for any other necessary roadway improvements prior to construction.
 - d. The Applicant shall obtain any necessary approvals for the STREET improvements from the relevant STREET maintenance authority.
 - e. The Applicant shall obtain any necessary Access Permits including any required plans.
 - f. The Applicant shall erect permanent markers indicating the presence of underground cables.
 - g. The Applicant shall install marker tape in any cable trench.
 - h. The Applicant shall become a member of the Illinois state wide One-Call Notice System (otherwise known as the Joint Utility Locating Information for Excavators or "JULIE") and provide JULIE with all of the information necessary to update its record with respect to the SOLAR FARM.
 - i. The Applicant shall use directional boring equipment to make all crossings of County Highways for the cable collection system.
 - j. The Applicant shall provide plans for the widening of any corner radius that is necessary to facilitate the turning movements of the transport trucks used by the Applicant.

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- k. The Applicant shall pay for the necessary temporary STREET improvements for the widened corner radii and pay for the cost to return the widened radii to their original lines and grades when no longer needed for the SOLAR FARM construction unless the STREET maintenance authority requests that the widened radii remain as improved.
- l. The Applicant shall notify the STREET maintenance authority in advance of all oversize moves and crane crossings.
- m. The Applicant shall provide the County Engineer with a copy of each overweight and oversize permit issued by the Illinois Department of Transportation for SOLAR FARM construction.
- n. The Applicant shall transport the SOLAR FARM loads so as to minimize adverse impact on the local traffic including farm traffic.
- o. The Applicant shall schedule SOLAR FARM construction traffic in a way to minimize adverse impacts on emergency response vehicles, rural mail delivery, school bus traffic, and local agricultural traffic.
- p. The Applicant shall provide as much advance notice as is commercially reasonable to obtain approval of the STREET maintenance authority when it is necessary for a STREET to be closed due to a crane crossing or for any other reason. Notwithstanding the generality of the aforementioned, the Applicant will provide 48 hours notice to the extent reasonably practicable.
- q. The Applicant shall provide signs indicating all highway and STREET closures and work zones in accordance with the Illinois Department of Transportation Manual on Uniform Traffic Control Devices.
- r. The Applicant shall establish a single escrow account and a single Irrevocable Letter of Credit for the cost of all STREET upgrades and repairs pursuant to the SOLAR FARM construction.
- s. The Applicant shall notify all relevant parties of any temporary STREET closures
- t. The Applicant shall obtain easements and other land rights needed to fulfill the Applicant's obligations under this Agreement.

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- u. The Applicant shall agree that the County shall design all STREET upgrades in accordance with the IDOT Bureau of Local Roads and Streets Manual, 2005 edition.
 - v. The Applicant shall provide written Notice to Proceed to the relevant STREET maintenance authority by December 31 of each year that identifies the STREETS to be upgraded during the following year.
 - w. The Applicant shall provide dust control and grading work to the reasonable satisfaction of the County Engineer on STREETS that become aggregate surface STREETS.
 - x. The Applicant shall conduct a post- SOLAR FARM construction baseline survey similar to the pre- SOLAR FARM construction baseline survey to identify the extent of repairs necessary to return the STREET to the pre- SOLAR FARM construction condition.
 - y. The Applicant shall pay for the cost of all repairs to all STREETS that are damaged by the Applicant during the construction of the SOLAR FARM and restore such STREETS to the condition they were in at the time of the pre- SOLAR FARM construction inventory.
 - z. All SOLAR FARM construction traffic shall exclusively use routes designated in the approved Transportation Impact Analysis.
 - aa. The Applicant shall provide liability insurance in an acceptable amount to cover the required STREET construction activities.
 - bb. The Applicant shall pay for the present worth costs of life consumed by the construction traffic as determined by the pavement management surveys and reports on the roads which do not show significant enough deterioration to warrant immediate restoration.
 - cc. Provisions for expiration date on the agreement.
 - dd. Other conditions that may be required.
2. A condition of the County Board Special Use Permit approval shall be that the Zoning Administrator shall not authorize a Zoning Use Permit for the SOLAR FARM until the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, has approved a Transportation Impact Analysis provided by the Applicant and prepared by an independent engineer that is mutually acceptable to the Applicant and the County Engineer and State's Attorney; or Township

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Highway Commissioner; or municipality where relevant, that includes the following:

- (a) Identify all such public STREETS or portions thereof that are intended to be used by the Applicant during construction of the SOLAR FARM as well as the number of loads, per axle weight of each load; and type of equipment that will be used to transport each load.
 - (b) A schedule of the across road culverts and bridges affected by the project and the recommendations as to actions, if any, required with respect to such culverts and bridges and estimated of the cost to replace such culverts and bridges;
 - (c) A schedule of the anticipated STREET repair costs to be made in advance of the SOLAR FARM construction and following construction of the SOLAR FARM.
 - (d) The Applicant shall reimburse the County Engineer; or Township Highway Commissioner; or municipality where relevant, for all reasonable engineering fees including the costs of a third party consultant, incurred in connection with the review and approval of the Transportation Impact Analysis.
3. At such time as decommissioning takes place the Applicant or its successors in interest shall enter into a Roadway use and Repair Agreement with the appropriate highway authority.
- G. Standard Conditions for Coordination with Local Fire Protection District**
1. The Applicant shall submit to the local fire protection district a copy of the site plan.
 2. Upon request by the local fire protection district, the Owner or Operator shall cooperate with the local fire protection district to develop the fire protection district's emergency response plan.
 3. Nothing in this section shall alleviate the need to comply with all other applicable fire laws and regulations.
- H. Standard Conditions to Mitigate Electromagnetic Interference**
1. The Applicant shall provide the applicable microwave transmission providers and local emergency service provider(s) (911 operators) copies of the project summary and site plan.

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2. To the extent that any relevant microwave transmission provider and local emergency service provider demonstrates a likelihood of interference with its communications resulting from the SOLAR FARM, the Applicant shall take reasonable measures to mitigate such anticipated interference.
 3. If, after construction of the SOLAR FARM, the Owner or Operator receives a written complaint related to the above-mentioned interference, the Owner or Operator shall take reasonable steps to respond to the complaint.
 4. If, after construction of the SOLAR FARM, the Owner or Operator receives a written complaint related to interference with local broadcast residential television, the Owner or Operator shall take reasonable steps to respond to the complaint.
- I. **Standard Conditions for Allowable Noise Level**
1. Noise levels from any SOLAR FARM shall be in compliance with the applicable Illinois Pollution Control Board (IPCB) regulations (*35 Illinois Administrative Code* Subtitle H: Noise Parts 900, 901, 910).
 2. The Applicant shall submit manufacturer's sound power level characteristics and other relevant data regarding noise characteristics of proposed SOLAR FARM equipment necessary for a competent noise analysis.
 3. The Applicant, through the use of a qualified professional, as part of the siting approval application process, shall appropriately demonstrate compliance with the above noise requirements.
 4. After construction of the SOLAR FARM the Zoning Administrator shall take appropriate enforcement action as necessary to investigate noise complaints in order to determine the validity of the complaints and take any additional enforcement action as proves warranted to stop any violation that is occurring, including but not limited to the following:
 - (a) The Zoning Administrator shall make the Environment and Land Use Committee aware of complaints about noise that have been received by the Complaint Hotline.
 - (b) If the Environment and Land Use Committee determines that the noise is excessive, the Environment and Land Use Committee shall require the Owner or Operator to take reasonable steps to mitigate the excessive noise.

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J. Standard Conditions for Endangered Species Consultation

The Applicant shall apply for consultation with the Endangered Species Program of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the Endangered Species Program of the Illinois Department of Natural Resources or, if applicable, a copy of the Detailed Action Plan Report submitted to the Endangered Species Program of the Illinois Department of Natural Resources and a copy of the response from the Illinois Department of Natural Resources.

K. Standard Conditions for Historic and Archaeological Resources Review

The Applicant shall apply for consultation with the State Historic Preservation Officer of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the State Historic Preservation Officer of the Illinois Department of Natural Resources.

L. Standard Conditions for Acceptable Wildlife Impacts

1. The SOLAR FARM shall be located, designed, constructed, and operated so as to avoid and if necessary mitigate the impacts to wildlife to a sustainable level of mortality.

M. Screening and fencing

i. Perimeter fencing

- a. SOLAR FARM equipment and structures shall be fully enclosed and secured by a fence with a minimum height of 7 feet.
- b. Knox boxes and keys shall be provided at locked entrances for emergency personnel access.
- c. The perimeter fencing shall be a minimum of 10 feet from a SIDE or REAR LOT LINE and a minimum of 40 feet from a MINOR STREET and a minimum of 55 feet from a COLLECTOR STREET and a minimum of 60 feet from a MAJOR STREET but in no case shall the perimeter fencing be less than 10 feet from the RIGHT OF WAY of any STREET.
- d. Vegetation between the fencing and the LOT LINE shall be maintained such that NOXIOUS WEEDS are controlled or eradicated consistent with the Illinois Noxious Weed Law (505 ILCS 100/1 et seq.). Management of the vegetation shall be explained in the application.

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2. **Screening**
 - a. A 30 feet wide visual screen buffer shall be provided inside the perimeter fencing of the SOLAR FARM as follows:
 - (1) The visual screen buffer shall include a continuous line of evergreen foliage and/ or an earthen berm and/ or any existing wooded areas that will conceal the SOLAR FARM from view from adjacent abutting property.
 - (2) The continuous line of evergreen foliage shall be planted at a minimum height of 3 feet tall and shall be planted in multiple rows as required to provide a continuous line of foliage upon initial planting.
 - (3) Any vegetation that is part of the approved visual screen buffer shall be maintained in perpetuity.
 - (4) Any earthen berm used as for the visual screen buffer shall be a minimum height of 8 feet high measured relative to the adjacent grade.
 - (5) The visual screen buffer shall be detailed in a landscape plan drawing that shall be included with the SOLAR FARM SPECIAL USE permit application.

N. Standard Condition to Minimize Glare.

1. The design and construction of the SOLAR FARM shall minimize glare that may affect adjacent properties and the application shall include an explanation of how glare will be minimized.
2. The application shall include a visual impact assessment that shall include the following:
 - a. A computer generated "zone of visibility map" shall be created to illustrate locations within a one-mile radius from the proposed SOLAR FARM, from which the proposed SOLAR FARM may be seen.
 - b. Pictorial representations of "before and after" views of the proposed SOLAR FARM from representative locations indicated on the "zone of visibility map". Representative locations shall include any DWELLING located within a one-mile radius and/ or any municipality within a one-mile radius and/ or any public SREET within a one-mile radius.

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3. After construction of the SOLAR FARM the Zoning Administrator shall take appropriate enforcement action as necessary to investigate complaints of glare in order to determine the validity of the complaints and take any additional enforcement action as proves warranted to stop any significant glare that is occurring, including but not limited to the following:
 - (a) The Zoning Administrator shall make the Environment and Land Use Committee aware of complaints about glare that have been received by the Complaint Hotline.
 - (b) If the Environment and Land Use Committee determines that the glare is excessive, the Environment and Land Use Committee shall require the Owner or Operator to take reasonable steps to mitigate the excessive glare such as the installation of additional screening.
- O. Standard Condition for Liability Insurance
1. The Owner or Operator of the SOLAR FARM shall maintain a current general liability policy covering bodily injury and property damage with minimum limits of a least \$5 million per occurrence and \$5 million in the aggregate. The amount of the limit shall be increased annually to account for the effects of inflation.
 2. The general liability policy shall identify landowners in the SPECIAL USE permit as additional insured.
- P. Operational Standard Conditions
1. Maintenance
 - (a) The Owner or Operator of the SOLAR FARM must submit, on an annual basis, a summary of the operation and maintenance reports to the Environment and Land Use Committee and any other operation and maintenance reports as the Environment and Land Use Committee reasonably requests.
 - (b) Any physical modification to the SOLAR FARM that increases the number of solar conversion devices or structures and/ or the land area occupied by the SOLAR FARM shall require a new County Board SPECIAL USE Permit. Like-kind replacements shall not require re-certification nor will replacement of transformers, cabling, etc. provided replacement is done in a fashion similar to the original installation.
 - (c) The Application shall explain methods and materials used to clean the SOLAR FARM equipment including an estimation of the daily and annual gallons of water used and the source of the water and

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the management of wastewater. The BOARD may request copies of well records from the Illinois State Water Survey and may require an estimate by a qualified hydrogeologist of the likely impact on adjacent waterwells.

2. **Materials Handling, Storage and Disposal**
 - (a) All solid wastes related to the construction, operation and maintenance of the SOLAR FARM shall be removed from the site promptly and disposed of in accordance with all federal, state and local laws.
 - (b) All hazardous materials related to the construction, operation and maintenance of the SOLAR FARM shall be handled, stored, transported and disposed of in accordance with all applicable local, state and federal laws.
3. **Vegetation management**
 - (a) The SOLAR FARM SPECIAL USE permit application shall include a weed control plan for the total area of the SPECIAL USE permit including areas both inside of and outside of the perimeter fencing.
 - (b) The weed control plan shall ensure the control and/ or eradication of NOXIOUS WEEDS consistent with the Illinois Noxious Weed Law (505 ILCS 100/1 et seq.)
 - (c) The weed control plan shall be explained in the application.

Q. Standard Condition for Decommissioning Plan and Site Reclamation Plan

1. The Applicant shall submit a signed site reclamation plan conforming to the requirements of paragraph 6.1.1 A.
2. In addition to the purposes listed in subparagraph 6.1.1 A. 4. the reclamation plan shall also include provisions for anticipated repairs to any public STREET used for the purpose of reclamation of the SOLAR FARM and all costs related to removal of access driveways.
3. The site reclamation plan required in paragraph 6.1.1A. shall also include the following:
 - (a) A stipulation that the applicant shall notify the GOVERNING BODY by certified mail of the commencement of voluntary or involuntary bankruptcy proceeding, naming the applicant as debtor, within ten days of commencement of the proceeding.

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- (b) A stipulation that the applicant shall agree that the sale, assignment in fact or law, or such other transfer of applicant's financial interest in the SOLAR FARM shall in no way affect or change applicant's obligation to continue to comply with the terms of this plan. Any successor or assignee shall assume the terms, covenants, and obligations of this plan and agrees to assume all reclamation liability and responsibility for the SOLAR FARM.
- (c) Authorization for the GOVERNING BODY and its authorized representatives for right of entry onto the SOLAR FARM premises for the purpose of inspecting the methods of reclamation or for performing actual reclamation if necessary.
- (d) A stipulation that at such time as decommissioning takes place the applicant or it's successors in interest are required to enter into a Roadway Use and Repair Agreement with the relevant highway authority.
- (e) A stipulation that the Applicant shall provide evidence of any new, additional, or substitute financing or security agreement to the Zoning Administrator throughout the operating lifetime of the project.
- (f) A stipulation that the Applicant shall be obliged to perform the work in the site reclamation plan before abandoning the SOLAR FARM or prior to ceasing production of electricity from the SOLAR FARM, after it has begun, other than in the ordinary course of business. This obligation shall be independent of the obligation to pay financial assurance, and shall not be limited by the amount of financial assurance. The obligation to perform the reclamation work shall constitute a covenant running with the land
- (g) The site reclamation plan shall provide for payment of any associated costs that Champaign County may incur in the event that decommissioning is actually required. Associated costs include all administrative and ancillary costs associated with drawing upon the financial assurance and performing the reclamation work and shall include but not be limited to attorney's fees; construction management and other professional service fees; and the costs of preparing request for proposals and bidding documents required to comply with state law or Champaign County purchasing policies.

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- (h) The depth of removal of foundation concrete below ground shall be a minimum of 54 inches. The depth of removal of foundation concrete shall be certified in writing by an Illinois Licensed Professional Engineer and the certification shall be submitted to the Zoning Administrator.
- (i) The hole resulting from the removal of foundation concrete during decommissioning shall be backfilled as follows:
 - (1) The excavation resulting from the removal of foundation concrete shall only be backfilled with subsoil and topsoil in similar depths and similar types as existed at the time of the original SOLAR FARM construction except that a lesser quality topsoil or a combination of a lesser quality topsoil and a subsoil that is similar to the native subsoil may be used at depths corresponding to the native subsoil but not less than 12 inches below grade.
 - (2) The native soils excavated at the time of the original SOLAR FARM construction may be used to backfill the concrete foundation excavations at the time of decommissioning provided that the soils are adequately stored throughout the operating lifetime of the SOLAR FARM. The methods for storing the excavated native soils during the operating lifetime of the SOLAR FARM shall be included in the site reclamation plan.
 - (3) If the excavated native soils are not stored for use for backfilling the concrete foundation excavations, a qualified soil scientist or Illinois Licensed Professional Engineer shall certify that the actual soils used to backfill the concrete foundation excavations are of equal or greater quality than the native soils or that, in the case of subsoil, the backfill soil meets the requirements of this paragraph. The certification shall be submitted to the Zoning Administrator.
 - (4) An Illinois Licensed Professional Engineer shall certify in writing that the concrete foundation excavations have been backfilled with soil to such a depth and with a minimum of compaction that is consistent with the restoration of productive agricultural use such that the depth of soil is expected to be no less than 54 inches within one year after backfilling.
- (j) A stipulation that should the site reclamation plan be deemed invalid by a court of competent jurisdiction the SOLAR FARM SPECIAL USE permit shall be deemed void.

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- (k) A stipulation that the Applicant's obligation to complete the site reclamation plan and to pay all associated costs shall be independent of the Applicant's obligation to provide financial assurance.
 - (l) A stipulation that the liability of the Applicant's failure to complete the site reclamation plan or any breach of the site reclamation plan requirement shall not be capped by the amount of the financial assurance.
 - (m) If the Applicant desires to remove equipment or property credited to the estimated salvage value without the concurrent replacement of the property with property of equal or greater salvage value or if the Applicant installs equipment or property increasing the cost of decommissioning after the SOLAR FARM begins to produce electricity, at any point, the Applicant shall first obtain the consent of the Zoning Administrator. If the Applicant's lien holders remove equipment or property credited to the salvage value the Applicant shall promptly notify the Zoning Administrator. In either of these events the total financial assurance shall be adjusted to reflect any change in total salvage value and total decommissioning costs resulting from any such removal or installation.
4. To comply with paragraph 6.1.1A.5., the Applicant shall provide financial assurance in the form of an irrevocable letter of credit and an escrow account as follows:
- (a) At the time of Special Use Permit approval the amount of financial assurance to be provided for the site reclamation plan shall be 210% of the decommissioning cost as determined in the independent engineer's cost estimate to complete the decommissioning work described in Sections 6.1.1A.4.a. and 6.1.1A.4.b. and 6.1.1A.4.c.
 - (b) Net salvage value may be deducted from decommissioning costs as follows:
 - (1) One of the following standards shall be met:
 - i. The Applicant shall maintain the SOLAR FARM free and clear of liens and encumbrances, including financing liens and shall provide proof of the same prior to issuance of the SPECIAL USE Permit; or
 - ii. The Applicant shall deduct from the salvage value credit the amount of any lien or encumbrance on the SOLAR FARM; or

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- iii. Any and all financing and/or financial security agreements entered into by the Applicant shall expressly provide that the agreements are subject to the covenant required by Section 6.1.1.A.2 that the reclamation work be done.
- (2) The Applicant shall provide proof of compliance with paragraph 6.1.5Q.4.(b)(1) prior to issuance of any Zoning Use Permit and upon every renewal of the financial assurance and at any other time upon the request of the Zoning Administrator.
- (3) The Applicant shall provide in the site reclamation plan for legal transfer of the STRUCTURE to the demolisher to pay the costs of reclamation work, should the reclamation work be performed.
- (4) The net estimated salvage value that is deducted from the estimated decommissioning costs shall be the salvage value that results after all related costs for demolition and any required preparation for transportation for reuse or recycling or for simple disposal and other similar costs including but not limited to the decommissioning of the SOLAR FARM STRUCTURES, equipment, and access roads.
- (5) Estimated salvage value shall be based on the average salvage price of the past five years as published in a reputable source for salvage values and shall reflect sound engineering judgment as to anticipated changes in salvage prices prior to the next update of estimated net salvage value.
- (6) The deduction from the estimated decommissioning costs for net estimated salvage value shall be capped at 70% of the total net estimated salvage value even though the total actual salvage value shall be available in the event that decommissioning is actually required.
- (7) The credit for net estimated salvage value attributable to any SOLAR FARM may not exceed the estimated cost of removal of the above-ground portion of that SOLAR FARM on the subject site.

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- (c) **The GOVERNING BODY has the right to require multiple letters of credit based on the regulations governing federal insurance for deposits.**

- (d) **The Applicant shall adjust the amount of the financial assurance to ensure that it reflects current and accurate information as follows:**
 - (1) **At least once every three years for the first 12 years of the financial assurance and at least once every year thereafter the Applicant shall use an independent Illinois Licensed Professional Engineer to provide updated estimates of decommissioning costs and salvage value, by including any changes due to inflation and/or change in salvage price. The Applicant shall, upon receipt, provide a copy of the adjusted Professional Engineer's report to the Zoning Administrator.**

 - (2) **At all times the total combined value of the irrevocable letter of credit and the escrow account shall equal or exceed the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation since the SOLAR FARM was approved; and an amount for any future years left in the anticipated 25-year life span of the SOLAR FARM at an assumed minimum rate of inflation of 3% per year.**

- (e) **The applicant or SOLAR FARM owner shall gradually pay down the value of the irrevocable letter of credit by placing cash deposits in an escrow account in equal annual installments over the first 13 years of the SOLAR FARM operation as follows:**
 - (1) **The applicant or SOLAR FARM owner and the GOVERNING BODY shall agree on a mutually acceptable financial institution at which an escrow account shall be established.**

 - (2) **The GOVERNING BODY shall be the beneficiary of the escrow account for the purpose of the reclamation of the SOLAR FARM in the event that the SOLAR FARM owner is incapable of decommissioning the SOLAR FARM.**

 - (3) **The applicant or SOLAR FARM owner shall grant perfected security in the escrow account by use of a control agreement establishing the County as an owner of record, pursuant to the Secured Transactions Article of the Uniform Commercial Code, 810 ILCS 9/101 et seq.**

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- (4) The applicant or SOLAR FARM owner shall make annual deposits to the escrow account over a 12 year period and shall simultaneously provide a replacement irrevocable letter of credit that is reduced accordingly.
 - (5) At all times the total combined value of the irrevocable letter of credit and the escrow account shall be increased annually as necessary to reflect actual rates of inflation over the life span of the SOLAR FARM and the amount shall be equal to or exceed the following:
 - i. the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation since the SOLAR FARM was approved; plus
 - ii. an amount for any future years left in the anticipated life span of the SOLAR FARM at an assumed minimum rate of inflation of 3% per year.
 - (6) Any interest accrued on the escrow account that is over and above the total value required by subparagraph 6.1.5Q.4.(b)(4) shall go to the SOLAR FARM owner.
 - (7) In order to provide funding for decommissioning at the time of decommissioning, the SOLAR FARM applicant or SOLAR FARM owner may exchange a new irrevocable letter of credit in an amount equal to the amount in the escrow account in exchange for the GOVERNING BODY agreeing to a release of the full amount of the escrow account.
 - (f) Should the salvage value of components be adjusted downward or the decommissioning costs adjusted upward pursuant to paragraph 6.1.5Q.4.(d), the amount to be placed in the escrow account pursuant to this paragraph 6.1.5.Q.4. shall be increased to reflect the adjustment, as if the adjusted estimate were the initial estimate.
5. In addition to the conditions listed in subparagraph 6.1.1A.9. the Zoning Administrator may also draw on the funds for the following reasons:
- (a) In the event that any SOLAR FARM or component thereof ceases to be functional for more than six consecutive months after it starts producing electricity and the Owner is not diligently repairing such SOLAR FARM or component.
 - (b) In the event that the Owner declares any wind turbine or other component to be functionally obsolete for tax purposes.

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- (c) There is a delay in the construction of any SOLAR FARM of more than 6 months after construction on that SOLAR FARM begins.
 - (d) Any SOLAR FARM or component thereof that appears in a state of disrepair or imminent collapse and/or creates an imminent threat to the health or safety of the public or any person.
 - (e) Any SOLAR FARM or component thereof is otherwise derelict for a period of 6 months.
 - (f) The SOLAR FARM is in violation of the terms of the SOLAR FARM SPECIAL USE permit for a period exceeding ninety (90) days.
 - (g) The Applicant has failed to maintain financial assurance in the form and amount required by the special use permit or compromised the COUNTY's interest in the site reclamation plan.
 - (h) The COUNTY discovers any material misstatement of fact or misleading omission of fact made by the Applicant in the course of the special use permit zoning case.
 - (i) The Applicant has either failed to receive a copy of the certification of design compliance required by paragraph 6.1.5D. or failed to submit it to the County within 12 consecutive months of receiving a Zoning Use Permit regardless of the efforts of the Applicant to obtain such certification.
6. The Zoning Administrator may, but is not required to, deem the SOLAR FARM abandoned, or the standards set forth in Section 6.1.5.Q.5. met, with respect to some, but not all, of the SOLAR FARM. In that event, the Zoning Administrator may draw upon the financial assurance to perform the reclamation work as to that portion of the SOLAR FARM only. Upon completion of that reclamation work, the salvage value and reclamation costs shall be recalculated as to the remaining SOLAR FARM.
7. The Site Reclamation Plan shall be included as a condition of approval by the BOARD and the signed and executed irrevocable letter of credit and evidence of the escrow account must be submitted to the Zoning Administrator prior to any Zoning Use Permit approval.

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R. Complaint Hotline

1. Prior to the commencement of construction on the SOLAR FARM and during the entire term of the County Board SPECIAL USE permit and any extension, the Applicant and Owner shall establish a telephone number hotline for the general public to call with any complaints or questions.
2. The telephone number hotline shall be publicized and posted at the operations and maintenance center and the construction marshalling yard.
3. The telephone number hotline shall be manned during usual business hours and shall be an answering recording service during other hours.
4. Each complaint call to the telephone number hotline shall be logged and identify the name and address of the caller and the reason for the call.
5. All calls shall be recorded and the recording shall be saved for transcription for a minimum of two years.
6. A copy of the telephone number hotline shall be provided to the Zoning Administrator on a monthly basis.
7. The Applicant and Owner shall take necessary actions to resolve all legitimate complaints.

S. Standard Condition for Expiration of SOLAR FARM County Board SPECIAL USE Permit

A SOLAR FARM County Board SPECIAL USE Permit designation shall expire in 10 years if no Zoning Use Permit is granted.

T. Application Requirements

1. In addition to all other information required on the SPECIAL USE Permit application and required by Section 9.1.11 A. 2. the application shall contain or be accompanied by the following information:
 - (a) A SOLAR FARM Project Summary, including, to the extent available:
 - (1) A general description of the project, including its approximate DC and AC generating capacity; the maximum number and type of solar devices; the potential equipment manufacturer(s).
 - (2) The specific proposed location of the SOLAR FARM including all tax parcels on which the SOLAR FARM will be constructed.

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- (3) The specific proposed location of all tax parcels required to be included in the SOLAR FARM County Board SPECIAL USE Permit.
 - (4) A description of the Applicant; Owner and Operator, including their respective business structures.
- (b) The name(s), address(es), and phone number(s) of the Applicant(s), Owner and Operator, and all property owner(s) for the SOLAR FARM County Board SPECIAL USE permit.
- (c) A site plan for the SOLAR FARM indicating the following:
- (1) The approximate planned location of all SOLAR FARM STRUCTURES, property lines (including identification of adjoining properties), required separations, public access roads and turnout locations, access driveways, solar devices, electrical inverter(s), electrical transformer(s), cabling, switching station, electrical cabling from the SOLAR FARM to the Substations(s), ancillary equipment, screening and fencing, third party transmission lines, meteorological station, maintenance and management facilities, and layout of all structures within the geographical boundaries of any applicable setback.
 - (2) The site plan shall clearly indicate the area of the proposed SOLAR FARM County Board SPECIAL USE Permit as required by subparagraph 6.1.4 A. 1.
 - (3) The separation of all SOLAR FARM structures from adjacent DWELLINGS and/ or PRINCIPAL BUILDINGS or uses shall be dimensioned on the approved site plan and that dimension shall establish the effective minimum separation that shall be required for any Zoning Use Permit. Greater separation and somewhat different locations may be provided in the approved site plan for the Zoning Use Permit provided that that the greater separation does not increase the noise impacts and /or glare that were approved in the SOLAR FARM County Board SPECIAL USE Permit. SOLAR FARM structures includes substations, third party transmission lines, maintenance and management facilities, or other significant structures.
- (d) All other required studies, reports, certifications, and approvals demonstrating compliance with the provisions of this Ordinance.

**Attachment A. Proposed Amendment
January 31, 2018**

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2. The Applicant shall notify the COUNTY of any changes to the information provided above that occurs while the County Board SPECIAL USE permit application is pending.

9. Add the following paragraph 9.3.1 J. for Zoning Use Permit fee:

- J. SOLAR FARM \$2000 per megawatt

10. Revise subsection 9.3.3 as follows:

9.3.3 Zoning Case Filing Fees

A. General Provisions

1. No zoning case filing shall be accepted until the filing fee has been paid.
2. No zoning case filing fee shall be waived unless the Zoning Administrator determines that the petition is the only means reasonably available to bring a property into compliance with the provisions of this ordinance and the non-compliance is due solely to staff error.
3. No zoning case filing fee shall be refunded after required legal notice has been made by mail or publication unless the Zoning Administrator determines such filing to have been based solely upon staff error.
4. No amendment to any petition which requires new legal notice shall be considered until an amended petition fee has been received unless the Zoning Administrator determines such amendment to be required due solely to staff error.
5. The fee for SPECIAL USE permits shall be determined based on the larger of the following (except for County Board WIND FARM or SOLAR FARM SPECIAL USE Permits):
 - a. the area of farmland taken out of production as a result of the SPECIAL USE; or
 - b. when farmland will not be taken out of production as a result of the SPECIAL USE, the land area taken up by the existing STRUCTURES and all proposed

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CONSTRUCTION proposed in the SPECIAL USE application.

- 6. When some combination of VARIANCE, SPECIAL USE and Map Amendment cases is required simultaneously for the same property, the total filing fee shall include the following (except for County Board WIND FARM or SOLAR FARM Special Use Permits):
 - a. The standard fee for the most expensive individual zoning case; and
 - b. one-half of the standard fee for any other required VARIANCE, SPECIAL USE, or Map Amendment provided that
 - c. no additional fees shall be included for multiple zoning cases of the same type that can be advertised in the same legal advertisement.

B. Fees

- 1. VARIANCES.
 - a. ADMINISTRATIVE VARIANCES \$100
 - b. Minor or Major VARIANCES \$200
- 2. SPECIAL USE permits and Map Amendments (except for County Board WIND FARM Special Use Permit and a map amendment to the WIND FARM Overlay Zoning District)
 - a. Two acres or less and Base Fee for larger areas.....\$400
 - b. More than two acres but no more than 12 acres add \$40 per acre to Base Fee for each acre over two acres
 - c. More than 12 acres add \$10 per acre for each acre over 12 acres and add to fees in a. and b. above
- 3. Appeals and Interpretations.....\$200
- 4. Change of Nonconforming Use\$100
- 5. Amendment to Petitions (requiring new legal notice).....\$100
- 6. County Board WIND FARM Special Use Permit..... \$20,000 or \$440 per WIND FARM TURBINE TOWER, whichever is greater

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7. County Board SOLAR FARM Special Use Permit.....\$5,000 or \$440 per megawatt, whichever is greater



February 8, 2018

Champaign County
Department of Planning & Zoning
Brookens Administrative Center
1776 E. Washington Street
Urbana, Illinois 61802

RE: Proposed Changes to the Champaign County Solar Ordinance dated January 26, 2018

Dear Champaign County Zoning Administrator,

Please find the proposed changes and suggestions to the Draft Champaign County Solar Ordinance. We appreciate the opportunity to comment on this ordinance and look forward to working with the County to perfect the final form. Considering the voluminous amount of comments, we request that the County Environmental Land Use Committee (ELUC) not take action on the current form. We suggest that it be sent back to staff for further revisions. Due to the limited amount of time for review, the comments provided in attachment A are only preliminary in nature. Below are the three major areas of concern that need to be enhanced before it will be an ordinance that industry can support.

1. The ordinance is heavily based off previous Wind Development. Many of the requirements are too onerous or not applicable to Solar Development.
2. The requirements for decommissioning are necessary, but are too cumbersome and can be financially unfeasible.
3. The road maintenance agreement appears to be specifically for wind. The requirements appear to be overkill for Solar Development for small projects and even large projects. We believe a modified version of this could work for industry and would still protect the roads for the County.

We suggest that a working group of staff, industry, members of the ELUC, and Community to create an ordinance that protects health and safety, but also promotes solar growth in Champaign County. We are willing to be an active participant in this working group and look forward to working with the County.

Sincerely,

A handwritten signature in black ink, appearing to read "Patrick Brown", written over a horizontal line.

Patrick Brown

Director of Development

BayWa-re Solar Projects LLC.

Attachment A**Proposed Changes to the Champaign County Solar Ordinance dated January 26, 2018**

- Section 6.1.1.A.2 The Draft Decommissioning Plan can be approved by the Board at time of approval, but the bind should not be required until prior to issuance of building permit which is consistent with section 6.1.1.A.5.
- Section 6.1.1.A.3.b The ordinance amendment does not have section 6.1.4.P to reference. It would be helpful to include the section that allows for salvage value.
- Section 6.1.1.A.5 The County should not limit the location where the Letter of Credit coming from as long as the bank issuing the note is of Tier A or better and the bank has a local branch within the 200 mile radius.
- Section 6.1.5.A.2.c This requirement does not have any action tied to it. "Any easement for a GAS PIPELINE or HAZARDOUS LIQUID PIPELINE; or any easement for an underground water main; or any easement for a drainage district." Any legal recorded or unrecorded easement will be avoided. It must be crossed for any reason; a crossing agreement will be obtained. This should not be regulated by the County.
- Section 6.1.5.C The minimum standards should specifically state that landscape buffers are permitted within the required setbacks.
- Section 6.1.5.C.2 This requirement is not clear and should specify what it is really requiring. Please specify what Illinois Pollution Control Board Regulations specifically need to be complied with. A typical standard is that the noise emitting from the solar project shall not exceed 50dBA at the property line.
- Section 6.1.5.D.2.b A majority of the project electrical lines will be undergrounded except for higher voltage 34.5kVA connector trunk lines that connect discontinuous portions of the project. Also, in some cases, the point of interconnection is off site and a private generator tie-line needs to construct to connect the project. In these cases where there are high voltage connection lines, these should be permitted to be above ground if they comply with all NEC and State safety standards.
- Section 6.1.5.D.2.c The requirement for compliance with FFA should only be applicable in the application if there is a requirement to file a 7460-1 Aeronautical Study. Please see the attached link for the FAA website that deals with screening. <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>
- Section 6.1.5.F The requirement for a Roadway Agreement is clearly been adopted from Wind Development. The requirements within section F are completely onerous to solar development. We agree that any damage to the public road should be repaired, but the requirements within this

section are clearly misplaced and over reaching. Solar development does not have overweight or over width deliveries. The standard truck is a class 8 van or flatbed delivering materials like the truck receiving and delivering agricultural products from farms to silos. We recommend that a traffic control and haul rout plan be provided as a condition for approval of the Special Use Permit. Then the County Engineer can review and approve the appropriate traffic controls needed for deliveries and the appropriate route that should be taken. A pre- and post-condition survey of the route can be noted and any damages from the deliveries can be compensated by the applicant.

Section 6.1.5.F.1 We request that the provision to enter into the Roadway agreement be a condition of the Special Use Permit and that it shall be executed before obtaining a Zoning and or Building Permit.

Section 6.1.5.H This section is not applicable to solar development. It should be removed.

Section 6.1.5.I Solar development has typically allow noise emission compared to Wind development. Not enough time has been provided to adequately comment on how these regulations will affect solar development. Please either identify which sections of 900, 901 and 910 are applicable, or allow for more time to complete a full analysis. In saying this, Inverters and transformers are the only noise emitting devices. These can be typically located within the interior of the project, so noise emissions do not exceed a 50dBA threshold at the property line during the day.

Section 6.1.5.M.c The requirements for fencing appear to conflict with the setback standards in section 6.1.5.C. Please clarify this.

Section 6.1.5.M.2.a In all of our experience around the nation, vegetative buffers are placed on the outside of the fence to screen the project including fence from public views.

Section 6.1.5.M.2.a.1 It is recommended that a plant palette be selected that uses local species that can survive in the environment. This is usually a mix of evergreen shrubs, trees, and deciduous trees for variation.

Section 6.1.5.N Glare will not occur because of the lack of topography within the County. At ground level the vegetative buffer will screen any immediate glare. A requirement to demonstrate that the project will not produce any glare that will affect any surrounding residences and public roadways or spaces should be sufficient. Please remove all remaining requirements.

- Section 6.1.O** **The amount of insurance is in excess, but acceptable. Please remove the last sentence requiring annual updating for inflation.**
- Section 6.1.5.Q.4.a** **The requirement for a 210% Letter of Credit based upon cost estimate is onerous. The existing Wind Ordinance is 150% of the cost estimate, which is still onerous.**
- Section 6.1.5.Q.4.b.4** **This section references wind farm components, "... tower, the hub assembly, the bed plate, the nacelle, the turbine."**
- Section 6.1.5.Q.4.d.1** **Every five years is standard to start with and should be done through the life of the project.**
- Section 6.1.5.Q.4.d.2** **The use of the CPI is preferred with a cap of 3%.**
- Section 6.1.5.Q.4.e** **A letter of credit is adequate for securing the agreement. Most applicants will prefer to put a LOC and not cash deposit because of the negative equity the cash will gain in a trust account. The cost of a letter of credit over time is more economical than a split between cash and LOC.**
- Section 6.1.5.Q.4.e.4** **It is unclear when the 12 year period starts and when it ends.**
- 9.3.1 J.** **A fee based upon megawatts is not a scalable fee structure. We suggest a tiered structure of 5MW or less, 6-10MW, 20-50MW and 50 and greater. These should be deposit accounts, so the County is actually reimbursed for the work they do and the remaining funds are refunded to the applicant.**
- General Questions** **How does entering into an Agricultural Mitigation Agreements with the Farmer/Farm Bureau effect decommissioning requirements or alleviate some of the requirements?**

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Department of Physics

Loomis Laboratory of Physics
1110 West Green Street
Urbana, IL 61801-3080



Scott Willenbrock

Telephone: (217) 333-4392
Fax: (217) 333-4990
Email: willen@illinois.edu

Dear Champaign County ELUC,

I have a few comments on the proposed zoning ordinance for Solar Farms.

1. A.2.a.(1): Excluding a zone 1.5 miles from an incorporated municipality seems unnecessary and more appropriate for a wind turbine than a Solar Farm.

2. D.2.(b): Requiring all power and communication wiring to be buried significantly drives up the cost of the project, as it is much easier to run wires through conduits aboveground and attached to the racking system. In addition, digging can negatively impact drainage tiles, so it seems to me it should be minimized.

3. M.2(a): It seems to me that the screening requirement assumes that screening is always desired. That may not be the case. If my neighbor erected a Solar Farm I would be happy to see it every day. I suggest that a screening requirement be put in place only if desired by the adjacent property owner. (I believe there is no requirement of screening from streets.)

Please forgive any misunderstandings on my part.

Sincerely,

A handwritten signature in black ink that reads "Scott C".

Scott Willenbrock

Professor of Physics

Provost Fellow for Sustainability

SOLAR FARMS IN ILLINOIS

Solar Energy Subcommittee Meeting

Kankakee County Planning Department
Delbert Skimerhorn, Sr., AICP, GISP, CFM
Planning Director

Solar Farms in Illinois

COMMERCIAL SOLAR FARMS IN ILLINOIS

Grand Ridge Solar Farm (Operating)

- LaSalle County – NE of Streator
- 160 acres
- 20MW Facility
- Photovoltaic
- Owned by Invenergy



Shelbyville Solar Farm (Under Construction)

- Shelby County – East of Shelbyville
- 20 acres
- 500kw Facility
- Owned by Prairie Power



Spoon River Solar Farm (Under Construction)

- Mason County –
Between Astoria and
Havana
- 20 acres
- 500kw Facility
- Owned by Prairie
Power



Additional Solar Farms

- There are two additional solar farms in Illinois.
 - The West Pullman Farm is 10MW on Chicago's south side. The largest urban solar farm in the country.
 - U of I built a 5.97MW Farm in Champaign to power the university.
- *- Rural* Neither of these are commercial farms.
- There may be others.

Zoning Ordinances

- When we started this process a year ago, ordinances relating to solar farms were nearly non-existent in the State of Illinois.
- Many Counties are now in the process of adopting ordinances.
- Kankakee, Livingston, & LaSalle now have ordinances in place.

Solar Farms in Illinois

WHY NOW?

New Legislation

- The “Future Energy Job’s Act” was enacted in December 2016 and goes into effect June 1, 2017.
 - Subsidize nuclear power through credits from zero emission facilities.
 - Fear of two nuclear plant closings; Clinton & Quad Cities. “Potential Nuclear Power Plant Closings in Illinois-2015”
 - Expand the states renewable portfolio;
 - Requires 3000 MW of new solar and 1300 MW of new wind power to be built in Illinois by 2030.
 - That sounds like a lot, but land consumption is estimated to be between 8000 and 15,000 acres state wide. That’s between 12.5 and 23.5 square miles or only about 78 to 147 acres per county.
- (You can read the law at your leisure for full details.)

Solar Farms in Illinois

TYPES OF SOLAR POWER FACILITIES

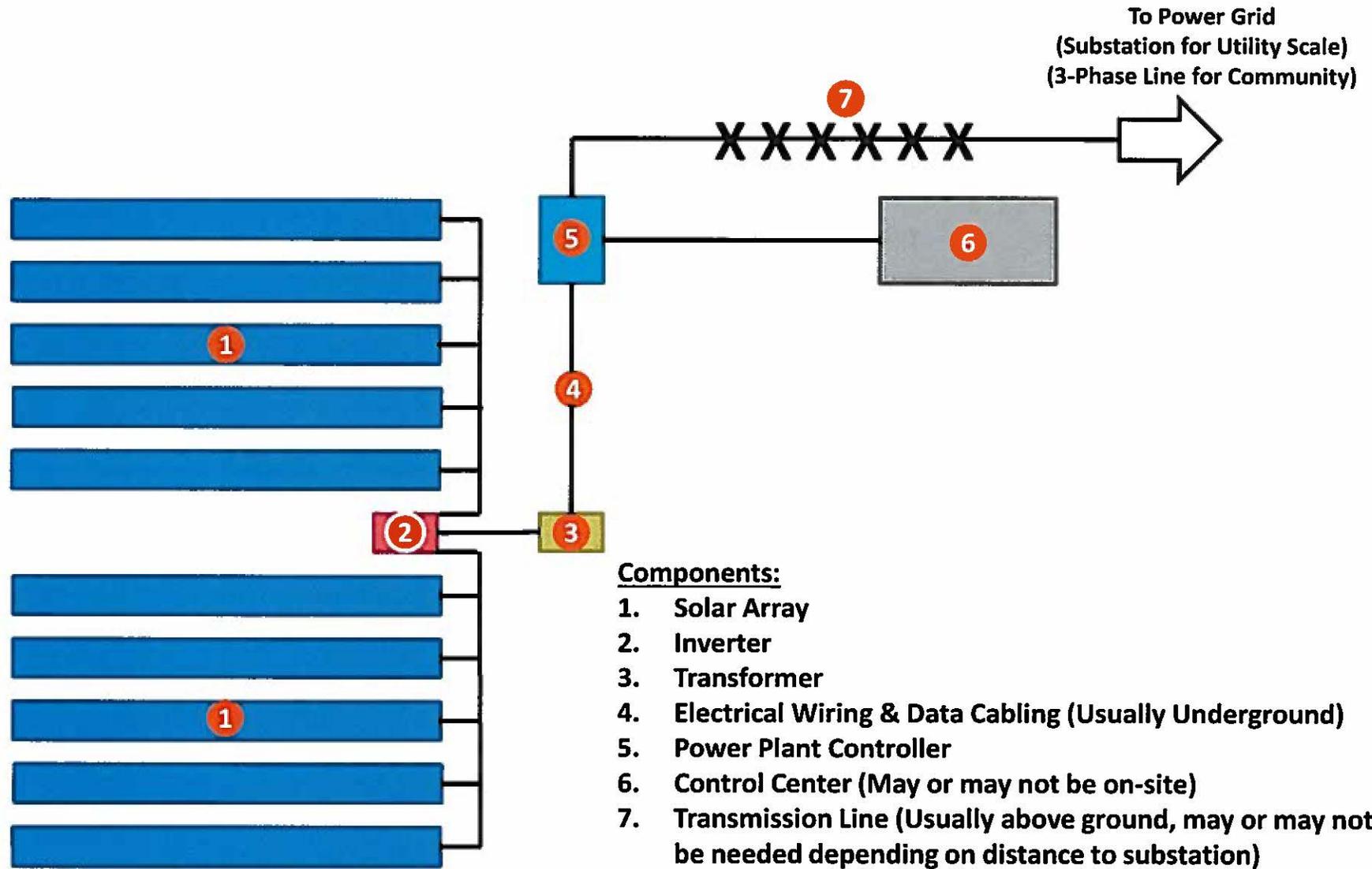
Types of Facilities

- **Utility Scale Solar Farms (40%)**
 - Large scale facilities usually 20+ acres strictly for the production of electricity to be sold on the open market. These facilities must have or be near a sub-station.
- **Community Solar Farms (50%)**
 - Smaller scale facilities usually between 5 and 10 acres. May be used for commercial generation or for community use such as a university, municipality, or other large land use or land use group. These do not need a substation and can be constructed anywhere a three phase line exists.
- **Light Renewable Program (8%)**
 - Private, individual installations.

Solar Farms in Illinois

COMPONENTS OF A SOLAR FARM

Components of a Solar Farm



Components:

1. Solar Array
2. Inverter
3. Transformer
4. Electrical Wiring & Data Cabling (Usually Underground)
5. Power Plant Controller
6. Control Center (May or may not be on-site)
7. Transmission Line (Usually above ground, may or may not be needed depending on distance to substation)
8. A security fence, signage, and access roads are also usually included.

Components Continued



1. Solar Array



1A. Solar Array Racking & 4. Wiring



2. Inverter



3. Transformer

Components Continued



5. Power Plant Controller



6. Control Center



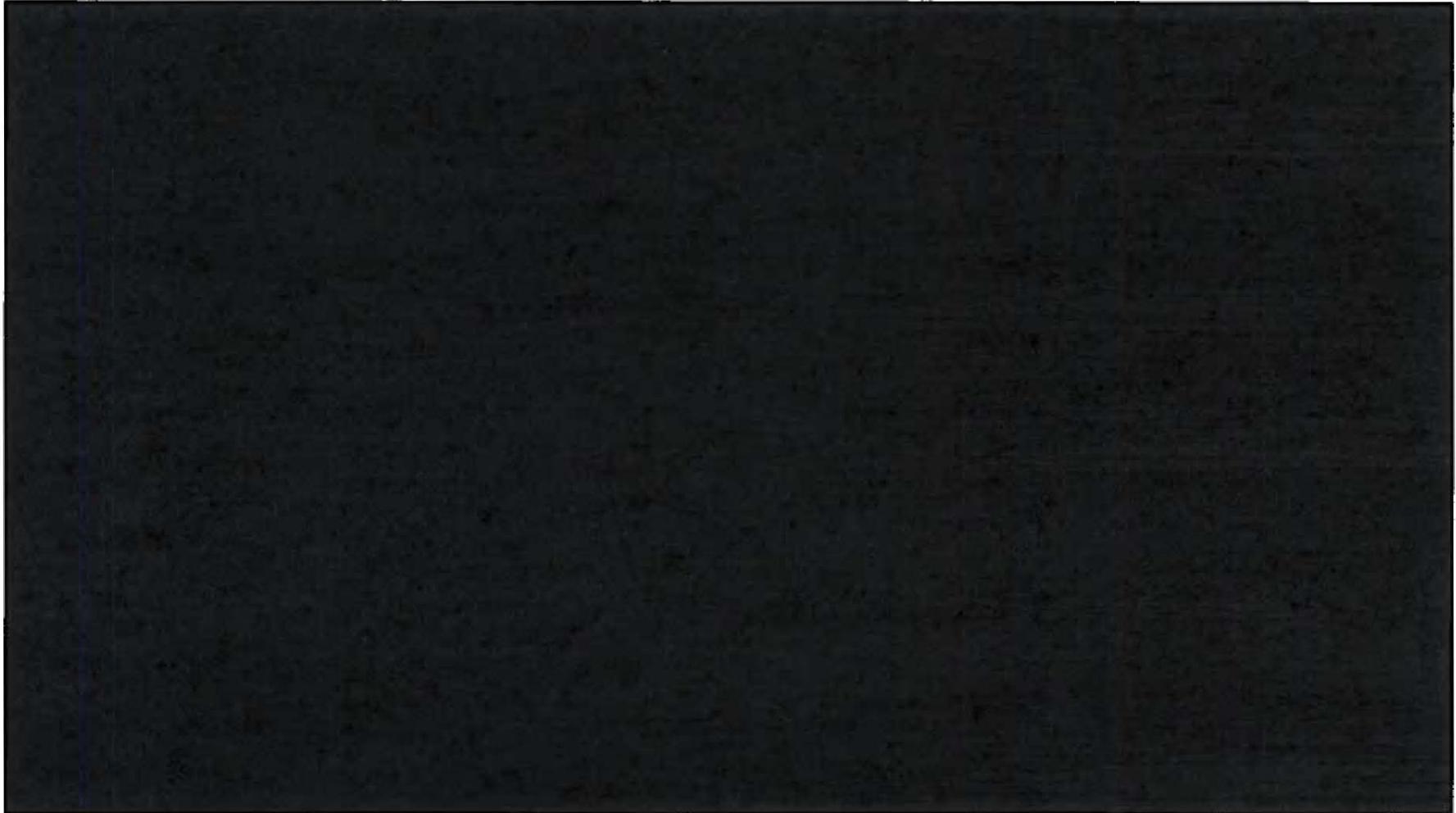
7. Transmission Lines

Foundations

- Solar array foundations are usually pipes or tubular steel driven into the ground. Concrete is only used if soil conditions warrant it.
- Solar arrays in our area are usually stationary mounted and do not move or tilt. Those are only needed in western desert regions.



Time Lapsed Construction Video (3min)



Published on Nov 23, 2015

This inspirational time-lapse film creatively presents the key stages in the construction of a Belectric solar farm. Shot over three months in Oxfordshire using a DJI Phantom 2 quadcopter, Gopro & conventional time-lapse techniques, it takes us on a frantic, techno charged journey from empty fields to gleaming solar panels in under 3 minutes. Landmead delivers 46 Megawatts, powering 14,000 UK homes for 25 years. Welcome to the Clean Energy Revolution!

QUESTIONS / DISCUSSION

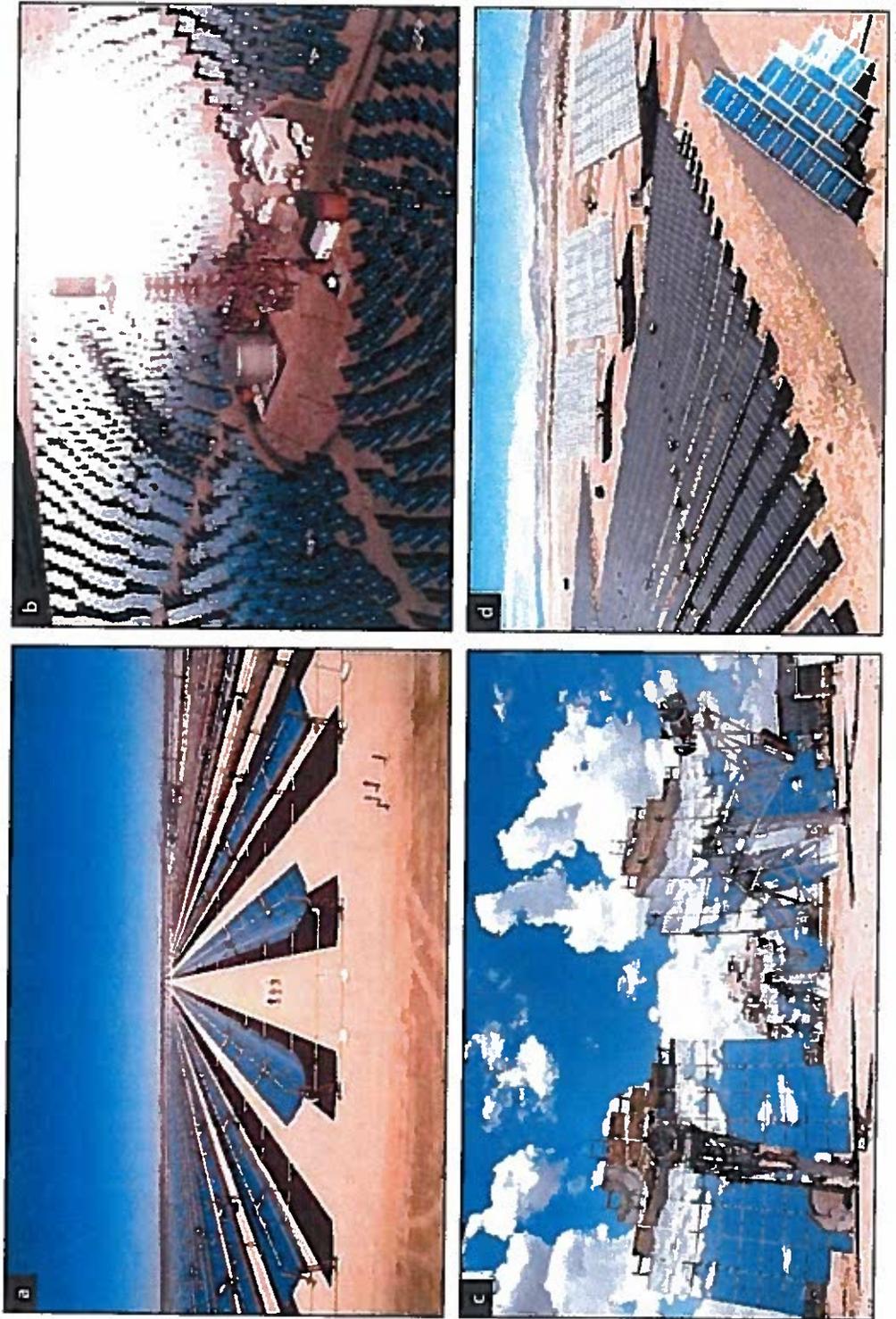


FIGURE 1-1 Typical Solar Fields for Various Technology Types: (a) Solar Parabolic Trough (Source: Hosoya et al. 2008), (b) Solar Power Tower (Credit: Sandia National Laboratories. Source: NREL 2010), (c) Dish Engine (Credit: R. Montoya. Source: Sandia National Laboratories 2008), and (d) PV (Credit: Arizona Public Service. Source: NREL 2010)

AGRICULTURAL IMPACT MITIGATION AGREEMENT
between
, LLC
and the
ILLINOIS DEPARTMENT OF AGRICULTURE
Pertaining to the Construction of a Commercial Wind Energy Facility
in
County, Illinois

The following standards and policies are required by the Illinois Department of Agriculture (IDOA) to help preserve the integrity of any agricultural land that is impacted by the Construction and Deconstruction of a wind energy facility in accordance with the Wind Energy Facilities Agricultural Impact Mitigation Act (Act), 505 ILCS 147 et seq. They were developed with the cooperation of agricultural agencies, organizations, Landowners, Tenants, drainage contractors, and wind energy companies to comprise this Agricultural Impact Mitigation Agreement (AIMA). The AIMA is made and entered into between the Company and the IDOA.

LLC, hereafter referred to as Commercial Wind Energy Facility Owner, plans to develop a MW Commercial Wind Energy Facility in County, which will consist of up to turbines, access roads, an underground collection line, a switchyard, a substation, and an operation and maintenance building site.

If construction does not commence within four years after the AIMA has been fully executed, the AIMA will be revised, with the Commercial Wind Energy Facility Owner's input, to reflect the IDOA's most current Wind Farm Construction and Deconstruction Standards and Policies. This AIMA, and any updated AIMA, will be filed with the County Board by Company.

The below prescribed standards and policies are applicable to Construction and Deconstruction activities occurring partially or wholly on privately owned agricultural land.

Conditions of the AIMA

The mitigative actions specified in the Construction and Deconstruction Standards and Policies set forth below shall be implemented in accordance with the conditions listed below:

- A. All Construction or Deconstruction activities may be subject to County or other local requirements. However, the specifications outlined in this AIMA shall be the minimum standards applied to all Construction or Deconstruction activities.
- B. All mitigative actions are subject to modification through negotiation by Landowners and a representative of the Commercial Wind Energy Facility Owner, provided such changes are negotiated in advance of any respective Construction or Deconstruction activities.
- C. The Commercial Wind Energy Facility Owner may negotiate with Landowners to carry out the mitigative actions that Landowners wish to perform themselves. In such instances, the Company will offer Landowners the area commercial rate for their machinery and labor costs.
- D. All mitigative actions will extend to associated future Construction, maintenance, repairs, and Deconstruction of the Project referenced by this AIMA by the Commercial Wind Energy Facility Owner.

- E. The Commercial Wind Energy Facility Owner will exercise Best Efforts to determine all Landowners and Tenants affected by the Construction and Deconstruction of a Commercial Wind Energy Facility. The Commercial Wind Energy Facility Owner shall keep the Landowners and Tenants informed of the project's status, meetings, and other factors that may have an impact upon their farming operations.
- F. The Commercial Wind Energy Facility Owner agrees to include a statement of its adherence to the Construction and Deconstruction Standards and Policies in any environmental assessment and/or environmental impact statement that may be prepared in connection with the project.
- G. Execution of this AIMA shall be made a condition of any Conditional/Special Use Permit. A copy of this AIMA shall be mailed to each Landowner. The Commercial Wind Energy Facility Owner shall provide postage and mailing labels to the IDOA for mailing to all Landowners.
- In the case of a new Underlying Agreement with the Landowner, the Commercial Wind Energy Facility Owner shall incorporate this AIMA into such Underlying Agreement.
- H. The Commercial Wind Energy Facility Owner will implement all mitigative actions to the extent that they do not conflict with the requirements of any applicable federal, state and local rules and regulations and other permits and approvals that are obtained by the Commercial Wind Energy Facility Owner for the project.
- I. If any mitigative action(s) is held to be unenforceable, no other provision shall be affected by that holding, and the remainder of the mitigative actions shall be interpreted as if they did not contain the unenforceable provision.
- J. No later than 45 days prior to the Construction and/or Deconstruction of a Commercial Wind Energy Facility, the Commercial Wind Energy Facility Owner will provide the Landowner(s) with a toll-free number the Landowner can call to alert the Commercial Wind Energy Facility Owner should the Landowner(s) have questions or concerns with the work which is being done or has been carried out on his/her property.
- K. If there is a change in ownership of the Commercial Wind Energy Facility, the Commercial Wind Energy Facility Owner assuming ownership of the facility shall provide notice within 90 days to the County and to Landowners of such change and the existing Financial Assurance requirements, plus the other terms of this AIMA, shall apply to the new Commercial Wind Energy Facility Owner.
- L. After construction, the Company will provide the IDOA with "as built" drawings (strip maps) showing the location of all tile lines by survey station encountered in the construction of the Wind Farm. The drawings and GPS tile lines repair coordinates will be provided on a county-by-county basis for distribution by the IDOA to the respective local Soil and Water Conservation District (SWCD) for the purpose of assisting Landowners with future drainage needs.
- M. In addition, after all construction is complete, all affected Landowners will receive a copy of the tile repairs location map with GPS coordinates identified as the electric cable crosses their property.
- N. The Commercial Wind Energy Facility Owner shall comply with all local, state and federal laws and regulations, specifically including the worker protection standards to protect workers from pesticide exposure.
- O. Within 30 days of execution of this AIMA, the Company will provide the IDOA with a set of mailing labels of all Landowners and known Tenants in such area, most likely on a county-

by-county basis, who will be affected by the proposed electric line. As the list of affected Landowners and Tenants is updated, the Company will notify the IDOA of any additions or deletions. The IDOA will use the labels for mailing this AIMA to the Landowners and Tenants.

In addition, the Company shall provide postage for mailing a copy of this AIMA and associated documents to applicable Landowners. The IDOA shall determine the amount of postage and inform Company, which shall provide such postage reimbursement to the Department as soon as possible.

Definitions

Abandonment -	Occurs when Deconstruction has not been completed within 18 months after the wind energy facility reaches the end of its Useful Life.
Aboveground Cable -	Electrical power lines installed above grade to be utilized for conveyance of power from the Wind Turbine(s) to the Wind Facility substation.
Agricultural Impact Mitigation Agreement (AIMA) -	The Agreement between the Commercial Wind Energy Facility Owner and the Illinois Department of Agriculture described herein.
Agricultural Land -	Land used for Cropland, hayland, pasture land, managed woodlands, truck gardens, farmsteads, commercial ag-related facilities, feedlots, livestock confinement systems, land on which farm buildings are located, and land in government set-aside programs used for purposes as set forth above.
Best Efforts -	Diligent, good faith, and commercially reasonable efforts to achieve a given objective or obligation.
Commercial Operation Date -	The calendar date on which the Commercial Wind Energy Facility is capable of producing power and placing said power on the grid.
Commercial Wind Energy Facility -	A wind energy conversion facility of equal or greater than 500 kilowatts in total nameplate generating capacity. "Commercial Wind Energy Facility" includes a wind energy conversion facility seeking an extension of a permit to construct granted by a county or municipality before the effective date of this Act. "Commercial Wind Energy Facility" does not include a wind energy conversion facility: (1) that has submitted a complete permit application to a county or municipality and for which the hearing on the completed application has commenced on the date provided in the public hearing notice, which must be before the effective date of this Act; (2) for which a permit to construct has been issued before the effective date of this Act; or (3) that was constructed before the effective date of this Act.

Insert Company name, LLC
2017 Agricultural Impact Mitigation Agreement

4

Commercial Wind Energy Facility Owner -	A private commercial enterprise that owns or operates a Wind Energy Facility of equal to or greater than 500 kilowatts in total nameplate capacity.
County -	The County where the Commercial Wind Energy Facility is located.
Construction -	The installation, preparation for installation and/or repair of a Commercial Wind Energy Facility.
Cropland -	Land used for growing row crops, small grains, or hay; includes land which was formerly used as cropland, but is currently in a government set-aside program and pastureland comprised of Prime Farmland.
Deconstruction -	The removal of a Commercial Wind Energy Facility from the property of a Landowner and the restoration of that property as provided in the Agricultural Impact Mitigation Agreement. For purposes of these standards and policies, the terms "Deconstruction" and "Decommissioning" have the same meaning and, therefore, may be interchanged with each other.
Deconstruction Plan -	<p>A plan prepared by a Professional Engineer, at the Commercial Wind Energy Facility Owner expense, that includes:</p> <ol style="list-style-type: none"> (1) the estimated Deconstruction cost per turbine, in current dollars at the time of filing, for the Commercial Wind Energy Facility, taking into account, among other things: <ol style="list-style-type: none"> i the number of Wind Turbines and related Commercial Wind Energy Facilities involved, ii the original Construction costs of the Commercial Wind Energy Facilities, iii the size and capacity of the Wind Turbines, iv the salvage value of the Commercial Wind Energy Facilities, v the Construction method and techniques for the Wind Turbines and other Commercial Wind Energy Facilities, and (2) a comprehensive detailed description of how the Commercial Wind Energy Facility Owner plans to pay for the Deconstruction of the Commercial Wind Energy Facility.
Department -	The Illinois Department of Agriculture (IDOA).
Financial Assurance -	A reclamation bond or other commercially available financial assurance that is acceptable to the County, with the County as beneficiary.
Landowner -	Any person with an ownership interest in property that is used for agricultural purposes and that is party to an Underlying Agreement.

Prime Farmland -	Agricultural Land comprised of soils that are defined by the USDA Natural Resources Conservation Service as being "prime" soils (generally considered the most productive soils with the least input of nutrients and management).
Professional Engineer -	An engineer licensed to practice engineering in the State of Illinois, and who is determined to be qualified to perform the work described herein by mutual agreement of the County and the Commercial Wind Energy Facility Owner.
Soil and Water Conservation District -	A local unit of government that provides technical and financial assistance to eligible landowners for the conservation of soil and water resources.
Tenant -	Any person lawfully residing or leasing/renting land that is subject to an Underlying Agreement.
Topsoil -	The uppermost layer of the soil that has the darkest color or the highest content of organic matter; more specifically, it is defined as the "A" horizon.
Underlying Agreement -	The written agreement with a Landowner(s) including, but not limited to, an easement, option, lease, or license under the terms of which another person has constructed, constructs, or intends to construct a Commercial Wind Energy Facility on the property of the Landowner.
Underground Cable -	Electrical power lines installed below grade to be utilized for conveyance of power from the Wind Turbine(s) to the Wind Facility substation.
USDA Natural Resources Conservation Service -	NRCS provides America's farmers with financial and technical assistance to voluntarily put conservation on the ground, not only helping the environment but agricultural operations too.
Useful Life -	A Commercial Wind Energy Facility will be presumed to have no remaining Useful Life if (1) no electricity is generated for a continuous period of twelve (12) months, and (2) if the Commercial Wind Energy Facility Owner fails, for a period of 6 consecutive months, to pay the Landowner amounts owed in accordance with the Underlying Agreement.
Wind Turbine -	A wind energy conversion unit equal to or greater than 500 kilowatts in total nameplate generating capacity.

Construction and Deconstruction Standards and Policies

1. Support Structures

- A. On Agricultural Land, only single pole support structures will be used for overland transmission not located adjacent to the Commercial Wind Energy Facility substation.
- B. Where the electric line is adjacent and parallel to highway and/or railroad right-of-way, but on privately owned property, the support structures will be placed as close as reasonably practicable and allowable by the applicable County Engineer or other applicable authorities to the highway or railroad right-of-way. The only exceptions may be at jogs or weaves on the highway alignment or along highways or railroads where transmission and distribution lines are already present.
- C. The highest priority will be given to locating the electric line parallel and adjacent to highway and/or railroad right-of-way. When this is not possible, Best Efforts will be expended to place all support poles in such a manner so as to minimize their placement on Cropland (i.e., longer than normal spans will be utilized when traversing Cropland).

2. Aboveground Facilities

Locations for Commercial Wind Energy Facilities shall be selected in a manner so as to be as unobtrusive as reasonably possible to ongoing agricultural activities occurring on the land that contains the facilities. Commercial Wind Energy Facility Owner's compliance with applicable local, county, state, and federal statutes, rules, regulations, and ordinances, and its securing any variations or waivers to such statutes, rules, regulations, and ordinances in accordance with applicable law, in selecting such locations shall constitute compliance with this provision.

3. Guy Wires and Anchors

- A. Best Efforts will be made to place guy wires and their anchors out of cropland, pastureland and hayland, placing them instead along existing utilization lines and on land not used for row crops, pasture or hay. Where this is not feasible, Best Efforts will be made to minimize guy wire impact on Cropland.
- B. All guy wires will be shielded with highly visible guards.

4. Underground Cabling Depth

- A. Underground electrical cables will be buried with:
 1. a minimum of 5 feet of top cover where it crosses Cropland.
 2. a minimum of 5 feet of top cover where it crosses pasture land or other Agricultural Land comprised of soils that are classified by the USDA as being prime soils.
 3. a minimum of 3 feet of top cover where it crosses pasture land and other Agricultural Land not comprised of prime soils.
 4. a minimum of 3 feet of top cover where it crosses wooded/brushy land.

- B. Notwithstanding the foregoing, in those areas where (i) rock in its natural formation and/or (ii) a continuous strata of gravel exceeding 200 feet in length are encountered, the minimum top cover will be 30 inches.

5. Topsoil Removal and Replacement

- A. Any excavation shall be performed in a manner to preserve topsoil. Best Efforts will be made to store the topsoil near the excavation site in such a manner that it will not become intermixed with subsoil materials.
- B. Best Efforts will be made to store all disturbed subsoil material near the excavation site and separate from the topsoil.
- C. When backfilling an excavation site, the stockpiled subsoil material will be placed back into the excavation site before replacing the topsoil.
- D. Refer to Item No. 7.A. through 7.D for procedures pertaining to rock removal from the subsoil and topsoil.
- E. Refer to Items No. 8.A. through 8.D. for procedures pertaining to the alleviation of compaction of the topsoil.
- F. Best Efforts will be performed to place the topsoil in a manner so that after settling occurs, the topsoil's original depth and contour (with an allowance for settling) will be restored as close as reasonably practicable. The same shall apply where excavations are made for road, stream, drainage ditch, or other crossings. In no instance will the topsoil materials be used for any other purpose unless agreed to otherwise by the Landowner.
- G. Excess subsoil material resulting from wind turbine foundation excavation shall be removed from Landowner's property, unless otherwise agreed to by Landowner.

6. Repair of Damaged Tile Lines

If underground drainage tile is damaged by Construction or Deconstruction, it will be repaired in a manner that assures the tile line's proper operation at the point of repair. The following standards and policies shall apply to the tile line repair:

- A. The Commercial Wind Energy Facility Owner will work with the Landowner to identify the tile lines traversing the property included within the Underlying Agreement. All tile lines identified in this manner will be shown on the Construction and Deconstruction Plans and staked or flagged prior to Construction or Deconstruction to alert Construction and Deconstruction crews to the possible need for tile line repairs.
- B. Tile lines that are damaged, cut, or removed shall be staked or flagged with stakes or flags placed in such a manner they will remain visible until the permanent repairs are completed. In addition, the location of damaged drain tile lines will be recorded using Global Positioning Systems (GPS) technology.
- C. If water is flowing through any damaged tile line, the Commercial Wind Energy Facility Owner shall utilize Best Efforts to immediately and temporarily repair the tile

line until such time that the Commercial Wind Energy Facility Owner can make permanent repairs. If the tile lines are dry and water is not flowing, temporary repairs are not required if the permanent repairs can be made by the Commercial Wind Energy Facility Owner within 14 days (weather and soil conditions permitting) of the time damage occurred; however, the exposed tile lines will be screened or otherwise protected to prevent the entry of foreign materials or animals into the tile lines.

- D. Where tile lines are severed by an excavation trench, repairs shall be made using the IDOA Drain Tile Repairs, Figures 1 and 2, or as an option, the Tile Bridge Permanent Repair.

If there is any dispute between the Landowner and the Commercial Wind Energy Facility Owner on the method of permanent tile line repair, the appropriate Soil and Water Conservation District's opinion shall be considered by the Commercial Wind Energy Facility Owner and the Landowner.

- E. To the extent practicable, there will be a minimum of one foot of separation between the tile line and the Underground Cable whether the Underground Cable passes over or under the tile line. If the tile line was damaged as part of the excavation for installation of the Underground Cable, the Underground Cable will be installed with a minimum one foot clearance below or over the tile line to be repaired or otherwise to the extent practicable.
- F. The original tile line alignment and gradient shall be maintained. A laser transit shall be used to ensure the proper gradient is maintained. A laser operated tiling machine shall be used to install or replace tiling segments of 100 linear feet or more.
- G. During Construction stage, all permanent tile line repairs must be made within 14 days of identification or notification of the damage, weather and soil conditions permitting. At other times, such repairs must be made at a time mutually agreed upon by the Commercial Wind Energy Facility Owner and the Landowner.
- H. Following Construction and/or Deconstruction activities, the Commercial Wind Energy Facility Owner will utilize best practices to restore the drainage in the area to the condition it was before the commencement of the Construction/Deconstruction activities. If the Landowner and Commercial Wind Energy Facility Owner cannot agree upon a reasonable method to complete this restoration, the Wind Energy Facility Owner may – but is not required to – implement the recommendations of the appropriate County Soil and Water Conservation District and such implementation would resolve the dispute.
- I. Following completion of the work, the Commercial Wind Energy Facility Owner will be responsible for correcting all tile line repairs that fail due to Construction and/or Deconstruction, provided those repairs were made by the Commercial Wind Energy Facility Owner. The Commercial Wind Energy Facility Owner will not be responsible for tile line repairs that the Commercial Wind Energy Facility Owner pays the Landowner to perform.

7. Rock Removal

The following rock removal procedures only pertain to rocks found in the uppermost 42 inches of soil, the common freeze zone in Illinois, which emerged due to the site as a result of Construction and/or Deconstruction.

The following rock removal procedures only pertain to rocks found in the uppermost 42 inches of soil, the common freeze zone in Illinois, which emerged due to the site as a result of Construction and/or Deconstruction.

- A. Before replacing any Topsoil, Best Efforts will be taken to remove all rocks greater than 3 inches in any dimension from the surface of exposed subsoil which were brought to the site as a result of Construction and/or Deconstruction.
- B. As topsoil is replaced, all rocks greater than 3 inches in any dimension will be removed from the topsoil which emerged at the site as a result of Construction and/or Deconstruction activities.
- C. If trenching, blasting, or boring operations are required through rocky terrain, precautions will be taken to minimize the potential for oversized rocks to become interspersed with adjacent soil material.
- D. Rocks and soil containing rocks removed from the subsoil areas, topsoil, or from any excavations, will be hauled off the Landowner's premises or disposed of on the Landowner's premises at a location that is mutually acceptable to the Landowner and the Commercial Wind Energy Facility Owner.

8. **Compaction and Rutting**

- A. Unless the Landowner opts to do the restoration work, after the topsoil has been replaced, all areas that were traversed by vehicles and Construction and/or Deconstruction equipment will be ripped at least 18 inches deep, and all pasture and woodland will be ripped at least 12 inches deep to the extent practicable. The existence of tile lines or underground utilities may necessitate less depth. The disturbed area will then be disked. Decompaction shall be conducted according to the guidelines provided in Appendices A and B.
- B. To the extent practicable, all ripping and disking will be done at a time when the soil is dry enough for normal tillage operations to occur on land adjacent to the right-of-way.
- C. The Commercial Wind Energy Facility Owner will restore all rutted land to a condition as close as possible to its original condition.
- D. If there is any dispute between the Landowner and the Commercial Wind Energy Facility Owner as to what areas need to be ripped/disked or the depth at which compacted areas should be ripped/disked, the appropriate County Soil and Water Conservation District's opinion shall be considered by the Commercial Wind Energy Facility Owner and the Landowner.

9. **Construction During Wet Weather**

Except as provided below, construction activities are not allowed on farmland where normal farming operations, such as plowing, disking, planting or harvesting, cannot take place due to excessively wet soils. Wet weather conditions are to be determined on a field by field basis and not for the project as a whole.

- A. Construction activities on prepared surfaces, surfaces where topsoil and subsoil have been removed, heavily compacted in preparation, or otherwise stabilized (e.g. through cement mixing) may occur at the discretion of the Company in wet weather conditions.
- B. Construction activities on unprepared surfaces will be done only when work will not result in rutting creating a mixing of subsoil and topsoil. Determination as to the potential of subsoil and topsoil mixing will be in consultation with the underlying Landowner, or, if approved by the Landowner, his/her designated Tenant.

10. Land Leveling

- A. Following the completion of Construction and/or Deconstruction of a Commercial Wind Energy Facility, the Commercial Wind Energy Facility Owner will utilize Best Efforts to restore the disturbed area to its original pre-construction elevation and contour should uneven settling occur or surface drainage problems develop as a result of said activity.
- B. If, in the future, uneven settling occurs or surface drainage problems develop as a result of the Construction or Deconstruction of a Commercial Wind Energy Facility, the Commercial Wind Energy Facility Owner will provide such land leveling services within 45 days of a Landowner's written notice, weather and soil conditions permitting.
- C. If there is any dispute between the Landowner and the Commercial Wind Energy Facility Owner as to what areas need additional land leveling beyond that which is done at the time of Construction, the Wind Energy Facility Owner may – but is not required to – implement the recommendations of the appropriate Soil and Water Conservation District and such implementation will resolve the dispute.

11. Prevention of Soil Erosion

- A. The Commercial Wind Energy Facility Owner will work with Landowners to prevent excessive erosion on land that has been disturbed by Construction or Deconstruction of a Commercial Wind Energy Facility. Consultation with the local Soil and Water Conservation District by the Commercial Wind Energy Facility Owner will take place to determine the appropriate methods to be implemented to control erosion. This is not a requirement, however, if the land is bare Cropland that the Landowner intends to leave bare until the next crop is planted.
- B. If the Landowner and Commercial Wind Energy Facility Owner cannot agree upon a reasonable method to control erosion on the Landowner's right-of-way, the Wind Energy Facility Owner may – but is not required to – implement the recommendations of the appropriate Soil and Water Conservation District and such implementation will resolve the dispute.

12. Repair of Damaged Soil Conservation Practices

Consultation with the local Soil and Water Conservation District by the Commercial Wind Energy Facility Owner will be carried out to determine if there are soil conservation practices (such as terraces, grassed waterways, etc.) that will be damaged by the Construction and/or Deconstruction of a Commercial Wind Energy Facility. Those conservation practices will be restored to their preconstruction condition as close as

reasonably practicable in accordance with USDA Natural Resources Conservation Service technical standards. All repair costs shall be borne by the Commercial Wind Energy Facility Owner.

13. Damages to Private Property

The Commercial Wind Energy Facility Owner will reasonably compensate Landowners for damages caused by the Commercial Wind Energy Facility Owner. Damage to Cropland will be reimbursed to the Landowner as prescribed in the applicable Underlying Agreement.

14. Clearing of Trees and Brush

- A. If trees are to be removed for the Construction or Deconstruction of a Commercial Wind Energy Facility, the Commercial Wind Energy Facility Owner will consult with the Landowner to determine if there are trees of commercial or other value to the Landowner.
- B. If there are trees of commercial or other value to the Landowner, the Commercial Wind Energy Facility Owner will allow the Landowner the right to retain ownership of the trees to be removed with the disposition of the removed trees to be negotiated prior to the commencement of land clearing.
- C. Unless otherwise restricted by federal, state or local regulations, the Commercial Wind Energy Facility Owner will follow the Landowner's desires regarding the removal and disposal of trees, brush, and stumps of no value to the Landowner by burning, burial, etc., or complete removal from any affected property.

15. Interference with Irrigation Systems

- A. If the Construction or Deconstruction of a Commercial Wind Energy Facility interrupts an operational (or soon to be operational) spray irrigation system, the Commercial Wind Energy Facility Owner will establish with the Landowner an acceptable amount of time the irrigation system may be out of service.
- B. If, as a result of Construction or Deconstruction of a Commercial Wind Energy Facility, an irrigation system interruption results in crop damages, the Landowner will be compensated for all such crop damages per the applicable Underlying Agreement.
- C. If it is feasible and mutually acceptable to the Commercial Wind Energy Facility Owner and the Landowner, temporary measures will be implemented to allow an irrigation system to continue to operate across land on which a Commercial Wind Energy Facility is also being Constructed or Deconstructed.

16. Access Roads

- A. To the extent practicable, access roads will be designed to not impede surface drainage and will be built to minimize soil erosion on or near the access roads.
- B. Access roads may be left intact through mutual agreement of the Landowner and the Commercial Wind Energy Facility Owner unless otherwise restricted by federal, state, or local regulations after the Useful Life.

- C. If the access roads are removed, Best Efforts will be expended to assure that the land shall be restored to equivalent condition(s) as existed prior to their construction, or as otherwise agreed to by the Wind Energy Facility Owner and the Landowner. All access roads that are removed shall be ripped to a depth of 18 inches. All ripping will be done consistent with Items 8.A. through 8.D.

17. Weed Control

- A. The Commercial Wind Energy Facility Owner will provide for weed control in a manner that prevents the spread of weeds onto agricultural land affected by Construction or Deconstruction. Spraying will be done by a pesticide applicator that is appropriately licensed for doing such work in the State of Illinois.
- B. The Commercial Wind Energy Facility Owner will be responsible for reimbursing all reasonable costs incurred by owners of agricultural land affected by Construction or Deconstruction where it has been determined that weeds have spread from land impacted by the Facility. Reimbursement is contingent upon written notice to the Commercial Wind Energy Facility Owner and failure to respond within 45 days after notice is received.

18. Pumping of Water from Open Excavations

- A. In the event it becomes necessary to pump water from open excavations, the Commercial Wind Energy Facility Owner will pump the water in a manner that will avoid damaging agricultural land affected by Construction or Deconstruction. Such damages include, but are not limited to: inundation of crops for more than 24 hours, deposition of sediment in ditches and other water courses, and the deposition of subsoil sediment and gravel in fields and pastures.
- B. If it is impossible to avoid water-related damages as described in Item 18.A. above, the Commercial Wind Energy Facility Owner will compensate the Landowner for damages to crops as prescribed in the applicable Underlying Agreement.
- C. All pumping of water shall comply with existing drainage laws, local ordinances relating to such activities and any other applicable laws, specifically including the Clean Water Act.

19. Advance Notice of Access to Private Property

- A. The Commercial Wind Energy Facility Owner will provide the Landowner or Tenant with a minimum of 48 hours prior notice before accessing his/her property for the purpose of Construction or Deconstruction of a Commercial Wind Energy Facility.
- B. Prior notice shall consist of either: (i) a personal contact, telephone contact or email contact, whereby the Landowner or tenant is informed of the Commercial Wind Energy Facility Owner's intent to access the land; or (ii) the Commercial Wind Energy Facility Owner mails or hand delivers to the Landowner or tenant's home a dated, written notice of the Commercial Wind Energy Facility Owner's intent. Such written or hand delivered notice shall include a toll-free number at which agents of the Commercial Wind Energy Facility Owner can be reached. The Landowner or tenant need not acknowledge receipt of the written notice before the Commercial Wind Energy Facility Owner can enter the Landowner's property.

20. Indemnification

The Commercial Wind Energy Facility Owner will indemnify all Landowners, their heirs, successors, legal representatives, and assigns from and against all claims, injuries, suits, damages, costs, losses, and reasonable expenses resulting from or arising out of Construction and/or Deconstruction, including damage to such Commercial Wind Energy Facility or any of its appurtenances, except where claims, injuries, suits, damages, costs, losses, and expenses are caused by the negligence or intentional acts, or willful omissions of such Landowners, and/or the Landowners heirs, successors, legal representatives, and assigns. In such circumstances, the Landowners, and the Landowners' heirs, successors, legal representatives, and assigns will indemnify the Commercial Wind Energy Facility Owner, its heirs, successors, legal representatives, and assigns from and against said claims, injuries, suits, damages, costs, losses, and reasonable expenses including but not limited to attorneys' fees and costs.

21. Deconstruction of Commercial Wind Energy Facilities and Financial Assurance

- A. The Commercial Wind Energy Facility Owner shall, at its expense, complete Deconstruction of a Commercial Wind Energy Facility within eighteen (18) months after the end of the Useful Life of the Commercial Wind Energy Facility.
- B. Deconstruction of a Commercial Wind Energy Facility shall include the removal/disposition of the following equipment/facilities utilized for operation of the Commercial Wind Energy Facility and located on Landowner property:
 1. Wind Turbine towers and blades;
 2. Wind Turbine generators;
 3. Wind Turbine foundations (to depth of 5 feet);
 4. Transformers;
 5. Collection/interconnection substation (components, cable, and steel foundations), provided, however, that electrical collection cables at a depth of 5 feet or greater may be left in place;
 6. Overhead collection system;
 7. Operations/maintenance buildings, spare parts buildings and substation/switching gear buildings unless otherwise agreed to by the Landowner;
 8. Access Road(s) (unless Landowner requests in writing that the access road is to remain);
 9. Operation/maintenance yard/staging area unless otherwise agreed to by the Landowner; and
 10. Debris and litter generated by Deconstruction and Deconstruction crews.
- C. During the County permit process, the Commercial Wind Energy Facility Owner shall file with the County, a Deconstruction Plan. A second Deconstruction Plan shall be filed with the County on or before the end of the tenth year of the Commercial Operation Date.

D. The Commercial Wind Energy Facility Owner shall provide the County with Financial Assurance to cover the estimated costs of Deconstruction of the Commercial Wind Energy Facility. Provision of this Financial Assurance shall be phased in over the first 11 years of the Project's operation as follows:

1. On or before the first anniversary of the Commercial Operation Date, the Commercial Wind Energy Facility Owner shall provide the County with Financial Assurance to cover ten (10) percent of the estimated costs of Deconstruction of the Commercial Wind Energy Facility as determined in the Deconstruction Plan provided during the county permit process.
2. On or before the sixth anniversary of the Commercial Operation Date, the Commercial Wind Energy Facility Owner shall provide the County with Financial Assurance to cover fifty (50) percent of the estimated costs of Deconstruction of the Commercial Wind Energy Facility as determined in the Deconstruction Plan provided during the county permit process.
3. On or before the eleventh anniversary of the Commercial Operation Date, the Commercial Wind Energy Facility Owner shall provide the County with Financial Assurance to cover one hundred (100) percent of the estimated costs of Deconstruction of the Commercial Wind Energy Facility as determined in the Deconstruction Plan provided during the tenth year of the Commercial Operation Date.

The Financial Assurance shall not release the surety from liability until the Financial Assurance is replaced. The use of salvage value as a setoff is dependent upon an agreement by the Commercial Wind Energy Facility Owner that all interests in the salvage value are subordinate to that of the County if Abandonment occurs.

E. The County may – but is not required to – reevaluate the estimated costs of Deconstruction of any Commercial Wind Energy Facility after the tenth anniversary, and every five years thereafter, of the Commercial Operation Date. Based on any reevaluation, the County may require changes in the level of Financial Assurance used to calculate the phased coverages described in Section 21 D. required from the Commercial Wind Energy Facility Owner. If the County is unable to its satisfaction to perform the investigations necessary to approve the Deconstruction Plan filed by the Commercial Wind Energy Facility Owner, then the County may select a separate Professional Engineer independent of the Commercial Wind Energy Facility Owner to conduct any necessary investigations. The Commercial Wind Energy Facility Owner shall be responsible for the cost of any such investigations.

F. Upon Abandonment, the County may take all appropriate actions for Deconstruction, including drawing upon the Financial Assurance.

Insert Company name, LLC
2017 Agricultural Impact Mitigation Agreement

Concurrence of the Parties to this AIMA

The Illinois Department of Agriculture and _____ LLC concur that this AIMA is the complete AIMA governing the mitigation of agricultural impacts that may result from the construction of the wind farm project in _____ County within the State of Illinois.

The effective date of this AIMA commences on the date of execution.

**STATE OF ILLINOIS
DEPARTMENT OF AGRICULTURE**

, LLC

By Raymond Poe, Director

By _____, title

By Craig J. Sondgeroth, General Counsel

address

801 Sangamon Avenue, 62702
State Fairgrounds, POB 19281
Springfield IL 62794-9281

date

date

AIMA last updated 4-11-17

Appendix A.

Guidelines for Conducting Proper and Successful Decompaction

1. Decompaction is required when all three conditions apply.
 - A. the area has been trafficked or traversed by vehicles or construction equipment, and
 - B. the soil penetrometer readings are 300 psi or greater, and
 - C. The soil strength (psi) in the right-of-way area is greater than that of the non-trafficked area.
2. An Environmental and/or Agricultural Inspector (AI), with experience and training in the proper identification of compacted soil and operation methods of deep decompaction tools is required to observe the daily operation of the ripper/subsoiler to ensure the conditions are appropriate for decompaction efforts and that the proper equipment is utilized and that equipment is set-up and operated correctly.
3. To achieve the most effective shatter of the compacted soil the following guidelines have been established:
 - A. Conduct ripping when the soil is dry. Follow the "Soil Plasticity Test Procedures" detailed in Appendix B to determine if soil conditions are adequately dry to conduct decompaction efforts.
 - B. Deep ripping shall be conducted using a ripper or subsoiling tool with a shank length of no less than 18 inches and a shank spacing of approximately the same measurement as the shank length.
 - C. Use a ripper with a knife length of no less than 2 inches more than the desired depth of decompaction.
 - D. To best promote revegetation and restore crop production, a total depth of 30 or more inches of soil (topsoil plus subsoil) is required.
 - E. The minimum depths of decompaction stated above in 3.D. are required where possible. A safe distance from sub-surface structures (tile drains, pipelines, buried utilities, bedrock, etc.) must be maintained at all times. Where such structures exist, a lesser depth of decompaction will be required to prevent damage to equipment and the structures as well as to maintain a safe work environment. The allowable decompaction depth in these instances will be determined on a site by site basis.
 - F. When the knives are in the soil to the desired depth, the tongue of the ripper should be parallel to the surface of the ground.
 - G. Select a tractor that has enough horsepower to pull the ripper at a speed of 1.5 to 2 mph and whose footprint is of equal or lesser width than the ripper. Tracked equipment is preferred and typically required to achieve this criteria.
 - H. The ripper shanks should not create ruts, channels, or mixing of the sub-soil with topsoil. A speed of 1.5 to 2 mph is recommended to minimize the risk of rutting and soil mixing. The ideal operating speed can vary with soil characteristics, tractor and ripping tool used. An excessive travel speed will often increase mixing of soil horizons.
 - I. When the equipment is set up and operated correctly, the ripper should create a wave across the surface of the ground as it lifts and drops the soil.

- J. Make one ripping pass through the compacted area. Using a penetrometer, the AI will measure the PSI between the ripped knife tracks to determine if the single ripping pass was successful. Additional passes should only be used where needed as they may reduce the effectiveness of the ripping by recompacting the soil shattered in the previous pass.
- K. If the first pass does not successfully decompact the soil, additional passes will be needed. Should multiple passes of the ripper be needed to achieve decompaction between the knives tracks of the ripping tool, the subsequent passes should be positioned so the knife tracks from the previous pass are split by the second pass. If three or more passes have been made and sufficient decompaction has not yet been achieved the AI may choose to halt further decompaction efforts in that area until conditions improve or better methods are determined.
- L. Following ripping, all stone and rock three or more inches in size which has been lifted to the surface shall be collected and removed from agricultural areas.
- M. After ripping has been conducted, do not allow unnecessary traffic on the ripped area.
- N. In agricultural lands and croplands that will not be replanted to vegetation by the Company, recommend to landowners to plant a cover crop (cereal rye, clover, alfalfa, tillage radish, turnips, etc.) following decompaction. Reduced compaction created by the ripper pass will not remain over time without subsequent root penetration. Root penetration into the shattered soil is necessary to establish permanent stabilized channels to conduct air and water into the soil profile. Two good sources for landowner cover crop education are <http://www.mccc.msu.edu/CCinfo/cropbycrop.html> and <http://mcccdev.anr.msu.edu/>. For local expertise, consult with your county's Soil and Water Conservation District /USDA Natural Resource Conservation Service (NRCS) office for cover crop selection and compliance with NRCS planting deadlines.

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Appendix B.

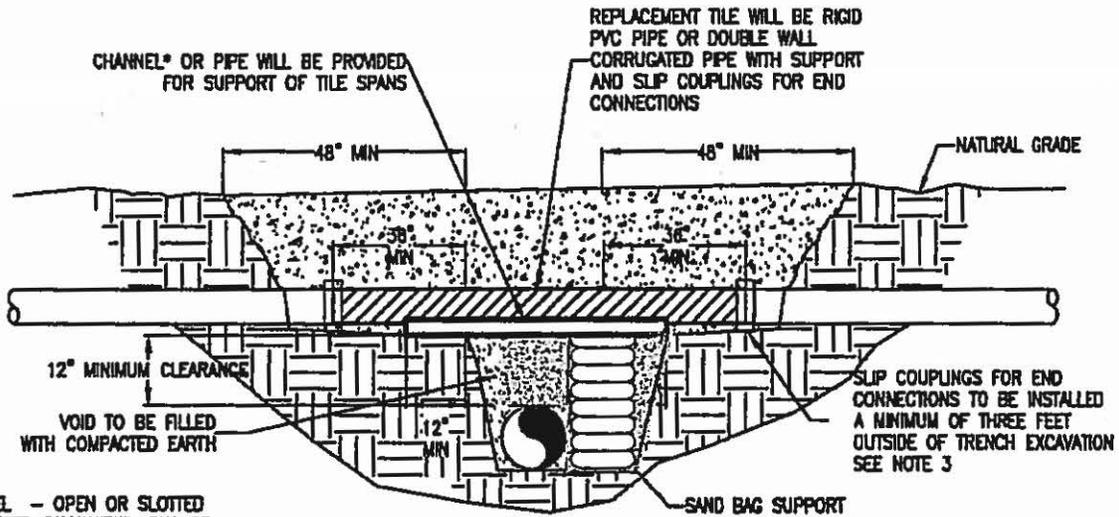
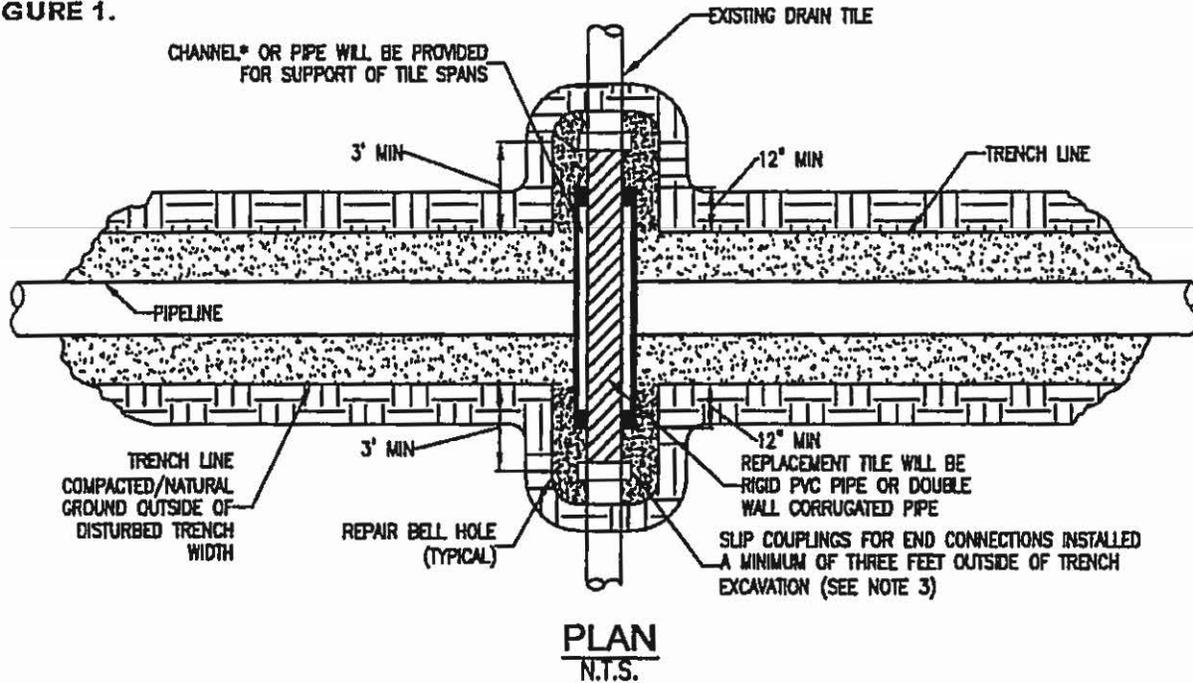
Soil Plasticity Test Procedures

The Agricultural Inspector will test the consistency of the surface soil to a depth of approximately 4 to 8 inches using the Field Plasticity Test procedure developed from the *Annual Book of ASTM Standards, Plastic Limit of Soils* (ASTM D-4318).

1. Pull a soil plug from the area to be tilled, moved, or trafficked to a depth of 4-8 inches.
2. Roll a portion of the sample between the palms of the hands to form a wire with a diameter of one-eighth inch.
3. The soil consistency is:
 - A. Tillable (able to be worked) if the soil wire breaks into segments not exceeding 3/8 of an inch in length.
 - B. Plastic (not tillable) if the segments are longer than 3/8 of an inch before breaking.
4. This Procedure is to be used to aid in determining when soil conditions are dry enough for construction activities to proceed.
5. Once the soil consistency has been determined to be of adequate dryness, the plasticity test is not required again until the next precipitation event.

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FIGURE 1.



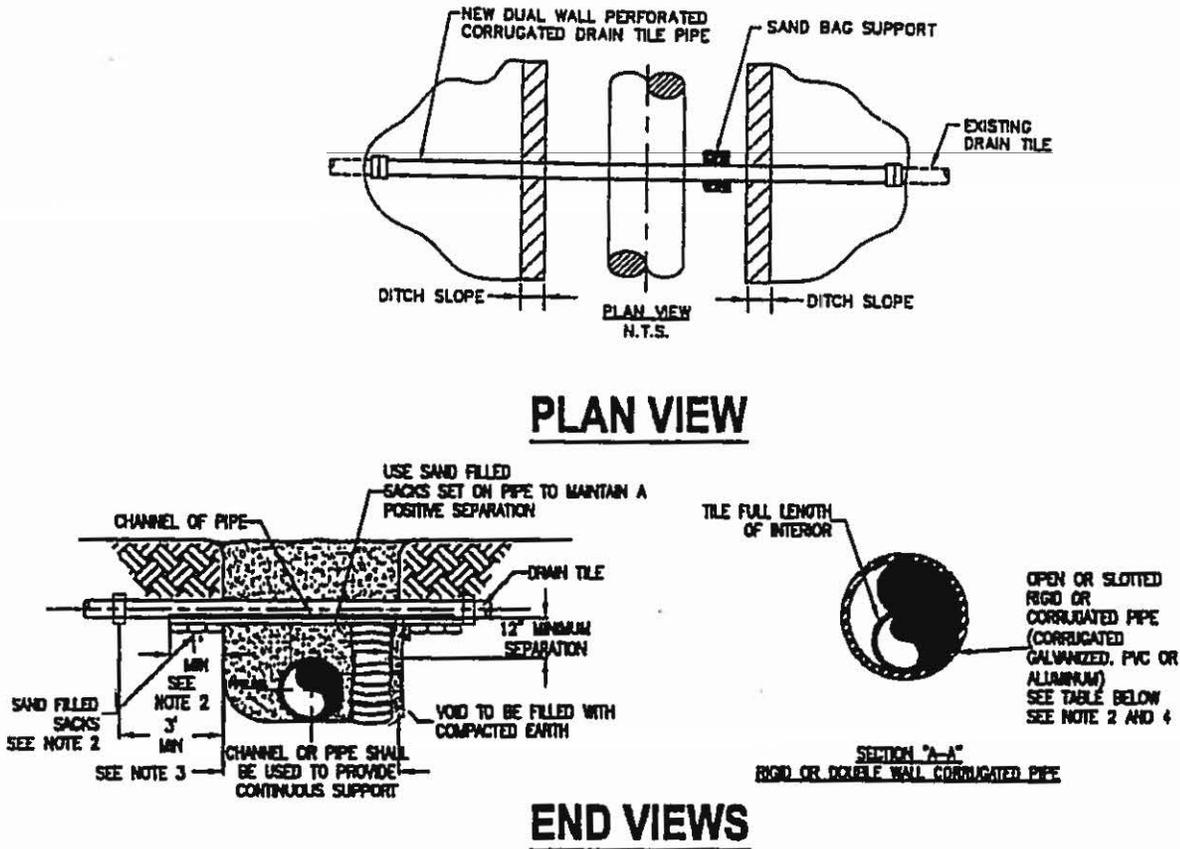
*CHANNEL - OPEN OR SLOTTED CORRUGATED GALVANIZED, PVC OR ALUMINUM CRADLE TO SUPPORT DRAIN TILE.

NOTE:

1. IMMEDIATELY REPAIR TILE IF WATER IS FLOWING THROUGH TILE AT TIME OF TRENCHING. IF NO WATER IS FLOWING AND TEMPORARY REPAIR IS DELAYED, OR NOT MADE BY THE END OF THE WORK DAY, A SCREEN OR APPROPRIATE 'NIGHT CAP' SHALL BE PLACED ON OPEN ENDS OF TILE TO PREVENT ENTRAPMENT OF ANIMALS ETC.
2. CHANNEL OR PIPE (OPEN OR SLOTTED) MADE OF CORRUGATED GALVANIZED PIPE, PVC OR ALUMINUM WILL BE USED FOR SUPPORT OF DRAIN TILE SPANS.
3. INDUSTRY STANDARDS SHALL BE FOLLOWED TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES.

TEMPORARY DRAIN TILE REPAIR

FIGURE 2.



MINIMUM SUPPORT TABLE				
TILE SIZE	CHANNEL SIZE		PIPE SIZE	
3"	4" @ 5.4 #/ft	#/ft	4"	STD. WT.
4"-5"	5" @ 8.7 #/ft	#/ft	6"	STD. WT.
6"-9"	7" @ 9.8 #/ft	#/ft	8"-10"	STD. WT.
10"	10" @ 15.3 #/ft	#/ft	12"	STD. WT.

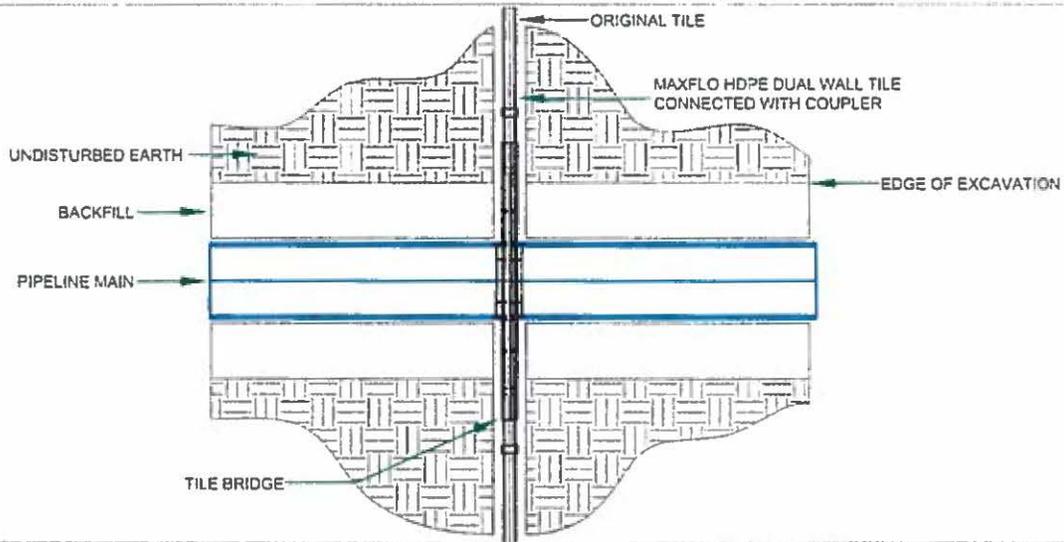
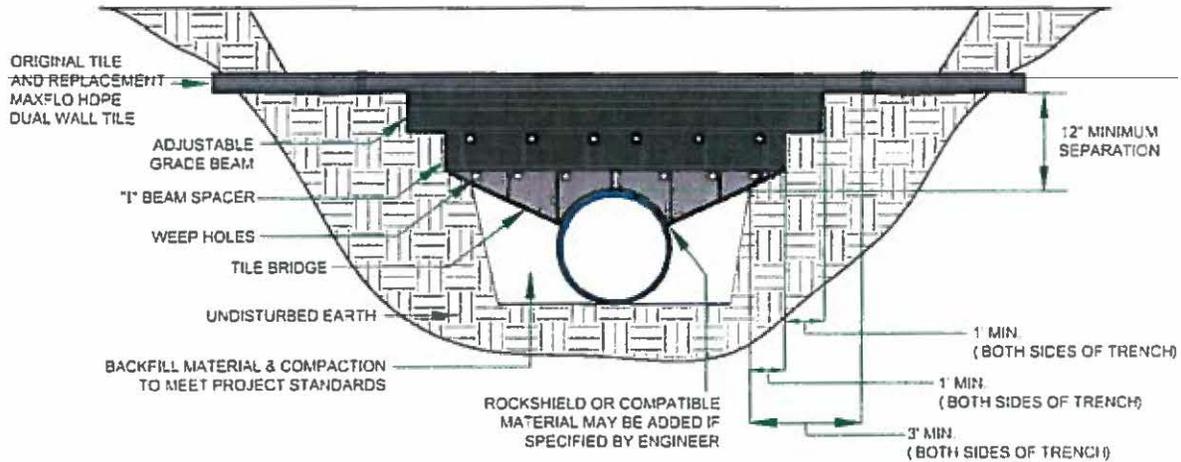
NOTE:

1. TILE REPAIR AND REPLACEMENT SHALL MAINTAIN ORIGINAL ALIGNMENT GRADIENT AND WATER FLOW TO THE GREATEST EXTENT POSSIBLE. IF THE TILE NEEDS TO BE RELOCATED, THE INSTALLATION ANGLE MAY VARY DUE TO SITE SPECIFIC CONDITIONS AND LANDOWNER RECOMMENDATIONS.
2. 1'-0" MINIMUM LENGTH OF CHANNEL OR RIGID PIPE (OPEN OR SLOTTED CORRUGATED GALVANIZED, PVC OR ALUMINUM CRADLE) SHALL BE SUPPORTED BY UNDISTURBED SOIL, OR IF CROSSING IS NOT AT RIGHT ANGLES TO PIPELINE, EQUIVALENT LENGTH PERPENDICULAR TO TRENCH. SHIM WITH SAND BAGS TO UNDISTURBED SOIL FOR SUPPORT AND DRAINAGE GRADIENT MAINTENANCE (TYPICAL BOTH SIDES).
3. DRAIN TILES WILL BE PERMANENTLY CONNECTED TO EXISTING DRAIN TILES A MINIMUM OF THREE FEET OUTSIDE OF EXCAVATED TRENCH LINE USING INDUSTRY STANDARDS TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES INCLUDING SLIP COUPLINGS.
4. DIAMETER OF RIGID PIPE SHALL BE OF ADEQUATE SIZE TO ALLOW FOR THE INSTALLATION OF THE TILE FOR THE FULL LENGTH OF THE RIGID PIPE.
5. OTHER METHODS OF SUPPORTING DRAIN TILE MAY BE USED IF ALTERNATE PROPOSED IS EQUIVALENT IN STRENGTH TO THE CHANNEL/PIPE SECTIONS SHOWN AND IF APPROVED BY COMPANY REPRESENTATIVES AND LANDOWNER IN ADVANCE. SITE SPECIFIC ALTERNATE SUPPORT SYSTEM TO BE DEVELOPED BY COMPANY REPRESENTATIVES AND FURNISHED TO CONTRACTOR FOR SPANS IN EXCESS OF 20', TILE GREATER THEN 10" DIAMETER, AND FOR "HEADER" SYSTEMS.
6. ALL MATERIAL TO BE FURNISHED BY CONTRACTOR.
7. PRIOR TO REPAIRING TILE, CONTRACTOR SHALL PROBE LATERALLY INTO THE EXISTING TILE TO FULL WIDTH OF THE RIGHTS OF WAY TO DETERMINE IF ADDITIONAL DAMAGE HAS OCCURRED. ALL DAMAGED/DISTURBED TILE SHALL BE REPAIRED AS NEAR AS PRACTICABLE TO ITS ORIGINAL OR BETTER CONDITION.

PERMANENT DRAIN TILE REPAIR



TILE BRIDGE - PERMANENT TILE REPAIR



NOTES:

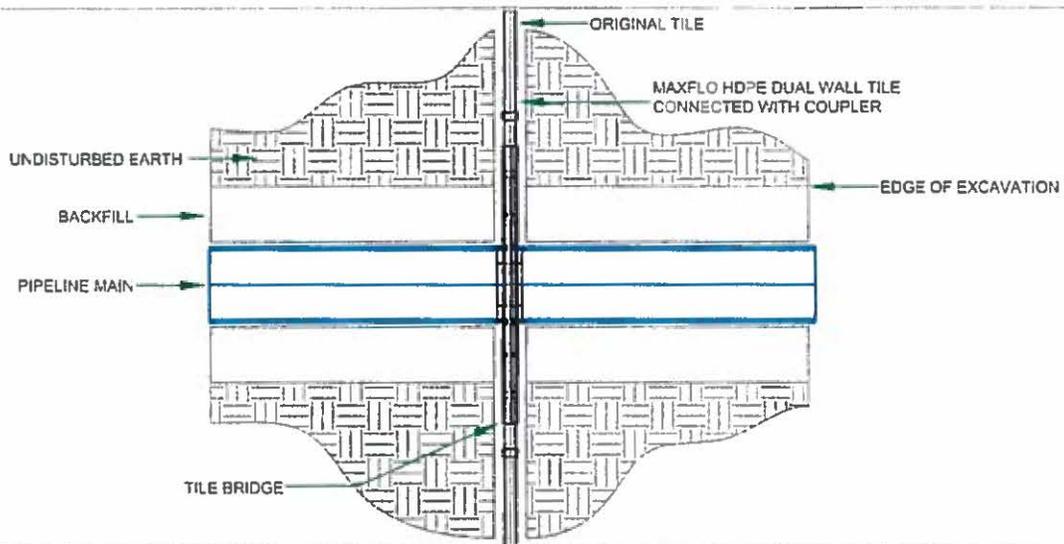
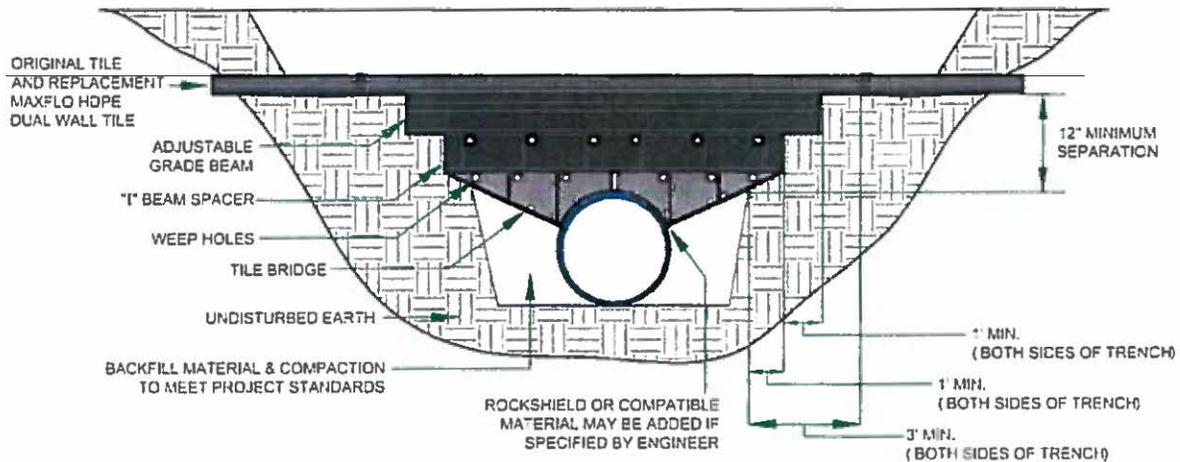
1. TILE REPAIR AND REPLACEMENT SHALL CROSS PERPENDICULAR TO THE PIPELINE WHILE MAINTAINING GRADIENT AND FLOW. WATER FLOW MUST BE EQUAL TO OR GREATER THAN ORIGINAL TILE CAPACITY. THE MINIMUM RECEIVING TILE SIZE REQUIRED FOR THE REPAIR SHALL BE 4" DUAL WALL WHEN CONNECTING TO 2", 3" OR 4" SINGLE WALL FIELD TILE AND 6" DUAL WALL WHEN CONNECTING TO 5" AND 6" SINGLE WALL FIELD TILE AND SO ON. ALL RECEIVING TILE SHALL BE DUAL WALL PERFORATED HDPE TUBING AND APPURTENANCES.
2. THE TILE BRIDGE SUPPORTING STRUCTURE SHALL PROVIDE A MINIMUM OF 1 LF SUPPORT INTO UNDISTURBED SOIL IN EACH TRENCH WALL. EACH ADDITIONAL SUPPORTING STRUCTURE SECTION SHALL ALSO PROVIDE A MINIMUM OF 1 LF SUPPORT INTO UNDISTURBED SOIL, INCLUDING ADJUSTABLE GRADE BEAM (WHICH INCLUDES "Y" SUPPORT STRUCTURE FOR PIPE) AND REPLACEMENT HDPE DUAL WALL. IN LOOSER, LESS STRUCTURED SOILS MORE PRONE TO SLOUGHING OFF, THESE SUPPORT DISTANCES MAY NEED TO BE INCREASED. REPLACEMENT HDPE DUAL WALL MAY BE ZIP TIED TO THE "Y" SECTION OF THE ADJUSTABLE GRADE BEAM. THE "Y" SECTION OF ADJUSTABLE GRADE BEAM SHALL SUPPORT HDPE DUAL WALL TO ASTM F449 STANDARDS. SPACER BEAMS MAY BE UTILIZED IF GREATER ELEVATION IS NEEDED BETWEEN THE TILE BRIDGE AND ADJUSTABLE GRADE BEAM TO MAINTAIN PROPER LINE AND GRADE. IF OVER DIGGING INTO THE UNDISTURBED SOIL, INTENDED TO SUPPORT THE STRUCTURE OCCURS DURING INSTALLATION OF THE SUPPORTING STRUCTURE, THIS OVER DIG MAY BE FILLED WITH SAND FILLED OR SAKRETE BAGS PROVIDED THEY FIRMLY ABUT ADDITIONAL BAGS AND THE SIDEWALL OF THE TRENCH. IF THE TILE MUST BE RELOCATED, THE INSTALLATION ANGLE SHALL BE PERPENDICULAR TO THE PIPELINE DIRECTION.
3. THE DRAIN TILE REPAIR SECTION WILL BE PERMANENTLY CONNECTED TO THE EXISTING DRAIN TILE A MINIMUM OF 1 LF OUTSIDE OF THE UPPERMOST SUPPORTING STRUCTURE USING INDUSTRY STANDARDS TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES.
4. OTHER METHODS OF PERMANENT DRAIN TILE REPAIR SUPPORTS MAY BE USED IF THE PROPOSED METHOD IS OF EQUAL OR GREATER STRENGTH THAN DETAILED ABOVE. ANY ALTERNATE METHODS, INCLUDING "TIE IN" AREAS OR OTHER AREAS REQUIRING LONGER SPANS OF SUPPORT, SHALL CONTAIN ADEQUATE AND CONTINUOUS METHODS OF SUPPORT FROM UNDISTURBED TRENCH BOTTOM SOIL VERTICALLY TO THE SUPPORT STRUCTURE AND THROUGHOUT ITS LENGTH. ALTERNATE SUPPORTS SHALL BE APPROVED BY COMPANY REPRESENTATIVES AND LAND OWNERS IN ADVANCE.
5. ALL MATERIALS SHALL BE FURNISHED BY THE PROJECT OWNER AND OR CONTRACTOR.
6. PRIOR TO REPAIRING TILE, CONTRACTOR SHALL PROBE LATERALLY INTO THE EXISTING TILE THE FULL WIDTH OF THE RIGHT OF WAY TO DETERMINE IF ADDITIONAL DAMAGE HAS OCCURRED. USE OF ACCEPTED VIDEO CAMERA EQUIPMENT FOR INTERNAL INSPECTION MAY ALSO BE CONSIDERED. ALL DAMAGED/DISTURBED TILE SHALL BE REPAIRED AS NEAR AS PRACTICABLE TO ITS ORIGINAL OR BETTER CONDITION.

TILE BRIDGE
PERMANENT TILE REPAIR

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Check	12/28/2014
Scale	1/2" = 1'
Sheet	1 OF 1



TILE BRIDGE - PERMANENT TILE REPAIR



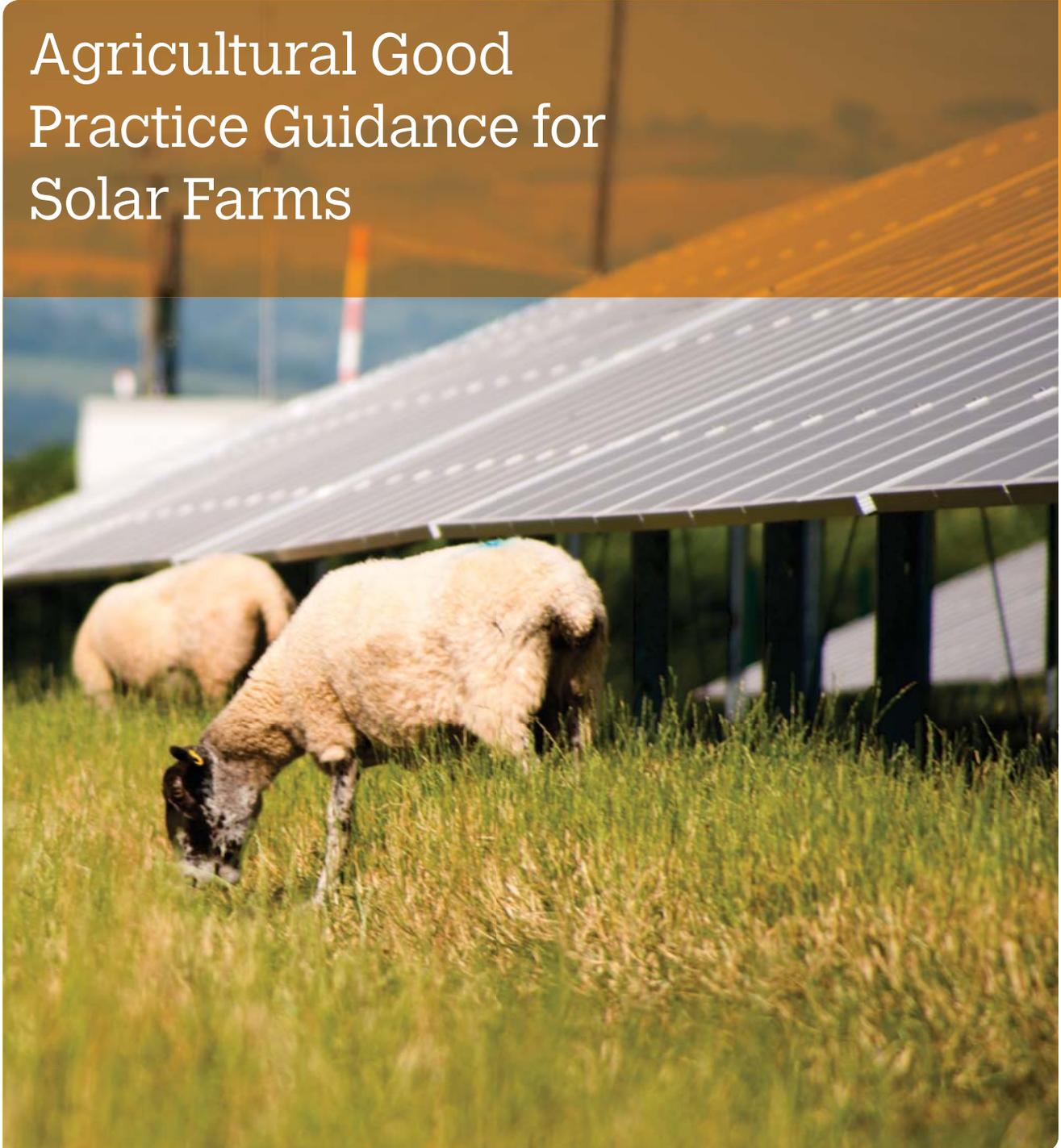
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1. TILE REPAIR AND REPLACEMENT SHALL CROSS PERPENDICULAR TO THE PIPELINE WHILE MAINTAINING GRADIENT AND FLOW. WATER FLOW MUST BE EQUAL TO OR GREATER THAN ORIGINAL TILE CAPACITY. THE MINIMUM RECEIVING TILE SIZE REQUIRED FOR THE REPAIR SHALL BE 4" DUAL WALL WHEN CONNECTING TO 2", 3" OR 4" SINGLE WALL FIELD TILE AND 6" DUAL WALL WHEN CONNECTING TO 5" AND 6" SINGLE WALL FIELD TILE AND SO ON. ALL RECEIVING TILE SHALL BE DUAL WALL PERFORATED HDPE TUBING AND APPURTENANCES.
2. THE TILE BRIDGE SUPPORTING STRUCTURE SHALL PROVIDE A MINIMUM OF 1 LF SUPPORT INTO UNDISTURBED SOIL IN EACH TRENCH WALL. EACH ADDITIONAL SUPPORTING STRUCTURE SECTION SHALL ALSO PROVIDE A MINIMUM OF 1 LF SUPPORT INTO UNDISTURBED SOIL, INCLUDING ADJUSTABLE GRADE BEAM (WHICH INCLUDES "Y" SUPPORT STRUCTURE FOR PIPE) AND REPLACEMENT HDPE DUAL WALL. IN LOOSER, LESS STRUCTURED SOILS MORE PRONE TO SLOUGHING OFF, THESE SUPPORT DISTANCES MAY NEED TO BE INCREASED. REPLACEMENT HDPE DUAL WALL MAY BE ZIP TIED TO THE "Y" SECTION OF THE ADJUSTABLE GRADE BEAM. THE "Y" SECTION OF ADJUSTABLE GRADE BEAM SHALL SUPPORT HDPE DUAL WALL TO ASTM F449 STANDARDS. SPACER BEAMS MAY BE UTILIZED IF GREATER ELEVATION IS NEEDED BETWEEN THE TILE BRIDGE AND ADJUSTABLE GRADE BEAM TO MAINTAIN PROPER LINE AND GRADE. IF OVER DIGGING INTO THE UNDISTURBED SOIL INTENDED TO SUPPORT THE STRUCTURE OCCURS DURING INSTALLATION OF THE SUPPORTING STRUCTURE, THIS OVER DIG MAY BE FILLED WITH SAND FILLED OR SAKRETE BAGS PROVIDED THEY FIRMLY ABUT ADDITIONAL BAGS AND THE SIDEWALL OF THE TRENCH. IF THE TILE MUST BE RELOCATED, THE INSTALLATION ANGLE SHALL BE PERPENDICULAR TO THE PIPELINE DIRECTION.
3. THE DRAIN TILE REPAIR SECTION WILL BE PERMANENTLY CONNECTED TO THE EXISTING DRAIN TILE A MINIMUM OF 1 LF OUTSIDE OF THE UPPERMOST SUPPORTING STRUCTURE USING INDUSTRY STANDARDS TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES.
4. OTHER METHODS OF PERMANENT DRAIN TILE REPAIR SUPPORTS MAY BE USED IF THE PROPOSED METHOD IS OF EQUAL OR GREATER STRENGTH THAN DETAILED ABOVE. ANY ALTERNATE METHODS, INCLUDING "TIE IN" AREAS OR OTHER AREAS REQUIRING LONGER SPANS OF SUPPORT, SHALL CONTAIN ADEQUATE AND CONTINUOUS METHODS OF SUPPORT FROM UNDISTURBED TRENCH BOTTOM SOIL VERTICALLY TO THE SUPPORT STRUCTURE AND THROUGHOUT ITS LENGTH. ALTERNATE SUPPORTS SHALL BE APPROVED BY COMPANY REPRESENTATIVES AND LAND OWNERS IN ADVANCE.
5. ALL MATERIALS SHALL BE FURNISHED BY THE PROJECT OWNER AND OR CONTRACTOR.
6. PRIOR TO REPAIRING TILE, CONTRACTOR SHALL PROBE LATERALLY INTO THE EXISTING TILE THE FULL WIDTH OF THE RIGHT OF WAY TO DETERMINE IF ADDITIONAL DAMAGE HAS OCCURRED. USE OF ACCEPTED VIDEO CAMERA EQUIPMENT FOR INTERNAL INSPECTION MAY ALSO BE CONSIDERED. ALL DAMAGED/DISTURBED TILE SHALL BE REPAIRED AS NEAR AS PRACTICABLE TO ITS ORIGINAL OR BETTER CONDITION.

TILE BRIDGE
PERMANENT TILE REPAIR

DATE	03/18/18
BY	J. J. J.
SCALE	AS SHOWN
TOTAL	1 OF 1

Agricultural Good Practice Guidance for Solar Farms



EUROPEAN UNION
Investing in Your Future
European Regional
Development Fund 2007-2013

BRE
NATIONAL
SOLAR
CENTRE

Principal Author and Editor Dr Jonathan Scurlock, National Farmers Union

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With thanks to NSC Founding Partners:



Context

This document describes experience and principles of good practice to date for the management of small livestock in solar farms established on agricultural land, derelict/marginal land and previously-developed land.

Proposed for publication as an appendix to existing best practice guidelines by the BRE National Solar Centre¹, it should be read in conjunction with BRE (2014) Biodiversity Guidance for Solar Developments (eds. G.E. Parker and L. Greene).

The guidance presented here has been developed with, and endorsed by, a number of leading UK solar farm developers and organisations concerned with agriculture and land management.

Introduction

Field-scale arrays of ground-mounted PV modules, or “solar farms”, are a relatively recent development, seen in Britain only since 2011, although they have been deployed in Germany and other European countries since around 2005. In accordance with the “10 Commitments” of good practice established by the Solar Trade Association², the majority of solar farm developers actively encourage multi-purpose land use, through continued agricultural activity or agri-environmental measures that support biodiversity, yielding both economic and ecological benefits.

It is commonly proposed in planning applications for solar farms that the land between and underneath the rows of PV modules should be available for grazing of small livestock. Larger farm animals such as horses and cattle are considered unsuitable since they have the weight and strength to dislodge standard mounting systems, while pigs or goats may cause damage to cabling, but sheep and free-ranging poultry have already been successfully employed to manage grassland in solar farms while demonstrating dual-purpose land use.

Opportunities for cutting hay or silage, or strip cropping of high-value vegetables or non-food crops such as lavender, are thought to be fairly limited and would need careful layout with regard to the proposed size of machinery and its required turning space. However, other productive options such as bee-keeping have already been demonstrated. In some cases, solar farms may actually enhance the agricultural value of land, where marginal or previously-developed land (e.g. an old airfield site) has been brought back into more productive grazing management. It is desirable that the terms of a solar farm agreement should include a grazing plan that ensures the continuation of access to the land by the farmer, ideally in a form that that enables the claiming of Basic Payment Scheme agricultural support (see page 2).



¹ BRE (2013) Planning guidance for the development of large scale ground mounted solar PV systems. www.bre.co.uk/nsc

² STA “Solar Farms: 10 Commitments” <http://www.solar-trade.org.uk/solarFarms.cfm>

Conservation grazing for biodiversity

As suggested in the Biodiversity Guidance described above, low intensity grazing can provide a cost-effective way of managing grassland in solar farms while increasing its conservation value, as long as some structural diversity is maintained. A qualified ecologist could assist with the development of a conservation grazing regime that is suited to the site's characteristics and management objectives, for incorporation into the biodiversity management plan.

Avoiding grazing in either the spring or summer will favour early or late flowering species, respectively, allowing the development of nectar and seeds while benefiting invertebrates, ground nesting birds and small mammals. Hardy livestock breeds are better suited to such autumn and winter grazing, when the forage is less nutritious and the principal aim is to prevent vegetation from overshadowing the leading (lower) edges of the PV modules (typically about 800-900mm high). Other habitat enhancements may be confined to non-grazed field margins (if provision is made for electric or temporary fencing) as well as hedgerows and selected field corners.

Agricultural grazing for maximum production

The developer, landowner and/or agricultural tenant/licensee may choose to graze livestock at higher stocking densities throughout the year over much of the solar farm, especially where the previous land use suggested higher yields or pasture quality. Between 4 and 8 sheep/hectare may be achievable (or 2-3 sheep/ha on newly-established pasture), similar to stocking rates on conventional grassland, i.e. between about March and November in the southwest and May to October in North-East England.

The most common practice is likely to be the use of solar farms as part of a grazing plan for fattening/finishing of young hill-bred 'store' lambs for sale to market. Store lambs are those newly-weaned animals that have not yet put on enough weight for slaughter, often sold by hill farmers in the Autumn for finishing in the lowlands. Some hardier breeds of sheep may be able to produce and rear lambs successfully under the shelter of solar farms, but there is little experience of this yet. Pasture management interventions such as 'topping' (mowing) may be required occasionally or in certain areas, in order to avoid grass getting into unsuitable condition for the sheep (e.g. too long, or starting to set seed).

Smaller solar parks can provide a light/shade environment for free-ranging poultry (this is now recognised by the RSPCA Freedom Foods certification scheme) – experience to date suggests there is little risk of roosting birds fouling the modules. Broiler (meat) chickens, laying hens and geese will all keep the grass down, and flocks may need to be rotated to allow recovery of vegetation. Stocking density of up to 2000 birds per hectare is allowed, so a 5 megawatt solar farm on 12 hectares would provide ranging for 24,000 birds.

Solar farm design and layout

In most solar farms, the PV modules are mounted on metal frames anchored by driven or screw piles, causing minimal ground disturbance and occupying less than 1% of the land area. The rest of the infrastructure typically disturbs less than 5% of the ground, and some 25-40% of the ground surface is over-sailed by the modules or panel. Therefore 95% of a field utilised for solar farm development is still accessible for vegetation growth, and can support agricultural activity as well as wildlife, for a lifespan of typically 25 years.

As described above, the layout of rows of modules and the width of field margins should anticipate future maintenance costs, taking into account the size, reach and turning circle of machinery and equipment that might be used for 'topping' (mowing), collecting forage grass, spot-weeding (e.g. of 'injurious' weeds like ragwort and dock) and re-seeding. Again, in anticipation of reverting the field to its original use after 25 years, many agri-environmental measures may be better located around field margins and/or where specifically recommended by local ecologists. All European farmers are obliged to maintain land in "good agricultural and environmental condition" under the Common Agricultural Policy rules of 'cross compliance', so it is important to demonstrate sound stewardship of the land for the lifetime of a solar farm project, from initial design to eventual remediation.

The depth of buried cables, armouring of rising cables, and securing of loose wires on the backs of modules all need to be taken into consideration where agricultural machinery and livestock will be present. Cables need to be buried according to national regulations and local DNO requirements, deep enough to avoid the risk of being disturbed by farming practice – for example, disc harrowing and re-seeding may till the soil to a depth of typically 100-150 mm, or a maximum of 200 mm. British Standard BS 7671 ("Wiring Regulations") describes the principles of appropriate depth for buried cables, cable conduits and cable trench marking. Note also that stony land may present a risk of stone-throw where inappropriate grass management machinery is used (e.g. unguarded cylinder mowers).

Eligibility for CAP support and greening measures

From 2015, under the Common Agricultural Policy, farmers will be applying for the new Basic Payment Scheme (BPS) of area-based farm support funding. It has been proposed that the presence of sheep grazing could be accepted as proof that the land is available for agriculture, and therefore eligible to receive BPS, but final details are still awaited from Defra at the time of writing. Farmers must have the land "at their disposal" in order to claim BPS, and solar farm agreements should be carefully drafted in order to demonstrate this (BPS cannot be claimed if the land is actually rented out). Ineligible land taken up by mountings and hard standing should be deducted from BPS claims, and in the year of construction larger areas may be temporarily ineligible if they are not available for agriculture.

Defra has not yet provided full details on BPS 'greening' measures, but some types of Ecological Focus Areas may be possibly located within solar farms, probably around the margins, including grazed buffer strips and ungrazed fallow land, both sown with wildflowers. Note that where the agreed biodiversity management plan excludes all forms of grazing, the land will become ineligible for BPS, and this may have further implications for the landowner, such as for inheritance tax.

Long-term management, permanent grassland and SSSI designation

Since solar farms are likely to be in place typically for 25 years, the land could pass on to a succeeding generation of farmers or new owners, and the vegetation and habitat within the fenced area is expected to gradually change with time. According to Natural England, there is little additional risk that the flora and fauna would assume such quality and interest that the solar farm might be designated a SSSI (Site of Special Scientific Interest) compared with a similarly-managed open field. However, there could be a possible conflict with planning conditions to return the land to its original use at the end of the project, e.g. if this is specified as 'cropland' rather than more generically as 'for agricultural purposes'. If the pasture within a solar farm were considered to have become a permanent grassland, it may be subject to regulations requiring an Environmental Impact Assessment to restore the original land use, although restoration clauses in the original planning consent may take precedence here. It is proposed that temporary (arable) grassland should be established on the majority of the land area that lies between the rows of modules. This would be managed in 'improved' condition by periodic harrowing and re-seeding (e.g. every 5 years), typically using a combination disc harrow and seed drill.

Other measures to maintain the productivity of grassland, without the need for mechanised cultivations or total reseeded, could include: maintaining optimum soil fertility and pH to encourage productive grass species; seasonally variable stocking rates to prevent over/under-grazing with the aim of preventing grass from seeding and becoming unpalatable. Non-tillage techniques to optimise grass sward content might include the use of a sward/grass harrow and air-seeder to revive tired pastures. When applying soil conditioners (e.g. lime), fertilisers or other products, consideration should be taken to prevent damage to or soiling of the solar modules.

Good practice in construction and neighbourliness

Consideration should also be given to best practice during construction and installation, and ensuring that the future agricultural management of the land (such as a change from arable cropping to lamb production) fits into the local rural economy. Site access should follow strictly the proposed traffic management plan, and careful attention to flood and mud management in accordance with the Flood Risk Assessment (e.g. controlling run-off by disrupting drainage along wheelings), will also ensure that the landowner remains on good terms with his/her neighbours.

Time of year should be taken into account for agricultural and biodiversity operations such as prior seeding of pasture grasses and wildflowers. Contractors should consider avoiding soil compaction and damage to land drains, e.g. by using low ground pressure tyres or tracked vehicles. Likewise, when excavating cable trenches, storing and replacing topsoil and subsoil separately and in the right order is important to avoid long-term unsightly impacts on soil and vegetation structure. Good practice at this stage will yield longer-term benefits in terms of productivity and optimal grazing conditions.

Evidence base and suggested research needs

A number of preliminary studies on the quantity and quality of forage available in solar farms have suggested that overall production is very little different from open grassland under similar conditions. A more comprehensive and independent evidence base could be established through a programme of directed research, e.g. by consultants (such as ADAS) or interested university groups (e.g. Exeter University departments of geography and biosciences), perhaps in association with seed suppliers and other stakeholders. Productivity of grasses could be compared between partial shade beneath the solar modules and unshaded areas between the rows. Alternatively daily live weight gain could be compared between two groups of fattening lambs (both under the same husbandry regime) on similar blocks of land, with and without solar modules present.



Case Steiger Quadtrac used to deliver inverters and other heavy equipment to site under soft ground conditions (photo courtesy of British Solar Renewables)



Cable trenching, showing topsoil stripped and set to one side, with subsoil placed on the other side ready for reinstatement (photo courtesy of British Solar Renewables)

Agricultural case studies

Benbole Farm, Wadebridge, Cornwall

One of the first solar farms developed in Britain in 2011, this 1.74 megawatt installation on a four-hectare site is well screened by high hedges and grazed by a flock of more than 20 geese. A community scheme implemented by the solar farm developers enabled local residents to benefit from free domestic solar panels and other green energy projects.



Higher Hill, Butleigh, Somerset

Angus Macdonald, a third-generation farmer, installed a five megawatt solar farm on his own land. Located near Glastonbury, the site has been grazed by sheep since its inception in 2011.



Eastacombe Farm, Holsworthy, Devon

This farm has been in the Petherick family for four generations, but they were struggling to survive with a small dairy herd. In 2011/12, a solar developer helped them convert eight hectares of the lower-grade part of their land into a 3.6 megawatt solar farm with sheep grazing, which has diversified the business, guaranteeing its future for the next generation of farmers.



Newlands Farm, Axminster, Devon

Devon sheep farmer Gilbert Churchill chose to supplement his agricultural enterprise by leasing 13 hectares of grazing land for a 4.2 megawatt solar PV development, which was completed in early 2013. According to Mr Churchill, the additional income stream is "a lifeline" that "will safeguard the farm's survival for the future".



Trevemper Farm, Newquay, Cornwall

In 2011, the Trewithen Estate worked with a solar developer to build a 1.7 megawatt solar farm on 6 hectares of this south-facing block of land, which had good proximity to a grid connection. During the 25-year lease, the resident tenant farmer is still able to graze the land with sheep at his normal stocking density, and is also paid an annual fee to manage the pasture.



Yeowood Solar Farm, North Somerset

Completed in 2012, this 1.3 megawatt installation on 4 hectares of land surrounds a poultry farm of 24,000 laying hens, which are free to roam the land between and underneath the rows of solar modules, as well as other fields. The Ford family, farm owners, also grow the energy crop miscanthus to heat their eco-friendly public swimming pool and office units.



Wyld Meadow Farm, Bridport, Dorset

Farmers Clive and Jo Sage continue to graze their own-brand Poll Dorset sheep on this 4.8 megawatt solar farm, established on 11 hectares in 2012. The solar farm was designed to have very low visual impact locally, with an agreement to ensure livestock grazing throughout the project's lifetime.



Wymeswold Solar Farm, Leicestershire

The author pictured in July 2014 at Britain's largest connected solar farm. At 33 megawatts, this development provides enough energy to power 8,500 homes. Built on a disused airfield in 2013, this extensive installation over 61 hectares (150 acres) received no objections during planning and is grazed by the landowner's sheep – just visible in the background.



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Top Five Large-Scale Solar Myths

As large-scale solar facilities proliferate throughout the country, more communities are considering the potential merits and drawbacks of this new kind of neighbor. Initial reactions to the prospect of large-scale photovoltaic (PV) facilities or solar farms tend to include a myriad of misperceptions.

Actual questions about proposed solar farms in [this former solar developer's experience](#) have included:

- Won't drivers cause accidents rubber-necking at this strange facility?
- Can my cattle graze on there?
- Can I run an extension cord to power my house?

Here are the top five myths I encountered in my six years of working with communities to build solar farms:

Myth #1: Solar farms are like factories

Local officials and planners often restrict solar farms in residential, commercial, and sometimes agricultural zoning districts, limiting their location to industrial districts. Industrial zoning is primarily intended to separate intense land uses, such as factories and distribution centers and their associated pollution, noise, and traffic, from residential areas. However, after construction, solar farms are quiet, clean facilities that generally have no on-site employees.

One city manager with numerous solar farms in his community compared the land use to a cemetery (no living inhabitants), demonstrating that solar farms can be compatible even with residential neighbors.

Myth #2: Glare

Residents and community officials often cite glare or blinding from solar facilities as a primary concern. While concentrating solar technologies do use mirrors which can cause glare, most solar farms use PV modules to generate electricity. PV modules use non-reflective glass and are designed to absorb rather than reflect the light that hits the panels in order to convert solar energy

into electricity. PV modules are generally less reflective than windows[\[1\]](#) and are installed at numerous airports.[\[2\]](#)



Sun Edison PV array at the NWTC. Photo by Dennis Schroeder, NREL 11249490

Myth #3: Noise

The noisiest components in a solar farm are the inverters, which generate a low buzzing sound as they convert electricity from the direct current (DC) generated by PV modules to alternating current (AC) used by the electric grid. Tracking equipment allowing PV modules to face the sun over the course of the day can also generate a low level of noise. However, the noise generated by solar farms is generally not audible above ambient noise outside of the facility fence.[\[3\]](#)

Myth #4: Property values

While the impacts of a solar farm on neighboring property values have not been studied in-depth, numerous studies found the impact of wind energy generation on neighboring property values to be negligible.[\[4\]](#) As solar farms do not have the same impacts as wind farms (i.e., PV facilities do not cast a shadow on neighboring properties, cause light flicker, or have the same visual impact as wind farms), the impacts on property values caused by solar farms are anticipated to be less than the impacts of wind farms. Some communities have opted for mitigation measures to reduce visual impacts of solar farms through

the use of vegetative screening or decorative fencing, since PV modules are usually mounted close to the ground (less than seven feet high).

Myth #5: Electro-magnetic fields

Solar facilities generate electro-magnetic fields similar to household appliances within close proximity, which dissipate with increasing distance and pose no health risk to neighboring residents. [5]

Concerns about proposed solar farms are often offset by local benefits such as significant local employment and spending during construction, increased property tax revenues with minimal drain on public services, and low water use, emission-free electricity generation.

[1] <http://www.hindawi.com/journals/isrn/2011/651857/>,

<http://www.mass.gov/eea/docs/doer/renewables/solar/solar-pv-guide.pdf>

[2] Sandia National Laboratory developed a [modeling tool](#), used by the Federal Aviation Administration, that tests for potential glare from solar installations on flight paths and control towers and can be used for other applications.

[3] http://images.masscec.com/uploads/attachments/Create%20Basic%20page/Study_of_Acoustic_and_EMF_Levels_from_Solar_Photovoltaic_Projects.pdf

[4] <http://www.realtor.org/field-guides/field-guide-to-wind-farms-their-effect-on-property-values>

[5] http://images.masscec.com/uploads/attachments/Create%20Basic%20page/Study_of_Acoustic_and_EMF_Levels_from_Solar_Photovoltaic_Projects.pdf,

<http://www.oregon.gov/odot/hwy/oipp/docs/emfconcerns.pdf>;

<http://www.ncbi.nlm.nih.gov/pubmed/26023811>

In Clash of Greens, a Case for Large-Scale U.S. Solar Projects

By Philip Warburg • August 24, 2015

Weaning the U.S. economy off fossil fuels will involve the wide deployment of utility-scale solar power. But for that to happen, the environmental community must resolve its conflict between clean energy advocates and those who regard solar farms as blights on the landscape.

If the United States and the world community hope to avoid the worst effects of climate change, solar power will have to play a pivotal role in electricity production. The technology is quickly maturing, and the price of solar panels has plummeted to the point where new utility-scale solar installations are a sound investment, cheaper than new coal plants and frequently competitive with natural gas. In 2014, solar power accounted for [almost a third of all new U.S. electric generating capacity](#). If the right policies are adopted, solar power could be the leading source of electricity worldwide by 2050, according to the [International Energy Agency](#).

As the adoption of solar power goes mainstream, the challenge now is finding enough space to harness the sun's energy. For solar power to cut substantially into our reliance on fossil fuels, major solar projects will have to be built on a noticeable portion of the landscape. There will inevitably be environmental impacts. Already, large-scale solar projects have created unexpected and unsettling fault lines within the American environmental movement — conflicts that will have to be resolved with creativity and compromise if we are to wean ourselves off fossil fuels.



Bechtel Corporation

SunPower's California Valley Solar Ranch includes 12,000 acres of conservation land.

In one camp are those who see solar power as a noble use of our non-urban land,

even if that means encroaching on farms and natural areas. The alternative, they say, is runaway global warming caused by the continued burning of carbon-based fuels — a far worse outcome than the construction of industrial-scale solar projects. This group makes the same argument for the widespread deployment of wind turbines.

Others see sprawling solar projects as blights on the landscape and threats to wildlife. Their concerns about protecting vulnerable species and natural open spaces have deep roots in the American conservation

To supply all of America's electricity from the sun, solar installations would have to occupy 0.6 percent of total land area.

movement, and they cannot be discounted. But the danger is that they underestimate the devastation likely to be caused by climate change and overestimate the energy that can be generated from solar panels on rooftops and on smaller parcels of urban and industrial land.

The United States is blessed with a vast reservoir of open spaces, but we are also burdened by an ideological and aesthetic aversion to seeing those open spaces encroached upon. In Europe, clean energy proponents tend to encounter a more pragmatic public response that allows for integrating wind farms and solar fields into landscapes that have often been affected by human activities for centuries or even millennia. Widespread acceptance of offshore wind farms across much of Northern Europe reflects this more tolerant regard for large-scale renewable energy facilities, in contrast to the diehard resistance that U.S. offshore wind proposals have encountered.

To supply all of America's electricity from the sun, the National Renewable Energy Laboratory (NREL) estimates that solar installations would have to occupy [about 0.6 percent of the country's total land area](#). That's equivalent to less than 2 percent of U.S. land now in crop production, but it's still a big stretch of terrain, almost the size of West Virginia. While this is far more solar than a balanced renewable energy economy would require, it is a useful gauge of solar power's land needs.

Roughly [a fifth of our total power supply](#) could come from rooftop solar arrays, NREL says. Additional solar electricity can be tapped at "brownfield" sites — abandoned and often-polluted industrial properties that are not suitable for residential or commercial use. Brownfield solar projects are being developed in many parts of the country, but these sites are often costly to convert and have a hard time competing with larger solar projects on less encumbered lands.

Construction of utility-scale solar facilities has soared since 2010, accounting for almost two-thirds of all [newly installed photovoltaic capacity](#) in 2014. A big reason for this is the [much lower cost](#) of building these projects: In the first quarter of 2015, utility-scale power plants based

One key step is to favor farmland over undeveloped open spaces when siting large solar projects.

on photovoltaics (PV) cost less than half as much per installed watt as residential rooftop PV, and 29 percent less than solar power installed on commercial buildings.

But unless Congress extends the [federal investment tax credit](#) for solar power beyond 2016, commercial and utility-scale projects that now enjoy a 30 percent credit will face a much lower 10 percent credit, and the residential solar tax credit will be eliminated entirely. Under those circumstances, utility-scale solar power may have a tough time competing with new natural gas plants, though the cost advantage of utility-scale solar projects over smaller installations is likely to persist.

As its advocates note, solar power produces none of the climate-altering carbon emissions or health-endangering air pollutants of coal or natural gas, and none of the hazards associated with nuclear power. Utility-scale solar projects do, however, occupy hundreds, and sometimes thousands, of acres. Fortunately, recent experience demonstrates that large-scale solar power *can* be developed in a manner that minimizes damage to the environment.

One important step is to favor farmland over undeveloped open spaces when siting large solar projects. No agricultural area may be better suited than California's drought-stricken Central Valley. Building big solar projects there could be a double win, amping up the state's supply of renewable energy while introducing a dry energy crop in place of the water-hungry cotton fields and sod plantations that farmers no longer have enough water to irrigate.

There are many other parts of the country where photovoltaic panels may be the highest and best use of agricultural land, especially on fields that lie fallow or depend on government support to remain in cultivation. Large solar projects have already been built on farmland in states as varied as

If done right, solar development can address habitat protection and wildlife concerns.

[Arizona](#), [Minnesota](#), and [North Carolina](#).

In some states, the same not-in-my-backyard reaction that has stymied a number of wind farm proposals is now plaguing solar energy developers. Upscale suburbanites in Bedminster, New Jersey, are waging a war of attrition against a solar plant that has been proposed for a moribund farm near their homes. Photovoltaic arrays will be a visual blight on a cherished agrarian landscape, some residents claim. The Bedminster parcel was long ago [rezoned](#) for ten-acre country mansions, which neighbors have declared they would rather look at than a solar plant — despite the developer’s claims that the proposed solar arrays would be screened by a grassy berm and natural foliage. While visual aesthetics have fueled this particular battle, New Jersey’s strong [farmland preservation policy](#) is likely to deter the widespread adoption of solar power in other, more actively farmed parts of the state.

Tensions can run equally high when solar projects are proposed for natural areas, such as the patch of New Jersey forest where Six Flags Great Adventure has sought to build a solar farm. Those who object to this [90-acre project](#) apparently give little thought to the [1.4 million acres](#) of mountains and forests that mountaintop removal coal mining in Appalachia will have destroyed by 2020. They are focused on concerns closer to home.

But solutions to the green energy/land conservation conflict can be found. In a number of places, solar developers have anticipated conservationists’ concerns by paying meticulous attention to wildlife and habitat protection. The Moapa Band of Paiutes, in southern Nevada, set a strong example when the tribe created a separate, 6,000-acre conservation area for 75 desert tortoises found on a 2,000-acre site it had selected for solar development. This [250-megawatt project](#), slated for completion in June 2016, will sell its output to the Los Angeles Department of Water and Power, supplying the electricity needs of 100,000 households. Today the tribe is well along with the planning of a [second solar plant](#) on a slightly smaller scale.

San Jose-based SunPower has been similarly vigilant in developing its [California Valley Solar Ranch](#) on the semi-arid Carrizo Plain, sometimes referred to as California’s Serengeti. [San Luis Obispo County officials](#) and a [trio of national environmental organizations](#) negotiated a rigorous set of environmental safeguards for the project. Before construction began,

Green energy advocates hadn’t counted on friendly fire from traditional allies in the conservation community.

biologists hired by SunPower created new dens for the San Joaquin kit fox, temporary “condos” for giant kangaroo rats, and wildlife corridors allowing

pronghorn and Tule elk to pass easily through the solar fields. Solar arrays sit on 1,400 acres of land, producing enough power for 100,000 homes, and 12,000 additional acres have been set aside for conservation in perpetuity.

Thanks to the California Valley Solar Ranch and many other plants generating power from solar, wind, geothermal, and other qualifying sources under the state's [Renewables Portfolio Standard](#), roughly a [quarter of California's retail electricity](#) today comes from renewable energy. Under state law, investor-owned utilities and other electric service providers must supply 33 percent of their power from renewable sources by 2020, and if Governor Jerry Brown has his way, [half of California's electricity](#) will come from renewable energy by 2030.

To meet this ambitious goal, diverse groups are now debating the governor's [Desert Renewable Energy Conservation Plan](#), which would devote roughly 177,000 acres of farmland and open spaces to clean energy projects and related transmission. Under the same plan, large stretches of the Mojave and Sonoran deserts would be dedicated to conservation and recreation. This is just the kind of innovative problem-solving with public participation that can advance renewable energy on a large scale while protecting the environment.

Green energy advocates may have thought their most formidable foes would be defenders of the fossil fuel status quo. They hadn't counted on so much friendly fire from traditional allies in the conservation community. But projects like the Moapa Paiute installation and the California Valley Solar Ranch show that, done right, solar development can address habitat protection and wildlife concerns.

The truth, however, is that clean energy is not without costs, and decarbonizing our energy supply involves making tough choices. Wide swaths of terrain will be needed if we are to capture the sun's vast energy potential. Figuring out a responsible way to install renewable energy projects on that land is vastly preferable to the alternative — a world under siege from climate change.



Environmental impacts from the solar energy technologies

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Abstract

Solar energy systems (photovoltaics, solar thermal, solar power) provide significant environmental benefits in comparison to the conventional energy sources, thus contributing, to the sustainable development of human activities. Sometimes however, their wide scale deployment has to face potential negative environmental implications. These potential problems seem to be a strong barrier for a further dissemination of these systems in some consumers.

To cope with these problems this paper presents an overview of an Environmental Impact Assessment. We assess the potential environmental intrusions in order to ameliorate them with new technological innovations and good practices in the future power systems. The analysis provides the potential burdens to the environment, which include—during the construction, the installation and the demolition phases, as well as especially in the case of the central solar technologies—noise and visual intrusion, greenhouse gas emissions, water and soil pollution, energy consumption, labour accidents, impact on archaeological sites or on sensitive ecosystems, negative and positive socio-economic effects.

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Keywords: Solar energy systems; Photovoltaic; Environmental impact assessment

1. Potential environmental impacts of solar energy technologies and mitigation measures

Every energy generation and transmission method affects the environment. As it is obvious conventional generating options can damage air, climate, water, land and wildlife, landscape, as well as raise the levels of harmful radiation. Renewable technologies are substantially safer offering a solution to many environmental and social problems associated with fossil and nuclear fuels (EC, 1995, 1997).

Solar energy technologies (SETs) provide obvious environmental advantages in comparison to the conventional energy sources, thus contributing to the sustainable development of human activities (Table 1). Not counting the depletion of the exhausted natural resources, their main advantage is related to the reduced CO₂ emissions, and, normally, absence of any air emissions or waste products during their operation.

Concerning the environment, the use of SETs has additional positive implications such as:

- reduction of the emissions of the greenhouse gases (mainly CO₂, NO_x) and prevention of toxic gas emissions (SO₂, particulates)
- reclamation of degraded land;
- reduction of the required transmission lines of the electricity grids; and
- improvement of the quality of water resources (Various, 2000).

In regard the socio-economic viewpoint the benefits of the exploitation of SETs comprise:

- increase of the regional/national energy independency;
- provision of significant work opportunities;
- diversification and security of energy supply;
- support of the deregulation of energy markets; and
- acceleration of the rural electrification in developing countries.

This article overviews of the various environmental aspects of the deployment of SETs and illustrate the ways that can be used to successfully address potential burdens to the environment.

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Table 1
Environmental and social indicators of SETs

Indicator	Central solar thermal	Distributed solar thermal	Central photovoltaic power generation	Distributed photovoltaic power generation	Solar thermal electricity
CO ₂ emissions savings	1.4 kg/kWh or 840 kg/m ² a	1.4 kg/kWh or 840 kg/m ² a	0.6–1.0 kg/kWh	0.6–1.0 kg/kWh	Annually 688 t/MW when compared to a combined cycle plant 1.360 t/MW when combined to a coal fired plant
Production employment (EU wide)	4000 jobs/a	4000 jobs/a	2–3000 jobs/a	2–3000 jobs/a	1 permanent job/MW for operation + 10–15 jobs/MW for 12–18 month construction
Total employment	12,000 jobs/a	12,000 jobs/a	4–5000 jobs/a	4–5000 jobs/a	1000 permanent jobs for 1000 MW

(EC, 2002).

2. Generic issues

Furthermore, unfavourable effects of SETs are usually minor and they can be minimized by appropriate mitigation measures. The potential environmental burdens of SETs are regularly site specific, depending on the size and nature of the project. As it is obvious from Tables 2 and 3, these burdens are usually associated with the loss of amenity (e.g. visual impact or noise—during the installation and the demolition phases) and the impacts can be minimized by (ETSU, 1996; Gekas et al., 2002; Frantzeskaki et al., 2002; Tsoutsos, 2001):

- the appropriate siting of central solar systems, which involves careful evaluation of alternative locations and estimation of expected impact (away from densely populated areas and not in protected areas or areas of significant natural beauty); the residential solar systems can be installed anywhere, especially integrated in the roofs;
- the appropriate operational practices (including rational water use, safety measures, waste disposal practices, use of biodegradable chemicals, etc.);
- the engagement of the public and relevant organizations in the early stages of planning, in order to ensure public acceptance;
- the use of the best available technologies/techniques and the improvement of technology (e.g. use of air as the heat-transfer medium in central tower systems, “advanced” Stirling engines);
- the integration in the building’s shell;
- the sensible planning constraints and pre-development assessments (e.g. on water use, habitat loss, estimation of expected CO₂ savings, etc.);
- the training of workers, use of special sunglasses during operation and construction, use of heat-insulating uniforms, familiarization with the system;

- the re-establishment of local flora and fauna, giving the environment enough time to come up to its previously state again; and
- thorough Environmental Impact Assessment Studies for central solar systems.

3. Environmental impacts from solar thermal heating systems

Though the production of solar thermal (ST) systems requires reasonable quantities of materials, insignificant amounts are also consumed during their operation; at that time the only potential environmental pollutant arises from the coolant change, which can be easily controlled by good working practice. The accidental leakage of coolant systems can cause fire and gas releases from vaporized coolant, unfavourably affecting public health and safety. On the contrary, the large-scale deployment of ST technologies will significantly reduce the combustion of conventional fuels and will consequently; reduce the environmental impacts associated with these fuels.

More analytically:

3.1. Land use

For low/medium heat systems it is the characteristics of the chosen system, which define the land use. For instance, in the case of single-dwelling hot water or space heating/cooling, no land will be required since the system will usually be added to the roof of the existing building. Communal low-temperature systems might use some land, though again the collection surfaces might well be added on already existing buildings. The principal additional use of land might be for heat storage.

Table 2
Solar energy technologies' negative impacts

Impacts–burdens	Alleviation technologies/techniques
<i>Solar thermal heating</i>	
Visual impact on buildings' aesthetics	Adoption of standards and regulations for environmentally friendly design; Good installation practices; Improved integration of solar systems in buildings; Avoid siting of solar panels on buildings of historic interest or in conservation areas.
Routine & accidental releases of chemicals	Recycling of the used chemicals; Good practices—appropriate disposal.
Land use	Proper siting and design.
<i>Photovoltaic power generation</i>	
Land use: large areas are required for central systems.	Use in isolated and deserted areas;
Reduction of cultivable land	Avoidance of ecologically and archeologically sensitive areas; Integration in large commercial buildings (facades, roofs); Use as sound isolation in highways or near hospitals.
Visual intrusion—aesthetics	Careful design of systems; Integration in buildings as architectural elements; Use of panels in modern architecture instead of mirrors onto the facade of buildings.
Impact on ecosystems (applicable to large PV schemes).	Avoidance of sensitive ecosystems and areas of natural beauty, archaeological sites.
Use of toxic and flammable materials (during construction of the modules).	Avoidance of release of potentially toxic and hazardous materials with the adoption of existing safety regulations and good practice.
Slight health risks from manufacture, use, & disposal	Good working practices (use of protecting gloves, sunglasses, clothing during construction).
<i>Solar thermal electricity</i>	
Construction activities	Good working practices; Site restoration; Avoidance of sensitive ecosystems and areas of natural beauty.
Visual impact—aesthetics	Proper siting (avoidance of sensitive ecosystems and areas of natural beauty, densely populated areas).
Land use	Proper siting.
Effect on the ecosystem, flora and fauna (especially birds)	Proper siting (avoidance of sensitive ecosystems).
Impact on water resources water use (for cooling of steam plant) and, possibly, water pollution due to thermal discharges or accidental discharges of chemicals used by the system	Appropriate constraints (not the excessive use of existing resources);Improved technology (use of air as heat-transfer medium);Exploitation of the warm water in the nearest industry in the production stream.Good operating practices and compliance with existing safety regulations;Employees should be educated and familiarized with the systems.
Safety issues (occupational hazards)	
(Tsoutsos et al., 1997; Various, 2000).	

Table 3
Grade of the potential negative environmental impacts of solar technologies

Environmental problem	Central solar thermal	Distributed solar thermal	Central photovoltaic power generation	Distributed photovoltaic power generation	Solar thermal electricity
Visual impact	++	+	++	+	+++
Routine & accidental releases of chemicals	+	++	+++	+++	++
Land use	++	+	++	+	+++
Work safety and hygiene	++	++	++	++	+++
Effect on the ecosystem	+		+		++
Impact on water resources	++	+	+	+	+++

(EC, 2002 adapted by the authors).

For high temperature systems, the land-use requirements of concentrating collectors providing process heat are more problematical.

Concerning the loss of habitat and changes to the ecosystem due to land use in the case of large-scale systems, provided that predevelopment assessments are

carried out and ecologically important sites are avoided, these are unlikely to be significant.

3.2. Routine and accidental discharges of pollutants

During the operation of the ST system coolant liquids may need change every 2–3 years. Such discharges require careful handling. In some cases, the coolant will be water based; but all indirect systems are likely to contain anti-freeze or rust inhibitors, as well as substances leached from the system during use. Heat transfer fluids might therefore contain glycol, nitrates, nitrites, chromates, sulphites, and sulphates. Higher temperature applications would use more complex substances, such as aromatic alcohols, oils, CFCs, etc. The large-scale adoption of SETs might well require control on the disposal of these substances (OECD/IEA, 1998).

Except for the normal use, there may be the risk of accidental water pollution through leaks of heat transfer fluid. In parallel, solar converters can achieve relatively high temperatures if their coolant is lost (up to 200°C). Consequently, at this temperature, there is a fire risk, with the additional problem of out-gassing from panel components (insulant, plastic components, epoxys) and the release of heat transfer fluids in gaseous state or following combustion (e.g. burnt freon).

3.3. Visual impact

Till recently “integration” used to be synonymous with “invisibility”. It was actually considered desirable to hide the fact that the solar elements were different than other building elements. This trend, fortunately, changed. Architects have discovered that solar elements can be used to enhance the aesthetic appeal of a building, and their clients have discovered the positive effects of advertising the fact that they are using solar energy. The solar elements are used as architectural elements in attractive and visible ways.

The aesthetic impact of solar panels is evidently a matter of taste, though flat panels usually are designed in such a way as to fit closely to the existing roofline and produce little glare.

Modern ST systems allow for the manufacturing of collectors that can be easily integrated in buildings in an aesthetically pleasant manner.

3.4. Effect on buildings

Theoretically the ST placement in the shell of the buildings could increase fire risk (OECD/IEA, 1998) and water intrusion into the roof. This can be easily avoided, since only four holes per panel on the roof will be integral part of the roof.

3.5. Other burdens

Other burdens applicable to central power systems only (e.g. noise—during the construction period, visual intrusion, etc.) are likely to prove insignificant (provided areas of scenic beauty are avoided), because such schemes are likely to be situated in those areas of low population density. Therefore, all the impacts of suitably located large ST schemes are expected to be small and reversible.

4. Environmental impacts from photovoltaic power generation

Photovoltaics (PV) are seen to be generally of benign environmental impact, generating no noise or chemical pollutants during use. It is one of the most viable renewable energy technologies for use in an urban environment, replacing existing building cladding materials. It is also an attractive option for use in scenic areas and National Parks, where the avoidance of pylons and wires is a major advantage.

4.1. Land use

The impact of land use on natural ecosystems is dependent upon specific factors such as the topography of the landscape, the area of land covered by the PV system, the type of the land, the distance from areas of natural beauty or sensitive ecosystems, and the biodiversity. The impacts and the modification on the landscape are likely to come up during construction stage by construction activities, such as earth movements and by transport movements. Furthermore, an application of a PV system in once-cultivable land is possible to damnify soil productive areas. The “sentimental bind” of the cultivator and his cultivable land is likely to be the reason of several social disagreements and displeasure.

4.2. Routine and accidental discharges of pollutants

During their normal operation PV systems emit no gaseous or liquid pollutants, and no radioactive substances. In the case of CIS and CdTe modules, which include small quantities of toxic substances, there is a potential slight risk that a fire in an array might cause small amounts of these chemicals to be released into the environment (Various, 1996).

In large-scale central plants a release of these hazardous materials might occur as a result of abnormal plant operations and it could pose a small risk to public and occupational health. Thus there must be emergency preparedness and response in case of an accidental fire or exposure to heat. Emissions to soil and groundwater

may occur inadequate storage of materials (OECD/IEA, 1998).

4.3. Visual impacts

Visual intrusion is highly dependent on the type of the scheme and the surroundings of the PV systems. It is obvious that, if we apply a PV system near an area of natural beauty, the visual impact would be significantly high. In case of modules integrated into the facade of buildings, there may be positive aesthetic impact on modern buildings in comparison to historic buildings or buildings with cultural value.

- Optimal architectural solutions to minimize potential impact on visual amenity and building aesthetics (i.e. PV integration into buildings and other installations). The use of PV as a cladding material for commercial buildings is showing the architectural possibilities of the technology to both the architectural profession and their clients. Advances in the development of multi-functional PV facades, which perform aesthetic and practical functions such as shading and heat extraction, have provided an important stimulus for architectural expression (Hestnes, 1999).
- Proper siting and design of large PV installations.
- Use of colour to assemble the PV modules in large-scale systems.

Integrated PV electrification schemes, which help to regenerate rural areas and user associations have successfully overcome the problems of managing and maintaining remote schemes by establishing mechanisms for collecting user payments, arranging regular maintenance, obtaining finance and providing advice on energy efficient appliances.

4.4. Depletion of natural resources

The production of current generation PV's is rather energy intensive (especially the poly crystalline and the mono-crystalline modules) and large quantities of bulk materials are needed (thin film modules have less primary energy requirement per W than the a-Si PV modules (a-Si are thin films also!) because of the difference in cell efficiency, so can be an answer to that problem). Also, small quantities of scarce materials (In/Te/Ga) are required; also limited quantities of the toxic Cd.

In general the Cd emissions attributed to CdTe production amount to 0.001% of Cd used (corresponding to 0.01 g/GWh). Furthermore Cd is produced as a byproduct of Zn production and can either be put to beneficial uses or discharged into the environment (Fthenakis and Zweibel, 2003)

Several aspects have to be studied to minimize environmental impacts related to the production of the PV cells:

- prospects for thinner cell layers;
- the full potential of the concentrator PV technologies;
- prospects for more efficient material utilization;
- safer materials and alternatives; and
- module recycling technology and its efficiency.

4.5. Air pollution

As far as life cycle assessment is concerned, the environmental performance of the system depends heavily on the energy efficiency of the system manufacturing and especially electricity production. The emissions associated with transport of the modules are insignificant in comparison with those associated with manufacture. Transport emissions were still only 0.1–1% of manufacturing related emissions. In the case of poly- and mono-crystalline modules, the estimated emissions are 2.757–3.845 kg CO₂/kWp, 5.049–5.524 kg SO₂/kWp and 4.507–5.273 NO_x/kWp (Raptis et al., 1995; OECD/IEA, 1998).

In urban environment, modern PV systems, which are architecturally integrated into buildings, are able to provide a direct supply of clean electricity that is well matched to the demand of the building, but can also contribute to day-lighting, and the control of shading and ventilation. Also, PV panels can be used instead of mirrors directly into the facade of a building. PV systems also assist to create a supportive environment within which to encourage other means of energy saving by the building promoters, owners and users. PV energy services are particularly obvious where only low levels of power are needed, such as in rural electrification applications, and where the users are able to benefit directly from the very high reliability of having their own PV generator. In the former case, to install a PV generator is frequently cheaper than to extend the mains grid over long distances.

4.6. Noise intrusion

As with all types of construction activity, there will be little noise. Also, there will be some employment benefits during the construction phase and especially for large schemes during the operational phase.

Manufacturers should be encouraged to produce systems that are easily recyclable.

Options for energy demand reduction must always be considered along with the assessment of PV applications.

4.7. Waste management

In the case of stand-alone systems, which are small fraction of the market (Tsoutsos et al., 2003b), the effects on health of chemical substances included in the batteries should also be studied. A life cycle analysis of batteries for stand-alone PV systems indicates that the batteries are responsible for most of the environmental impacts, due to their relatively short life span and their heavy metal content. Furthermore a large amount of energy and raw materials are required for their production. A module-recycling scheme can improve this situation (Fthenakis, 2000).

5. Environmental impacts from solar thermal electricity

The limited deployment of ST electricity to date means that there is little actual experience of the environmental impacts that such a scheme may have.

Similarly to other SETs, ST electricity systems present the basic environmental benefit of the displacement or the avoidance of emissions associated with conventional electricity generation (Tsoutsos et al., 2003a). During their operation, these systems have no emissions. Some emissions do arise from other phases of their life cycle (primarily materials processing and manufacture), but they are lower, compared to those avoided by the systems operation.

5.1. Materials' processing and manufacture

Energy use and gas emissions (CO₂, SO₂, NO_x) in materials' processing and manufacture of ST systems are noticeable. The impacts of these emissions vary according to location, and are fewer than those of conventional fossil fuel technologies (Norton et al., 1998).

5.2. Construction

These projects have the usual environmental impacts associated with any engineering scheme during the construction phase—impact on landscape, effects on local ecosystems and habitats, noise, virtual intrusion, and topical vexation such as noise and temporally pollutant emissions due to increased traffic because of transportation of workers and of material, occupational accidents, temporal blindness (Theodoratos and Karakasidis, 1997), etc.

5.3. Land use

ST electric systems are amongst the most efficient SETs when it comes to land use (they produce annually about 4–5 GWh/ha). To date, most sites used or considered for ST systems are in arid desert areas,

which typically have fragile soil and plant communities (OECD/IEA, 1998).

5.4. Ecosystem, flora and fauna

Attention during the planning, construction and operation phases can minimize the effects on vegetation, soil and habitat (OECD/IEA, 1998). Furthermore, the shade offered by the reflectors has a beneficial effect on the microclimate around the scheme and on the vegetation, too. Provided that such schemes are not deployed in ecologically sensitive areas or in areas of natural beauty, it is unlikely that any of the above changes would be considered as significant.

Central concentrator power systems could pose a danger to birds, but operational experience shows that birds avoid any danger areas (possibly by being sensitive to air turbulence) (OECD/IEA, 1998). Flying insects can also be burnt when flying close to the reflector's area. The loss of the insect population is insignificant.

5.5. Visual impact

In addition to the collector systems, the main visual impact would come from the tower of the central receiver systems. However, the atmospheric requirements for these systems point to their deployment in areas of low population densities, so provided that areas of outstanding natural beauty are avoided, visual intrusion is unlikely to be significant.

5.6. Noise

Likewise, noise is insignificant in comparison to any other power option, such as the conventional, the wind power generation, and the gas turbines. The noise from the generating plant of large-scale schemes is unlikely to cause any disturbance to the public. Noise would be generated primarily only during the day; at night, when people are more sensitive to noise, the system is unable to operate.

The Stirling engines of stand-alone parabolic dish systems are a source of noise during operation, but they are unlikely to be any noisier than the stand-by diesel generating sets, which they generally displace. Also, new (technological) advanced Stirling engines are constructed to operate noiselessly.

5.7. Water resources

Parabolic trough and central tower systems using conventional steam plant to generate electricity require the use of cooling water. This could place a significant strain on water resources in arid areas. In addition, there may be some pollution of water resources, through thermal discharges and accidental release of plant

chemicals (OECD/IEA, 1998), although the latter can be avoided by good operating practice. Stand-alone parabolic dish systems require no water, other than for periodic cleaning of reflective surfaces and so they have little impact on water resources.

5.8. Health and safety (occupational hazards)

The accidental release of heat transfer fluids (water and oil) from parabolic trough and central receiver systems could form a health hazard. The hazard could be substantial in some central tower systems, which use liquid sodium or molten salts as a heat-transfer medium. Indeed a fatal accident has occurred in a system using liquid sodium. These dangers will be avoided by moving to volumetric systems that use air as a heat-transfer medium.

Central tower systems have the potential to concentrate light to intensities that could damage eyesight. Under normal operating conditions this should not pose any danger to operators, but failure of the tracking systems could result in straying beams that might pose an occupational safety risk on site.

5.9. Social impacts

There will be some employment benefits during the construction and operational phase.

6. Conclusions and recommendations

SETs present tremendous environmental benefits when compared to the conventional energy sources. In addition to not exhausting natural resources, their main advantage is, in most cases, total absence of almost any air emissions or waste products. In other words, SE can be considered as an almost absolute clean and safe energy source.

Furthermore, the use of SETs can have additional environmental benefits, associated with:

- (i) the SE potential to be employed in stand-alone applications (e.g., avoidance of grid connection, with all associated impacts on the ecosystem and the landscape; feasibility of installation and continuous/remote operation of equipment that perform functions related to protection or rehabilitation of environmental media, such as air quality monitoring, lake-water re-aeration, etc.),
- (ii) multi-purpose applications of SETs (e.g. combined solar systems for water and space heating).

Finally, the use of SETs has significant socio-economic benefits, such as diversification and security of energy supply, provision of significant job opportunities, support of the restructure of energy

markets, reduction of the dependency on fuel imports and acceleration of the electrification of rural communities in remote/isolated areas.

On the other hand, it must be realized that no man-made project can completely avoid some impact to the environment, so neither can SET installations. Potential environmental burdens depend on the size and nature of the project and are often site specific. Most of these burdens are associated with loss of amenity (e.g., visual impact or noise in the case of central systems).

However, adverse effects are generally small and can be minimized by appropriate mitigation measures, including the use of the best available abatement technologies.

Technologies or techniques that can be used to eliminate or minimize potential environmental impacts from SETs may involve, in some cases, the use of air emission or odour control equipment, design tools for optimal design and siting of the installations, best practice guidelines, improved pieces of equipment (such as gearless or lubricant-free motors), or, completely innovative design (e.g., closed-cycle plants, submerged plants, etc.).

It is up to the involved factors (investors, developers, and permitting authorities) to make the appropriate decisions by taking environmental issues into serious consideration. To that end, an Environmental Impact Assessment for central solar systems, which should estimate the magnitude of potential environmental impacts and propose appropriate mitigation measures, can play a significant role to proper project design and to a subsequent project public acceptance.

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Attachment A. Proposed Amendment

February 22, 2018

1. Add the following to Section 3.0 Definitions (somewhat similar to the definition of WIND FARM):

NOXIOUS WEEDS: any of several plants designated pursuant to the Illinois Noxious Weed Law (505 ILCS 100/1 et seq.) and that are identified in 8 Illinois Administrative Code 220.

SOLAR FARM: A unified development intended to convert sunlight into electricity whether by photovoltaic (PV) devices, concentrating solar thermal devices (CST), or other conversion technology using other types of solar devices, for the primary purpose of wholesale sales of generated electricity. A SOLAR FARM is under a common ownership and operating control even though parts of the SOLAR FARM may be located on land leased from different owners. A SOLAR FARM includes all necessary components including access driveways, solar devices, electrical inverter(s), electrical transformer(s), cabling, a common switching station, maintenance and management facilities, and waterwells.

SOLAR FARM, COMMUNITY: A SOLAR FARM of not more than 2,000 kilowatt nameplate capacity that meets the requirements of Public Act 99-0906 for a “community renewable generation project”.

2. Add new subparagraph 4.2.1 C.4. as follows:

4. A SOLAR FARM may be authorized as a County Board SPECIAL USE permit in the AG-1, Agriculture Zoning District or the AG-2 Agriculture Zoning District as a second PRINCIPAL USE on a LOT with another PRINCIPAL USE.

3. Add new subparagraph 4.3.4 H. 4. i. as follows (similar to existing 4.3.4H.4.h. for wind farms):

- h. SOLAR FARM except as PIPELINE IMPACT RADIUS regulations are required in Subsection 6.1.5.

4. Amend Section 5.2 as follows (similar to existing WIND FARM designation):

Add “SOLAR FARM” as a COUNTY BOARD Special Use Permit in the AG-1 District and AG-2 District by a “B”.

5. Add the following as footnote 15 under the Special Provisions for the AG-1 District in Section 5.3 (similar to existing footnote 14 for LOTS in a WIND FARM):

15. LOTS in a SOLAR FARM County Board SPECIAL USE Permit and intended for SOLAR FARM, related substations, and SOLAR FARM maintenance and management facilities are exempt from the requirements of Section 5.3 except as such regulations are required by Subsection 6.1.4.

6. Add new paragraph 5.4.3 F. as follows:

Attachment A. Proposed Amendment

February 22, 2018

- F. The Rural Residential Overlay Zoning District is prohibited from being established within a SOLAR FARM County Board SPECIAL USE Permit.

7. Amend Section 6.1.1 to read as follows:

- A. Site Reclamation Plan for NON-ADAPTABLE STRUCTURES
1. In the course of BOARD review of a SPECIAL USE request, the BOARD may find that a proposed STRUCTURE is a NON-ADAPTABLE STRUCTURE. Any WIND FARM and any SOLAR FARM shall be a NON-ADAPTABLE STRUCTURE. The Applicant for the SPECIAL USE request for a NON-ADAPTABLE STRUCTURE shall submit a site reclamation plan to the BOARD for the subject site.
 2. The site reclamation plan shall be binding upon all successors of title to the land. Prior to the issuance of a SPECIAL USE Permit for such NON-ADAPTABLE STRUCTURES, the landowner or applicant shall also record a covenant incorporating the provisions of the site reclamation plan on the deed subject to the LOT, requiring that the reclamation work be performed and that a letter of credit be provided for financial assurance.
 3. Separate cost estimates for Section 6.1.1A.4.a., 6.1.1A.4.b., and 6.1.1A.4.c. shall be provided by an Illinois Licensed Professional Engineer.
 - a. Cost estimates provided shall be subject to approval of the BOARD.
 - b. Except as provided in Section 6.1.4P. and Section 6.1.5Q., the salvage value of the components of the NON-ADAPTABLE STRUCTURE shall not be credited to the cost estimates.
 4. The site reclamation plan shall provide for:
 - a. removal of above-ground portion of any STRUCTURE on the subject site; site grading; and, interim soil erosion control;
 - b. below-ground restoration, including final grading and surface treatment;
 - c. any environmental remediation required by State or Federal law;
 - d. provision and maintenance of a letter of credit, as set forth in Section 6.1.1A.5.

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5. No Zoning Use Permit for such SPECIAL USE will be issued until the applicant provides the COUNTY with an irrevocable letter of credit to be drawn upon a federally insured financial institution within 200 miles of Urbana or reasonable anticipated travel costs shall be added to the amount of the letter of credit. The irrevocable letter of credit shall be in the amount of one hundred fifty percent (150%) of an independent engineer's cost estimate to complete the work described in Section 6.1.1A.4.a., Section 6.1.1A.4.b., and Section 6.1.1A.4.c., except a different amount may be required as a standard condition in Section 6.1.4P. and Section 6.1.5Q. This letter of credit, or a successor letter of credit pursuant to Section 6.1.1A.6. or 6.1.1A.12. shall remain in effect and shall be made available to the COUNTY for an indefinite term or for a different term that may be required as a standard condition in paragraph 6.1.4P.

6. One hundred eighty (180) days prior to the expiration date of an irrevocable letter of credit submitted pursuant to this Section, the Zoning Administrator shall notify the landowner or applicant in writing and request information about the landowner or applicant's intent to renew the letter of credit, or remove the NON-ADAPTABLE STRUCTURE. The landowner or applicant shall have thirty (30) days to respond in writing to this request. If the landowner or applicant's intention is to remove the NON-ADAPTABLE STRUCTURE, the landowner or applicant will have a total of ninety (90) days from the date of response to remove it in accordance with Section 6.1.1A.4.a. At the end of ninety (90) days, the Zoning Administrator shall have a period of sixty (60) days to either:
 - a. confirm that the bank has renewed the letter of credit; or
 - b. inspect the subject property for compliance with Section 6.1.1A.4.a.;
 - c. draw on the letter of credit and commence the bid process to have a contractor remove the NON-ADAPTABLE STRUCTURE pursuant to Section 6.1.1A.4.a.

7. The Zoning Administrator may find a NON-ADAPTABLE STRUCTURE abandoned in place. Factors to be considered in making this finding include, but are not limited to:
 - a. the nature and frequency of use as set forth in the application for SPECIAL USE;
 - b. the current nature and frequency of use;

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- c. whether the NON-ADAPTABLE STRUCTURE has become a public nuisance, or otherwise poses a risk of harm to public health or safety;
 - d. whether the NON-ADAPTABLE STRUCTURE has been maintained in a manner which allows it to be used for its intended purpose, with no greater effects on surrounding properties and the public as a whole than was originally intended.
 - e. A court of law, an arbitrator, mediator, or any state or Federal agency charged with enforcing State or Federal law has made a finding that either said NON-ADAPTABLE STRUCTURE or the structures supporting said NON-ADAPTABLE STRUCTURE and/or any related site grading and soil erosion controls or lack of same, constitutes a public nuisance or otherwise violates State or Federal law, or any State or Federal agency charged with enforcing State or Federal law has made a final determination either imposing an administrative sanction on any person associated with the NON-ADAPTABLE STRUCTURE relating to its use or denying the NON-ADAPTABLE STRUCTURE a permit necessary for its lawful operation.
8. Once the Zoning Administrator has made a finding that a NON-ADAPTABLE STRUCTURE is abandoned in place, the Zoning Administrator shall issue notice to the land owner at the owner's last known address that the COUNTY will draw on the performance guarantee within thirty (30) days unless the owner appeals the Zoning Administrator's finding, pursuant to Section 9.1.8 or enters into a written agreement with the COUNTY to remove such NON-ADAPTABLE STRUCTURE in accordance with Section 6.1.1A.4. within ninety (90) days and removes the NON-ADAPTABLE STRUCTURE accordingly.
9. The Zoning Administrator may draw on the funds to have said NON-ADAPTABLE STRUCTURE removed as per Section 6.1.1A.4. of the reclamation agreement when any of the following occur:
- a. no response is received from the land owner within thirty (30) days from initial notification by the Zoning Administrator;

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- b. the land owner does not enter, or breaches any term of a written agreement with the COUNTY to remove said NON-ADAPTABLE structure as provided in Section 6.1.1A.8.;
 - c. any breach or performance failure of any provision of the reclamation agreement;
 - d. the owner of record has filed a bankruptcy petition, or compromised the COUNTY's interest in the letter of credit in any way to specifically allowed by the reclamation agreement;
 - e. a court of law has made a finding that a NON-ADAPTABLE STRUCTURE constitutes a public nuisance;
 - f. the owner of record has failed to replace an expiring letter of credit within the deadlines set forth in Section 6.1.1A.6.; or
 - g. any other conditions to which the COUNTY and the land owner mutually agree, as set forth in the reclamation agreement.
10. Once the letter of credit has been drawn upon, and the site has been restored to its original condition, as certified by the Zoning Administrator, the covenant entered pursuant to Section 6.1.1.A.2. shall expire, and the COUNTY shall act to remove said covenant from the record of the property at the Recorder of Deeds within forty-five (45) days.
11. The proceeds of the letter of credit may only be used by the COUNTY to:
- a. remove the NON-ADAPTABLE STRUCTURE and return the site to its condition prior to the placement of the NON-ADAPTABLE STRUCTURE, in accordance with the most recent reclamation agreement submitted and accepted in relation to the NON-ADAPTIVE STRUCTURE;
 - b. pay all administrative and ancillary costs associated with drawing upon the financial assurance and performing the reclamation work, which shall include, but not be limited to, attorney's fees; construction management and other professional service fees; and the costs of preparing request for proposal and bidding documents required to comply with state law or Champaign County purchasing policies; and

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- c. remove any covenants placed on the title in conjunction with Section 6.1.1.A.2.

The balance of any proceeds remaining after the site has been reclaimed shall be returned to the issuer of the letter of credit.

12. Upon transfer of any property subject to a letter of credit pursuant to this Section, the new owner or applicant of record shall submit a new irrevocable letter of credit of same or greater value to the Zoning Administrator, prior to legal transfer of title, and shall submit a new site reclamation plan, pursuant to Section 6.1.1A.4.a., and, for WIND FARMS, Section 6.1.4P., and for SOLAR FARMS, 6.1.5Q. Once the new owner or applicant of record has done so, the letter of credit posted by the previous owner or applicant shall be released, and the previous owner shall be released from any further obligations under the site reclamation plan.
13. The Applicant shall provide evidence of any new, additional, or substitute financial assurance to the Zoning Administrator throughout the operating lifetime of the NON-ADAPTABLE STRUCTURE.
14. Should the site reclamation plan, or any part of it, be deemed invalid by a court of competent jurisdiction, the associated SPECIAL USE permit shall be deemed void.

8. Add new subsection 6.1.5 as follows (NOTE: the following new subsection is based on the existing subsection 6.1.4 for “WIND FARM”):

6.1.5 SOLAR FARM County Board SPECIAL USE permit

A SOLAR FARM County Board SPECIAL USE permit may only be authorized in the AG-1 Zoning District subject to the following standard conditions.

A. General Standard Conditions

1. The area of the SOLAR FARM County Board SPECIAL USE permit must include the following minimum areas:
- (a) All land that will be exposed to a noise level greater than that authorized to Class A land under paragraph 6.1.5 I.
- (b) All necessary access lanes or driveways and any required new PRIVATE ACCESSWAYS. For purposes of determining the minimum area of the special use permit, access lanes or driveways shall be provided a minimum 40 feet wide area.
- (c) All necessary SOLAR FARM STRUCTURES and ACCESSORY STRUCTURES including electrical distribution lines, inverters, transformers, common switching stations, and substations not under

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the ownership of a PUBLICLY REGULATED UTILITY and all waterwells that will provide water for the SOLAR FARM. For purposes of determining the minimum area of the special use permit, underground cable installations shall be provided a minimum 40 feet wide area.

(d) All aboveground STRUCTURES and facilities shall be of a type and shall be located in a manner that is consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.

2. The SOLAR FARM County Board SPECIAL USE permit shall not be located in the following areas:
 - a. Less than one-and-one-half miles from an incorporated municipality that has a zoning ordinance unless the following is provided:
 - (1) The SOLAR FARM SPECIAL USE permit application shall include documentation that the application has provided a complete copy of the SPECIAL USE permit application to any municipality within one-and-one-half miles of the proposed SOLAR FARM.
 - (2) A municipal Resolution of Non-opposition to the SOLAR FARM by any relevant municipality must be submitted to the ZONING ADMINISTRATOR prior to the consideration of the SOLAR FARM SPECIAL USE permit by the Champaign County Board.
 - b. Less than one-half mile from the CR Conservation Recreation Zoning District.
 - c. Any easement for a GAS PIPELINE or HAZARDOUS LIQUID PIPELINE; or any easement for an underground water main; or any easement for a drainage district, unless a crossing agreement has been entered into with the relevant party.
3. Interconnection to the power grid
 - a. The SOLAR FARM SPECIAL USE permit application shall include documentation that the applicant or SOLAR FARM is in the queue to acquire an interconnection agreement to the power grid.
 - b. Documentation of an executed interconnection agreement with the appropriate electric utility shall be provided prior to issuance of a Zoning Compliance Certificate to authorize operation of the SOLAR FARM.

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B. Minimum Lot Standards

1. There are no minimum LOT AREA, AVERAGE LOT WIDTH, SETBACK, YARD, or maximum LOT COVERAGE requirements for a SOLAR FARM or for LOTS for SOLAR FARM substations and/ or SOLAR FARM maintenance and management facilities.
2. There is no maximum LOT AREA requirement on BEST PRIME FARMLAND.

C. Minimum Standard Conditions for Separations for SOLAR FARM from adjacent USES and STRUCTURES

The location of each SOLAR FARM shall provide the following required separations as measured from the exterior of the above ground portion of the SOLAR FARM STRUCTURES and equipment except for fencing:

1. A SETBACK of ~~100~~ 55 feet from a MINOR STREET and a SETBACK of ~~120~~ 75 feet from a COLLECTOR STREET and a SETBACK of ~~130~~ 85 feet from a MAJOR STREET.
2. At least 100 feet from any existing DWELLING or existing PRINCIPAL BUILDING and not less than 50 feet from the property line and provided that the noise level caused by the SOLAR FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.
3. A separation of at least 500 feet from any of the following unless the SPECIAL USE permit application includes results provided from an analysis using the Solar Glare Hazard Analysis Tool (SGHAT) for the Airport Traffic Control Tower cab and final approach paths, consistent with the Interim Policy, Federal Aviation Administration (FAA) Review of Solar Energy Projects on Federally Obligated Airports, or the most recent version adopted by the FAA, and the SGHAT results show no detrimental affect with less than a 500 feet separation from any of the following:
 - (a) any AIRPORT premises or any AIRPORT approach zone; or
 - (b) any legal RESTRICTED LANDING AREA that existed on or for which there had been a complete SPECIAL USE permit application received by April 22, 2010, or any approach zone for any such RESTRICTED LANDING AREA; or
 - (c) any legal RESIDENTIAL AIRPORT that existed on or for which there had been a complete SPECIAL USE permit application received by April 22, 2010, or any approach zone for any such RESIDENTIAL AIRPORT.

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- D. Standard Conditions for Design and Installation of any SOLAR FARM.
1. Any building that is part of a SOLAR FARM shall include as a requirement for a Zoning Compliance Certificate a certification by an Illinois Professional Engineer or Illinois Licensed Structural Engineer or other qualified professional that the constructed building conforms to Public Act 96-074 regarding building code compliance and conforms to the Illinois Accessibility Code.
 2. Electrical Components
 - (a) All electrical components of the SOLAR FARM shall conform to the National Electrical Code as amended.
 - (b) Burying All power and communication wiring ~~shall be buried~~ underground ~~except for connections that must be above ground~~ shall be minimized consistent with best management practice regarding solar farm construction and minimizing impacts on agricultural drainage tile.
 3. The SOLAR FARM shall comply with all applicable Federal Aviation Administration (FAA) requirements which shall be explained in the application.
 4. Maximum height. The height limitation established in Section 5.3 shall not apply to a SOLAR FARM. The maximum height of all above ground STRUCTURES shall be identified in the application and as approved in the SPECIAL USE permit.
 5. Warnings
 - (a) A reasonably visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and substations.
- E. Standard Conditions to Mitigate Damage to Farmland
1. All underground wiring or cabling for the SOLAR FARM shall be at a minimum depth of ~~4-5~~ feet below grade or deeper if required to maintain a minimum one foot of clearance between the wire or cable and any agricultural drainage tile or a lesser depth if so authorized by the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.
 2. Protection of agricultural drainage tile
 - (a) The applicant shall endeavor to locate all existing agricultural drainage tile prior to establishing any construction staging areas, construction of any necessary SOLAR FARM access lanes or

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driveways, construction of any SOLAR FARM STRUCTURES, any common switching stations, substations, and installation of underground wiring or cabling. The applicant shall contact affected landowners and tenants and the Champaign County Soil and Water Conservation District and any relevant drainage district for their knowledge of tile line locations prior to the proposed construction. Drainage districts shall be notified at least two weeks prior to disruption of tile.

- (b) All identified drainage district tile lines shall be staked or flagged prior to construction to alert construction crews of the possible need for tile line repairs unless this requirement is waived in writing by the drainage district.
- (c) Any agricultural drainage tile located underneath construction staging areas, access lanes, driveways, any common switching stations, and substations shall be replaced as required in Section 6.3 of the Champaign County Champaign County Storm Water Management and Erosion Control Ordinance.
- (d) Any agricultural drainage tile that must be relocated shall be relocated as required in the Champaign County Champaign County Storm Water Management and Erosion Control Ordinance.
- (e) Conformance of any relocation of drainage district tile with the in the Champaign County Champaign County Storm Water Management and Erosion Control Ordinance shall be certified by an Illinois Professional Engineer. Written approval by the drainage district shall be received prior to any backfilling of the relocated drain tile and a copy of the approval shall be submitted to the Zoning Administrator. As-built drawings shall be provided to both the relevant drainage district and the Zoning Administrator of any relocated drainage district tile.
- (f) All tile lines that are damaged, cut, or removed shall be staked or flagged in such manner that they will remain visible until the permanent repairs are completed.
- (g) All exposed tile lines shall be screened or otherwise protected to prevent the entry into the tile of foreign materials, loose soil, small mammals, etc.
- (h) Permanent tile repairs shall be made within 14 days of the tile damage provided that weather and soil conditions are suitable or a temporary tile repair shall be made. Immediate temporary repair shall also be required if water is flowing through any damaged tile line. Temporary repairs are not needed if the tile lines are dry and

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water is not flowing in the tile provided the permanent repairs can be made within 14 days of the damage. All permanent and temporary tile repairs shall be made as detailed in the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.

- (i) All damaged tile shall be repaired so as to operate as well after construction as before the construction began.
 - (j) Following completion of the SOLAR FARM construction the applicant shall be responsible for correcting all tile line repairs that fail, provided that the failed repair was made by the Applicant.
3. All soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by SOLAR FARM construction shall be restored by the applicant to the pre- SOLAR FARM construction condition.
4. Topsoil replacement

For any open trenching required pursuant to SOLAR FARM construction, the topsoil shall be stripped and replaced as follows:

- (a) The top 12 inches of topsoil shall first be stripped from the area to be trenched and from an adjacent area to be used for subsoil storage. The topsoil shall be stored in a windrow parallel to the trench in such a manner that it will not become intermixed with subsoil materials.
- (b) All subsoil material that is removed from the trench shall be placed in the second adjacent stripped windrow parallel to the trench but separate from the topsoil windrow.
- (c) In backfilling the trench, the stockpiled subsoil material shall be placed back into the trench before replacing the topsoil.
- (d) The topsoil must be replaced such that after settling occurs, the topsoil's original depth and contour (with an allowance for settling) will be restored.
- (e) All topsoil shall be placed in a manner consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.

5. Mitigation of soil compaction and rutting

- (a) The Applicant shall not be responsible for mitigation of soil compaction and rutting if exempted by the SOLAR FARM lease.

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(b) Unless specifically provided for otherwise in the SOLAR FARM lease, the Applicant shall mitigate soil compaction and rutting for all areas of farmland that were traversed with vehicles and construction equipment or where topsoil is replaced in open trenches.

(c) All mitigation of soil compaction and rutting shall be consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.

6. Land leveling

(a) The Applicant shall not be responsible for leveling of disturbed land if exempted by the SOLAR FARM lease.

(b) Unless specifically provided for otherwise in the SOLAR FARM lease, the Applicant shall level all disturbed land as follows:

(1) Following the completion of any open trenching, the applicant shall restore all land to its original pre-construction elevation and contour.

(2) Should uneven settling occur or surface drainage problems develop as a result of the trenching within the first year after completion, the applicant shall again restore the land to its original pre-construction elevation and contour.

(c) All land leveling shall be consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.

7. Permanent Erosion and Sedimentation Control Plan

(a) Prior to the approval of any Zoning Use Permit, the Applicant shall provide a permanent soil erosion and sedimentation plan for the SOLAR FARM including any access road that conforms to the relevant Natural Resources Conservation Service guidelines and that is prepared by an Illinois Licensed Professional Engineer.

(b) As-built documentation of all permanent soil erosion and sedimentation improvements for the SOLAR FARM including any access road prepared by an Illinois Licensed Professional Engineer shall be submitted and accepted by the Zoning Administrator prior to approval of any Zoning Compliance Certificate.

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8. Retention of all topsoil

No topsoil may be removed, stripped, or sold from the proposed SPECIAL USE Permit site pursuant to or as part of the construction of the SOLAR FARM.

F. Standard Conditions for Use of Public Streets

Any SOLAR FARM Applicant proposing to use any County Highway or a township or municipal STREET for the purpose of transporting SOLAR FARM or Substation parts and/or equipment for construction, operation, or maintenance of the SOLAR FARM or Substations(s), shall identify all such public STREETS and pay the costs of any necessary permits and the costs to repair any damage to the STREETS caused by the SOLAR FARM construction, as follows:

1. Prior to the close of the public hearing before the BOARD, the Applicant shall enter into a Roadway Upgrade and Maintenance agreement approved by the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, except for any COMMUNITY SOLAR FARM for which the relevant highway authority has agreed in writing to waive the requirements of subparagraphs 6.1.5 F. 1., 2., and 3., and the signed and executed Roadway Upgrade and Maintenance agreements must provide for the following minimum conditions:
 - (a) The applicant shall agree to conduct a pre- SOLAR FARM construction baseline survey to determine existing STREET conditions for assessing potential future damage including the following:
 - (1) A videotape of the affected length of each subject STREET supplemented by photographs if necessary.
 - (2) Pay for costs of the County to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the SOLAR FARM construction.
 - (3) Pay for any strengthening of STREET structures that may be necessary to accommodate the proposed traffic loads caused by the SOLAR FARM construction.
 - (b) The Applicant shall agree to pay for costs of the County Engineer to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the SOLAR FARM construction and pay for any strengthening of structures that may be necessary to accommodate

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the proposed traffic loads caused by the SOLAR FARM construction.

- (c) The Applicant shall agree upon an estimate of costs for any other necessary roadway improvements prior to construction.
- (d) The Applicant shall obtain any necessary approvals for the STREET improvements from the relevant STREET maintenance authority.
- (e) The Applicant shall obtain any necessary Access Permits including any required plans.
- (f) The Applicant shall erect permanent markers indicating the presence of underground cables.
- (g) The Applicant shall install marker tape in any cable trench.
- (h) The Applicant shall become a member of the Illinois state wide One-Call Notice System (otherwise known as the Joint Utility Locating Information for Excavators or "JULIE") and provide JULIE with all of the information necessary to update its record with respect to the SOLAR FARM.
- (i) The Applicant shall use directional boring equipment to make all crossings of County Highways for the cable collection system.
- ~~(j) The Applicant shall provide plans for the widening of any corner radius that is necessary to facilitate the turning movements of the transport trucks used by the Applicant.~~
- ~~(k) The Applicant shall pay for the necessary temporary STREET improvements for the widened corner radii and pay for the cost to return the widened radii to their original lines and grades when no longer needed for the SOLAR FARM construction unless the STREET maintenance authority requests that the widened radii remain as improved.~~
- (j) The Applicant shall notify the STREET maintenance authority in advance of all oversize moves and crane crossings.
- (k) The Applicant shall provide the County Engineer with a copy of each overweight and oversize permit issued by the Illinois Department of Transportation for SOLAR FARM construction.
- (l) The Applicant shall transport the SOLAR FARM loads so as to minimize adverse impact on the local traffic including farm traffic.

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- (m) The Applicant shall schedule SOLAR FARM construction traffic in a way to minimize adverse impacts on emergency response vehicles, rural mail delivery, school bus traffic, and local agricultural traffic.
- (n) The Applicant shall provide as much advance notice as is commercially reasonable to obtain approval of the STREET maintenance authority when it is necessary for a STREET to be closed due to a crane crossing or for any other reason. Notwithstanding the generality of the aforementioned, the Applicant will provide 48 hours notice to the extent reasonably practicable.
- (o) The Applicant shall provide signs indicating all highway and STREET closures and work zones in accordance with the Illinois Department of Transportation Manual on Uniform Traffic Control Devices.
- (p) The Applicant shall establish a single escrow account and a single Irrevocable Letter of Credit for the cost of all STREET upgrades and repairs pursuant to the SOLAR FARM construction.
- (q) The Applicant shall notify all relevant parties of any temporary STREET closures.
- (r) The Applicant shall obtain easements and other land rights needed to fulfill the Applicant's obligations under this Agreement.
- (s) The Applicant shall agree that the County shall design all STREET upgrades in accordance with the IDOT Bureau of Local Roads and Streets Manual, 2005 edition.
- (t) The Applicant shall provide written Notice to Proceed to the relevant STREET maintenance authority by December 31 of each year that identifies the STREETS to be upgraded during the following year.
- (u) The Applicant shall provide dust control and grading work to the reasonable satisfaction of the County Engineer on STREETS that become aggregate surface STREETS.
- (v) The Applicant shall conduct a post- SOLAR FARM construction baseline survey similar to the pre- SOLAR FARM construction baseline survey to identify the extent of repairs necessary to return the STREET to the pre- SOLAR FARM construction condition.
- (w) The Applicant shall pay for the cost of all repairs to all STREETS that are damaged by the Applicant during the construction of the

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SOLAR FARM and restore such STREETS to the condition they were in at the time of the pre- SOLAR FARM construction inventory.

- (x) All SOLAR FARM construction traffic shall exclusively use routes designated in the approved Transportation Impact Analysis.
 - (y) The Applicant shall provide liability insurance in an acceptable amount to cover the required STREET construction activities.
 - (z) The Applicant shall pay for the present worth costs of life consumed by the construction traffic as determined by the pavement management surveys and reports on the roads which do not show significant enough deterioration to warrant immediate restoration.
 - (aa) Provisions for expiration date on the agreement.
 - (bb) Other conditions that may be required.
2. A condition of the County Board Special Use Permit approval shall be that the Zoning Administrator shall not authorize a Zoning Use Permit for the SOLAR FARM until the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, has approved a Transportation Impact Analysis provided by the Applicant and prepared by an independent engineer that is mutually acceptable to the Applicant and the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, that includes the following:
- (a) Identify all such public STREETS or portions thereof that are intended to be used by the Applicant during construction of the SOLAR FARM as well as the number of loads, per axle weight of each load; and type of equipment that will be used to transport each load.
 - (b) A schedule of the across road culverts and bridges affected by the project and the recommendations as to actions, if any, required with respect to such culverts and bridges and estimated of the cost to replace such culverts and bridges;
 - (c) A schedule of the anticipated STREET repair costs to be made in advance of the SOLAR FARM construction and following construction of the SOLAR FARM.
 - (d) The Applicant shall reimburse the County Engineer; or Township Highway Commissioner; or municipality where relevant, for all reasonable engineering fees including the costs of a third party consultant, incurred in connection with the review and approval of the Transportation Impact Analysis.

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3. At such time as decommissioning takes place the Applicant or its successors in interest shall enter into a Roadway use and Repair Agreement with the appropriate highway authority.

G. Standard Conditions for Coordination with Local Fire Protection District

1. The Applicant shall submit to the local fire protection district a copy of the site plan.
2. Upon request by the local fire protection district, the Owner or Operator shall cooperate with the local fire protection district to develop the fire protection district's emergency response plan.
3. Nothing in this section shall alleviate the need to comply with all other applicable fire laws and regulations.

~~H. Standard Conditions to Mitigate Electromagnetic Interference~~

- ~~1. The Applicant shall provide the applicable microwave transmission providers and local emergency service provider(s) (911 operators) copies of the project summary and site plan.~~
- ~~2. To the extent that any relevant microwave transmission provider and local emergency service provider demonstrates a likelihood of interference with its communications resulting from the SOLAR FARM, the Applicant shall take reasonable measures to mitigate such anticipated interference.~~
- ~~3. If, after construction of the SOLAR FARM, the Owner or Operator receives a written complaint related to the above mentioned interference, the Owner or Operator shall take reasonable steps to respond to the complaint.~~
- ~~4. If, after construction of the SOLAR FARM, the Owner or Operator receives a written complaint related to interference with local broadcast residential television, the Owner or Operator shall take reasonable steps to respond to the complaint.~~

H. Standard Conditions for Allowable Noise Level

1. Noise levels from any SOLAR FARM shall be in compliance with the applicable Illinois Pollution Control Board (IPCB) regulations (35 *Illinois Administrative Code* Subtitle H: Noise Parts 900, 901, 910).
2. The Applicant shall submit manufacturer's sound power level characteristics and other relevant data regarding noise characteristics of

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proposed SOLAR FARM equipment necessary for a competent noise analysis.

3. The Applicant, through the use of a qualified professional, as part of the siting approval application process, shall appropriately demonstrate compliance with the above noise requirements.
4. After construction of the SOLAR FARM the Zoning Administrator shall take appropriate enforcement action as necessary to investigate noise complaints in order to determine the validity of the complaints and take any additional enforcement action as proves warranted to stop any violation that is occurring, including but not limited to the following:
 - (a) The Zoning Administrator shall make the Environment and Land Use Committee aware of complaints about noise that have been received by the Complaint Hotline.
 - (b) If the Environment and Land Use Committee determines that the noise is excessive, the Environment and Land Use Committee shall require the Owner or Operator to take reasonable steps to mitigate the excessive noise.

I. Standard Conditions for Endangered Species Consultation

The Applicant shall apply for consultation with the Endangered Species Program of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the Endangered Species Program of the Illinois Department of Natural Resources or, if applicable, a copy of the Detailed Action Plan Report submitted to the Endangered Species Program of the Illinois Department of Natural Resources and a copy of the response from the Illinois Department of Natural Resources.

J. Standard Conditions for Historic and Archaeological Resources Review

The Applicant shall apply for consultation with the State Historic Preservation Officer of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the State Historic Preservation Officer of the Illinois Department of Natural Resources.

K. Standard Conditions for Acceptable Wildlife Impacts

1. The SOLAR FARM shall be located, designed, constructed, and operated so as to avoid and if necessary mitigate the impacts to wildlife to a sustainable level of mortality.

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L. Screening and fencing

1. Perimeter fencing

- (a) SOLAR FARM equipment and structures shall be fully enclosed and secured by a fence with a minimum height of 7 feet.
- (b) Knox boxes and keys shall be provided at locked entrances for emergency personnel access.
- (c) The perimeter fencing shall be a minimum of 10 feet from a SIDE or REAR LOT LINE and a minimum of 40 feet from a MINOR STREET and a minimum of 55 feet from a COLLECTOR STREET and a minimum of 60 feet from a MAJOR STREET but in no case shall the perimeter fencing be less than 10 feet from the RIGHT OF WAY of any STREET.
- (d) Vegetation between the fencing and the LOT LINE shall be maintained such that NOXIOUS WEEDS are controlled or eradicated consistent with the Illinois Noxious Weed Law (505 ILCS 100/1 et seq.). Management of the vegetation shall be explained in the application.

2. Screening

- (a) A ~~30 feet wide~~-visual screen ~~buffer~~ shall be provided ~~inside~~ around the perimeter ~~fencing~~ of the SOLAR FARM as follows:

(1) The visual screen shall be provided for any part of the SOLAR FARM that is visible to and located within 1,000 feet of a DWELLING or residential DISTRICT. However, the visual screen shall not be required if the SOLAR FARM is not visible to a DWELLING or residential DISTRICT by virtue of the existing topography.

(2) The visual screen shall be waived if the owner(s) of a relevant DWELLING(S) have agreed in writing to waive the screening requirement and a copy of the written waiver is submitted to the BOARD or GOVERNING BODY.

(3) The visual screen shall either be opaque fencing consistent with subparagraph 6.1.5 L.1. or a vegetated buffer as follows:

- (a) A vegetated ~~The~~-visual screen buffer shall include a continuous line of evergreen foliage ~~and/or an earthen berm~~ and/ or any existing wooded area ~~and/ or~~

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tallgrass prairie plantings that will conceal the SOLAR FARM from view from adjacent abutting property.

- (b) Any vegetation that is part of the approved visual screen buffer shall be maintained in perpetuity.
- (c) The continuous line of evergreen foliage shall be planted at a minimum height of ~~3~~ 5 feet tall and shall be planted in multiple rows as required to provide a continuous line of foliage upon initial planting 50% screen within 2 years of planting. If the evergreen foliage below a height of 7 feet disappears over time the screening shall be replaced.

(d) A tallgrass prairie planting used as a visual screen buffer shall be at least 10 feet wide and shall be planted and maintained per the recommendations of the Natural Resources Conservation Service.

~~(4) Any earthen berm used as for the visual screen buffer shall be a minimum height of 8 feet high measured relative to the adjacent grade.~~

(e) ~~The visual~~ Any vegetated screen buffer shall be detailed in a landscape plan drawing that shall be included with the SOLAR FARM SPECIAL USE permit application.

M. Standard Condition to Minimize Glare.

- 1. The design and construction of the SOLAR FARM shall minimize glare that may affect adjacent properties and the application shall include an explanation of how glare will be minimized.
- ~~2. The application shall include a visual impact assessment that shall include the following:~~
 - ~~a. A computer generated “zone of visibility map” shall be created to illustrate locations within a one-mile radius from the proposed SOLAR FARM, from which the proposed SOLAR FARM may be seen.~~
 - ~~b. Pictorial representations of “before and after” views of the proposed SOLAR FARM from representative locations indicated on the “zone of visibility map”. Representative locations shall include any DWELLING located within a one-mile radius and/ or any~~

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~~municipality within a one-mile radius and/or any public SREET within a one-mile radius.~~

2. After construction of the SOLAR FARM the Zoning Administrator shall take appropriate enforcement action as necessary to investigate complaints of glare in order to determine the validity of the complaints and take any additional enforcement action as proves warranted to stop any significant glare that is occurring, including but not limited to the following:
 - (a) The Zoning Administrator shall make the Environment and Land Use Committee aware of complaints about glare that have been received by the Complaint Hotline.
 - (b) If the Environment and Land Use Committee determines that the glare is excessive, the Environment and Land Use Committee shall require the Owner or Operator to take reasonable steps to mitigate the excessive glare such as the installation of additional screening.

N. Standard Condition for Liability Insurance

1. The Owner or Operator of the SOLAR FARM shall maintain a current general liability policy covering bodily injury and property damage with minimum limits of a least \$5 million per occurrence and \$5 million in the aggregate. ~~The amount of the limit shall be increased annually to account for the effects of inflation.~~
2. The general liability policy shall identify landowners in the SPECIAL USE permit as additional insured.

O. Operational Standard Conditions

1. Maintenance
 - (a) The Owner or Operator of the SOLAR FARM must submit, on an annual basis, a summary of the operation and maintenance reports to the Environment and Land Use Committee and any other operation and maintenance reports as the Environment and Land Use Committee reasonably requests.
 - (b) Any physical modification to the SOLAR FARM that increases the number of solar conversion devices or structures and/ or the land area occupied by the SOLAR FARM shall require a new County Board SPECIAL USE Permit. Like-kind replacements shall not require re-certification nor will replacement of transformers, cabling, etc. provided replacement is done in a fashion similar to the original installation.

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- (c) The Application shall explain methods and materials used to clean the SOLAR FARM equipment including an estimation of the daily and annual gallons of water used and the source of the water and the management of wastewater. The BOARD may request copies of well records from the Illinois State Water Survey and may require an estimate by a qualified hydrogeologist of the likely impact on adjacent waterwells.
2. Materials Handling, Storage and Disposal
- (a) All solid wastes related to the construction, operation and maintenance of the SOLAR FARM shall be removed from the site promptly and disposed of in accordance with all federal, state and local laws.
- (b) All hazardous materials related to the construction, operation and maintenance of the SOLAR FARM shall be handled, stored, transported and disposed of in accordance with all applicable local, state and federal laws.
3. Vegetation management
- (a) The SOLAR FARM SPECIAL USE permit application shall include a weed control plan for the total area of the SPECIAL USE permit including areas both inside of and outside of the perimeter fencing.
- (b) The weed control plan shall ensure the control and/ or eradication of NOXIOUS WEEDS consistent with the Illinois Noxious Weed Law (505 ILCS 100/1 et seq.)
- (c) The weed control plan shall be explained in the application.
- P. Standard Condition for Decommissioning Plan and Site Reclamation Plan
1. The Applicant shall submit a signed site reclamation plan conforming to the requirements of paragraph 6.1.1 A.
2. In addition to the purposes listed in subparagraph 6.1.1 A. 4. the reclamation plan shall also include provisions for anticipated repairs to any public STREET used for the purpose of reclamation of the SOLAR FARM and all costs related to removal of access driveways.
3. The site reclamation plan required in paragraph 6.1.1A. shall also include the following:
- (a) A stipulation that the applicant shall notify the GOVERNING BODY by certified mail of the commencement of voluntary or

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involuntary bankruptcy proceeding, naming the applicant as debtor, within ten days of commencement of the proceeding.

- (b) A stipulation that the applicant shall agree that the sale, assignment in fact or law, or such other transfer of applicant's financial interest in the SOLAR FARM shall in no way affect or change applicant's obligation to continue to comply with the terms of this plan. Any successor or assignee shall assume the terms, covenants, and obligations of this plan and agrees to assume all reclamation liability and responsibility for the SOLAR FARM.
- (c) Authorization for the GOVERNING BODY and its authorized representatives for right of entry onto the SOLAR FARM premises for the purpose of inspecting the methods of reclamation or for performing actual reclamation if necessary.
- (d) A stipulation that at such time as decommissioning takes place the applicant or its successors in interest are required to enter into a Roadway Use and Repair Agreement with the relevant highway authority.
- (e) A stipulation that the Applicant shall provide evidence of any new, additional, or substitute financing or security agreement to the Zoning Administrator throughout the operating lifetime of the project.
- (f) A stipulation that the Applicant shall be obliged to perform the work in the site reclamation plan before abandoning the SOLAR FARM or prior to ceasing production of electricity from the SOLAR FARM, after it has begun, other than in the ordinary course of business. This obligation shall be independent of the obligation to pay financial assurance, and shall not be limited by the amount of financial assurance. The obligation to perform the reclamation work shall constitute a covenant running with the land
- (g) The site reclamation plan shall provide for payment of any associated costs that Champaign County may incur in the event that decommissioning is actually required. Associated costs include all administrative and ancillary costs associated with drawing upon the financial assurance and performing the reclamation work and shall include but not be limited to attorney's fees; construction management and other professional service fees; and the costs of preparing request for proposals and bidding documents required to comply with state law or Champaign County purchasing policies.
- (h) The depth of removal of foundation concrete below ground shall be a minimum of 54 inches. The depth of removal of foundation concrete shall be certified in writing by an Illinois Licensed

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Professional Engineer and the certification shall be submitted to the Zoning Administrator.

- (i) The hole resulting from the removal of foundation concrete during decommissioning shall be backfilled as follows:
- (1) The excavation resulting from the removal of foundation concrete shall only be backfilled with subsoil and topsoil in similar depths and similar types as existed at the time of the original SOLAR FARM construction except that a lesser quality topsoil or a combination of a lesser quality topsoil and a subsoil that is similar to the native subsoil may be used at depths corresponding to the native subsoil but not less than 12 inches below grade.
 - (2) The native soils excavated at the time of the original SOLAR FARM construction may be used to backfill the concrete foundation excavations at the time of decommissioning provided that the soils are adequately stored throughout the operating lifetime of the SOLAR FARM. The methods for storing the excavated native soils during the operating lifetime of the SOLAR FARM shall be included in the site reclamation plan.
 - (3) If the excavated native soils are not stored for use for backfilling the concrete foundation excavations, a qualified soil scientist or Illinois Licensed Professional Engineer shall certify that the actual soils used to backfill the concrete foundation excavations are of equal or greater quality than the native soils or that, in the case of subsoil, the backfill soil meets the requirements of this paragraph. The certification shall be submitted to the Zoning Administrator.
 - (4) An Illinois Licensed Professional Engineer shall certify in writing that the concrete foundation excavations have been backfilled with soil to such a depth and with a minimum of compaction that is consistent with the restoration of productive agricultural use such that the depth of soil is expected to be no less than 54 inches within one year after backfilling.
- (j) A stipulation that should the site reclamation plan be deemed invalid by a court of competent jurisdiction the SOLAR FARM SPECIAL USE permit shall be deemed void.
- (k) A stipulation that the Applicant's obligation to complete the site reclamation plan and to pay all associated costs shall be

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independent of the Applicant's obligation to provide financial assurance.

- (l) A stipulation that the liability of the Applicant's failure to complete the site reclamation plan or any breach of the site reclamation plan requirement shall not be capped by the amount of the financial assurance.
 - (m) If the Applicant desires to remove equipment or property credited to the estimated salvage value without the concurrent replacement of the property with property of equal or greater salvage value or if the Applicant installs equipment or property increasing the cost of decommissioning after the SOLAR FARM begins to produce electricity, at any point, the Applicant shall first obtain the consent of the Zoning Administrator. If the Applicant's lien holders remove equipment or property credited to the salvage value the Applicant shall promptly notify the Zoning Administrator. In either of these events the total financial assurance shall be adjusted to reflect any change in total salvage value and total decommissioning costs resulting from any such removal or installation.
4. To comply with paragraph 6.1.1A.5., the Applicant shall provide financial assurance in the form of an irrevocable letter of credit and an escrow account as follows:
- (a) At the time of Special Use Permit approval the amount of financial assurance to be provided for the site reclamation plan shall be ~~210~~ 150% of the decommissioning cost as determined in the independent engineer's cost estimate to complete the decommissioning work described in Sections 6.1.1A.4.a. and 6.1.1A.4.b. and 6.1.1A.4.c.
 - (b) Net salvage value may be deducted from decommissioning costs as follows:
 - (1) One of the following standards shall be met:
 - a. The Applicant shall maintain the SOLAR FARM free and clear of liens and encumbrances, including financing liens and shall provide proof of the same prior to issuance of the SPECIAL USE Permit; or
 - b. The Applicant shall deduct from the salvage value credit the amount of any lien or encumbrance on the SOLAR FARM; or
 - c. Any and all financing and/or financial security agreements entered into by the Applicant shall

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expressly provide that the agreements are subject to the covenant required by Section 6.1.1.A.2 that the reclamation work be done.

- (2) The Applicant shall provide proof of compliance with paragraph 6.1.5P.4.(b)(1) prior to issuance of any Zoning Use Permit and upon every renewal of the financial assurance and at any other time upon the request of the Zoning Administrator.
 - (3) The Applicant shall provide in the site reclamation plan for legal transfer of the STRUCTURE to the demolisher to pay the costs of reclamation work, should the reclamation work be performed.
 - (4) The net estimated salvage value that is deducted from the estimated decommissioning costs shall be the salvage value that results after all related costs for demolition and any required preparation for transportation for reuse or recycling or for simple disposal and other similar costs including but not limited to the decommissioning of the SOLAR FARM STRUCTURES, equipment, and access roads.
 - (5) Estimated salvage value shall be based on the average salvage price of the past five years as published in a reputable source for salvage values and shall reflect sound engineering judgment as to anticipated changes in salvage prices prior to the next update of estimated net salvage value.
 - (6) The deduction from the estimated decommissioning costs for net estimated salvage value shall be capped at 70% of the total net estimated salvage value even though the total actual salvage value shall be available in the event that decommissioning is actually required.
 - (7) The total financial assurance after deduction of the net estimated salvage value shall not be less than \$1,000 per acre.
 - (8) The credit for net estimated salvage value attributable to any SOLAR FARM may not exceed the estimated cost of removal of the above-ground portion of that SOLAR FARM on the subject site.
- (c) The GOVERNING BODY has the right to require multiple letters of credit based on the regulations governing federal insurance for deposits.
- (d) The Applicant shall adjust the amount of the financial assurance to ensure that it reflects current and accurate information as follows:

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- (1) At least once every three years for the first 12 years of the financial assurance and at least once every year thereafter the Applicant shall use an independent Illinois Licensed Professional Engineer to provide updated estimates of decommissioning costs and salvage value, by including any changes due to inflation and/or change in salvage price. The Applicant shall, upon receipt, provide a copy of the adjusted Professional Engineer's report to the Zoning Administrator.
 - (2) At all times the total combined value of the irrevocable letter of credit and the escrow account shall equal or exceed the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation based on the Consumer Price Index since the SOLAR FARM was approved; ~~and an amount for any future years left in the anticipated 25-year life span of the SOLAR FARM at an assumed minimum rate of inflation of 3% per year.~~
- (e) The applicant or SOLAR FARM owner shall gradually pay down the value of the irrevocable letter of credit by placing cash deposits in an escrow account in equal annual installments over the first 13 years of the SOLAR FARM operation as follows:
- (1) The applicant or SOLAR FARM owner and the GOVERNING BODY shall agree on a mutually acceptable financial institution at which an escrow account shall be established.
 - (2) The GOVERNING BODY shall be the beneficiary of the escrow account for the purpose of the reclamation of the SOLAR FARM in the event that the SOLAR FARM owner is incapable of decommissioning the SOLAR FARM.
 - (3) The applicant or SOLAR FARM owner shall grant perfected security in the escrow account by use of a control agreement establishing the County as an owner of record, pursuant to the Secured Transactions Article of the Uniform Commercial Code, 810 ILCS 9/101 et seq.
 - (4) The applicant or SOLAR FARM owner shall make annual deposits to the escrow account over a 12 year period and shall simultaneously provide a replacement irrevocable letter of credit that is reduced accordingly.
 - (5) At all times the total combined value of the irrevocable letter of credit and the escrow account shall be increased annually as necessary to reflect actual rates of inflation over

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the life span of the SOLAR FARM and the amount shall be equal to or exceed ~~the following:~~

~~i. 150% of~~ the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation since the SOLAR FARM was approved; ~~plus~~

~~ii. an amount for any future years left in the anticipated life span of the SOLAR FARM at an assumed minimum rate of inflation of 3% per year.~~

(6) Any interest accrued on the escrow account that is over and above the total value required by subparagraph 6.1.5P.4.(b)(4) shall go to the SOLAR FARM owner.

(7) In order to provide funding for decommissioning at the time of decommissioning, the SOLAR FARM applicant or SOLAR FARM owner may exchange a new irrevocable letter of credit in an amount equal to the amount in the escrow account in exchange for the GOVERNING BODY agreeing to a release of the full amount of the escrow account.

(f) Should the salvage value of components be adjusted downward or the decommissioning costs adjusted upward pursuant to paragraph 6.1.5P.4.(d), the amount to be placed in the escrow account pursuant to this paragraph 6.1.5.P.4. shall be increased to reflect the adjustment, as if the adjusted estimate were the initial estimate.

(g) Any financial assurance required per the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q. shall count towards the total financial assurance required for compliance with paragraph 6.1.1A.5.

5. In addition to the conditions listed in subparagraph 6.1.1A.9. the Zoning Administrator may also draw on the funds for the following reasons:

(a) In the event that any SOLAR FARM or component thereof ceases to be functional for more than six consecutive months after it starts producing electricity and the Owner is not diligently repairing such SOLAR FARM or component.

(b) In the event that the Owner declares ~~the SOLAR FARM any wind turbine or other~~ any SOLAR FARM component to be functionally obsolete for tax purposes.

(c) There is a delay in the construction of any SOLAR FARM of more than 6 months after construction on that SOLAR FARM begins.

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- (d) Any SOLAR FARM or component thereof that appears in a state of disrepair or imminent collapse and/or creates an imminent threat to the health or safety of the public or any person.
 - (e) Any SOLAR FARM or component thereof is otherwise derelict for a period of 6 months.
 - (f) The SOLAR FARM is in violation of the terms of the SOLAR FARM SPECIAL USE permit for a period exceeding ninety (90) days.
 - (g) The Applicant has failed to maintain financial assurance in the form and amount required by the special use permit or compromised the COUNTY's interest in the site reclamation plan.
 - (h) The COUNTY discovers any material misstatement of fact or misleading omission of fact made by the Applicant in the course of the special use permit zoning case.
 - (i) The Applicant has either failed to receive a copy of the certification of design compliance required by paragraph 6.1.5D. or failed to submit it to the County within 12 consecutive months of receiving a Zoning Use Permit regardless of the efforts of the Applicant to obtain such certification.
6. The Zoning Administrator may, but is not required to, deem the SOLAR FARM abandoned, or the standards set forth in Section 6.1.5.P.5. met, with respect to some, but not all, of the SOLAR FARM. In that event, the Zoning Administrator may draw upon the financial assurance to perform the reclamation work as to that portion of the SOLAR FARM only. Upon completion of that reclamation work, the salvage value and reclamation costs shall be recalculated as to the remaining SOLAR FARM.
7. The Site Reclamation Plan shall be included as a condition of approval by the BOARD and the signed and executed irrevocable letter of credit and evidence of the escrow account must be submitted to the Zoning Administrator prior to any Zoning Use Permit approval.

Q. Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture.

- 1. The Applicant shall enter into an Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture.
- 2. The Applicant shall bear full responsibility for coordinating any special conditions required in the SPECIAL USE Permit in order to ensure

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compliance with the signed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture.

3. All requirements of the signed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture shall become requirements of the County Board SPECIAL USE Permit.
4. Champaign County shall have the right to enforce all requirements of the signed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture

R. Complaint Hotline

1. Prior to the commencement of construction on the SOLAR FARM and during the entire term of the County Board SPECIAL USE permit and any extension, the Applicant and Owner shall establish a telephone number hotline for the general public to call with any complaints or questions.
2. The telephone number hotline shall be publicized and posted at the operations and maintenance center and the construction marshalling yard.
3. The telephone number hotline shall be manned during usual business hours and shall be an answering recording service during other hours.
4. Each complaint call to the telephone number hotline shall be logged and identify the name and address of the caller and the reason for the call.
5. All calls shall be recorded and the recording shall be saved for transcription for a minimum of two years.
6. A copy of the telephone number hotline shall be provided to the Zoning Administrator on a monthly basis.
7. The Applicant and Owner shall take necessary actions to resolve all legitimate complaints.

S. Standard Condition for Expiration of SOLAR FARM County Board SPECIAL USE Permit

A SOLAR FARM County Board SPECIAL USE Permit designation shall expire in 10 years if no Zoning Use Permit is granted.

T. Application Requirements

1. In addition to all other information required on the SPECIAL USE Permit application and required by Section 9.1.11 A. 2. the application shall contain or be accompanied by the following information:

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- (a) A SOLAR FARM Project Summary, including, to the extent available:
- (1) A general description of the project, including its approximate DC and AC generating capacity; the maximum number and type of solar devices; the potential equipment manufacturer(s).
 - (2) The specific proposed location of the SOLAR FARM including all tax parcels on which the SOLAR FARM will be constructed.
 - (3) The specific proposed location of all tax parcels required to be included in the SOLAR FARM County Board SPECIAL USE Permit.
 - (4) A description of the Applicant; Owner and Operator, including their respective business structures.
- (b) The name(s), address(es), and phone number(s) of the Applicant(s), Owner and Operator, and all property owner(s) for the SOLAR FARM County Board SPECIAL USE permit.
- (c) A site plan for the SOLAR FARM indicating the following:
- (1) The approximate planned location of all SOLAR FARM STRUCTURES, property lines (including identification of adjoining properties), required separations, public access roads and turnout locations, access driveways, solar devices, electrical inverter(s), electrical transformer(s), cabling, switching station, electrical cabling from the SOLAR FARM to the Substations(s), ancillary equipment, screening and fencing, third party transmission lines, meteorological station, maintenance and management facilities, and layout of all structures within the geographical boundaries of any applicable setback.
 - (2) The site plan shall clearly indicate the area of the proposed SOLAR FARM County Board SPECIAL USE Permit as required by subparagraph ~~6.1.4A.1.~~ 6.1.5A.1.
 - (3) The location of all below-ground wiring.
 - (4) The location, height, and appearance of all above-ground wiring and wiring structures.
 - (5) The separation of all SOLAR FARM structures from adjacent DWELLINGS and/ or PRINCIPAL BUILDINGS or uses shall be dimensioned on the approved site plan and that dimension shall establish the effective minimum separation that shall be required for any Zoning Use Permit. Greater separation and

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somewhat different locations may be provided in the approved site plan for the Zoning Use Permit provided that that the greater separation does not increase the noise impacts and /or glare that were approved in the SOLAR FARM County Board SPECIAL USE Permit. SOLAR FARM structures includes substations, third party transmission lines, maintenance and management facilities, or other significant structures.

(d) All other required studies, reports, certifications, and approvals demonstrating compliance with the provisions of this Ordinance.

2. The Applicant shall notify the COUNTY of any changes to the information provided above that occurs while the County Board SPECIAL USE permit application is pending.

3. The Applicant shall include a copy of the signed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture with the Zoning Use Permit Application to authorize construction.

9. Add the following paragraph 9.3.1 J. for Zoning Use Permit fee:

J. SOLAR FARM ~~\$2000~~1,800 per megawatt
(includes COMMUNITY SOLAR FARM)

10. Revise subsection 9.3.3 as follows:

9.3.3 Zoning Case Filing Fees

A. General Provisions

1. No zoning case filing shall be accepted until the filing fee has been paid.
2. No zoning case filing fee shall be waived unless the Zoning Administrator determines that the petition is the only means reasonably available to bring a property into compliance with the provisions of this ordinance and the non-compliance is due solely to staff error.
3. No zoning case filing fee shall be refunded after required legal notice has been made by mail or publication unless the Zoning Administrator determines such filing to have been based solely upon staff error.
4. No amendment to any petition which requires new legal notice shall be considered until an amended petition fee has been received

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unless the Zoning Administrator determines such amendment to be required due solely to staff error.

5. The fee for SPECIAL USE permits shall be determined based on the larger of the following (except for County Board WIND FARM or SOLAR FARM SPECIAL USE Permits):

- a. the area of farmland taken out of production as a result of the SPECIAL USE; or
- b. when farmland will not be taken out of production as a result of the SPECIAL USE, the land area taken up by the existing STRUCTURES and all proposed CONSTRUCTION proposed in the SPECIAL USE application.

6. When some combination of VARIANCE, SPECIAL USE and Map Amendment cases is required simultaneously for the same property, the total filing fee shall include the following (except for County Board WIND FARM or SOLAR FARM Special Use Permits):

- a. The standard fee for the most expensive individual zoning case; and
- b. one-half of the standard fee for any other required VARIANCE, SPECIAL USE, or Map Amendment provided that
- c. no additional fees shall be included for multiple zoning cases of the same type that can be advertised in the same legal advertisement.

B. Fees

1. VARIANCES

- a. ADMINISTRATIVE VARIANCES \$100
- b. Minor or Major VARIANCES \$200

2. SPECIAL USE permits and Map Amendments (except for County Board WIND FARM or SOLAR FARM Special Use Permit ~~and a map amendment to the WIND FARM Overlay Zoning District~~)

- a. Two acres or less and Base Fee for larger areas \$400
- b. More than two acres but no more than 12 acres add \$40 per acre to Base Fee for each acre over two acres

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c. More than 12 acres add \$10 per acre for each acre over 12 acres and add to fees in a. and b. above

- 3. Appeals and Interpretations.....\$200
- 4. Change of Nonconforming Use\$100
- 5. Amendment to Petitions (requiring new legal notice) \$100
- 6. County Board WIND FARM Special Use Permit..... \$20,000 or \$440 per WIND FARM TURBINE TOWER, whichever is greater
- 7. BIG WIND TURBINE TOWER SPECIAL USE Permit per BIG WIND TURBINE TOWER.....\$3,300
- 8. County Board SOLAR FARM Special Use Permit.....~~\$5,000 or \$440 per megawatt, whichever is greater~~
SOLAR FARM with not more than 7 megawatt nameplate rating.....\$1,320 per megawatt (includes COMMUNITY SOLAR FARM)

SOLAR FARM with nameplate rating of 8 to 112 megawatts.....\$9,240 plus \$102 for each megawatt more than 7 megawatts

SOLAR FARM with more than 112 megawatt nameplate rating..... \$173 per megawatt

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1. Add the following to Section 3.0 Definitions (somewhat similar to the definition of WIND FARM):

NOXIOUS WEEDS: any of several plants designated pursuant to the Illinois Noxious Weed Law (505 ILCS 100/1 et seq.) and that are identified in 8 Illinois Administrative Code 220.

SOLAR FARM: A unified development intended to convert sunlight into electricity whether by photovoltaic (PV) devices, concentrating solar thermal devices (CST), or other conversion technology using other types of solar devices, for the primary purpose of wholesale sales of generated electricity. A SOLAR FARM is under a common ownership and operating control even though parts of the SOLAR FARM may be located on land leased from different owners. A SOLAR FARM includes all necessary components including access driveways, solar devices, electrical inverter(s), electrical transformer(s), cabling, a common switching station, maintenance and management facilities, and waterwells.

SOLAR FARM, COMMUNITY: A SOLAR FARM of not more than 2,000 kilowatt nameplate capacity that meets the requirements of Public Act 99-0906 for a “community renewable generation project”.

2. Add new subparagraph 4.2.1 C.4. as follows:

4. A SOLAR FARM may be authorized as a County Board SPECIAL USE permit in the AG-1, Agriculture Zoning District or the AG-2 Agriculture Zoning District as a second PRINCIPAL USE on a LOT with another PRINCIPAL USE.

3. Add new subparagraph 4.3.4 H. 4. i. as follows (similar to existing 4.3.4H.4.h. for wind farms):

- h. SOLAR FARM except as PIPELINE IMPACT RADIUS regulations are required in Subsection 6.1.5.

4. Amend Section 5.2 as follows (similar to existing WIND FARM designation):

Add “SOLAR FARM” as a COUNTY BOARD Special Use Permit in the AG-1 District and AG-2 District by a “B”.

5. Add the following as footnote 15 under the Special Provisions for the AG-1 District in Section 5.3 (similar to existing footnote 14 for LOTS in a WIND FARM):

15. LOTS in a SOLAR FARM County Board SPECIAL USE Permit and intended for SOLAR FARM, related substations, and SOLAR FARM maintenance and management facilities are exempt from the requirements of Section 5.3 except as such regulations are required by Subsection 6.1.4.

6. Add new paragraph 5.4.3 F. as follows:

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- F. The Rural Residential Overlay Zoning District is prohibited from being established within a SOLAR FARM County Board SPECIAL USE Permit.

7. Amend Section 6.1.1 to read as follows:

- A. Site Reclamation Plan for NON-ADAPTABLE STRUCTURES
1. In the course of BOARD review of a SPECIAL USE request, the BOARD may find that a proposed STRUCTURE is a NON-ADAPTABLE STRUCTURE. Any WIND FARM and any SOLAR FARM shall be a NON-ADAPTABLE STRUCTURE. The Applicant for the SPECIAL USE request for a NON-ADAPTABLE STRUCTURE shall submit a site reclamation plan to the BOARD for the subject site.
 2. The site reclamation plan shall be binding upon all successors of title to the land. Prior to the issuance of a SPECIAL USE Permit for such NON-ADAPTABLE STRUCTURES, the landowner or applicant shall also record a covenant incorporating the provisions of the site reclamation plan on the deed subject to the LOT, requiring that the reclamation work be performed and that a letter of credit be provided for financial assurance.
 3. Separate cost estimates for Section 6.1.1A.4.a., 6.1.1A.4.b., and 6.1.1A.4.c. shall be provided by an Illinois Licensed Professional Engineer.
 - a. Cost estimates provided shall be subject to approval of the BOARD.
 - b. Except as provided in Section 6.1.4P. and Section 6.1.5Q., the salvage value of the components of the NON-ADAPTABLE STRUCTURE shall not be credited to the cost estimates.
 4. The site reclamation plan shall provide for:
 - a. removal of above-ground portion of any STRUCTURE on the subject site; site grading; and, interim soil erosion control;
 - b. below-ground restoration, including final grading and surface treatment;
 - c. any environmental remediation required by State or Federal law;
 - d. provision and maintenance of a letter of credit, as set forth in Section 6.1.1A.5.

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5. No Zoning Use Permit for such SPECIAL USE will be issued until the applicant provides the COUNTY with an irrevocable letter of credit to be drawn upon a federally insured financial institution within 200 miles of Urbana or reasonable anticipated travel costs shall be added to the amount of the letter of credit. The irrevocable letter of credit shall be in the amount of one hundred fifty percent (150%) of an independent engineer's cost estimate to complete the work described in Section 6.1.1A.4.a., Section 6.1.1A.4.b., and Section 6.1.1A.4.c., except a different amount may be required as a standard condition in Section 6.1.4P. and Section 6.1.5Q. This letter of credit, or a successor letter of credit pursuant to Section 6.1.1A.6. or 6.1.1A.12. shall remain in effect and shall be made available to the COUNTY for an indefinite term or for a different term that may be required as a standard condition in paragraph 6.1.4P.

6. One hundred eighty (180) days prior to the expiration date of an irrevocable letter of credit submitted pursuant to this Section, the Zoning Administrator shall notify the landowner or applicant in writing and request information about the landowner or applicant's intent to renew the letter of credit, or remove the NON-ADAPTABLE STRUCTURE. The landowner or applicant shall have thirty (30) days to respond in writing to this request. If the landowner or applicant's intention is to remove the NON-ADAPTABLE STRUCTURE, the landowner or applicant will have a total of ninety (90) days from the date of response to remove it in accordance with Section 6.1.1A.4.a. At the end of ninety (90) days, the Zoning Administrator shall have a period of sixty (60) days to either:
 - a. confirm that the bank has renewed the letter of credit; or
 - b. inspect the subject property for compliance with Section 6.1.1A.4.a.;
 - c. draw on the letter of credit and commence the bid process to have a contractor remove the NON-ADAPTABLE STRUCTURE pursuant to Section 6.1.1A.4.a.

7. The Zoning Administrator may find a NON-ADAPTABLE STRUCTURE abandoned in place. Factors to be considered in making this finding include, but are not limited to:
 - a. the nature and frequency of use as set forth in the application for SPECIAL USE;
 - b. the current nature and frequency of use;

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- c. whether the NON-ADAPTABLE STRUCTURE has become a public nuisance, or otherwise poses a risk of harm to public health or safety;
 - d. whether the NON-ADAPTABLE STRUCTURE has been maintained in a manner which allows it to be used for its intended purpose, with no greater effects on surrounding properties and the public as a whole than was originally intended.
 - e. A court of law, an arbitrator, mediator, or any state or Federal agency charged with enforcing State or Federal law has made a finding that either said NON-ADAPTABLE STRUCTURE or the structures supporting said NON-ADAPTABLE STRUCTURE and/or any related site grading and soil erosion controls or lack of same, constitutes a public nuisance or otherwise violates State or Federal law, or any State or Federal agency charged with enforcing State or Federal law has made a final determination either imposing an administrative sanction on any person associated with the NON-ADAPTABLE STRUCTURE relating to its use or denying the NON-ADAPTABLE STRUCTURE a permit necessary for its lawful operation.
- 8. Once the Zoning Administrator has made a finding that a NON-ADAPTABLE STRUCTURE is abandoned in place, the Zoning Administrator shall issue notice to the land owner at the owner's last known address that the COUNTY will draw on the performance guarantee within thirty (30) days unless the owner appeals the Zoning Administrator's finding, pursuant to Section 9.1.8 or enters into a written agreement with the COUNTY to remove such NON-ADAPTABLE STRUCTURE in accordance with Section 6.1.1A.4. within ninety (90) days and removes the NON-ADAPTABLE STRUCTURE accordingly.
 - 9. The Zoning Administrator may draw on the funds to have said NON-ADAPTABLE STRUCTURE removed as per Section 6.1.1A.4. of the reclamation agreement when any of the following occur:
 - a. no response is received from the land owner within thirty (30) days from initial notification by the Zoning Administrator;
 - b. the land owner does not enter, or breaches any term of a written agreement with the COUNTY to remove said NON-ADAPTABLE structure as provided in Section 6.1.1A.8.;

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- c. any breach or performance failure of any provision of the reclamation agreement;
 - d. the owner of record has filed a bankruptcy petition, or compromised the COUNTY's interest in the letter of credit in any way to specifically allowed by the reclamation agreement;
 - e. a court of law has made a finding that a NON-ADAPTABLE STRUCTURE constitutes a public nuisance;
 - f. the owner of record has failed to replace an expiring letter of credit within the deadlines set forth in Section 6.1.1A.6.; or
 - g. any other conditions to which the COUNTY and the land owner mutually agree, as set forth in the reclamation agreement.
10. Once the letter of credit has been drawn upon, and the site has been restored to its original condition, as certified by the Zoning Administrator, the covenant entered pursuant to Section 6.1.1.A.2. shall expire, and the COUNTY shall act to remove said covenant from the record of the property at the Recorder of Deeds within forty-five (45) days.
11. The proceeds of the letter of credit may only be used by the COUNTY to:
- a. remove the NON-ADAPTABLE STRUCTURE and return the site to its condition prior to the placement of the NON-ADAPTABLE STRUCTURE, in accordance with the most recent reclamation agreement submitted and accepted in relation to the NON-ADAPTIVE STRUCTURE;
 - b. pay all administrative and ancillary costs associated with drawing upon the financial assurance and performing the reclamation work, which shall include, but not be limited to, attorney's fees; construction management and other professional service fees; and the costs of preparing request for proposal and bidding documents required to comply with state law or Champaign County purchasing policies; and
 - c. remove any covenants placed on the title in conjunction with Section 6.1.1.A.2.

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The balance of any proceeds remaining after the site has been reclaimed shall be returned to the issuer of the letter of credit.

12. Upon transfer of any property subject to a letter of credit pursuant to this Section, the new owner or applicant of record shall submit a new irrevocable letter of credit of same or greater value to the Zoning Administrator, prior to legal transfer of title, and shall submit a new site reclamation plan, pursuant to Section 6.1.1A.4.a., and, for WIND FARMS, Section 6.1.4P., and for SOLAR FARMS, 6.1.5Q. Once the new owner or applicant of record has done so, the letter of credit posted by the previous owner or applicant shall be released, and the previous owner shall be released from any further obligations under the site reclamation plan.
13. The Applicant shall provide evidence of any new, additional, or substitute financial assurance to the Zoning Administrator throughout the operating lifetime of the NON-ADAPTABLE STRUCTURE.
14. Should the site reclamation plan, or any part of it, be deemed invalid by a court of competent jurisdiction, the associated SPECIAL USE permit shall be deemed void.

8. Add new subsection 6.1.5 as follows (NOTE: the following new subsection is based on the existing subsection 6.1.4 for “WIND FARM”):

6.1.5 SOLAR FARM County Board SPECIAL USE permit

A SOLAR FARM County Board SPECIAL USE permit may only be authorized in the AG-1 Zoning District subject to the following standard conditions.

A. General Standard Conditions

1. The area of the SOLAR FARM County Board SPECIAL USE permit must include the following minimum areas:
 - (a) All land that will be exposed to a noise level greater than that authorized to Class A land under paragraph 6.1.5 I.
 - (b) All necessary access lanes or driveways and any required new PRIVATE ACCESSWAYS. For purposes of determining the minimum area of the special use permit, access lanes or driveways shall be provided a minimum 40 feet wide area.
 - (c) All necessary SOLAR FARM STRUCTURES and ACCESSORY STRUCTURES including electrical distribution lines, inverters, transformers, common switching stations, and substations not under

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the ownership of a PUBLICLY REGULATED UTILITY and all waterwells that will provide water for the SOLAR FARM. For purposes of determining the minimum area of the special use permit, underground cable installations shall be provided a minimum 40 feet wide area.

- (d) All aboveground STRUCTURES and facilities shall be of a type and shall be located in a manner that is consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.

2. The SOLAR FARM County Board SPECIAL USE permit shall not be located in the following areas:
- a. Less than one-and-one-half miles from an incorporated municipality that has a zoning ordinance unless the following is provided:
 - (1) The SOLAR FARM SPECIAL USE permit application shall include documentation that the application has provided a complete copy of the SPECIAL USE permit application to any municipality within one-and-one-half miles of the proposed SOLAR FARM.
 - (2) A municipal Resolution of Non-opposition to the SOLAR FARM by any relevant municipality must be submitted to the ZONING ADMINISTRATOR prior to the consideration of the SOLAR FARM SPECIAL USE permit by the Champaign County Board.
 - b. Less than one-half mile from the CR Conservation Recreation Zoning District.
 - c. Any easement for a GAS PIPELINE or HAZARDOUS LIQUID PIPELINE; or any easement for an underground water main; or any easement for a drainage district, unless a crossing agreement has been entered into with the relevant party.
3. Interconnection to the power grid
- a. The SOLAR FARM SPECIAL USE permit application shall include documentation that the applicant or SOLAR FARM is in the queue to acquire an interconnection agreement to the power grid.
 - b. Documentation of an executed interconnection agreement with the appropriate electric utility shall be provided prior to issuance of a Zoning Compliance Certificate to authorize operation of the SOLAR FARM.

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B. Minimum Lot Standards

1. There are no minimum LOT AREA, AVERAGE LOT WIDTH, SETBACK, YARD, or maximum LOT COVERAGE requirements for a SOLAR FARM or for LOTS for SOLAR FARM substations and/ or SOLAR FARM maintenance and management facilities.
2. There is no maximum LOT AREA requirement on BEST PRIME FARMLAND.

C. Minimum Standard Conditions for Separations for SOLAR FARM from adjacent USES and STRUCTURES

The location of each SOLAR FARM shall provide the following required separations as measured from the exterior of the above ground portion of the SOLAR FARM STRUCTURES and equipment except for fencing:

1. A SETBACK of 55 feet from a MINOR STREET and a SETBACK of 75 feet from a COLLECTOR STREET and a SETBACK of 85 feet from a MAJOR STREET.
2. At least 100 feet from any existing DWELLING or existing PRINCIPAL BUILDING and not less than 50 feet from the property line and provided that the noise level caused by the SOLAR FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.
3. A separation of at least 500 feet from any of the following unless the SPECIAL USE permit application includes results provided from an analysis using the Solar Glare Hazard Analysis Tool (SGHAT) for the Airport Traffic Control Tower cab and final approach paths, consistent with the Interim Policy, Federal Aviation Administration (FAA) Review of Solar Energy Projects on Federally Obligated Airports, or the most recent version adopted by the FAA, and the SGHAT results show no detrimental affect with less than a 500 feet separation from any of the following:
 - (a) any AIRPORT premises or any AIRPORT approach zone; or
 - (b) any legal RESTRICTED LANDING AREA that existed on or for which there had been a complete SPECIAL USE permit application received by April 22, 2010, or any approach zone for any such RESTRICTED LANDING AREA; or
 - (c) any legal RESIDENTIAL AIRPORT that existed on or for which there had been a complete SPECIAL USE permit application received by April 22, 2010, or any approach zone for any such RESIDENTIAL AIRPORT.

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- D. Standard Conditions for Design and Installation of any SOLAR FARM.
1. Any building that is part of a SOLAR FARM shall include as a requirement for a Zoning Compliance Certificate a certification by an Illinois Professional Engineer or Illinois Licensed Structural Engineer or other qualified professional that the constructed building conforms to Public Act 96-074 regarding building code compliance and conforms to the Illinois Accessibility Code.
 2. Electrical Components
 - (a) All electrical components of the SOLAR FARM shall conform to the National Electrical Code as amended.
 - (b) Burying power and communication wiring underground shall be minimized consistent with best management practice regarding solar farm construction and minimizing impacts on agricultural drainage tile.
 3. The SOLAR FARM shall comply with all applicable Federal Aviation Administration (FAA) requirements which shall be explained in the application.
 4. Maximum height. The height limitation established in Section 5.3 shall not apply to a SOLAR FARM. The maximum height of all above ground STRUCTURES shall be identified in the application and as approved in the SPECIAL USE permit.
 5. Warnings
 - (a) A reasonably visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and substations.
- E. Standard Conditions to Mitigate Damage to Farmland
1. All underground wiring or cabling for the SOLAR FARM shall be at a minimum depth of 5feet below grade or deeper if required to maintain a minimum one foot of clearance between the wire or cable and any agricultural drainage tile or a lesser depth if so authorized by the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.
 2. Protection of agricultural drainage tile
 - (a) The applicant shall endeavor to locate all existing agricultural drainage tile prior to establishing any construction staging areas,

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construction of any necessary SOLAR FARM access lanes or driveways, construction of any SOLAR FARM STRUCTURES, any common switching stations, substations, and installation of underground wiring or cabling. The applicant shall contact affected landowners and tenants and the Champaign County Soil and Water Conservation District and any relevant drainage district for their knowledge of tile line locations prior to the proposed construction. Drainage districts shall be notified at least two weeks prior to disruption of tile.

- (b) All identified drainage district tile lines shall be staked or flagged prior to construction to alert construction crews of the possible need for tile line repairs unless this requirement is waived in writing by the drainage district.
- (c) Any agricultural drainage tile located underneath construction staging areas, access lanes, driveways, any common switching stations, and substations shall be replaced as required in Section 6.3 of the Champaign County Champaign County Storm Water Management and Erosion Control Ordinance.
- (d) Any agricultural drainage tile that must be relocated shall be relocated as required in the Champaign County Champaign County Storm Water Management and Erosion Control Ordinance.
- (e) Conformance of any relocation of drainage district tile with the in the Champaign County Champaign County Storm Water Management and Erosion Control Ordinance shall be certified by an Illinois Professional Engineer. Written approval by the drainage district shall be received prior to any backfilling of the relocated drain tile and a copy of the approval shall be submitted to the Zoning Administrator. As-built drawings shall be provided to both the relevant drainage district and the Zoning Administrator of any relocated drainage district tile.
- (f) All tile lines that are damaged, cut, or removed shall be staked or flagged in such manner that they will remain visible until the permanent repairs are completed.
- (g) All exposed tile lines shall be screened or otherwise protected to prevent the entry into the tile of foreign materials, loose soil, small mammals, etc.
- (h) Permanent tile repairs shall be made within 14 days of the tile damage provided that weather and soil conditions are suitable or a temporary tile repair shall be made. Immediate temporary repair shall also be required if water is flowing through any damaged tile

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line. Temporary repairs are not needed if the tile lines are dry and water is not flowing in the tile provided the permanent repairs can be made within 14 days of the damage. All permanent and temporary tile repairs shall be made as detailed in the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.

- (i) All damaged tile shall be repaired so as to operate as well after construction as before the construction began.
 - (j) Following completion of the SOLAR FARM construction the applicant shall be responsible for correcting all tile line repairs that fail, provided that the failed repair was made by the Applicant.
3. All soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by SOLAR FARM construction shall be restored by the applicant to the pre- SOLAR FARM construction condition.
 4. Topsoil replacement

For any open trenching required pursuant to SOLAR FARM construction, the topsoil shall be stripped and replaced as follows:

- (a) The top 12 inches of topsoil shall first be stripped from the area to be trenched and from an adjacent area to be used for subsoil storage. The topsoil shall be stored in a windrow parallel to the trench in such a manner that it will not become intermixed with subsoil materials.
 - (b) All subsoil material that is removed from the trench shall be placed in the second adjacent stripped windrow parallel to the trench but separate from the topsoil windrow.
 - (c) In backfilling the trench, the stockpiled subsoil material shall be placed back into the trench before replacing the topsoil.
 - (d) The topsoil must be replaced such that after settling occurs, the topsoil's original depth and contour (with an allowance for settling) will be restored.
 - (e) All topsoil shall be placed in a manner consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.
5. Mitigation of soil compaction and rutting

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- (a) The Applicant shall not be responsible for mitigation of soil compaction and rutting if exempted by the SOLAR FARM lease.
 - (b) Unless specifically provided for otherwise in the SOLAR FARM lease, the Applicant shall mitigate soil compaction and rutting for all areas of farmland that were traversed with vehicles and construction equipment or where topsoil is replaced in open trenches.
 - (c) All mitigation of soil compaction and rutting shall be consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.

6. Land leveling

- (a) The Applicant shall not be responsible for leveling of disturbed land if exempted by the SOLAR FARM lease.
- (b) Unless specifically provided for otherwise in the SOLAR FARM lease, the Applicant shall level all disturbed land as follows:
 - (1) Following the completion of any open trenching, the applicant shall restore all land to its original pre-construction elevation and contour.
 - (2) Should uneven settling occur or surface drainage problems develop as a result of the trenching within the first year after completion, the applicant shall again restore the land to its original pre-construction elevation and contour.
- (c) All land leveling shall be consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q.

7. Permanent Erosion and Sedimentation Control Plan

- (a) Prior to the approval of any Zoning Use Permit, the Applicant shall provide a permanent soil erosion and sedimentation plan for the SOLAR FARM including any access road that conforms to the relevant Natural Resources Conservation Service guidelines and that is prepared by an Illinois Licensed Professional Engineer.
- (b) As-built documentation of all permanent soil erosion and sedimentation improvements for the SOLAR FARM including any access road prepared by an Illinois Licensed Professional Engineer shall be submitted and accepted by the Zoning Administrator prior to approval of any Zoning Compliance Certificate.

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8. Retention of all topsoil

No topsoil may be removed, stripped, or sold from the proposed SPECIAL USE Permit site pursuant to or as part of the construction of the SOLAR FARM.

F. Standard Conditions for Use of Public Streets

Any SOLAR FARM Applicant proposing to use any County Highway or a township or municipal STREET for the purpose of transporting SOLAR FARM or Substation parts and/or equipment for construction, operation, or maintenance of the SOLAR FARM or Substation(s), shall identify all such public STREETS and pay the costs of any necessary permits and the costs to repair any damage to the STREETS caused by the SOLAR FARM construction, as follows:

1. Prior to the close of the public hearing before the BOARD, the Applicant shall enter into a Roadway Upgrade and Maintenance agreement approved by the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, except for any COMMUNITY SOLAR FARM for which the relevant highway authority has agreed in writing to waive the requirements of subparagraphs 6.1.5 F. 1., 2., and 3., and the signed and executed Roadway Upgrade and Maintenance agreements must provide for the following minimum conditions:
 - (a) The applicant shall agree to conduct a pre- SOLAR FARM construction baseline survey to determine existing STREET conditions for assessing potential future damage including the following:
 - (1) A videotape of the affected length of each subject STREET supplemented by photographs if necessary.
 - (2) Pay for costs of the County to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the SOLAR FARM construction.
 - (3) Pay for any strengthening of STREET structures that may be necessary to accommodate the proposed traffic loads caused by the SOLAR FARM construction.
 - (b) The Applicant shall agree to pay for costs of the County Engineer to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the SOLAR FARM construction and pay for any strengthening

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of structures that may be necessary to accommodate the proposed traffic loads caused by the SOLAR FARM construction.

- (c) The Applicant shall agree upon an estimate of costs for any other necessary roadway improvements prior to construction.
- (d) The Applicant shall obtain any necessary approvals for the STREET improvements from the relevant STREET maintenance authority.
- (e) The Applicant shall obtain any necessary Access Permits including any required plans.
- (f) The Applicant shall erect permanent markers indicating the presence of underground cables.
- (g) The Applicant shall install marker tape in any cable trench.
- (h) The Applicant shall become a member of the Illinois state wide One-Call Notice System (otherwise known as the Joint Utility Locating Information for Excavators or "JULIE") and provide JULIE with all of the information necessary to update its record with respect to the SOLAR FARM.
- (i) The Applicant shall use directional boring equipment to make all crossings of County Highways for the cable collection system.
- (j) The Applicant shall notify the STREET maintenance authority in advance of all oversize moves and crane crossings.
- (k) The Applicant shall provide the County Engineer with a copy of each overweight and oversize permit issued by the Illinois Department of Transportation for SOLAR FARM construction.
- (l) The Applicant shall transport the SOLAR FARM loads so as to minimize adverse impact on the local traffic including farm traffic.
- (m) The Applicant shall schedule SOLAR FARM construction traffic in a way to minimize adverse impacts on emergency response vehicles, rural mail delivery, school bus traffic, and local agricultural traffic.
- (n) The Applicant shall provide as much advance notice as is commercially reasonable to obtain approval of the STREET maintenance authority when it is necessary for a STREET to be closed due to a crane crossing or for any other reason. Notwithstanding the generality of the

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aforementioned, the Applicant will provide 48 hours notice to the extent reasonably practicable.

- (o) The Applicant shall provide signs indicating all highway and STREET closures and work zones in accordance with the Illinois Department of Transportation Manual on Uniform Traffic Control Devices.
- (p) The Applicant shall establish a single escrow account and a single Irrevocable Letter of Credit for the cost of all STREET upgrades and repairs pursuant to the SOLAR FARM construction.
- (q) The Applicant shall notify all relevant parties of any temporary STREET closures.
- (r) The Applicant shall obtain easements and other land rights needed to fulfill the Applicant's obligations under this Agreement.
- (s) The Applicant shall agree that the County shall design all STREET upgrades in accordance with the IDOT Bureau of Local Roads and Streets Manual, 2005 edition.
- (t) The Applicant shall provide written Notice to Proceed to the relevant STREET maintenance authority by December 31 of each year that identifies the STREETS to be upgraded during the following year.
- (u) The Applicant shall provide dust control and grading work to the reasonable satisfaction of the County Engineer on STREETS that become aggregate surface STREETS.
- (v) The Applicant shall conduct a post- SOLAR FARM construction baseline survey similar to the pre- SOLAR FARM construction baseline survey to identify the extent of repairs necessary to return the STREET to the pre- SOLAR FARM construction condition.
- (w) The Applicant shall pay for the cost of all repairs to all STREETS that are damaged by the Applicant during the construction of the SOLAR FARM and restore such STREETS to the condition they were in at the time of the pre- SOLAR FARM construction inventory.
- (x) All SOLAR FARM construction traffic shall exclusively use routes designated in the approved Transportation Impact Analysis.
- (y) The Applicant shall provide liability insurance in an acceptable amount to cover the required STREET construction activities.
- (z) The Applicant shall pay for the present worth costs of life consumed by the construction traffic as determined by the pavement

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management surveys and reports on the roads which do not show significant enough deterioration to warrant immediate restoration.

(aa) Provisions for expiration date on the agreement.

(bb) Other conditions that may be required.

2. A condition of the County Board Special Use Permit approval shall be that the Zoning Administrator shall not authorize a Zoning Use Permit for the SOLAR FARM until the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, has approved a Transportation Impact Analysis provided by the Applicant and prepared by an independent engineer that is mutually acceptable to the Applicant and the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, that includes the following:

(a) Identify all such public STREETS or portions thereof that are intended to be used by the Applicant during construction of the SOLAR FARM as well as the number of loads, per axle weight of each load; and type of equipment that will be used to transport each load.

(b) A schedule of the across road culverts and bridges affected by the project and the recommendations as to actions, if any, required with respect to such culverts and bridges and estimated of the cost to replace such culverts and bridges;

(c) A schedule of the anticipated STREET repair costs to be made in advance of the SOLAR FARM construction and following construction of the SOLAR FARM.

(d) The Applicant shall reimburse the County Engineer; or Township Highway Commissioner; or municipality where relevant, for all reasonable engineering fees including the costs of a third party consultant, incurred in connection with the review and approval of the Transportation Impact Analysis.

3. At such time as decommissioning takes place the Applicant or its successors in interest shall enter into a Roadway use and Repair Agreement with the appropriate highway authority.

G. Standard Conditions for Coordination with Local Fire Protection District

1. The Applicant shall submit to the local fire protection district a copy of the site plan.

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2. Upon request by the local fire protection district, the Owner or Operator shall cooperate with the local fire protection district to develop the fire protection district's emergency response plan.
 3. Nothing in this section shall alleviate the need to comply with all other applicable fire laws and regulations.

H. Standard Conditions for Allowable Noise Level

1. Noise levels from any SOLAR FARM shall be in compliance with the applicable Illinois Pollution Control Board (IPCB) regulations (*35 Illinois Administrative Code* Subtitle H: Noise Parts 900, 901, 910).
2. The Applicant shall submit manufacturer's sound power level characteristics and other relevant data regarding noise characteristics of proposed SOLAR FARM equipment necessary for a competent noise analysis.
3. The Applicant, through the use of a qualified professional, as part of the siting approval application process, shall appropriately demonstrate compliance with the above noise requirements.
4. After construction of the SOLAR FARM the Zoning Administrator shall take appropriate enforcement action as necessary to investigate noise complaints in order to determine the validity of the complaints and take any additional enforcement action as proves warranted to stop any violation that is occurring, including but not limited to the following:
 - (a) The Zoning Administrator shall make the Environment and Land Use Committee aware of complaints about noise that have been received by the Complaint Hotline.
 - (b) If the Environment and Land Use Committee determines that the noise is excessive, the Environment and Land Use Committee shall require the Owner or Operator to take reasonable steps to mitigate the excessive noise.

I. Standard Conditions for Endangered Species Consultation

The Applicant shall apply for consultation with the Endangered Species Program of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the Endangered Species Program of the Illinois Department of Natural Resources or, if applicable, a copy of the Detailed Action Plan Report submitted to the Endangered Species Program of the Illinois Department of Natural Resources and a copy of the response from the Illinois Department of Natural Resources.

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J. Standard Conditions for Historic and Archaeological Resources Review

The Applicant shall apply for consultation with the State Historic Preservation Officer of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the State Historic Preservation Officer of the Illinois Department of Natural Resources.

K. Standard Conditions for Acceptable Wildlife Impacts

1. The SOLAR FARM shall be located, designed, constructed, and operated so as to avoid and if necessary mitigate the impacts to wildlife to a sustainable level of mortality.

L. Screening and fencing

1. Perimeter fencing

- (a) SOLAR FARM equipment and structures shall be fully enclosed and secured by a fence with a minimum height of 7 feet.
- (b) Knox boxes and keys shall be provided at locked entrances for emergency personnel access.
- (c) The perimeter fencing shall be a minimum of 10 feet from a SIDE or REAR LOT LINE and a minimum of 40 feet from a MINOR STREET and a minimum of 55 feet from a COLLECTOR STREET and a minimum of 60 feet from a MAJOR STREET but in no case shall the perimeter fencing be less than 10 feet from the RIGHT OF WAY of any STREET.
- (d) Vegetation between the fencing and the LOT LINE shall be maintained such that NOXIOUS WEEDS are controlled or eradicated consistent with the Illinois Noxious Weed Law (505 ILCS 100/1 et seq.). Management of the vegetation shall be explained in the application.

2. Screening

- (a) A visual screen shall be provided around the perimeter of the SOLAR FARM as follows:
 - (1) The visual screen shall be provided for any part of the SOLAR FARM that is visible to and located within 1,000 feet of a DWELLING or residential DISTRICT. However, the visual screen shall not be required if the SOLAR FARM is not visible to a DWELLING or residential DISTRICT by virtue of the existing topography.

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- (2) The visual screen shall be waived if the owner(s) of a relevant DWELLING(S) have agreed in writing to waive the screening requirement and a copy of the written waiver is submitted to the BOARD or GOVERNING BODY.
 - (3) The visual screen shall either be opaque fencing consistent with subparagraph 6.1.5 L.1. or a vegetated buffer as follows:
 - (a) A vegetated visual screen buffer shall include a continuous line of evergreen foliage and/ or any existing wooded area and/ or tallgrass prairie plantings that will conceal the SOLAR FARM from view from adjacent abutting property.
 - (b) Any vegetation that is part of the approved visual screen buffer shall be maintained in perpetuity.
 - (c) The continuous line of evergreen foliage shall be planted at a minimum height of 5 feet tall and shall be planted in multiple rows as required to provide a 50% screen within 2 years of planting. If the evergreen foliage below a height of 7 feet disappears over time the screening shall be replaced.
 - (d) A tallgrass prairie planting used as a visual screen buffer shall be at least 10 feet wide and shall be planted and maintained per the recommendations of the Natural Resources Conservation Service.
 - (e) Any vegetated screen buffer shall be detailed in a landscape plan drawing that shall be included with the SOLAR FARM SPECIAL USE permit application.

M. Standard Condition to Minimize Glare

1. The design and construction of the SOLAR FARM shall minimize glare that may affect adjacent properties and the application shall include an explanation of how glare will be minimized.
2. After construction of the SOLAR FARM the Zoning Administrator shall take appropriate enforcement action as necessary to investigate complaints of glare in order to determine the validity of the complaints and take any additional enforcement action as proves warranted to stop any significant glare that is occurring, including but not limited to the following:

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- (a) The Zoning Administrator shall make the Environment and Land Use Committee aware of complaints about glare that have been received by the Complaint Hotline.
 - (b) If the Environment and Land Use Committee determines that the glare is excessive, the Environment and Land Use Committee shall require the Owner or Operator to take reasonable steps to mitigate the excessive glare such as the installation of additional screening.

N. Standard Condition for Liability Insurance

- 1. The Owner or Operator of the SOLAR FARM shall maintain a current general liability policy covering bodily injury and property damage with minimum limits of a least \$5 million per occurrence and \$5 million in the aggregate.
- 2. The general liability policy shall identify landowners in the SPECIAL USE permit as additional insured.

O. Operational Standard Conditions

- 1. Maintenance
 - (a) The Owner or Operator of the SOLAR FARM must submit, on an annual basis, a summary of the operation and maintenance reports to the Environment and Land Use Committee and any other operation and maintenance reports as the Environment and Land Use Committee reasonably requests.
 - (b) Any physical modification to the SOLAR FARM that increases the number of solar conversion devices or structures and/ or the land area occupied by the SOLAR FARM shall require a new County Board SPECIAL USE Permit. Like-kind replacements shall not require re-certification nor will replacement of transformers, cabling, etc. provided replacement is done in a fashion similar to the original installation.
 - (c) The Application shall explain methods and materials used to clean the SOLAR FARM equipment including an estimation of the daily and annual gallons of water used and the source of the water and the management of wastewater. The BOARD may request copies of well records from the Illinois State Water Survey and may require an estimate by a qualified hydrogeologist of the likely impact on adjacent waterwells.

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2. Materials Handling, Storage and Disposal
 - (a) All solid wastes related to the construction, operation and maintenance of the SOLAR FARM shall be removed from the site promptly and disposed of in accordance with all federal, state and local laws.
 - (b) All hazardous materials related to the construction, operation and maintenance of the SOLAR FARM shall be handled, stored, transported and disposed of in accordance with all applicable local, state and federal laws.

 3. Vegetation management
 - (a) The SOLAR FARM SPECIAL USE permit application shall include a weed control plan for the total area of the SPECIAL USE permit including areas both inside of and outside of the perimeter fencing.
 - (b) The weed control plan shall ensure the control and/ or eradication of NOXIOUS WEEDS consistent with the Illinois Noxious Weed Law (505 ILCS 100/1 et seq.)
 - (c) The weed control plan shall be explained in the application.

 - P. Standard Condition for Decommissioning Plan and Site Reclamation Plan
 1. The Applicant shall submit a signed site reclamation plan conforming to the requirements of paragraph 6.1.1 A.
 2. In addition to the purposes listed in subparagraph 6.1.1 A. 4. the reclamation plan shall also include provisions for anticipated repairs to any public STREET used for the purpose of reclamation of the SOLAR FARM and all costs related to removal of access driveways.
 3. The site reclamation plan required in paragraph 6.1.1A. shall also include the following:
 - (a) A stipulation that the applicant shall notify the GOVERNING BODY by certified mail of the commencement of voluntary or involuntary bankruptcy proceeding, naming the applicant as debtor, within ten days of commencement of the proceeding.
 - (b) A stipulation that the applicant shall agree that the sale, assignment in fact or law, or such other transfer of applicant's financial interest in the SOLAR FARM shall in no way affect or change applicant's obligation to continue to comply with the terms of this plan. Any successor or assignee shall assume the terms, covenants, and

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obligations of this plan and agrees to assume all reclamation liability and responsibility for the SOLAR FARM.

- (c) Authorization for the GOVERNING BODY and its authorized representatives for right of entry onto the SOLAR FARM premises for the purpose of inspecting the methods of reclamation or for performing actual reclamation if necessary.
- (d) A stipulation that at such time as decommissioning takes place the applicant or its successors in interest are required to enter into a Roadway Use and Repair Agreement with the relevant highway authority.
- (e) A stipulation that the Applicant shall provide evidence of any new, additional, or substitute financing or security agreement to the Zoning Administrator throughout the operating lifetime of the project.
- (f) A stipulation that the Applicant shall be obliged to perform the work in the site reclamation plan before abandoning the SOLAR FARM or prior to ceasing production of electricity from the SOLAR FARM, after it has begun, other than in the ordinary course of business. This obligation shall be independent of the obligation to pay financial assurance, and shall not be limited by the amount of financial assurance. The obligation to perform the reclamation work shall constitute a covenant running with the land
- (g) The site reclamation plan shall provide for payment of any associated costs that Champaign County may incur in the event that decommissioning is actually required. Associated costs include all administrative and ancillary costs associated with drawing upon the financial assurance and performing the reclamation work and shall include but not be limited to attorney's fees; construction management and other professional service fees; and the costs of preparing request for proposals and bidding documents required to comply with state law or Champaign County purchasing policies.
- (h) The depth of removal of foundation concrete below ground shall be a minimum of 54 inches. The depth of removal of foundation concrete shall be certified in writing by an Illinois Licensed Professional Engineer and the certification shall be submitted to the Zoning Administrator.
- (i) The hole resulting from the removal of foundation concrete during decommissioning shall be backfilled as follows:
 - (1) The excavation resulting from the removal of foundation concrete shall only be backfilled with subsoil and topsoil in

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similar depths and similar types as existed at the time of the original SOLAR FARM construction except that a lesser quality topsoil or a combination of a lesser quality topsoil and a subsoil that is similar to the native subsoil may be used at depths corresponding to the native subsoil but not less than 12 inches below grade.

- (2) The native soils excavated at the time of the original SOLAR FARM construction may be used to backfill the concrete foundation excavations at the time of decommissioning provided that the soils are adequately stored throughout the operating lifetime of the SOLAR FARM. The methods for storing the excavated native soils during the operating lifetime of the SOLAR FARM shall be included in the site reclamation plan.
- (3) If the excavated native soils are not stored for use for backfilling the concrete foundation excavations, a qualified soil scientist or Illinois Licensed Professional Engineer shall certify that the actual soils used to backfill the concrete foundation excavations are of equal or greater quality than the native soils or that, in the case of subsoil, the backfill soil meets the requirements of this paragraph. The certification shall be submitted to the Zoning Administrator.
- (4) An Illinois Licensed Professional Engineer shall certify in writing that the concrete foundation excavations have been backfilled with soil to such a depth and with a minimum of compaction that is consistent with the restoration of productive agricultural use such that the depth of soil is expected to be no less than 54 inches within one year after backfilling.
- (j) A stipulation that should the site reclamation plan be deemed invalid by a court of competent jurisdiction the SOLAR FARM SPECIAL USE permit shall be deemed void.
- (k) A stipulation that the Applicant's obligation to complete the site reclamation plan and to pay all associated costs shall be independent of the Applicant's obligation to provide financial assurance.
- (l) A stipulation that the liability of the Applicant's failure to complete the site reclamation plan or any breach of the site reclamation plan requirement shall not be capped by the amount of the financial assurance.

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- (m) If the Applicant desires to remove equipment or property credited to the estimated salvage value without the concurrent replacement of the property with property of equal or greater salvage value or if the Applicant installs equipment or property increasing the cost of decommissioning after the SOLAR FARM begins to produce electricity, at any point, the Applicant shall first obtain the consent of the Zoning Administrator. If the Applicant's lien holders remove equipment or property credited to the salvage value the Applicant shall promptly notify the Zoning Administrator. In either of these events the total financial assurance shall be adjusted to reflect any change in total salvage value and total decommissioning costs resulting from any such removal or installation.
4. To comply with paragraph 6.1.1A.5., the Applicant shall provide financial assurance in the form of an irrevocable letter of credit and an escrow account as follows:
- (a) At the time of Special Use Permit approval the amount of financial assurance to be provided for the site reclamation plan shall be 150% of the decommissioning cost as determined in the independent engineer's cost estimate to complete the decommissioning work described in Sections 6.1.1A.4.a. and 6.1.1A.4.b. and 6.1.1A.4.c.
- (b) Net salvage value may be deducted from decommissioning costs as follows:
- (1) One of the following standards shall be met:
- a. The Applicant shall maintain the SOLAR FARM free and clear of liens and encumbrances, including financing liens and shall provide proof of the same prior to issuance of the SPECIAL USE Permit; or
 - b. The Applicant shall deduct from the salvage value credit the amount of any lien or encumbrance on the SOLAR FARM; or
 - c. Any and all financing and/or financial security agreements entered into by the Applicant shall expressly provide that the agreements are subject to the covenant required by Section 6.1.1.A.2 that the reclamation work be done.
- (2) The Applicant shall provide proof of compliance with paragraph 6.1.5P.4.(b)(1) prior to issuance of any Zoning Use Permit and upon every renewal of the financial assurance and at any other time upon the request of the Zoning Administrator.

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- (3) The Applicant shall provide in the site reclamation plan for legal transfer of the STRUCTURE to the demolisher to pay the costs of reclamation work, should the reclamation work be performed.
 - (4) The net estimated salvage value that is deducted from the estimated decommissioning costs shall be the salvage value that results after all related costs for demolition and any required preparation for transportation for reuse or recycling or for simple disposal and other similar costs including but not limited to the decommissioning of the SOLAR FARM STRUCTURES, equipment, and access roads.
 - (5) Estimated salvage value shall be based on the average salvage price of the past five years as published in a reputable source for salvage values and shall reflect sound engineering judgment as to anticipated changes in salvage prices prior to the next update of estimated net salvage value.
 - (6) The deduction from the estimated decommissioning costs for net estimated salvage value shall be capped at 70% of the total net estimated salvage value even though the total actual salvage value shall be available in the event that decommissioning is actually required.
 - (7) The total financial assurance after deduction of the net estimated salvage value shall not be less than \$1,000 per acre.
 - (8) The credit for net estimated salvage value attributable to any SOLAR FARM may not exceed the estimated cost of removal of the above-ground portion of that SOLAR FARM on the subject site.
- (c) The GOVERNING BODY has the right to require multiple letters of credit based on the regulations governing federal insurance for deposits.
- (d) The Applicant shall adjust the amount of the financial assurance to ensure that it reflects current and accurate information as follows:
- (1) At least once every three years for the first 12 years of the financial assurance and at least once every year thereafter the Applicant shall use an independent Illinois Licensed Professional Engineer to provide updated estimates of decommissioning costs and salvage value, by including any changes due to inflation and/or change in salvage price. The

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Applicant shall, upon receipt, provide a copy of the adjusted Professional Engineer's report to the Zoning Administrator.

- (2) At all times the total combined value of the irrevocable letter of credit and the escrow account shall equal or exceed the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation based on the Consumer Price Index since the SOLAR FARM was approved.
- (e) The applicant or SOLAR FARM owner shall gradually pay down the value of the irrevocable letter of credit by placing cash deposits in an escrow account in equal annual installments over the first 13 years of the SOLAR FARM operation as follows:
- (1) The applicant or SOLAR FARM owner and the GOVERNING BODY shall agree on a mutually acceptable financial institution at which an escrow account shall be established.
 - (2) The GOVERNING BODY shall be the beneficiary of the escrow account for the purpose of the reclamation of the SOLAR FARM in the event that the SOLAR FARM owner is incapable of decommissioning the SOLAR FARM.
 - (3) The applicant or SOLAR FARM owner shall grant perfected security in the escrow account by use of a control agreement establishing the County as an owner of record, pursuant to the Secured Transactions Article of the Uniform Commercial Code, 810 ILCS 9/101 et seq.
 - (4) The applicant or SOLAR FARM owner shall make annual deposits to the escrow account over a 12 year period and shall simultaneously provide a replacement irrevocable letter of credit that is reduced accordingly.
 - (5) At all times the total combined value of the irrevocable letter of credit and the escrow account shall be increased annually as necessary to reflect actual rates of inflation over the life span of the SOLAR FARM and the amount shall be equal to or exceed 150% of the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation since the SOLAR FARM was approved;
 - (6) Any interest accrued on the escrow account that is over and above the total value required by subparagraph 6.1.5P.4.(b)(4) shall go to the SOLAR FARM owner.

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- (7) In order to provide funding for decommissioning at the time of decommissioning, the SOLAR FARM applicant or SOLAR FARM owner may exchange a new irrevocable letter of credit in an amount equal to the amount in the escrow account in exchange for the GOVERNING BODY agreeing to a release of the full amount of the escrow account.
- (f) Should the salvage value of components be adjusted downward or the decommissioning costs adjusted upward pursuant to paragraph 6.1.5P.4.(d), the amount to be placed in the escrow account pursuant to this paragraph 6.1.5.P.4. shall be increased to reflect the adjustment, as if the adjusted estimate were the initial estimate.
- (g) Any financial assurance required per the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 Q. shall count towards the total financial assurance required for compliance with paragraph 6.1.1A.5.
5. In addition to the conditions listed in subparagraph 6.1.1A.9. the Zoning Administrator may also draw on the funds for the following reasons:
- (a) In the event that any SOLAR FARM or component thereof ceases to be functional for more than six consecutive months after it starts producing electricity and the Owner is not diligently repairing such SOLAR FARM or component.
- (b) In the event that the Owner declares the SOLAR FARM any SOLAR FARM component to be functionally obsolete for tax purposes.
- (c) There is a delay in the construction of any SOLAR FARM of more than 6 months after construction on that SOLAR FARM begins.
- (d) Any SOLAR FARM or component thereof that appears in a state of disrepair or imminent collapse and/or creates an imminent threat to the health or safety of the public or any person.
- (e) Any SOLAR FARM or component thereof is otherwise derelict for a period of 6 months.
- (f) The SOLAR FARM is in violation of the terms of the SOLAR FARM SPECIAL USE permit for a period exceeding ninety (90) days.
- (g) The Applicant has failed to maintain financial assurance in the form and amount required by the special use permit or compromised the COUNTY's interest in the site reclamation plan.

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- (h) The COUNTY discovers any material misstatement of fact or misleading omission of fact made by the Applicant in the course of the special use permit zoning case.
 - (i) The Applicant has either failed to receive a copy of the certification of design compliance required by paragraph 6.1.5D. or failed to submit it to the County within 12 consecutive months of receiving a Zoning Use Permit regardless of the efforts of the Applicant to obtain such certification.
6. The Zoning Administrator may, but is not required to, deem the SOLAR FARM abandoned, or the standards set forth in Section 6.1.5.P.5. met, with respect to some, but not all, of the SOLAR FARM. In that event, the Zoning Administrator may draw upon the financial assurance to perform the reclamation work as to that portion of the SOLAR FARM only. Upon completion of that reclamation work, the salvage value and reclamation costs shall be recalculated as to the remaining SOLAR FARM.
 7. The Site Reclamation Plan shall be included as a condition of approval by the BOARD and the signed and executed irrevocable letter of credit and evidence of the escrow account must be submitted to the Zoning Administrator prior to any Zoning Use Permit approval.
- Q. Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture.
1. The Applicant shall enter into an Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture.
 2. The Applicant shall bear full responsibility for coordinating any special conditions required in the SPECIAL USE Permit in order to ensure compliance with the signed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture.
 3. All requirements of the signed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture shall become requirements of the County Board SPECIAL USE Permit.
 4. Champaign County shall have the right to enforce all requirements of the signed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture
- R. Complaint Hotline
1. Prior to the commencement of construction on the SOLAR FARM and during the entire term of the County Board SPECIAL USE permit and any

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extension, the Applicant and Owner shall establish a telephone number hotline for the general public to call with any complaints or questions.

2. The telephone number hotline shall be publicized and posted at the operations and maintenance center and the construction marshalling yard.
3. The telephone number hotline shall be manned during usual business hours and shall be an answering recording service during other hours.
4. Each complaint call to the telephone number hotline shall be logged and identify the name and address of the caller and the reason for the call.
5. All calls shall be recorded and the recording shall be saved for transcription for a minimum of two years.
6. A copy of the telephone number hotline shall be provided to the Zoning Administrator on a monthly basis.
7. The Applicant and Owner shall take necessary actions to resolve all legitimate complaints.

S. Standard Condition for Expiration of SOLAR FARM County Board SPECIAL USE Permit

A SOLAR FARM County Board SPECIAL USE Permit designation shall expire in 10 years if no Zoning Use Permit is granted.

T. Application Requirements

1. In addition to all other information required on the SPECIAL USE Permit application and required by Section 9.1.11 A. 2. the application shall contain or be accompanied by the following information:
 - (a) A SOLAR FARM Project Summary, including, to the extent available:
 - (1) A general description of the project, including its approximate DC and AC generating capacity; the maximum number and type of solar devices; the potential equipment manufacturer(s).
 - (2) The specific proposed location of the SOLAR FARM including all tax parcels on which the SOLAR FARM will be constructed.
 - (3) The specific proposed location of all tax parcels required to be included in the SOLAR FARM County Board SPECIAL USE Permit.

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- (4) A description of the Applicant; Owner and Operator, including their respective business structures.
- (b) The name(s), address(es), and phone number(s) of the Applicant(s), Owner and Operator, and all property owner(s) for the SOLAR FARM County Board SPECIAL USE permit.
- (c) A site plan for the SOLAR FARM indicating the following:
 - (1) The approximate planned location of all SOLAR FARM STRUCTURES, property lines (including identification of adjoining properties), required separations, public access roads and turnout locations, access driveways, solar devices, electrical inverter(s), electrical transformer(s), cabling, switching station, electrical cabling from the SOLAR FARM to the Substations(s), ancillary equipment, screening and fencing, third party transmission lines, meteorological station, maintenance and management facilities, and layout of all structures within the geographical boundaries of any applicable setback.
 - (2) The site plan shall clearly indicate the area of the proposed SOLAR FARM County Board SPECIAL USE Permit as required by subparagraph 6.1.5A.1.
 - (3) The location of all below-ground wiring.
 - (4) The location, height, and appearance of all above-ground wiring and wiring structures.
 - (5) The separation of all SOLAR FARM structures from adjacent DWELLINGS and/ or PRINCIPAL BUILDINGS or uses shall be dimensioned on the approved site plan and that dimension shall establish the effective minimum separation that shall be required for any Zoning Use Permit. Greater separation and somewhat different locations may be provided in the approved site plan for the Zoning Use Permit provided that that the greater separation does not increase the noise impacts and /or glare that were approved in the SOLAR FARM County Board SPECIAL USE Permit. SOLAR FARM structures includes substations, third party transmission lines, maintenance and management facilities, or other significant structures.
- (d) All other required studies, reports, certifications, and approvals demonstrating compliance with the provisions of this Ordinance.

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- 2. The Applicant shall notify the COUNTY of any changes to the information provided above that occurs while the County Board SPECIAL USE permit application is pending.
 - 3. The Applicant shall include a copy of the signed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture with the Zoning Use Permit Application to authorize construction.

9. Add the following paragraph 9.3.1 J. for Zoning Use Permit fee:

- J. SOLAR FARM \$1,800 per megawatt
(includes COMMUNITY SOLAR FARM)

10. Revise subsection 9.3.3 as follows:

9.3.3 Zoning Case Filing Fees

A. General Provisions

- 1. No zoning case filing shall be accepted until the filing fee has been paid.
- 2. No zoning case filing fee shall be waived unless the Zoning Administrator determines that the petition is the only means reasonably available to bring a property into compliance with the provisions of this ordinance and the non-compliance is due solely to staff error.
- 3. No zoning case filing fee shall be refunded after required legal notice has been made by mail or publication unless the Zoning Administrator determines such filing to have been based solely upon staff error.
- 4. No amendment to any petition which requires new legal notice shall be considered until an amended petition fee has been received unless the Zoning Administrator determines such amendment to be required due solely to staff error.
- 5. The fee for SPECIAL USE permits shall be determined based on the larger of the following (except for County Board WIND FARM or SOLAR FARM SPECIAL USE Permits):
 - a. the area of farmland taken out of production as a result of the SPECIAL USE; or
 - b. when farmland will not be taken out of production as a result of the SPECIAL USE, the land area taken up by the existing

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STRUCTURES and all proposed CONSTRUCTION proposed in the SPECIAL USE application.

- 6. When some combination of VARIANCE, SPECIAL USE and Map Amendment cases is required simultaneously for the same property, the total filing fee shall include the following (except for County Board WIND FARM or SOLAR FARM Special Use Permits):
 - a. The standard fee for the most expensive individual zoning case; and
 - b. one-half of the standard fee for any other required VARIANCE, SPECIAL USE, or Map Amendment provided that
 - c. no additional fees shall be included for multiple zoning cases of the same type that can be advertised in the same legal advertisement.

B. Fees

1. VARIANCES

- a. ADMINISTRATIVE VARIANCES \$100
- b. Minor or Major VARIANCES \$200

2. SPECIAL USE permits and Map Amendments (except for County Board WIND FARM or SOLAR FARM Special Use Permit)

- a. Two acres or less and Base Fee for larger areas \$400
- b. More than two acres but no more than 12 acres add \$40 per acre to Base Fee for each acre over two acres
- c. More than 12 acres add \$10 per acre for each acre over 12 acres and add to fees in a. and b. above

3. Appeals and Interpretations.....\$200

4. Change of Nonconforming Use\$100

5. Amendment to Petitions (requiring new legal notice) \$100

6. County Board WIND FARM Special Use Permit..... \$20,000 or \$440 per WIND FARM TURBINE TOWER, whichever is greater

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7. BIG WIND TURBINE TOWER SPECIAL USE Permit per BIG WIND TURBINE TOWER.....\$3,300

8. County Board SOLAR FARM Special Use Permit

SOLAR FARM with not more than 7 megawatt nameplate rating.....\$1,320 per megawatt (includes COMMUNITY SOLAR FARM)

SOLAR FARM with nameplate rating of 8 to 112 megawatts.....\$9,240 plus \$102 for each megawatt more than 7 megawatts

SOLAR FARM with more than 112 megawatt nameplate rating..... \$173 per megawatt