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

CASE NO. 895-AT-18

SUPPLEMENTAL MEMORANDUM #11
April 20, 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

STATUS

As a follow up to discussion at the April 12 public hearing, information from the Table of Various Indoor and Outdoor Sound Levels from the *STUDY OF ACOUSTIC AND EMF LEVELS FROM SOLAR PHOTOVOLTAIC PROJECTS* by the Massachusetts Clean Energy Center (Attachment G to Supplemental Memorandum #6) has been inserted into a table – see the "Noise Table" section below and Attachment B for the table.

Public comments received by P&Z Staff via email can be found in the Attachments.

Based on research and public input to date, P&Z Staff recommends revisions to the proposed ordinance – see the "Updated Revised Amendment" section below for a summary. A revised amendment can be found in Attachment R (annotated) and Attachment S (clean). Note that the numbering hierarchy has changed for consistency; all text is still in the same order as previous drafts. Any references made in this memo to the revised proposed amendment dated April 26, 2018, will use the new numbering hierarchy.

A revised Finding of Fact dated April 26, 2018can be found in the "Revised Draft Finding of Fact" section below and in Attachment T.

NOISE TABLE

As a follow up to discussion at the April 12, 2018 public hearing, information from the Table of Various Indoor and Outdoor Sound Levels from the *STUDY OF ACOUSTIC AND EMF LEVELS FROM SOLAR PHOTOVOLTAIC PROJECTS* by the Massachusetts Clean Energy Center (Attachment G to Supplemental Memorandum #6) has been inserted into a table that also includes the following additional information:

- Approximate Illinois Pollution Control Board Maximum Sound Emitted to Class A Land (nighttime and daytime).

- Various approximate Illinois Pollution Control Board Long Term Ambient Background Noise Levels (nighttime and daytime for Rural; Quiet Residential; and Moderate Residential).

- The pre-development ambient noise levels for the California Ridge Wind Farm (an average as measured at two locations).

- The sound level from an SMA solar farm inverter as measured by the manufacturer at 32.8 feet and as calculated at 475 feet.

UPDATED REVISED AMENDMENT

An updated amendment is attached that includes the revisions from Supplemental Memorandum #10 and the following additional revisions:

Regarding Federal Communications Commission (FCC) Requirements

Revise 6.1.5E.(2)a. as follows:

a. All electrical components of the PV SOLAR FARM shall conform to the National Electrical Code as amended and shall comply with Federal Communications Commission (FCC) requirements.

Regarding protection of Best Prime Farmland

Staff has eliminated the proposed comparison of disturbance of best prime farmland caused by alternative by-right residential development (Sec. 6.1.5 F.(9)). This comparison has been eliminated due to concerns of a lack of clear standards. It is assumed this will be a consideration in any PV SOLAR FARM but will not a standard condition. Paragraph 6.1.5 F.(9) has been amended as follows:

(9) Minimizing disturbance to BEST PRIME FARMLAND

a. Any PV SOLAR FARM to be located on BEST PRIME FARMLAND shall minimize the disturbance to BEST PRIME FARMLAND as follows:

(a) The disturbance to BEST PRIME FARMLAND caused by construction and operation of the PV SOLAR FARM shall be minimized at all times consistent with good engineering practice.

~~(2~~b~~)~~ ~~The total amount of~~ proposed ~~disturbance to BEST PRIME FARMLAND due to construction of solar photovoltaic arrays, interior access roads, equipment pads, underground cabling, transmission lines, and substations shall not exceed the disturbance that might otherwise occur due to construction of DWELLINGS that are permissible by right absent the construction of the PV SOLAR FARM. The~~ assumed ~~disturbance caused by construction of the DWELLINGS shall assume DWELLINGS of typical size and~~ shall

~~also include the related construction of driveways, septic systems (both active and reserve), and ACCESSORY BUILDINGS of typical size and quantity.~~

Regarding screening and fencing

Regarding fencing, proposed Section 6.1.5 M.(1) has been amended as follows:

(1) Perimeter fencing

a. PV 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~~ PV SOLAR FARM perimeter fencing shall be ~~a minimum of 10 feet from a SIDE or REAR LOT LINE but not less than 25 feet from the property line of any adjacent LOT that is three acres or less in area 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 unless a greater separation is required by Section 6.1.5 D. and/or unless a greater separation is required for screening pursuant to Section 6.1.5 M.(2)a., 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.

e. Required location of fencing in relation to NON-PARTICIPATING properties:

(a) The perimeter fencing shall be a minimum of ~~10~~ 200 feet from a SIDE or REAR LOT LINE ~~but not less than 25 feet from the property line~~ of any adjacent LOT that is ~~three~~ five acres or less in area (not including the STREET RIGHT OF WAY).

(b) The perimeter fencing shall be a minimum of 10 feet from a SIDE or REAR LOT LINE but not less than 250 feet from any existing DWELLING or existing PRINCIPAL BUILDING of any adjacent LOT that is greater than five acres in area.

Regarding screening, proposed Section 6.1.5. M includes the following changes (summarized):

- Minimum 30 feet width/depth (increased from 10 feet) for plantings of tall native grasses and other native flowering plants to be used for screening and a requirement that the perimeter fence be opaque.

- Minimum 30 feet width/depth for agricultural crop production (a new proposal) used for screening and a requirement that the perimeter fence be opaque.

- Added NRCS Practice Standard 380 (see attached) as source of standards to guide plantings of shrubs and trees. Note this standard will allow three rows of deciduous shrubs or trees in lieu of evergreen plantings and this standard also provides guidance to minimize snow accumulation from plantings along streets.

Proposed Section 6.1.5 M.(2) has been amended as follows (full text):

(2) Screening

a. A visual screen shall be provided around the perimeter of the PV SOLAR FARM as follows:

(a) The visual screen shall be provided for any part of the PV 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 PV SOLAR FARM is not visible to a DWELLING or residential DISTRICT by virtue of the existing topography.

(b) 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.

(c) The visual screen shall be a vegetated buffer as follows:

i. A vegetated visual screen buffer shall include a continuous line of native evergreen foliage and/or native shrubs and/or native trees and/or any existing wooded area and/ or ~~tallgrass prairie~~ plantings of tall native grasses and other native flowering plants and/or an area of agricultural crop production that will conceal the PV SOLAR FARM from view from adjacent abutting property.

ii. Any vegetation that is part of the approved visual screen buffer shall be maintained in perpetuity of the PV SOLAR FARM. If the evergreen foliage below a height of 7 feet disappears over time, the screening shall be replaced.

iii. The continuous line of native evergreen foliage and/or native shrubs and/or native trees 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. The planting shall conform to Natural Resources Conservation Service Practice Standard 380 Windbreak/Shelterbreak Establishment.

iv. A ~~tallgrass prairie~~ planting of tall native grasses and other native flowering plants may be used as a visual screen buffer for any PV module installation that is no more than 8 feet tall provided that ~~and~~ the planting shall be at least ~~10~~ 30 feet ~~wide~~ in depth and shall be planted and maintained per the recommendations of the Natural Resources Conservation Service Practice Standard 327 Conservation Cover and further provided that the PV SOLAR FARM perimeter fence is opaque.

v. An area of agricultural crop production that is at least 30 feet in depth and provided that the PV SOLAR FARM perimeter fence is opaque. Any area of crop production that is used as a vegetated visual screen shall be planted annually and shall be replanted as necessary to ensure a crop every year regardless of weather or market conditions.

vi. Any vegetated screen buffer shall be detailed in a landscape plan drawing that shall be included with the PV SOLAR FARM SPECIAL USE permit application.

REVISED DRAFT FINDING OF FACT

An updated Draft Finding of Fact is attached that includes the following new evidence:

1. New evidence regarding Governmental Coordination (Goal 2) including a summary of public testimony (see item 7.).

2. New evidence regarding compliance with Policy 4.1.6b. (item 9.A.(2)) regarding conversion of best prime farmland by non-residential discretionary development.

3. New evidence related to Policy 4.2.2 (item 9.B.(2)) regarding the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture.

4. Summary of public testimony regarding concerns about property value impacts (item 16.B.(1)).

5. Previous evidence reviewed in Supplement Memorandum #10 regarding property value impacts (see item 16.B.(2)). Note that the Board has not yet determined whether to accept the statement "**The ZBA has concluded that, in general, a photovoltaic solar farm will not harm the value of adjacent or nearby property**."

6. New evidence regarding positive effects on Equalized Assess Valuation that will benefit taxing districts from either of two bills pending in the legislature (Senate Bill 486 and House Bill 5284; see item 16.B.(3)).

7. New evidence regarding decommissioning and site reclamation and the alternative decommissioning standard (see items 16.B.(4) and (5)).

8. New evidence regarding promotion of public health, safety, comfort, morals, and general welfare (item 16.E.) including a summary of public testimony.

9. A Summary Finding of Fact that recommends that the proposed Zoning Ordinance text amendment ***IS NECESSARY TO ACHIEVE*** the Land Resource Management Plan (see the Summary Finding of Fact).

ATTACHMENTS

A Legal advertisement
B Noise Table created by P&Z Staff on April 16, 2018; includes data from "Table of Various Indoor and Outdoor Sound Levels" from the *Study of Acoustic and EMF Levels from Solar Photovoltaic Projects* by the Massachusetts Clean Energy Center, 2012.
C Email from Chris Hitz (series of tables) received April 12, 2018
D Email from Curtis Frazier received April 12, 2018
E Email from Ming Kuo received April 12, 2018
F Email from Mona Jawad received April 12, 2018
G Email from Ron Becker received April 13, 2018
H Email from Nathaniel Forsythe received April 13, 2018
I Email from Daniel Maloney received April 13, 2018
J Email from Phillip Geil received April 13, 2018
K Email from Kathy Shannon received April 16, 2018
L Email from Marya Ryan received April 17, 2018
M Email from Suzanne Smith received April 18, 2018
N Email from Jonathan Livingood received April 18, 2018
O *Illinois Biology Technical Note No. 22: Planning Tree and Shrub Plantings for Wildlife*, Natural Resources Conservation Service, May 2007
P *Conservation Practice Standard 327: Conservation Cover*, Natural Resources Conservation Service, January 2017
Q *Conservation Practice Standard 380: Windbreak/Shelterbelt Establishment*, Natural Resources Conservation Service, October 2012
R Updated Revised Text Amendment dated April 26, 2018 – annotated
S Updated Revised Text Amendment dated April 26, 2018 – clean
T Revised Finding of Fact dated April 26, 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

Various Indoor and Outdoor Sound Levels

Noise levels from "Study of Acoustic and EMF Levels from Solor PV Projects", Massachusetts Clean Energy Center, December 17, 2012

Additional noises relevant to proposed text amendment

Outdoor Sound Levels	Sound Pressure (µPa)	Sound Level (dBA)	Indoor Sound Levels
	6,324,555	110	Rock Band at 5m
Jet Over-Flight at 300 m		105	
	2,000,000	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		95	
	632,456	90	Food Blender at 1 m
Diesel Truck at 15 m		85	
Noisy Urban Area--Daytime	200,000	80	Garbage Disposal at 1 m
		75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		65	Normal Speech at 1 m
SMA Inverter Model SC 2750EV at 10 m (32.8 ft)		64.3	
Quiet Urban Area -- Daytime	20,000	60	
		55	Quiet Conversation at 1 m
Average measured ambient (background) noise levels for the California Ridge Wind Farm - Daytime (pre-development)		52	
*IPCB Maximum Sound Emitted to Class A Land - Daytime		51.7	
Quiet Urban Area--Nighttime	6,325	50	Dishwasher Next Room
*IPCB Long Term Background Ambient Noise Level (Leq) for Land Use Category 3 (Moderate Residential Area) - Daytime		47	
		45	
Average measured ambient (background) noise levels for the California Ridge Wind Farm - nighttime (pre-development)		44	
*IPCB Long Term Background Ambient Noise Level (Leq) for Land Use Category 3 (Moderate Residential Area) - Nighttime		41.3	
*Calculated sound level from SMA Inverter at 475 feet		41.1	
*IPCB Long Term Background Ambient Noise Level (Leq) for Land Use Category 4 (Quiet Residential Area) - Daytime		40	
Suburban Area--Nighttime	2,000	40	Empty Theater or Library
*IPCB Maximum Sound Emitted to Class A Land - Nighttime		37.5	
IPCB Long Term Background Ambient Noise Level (Leq) for Land Use Category 4 (Quiet Residential Area) - Nighttime		35	
		35	
IPCB Long Term Background Ambient Noise Level (Leq) for Land Use Category 5 (Rural Area) - Daytime		34	
Rural Area--Nighttime	632	30	Quiet Bedroom at Night
IPCB Long Term Background Ambient Noise Level (Leq) for Land Use Category 5 (Rural Area) - Nighttime		28.8	
		25	Empty Concert Hall
Rustling Leaves	200	20	Average Whisper
		15	Broadcast and Recording Studios
	63	10	
		5	Human Breathing
Reference Pressure Level	20	0	Threshold of Hearing

* Online Noise Criterion calculator used: https://apps.engineeringtoolbox.com/noise-criterion-nc-a_21.html

** Online sound calculator used: http://hyperphysics.phy-astr.gsu.edu/hbase/Acoustic/isprob2.html

RECEIVED
APR 12 2018
CHAMPAIGN CO. P & Z DEPARTMENT

From: Chris Hitz <chrishitz73@gmail.com>
Sent: Thursday, April 12, 2018 9:07 PM
To: zoningdept <zoningdept@co.champaign.il.us>
Subject: Att Susan burgstrom

Number of clear, partly cloudy, and cloudy days for sites in Illinois.
Prepared by Jim Angel, state climatologist, Illinois State Water Survey, 2010.

DATA THROUGH 2009

	YEARS	JAN			FEB			MAR		
		CLEAR	PART CLDY	CLDY	CLEAR	PART CLDY	CLDY	CLEAR	PART CLDY	CLDY
CAIRO,IL	30	8	6	17	8	6	14	9	8	15
CHICAGO,IL	37	7	6	18	6	6	16	5	8	18
MOLINE, IL	62	8	7	16	7	6	15	6	8	17
PEORIA, IL	52	7	6	18	7	6	16	6	7	18
ROCKFORD, IL	45	7	7	17	7	6	15	6	8	17
SPRINGFIELD, IL	48	7	6	17	7	6	15	6	7	18

	YEARS	APR			MAY			JUN		
		CLEAR	PART CLDY	CLDY	CLEAR	PART CLDY	CLDY	CLEAR	PART CLDY	CLDY
CAIRO,IL	30	8	9	13	8	10	13	8	12	10
CHICAGO,IL	37	6	8	16	7	10	14	7	11	11
MOLINE, IL	62	7	9	15	8	9	14	7	11	12
PEORIA, IL	52	6	8	16	7	10	14	7	11	12
ROCKFORD, IL	45	6	8	16	8	9	14	7	11	12
SPRINGFIELD, IL	48	7	8	15	8	9	14	8	9	12

	YEARS	JUL			AUG			SEP		
		CLEAR	PART CLDY	CLDY	CLEAR	PART CLDY	CLDY	CLEAR	PART CLDY	CLDY
CAIRO,IL	30	9	13	10	12	11	8	12	9	9
CHICAGO,IL	37	8	12	10	9	11	11	9	10	11
MOLINE, IL	62	10	12	9	10	11	10	12	8	11
PEORIA, IL	52	9	12	10	10	10	10	11	9	10
ROCKFORD, IL	45	9	12	10	9	11	11	10	9	12
SPRINGFIELD, IL	48	10	11	10	11	10	10	12	8	10

	YEARS	OCT			NOV			DEC			ANNUAL		
		CLEAR	PART CLDY	CLDY	CLEAR	PART CLDY	CLDY	CLEAR	PART CLDY	CLDY	CLEAR	PART CLDY	CLDY
CAIRO,IL	30	15	7	9	9	8	13	8	7	16	113	104	149
CHICAGO,IL	37	9	9	14	5	6	18	6	6	19	84	105	176
MOLINE, IL	62	12	8	12	7	7	16	7	6	18	101	100	164
PEORIA, IL	52	11	8	12	7	6	17	7	6	19	95	97	172
ROCKFORD, IL	45	10	7	13	6	6	18	7	6	19	93	98	174
SPRINGFIELD, IL	48	12	7	12	8	6	16	7	6	18	104	94	167

Data Source: http://www.ncdc.noaa.gov/oa/climate/online/ccd/clpcdy.txt

Susan Burgstrom

From: John Hall
Sent: Thursday, April 12, 2018 4:45 PM
To: Susan Burgstrom
Subject: FW: Comments on the Solar Ordinance for the Record

Follow Up Flag: Follow up
Flag Status: Flagged

From: Curtis Frazier [mailto:curtis.wyffels@gmail.com]
Sent: Thursday, April 12, 2018 4:40 PM
To: John Hall <jhall@co.champaign.il.us>
Subject: Comments on the Solar Ordinance for the Record

Champaign County should NOT be limiting any use renewalable energy. Solar panels should not be limited to rooftops only. A solar farm can provide safe, efficient renewable energy for our country. We should be progressive in wanting better energy sources for our future.

Curtis Frazier
2606 W John St.
Champaign, IL 61821
309-265-7396
--
—
Curtis M Frazier
M: 309.265.7396

Susan Burgstrom

From: John Hall
Sent: Friday, April 13, 2018 8:27 AM
To: Susan Burgstrom
Subject: FW: Comments on the Solar Ordinance for the Record

From: Ming Kuo [mailto:ming123@mac.com]
Sent: Thursday, April 12, 2018 6:30 PM
To: John Hall <jhall@co.champaign.il.us>
Subject: Comments on the Solar Ordinance for the Record

Dear John:

I am a resident of Champaign County (Urbana, IL), and I am writing to oppose the proposed increase in setbacks for solar farms from 250ft to 500-1000ft.

Increasing solar farms is good economically for our county — increasing jobs, good for our environment, and makes sense fiscally (since our taxes are already going into the solar incentives, and allowing large-scale projects will help us recoup as much of that investment as possible).

By comparison to living next to farmland, surely the potential nuisance of glare is trivial compared to the pesticide drift associated with most cropland.

I hope you will vote no on this proposed increase in setbacks. Thank you.

Ming Kuo
504 West Vermont Avenue
Urbana, IL 61801

(217) 898-7600)

Susan Burgstrom

From: John Hall
Sent: Friday, April 13, 2018 8:27 AM
To: Susan Burgstrom
Subject: FW: Comments on the Solar Ordinance for the Record

From: Mona Jawad [mailto:jawadmona22@gmail.com]
Sent: Thursday, April 12, 2018 6:17 PM
To: John Hall <jhall@co.champaign.il.us>
Subject: Comments on the Solar Ordinance for the Record

Good afternoon Administrator Hall,

My name is Mona Jawad, and I am currently a high school student at Centennial High School in Champaign, Illinois. After recently hearing about the new push for setbacks on solar installation, I wanted to reach out and tell you how important it is to the youth in my generation and I that we don't limit our opportunities for renewable energy in the future.

I believe it is vital that we allow solar farms to grow in our community because they are a huge step forward in securing the sustainability of our town. To that extent, I ask that you include a less than 250 ft. setback requirement in the solar ordinance, in order to maintain the integrity of our future, increase green jobs, and improve our prospects for renewable energy in the future.

Thank you very much for your time and consideration.

Sincerely,
Mona Jawad
1917 Maynard Drive, Champaign IL
61822
217-649-7714

Susan Burgstrom

From: Lori Busboom
Sent: Friday, April 13, 2018 8:00 AM
To: John Hall; Susan Burgstrom
Subject: FW: Google view of Grandridge Solar Farm

From: Ron Becker <rbecker@ibew601.org>
Sent: Thursday, April 12, 2018 9:23 PM
To: zoningdept <zoningdept@co.champaign.il.us>
Subject: Google view of Grandridge Solar Farm

For your review.
Please note the wind towers directly across the road. If you have any additional questions please feel free to contact via email or phone.

Ron Becker
Assistant Business Manager
IBEW Local 601
409 N. Monroe
Streator,IL. 61364
Office: 815-672-0339
Fax: 815-673-2301
Email: rbecker@ibew601.org

Susan Burgstrom

From: John Hall
Sent: Friday, April 13, 2018 8:26 AM
To: Susan Burgstrom
Subject: FW: Zoning Ordinance Solar Farm Amendment

-----Original Message-----
From: Nathaniel Forsythe [mailto:nattyish@gmail.com]
Sent: Friday, April 13, 2018 12:33 AM
To: John Hall <jhall@co.champaign.il.us>
Subject: Zoning Ordinance Solar Farm Amendment

Hello,

I am writing to express my concern over the amendments to the Zoning Ordinance currently being drafted by the Zoning Board of Appeals. The proposed required setback of 250 feet from the property line would place an undue burden on developers of solar installations. I have reviewed similar regulations put in place by similar counties throughout Illinois with specific regulations in place for solar farms and they generally have requirements for between 50 and 100 feet of separation (*see examples below). Imposing requirements more stringent than that would put Champaign County at a significant disadvantage from the perspective of developers.

These proposed distance restrictions are excessive and will prevent solar installers from choosing to construct in Champaign county. With the passage of the Future Energy Jobs Act solar installations will be coming throughout Illinois and Champaign County needs appropriate and fair regulations that do not put an undue burden on solar energy, one that is not being imposed on any other specific industry.

Thank you for considering my opinion.

* Some examples of similar ordinances from Illinois counties that I found:
- Sangamon County ordinance requires 50ft setback from property lines
- Peoria County proposed ordinance requires 75ft setback from dwellings: https://tinyurl.com/y7ggb5tf
- McClean County ordinance requires 50ft setbacks: https://tinyurl.com/ybohnc75
- Iroquois County proposed ordinance requires setbacks of 80ft from front road and 150ft from dwellings: https://tinyurl.com/y82q23l5
- Macon County proposed ordinance requires 50ft setbacks: https://tinyurl.com/yby8q46b
- LaSalle County ordinance requires no special setback for solar usage: https://tinyurl.com/yafa238j

Regards,
Nathaniel Forsythe
917 W Church St.
Champaign, IL 61821

Susan Burgstrom

From: John Hall
Sent: Friday, April 13, 2018 2:18 PM
To: Susan Burgstrom
Subject: FW: Copy of Dan Maloney's testimony given at last nights ZBA meeting

From: Dan Maloney <dan@detech.net>
Sent: Friday, April 13, 2018 2:04 PM
To: County Board <CountyBoard@co.champaign.il.us>
Subject: Copy of Dan Maloney's testimony given at last nights ZBA meeting

As promised, below is the text I prepared and referenced when I talked last night. Thanks, Dan

Hello, My name is Dan Maloney. 1008 West William St, Champaign. I am speaking tonight to encourage the board to pass a reasonable ordinance that will allow for the development of community solar farms.

With the passing of the Future Energy Jobs Act, Illinois will play a major role in the solar market place. The Act will spark the investment of billions of dollars in the state?s infrastructure. I don?t want to see Champaign County miss out on getting their share of the infrastructure improvements, jobs and environmental benefits --- but, too restrictive of a solar ordinance will do just that.

Last year I had 2 commercial solar systems installed. I installed an 18 kw system on a building I own in downtown Urbana at the corner of Main & Race St, and I teamed up with the owners of Riggs Beer Company in Urbana to build a 75 kw system at their brewery. While the system at Riggs is not as big as a solar farm, it is a fairly large system. The system at Riggs is very visible from High Cross Road in Urbana & I believe it is viewed as esthetically pleasing. Additionally, I encourage people here to visit the brewery at 2 times: once on a sunny day to listen right next to the inverters to hear what sounds like the fan from a desktop computer and then again at night when there inverters make ZERO noise.

Going forward, I am particularly excited about the possibility of community solar.

While I am happy that I have been able to install 2 commercial solar systems the opportunity to invest in solar to offset my residential electric use has eluded me because I can?t practically install solar on the roof of my home in Champaign because of the type of roof I have and nearby trees. Community solar will allow me the opportunity to do just that --- provided the solar ordinance is not too strict.

I am concerned that the proposed setbacks are too restrictive and the board consider smaller setbacks that allow solar farm to be a possibility.

Dan Maloney
D&E Technical, Inc. (DETech)
www.detech.net
dan@detech.net (e-mail)
217-356-8426 (office)
217-840-4204 (cell)

Susan Burgstrom

From: John Hall
Sent: Friday, April 13, 2018 2:34 PM
To: Susan Burgstrom
Subject: FW: Added comments on the Solar Farm oning amendments

From: Phillip Geil [mailto:phgeil@gmail.com]
Sent: Friday, April 13, 2018 2:29 PM
To: John Hall <jhall@co.champaign.il.us>
Subject: Added comments on the Solar Farm oning amendments

Dear Mr. Hall and members of the Champaign County Zoning Board of Appeals:

Having attended the meeting last night (4/12/16) and removing my name from the list of speakers to save time I am taking this method to suggest a modification of section 6.1.5.F.9 (3) Minimizing disturbance to BEST PRIME FARMLAND. I am strongly in favor of the requirement of establishing a vegetative ground cover as written, when appropriate, but, based on personal experience with the 6 rows of panels we have (see message of 4/12/18), suggest two additional options:

1. For Community solar farms the members should be permitted to garden the spaces between the rows; they are ideal for growing numerous, low growing vegetable crops. For a community solar farm the bottom of the panels could also be raised a small amount at little additional cost to permit taller plants.
2. For farmer leased land the owner should be permitted to farm the land between the rows. I suggest plants such as pumpkins, squash, potatoes, and numerous others would be possible. I could also imagine it being used for pasture for relatively small animals such as sheep and goats. For solar company owned land leasing to farmers for this purpose should also be possible.

In addition I note the current suggested requirements only apply to "BEST PRIME FARMLAND". Not clear to me, or specified in the distributed material, is what fraction of potentially available land in Champaign county is so defined. If there is other, not-so-designated land, for instance prior landfills, I would suggest both the currently proposed and my suggestions above should apply to those as well. As of now it appears that if the land in the proposed site is not BEST PRIME FARMLAND there would be no requirements on its protection.

Sincerely yours.

Phillip Geil
2060B Cty. Rd. 125 E
Mahomet, IL 61853
217-586-3895 ,

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Phillip Geil
2060B Cty. Rd. 125 E
Mahomet, IL (61853)

Susan Burgstrom

From: Kathy Shannon <kshannon617@comcast.net>
Sent: Monday, April 16, 2018 6:07 PM
To: Susan Burgstrom
Subject: Comments About Solar Ordinance

Hi,

I wanted to comment on the solar ordinance issue at the April 12th meeting, but it went so late that I had to leave before I got a chance to speak. I don't want to make your next meeting any longer than it has to be, so I'm emailing my comments.

I support the development of large scale solar energy installations in our area. It's vital that we all move away from fossil fuels to mitigate climate change, and our energy infrastructure needs to be decentralized to be as robust as possible. I am excited for the opportunity to invest in community solar projects, and I'd much prefer to invest those dollars locally.

Thanks for your thoughtful consideration of how to make solar power viable in Champaign County.

Kathy Shannon
Champaign, IL

Susan Burgstrom

From: John Hall
Sent: Tuesday, April 17, 2018 7:54 AM
To: Susan Burgstrom
Subject: FW: Comments on the Solar Ordinance for the Record

From: Marya Ryan [mailto:mryan@maryar.net]
Sent: Monday, April 16, 2018 9:37 PM
To: John Hall <jhall@co.champaign.il.us>
Subject: Comments on the Solar Ordinance for the Record

Dear Mr. Hall,

I was out of town and unable to attend last week's Zoning Board of Appeals meeting. I hope it is not too late for me to express my support for the growth of solar farms in Champaign County. My understanding is that an ordinance is being developed that has the potential to unduly restrain the growth of utility-scale solar farms in the county. If setback requirements are excessive, it would severely limit available spaces to install solar farms. Setbacks of 250 feet or less would not have this harmful effect on the growth of solar in our county, so I hope that the ZBA will consider setbacks within that range.

Best regards,
Marya Ryan
503 W. Indiana Ave.
Urbana, IL 61801
217-552-5223

Susan Burgstrom

From: John Hall
Sent: Wednesday, April 18, 2018 8:13 AM
To: Susan Burgstrom
Subject: FW: solar installations

From: Suzanne Smith [mailto:suzanne56smith@gmail.com]
Sent: Wednesday, April 18, 2018 7:59 AM
To: John Hall <jhall@co.champaign.il.us>
Subject: solar installations

Dear Mr. Hall,
I live near Homer with my husband, a 6th generation farmer, where we manage and work on both conventional and organic farms in Champaign and Vermilion counties. We signed on to the Champaign County community solar buy-in with StraightUp Solar in 2016. The 19.2 kW array of 66 ground-mounted static panels has been indirectly powering our home and farm since Oct 2017.

The wall of ground-mounted solar panels changed the landscape of our 3-acre lot by limiting view to the south and altering southern wind currents. In addition, there is a slight noise from our inverter but it is very minimal. We own the land and made the personal choice to live with these alterations because facing the possibility of a coal mine seven miles from our home has motivated us to support alternative energy development and to personally invest in cleaner energy. After listening to the discussion at the Zoning Board of Appeals meeting on April 12th, I have a few comments to share:

We have enrolled and planted 5 acres into the pollinator program and have a small 1/2 acre prairie plot near our home. I am a proponent of diversification in agriculture and on the landscape, but please be mindful that establishing a native grassland takes a considerable investment of money, time and labor. Questions that should be considered include:
1- How will the weeds be controlled during the first few years as the perennials are being established?
2- Who is responsible for the cost and management of this native landscape?
3- Assuming there would be grass and not gravel under the array, would the up-front cost of establishing a native pollinator habitat be offset in the long-run by eliminating regular mowing of a conventional fescue or bluegrass lawn?

Continue to be creative. Solar power production and agriculture are not mutually-exclusive. There are examples of growing vegetables, beekeeping, and even grazing small livestock underneath and between the panels of solar farms. Perimeters also have production potential for many crops including but not limited to sweet corn, hay, wheat, or barley for microbreweries. Would production agriculture be allowed in the perimeters, and if so, who would manage these corridors- the landowner or the leasing company? We should be so fortunate as to have a forward-thinking and understanding solar company, and such industrious and innovative residents, that we can have our cake and eat it too.

Setbacks are important but you may want to consider vegetative screening (tall enough to block the view and short enough to allow maximum solar production) in lieu of large setbacks. An industrial-sized array near any town or private residency will greatly impact their environment and therefore should be addressed. However, large setbacks could remove significant acres from energy production. On a 40-acre tract, a perimeter 200-foot buffer leaves only 20 acres in the center for solar panels, removing 50% of the land from green energy production. On a square mile, 92 acres would be removed or 15%.

Informed and well-conceived regulation on green energy is a safeguard of the people, not a condemnation of the industry. Thank you for careful consideration of this important issue.

Suzanne Smith
2797 CR 1200 N
Homer, Illinois

Susan Burgstrom

From: John Hall
Sent: Wednesday, April 18, 2018 8:15 AM
To: Susan Burgstrom
Subject: FW: Comments on the Solar Ordinance for the Record

From: Jonathan Livengood <jonathan.livengood@gmail.com>
Sent: Tuesday, April 17, 2018 10:57:28 PM
To: County Board
Subject: Comments on the Solar Ordinance for the Record

To the Members of the Board,

I am writing to encourage the Board to actively support solar projects, including the development of large solar farms, in the county. The county government ought to have as one of its goals the elimination of reliance on fossil fuels and other non-renewable sources of energy.

Specifically with respect to the proposed amendment to the Champaign County Zoning Ordinance now before the Board, I urge you to take two steps.

First, I urge you to *reduce* or *eliminate* the required off-set distances. Proposed revisions increasing the off-set distances are ill-advised. According to documents I have in hand, earlier language for 6.1.5 D.3 required 100 feet of off-set, but new suggested language increases the off-set to 200 feet or 250 feet in the case of dwellings on lots of 5 acres or more. Again, I urge you to reduce or eliminate these off-set distances. In my opinion, 100 feet was already too large a required off-set distance. I also recommend *rejecting* the suggested addition of paragraph 6.1.5 D.5.

Second, I urge you to *reduce* or *eliminate* the regulatory burdens on solar facilities. Proposed additions of noise analyses at 6.1.5 I.3 as part of the special use permit should be rejected. The noise produced by solar facilities is negligible. Adding regulatory burden for such negligible issues is unwarranted and sets bad precedent. In addition, I urge the Board to reject the addition of a new paragraph 6.1.5 F.9 minimizing disturbance to "BEST PRIME FARMLAND."

In general, as I have read through concerns raised by residents nearby proposed solar farms, it has struck me that many are the products of problematic not-in-my-backyard attitudes that retard urgently needed development of green energy sources. Studies cited in documents that have been made available to the Board suggest to me that concerns about noise pollution, property values, and general safety ought to be heard, acknowledged, and kindly rejected.

Sincerely,

Jonathan Livengood
1220 W University Ave
Champaign, IL

NRCS Natural Resources Conservation Service

Planning Tree and Shrub Plantings for Wildlife

Illinois Biology Technical Note No. 22 *May 2007*

WHY ARE TREE AND SHRUB PLANTINGS USED FOR WILDLIFE HABITAT?

Trees and shrubs can provide many benefits for a variety of wildlife species. In order to achieve true success, it is critical that the planting is properly designed with suitable species of plants and successfully established in the proper location. Many species of wildlife depend on trees and shrubs to provide food throughout the year, as well as cover for nesting, roosting and protection from predators and severe weather. Trees and shrubs are often planted along areas of other habitat such as fence rows, ditches and streams, windbreaks, along hayfields and pastures, or even around backyards and subdivisions. In reforestation projects, planting plans usually include some plants that are selected for their wildlife benefits. Tree and shrub plantings for wildlife are often an attractive addition to the landscape with flowering shrubs and colorful fruits that attract birds and animals that people enjoy.

PLANNING

The first step is to evaluate the habitat needs for the wildlife species, or group of species you hope to benefit. You may have already identified the approximate location or general area available for a wildlife habitat planting. Determine how trees and shrubs can provide the food and different kinds of cover needed by the wildlife species you desire to attract to this area. What time of year is food in short supply for wildlife? What type of cover is needed during different seasons of the year? Are the animals moving through the area and if so, what type of cover is needed during that period? Consult with a wildlife biologist to learn about the life history requirements for the wildlife species that interest you. Learn how tree and shrub plantings may help wildlife in your area.

Shrubs can be planted as part of a windbreak, along a fencerow, travel lanes, or the edges of mature woodlands or other tree plantings. Shrubs can add to the wildlife habitat value of all these areas by increasing the amount and variety of food and providing dense cover near the ground.

Another consideration when planning tree and shrub plantings for wildlife is the selection of appropriate plant species for a planting site. Each plant species has particular site requirements necessary for good grow and productivity. The plant must be adapted to conditions of the site--drainage, soil and exposure to the sun. Table 1 lists tree and shrub species often suggested for use in wildlife habitat plantings. Included in Table 1 are site adaptation requirements, average height that each species can be expected to reach, the season of the year that the fruit or nut matures and comments on wildlife uses of the plant species. Using this data will help you select plants adapted to the planting site, are the desired size to fit the site, and provide the needed wildlife food and/or cover.

Establishing a variety of plant species will increase the types of food available at different times of the year and increase the number of places for foraging and nesting. Using a variety of plants will also help protect the planting from failure to produce food and cover due to poor weather or diseases.

For planning criteria pertaining to width, length, number of rows and spacing see criteria in the Conservation Planning Standard (Field Office Technical Guide) for the practice that is being planned.

ESTABLISHMENT

Follow NRCS Conservation Practice Standard Tree/shrub Establishment (612) for planting specifications and use NRCS Tree/Shrub Establishment Job Sheet for the development of site specific plans

Table 1 – Suggested Tree and Shrub Species for Wildlife Habitat Plantings

SHRUBS

SPECIES	Site Adaptation*	Ave. Mat. Height (Ft.)	Month of fruit	Comments (Naturally occurring range statewide unless noted)
Alder, hazel *Alnus serrulata*	VPD – WD FS – PS	12	9-10	Prefers wet to moist soils. Seeds persistent and eaten by songbirds, forms dense cover. Nitrogen fixer. (S 1/3)
Arrowwood *Viburnum dentatum*	SPD – WD FS - PS	6	8-11	¼" bluish-black drupe. Erect branches. Fruits persist into winter, eaten by many species. (S ½)
Blackberry, wild *Rubus allegheniensis*	MWD–WD FS - PS	6	7-9	Upright arching shrub with stout prickles. Provides cover and food for birds and mammals. Recommended for quail.
Buttonbush *Cephalanthus occidentalis*	VPD – WD FS - PS	12	9-11	Best on wet sites. Wilted leaves may be toxic to livestock.
Chokeberry, black *Aronia melanocarpa*	SPD – WD FS – PS	6	8-11	1/3" dark-purple fruit eaten by birds. (N ¼)
Chokecherry *Prunus virginiana*	SPD – WD FS – PS	20	7-9	Grows in a wide variety of sites. 1/3" red becoming black edible fruit eaten by many species
Crabapple, prairie *Malus ioensis*	SPD – WD FS	25	9-10	Showy white flowers. Fruit 1.5 inches across. Susceptible to cedar apple rust. Used by many species of wildlife.
Crabapple, wild sweet *Malus coronaria*	SPD – ED FS	25	9-10	Yellow-green, 1 inch across, edible fruit with highly fragrant flowers. Recommended for quail.
Cranberry, Am. highbush *Viburnum opulus*	VPD – WD FS - PS	12	8- 9	Tart red edible fruits. Eaten by grouse, pheasant and songbirds. Showy. (N ½)
Dogwood, alternateleaf *Cornus alternifolia*	SPD – WD FS - PS	18	7-9	Blue-black fruit with red stems on fruit. Fruit eaten by birds. Twigs browsed by deer and rabbits.
Dogwood, flowering *Cornus florida*	MWD –WD FS - PS	30	9-10	Showy flowers, glossy red drupe. Recommended for quail. (S ½)
Dogwood, gray *Cornus racemosa*	SPD – WD FS	8	9-10	Red pedicles in winter, white drupe eaten by birds.
Dogwood, redosier *Cornus sericea*	VPD – WD FS	10	8-10	Reddish stem, white drupe, good winter color. Fruit sought by songbirds, grouse, and quail. Twigs browsed by deer, rabbits. (N ½)
Dogwood, roughleaf *Cornus drummondii*	PD – WD FS – PS	15	8-10	White drupes. Fruit eaten by several songbirds, grouse, quail, turkey and pheasant. Browsed by rabbits and deer. (S ¾)
Dogwood, silky *Cornus obliqua*	VPD – WD FS - PS	10	8-10	Blue fruit eaten by birds, likes moist soils and partial shade. Browsed by rabbits and deer.
Elderberry *Sambucus nigra*	VPD – WD FS - PS	9	7-9	Purple-black edible drupe. Fruits eaten by many birds including pheasant, quail, dove and turkey.
Haw, black *Viburnum prunifolium*	SPD – WD FS - PS	15	8-10	½ " long blue black edible drupe, eaten by song birds, quail, and fox.
Haw, red *Crataegus mollis*	PD - MWD FS	30	9	Fruit consumed by a number of birds and mammals. Nesting site for many birds.
Haw, rusty *Viburnum rufidulum*	PD - MWD FS-PS	25	7-9	Many species of birds and mammals utilize the fruits. Leaves twigs and bark used by mammals. (S ½)
Hawthorn, cockspur *Crataegus crus-galli*	PD - MWD FS	25	8-12	Variety of wildlife use flowers, leaves and fruits. Excellent nesting habitat for songbirds.
Hawthorn, Washington *Crataegus phaenopyrum*	SPD – ED FS	30	9-12	Red fruit that lasts into winter and attracts many birds. Also fed on by deer, fox, rabbit, and pheasant. Nesting habitat for songbirds.

*Site Adaptation Key:			
ED= Excessively Drained	WD = Well Drained	MWD = Moderately Well Drained	SPD = Somewhat Poorly Drained
PD = Poorly Drained	VPD = Very Poorly Drained	FS = Full Sun	PS = Partial Shade

Table 1 – Suggested Tree and Shrub Species for Wildlife Habitat Plantings (Con't)

SHRUBS (Continued)

SPECIES	Site Adaptation*	Ave. Mat. Height (Ft.)	Month of fruit	Comments (Naturally occurring range statewide unless noted)
Hazelnut, American *Corylus americana*	MWD–WD FS – PS	15	7-8	Often forms large colonies. Small edible nut, eaten by squirrels, deer, jays, grouse, quail and pheasant.
Nannyberry *Viburnum lentago*	SPD – WD FS - PS	20	7-9	Blue-black fruits similar to raisins, eaten by birds and mammals. Provides cover and nest sites. (N ½)
Ninebark *Physocarpus opulifolius*	VPD – WD FS - PS	10	5-7	Fruit are small dry bladders lasting through winter. White to pinkish flowers.
Pawpaw *Asimina triloba*	SPD – WD PS	30	9-11	Large leaves, likes deep moist soils. Edible fruit. Eaten by opossum, squirrels, raccoon and fox. (S ½)
Plum, American *Prunus americana*	MWD – ED FS	20	8-10	Reddish edible drupe recommended for quail, and mammals.
Raspberry, wild *Rubus idaeus*	MWD –WD FS - PS	5	7-9	Arching shrub with strong hooked prickles. Provides cover and food for birds and mammals.
Redbud, Eastern *Cercis canadensis*	MW – WD FS – PS	30	9-10	A legume, pod 2-3" long, reddish-purple flowers, heart shaped leaves. Seeds eaten by a few songbirds. (S ½)
Serviceberry or shadbush *Amelanchier arborea*	MW – WD FS	30	6 - 8	Berry-like pome, green turning red to black eaten by birds and small mammals.
Spicebush *Lindera benzoin*	VPD – WD FS - PS	9	7- 8	Small red drupe that is edible. Twigs and fruit eaten by songbirds, deer, rabbit, opossum, quail and grouse. (S ½)
Sumac, smooth *Rhus glabra*	MWD – ED FS	12	8-9	Often forms large colonies. Reddish fruit eaten by some songbirds, quail, dove, and pheasant. Twigs browsed by rabbits and deer.
Sumac, staghorn *Rhus hirta*	MWD – ED FS	15	8-9	Tolerates dry, infertile soils. Reddish fruit eaten by some songbirds, quail, dove, pheasant. Twigs browsed by rabbits and deer.
Tea, New Jersey *Ceanothus americanus*	WD – ED FS	3	9	Prairie plant with white flower in dense heads. Quail and wild turkey eat the three-celled capsule.
Witchhazel, American *Hamamelis virginiana*	SPD – WD FS - PS	18	9-11	Pale yellow flowers that produce pods with seeds. Seeds, buds and twigs eaten by deer, rabbit, quail and pheasant.

PINE/SOFTWOOD TREES

SPECIES	Site Adaptation*	Ave. Mat. Height (Ft.)	Month of fruit	Comments (Naturally occurring range statewide unless noted)
Baldcypress *Taxodium distichum*	WPD-WD FS	80	8-9	Waterfowl occasionally consume seeds. Trees serve as perching areas for song and wading birds. (S 1/5)
Cedar, Northern white *Thuja occidentalis*	PD-WD FS-PS	40	8-9	Sometimes browsed by deer. Provides winter cover near the ground. (NE ¼)
Pine, Eastern white *Pinus strobus*	MWD-WD FS	90	8-9	Seeds eaten by wide variety of birds, squirrels and mice. Browsed by deer. Provides roosting site for many species of birds. (N ¼)

*Site Adaptation Key:

ED= Excessively Drained	WD = Well Drained	MWD = Moderately Well Drained	SPD = Somewhat Poorly Drained
PD = Poorly Drained	VPD = Very Poorly Drained	FS = Full Sun	PS = Partial Shade

Table 1 – Suggested Tree and Shrub Species for Wildlife Habitat Plantings (Con't)

HARD MAST PRODUCING TREES

SPECIES	Site Adaptation*	Ave. Mat. Height (Ft.)	Month of fruit	Comments (Naturally occurring range statewide unless noted)
Beech, American *Fagus grandifolia*	MWD – WD FS - PS	75	9-11	Nuts consumed by turkeys, deer and squirrels. Extremely shade tolerant species with decorative smooth gray bark. (S ½ ; E border)
Butternut *Juglans cinerea*	MWD-WD FS - PS	50	9-10	Elliptical nut consumed by squirrels. Do not plant if butternut canker disease is in the area.
Hickory, mockernut *Carya alba*	ED-MWD FS - PS	50	9-10	Nuts are a major food source for squirrels and used by deer and turkey. (S ¾)
Hickory, pignut *Carya glabra*	WD-ED FS - PS	50	9-10	Nuts are a major food source for squirrels and used by deer and turkey. (S ½)
Hickory, shagbark Carya ovata	MWD - WD FS - PS	90	9-10	Nuts are a major food source for squirrels and used by deer and turkey. The loose shaggy bark makes good roosting sites for bats.
Hickory, shellbark *Carya laciniosa*	PD - MWD FS - PS	70	9-10	Nuts used by wood duck, squirrels, deer and turkey. The loose shaggy bark makes good roosting sites for bats. (S 2/3)
Oak, black *Quercus velutina*	NWD-ED FS	60	9-11	Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons.
Oak, bur *Quercus macrocarpa*	PD - WD FS	80	8-11	Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons.
Oak, cherrybark *Quercus, pagoda*	SPD – WD FS	75	9-11	Large tree of bottomlands and well-drained soils.. Acorns eaten by many species of wildlife. (S 1/6)
Oak, chinquapin *Quercus muehlenbergii*	MWD – WD FS	80	9-11	Acorns small in size making them useful to many species of small mammals and birds, as well as wild turkey and deer.
Oak, northern red *Quercus rubra*	MWD - WD FS	100	9-11	Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons.
Oak, pin *Quercus palustris*	VPD -MWD FS	75	9-12	Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons.
Oak, scarlet *Quercus coccinea*	MWD-ED FS	70	9-11	Medium-sized tree of dry ridges. Brilliant scarlet leave in fall. Acorns eaten by many species of wildlife. (S 1/3)
Oak, shingle *Quercus imbricaria*	SPD-WD FS	50	9-11	Medium-sized tree of dry ridges. Brilliant scarlet leaves in fall. Small acorns eaten by many species of wildlife.
Oak, shumard *Quercus shumardii*	SPD-WD FS	75	9-11	Large-sized tree of well drained soils and bottomlands. Acorns eaten by many species of wildlife. (S 2/5)
Oak, swamp chestnut Quercus michauxii	SPD-WD FS	70	9-11	Medium to large-sized tree most often found on well drained bottomland. Acorns eaten by many species of wildlife. (S 1/3)
Oak, swamp white *Quercus bicolor*	VPD-WD FS	70	8-10	Medium-sized tree of poorly drained soils. Acorns have less tannic acid then red and black oaks so white oak acorns are preferred by wildlife.
Oak, white *Quercus alba*	MWD - WD FS	100	9-11	Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons. Acorns of white oak have less tannic acid then red and black oaks so white oak acorns are preferred by wildlife.
Pecan *Carya illinoensis*	MWD-WD FS	80	9-10	Large tree with sweet edible nut eaten by many species of wildlife.
Walnut, Black *Juglans nigra*	MWD-WD FS	80	9-10	Nuts eaten by squirrels.

*Site Adaptation Key:

ED= Excessively Drained	WD = Well Drained	MWD = Moderately Well Drained	SPD = Somewhat Poorly Drained
PD = Poorly Drained	VPD = Very Poorly Drained	FS = Full Sun	PS = Partial Shade

Table 1 – Suggested Tree and Shrub Species for Wildlife Habitat Plantings (Con't)

SOFT MAST PRODUCING TREES

SPECIES	Site Adaptation*	Ave. Mat. Height (Ft.)	Month of fruit	Comments (Naturally occurring range statewide unless noted)
Persimmon *Diospyros virginiana*	MWD-SPD FS - PS	50	9-11	Fruit is eaten by deer, raccoon, foxes, and to a lesser extent songbirds. (S 2/3)
Redcedar, Eastern *Juniperus virginiana*	SPD – ED FS	45	9-3	Fruit used by songbirds. Provides cover. Red Cedar should not be planted within 1/2 mile of apple orchards to avoid cedar-apple rust disease.
Hackberry *Celtis occidentalis*	SPD -MWD FS - PS	60	9-10	Fruit used by birds and mature trees for nest sites.
Maple, red *Acer rubrum*	PD - WD FS - PS	70	4-6	Samaras are widely consumed by birds and squirrels. Browsed by deer. (S 1/3, rare in NE corner)
Cherry, black *Prunus serotina*	SPD – WD FS – PS	100	8-9	Fruit is an important food for many species of birds and mammals.
Birch, River *Betula nigra*	VPD-WD FS	50	5-6	Small tree of floodplains with exfoliating bark. Stands of birch provide cover for riparian wildlife and leaves are browsed by deer. (S ⅓)
Gum, Black *Nyssa sylvatica*	PD-WD FS - PS	60	9-10	Fruits eaten by songbirds, turkeys and woodpeckers. Deer and beaver browse on twigs. (S 1/6)
Tupelo, Water *Nyssa aquatica*	VPD-PD FS - PS	100	9-12	Many kinds of wildlife (wood ducks, quail, turkey, songbirds and raccoons) eat the fruits and water tupelo is a favored honey tree. (S1/6)
Maple, Sugar *Acer saccharum*	MWD-WD FS - PS	70	4-6	Samaras are widely consumed by birds and squirrels. Browsed by deer.
Sweetgum *Liquidambar styraciflua*	PD-WD FS	85	9-11	Seeds from prickly ball fruit are consumed by several species of birds. (S 1/3)
Tuliptree *Liriodendron tulipifera*	MWD-WD FS	100	8-11	Seeds eaten by songbirds, quail, turkey and squirrels. Browsed by deer. (S 3/5)

NON MAST PRODUCING TREES

SPECIES	Site Adaptation*	Ave. Mat. Height (Ft.)	Month of fruit	Comments (Naturally occurring range statewide unless noted)
Aspen, Bigtooth *Populus grandidentata*	MWD-WD FS	70	5-6	Twigs and bark consumed by deer and beavers. (N ½)
Cottonwood, Eastern *Populus deltoides*	PD-ED FS	90	5-8	Twigs and bark consumed by deer and beavers.
Sycamore, American *Platanus occidentalis*	PD-WD FS	90	9-11	Sycamore has low food value to wildlife; however, this species forms an important structural component of bottomland forest and often provides cavities for nesting.

*Site Adaptation Key:

ED= Excessively Drained	WD = Well Drained	MWD = Moderately Well Drained	SPD = Somewhat Poorly Drained
PD = Poorly Drained	VPD = Very Poorly Drained	FS = Full Sun	PS = Partial Shade

References:
USDA Natural Resources Conservation Service Plants Database http://plants.usda.gov/
USDA U.S. Forest Service Fire Effects Information http://www.fs.fed.us/database/feis/plants/index.html

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

CONSERVATION COVER

(Ac.)

CODE 327

DEFINITION

Establishing and maintaining permanent vegetative cover.

PURPOSE

This practice is applied to support one or more of the following (resource concerns in parenthesis):

- Reduce sheet, rill, and wind erosion and sedimentation.
- Reduce ground and surface water quality degradation by nutrients and surface water quality degradation by sediment.
- Reduce emissions of particulate matter (PM), PM precursors, and greenhouse gases.)
- Enhance wildlife, pollinator and beneficial organism habitat.
- Improve soil health.

CONDITION WHERE PRACTICE APPLIES

The practice applies on all lands needing permanent herbaceous vegetative cover. The practice does not apply to plantings for forage production or to critical area plantings. The practice can be applied on a portion of a field.

CRITERA

General Criteria Applicable to All Purposes

Select species that are adapted to the soil, ecological sites, and climatic conditions that are suitable for the planned purpose and site conditions. Periodic removal of some products such as high value trees, medicinal herbs, nuts, and fruits is permitted provided the conservation purpose is not compromised by the loss of vegetation or harvesting disturbance.

Species planted shall be suitable for the planned purpose and site conditions.

Unplanted native grass, sedge, rush, or forb species that encroach the planting and meet the practice purpose(s) and landowner's objectives will be allowed.

Seeding rates and methods shall be adequate to accomplish the planned purpose. Certified or source identified seed shall be used where possible.

Planting dates, planting methods and care in handling and planting of the seed or planting stock shall ensure that planted materials have an acceptable rate of survival.

Site preparation shall be sufficiently adequate to eliminate weeds and provide soil conditions for consistent seed depth for successful establishment and growth of selected species.

Use pesticides applied for establishment and management purposes according to label instructions and all applicable federal, state, and local regulations.

Plant nutrients shall be applied following the specifications in the *Fertilizer and Lime Requirements* section.

Additional Criteria to Reduce Sheet, Rill, and Wind Erosion and Sedimentation

Determine and maintain the amount of plant biomass and cover needed to reduce wind and water erosion to the planned soil loss objective by using the current approved wind and/or water erosion prediction technology.

No-till seeding methods are preferred where erosion concerns are present.

Nurse crops are required for seedings where severe erosion would be expected during the establishment period.

Additional Criteria to Reduce Emissions of Particulate Matter (PM), PM Precursors, and greenhouse gases

In perennial crop systems such as orchards, vineyards, berries and nursery stock, establish vegetation to provide full ground coverage in the alleyway during mowing and harvest operations to minimize generation of particulate matter.

Additional Criteria to Enhance Wildlife, Pollinator and Beneficial Organism Habitat

Where wildlife management is an objective, use Biology Technical Note IL-18, "Illinois Wildlife Habitat Evaluation" to determine how the food and cover value of the planting can be enhanced.

Grasses, forbs, shrubs and/or legumes shall be planted in a diverse mix to promote biodiversity and meet the needs of targeted wildlife species. It is recommended that diverse mixtures include species beneficial for pollinators. Pollinator habitat areas will consist of a sufficient number of plant species to sustain the target pollinators throughout the growing season. Specific measures to benefit pollinators can be found in Biology Technical Note IL- 23, "Pollinator Biology and Habitat."

Monoculture seedings are allowed for special purposes, such as nesting and escape cover or herbaceous fire breaks when included in a wildlife management plan approved by an Illinois Department of Natural Resources (IDNR) or NRCS wildlife biologist. Native grass monocultures should be planted at a seeding rate of approximately 30 PLS seeds/ft^2 unless otherwise specified within the wildlife management plan.

Locate habitat plantings to reduce pesticide exposures that could harm wildlife, pollinators, and other beneficial organisms.

Additional Criteria to Improve Soil Health

To maintain or improve soil organic matter, select plants that will produce high volumes of organic material. The amount of biomass needed will be determined using the current soil conditioning index procedure

CONSIDERATIONS

The practice may be used to promote the conservation of wildlife species in general, including threatened and endangered species.

Where wildlife is a primary purpose, consider seed mixtures that are comprised of 50-70% forbs on a PLS seeds/ft^2 basis.

Rotate management and maintenance activities (e.g. mow only one-fourth or one-third of the area each year) throughout the managed area to maximize spatial and temporal diversity. See Illinois NRCS Early Successional Habitat Management/Development (Practice Code 647).

Consider using native species that are appropriate for the identified resource concern and management objective(s). Consider trying to re-establish the native plant community for the site.

Consider the long-term objectives of the land user and the needs of declining wildlife species, including threatened and endangered species in the selection of vegetative cover. The use of native plant species is encouraged for all cover situations.

Where applicable this practice may be used to conserve and stabilize archeological and historic sites.

Additional conservation practices, such as grassed waterways, may be needed for complete erosion control.

Established plant communities usually benefit from periodic prescribed burning. Burning can stimulate growth of some species by reducing unwanted competition from weedy plants and excessive plant residue and therefore helps to maintain plant community diversity. (Refer to Prescribed Burning, Practice Code 338).

PLANS AND SPECIFICATIONS

Specifications for this practice shall be prepared for each site. They shall include, but are not limited to:

- recommended species,
- seeding rates and dates,
- establishment procedures,
- other management actions needed to ensure adequate stand establishment.

Specifications shall be recorded using Job Sheet 327, narrative statements in the conservation plan, and the 327 Calculator spreadsheet.

All specifications shall be consistent with Federal, State, and local regulations.

ESTABLISHMENT OF PERMANENT VEGETATIVE COVER

Seeding Periods

Seeding dates are listed in Table 1. The dates listed in the table are based on long-term averages and may be extended by two weeks by the district conservationist. Extension of these deadlines shall be based on both favorable moisture and temperature for seed germination.

Soil Testing

Soil tests will be taken to the 7-inch depth for newly retired cropland planned for introduced cool-season species. Soil tests are considered current if they are 4 years old or less. Soil tests are not required for native grass and forb seedings. Planners have the option to request soil tests where there is a suspicion of possible nutrient deficiencies.

Fertilizer and Lime Requirements for Introduced Cool-Season Grasses and Legumes

The minimum soil test pH for all new introduced, cool- season seedings is 5.5. Where the soil pH level is below 5.5, apply limestone at rates needed to increase soil pH to 6.2 or 3 tons/acre, whichever is less. Lime application rates will be calculated according to the procedures described in the Illinois Agronomy Handbook. Application rates greater than 2 tons/acre will be incorporated with tillage.

The minimum soil test Phosphorus (Bray P1 or Mehlich 3) is 15 pounds per acre. For fields with soil test Phosphorus levels below 15 pounds per acre, apply 60 pounds of $\mathbf{P_2O_5}$ per acre. The minimum soil test Potassium is 150 pounds per acre. For fields with soil test Potassium levels below 150 pounds per acre, apply 200 pounds of $\mathbf{K_20}$ per acre.

Nitrogen is not recommended where legumes are included in the seed mixture. For cool-season seed mixtures consisting of grasses only, apply 30 lbs. /ac of actual nitrogen at planting.

Nitrogen may be omitted where:

- Cool-season grass seedings follow within nine months of the harvest of a legume crop or,
- Cool-season grass seedings are sown into soils with at least 2 percent organic matter.

Seed Quality

All seed shall comply with Illinois Seed and Weed Laws and originate from the United States or Canada.

Seed rates will be based on Pure Live Seed (PLS) per acre. Compute Pure Live Seed using the following formula:

$$\text{PLS} = \frac{(\%\ \text{germination} + \%\ \text{dormant seed}) \times \%\ \text{purity}}{100}$$

Germination tests are required for all warm and cool-season grasses and legumes (excluding companion crops). Germination tests may not be older than 12 months at time of seeding excluding the month of testing. Germination tests are not required for native forbs. Base forb seed rates on a PLS seeds/ft^2 where seed quality data is available. Bulk seeds/ft^2 will be accepted where forb seed quality is not available.

Legume Inoculation

Legume seeds shall be treated with a pure culture of nitrogen fixing bacteria prepared specifically for the species being seeded. Where more than one legume is included in the seed mixture, inoculate each species separately. A sticker, as recommended by the inoculant manufacturer, will be used to secure the bacteria to the seed. Refer to Agronomy Technical Note IL-20 “Inoculating Legumes” for guidance.

Uncoated seed pre-inoculated greater than 60 days will be re-inoculated. Pre-inoculated seed that has been coated must be seeded within 12 months of inoculation, otherwise re-inoculate. In no cases shall inoculum be used after the expiration date, including inoculum that is included with the seed as a pre-treatment.

Legumes not pre-inoculated will be inoculated within 24 hours of seeding.

Inoculation of native legumes is recommended when commercial inoculum is available.

Companion (Nurse) Crop

Companion crops may be omitted for no-till seedings where ground cover after planting will be approximately 50 percent.

Companion (Nurse Crop) for Introduced Species

For spring seedings, oats shall be seeded at a rate of one bushel/acre to reduce soil erosion and suppress weed competition. The oats shall be clipped prior to seed head emergence (late boot stage) to prevent further competition with the new permanent cover. For seedings planned for the late summer seeding period (Table 1), a companion crop of wheat, cereal rye, triticale, or winter barley at of 20 lbs. /acre or oats at one bushel per acre. Companion crops shall be mowed no later than the boot stage for growth to prevent seed formation.

Companion (Nurse Crop) for Native Species

Companion crops are usually not required for native warm season seedings. Where erosion or weed pressure is of concern, use oats one bushel (32 lbs.)/acre. Mow companion crop by the late boot stage to prevent further competition with the new permanent cover and to control weeds.

Temporary Cover

Temporary cover may be required to reduce potential weed and erosion problems where one of the following conditions exists:

- Fields with herbicide carry over,
- Planting is delayed due to unavailability of seed, or
- The normal seeding period has passed.

The temporary cover shall be seeded as specified in Cover Crop (CPS 340). Consult with the appropriate specialist for species selection where concerns for herbicide carryover exist. Temporary cover crops will be mowed as many times as necessary in order to prevent seed formation.

Seeding equipment

Drills, rotary spreaders, or airflow spreaders may be used. Drills will be equipped with metering devices designed for the seeds being sown. Chaffy or bearded seed will be seeded with drills designed to sow bearded seed. Mix seed with a bulking material such as cracked corn, pelletized lime, or other suitable materials where rotary or airflow spreaders are used. Chaffy seed must be de-bearded where rotary or airflow equipment is used.

Seedbed preparation and seeding

Conventionally prepared Seedbeds

Till seedbeds to a depth of at least 3 inches. Firm tilled seedbeds with a corrugated metal roller, cultipacker, or a cultimulcher with the tines disengaged. The seedbed shall be smooth, friable, and firm prior to seeding. Perform all tillage operations across the general slope of the land where possible. Grass and legume seed shall be drilled to a maximum 1/4-1/2 inch depth. Small seeded species shall be planted no deeper than twice the seed diameter. Broadcast and airflow seedings are to be rolled with a corrugated metal roller, or a vertical tillage implement equipped with a rolling basket or harrow attachment after planting. Disks and field cultivators shall not be used to incorporate broadcast surface applied seeds.

No-till Seedings

Use labelled herbicides to kill or suppress existing weed competition, where necessary. A drill designed for no-till planting shall be used to plant the seed to a maximum depth of 1/4-1/2 inch. Small seeded species shall be planted no deeper than twice the seed diameter.

Frost Seeding

Frost seeding is a technique used to introduce diversity into existing stands or to provide cold moist stratification for new plantings of diverse native stands. Success with frost seeding occurs where at least 50% of the soil surface is free of litter or plant canopy and is dependent on multiple freeze/thaw cycles to adequately incorporate seeds into the soil surface. In Illinois, these conditions generally occur in late February to Early March. Historically, this method has been used with forage legumes and some grass species. Introduced species that have been shown to be successful using frost seeding methods are noted in Table 2.

Seed Mixtures

General Seed Mixtures

Several seeding mixtures have been provided for common wildlife species and can be used for general planning purposes. The mixtures may or may not be suitable for specific sites, other wildlife species of concern, or meet requirements of specific conservation programs. The native seed mixtures

are designed to provide approximately 20-30 PLS seeds/ ft^2. Information in Tables 2 and 3 are to be used to customize additional seeding mixtures as needed.

Seed Mixtures for slopes 5 percent or greater

Introduced cool-season grass and legume seed mixtures

Seed mixtures shall consist of grass and legume components. The grass component of the seed mixture shall consist of at least 3 lbs. PLS seeds/acre. The legume component shall consist of at least 50 percent by weight of the total seed mixture. In no case, shall the legumes in mixtures be sown at rates less than the minimums found in Table 2.

Native grass and forb seed mixtures

Seed rates shall provide a total minimum of 30 PLS seeds/ ft^2. At least 20 PLS seeds/ ft^2 shall be comprised of grasses and a minimum of 5 PLS seeds/ ft^2 shall be forb species. Seed mixtures may be developed from data in Table 3 or from the Conservation Cover (327) Calculator Spreadsheet.

Seed Mixtures for slopes less than 5 percent

Introduced cool-season grass and legume seed mixtures

Seed mixtures shall contain at least two grass and one legume species. The grass component of seed mixtures shall be at least 2 lbs. PLS seeds/ acre. Seed mixtures may be designed using data in Table 2.

Native grass and forb seed mixtures

Seed mixtures consisting of native grasses and forbs/legumes shall provide at least 20 PLS seeds per ft^2. The grass component shall provide at least 10 PLS seeds/ft^2. A minimum of 5 PLS seeds/ft^2 shall be forb species. Seed mixtures may be developed from data in Table 3 or from the Conservation Cover (327) Calculator Spreadsheet.

Monoculture plantings are allowed for special purposes, such as nesting or escape cover if included in a wildlife management plan approved by an IDNR or NRCS wildlife biologist.

Seed Mixtures for Pollinator Concerns

Criteria for all pollinator seed mixtures

Seeding mixes for pollinator habitats shall contain a minimum of nine principle species of native forbs that are highly beneficial to pollinators with a minimum of 3 species for each principle bloom period (early, mid, and late). Each of the nine principle species (three in each season) shall have at least 0.3 PLS seeds/ft^2 or at least four ounces PLS per acre in the seeding mix except where a species would be deemed aggressive or potentially invasive. The native forbs may be annual, biennial, or perennial species. Introduced species shall not be used, however crimson clover (*Trifolium incarnatum*) may be included at a maximum of ½ lb./acre. Note: Crimson clover, if added, will not count towards the minimum forb species, seeds per ft2, or bloom period requirements.

The approximate dates for each bloom period are defined in the table below. Many species bloom during periods that overlap the dates used to define the blooming periods and are defined as “early-mid” or “mid to late”. Species with overlapping blooming periods will only count once toward the minimum blooming requirements. For example, a species labelled “early-mid” will only count as an early bloomer or mid bloomer but not both. Sod forming grass species shall not be included in pollinator seed mixtures. Tall grasses such as big bluestem, indiangrass, or switchgrass shall not be used.

Principle Bloom Periods	
Early	April through Mid-June
Mid	Mid-June through July
Late	August through October

Pollinator seed mix criteria for slopes 5% or greater

In addition to the criteria above, the grass component shall be a minimum of 10 PLS seeds/ft^2 non-sod forming native grasses or grass-like species (sedges or rushes). The forb component shall have a minimum of 30 PLS seeds/ft^2. The total amount of seed rate shall be a minimum of 40 PLS seeds/ft^2.

Pollinator seed mix criteria for slopes less than 5 %

In addition to the criteria above, the grass component shall not exceed 5 PLS seeds/ft^2 of non-sod forming native grasses or grass-like species (sedges and or rushes). The forb component shall have a minimum of 15 PLS seeds/ft^2. The total seeding rate shall be a minimum of 20 PLS seeds/ft^2. Custom seed mixtures may be designed using any of the following: Table 3 and pollinator information contained in the Conservation Cover (327)Calculator Spreadsheet, Restoration and Management of Declining Habitats Job Sheet (Excel 643JS), and Illinois Biology Technical Note No. 23 – Pollinator Biology and Habitat.

Weed and companion crop control during the establishment year for all seedings.

To ensure survival of new seedings, weeds and companion crops shall be controlled during the establishment year. Native warm-season species shall be mowed no shorter than eight inches. Introduced cool-season species shall be mowed no closer than four inches.

Managing the succession of existing stands

Acreage seeded to grass and legume/forb mixtures often evolve to be dominated by perennial grasses over time and may be less effective in achieving the original wildlife objectives. To recreate the species and structural diversity of the original stand, suppression of the perennial grasses is often required. Common methods of suppression are prescribed burning, tillage, and/or herbicide application. Guidance on the use of these methods can be found under Early Successional Habitat Development and Management (Practice Code 647). Interseeding with additional species in addition to perennial grass suppression **may** be required to achieve the desired diversity and/or add missing components of a desired plant community. Legumes are often found to be deficient in introduced cool-season stands. Introduced cool-season legume seeding rates are based on the legume seed rates that are specified for mixtures in Table 2. Native forbs often become deficient in stands consisting of native grasses. Disturbance activities such as burning, strip disking, and/or herbicide application implemented on native grass stands originally established with a few forb species may be all that is necessary to encourage reestablishment of the forbs and other broadleaf plants favored by wildlife species. Use Table 3 to develop forb mixtures for interseeding where there is low likelihood of an existing forb seed bank or additional diversity is desired. Forb mixtures should include as many species as possible depending on the objectives of the landowner. A 5-10 species mix seeded at 1 lb. /acre would generally be adequate if the appropriate disturbance methods were implemented prior to seeding. Stand evaluations are usually necessary to determine which additional species are needed in an existing stand. Visual stand evaluations of are often adequate to determine species composition. Where detailed stand evaluations are needed, use methods described in Agronomy Technical Note IL-2 “Guidelines for Herbaceous Stand Evaluation”.

OPERATION AND MAINTENANCE

After the establishment period, use spot mowing or spot herbicide treatment where possible, to control noxious weeds and other undesirable plant growth.

Mowing after the establishment period (except for noxious weed control) shall be done prior to April 15 or after August 1 to protect nesting wildlife. Exceptions can be made to allow mowing, burning, and/or chemical treatments when necessary to maintain the health and diversity of the plant community.

Burning native plant stands may be appropriate when plant vigor declines, diversity diminishes, or where invasive/undesirable species encroach. See Prescribed Burning, Practice Code 338 for additional information and criteria.

Where the conservation cover is grazed or hayed, refer to Prescribed Grazing, Practice Code 528 and Forest Harvest Management, Practice Code 511.

Strip-disking can be used to control stand succession and maintain wildlife benefits except in pollinator plantings. See Early Successional Habitat Development/Management (Practice Code 647) standards and specifications for specific guidelines.

The procedure in Illinois Agronomy Technical Note (IL-2) shall be used for stand evaluation.

REFERENCES

Heath, M.E., D.S. Metcalfe, R.F. Barnes. 1973. Forages-The Science of Grassland Agriculture, 3rd ed., Iowa State University Press, Ames.

Illinois Native Plant Guide for Streams and Stormwater Facilities in Northeast Illinois. 1997. Revised 2004.

Illinois Plant Information Network (ILPIN), http://www.fs.fed.us/ne/delaware/ilpin/ilpin.html

Maier, C.M., R.D. Jackson, J.L. Posner. "Forage Production and Quality of Restored Prairie Interseeded With Native Legumes. http://wicst.wisc.edu/wp-content/uploads/maier_wicst_prairie_grazing_report_1-22-10_final.pdf

McClain, W.E. 1997. Prairie Establishment and Landscaping, Technical Publication No. 2. Division of Natural Heritage, Illinois Department of Natural Resources, Springfield, Illinois.

National Range and Pasture Handbook, USDA, Natural Resources Conservation Service, Grazing Lands Technology Institute, 1997.

Prairie Moon Nursery, Prairie Moon Nursery - Native Prairie Seeds

USDA, NRCS. 2008. The PLANTS Database (http://plants.usda.gov, 25 July 2008). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Table 1. Seeding Dates

Time of Seeding	Plant Suitability Zone[1]	Cool Season Species	Warm Season Species[2]
Spring	I	Early spring - June 1	Early spring - June 15
	II	Early Spring - May 15	Early spring - June 5
	III	Early Spring - May 15	Early spring - June 1
Late Summer	I	August 1 - September 1	Not Recommended
	II	August 1 - September 10	Not Recommended
	III	August 1 - September 20	Not Recommended
Dormant[3]	I	November 1 - March 15	
	II	November 15 - March 1	
	III	November 15 - March 1	

1 - Refer to the "Plant Suitability Zones" map located in Section I, IL-FOTG-Climatic Data

2 - Dates to be used when warm and cool season natives are planted in mixture.

3 - The latter part of the Dormant seeding period where alternating, daily freezing and thawing cycles occur may be targeted for "frost seedings".

Table 2. Introduced grasses and legumes

Species S=Sod Forming B= Bunch Forming	Suggested percent mixture by weight to benefit wildlife	Seeds per pound	Seeds per square foot at 1 Lb. PLS/Acre	Recommended seeding rate when included in mixtures[4] Lbs. PLS/Acre	Wildlife Suitability P=Pheasant Q=Quail PN=Beneficial for Pollinators	Site Suitability[3]	Optimal Soil pH Range
Smooth Bromegrass(S)	0-60	136,000	3	1-3	P	D,WD	5.6-8.4
Kentucky Bluegrass(S)[1]	0-60	2,177,000	50	¾ -1 ¼	Q	WD,PD	5.6-7.3
Orchardgrass(B)	0-50	654,000	15	½ -1 ½	P,Q	D,WD	5.6-8.4
Timothy(B)[1]	0-50	1,230,000	28	½ - 1 ½	P,Q	WD,PD	5.1-8.4
Red top(S)	0-50	4,990,000	114	¼ - ¾	P,Q	WD,PD	4.5-9.0
Perennial Ryegrass(B)	0-25	227,000	5	1-3	P	WD,PD	5.1-8.4
Alfalfa[1]	0-50	200,000	5	4-6	P, PN	D,WD	6.1-8.4
Birdsfoot Trefoil[1]	0-50	375,000	9	3-4	P,Q	D,WD,PD	5.1-8.4
Red Clover[1]	0-50	275,000	6	4-6	P,Q,PN	D,WD	5.1-8.4
Crimson Clover[1,5]	0-50	140,000	3	5-6	P,Q,PN	D,WD	5.5-7.0
Ladino Clover[1]	0-50	800,000	37	½ -1	P,Q, PN	WD,PD	5.1-8.4
Alsike Clover[1]	0-50	700,000	18	2-3	P,Q,PN	WD,PD	5.1-7.3
Annual Lespedeza [1,2,]	0-50	225,000	5	5-6	Q	D,WD	5.1-7.3 (Common)

1. Species suitable for frost seeding.

2. Annual lespedezas are adapted to Plant Suitability Zones 2 and 3 only. Common Korean and Summit are recommended varieties of Korean lespedeza. Kobe and Marion are recommended varieties of striate lespedeza.

3. D=Droughty, WD=Well Drained, PD=Poorly Drained

4. Suggested seed rates for interseeding into existing stands. For mixtures, base seed rate on percentage of the mixture desired. e.g. To interseed a seed mixture comprising of 50 percent red clover and 50 percent annual lespedeza into an existing cover, the red clover seed rate would be 2-3 lbs. PLS/acre and lespedeza would be 2.5 to 3 lbs. PLS/acre.

5. Crimson clover is an annual that does not reliably re-seed itself in Illinois and therefore should not be included in mixtures where persistence is desired.

FIGURE 1. STATEWIDE DISTRIBUTION OF RINGNECK PHEASANT AND BOBWHITE QUAIL

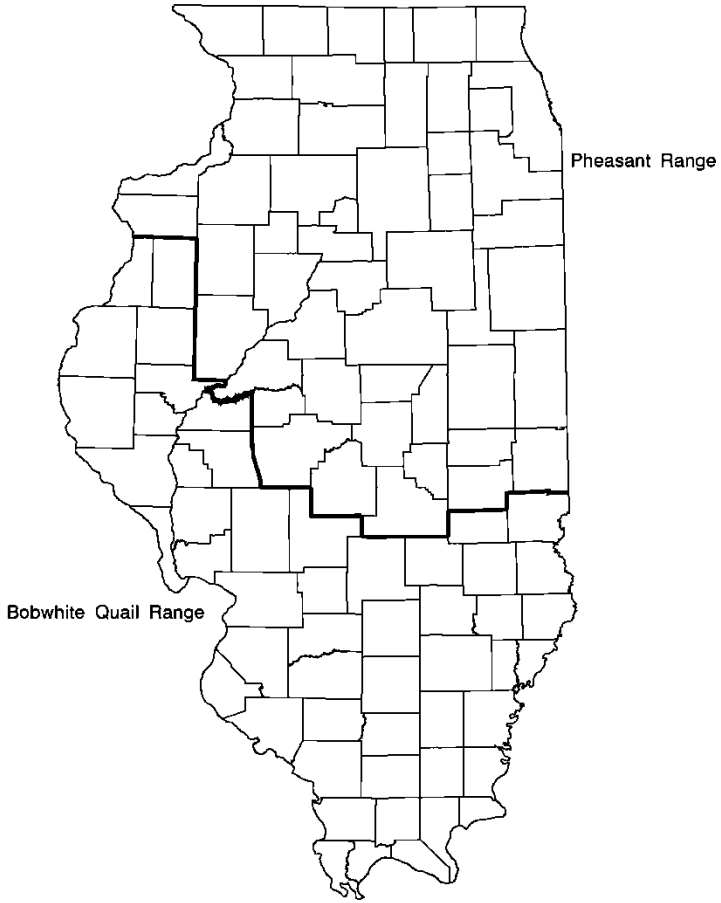

Table 3. Native grasses, sedges, and rushes

Species	Native Ecosystem[1]	**Moisture Regime[2]**	Seeds per ft^2 at 1 lb. or ***(1 oz.)*** PLS/Acre	PLS seeds per pound **(Seeds per ounce)**	pH Range	Remarks
Beaked panicgrass, *Panicum anceps*	P,S,W	M,WM,W	12	525,000		Warm-Season
Big Bluestem*, Andropogon gerardii*	P,S	D,DM,M, WM	3	130,000	5.1-8.4	Warm-Season
Blue Grama, *Bouteloua gracilis*	P	D,DM	16	710,000	6.6-8.4	Warm-season, Sandy soils
Bluejoint Reedgrass, *Calamagrostis canadensis*	P	WM,W	Plugs or rhizomes on 0.5-1.5 foot centers	3,750,000	4.5-8.0	Cool-Season, Seedings are unreliable
Canada Wildrye, *Elymus canadensis*	P,S	DM,M, WM	3	115,000	5-8	Cool-Season
Composite Dropseed, *Sporobolus compositus (S. Asper)*	P,S	D,DM,M	11	480,000	5+	Warm-Season, Sandy soil
Dark Green Bulrush, *Scirpus atrovirens*	P	W	*(11)*	(460,000)	4-8	
Eastern Gamagrass[3], *Tripsacum dactyloides*	P	M,WM,W	0.2[4]	7,500	4.5-9.0	Warm-Season
Fowl Mannagrass, Glyceria striata	P	M,WM,W	(4.13)	(100,000)		Cool-Season
Fox Sedge, *Carex vulpinoidea*	P,W,S	WM,W	(2.29)	(100,000)	6.8-8.9	
Fringed Sedge, *Carex crinita*	P	WM,W	(0.52)	(23,000)		

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Species	Native Ecosystem[1]	**Moisture Regime[2]**	Seeds per ft^2 at 1 lb. or ***(1 oz.)*** PLS/Acre	PLS seeds per pound **(Seeds per ounce)**	pH Range	Remarks
Grays Sedge, *Carex grayi*	P	M,WM,W	(0.027)	(1,200)		
Hard Stemmed Bulrush, *Scirpus acutus*	P	W	5	206,400	5.2-8.5	
Hop Sedge, *Carex lupulina*	P	W	12	528,000	6.1-7.0	
Indiangrass, *Sorghastrum nutans*	P	D,DM,M	4	170,000	5.6-7.3	Warm-Season
June Grass, *Koeleria macrantha*	P	D,DM,M	34	1,465,000	6-8	Cool-Season, Sandy soils, Provides nest habitat for bumblebees.
Little Bluestem, *Schizachyrium scoparium*	P,S	D,DM,M	5	225,000	5.1-8.4	Warm-Season, Provides nest habitat for bumblebees.
Prairie Cordgrass, *Spartina pectinata*	P	M,WM,W	Plugs or rhizomes on 3 foot centers		6.0-8.5	Warm-Season, Seedings are unreliable
Prairie Dropseed, *Sporobolus heterolepis*	P	D,DM,M	28	1,200,000	6-7.2	Warm-Season, Provides nest habitat for bumblebees.
River Oats, *Chasmanthium latifolia*	P	M,WM	(0.091)	(4,000)		Cool Season
Rough Dropseed, *Sporobolus asper*	P	D,DM,M, WM	34	1,500,000		Warm-Season
Sand Dropseed, *Sporobolus cryptandrus*	P	D,DM	114	5,000,000	6.6-8.0	Warm-Season
Sand Lovegrass, *Eragrostis trichodes*	P,S	D,DM	35.6	1,550,000	6.0-8.5	Warm-Season, Sandy soils

NRCS, ILLINOIS
January 2017

Species	Native Ecosystem[1]	**Moisture Regime[2]**	Seeds per ft^2 at 1 lb. or ***(1 oz.)*** PLS/Acre	PLS seeds per pound **(Seeds per ounce)**	pH Range	Remarks
Sideoats Grama, *Bouteloua curtipendula*	P,S	D,DM	4.3	190,000	5.5-7.8	Warm-Season, Provides nest habitat for bumblebees.
Soft Stemmed Bulrush, *Schoenoplectus tabernaemontani*	P	W	11	496,000	5.4-7.5	
Switchgrass, *Panicum virgatum*	P,S	D,DM,M, WM	9	400,000	5.1-8.4	Warm-Season
Virginia Wildrye, *Elymus virginicus*	P,S,W	WM,W	2	75,000	5-7	Cool-Season
Wooly Sedge, *Carex pellita*	P	WM,W	*(0.64)*	(28,000)		
Wool Grass, *Scirpus cyperinus*	P,W	WM,W	(39)	(1,700,000)	3.7-8.4	Provides nest habitat for bumblebees.

1. Native Ecosystem: P=Prairie, S=Savanna, W= Woodland
2. Moisture Regime: D=Dry(excessively drained), DM=Dry Mesic(moderately well drained), M=Mesic(well drained), WM=Wet Mesic(somewhat poorly drained),, W=Wet(very poorly drained, poorly drained)
3. For mixtures including Eastern Gamagrass, consider 1 lb./acre to provide the equivalent of 2 seeds/ft^2

Table 3a. Native Forbs

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Alumroot, *Heuchera richardsonii*	P	D, DM, M	April-June	16	687,500		

327-14

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
American Germander, *Teucrium canadense*	P,S,W	M,WM	June-Sept.	0.5	21,800	4.5-8	Aggressive
Angelica, Great, *Angelica atropurpurea*	P,W	M,WM	May-June	0.12	5,400	7-8	Highly beneficial to pollinators
Aster, Aromatic , *Symphyotrichum oblongifolium*	P	D,DM,M	Aug.-Oct.	1.1	51,000	7-8	
Aster, Calico, *Symphyotrichum lateriflorum*	S,W	WM,W	Sept.-Oct.	5.7	250,000		
Aster, False *Boltonia asteroides*	P	WM,W	Aug.-Oct.	3.7	160,000		
Aster, Flat-topped, *Symphyotrichum umbellatum*	P,S	M,WM,W	Aug.-Oct.	1.5315	67,000		Highly beneficial to pollinators
Aster, Frost, *Symphyotrichum pilosum*	P,S,W	D,DM,M	Sept.-Oct.	3.2	140,000		Highly beneficial to pollinators, very aggressive. Seed no more than 1 ounce/acre
Aster, New England, *Symphyotrichum novae-angliae*	P,S	DM,M,WM, W	Aug.-Oct	1.5	66,000		Highly beneficial to pollinators
Aster, White Panicle S*ymphyotrichum lanceolatum*	P,W	WM,M	July-Oct.	1.0	190,000		Highly beneficial to pollinators
Aster, Silky, *Symphyotrichum sericeum*	P,S	D,DM	Sept.-Oct.	1.29	55,600		Highly beneficial to pollinators
Aster, Sky Blue, *Symphyotrichum oolentangiense*	P,S	D,DM,M	Sept.-Oct.	1.45	63,000		Highly beneficial to pollinators, easily established

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Aster, Smooth Blue, *Symphyotrichum laeve*	P,S	DM,M,WM	Aug.-Oct.	1.15	50,000		Highly beneficial to pollinators, easily established
Aster, Swamp, *Symphyotrichum puniceum*	P,S	WM,W	Aug.-Oct.	1.84	80,000		Highly beneficial to pollinators
Aster, White Heath, *Symphyotrichum ericoides*	P,S	D,DM,M	Aug.-Oct.	4.6	200,000		Highly beneficial to pollinators Seed no more than 0.1 ounce/acre
Bird's Foot Violet, *Viola pedata*	P	D,DM	April-June	0.6	26,000		
Black-eyed Susan, *Rudbeckia hirta*	P, S	D,DM,M, WM	July-Sept.	2.0	93,750	6.0-7.0	Biennial, Seed no more than 1 oz./ac., easily established
Blazingstar, Dotted, *Liatris punctata*	P	D,DM,M	Aug.-Sept	0.09	3,900	6.0-7.8	Highly beneficial to pollinators
Blazingstar, Dwarf, *Liatris cylindracea*	p	D,DM	Aug.-Sept.	0.32	14,000		Highly beneficial to pollinators, sandy soils
Blazingstar, Marsh *Liatris spicata*	P	W,WM,M	July-Sept.	0.25	11,000		Highly beneficial to pollinators
Blazingstar, Prairie ,*Liatris pycnostachya*	P	DM,M,WM	July-Sept.	0.17	7,500	6-8.5	Highly beneficial to pollinators, easily established,

327-16

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Blazingstar, Rough, *Liatris aspera*	P,S	D,DM,M	Aug.-Sept.	0.34	16,000		Highly beneficial to pollinators, easily established
Blue-eyed Grass, *Sisyrinchium campestre*	P,S	D,DM,M	May-June	1.0	45,000		
Blue Flag Iris, *Iris virginica var. shrevei*	P,S	M,WM,W	May-July	0.02	1,000		
Blue Lobelia or Great Blue Lobelia, *Lobelia siphilitica*	P,S	M,WM,W	Aug.-Oct.	11.5	500,000		Highly beneficial to pollinators
Blue Vervain, *Verbena hastata*	P	M,WM,W	June-Oct.	2.0	93,000		
Boneset, *Eupatorium perfoliatum*	P	W,WM	Aug.-Oct.	3.6	160,000		Highly beneficial to pollinators
Boneset, False, *Brickellia eupatorioides*	P	D,DM	Aug.-Sept.	0.73	32,000		
Bottle or Closed Gentian, *Gentiana andrewsii*	P,S	M,WM	Aug.-Oct.	13.0	562,500	5.8-7.2	Highly beneficial to pollinators
Brown-eyed Susan, *Rudbeckia triloba*	P,S	DM,M,WM	Jul.-Sept.	0.8	35,000		
Bunchflower, *Veratrum virginicum*	P	WM,W	June-July	0.20	9,000		Highly beneficial to pollinators
Canada Anemone, *Anemone canadensis*	P,S	M,WM,W	May-June	0.18	8,000		Highly beneficial to pollinators

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Cardinal Flower, *Lobelia cardinalis*	P,S	WM,W	July-Sept.	9.2	400,000	5.8-7.8	Highly beneficial to pollinators
Carpenter's Square, Maryland Figwort, *Scrophularia marilandica*	S,W	DM,M	July-Oct.	3.9	170,000		Highly beneficial to pollinators
Compass Plant, *Silphium laciniatum*	P	DM,M	June-Sept.	0.01	600		Highly beneficial to pollinators
Cream Wild Indigo, *Baptisia leucophaea*	P,S	DM,M	May	0.03	1,400		Highly beneficial to pollinators
Culver's Root, *Veronicastrum virginicum*	P,S	M,WM,W	June-Sept.	17.2	750,000		Highly beneficial to pollinators
Cup Plant, *Silphium perfoliatum*	P,S	M,WM,W	June-Sept.	0.03	1,400		Highly beneficial to pollinators
Dotted Mint, *Monarda punctata*	P,S,W	D,DM	June-Oct.	2.0	90,000		Highly beneficial to pollinators, sandy soils
Downy Gentian, *Gentiana puberulenta*	P,S	M,WM	Sept.-Oct.	10.0	435,000		
Evening Primrose, *Oenothera biennis*	P,S	D,DM,M	Aug.-Sept.	2.0	86,000	5.0-7.0	Biennial
Feverfew or Wild Quinine, *Parthenium integrifolium*	P	DM,M,WM	June-Aug.	0.16	7,000		Easily established
Flowering spurge, *Euphorbia corollata*	P	D,DM,M	June-Sept.	0.18	8,000		

327-18

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Foxglove Beardtongue, *Penstemon digitalis*	P,S	DM,M,WM	May-July	2.98	130,000	5.5-7	Highly beneficial to pollinators
Fringed Gentian, *Gentianopsis crinita*	P	WM,W	Sept.-Oct.	5.3	231,250		Biennial
Fringed Loosestrife, *Lysimachia ciliata*	P,W	WM,W	June-Aug.	2.0	90,000		
Goats Rue, *Tephrosia virginiana*	P,S	D,DM	June-July	0.57	2,500	4-6	Legume, sandy soils
Golden Alexanders, *Zizia aurea*	P,S,W	M,WM	April-June	0.28	12,000		Highly beneficial to pollinators, Easily established
Golden Ragwort, *Packera aurea or Senecio aureus*	P,W	WM,W	April-May	1.7	73,000		Highly beneficial to pollinators
Goldenrod, Old Field, Gray, *Solidago nemoralis*	P,S	D,DM,M	Aug.-Oct.	6.9	300,000	6.5-7.5	
Goldenrod, Riddell's, *Solidago riddellii*	P	M,WM,W	Aug.-Sept.	2.1	93,000		Highly beneficial to pollinators, suited to wet/calcareous soils
Goldenrod, Rigid or Stiff, *Solidago rigida*	P	D,DM, M,WM	Aug-Oct.	1.0	41,000		Highly beneficial to pollinators, easily established
Goldenrod, Showy, *Solidago speciosa*	P,S	D,DM,M	July-Oct.	2.18	95,000		Highly beneficial to pollinators
Gray-headed Coneflower, *Ratibida pinnata*	P,S	D,DM,M, WM	July-Sept.	0.9	39,000	5.5-6.8	Easily established

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Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Heartleaf Meadow Parsnip, *Zizia aptera*	P,S	DM,M	Apr.-June	0.28	12,000		
Hoary Puccoon, *Lithospermum canescens*	P	D,DM	May	0.57	25,000		
Hoary Vervain, *Verbena stricta*	P	D,DM	May-Sept.	0.77	33,400		Easily established
Illinois Bundle Flower, *Desmanthus illinoensis*	P,S,W	DM,M	June-Aug.	0.09	3,800	5.0-8.0	Legume, easily established
Ironweed, *Vernonia fasciculata*	P,S	M,WM	July-Oct.	0.55	24,000		Highly beneficial to pollinators, easily established
Ironweed, Missouri, *Vernonia missurica*	P	DM,M,WM	July-Oct.	0.53	22,000		Highly beneficial to pollinators
Joe-Pye Weed, *Eupatorium maculatum*	P	WM,W	July-Sept.	2.1	95,000		
Lance Leaf Coreopsis, *Coreopsis lanceolata*	P,S	D,DM	May-June	0.46	20,000		
Leadplant, *Amorpha canescens*	P,S	D,DM,M	June-Aug.	0.4	17,000		Highly beneficial to pollinators, legume, sandy soils
Loosestrife, Winged, *Lythrum alatum*	P,W	WM,W	June-Sept.	68.9	3,000,000		Highly beneficial to pollinators

327-20

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Lousewort, Wood Betony, *Pedicularis canadensis*	P,S	D,DM,M,WM	May-June	0.75	33,000	4.0-7.0	
Marigold, Marsh, *Caltha palustris*	P,W	WM,W	April-June	0.60	26,000		Highly beneficial to pollinators
Milk Vetch, *Astragalus canadensis*	P	D,DM,M	June-Aug.	0.39	17,000	6.0-8.0	Legume, easily established
Milkweed, Butterfly, *Asclepias tuberosa*	P,S	DM,M	June-Aug.	0.10	4,300	4.8-6.8	Highly beneficial to pollinators
Milkweed, Common, *Asclepias syriaca*	P,S	D,DM,M,WM	May-Aug.	0.10	4,000		Highly beneficial to pollinators, adapted to sandy soils
Milkweed, Prairie, *Asclepias sullivantii*	P	M,WM	June-July	0.10	4,500		Highly beneficial to pollinators
Milkweed, Purple, *Asclepias purpurascens*	P	DM,M,WM	May-July	0.10	4,500		Highly beneficial to pollinators
Milkweed, Showy, *Asclepias speciose*	P	DM,M	June-Aug.	0.10	4,500		Highly beneficial to pollinators
Milkweed Swamp, *Asclepias incarnata*	P	M,WM,W	June-Aug.	0.10	4,300		Highly beneficial to pollinators, easily
Milkweed, Tall Green, *Asclepias hirtella*	P	D,DM,M,WM	June-Aug.	0.10	4,300		Highly beneficial to pollinators
Milkweed, Whorled, *Asclepias verticillata*	P,S	D,DM,M	June-Aug.	2.5	11,000		Highly beneficial to pollinators
Mountain Mint, *Pycnanthemum virginianum*	P,S	DM,M,WM	July-Sept.	5.0	220,000		Highly beneficial to pollinators

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Mountain Mint, Narrowleaf, *Pycnanthemum tenuifolium*	P,S	DM,M,WM	June-Sept.	8.7	378,000		Highly beneficial to pollinators
Obedient Plant, *Physostegia virginiana*	P,W	M,WM,W	Aug.-Sept.	0.25	11,000		Highly beneficial to pollinators
Ohio Horse Mint, Pagoda Plant, Downy Wood Mint, *Blephilia*	P	D,DM,M,	May-August	9.2	400,000		Highly beneficial to pollinators
Ox-eye or False Sunflower, *Heliopsis helianthoides*	P,S	DM,M,WM	June-Sept	0.15	6,500		Easily established
Pale Gentian, *Gentiana alba*	P	M,WM	Sept.-Oct.	5.2	227,000		
Pale Purple Coneflower, *Echinacea pallida*	P	D,DM,M	July-Aug.	0.12	5,200	6.5-7.2	Highly beneficial to pollinators, easily established
Pale Spike Lobelia, *Lobelia spicata*	P,S	D,DM,M	July-Aug.	20.7	900,000		Highly beneficial to pollinators
Partridge Pea, *Chamaecrista fasciculata*	P,S	D,DM,M	July-Sept	0.07	3,100	6.5-7.5	Highly beneficial to pollinators, annual legume, sandy soils
Pasqueflower, *Pulsatilla patens*	P	D,DM	Mar.-April	0.41	18,000		Northern IL
Penstemon, Pale, *Penstemon pallidus*	P,S	D,DM	May-July	4.1	180,000		Highly beneficial to pollinators
Prairie Cinquefoil (Potentilla), *Potentilla arguta*	P,S	D,DM,M	June-July	5.3	230,000	6-8	Easily established

327-22

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Prairie Coreopsis, *Coreopsis palmata*	P,S	D,DM,M	June	0.23	10,000		
Prairie Dock, *Silphium terebinthinaceum*	P	M,WM	July-Sept.	0.02	1,000		
Prairie Phlox, *Phlox pilosa*	P,S	DM,M	May-Aug.	.44	19,000		
Prairie Ragwort, *Senecio plattensis*	P	D,DM,M	May-June	2.3	100,000		
Prairie Smoke, *Geum triflorum*	P,S	D, DM	May-June	1.0	43,500		Northern 1/6 of IL
Prairie Sundrops, *Oenothera pilosella*	P	M,WM	May-July	6.1	266,000		Highly beneficial to pollinators
Prairie Violet, *Viola pedatifida*	P	D,DM,M	April-June	0.7	28,000		
Primrose, Sand, *Oenothera rhombipetala*	P	D	June-Sept.	2.3	100,000		
Purple Coneflower, *Echinacea purpurea*	P,W	DM,M,WM	July-Aug.	0.15	6,600	6.5-7.2	Highly Beneficial to pollinators, easily established
Purple Hyssop, *Agastache scrophulariifolia*	W	DM,M,WM	July-Sept.	2.1	93,000		Highly beneficial to pollinators
Purple Meadow Rue, *Thalictrum dasycarpum*	P	M,WM	May-June	0.25	11,000		Highly beneficial to pollinators legume

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Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Purple Prairie Clover, *Dalea purpureum*	P	D,DM,M	July-Aug.	0.40	17,000		Highly beneficial to pollinators, legume
Rattlesnake Master, *Eryngium yuccifolium*	P	DM,M,WM	June-August	0.16	7,000		Highly beneficial to pollinators
Rosinweed, *Silphium integrifolium*	P	DM,M	July-Sept.	0.03	1,400		Highly beneficial to pollinators, easily established
Roundhead Lespedeza, *Lespedeza capitata*	P,S	D,DM,M	July-Sept.	0.18	8,000	5.7-8.2	Legume, easily established, sandy soils
Seedbox, *Ludwigia alternifolia*	P	M,WM,W	June-Aug.	29.8	1,300,000	4-6	Adapted to sandy soils
Scurf pea, *Psoralidium tenuiflorum*	P	D,DM	June-Sept.	0.02	1,000		Highly beneficial to pollinators, legume
Senna, Wild, *Senna hebecarpa*	P	M,WM	July-August	0.03	1,400	4-7	Highly beneficial to pollinators, legume
Senna, Maryland, *Cassia marilandica*	P	DM,M,WM	July-Aug.	0.04	1,700		Highly beneficial to pollinators, legume
Shooting Star, *Dodecatheon meadia*	P,S	D,DM,M	April-May	1.38	60,000	4-6	

327-24

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Sneezeweed, *Helenium autumnale*	P	WM,W	Aug-Sept.	3.21	140,000		Highly beneficial to pollinators
Spiderwort, *Tradescantia ohiensis*	P,S	D,DM,M	May-June	0.18	8,000		Highly beneficial to pollinators
Spotted St. Johnswort, *Hypericum punctatum*	P,S	DM,M	June-Aug.	13.3	580,000		
Sunflower, Ashy, *Helianthus mollis*	P	D,DM,M	Aug.-Sept.	0.16	7,000		Highly beneficial to pollinators, Aggressive seed no more than 10 ounces/acre
Sunflower, Saw-tooth *Helianthus grosseserratus*	P,S	M,WM,W	July-Aug.	0.90	12,500		Highly beneficial to pollinators, aggressive, Seed no more than 10 ounces/acre
Sunflower, Showy, *Helianthus pauciflorus (×laetiflorus)*	P	D,DM	July-October	0.09	4,000		Highly beneficial to pollinators, Aggressive
Sunflower, Tall, *Helianthus giganteus*	P	WM,W	July-Sept.	0.23	10,000		Highly beneficial to pollinators Aggressive,
Swamp Buttercup, *Ranunculus hispidus*	S,W	WM,W	April-July	0.04	1,600		

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Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Sweet Black-Eyed Susan, *Rudbeckia subtomentosa*	P,S	DM,M,WM	Aug.-Sept.	1.0	43,000		
Tall Tickseed or Tall Coreopsis, *Coreopsis tripteris*	P,S,W	M,WM	Aug.-Sept.	0.32	14,000		Aggressive
Thimbleweed, *Anemone cylindrica*	P,S	D,DM,M	May-Aug.	0.60	26,000		
Tick-Trefoil, Illinois *Desmodium illinoense*	P,S,W	D,DM	June-July	0.10	4,300		Highly beneficial to pollinators, legume
Tick-Trefoil, Sessile leafed, *Desmodium sessilifolium*	P,S	D,DM	July-Sept.	0.11	5,000		Highly beneficial to pollinators, legume
Tick Trefoil, Showy, *Desmodium canadense*	P,S	DM,M,WM	July-Aug.	0.13	5,500		Highly beneficial to pollinators, legume, easily established
Turtlehead, *Chelone glabra*	P,W	WM,W	July-Sept.	2.1	92,000		Highly beneficial to pollinators
White Prairie Clover, *Dalea candida*	P	DM,M	June-July	0.44	19,000		Highly beneficial to pollinators legume, easily established
White Sage or Prairie Sage, *Artemisia ludoviciana*	P,S	D,DM,M	Aug.-Oct.	5.4	250,000		Aggressive
Wild White Indigo, *Baptisia alba*	P,S	DM,M,WM	May-July	0.04	1,700		Highly beneficial to pollinators

327-26

Forbs and Legumes	Native Ecosystem[1]	Moisture Regime[2]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per Ounce	pH Range	Remarks
Wild Blue Indigo, Baptisia australis	P,S	D,DM,M, WM	May-June	0.03	1,500		Highly beneficial to pollinators, adapted to sandy soils
Wild Bergamot or Bee Balm, *Monarda fistulosa*	P,S	D,DM,M	May-July	1.72	75,000	6-8	Highly beneficial to pollinators, easily established
Wild Blue Larkspur, *Delphinium carolinianum*	S,W	DM,M	June	1.34	41,000		
Wild Geranium, *Geranium maculatum*	P,S	DM,M	April-June	0.11	5,000		Highly beneficial to pollinators
Wild Lupine, *Lupinus perennis*	P,S	D,DM,M	May-June	.03	1,400		Highly beneficial to pollinators
Yellow Star-grass, *Hypoxis hirsuta*	P,S	M,WM	May-June	1.84	80,000		
1. Native Ecosystem: P=Prairie, S=Savanna, W= Woodland 2. Moisture Regime: D=Dry, DM=Dry Mesic, M=Mesic, WM=Wet Mesic, W=Wet							

Table 3b. Native Woody Shrub Species

Perennial Native Woody Shrub Species	Moisture Regime[1]	Flowering Period	Seeds per ft^2 at 1 PLS ounce/acre	Seeds per ounce	pH Range	Remarks
Button bush, *Cephalanthus occidentalis*	WM,W	June-August	0.14	6,000	5.3-8.5	Highly beneficial to pollinators
False indigo, *Amorpha fruticosa*	DM,M,WM	May-June	0.07	3,250	5.0-8.5	Legume, Highly beneficial to pollinators
Meadow rose, *Rosa blanda*	DM,M,WM	May-June	0.06	2,500		Highly beneficial to pollinators
New Jersey tea, *Ceanothus americanus*	DM,M	June-Aug.	0.16	7,000	4.3-6.5	Highly beneficial to pollinators
Inland New Jersey Tea, Redroot, *Ceanothus ovata*	D,DM	June-Aug.	0.23	10,000		Rare, sandy soils, N. IL
Pasture rose, *Rosa carolina*	DM,M, WM	June-July	0.06	2,500	4-7	Highly beneficial to pollinators
Sunshine rose, *Rosa arkansana*	DM, M	June-July	0.06	2,500		Highly beneficial to pollinators
Prairie willow, *Salix humilis*	D,DM,M,WM	March-May	Cuttings or bare root plants 200-300/acre		5.9-7.0	Highly beneficial to pollinators, sandy soils
Pussy Willow, *Salix discolor*	M,WM,W	March-May	Cuttings or bare root plants 200-300/ acre		5.0-7.0	Highly Beneficial to pollinators
1. Moisture Regime: D=Dry, DM=Dry Mesic, M=Mesic, WM=Wet Mesic, W=Wet						

Wildlife Species	Introduced Species	Seed Rate Lbs. PLS/Acre	Native Species	Seed Rate Lbs. PLS/Acre
Pheasant				
Prefer cool season grass- legume mix or moderately dense warm season grass.	Mixture 1		Mixture 1	
	Smooth Brome Timothy Alfalfa	3 ½ 6	Sideoats Grama Indiangrass Little Bluestem Purple Prairie Clover Wild Bergamot	1 1 1 10 oz 1.2 oz.
	Mixture 2		Mixture 2	
	Smooth Brome Orchardgrass Alfalfa	1 1 6	Little Bluestem Sideoats Grama Canada Wildrye Diverse Forb Mixture(10-20 species)	1 1 1 1-2
	Mixture 3		Mixture 3	
	Orchardgrass Timothy Red Clover	1 1 6	Little Bluestem Sideoats Grama Purple Prairie Clover Partridge Pea	2 2 1 1

Wildlife Species	Introduced Species	Seed Rate Lbs. PLS/Acre	Native Species	Seed Rate Lbs. PLS/Acre
Whitetail Deer				
Prefer moderately dense warm season grass or cool season grass-legume stands. Legumes are an important deer food and should be included in a mixture or with other species or planted in a block as a food plot	Mixture 1		Mixture 1	
	Smooth Brome	3	Big Bluestem	1
	Orchardgrass	1/2	Switchgrass	1
	Alfalfa	6	Indiangrass	1
			Purple Prairie Clover	2
	Mixture 2		Mixture 2	
	Smooth Brome	1	Big Bluestem	1
	Timothy	1	Little Bluestem	2
	Alfalfa	4	Sideoats Grama	1
	Red Clover	4	Partridge Pea	1
			Illinois Bundleflower	1
			Purple Prairie Clover	1/2

Wildlife Species	Introduced Species	Seed Rate Lbs. PLS/Acre	Native Species	Seed Rate Lbs. PLS/Acre
Bobwhite Quail				
Prefer stands of bunch forming grasses the form overhead canopies with open space at ground level interspersed with legumes and other annual plant species.	Mixture 1		Mixture 1	
	Redtop Timothy Red Clover	3/4 1 ¼ 6	Little Bluestem Sideoats Grama Partridge Pea Purple Prairie Clover Roundhead Lespedeza	2 2 1 1/2 1/2
	Mixture 2 (Plant Suitability Zones 2 and 3 only)		Mixture 2	
	Redtop Orchardgrass Red Clover Annual Lespedeza	3/4 1 ¼ 4 5	Little Bluestem Sideoats Grama Diverse forb mix (10-20 species)	2 2 1

Wildlife Species	Introduced Species	Seed Rate Lbs. PLS/Acre	Native Species	Seed Rate Lbs. PLS/Acre
Waterfowl				
Duck species have differing preferences of vegetation height for nesting. For example, Pintails prefer short grasses, Blue Wing Teal prefer mid-size grasses, while Mallards and Gadwalls prefer tall species.	Mixture 1		Mixture 1	
	Redtop Timothy Red Clover	3/4 1 ¼ 6	Little Bluestem Sideoats Grama Partridge Pea Purple Prairie Clover Roundhead Lespedeza	2 2 1 1/2 1/2
	Mixture 2 (Plant Suitability Zones 2 and 3 only)		Mixture 2	
	Redtop Orchardgrass Red Clover Annual Lespedeza	3/4 1 ¼ 4 5	Little Bluestem Sideoats Grama Canada Wildrye Diverse forb mix (10-20 species)	2 2 2 1
The mixes above are only example mixes that target specific wildlife species. Established and managed properly the resulting plant communities will benefit the targeted and other wildlife species. The mixes may or may not conform to the specifications of specific Conservation Programs. Consult administering agency personnel for specific program requirements. Planners may elect to design other mixtures using Tables 2 and/or 3. Planners or landowners may consult with IDNR or NRCS Biologists for seed mixes that meet specific goals or desire to target other wildlife species. Forb mixtures provide more diversity and may be used as a substitute for the legumes or forbs listed above. A sample forb mixture is provided below.				

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Sample Forb Mixture

Forbs and Legumes	Native Ecosystem	Moisture Regime	Flowering Period	Seed Rate PLS ounce/acre	Seeds per ft^2	pH Range	Remarks
Black-eyed Susan, *Rudbeckia hirta*	P, S	D, DM, M, WM	July-Sept	1.0	2.0	6.0-7.0	Biennial ,Seed no more than 1 oz./ac.
Foxglove Beardtongue, *Penstemon digitalis*	P, S	DM,M,WM	May-July	1.0	2.8	5.5-7	Highly beneficial to pollinators
Common Milkweed, *Asclepias syriaca*	P, S	D,DM,WM	May-Aug.	2.0	0.2		Beneficial to the Monarch butterfly
Purple Coneflower, *Echinacea purpurea*	P, W	DM,M,WM	July-Aug.	4.0	0.60	6.5-7.2	Highly Beneficial to pollinators, easily established
Purple Prairie Clover, *Dalea purpureum*	P	D, DM, M	July-Aug	2.0	0.80		Highly beneficial to pollinators, legume
Aster, New England, *Symphyotrichum novae-angliae*	P, S	DM,M,M,W	Aug.-Oct	1.0	1.5		Highly beneficial to pollinators
Roundhead Lespedeza, *Lespedeza capitata*	P,S	D, DM, M	July-Sept	1.0	0.18	5.7-8.2	Legume, easily established, sandy soils
White Prairie Clover, *Dalea candida*	P	DM, M	June-July	2.0	0.88		Highly beneficial to pollinators, legume, easily established,
Wild Bergamot or Bee Balm, *Monarda fistulosa*	P, S	D, DM, M	July-Aug.	1.0	1.72	6-8	Highly beneficial to pollinators, easily established
Goldenrod, Rigid or Stiff, *Solidago rigida*	P	D, DM, M	Aug-Oct	1.0	1.0		Highly beneficial to pollinators easily established
TOTAL				16.0	10.7		

NRCS, ILLINOIS
January 2017

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

WINDBREAK/SHELTERBELT ESTABLISHMENT

(Ft)

Code 380

DEFINITION

Windbreaks or shelterbelts are single or multiple rows of trees or shrubs in linear configurations.

PURPOSES

- Reduce soil erosion from wind.
- Protect plants from wind related damage.
- Alter the microenvironment for enhancing plant growth.
- Manage snow deposition.
- Provide shelter for structures, animals, and people.
- Enhance wildlife habitat.
- Provide noise screens.
- Provide visual screens.
- Improve air quality by reducing and intercepting airborne particulate matter, chemicals and odors.
- Delineate property and field boundaries.
- Improve irrigation efficiency.
- Increase carbon storage in biomass and soils.
- Reduce energy use

CONDITIONS WHERE PRACTICE APPLIES

Apply practice on any areas where linear plantings of woody plants are desired and suited for controlling wind, noise, odor, and visual resources. Use other tree/shrub practices when wind, noise and visual problems are not concerns.

CRITERIA

General Criteria Applicable to All Purposes

The location, layout and density of the planting will accomplish the purpose and function intended within a 20-year period. See REFERENCES section for historic wind roses and frequency data from the State Climatologist Office for Illinois.

The maximum design height (H) for the windbreak or shelterbelt shall be the expected height of the tallest row of trees or shrubs at age 20 for the given site.

The distance protection extends from the windbreak's leeward side is proportional to the overall height. The most effective zone of protection extends to a distance 2 to 5 times (2H - 5H) the height, while significant protection extends to 10H.

Species must be adapted to the soils, climate and site conditions. Only viable, high quality, and adapted planting stock or seed will be used.

Changes in soil properties within the planting site may require the species to change within the row or selection of species with a wide range of adaptability.

Species shall be suited for the planned practice purpose(s).

No plants on the Federal or state noxious weeds list shall be planted.

Multiple species, within rows, may be used if heights, growth rates and growth forms are similar.

Site preparation shall be sufficient for establishment and growth of selected species and temporary cover when planned, not contribute to erosion, and be appropriate for the site. Refer to conservation practice standard TREE/SHRUB SITE PREPARATION (Practice Code – 490).

The planting shall be done at a time and manner to insure survival and growth of selected species.

Moisture conservation or supplemental watering shall be provided for plant establishment and growth where natural precipitation is too low for the selected species.

Refer to conservation practice standard TREE/SHRUB ESTABLISHMENT (Practice Code – 612) for further guidance on planting trees and shrubs.

Spacing between individual plants shall be based on the needed growing space for plant type and species, the accommodation of maintenance equipment, and the desired characteristics of the stem(s), branches and canopy as required for a specific purpose.

Trees and/or shrubs will not be planted where they will interfere with structures and/or above or below ground utilities. Woody plants will be established without compromising the integrity of property lines, fences, utilities, roads, legal drains, easements or rights of way.

Allow at least a 16-foot maintenance strip from the outside row of trees or shrubs to adjacent property lines or contrasting land use areas.

Comply with applicable federal, state and local laws and regulations during installation, operation, and maintenance of the practice. Appropriate cultural resources review will be conducted before beginning any tree planting practice.

Where functional subsurface drains (tile lines) pass through a tree/shrub planting, sealed conduit will be installed through the planting and extend a minimum of 100 feet from rows of large trees (capable of reaching heights greater than 60 feet) and 75 feet from all other trees and shrubs. Trees and shrubs will not be planted within 50 feet of either side of existing subsurface drains.

When placing an opening through a windbreak, make the opening on an angle to reduce the loss of wind protection. Whenever possible locate access roads at the ends of windbreaks, beyond the area where snowdrifts form.

Local regulations concerning planting of trees and shrubs along roads and right of ways will be observed.

Additional Criteria to Reduce Wind Erosion and to Protect Plants from Wind Related Damage

The windbreak will be oriented as close to perpendicular to the troublesome wind as possible.

For wind erosion control, temporary measures including residue management, crop rotation, and cover crops will be considered to supplement the windbreak until it is fully functional.

Sites, fields, and plants are protected within an area 10 times the design height (H) on the leeward side and two times the design height (H) on the windward side of the windbreak.

The length of the windbreak will extend 50 feet beyond each end of the area to be protected to mitigate changes in wind direction and ensure maximum effectiveness. (Up to 50 feet when property boundary limitations do not allow)

The interval between windbreaks shall be determined using current, approved, wind erosion technology. Interval widths shall not exceed distances permitted by the soil loss tolerance (T), or other planned soil loss objective. Calculations shall account for the effects of other practices in the conservation management system. Base spacing between sets of windbreaks on the level of plant

protection desired. Some crops and their annual/acre tolerance to windblown soil are listed below.

- Tolerant (3 tons): barley, oats, rye, wheat
- Moderate tolerance (2 tons): corn, grain sorghum, sunflowers
- Low tolerance (1 ton): apples, cherries, peaches
- Very low tolerance (< 1 ton): alfalfa, cotton, vegetables, potatoes

Select plant species taller than the crops being protected.

Additional Criteria to Manage Snow Deposition (Living Snow Fence)

The windbreak will be oriented as close to perpendicular to the snow-bearing wind as possible.

For even snow distribution across a field, the windbreak density (during expected snow-producing months) shall not be less than 25% nor greater than 50%. The interval between barriers will not exceed 20H.

For snow accumulation, the minimum barrier density, during expected snow-producing months, will be 50%.

The windward row will be at least 80 feet (60 feet south of Interstate 64) from the area to be protected. The windward row will be no more than 250 feet from the area to be protected.

Windbreaks will be located in a manner to ensure snow deposition will not pose a health or safety problem or obstruct human, livestock, or vehicular traffic.

Where water erosion and/or runoff from melting snow are a hazard, it shall be controlled by supporting practices.

If snow damage in a windbreak is a problem, use the widest spacing, locate a shrub row windward 40-75 feet from the primary windbreak, and/or locate a shrub row on the leeward side.

Additional Criteria to Provide Shelter for Structures, Livestock, and People

The windbreak will be oriented as close to perpendicular to the troublesome wind as possible.

For wind protection, the minimum barrier density will exceed 65% during the months of most troublesome wind.

The area to be protected will fall within a leeward distance of 10H.

To mitigate snow accumulation and reduce turbulence, the windward row will be at least 80 feet (60 feet south of Interstate 64) from the area to be protected.

The length of the windbreak will extend 50 feet beyond each end of the area to be protected to mitigate the “end effect” of drifts, changes in wind direction, and ensure maximum effectiveness. (Up to 50 feet when property boundary limitations do not allow)

Drainage of snowmelt from the windbreak shall not flow into livestock areas.

Drainage of livestock waste from livestock areas shall not flow into the windbreak.

Additional Criteria for Providing or Enhancing Wildlife Habitat or Travel Corridors

Select plant species to benefit targeted wildlife species including pollinators. Refer to conservation practice standard HEDGEROW PLANTING (Practice Code – 422) for a list of recommended woody species for wildlife.

Design dimensions of the planting shall be adequate for targeted wildlife species. Minimum width is 30 feet. See “Conservation Corridor Planning” in listed REFERENCES for additional information on corridor design.

Add rows to a planting to increase wildlife benefits. A minimum of one evergreen and one shrub row should be included among the windbreak rows. Shrub rows should be located on outside rows. Wildlife usage is increased

with 5 rows, and becomes optimal with 10 or more rows.

Use plants of different sizes, growth forms, food-bearing capabilities and densities to increase diversity.

Additional Criteria for Noise Screens

Noise screens will be at least 65% dense during all times of the year. At least one row will be composed of the tallest-growing species adapted to the site. Establish the noise screen as close to the noise source as practicable.

The length of the noise screen will be twice as long as the distance from the noise source to the receiver.

For high-speed (> 50 mph) traffic noise, the barrier will be a minimum of 65 feet wide. The leading edge of the planting will be 80-150 feet from the edge of the roadway. The tallest tree row will be capable of attaining a mature height of at least 45 feet.

For moderate speed (< 50 mph) traffic noise, the barrier will be a minimum of 20 feet wide. The leading edge of the planting will be 50-80 feet from the edge of the roadway. The tallest tree row will be capable of attaining a mature height of at least 30 feet.

Trees and/or shrubs planted near paved roads subject to application of de-icing salt will be at least moderately tolerant to salt spray. See “Right Tree – Right Place” and “Salt Tolerant Trees and Shrubs” in listed REFERENCES.

Additional Criteria for Visual Screens

Visual screens shall be located as close to the observer as possible with a density, height and width to sufficiently block the view between the area of concern and the sensitive area during desired periods.

Additional Criteria to Improve Air Quality by Reducing and Intercepting Airborne Particulate Matter, Chemicals and Odors

Windbreaks planted to control chemical drift function by both reducing wind speed to limit drift and by absorbing spray drift on plant parts. Use at least one row of the tallest adapted species to maximize the effectiveness of the windbreak.

The windbreak interval shall be less than or equal to 10H depending on site conditions and related supporting conservation practices.

Windbreak density on the windward side of the problem source, (i.e. particulate, chemical or odor) shall be greater than 50% to reduce the airflow into the source area.

Windbreak density on the leeward side of the problem source, and windward of the area to be protected, shall be greater than 65%.

Keep inner row of windbreak plantings from all buildings and waste storage areas at least 10 times the exhaust fan diameter or 50 feet, whichever is farther.

Adjust windbreak porosities/densities to meet air movement needs for naturally ventilated livestock confinement systems.

Select and maintain tree and shrub species with foliar and structural characteristics to optimize interception, adsorption and absorption of airborne chemicals or odors.

Additional Criteria for Improving Irrigation Efficiency

For sprinkler irrigation systems, the windbreak shall be taller than the spray height.

The windbreak shall not interfere with the operation of the irrigation system.

Additional Criteria to Increase Carbon Storage in Biomass and Soils

Select plants adapted to the site to assure strong health and vigor and plant the full stocking rate for the site.

Use fast growing species in a mix with long-lived species.

Maintain optimal water and nutrient needs for the planting.

Maximize width and length of the windbreak to fit the site.

For optimal carbon sequestration, select plants with higher rates of sequestration in biomass and soils.

Plant and manage the appropriate plant spacing for the site to maximize above and below ground biomass production.

Minimize soil disturbance during establishment and maintenance of the windbreak/shelterbelt.

Additional Criteria to Reduce Energy Use

Orient the windbreak as close to perpendicular to the troublesome wind as possible

Use proper plant density to meet energy reduction needs.

Use plants with a potential height growth that will be taller than the structure or facility being protected.

CONSIDERATIONS

Selection of plants for use in windbreaks should favor species or varieties tolerant to herbicides used in the area.

Plants which may be alternate hosts to undesirable pests should be avoided.

Tree or shrub rows should be oriented on or near the contour where water erosion is a concern. Consider control of hazardous water erosion and/or runoff from melting snow with supporting practices.

Wildlife and pollinator needs should be considered when selecting tree or shrub species. Species diversity, including use of native species, should be considered to avoid loss of function due to species-specific pests.

A shelterbelt can be used as a travel corridor to connect existing patches of wildlife habitat.

Consideration should be given to adverse offsite effects such as shading and deposit of snow on adjacent areas.

In cropping systems select windbreak and shelterbelt species to minimize adverse affects to crop growth (e.g. shade, allelopathy, competing root systems or root sprouts).

Root pruning may eventually be necessary to reduce impacts on adjacent croplands. Refer to conservation practice standard WINDBREAK/SHELTERBELT RENOVATION (Practice Code – 650) for additional information on root pruning.

Windbreaks for odor and chemical control increase in effectiveness as the amount of foliage surface area increases. Multiple rows, wide plantings offer greater interception potential than do smaller plantings.

Refer to Illinois Fact Sheet “Using Windbreaks to Manage Odor from Livestock Facilities”, located in Section IV of the IL – FOTG, for additional information on odor management.

When using trees and shrubs for greenhouse gas reductions, prediction of carbon sequestration rates should be made using current, approved carbon sequestration modeling technology.

Species selection to allow for the production of nuts and fruits for human and/or wildlife consumption, wood products, seeds, floral products and other agroforestry products is appropriate where it does not reduce the effectiveness of the windbreak.

Consider using larger air-root pruned potted planting stock to speed establishment and growth. Balled and burlapped material, by comparison, is often much more expensive and grows slowly for several years after planting. For more information on air-root pruned potted stock see “Container grown” planting stock in conservation practice standard TREE/SHRUB ESTABLISHMENT (Practice Code – 612)

When designing and locating a windbreak or shelterbelt, consider the impact upon the landowner’s or public’s view of the landscape.

All plantings should complement natural features.

PLANS AND SPECIFICATIONS

Specifications for applying practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation. Minimum design documentation will include: Determination of adapted species or trees/shrubs, planned site preparation and weed control, species and number to be planted in each row, spacing within and between rows, plant protective measures to provide desired function, maps or drawings needed to show location and site layout.

Recommended species

For adapted species and cultivars, refer to the Illinois FOTG, Section II, E. Conservation Tree/Shrub Suitability Groups. A partial list of the more commonly used trees and shrubs for windbreaks in Illinois is in Table 1. Additional species that meet intended purpose and design specifications may be considered when shown to be adapted to the soil, climate and site conditions.

Density

Windbreak densities can be controlled through the type of plants, pruning activities, within row spacing, and the number of rows used. See "How Windbreaks Work" in listed REFERENCES for chart to estimate windbreak densities.

Specific row minimums and plant types are designed to achieve the minimum densities stated under individual criteria sections. Use the following chart to achieve the minimum density requirements and adjust plant spacing to meet specific objectives above these minimums.

Windbreak Type	Minimum # of Rows
Shelter	
farmstead/shelterbelt	3ai
feedlot	3ai
Screens	
high-traffic noise (>50 mph)	6cj
med-traffic noise (<50 mph)	3bj
visual	2ad
Wildlife	5ai
Field	1h or 3ei
Living Snow Fence	
snow distribution	1f or 1i
snow accumulation	2g or 2i
Air Quality	
reducing chemical drift	1j
odor control (windward side)	3ai*
odor control (leeward side)	2g or 2i

a = 1 row must be evergreen
b = 2 rows must be evergreen
c = 3 rows must be evergreen
d = 3 rows if all deciduous species are used
e = 2 rows deciduous trees and/or evergreens
f = 1 row of deciduous tree, e. redcedar or arborvitae
g = at least 1 row e. redcedar or arborvitae
h = e. redcedar, arborvitae or spruce spp.
i = 1 row of shrubs *(inside row for odor)
j = tallest tree species adapted to the site

Additional rows may be used to enhance wildlife values, meet landowner objectives, increase diversity, improve natural beauty, and/or increase density.

Plant Spacing

Stagger tree spacing so the trees in one row will be planted opposite the opening in the other row.

Example:

X X X X
X X X X X
X X X X

Within Row Spacing:

Small shrubs (< 8' tall)	3 – 6 feet
Large shrub (8-25')	5 – 8 feet
E. redcedar and arborvitae	8 – 12 feet

Tall deciduous/evergreen trees	8 – 16 feet

Spacing Between Rows:

Shrub	6 – 12 feet
E. redcedar and arborvitae	10 – 16 feet
Tall deciduous/evergreen	12 – 30 feet
Between tree & shrub rows	10 – 20 feet

Using the closest within row spacing will give quicker results due to canopy closure but may necessitate thinning to maintain full crowns and prevent natural pruning of lower branches.

Using the widest spacing will reduce or eliminate the need for maintenance or renovation, especially thinning, but will greatly increase the time for crowns to close and the windbreak to reach maximum effectiveness.

Between row spacing should be at least 4 feet wider than any equipment planned for between-row maintenance.

Use the widest between row spacing if deciduous/evergreen trees are to be planted in adjacent rows of the same windbreak. Wide Spacing will prevent faster growing deciduous species from overtopping conifer species.

Use close within row spacing for windward rows and 2-row windbreaks. Wider spacing is best in middle and lee rows of multi-row windbreaks because plants will develop fuller crowns and require less maintenance.

If trees and/or shrubs are to be established by direct seeding, seed at a rate of approximately one seed for every 1.5 to 2 feet of row length. Plan to thin, reserving the best seedlings, to desired final spacing. Refer to conservation practice standard TREE/SHRUB ESTABLISHMENT (Practice Code – 612)

Living Snow Fence:

Additional specifications when planning for snow accumulation along roadways

- Snow barriers should extend 100 feet beyond the ends of the roadway areas to be protected when ownership and site conditions allow.
- Windward rows will be a maximum of 250 feet from the centerline of the roadway.
- Windward rows will not be closer than 80 feet from the centerline of the roadway. (60 feet south of Interstate 64)
- To mitigate icing and windthrow, Leeward rows (nearest the roadway) will be a distance from the road shoulder of at least 1.5 times the mature plant height for that row.

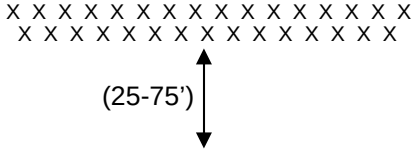
An area on the leeward side of a windbreak within 1H to 4H of the windward row will receive maximum snow deposition. Snow will also accumulate on the windward side for a distance of 1H to 2H. The deepest part of the snowdrift will be closest to dense windbreaks and progressively farther away from the windbreak as windbreak density decreases.

Twin Row High Density:

A windbreak design consisting of 2 closely spaced offset rows of trees or shrubs designed to grow together into a single thick row of vegetation.

- Each twin row set will contain the same species.
- The windbreak will contain a minimum of two twin row sets (4 rows total). To promote diversity each twin row set may be composed of a different species of tree or shrub.
- The spacing between twin rows will be 25 to 75 feet to achieve desired objectives.
- For plant spacing within twin rows, use the closest within row spacing for the appropriate species. Use the same spacing between rows and between plants within the twin row set.

Example: (2 twin row sets of different species)



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Site Preparation

Competing vegetation will be controlled by one or more of the following methods:

Fall site preparation prior to spring planting is preferred. A fall temporary seeding may be used where needed to control soil erosion, see conservation practice standard TREE/SHRUB SITE PREPARATION (Practice Code – 490).

If the existing cover is sod, alfalfa, or weedy cropland, control competing vegetation by:

- Strip tilling
- Strip chemical treatment
- Chemical or mechanical spot treatments

If cover is non-weedy cropland:

- Plant in stubble without prior preparation; or
- Lightly disk the area to evenly distribute crop residues.

All spot or strip treatments shall be at least 4 feet in diameter or width.

All chemicals will be used in accordance with label guidelines.

Planting

Refer to conservation practice standard TREE/SHRUB ESTABLISHMENT (Practice Code – 612) for planting guidelines.

OPERATION AND MAINTENANCE

The following actions shall be carried out to insure the windbreak or shelterbelt functions as intended throughout the expected life of the practice. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance):

A weed-free area at least 2 feet in all directions from planted or seeded trees and/or shrubs will be maintained for at least the first 2 years after planting. Competing grass species will continue to be controlled in a 2-foot radius until woody plants are at least equal in height to competing grasses. Noxious weeds will be controlled. If mulches are to be used refer to conservation practice standard MULCHING (Practice Code – 484). If herbicides are to be applied read and follow all label directions.

Replacement of dead trees or shrubs will be continued until the windbreak/shelterbelt is functional. Replace any dead plants for the first 2 years. After 2 years at least 85% of plants will be surviving with no two adjacent plants missing.

Supplemental water or weed barrier fabric will be provided as needed.

Periodic applications of nutrients may be needed to maintain plant vigor.

Thin the windbreak/shelterbelt to maintain function.

Pruning should be done only for the purposes of removing dead, injured, or diseased wood and for creating desired levels of porosity.

Inspect trees and shrubs at least every 6 months and protect from adverse impacts including insects, diseases, competing vegetation, fire and damage from livestock and wildlife. Tree shelters may be necessary to protect trees and shrubs from damage by rabbits and/or deer.

Protect windbreaks from herbicides, especially during burn-down treatments on adjacent croplands. Use directed sprays around trees and develop a drift control strategy around windbreaks.

Windbreaks may be root pruned if woody plant roots are expected to compete for moisture with adjacent cropping systems. Refer to conservation practice standard WINDBREAK/SHELTERBELT RENOVATION (Practice Code – 650) for additional information on root pruning.

Properly maintained windbreaks will not require renovation for many years. Maintenance should begin after trees are well established and before crowding starts. Maintenance usually occurs between the tenth and fifteenth year depending on the species, rate of growth and spacing. Periodic removal of individual trees will relieve overcrowding and eliminate the need for major renovation. Care must be taken in removing trees in a windbreak to avoid reducing effectiveness. See conservation practice standard WINDBREAK/SHELTERBELT RENOVATION (Practice Code – 650) and "Windbreak Management" in listed REFERENCES for more information.

REFERENCES

Conservation buffers: design guidelines for buffers, corridors, and greenways. Bentrup, Gary 2008. Gen. Tech. Rep. SRS-109.

Air Quality and Shelterbelts: Odor Mitigation and Livestock Production, A Literature Review. USDA National Agroforestry Center Research Project. Spring 2000.

A Reference Manual for Herbicide Use in Forest and Conservation Tree Planting and Timber Stand Improvement Projects in Illinois. IL Stewardship Advisory Comm. & Univ. Of IL, 1998.

Catching the Snow with Living Snow Fences. Univ. of MN Ext. Serv. 1999.

Chemical Weed Control in Tree Plantings. MF-656, KS Forest Service-KS St. Univ. 2001.

Conservation Corridor Planning at the Landscape Level: Managing for Wildlife Habitat Part 614.4, USDA-NRCS National Biology Handbook, 190-vi-NBH, August 1999.

Designs for Windbreak Walls for Mitigating Dust and Odor Emissions from Tunnel Ventilated Swine Buildings. North Carolina State University. 2000.

Field Windbreaks. University of Nebraska Extension; EC 00-1778-X. 2000. Available at:

How Windbreaks Work. University of Nebraska Extension; EC 91-1763-B. 1991.

Illinois Windbreak Manual. IL DOC, USDA-CES, & USDA-SCS. 1987.

Living Snow Fences: Protection that Just Keeps on Growing. Shaw, D.L., CO St. Univ.

"Right Tree – Right Place" White Pine and Salt Tolerance. Purdue Univ. FNR-FAQ-10-W. 2000. http://www.extension.purdue.edu/extmedia/FNR/FNR-FAQ-10-W.pdf

Salt Tolerant Trees and Shrubs. Morton Arboretum http://www.mortonarb.org/tree-plant-advice/article/845/salt-tolerant-trees-and-shrubs.html

The Benefits of Planting Trees Around Poultry Farms. Bulletin 159. University of Delaware. December 2001.

Weed Barrier Fabric Mulch for Tree and Shrub Plantings. KS St. Univ. pub. MF-2216. 1996.

Windbreak Technology. Brandle, J.R. etal. Agric. Ecosyst. Environ. Vol. 22-23.

Asheville, NC: Department of Agriculture, Forest Service, Southern Research Station.

Windbreak Establishment. University of Nebraska Extension; EC 91-1764-B. 1991. Available at:

Windbreaks for Conservation. USDA-NRCS. Ag. Info. Bull. 339.

Windbreaks for Livestock Operations. University of Nebraska Extension, EC 94-1766-X. 1994.

Windbreak Management. KS St. Univ. Pub. MF-815, 1999.

Windbreaks for Snow Management. University of Nebraska Extension, EC 96-1770-X. 1996.

Windbreaks and Wildlife. University of Nebraska Extension, EC 91-1771-B. 1991.

Wind Roses and Wind Frequency Tables for Illinois. Illinois State Water Survey – State Climatologist Office for Illinois

http://www.isws.illinois.edu/atmos/statecli/roses/wind_climatology.htm

Table 1. Partial list of Trees and Shrubs capable of growing on many soil types throughout Illinois.(a)

TREE SPECIES	20 YR HEIGHT(1)	MATURE HEIGHT(1)	MATURE SPREAD (2)	CROWN SHAPE	SALT SPRAY TOLERANCE(3)
Common ninebark	<8	10	5-10	Spreading	Moderate
American hazelnut	<8	10	5-10	Spreading	Sensitive
Gray dogwood	<8	10	4-6	Spreading	Sensitive
Silky dogwood	<8	7	6-10	Spreading	Sensitive
Redosier dogwood	<8	12	6-10	Spreading	Sensitive
Roughleaf dogwood	8-15	25	5-10	Spreading	Sensitive
Common serviceberry	8-15	36	10-15	Spreading	Moderate
American plum	8-15	24	10-15	Spreading	Sensitive
Blackhaw	8-15	16	8-12	Spreading	Moderate
Common chokecherry	8-15	25	10-15	Spreading	Moderate
Arborvitae	16-25	50	4-10	Columnar	Moderate
Eastern red cedar	16-25	50	8-12	Pyramidal	Moderate
Persimmon	16-25	55	20- 35	Rounded	Moderate
Colorado blue spruce	16-25	100	10-20	Pyramidal	Tolerant
White oak	16-25	100	50-70	Rounded	Moderate
Hackberry	26-35	60	15-30	Oblong	Sensitive
Norway spruce*	26-35	>100	25-35	Pyramidal	Moderate
Bald cypress	26-35	>100	40-50	Pyramidal	Tolerant
Red pine	26-35	80	25-35	Pyramidal	Sensitive
Sweetgum	26-35	100	35-40	Pyramidal	Tolerant
Pin oak	26-35	100	35-40	Pyramidal	Sensitive
Swamp white oak	26-35	100	50-70	Rounded	Sensitive
Bur oak	26-35	100	50-70	Rounded	Moderate
Red maple	26-35	68	25-40	Rounded	Sensitive
Eastern white pine	>35	>100	50-60	Pyramidal	Sensitive
Yellow poplar (Tulip)	>35	>100	20-50	Oblong	Sensitive
Carolina poplar*	>35	>100	20-40	Oblong	Moderate
Eastern cottonwood	>35	>100	50-70	V-Shaped	Tolerant

* Not Native to Illinois

(a) Refer to Section II eFOTG for additional species and adaptability

(1) Mature height (feet) is an estimate and may vary dependent upon site

Information taken from USDA PLANTS Database: http://plants.usda.gov/java/

(2) Mature Spread (feet) is an estimate and may vary dependent upon adjacent competition and site

(3) Salt tolerance rating is for road salt spray,

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service State Office or visit the Field Office Technical Guide.

NRCS – Illinois
October 2012

variations may occur with soil-borne salt or other sources

Attachment R. Revised Proposed Amendment - Annotated
April 26, 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.

PHOTOVOLTAIC (PV): A type of solar energy system that produces electricity by the use of photovoltaic cells that generate electricity when struck by light.

PV SOLAR FARM: A unified development intended to convert sunlight into electricity by photovoltaic (PV) devices for the primary purpose of wholesale sales of generated electricity. A PV SOLAR FARM is under a common ownership and operating control even though parts of the PV SOLAR FARM may be located on land leased from different owners. A PV 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. PV SOLAR FARM should be understood to include COMMUNITY PV SOLAR FARM unless specified otherwise in the relevant section or paragraph.

PV SOLAR FARM, COMMUNITY: A PV 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 PV 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 4.3.4 H.4.h. for wind farms):

i.. PV 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 "PV 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 PV SOLAR FARM County Board SPECIAL USE Permit and intended for PV SOLAR FARM, related substations, and PV SOLAR FARM maintenance and management

facilities are exempt from the requirements of Section 5.3 except as such regulations are required by Subsection 6.1.5.

6. Add new paragraph 5.4.3 F. as follows:

F. The Rural Residential Overlay Zoning District is prohibited from being established within a PV 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 PV 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 6.1.1 A.4.a., 6.1.1 A.4.b., and 6.1.1 A.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 6.1.4 P. and Section 6.1.5 Q., 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 6.1.1 A.5.

(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 6.1.1 A.4.a., Section 6.1.1 A.4.b., and Section 6.1.1 A.4.c., except a different amount may be required as a standard condition in Section 6.1.4 P. and Section 6.1.5 Q. This letter of credit, or a successor letter of credit pursuant to Section 6.1.1 A.6. or 6.1.1 A.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 6.1.4 P and 6.1.5 Q.

(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 6.1.1 A.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 6.1.1 A.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;

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 noted 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 6.1.1 A.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 6.1.1 A.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 6.1.1 A.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

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 6.1.1 A.4.a., and, for WIND FARMS, Section 6.1.4 P., and for PV SOLAR FARMS, 6.1.5 Q. 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 PHOTOVOLTAIC (PV) SOLAR FARM County Board SPECIAL USE permit

A PHOTOVOLTAIC (PV) SOLAR FARM County Board SPECIAL USE permit may only be authorized in the AG-1 Zoning District or the AG-2 Agriculture Zoning District subject to the following standard conditions.

A. In what follows, PV SOLAR FARM should be understood to include COMMUNITY PV SOLAR FARM unless specified otherwise in the relevant section or paragraph.

B. General Standard Conditions

(1) The area of the PV 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 PV SOLAR FARM STRUCTURES and ACCESSORY STRUCTURES including electrical distribution lines, inverters, transformers, common switching stations, and substations not under the ownership of a PUBLICLY REGULATED UTILITY and all waterwells that will provide water for the PV 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 R.

(2) The PV 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:

(a) A separation of one-half mile from the proposed PV SOLAR FARM, except for any power lines of 34.5 Kva or less, to the municipal boundary at the time of application for the SPECIAL USE Permit.

(b) The PV SOLAR FARM SPECIAL USE permit application shall include documentation that the ~~application~~ applicant has provided a complete copy of the SPECIAL USE permit application to any municipality within one-and-one-half miles of the proposed PV SOLAR FARM.

(c) A municipal ~~Resolution of Non-opposition to~~ resolution regarding the PV SOLAR FARM by any ~~relevant~~ municipality located within one-and-one-half miles of the PV SOLAR FARM must be submitted to the ZONING ADMINISTRATOR prior to the consideration of the PV SOLAR FARM SPECIAL USE permit by the Champaign County Board or, in the absence of such a resolution, the ZONING ADMINISTRATOR shall provide documentation to the County Board that any municipality within one-and-one-half miles of the PV SOLAR FARM was provided notice of the meeting dates for consideration of the proposed PV SOLAR FARM SPECIAL USE Permit for both the Environment and Land Use Committee and the 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 PV SOLAR FARM SPECIAL USE permit application shall include documentation that the applicant or PV 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 PV SOLAR FARM.

C. Minimum Lot Standards

(1) There are no minimum LOT AREA, AVERAGE LOT WIDTH, SETBACK, YARD, or maximum LOT COVERAGE requirements for a PV SOLAR FARM or for LOTS for PV SOLAR FARM substations and/ or PV SOLAR FARM maintenance and management facilities.

(2) There is no maximum LOT AREA requirement on BEST PRIME FARMLAND.

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

The location of each PV SOLAR FARM shall provide the following required separations as measured from the exterior of the above ground portion of the PV SOLAR FARM STRUCTURES and equipment including fencing ~~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) For properties participating in the solar farm: No required separation from any existing DWELLING or existing PRINCIPAL BUILDING except as required to ensure that a minimum zoning lot is provided for the existing DWELLING or PRINCIPAL BUILDING.

(3) For properties not participating in the solar farm:

a. For any adjacent LOT that is ~~three~~ five acres or less in area (not including the STREET RIGHT OF WAY):

(a) For any adjacent LOT that is bordered (directly abutting and/or across the STREET) on no more than two sides by the PV SOLAR FARM, ~~at least 100~~ 250 feet from any existing ~~DWELLING or existing PRINCIPAL BUILDING and not less than 50~~ the separation shall be no less than 200 feet from the property line ~~and~~ provided that the noise level caused by the PV SOLAR FARM complies with the applicable Illinois Pollution Control Board regulations. ~~This separation distance applies to properties that are adjacent to or across a STREET from a PV SOLAR FARM.~~

(b) For any adjacent LOT that is bordered (directly abutting and/or across the STREET) on more than two sides by the PV SOLAR

FARM, the separation shall exceed 200 feet as deemed necessary by the BOARD provided that the noise level caused by the PV SOLAR FARM complies with the applicable Illinois Pollution Control Board regulations.

b. For any adjacent LOT that is five acres or more in area (not including the STREET RIGHT OF WAY), ~~at least 100~~ the separation shall be no less than 250 feet from any existing DWELLING or existing PRINCIPAL BUILDING ~~and not less than 50 feet from the property line of any adjacent LOT that is three greater than five acres in area and~~ provided that the noise level caused by the PV SOLAR FARM complies with the applicable Illinois Pollution Control Board regulations. This separation distance applies to properties that are adjacent to or across a STREET from a PV SOLAR FARM.

c. Additional ~~setback~~ separation may be required as deemed necessary by the BOARD.

~~3~~(4) 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 within five miles of the end of the AIRPORT runway; or

b. any RESTRICTED LANDING AREA that is NONCONFORMING or which has been authorized by SPECIAL USE permit and 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 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.

~~4~~(5) A separation of at least 500 feet between substations and transmission lines of greater than 34.5Kva to adjacent dwellings and residential DISTRICTS.

(6) Electrical inverters shall be located as far as possible from property lines and adjacent DWELLINGS consistent with good engineering practice.

Inverter locations that are less than 275 feet from the perimeter fence shall require specific approval and may require special sound deadening construction and noise analysis.

(7) Separation distances for any PV SOLAR FARM with solar equipment exceeding 8 feet in height, with the exception of transmission lines which may be taller, shall be determined by the BOARD on a case-by-case basis.

E. Standard Conditions for Design and Installation of any PV SOLAR FARM.

(1) Any building that is part of a PV 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 PV SOLAR FARM shall conform to the National Electrical Code as amended and shall comply with Federal Communications Commission (FCC) requirements.

b. Burying power and communication wiring underground shall be minimized consistent with best management practice regarding PV solar farm construction and minimizing impacts on agricultural drainage tile.

(3) Maximum height. The height limitation established in Section 5.3 shall not apply to a PV SOLAR FARM. The maximum height of all above ground STRUCTURES shall be identified in the application and as approved in the SPECIAL USE permit.

(4) Warnings

a. A reasonably visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and substations.

F. Standard Conditions to Mitigate Damage to Farmland

(1) All underground wiring or cabling for the PV SOLAR FARM shall be at a minimum depth of 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 R.

(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 PV SOLAR FARM access lanes or driveways, construction of any PV 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. The location of drainage district tile lines shall be identified prior to any construction and drainage district tile lines shall be protected from disturbance as follows:

(a) All identified drainage district tile lines and any known existing drainage district tile easement shall be staked or flagged prior to construction to alert construction crews of the presence of drainage district tile and the related easement. ~~possible need for tile line repairs unless this requirement is waived in writing by the drainage district.~~

(b) Any drainage district tile for which there is no existing easement shall be protected from disturbance by a 30-feet wide no-construction buffer on either side of the drainage district tile. The no-construction buffer shall be staked or flagged prior to the start of construction and shall remain valid for the lifetime of the PV SOLAR FARM SPECIAL USE Permit and during any deconstruction activities that may occur pursuant to the PV SOLAR FARM SPECIAL USE Permit.

(c) Construction shall be prohibited within any existing drainage district easement and also prohibited within any 30-feet wide no-construction buffer on either side of drainage district tile that does not have an existing easement unless specific construction is authorized in writing by all commissioners of the relevant drainage district. A copy of the written authorization shall be provided to the Zoning Administrator prior to the commencement of construction.

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 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 R. and shall not be waived or modified except as authorized in the SPECIAL USE Permit.

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 PV 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 PV SOLAR FARM construction shall be restored by the applicant to the pre-PV SOLAR FARM construction condition in a manner consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 R.

(4) Topsoil replacement

For any open trenching required pursuant to PV 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 R.

(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 PV SOLAR FARM lease.

b. Unless specifically provided for otherwise in the PV 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 R.

(6) Land leveling

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

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

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

(b) 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 R.

(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 PV 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 PV 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.

(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 PV SOLAR FARM.

(9) Minimizing disturbance to BEST PRIME FARMLAND

a. Any PV SOLAR FARM to be located on BEST PRIME FARMLAND shall minimize the disturbance to BEST PRIME FARMLAND as follows:

(a) The disturbance to BEST PRIME FARMLAND caused by construction and operation of the PV SOLAR FARM shall be minimized at all times consistent with good engineering practice.

~~(b) The total amount of disturbance to BEST PRIME FARMLAND due to construction of solar photovoltaic arrays, interior access roads, equipment pads, underground cabling, transmission lines, and substations shall not exceed~~

~~the disturbance that might otherwise occur due to construction of DWELLINGS that are permissible by right absent the construction of the PV SOLAR FARM. The disturbance caused by construction of the DWELLINGS shall assume DWELLINGS of typical size and related construction of driveways, septic systems (both active and reserve), and ACCESSORY BUILDINGS of typical size and quantity.~~

(c) Disturbance to BEST PRIME FARMLAND shall be offset by establishment of a vegetative ground cover within the PV SOLAR FARM that includes the following:

i. The vegetative ground cover shall use native plant species as much as possible and shall be based on a site assessment of the site geography and soil conditions.

ii. The species selected shall serve a secondary habitat purpose as much as possible.

iii. Maintenance of the vegetative ground cover shall use a combination of management approaches to ensure safe, cost-effective, reliable maintenance while minimizing environmental risks.

iv. The plan to establish and maintain a vegetative ground cover that includes native plant species as much as possible shall be detailed in a landscape plan included in the PV SOLAR FARM SPECIAL USE permit application. The landscape plan shall include the weed control plan required by Section 6.1.5 P.3.

G. Standard Conditions for Use of Public Streets

Any PV SOLAR FARM Applicant proposing to use any County Highway or a township or municipal STREET for the purpose of transporting PV SOLAR FARM or Substation parts and/or equipment for construction, operation, or maintenance of the PV 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 PV 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 PV 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-PV SOLAR FARM construction baseline survey to determine existing STREET conditions for assessing potential future damage including the following:

(a) A videotape of the affected length of each subject STREET supplemented by photographs if necessary.

(b) 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 PV SOLAR FARM construction.

(c) Pay for any strengthening of STREET structures that may be necessary to accommodate the proposed traffic loads caused by the PV 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 PV SOLAR FARM construction and pay for any strengthening of structures that may be necessary to accommodate the proposed traffic loads caused by the PV 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 PV 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 PV SOLAR FARM construction.

l. The Applicant shall transport the PV SOLAR FARM loads so as to minimize adverse impact on the local traffic including farm traffic.

m. The Applicant shall schedule PV 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 PV 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- PV SOLAR FARM construction baseline survey similar to the pre- PV SOLAR FARM construction baseline survey to identify the extent of repairs necessary to return the STREET to the pre- PV 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 PV SOLAR FARM and restore such STREETS to the condition they were in at the time of the pre-PV SOLAR FARM construction inventory.

x. All PV 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 PV 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 PV 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 PV SOLAR FARM construction and following construction of the PV 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.

H. 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.

I. Standard Conditions for Allowable Noise Level

(1) Noise levels from any PV 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 PV 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 as follows:

a. The SPECIAL USE permit application for other than a COMMUNITY PV SOLAR FARM shall include a noise analysis that includes the following:

(a) The pre-development 24-hour ambient background sound level shall be identified at representative locations near the site of the proposed PV SOLAR FARM.

(b) Computer modeling shall be used to generate the anticipated sound level resulting from the operation of the proposed PV SOLAR FARM at all DWELLINGS and other PRINCIPAL STRUCTURES within 1,500 feet of the proposed PV SOLAR FARM.

(c) Results of the ambient background sound level monitoring and the modeling of anticipated sound levels shall be clearly stated in the application and the application shall include a map of the modeled noise contours within 1,500 feet of the proposed PV SOLAR FARM.

(d) The application shall also clearly state the assumptions of the computer model's construction and algorithms so that a competent and objective third party can as simply as possible verify the anticipated sound data and sound levels.

b. For a COMMUNITY PV SOLAR FARM the Board may require submission of a noise analysis that meets the standard of paragraph 6.1.5 I.3.(a).

(4) After construction of the PV 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.

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 PV 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

(1) Perimeter fencing

a. PV 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~~ PV SOLAR FARM perimeter fencing shall be ~~a minimum of 10 feet from a SIDE or REAR LOT LINE but not less than 25 feet from the property line of any adjacent LOT that is three acres or less in area 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 unless a greater separation is required by Section 6.1.5 D. and/or unless a greater separation is required for screening pursuant to Section 6.1.5 M.(2)a., 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.

e. Required location of fencing in relation to NON-PARTICIPATING properties:

(a) The perimeter fencing shall be a minimum of ~~10~~ 200 feet from a SIDE or REAR LOT LINE ~~but not less than 25 feet from the property line~~ of any adjacent LOT that is ~~three~~ five acres or less in area (not including the STREET RIGHT OF WAY).

(b) The perimeter fencing shall be a minimum of 10 feet from a SIDE or REAR LOT LINE but not less than 250 feet from any

existing DWELLING or existing PRINCIPAL BUILDING of any adjacent LOT that is greater than five acres in area.

(2) Screening

a. A visual screen shall be provided around the perimeter of the PV SOLAR FARM as follows:

(a) The visual screen shall be provided for any part of the PV 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 PV SOLAR FARM is not visible to a DWELLING or residential DISTRICT by virtue of the existing topography.

(b) 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.

(c) The visual screen shall be a vegetated buffer as follows:

i. A vegetated visual screen buffer shall include a continuous line of native evergreen foliage and/or native shrubs and/or native trees and/or any existing wooded area and/ or ~~tallgrass prairie~~ plantings of tall native grasses and other native flowering plants and/or an area of agricultural crop production that will conceal the PV SOLAR FARM from view from adjacent abutting property.

ii. Any vegetation that is part of the approved visual screen buffer shall be maintained in perpetuity of the PV SOLAR FARM. If the evergreen foliage below a height of 7 feet disappears over time, the screening shall be replaced.

iii. The continuous line of native evergreen foliage and/or native shrubs and/or native trees 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. The planting shall conform to Natural Resources Conservation Service Practice Standard 380 Windbreak/Shelterbreak Establishment.

iv. A ~~tallgrass prairie~~ planting of tall native grasses and other native flowering plants may be used as a visual screen buffer for any PV module installation that is no more than 8 feet tall provided that ~~and~~ the planting shall be at least ~~10~~ 30 feet ~~wide~~ in depth and shall be planted and maintained per the recommendations of the Natural Resources Conservation Service Practice Standard 327 Conservation Cover and further provided that the PV SOLAR FARM perimeter fence is opaque.

v. An area of agricultural crop production that is at least 30 feet in depth and provided that the PV SOLAR FARM perimeter fence is opaque. Any area of crop production that is used as a vegetated visual screen shall be planted annually and shall be replanted as necessary to ensure a crop every year regardless of weather or market conditions.

vi. Any vegetated screen buffer shall be detailed in a landscape plan drawing that shall be included with the PV SOLAR FARM SPECIAL USE permit application.

N. Standard Condition to Minimize Glare

(1) The design and construction of the PV 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 PV 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 PV 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.

P. Operational Standard Conditions

(1) Maintenance

a. The Owner or Operator of the PV 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 PV SOLAR FARM that increases the number of solar conversion devices or structures and/ or the land area occupied by the PV 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 PV 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 PV 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 PV 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 PV 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 PV SOLAR 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 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 PV 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 PV SOLAR FARM.

c. Authorization for the GOVERNING BODY and its authorized representatives for right of entry onto the PV 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 **t**he 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 **t**he Applicant shall be obliged to perform the work in the site reclamation plan before abandoning the PV SOLAR FARM or prior to ceasing production of electricity from the PV 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. Underground electrical cables at a depth of 5 feet or greater may be left in place.

j. The hole resulting from the removal of foundation concrete during decommissioning shall be backfilled as follows:

(a) 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 PV 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.

(b) The native soils excavated at the time of the original PV 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 PV SOLAR FARM. The methods for storing the excavated native soils

during the operating lifetime of the PV SOLAR FARM shall be included in the site reclamation plan.

(c) 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.

(d) 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.

k. A stipulation that should the site reclamation plan be deemed invalid by a court of competent jurisdiction the PV SOLAR FARM SPECIAL USE permit shall be deemed void.

l. 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.

m. 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.

n. 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 PV 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 6.1.1 A.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 125% of the decommissioning cost as determined in the independent engineer's cost estimate to complete the decommissioning work described in Sections 6.1.1 A.4.a. and 6.1.1 A.4.b. and 6.1.1 A.4.c. and shall otherwise comply with Section 6.1.1 A.5.

b. Net salvage value may be deducted from decommissioning costs as follows:

(a) One of the following standards shall be met:

i. The Applicant shall maintain the PV 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 PV SOLAR FARM; 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 6.1.1. A.2 that the reclamation work be done.

(b) The Applicant shall provide proof of compliance with paragraph 6.1.5. Q.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.

(c) 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.

(d) 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 PV SOLAR FARM STRUCTURES, equipment, and access roads.

(e) 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.

(f) 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.

(g) The total financial assurance after deduction of the net estimated salvage value shall not be less than $1,000 per acre.

(h) The credit for net estimated salvage value attributable to any PV SOLAR FARM may not exceed the estimated cost of removal of the above-ground portion of that PV 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:

(a) At least once every three years for the first 12 years of the financial assurance and at least once every two years 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.

(b) 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 PV SOLAR FARM was approved.

e. The applicant or PV 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 PV SOLAR FARM operation as follows:

(a) The applicant or PV SOLAR FARM owner and the GOVERNING BODY shall agree on a mutually acceptable financial institution at which an escrow account shall be established.

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

(c) The applicant or PV 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.

(d) The applicant or PV 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.

(e) 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 PV SOLAR FARM and the amount shall be equal to or exceed 125% of the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation since the PV SOLAR FARM was approved;

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

(g) In order to provide funding for decommissioning at the time of decommissioning, the PV SOLAR FARM applicant or PV 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 6.1.5 Q.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.

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

h. Unless the Governing Body approves otherwise, the Champaign County State's Attorney's Office shall review and approve every Letter of Credit and every agreement regarding the Escrow Account prior to formal acceptance by the Zoning Administrator.

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

a. In the event that any PV 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 PV SOLAR FARM or component.

b. In the event that the Owner declares the PV SOLAR FARM any PV SOLAR FARM component to be functionally obsolete for tax purposes.

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

d. Any PV 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 PV SOLAR FARM or component thereof is otherwise derelict for a period of 6 months.

f. The PV SOLAR FARM is in violation of the terms of the PV 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 6.1.5 D. 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 PV 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 PV 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 PV SOLAR FARM only. Upon completion of that reclamation work, the salvage value and reclamation costs shall be recalculated as to the remaining PV 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.

R. 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

S. Complaint Hotline

(1) Prior to the commencement of construction on the PV 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.

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

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

U. 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 PV SOLAR FARM Project Summary, including, to the extent available:

(a) 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).

(b) The specific proposed location of the PV SOLAR FARM including all tax parcels on which the PV SOLAR FARM will be constructed.

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

(d) 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 PV SOLAR FARM County Board SPECIAL USE permit.

c. A site plan for the SOLAR FARM indicating the following:

(a) The approximate planned location of all PV 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 PV 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.

(b) The site plan shall clearly indicate the area of the proposed PV SOLAR FARM County Board SPECIAL USE Permit as required by subparagraph 6.1.5 A.1.

(c) The location of all below-ground wiring.

(d) The location, height, and appearance of all above-ground wiring and wiring structures.

(e) The separation of all PV 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 PV SOLAR FARM County Board SPECIAL USE Permit. PV 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. PV SOLAR FARM with not more than 7.5 megawatt nameplate rating..... $1,800 per megawatt (includes COMMUNITY PV SOLAR FARM)

PV SOLAR FARM with nameplate rating of more than 7.5 megawatts…. $13,500 plus $1,260 for each megawatt more than 7.5 megawatts

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 PV 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 PV 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 PV 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

(7) BIG WIND TURBINE TOWER SPECIAL USE Permit per BIG WIND TURBINE TOWER……$3,300

(8) County Board PV SOLAR FARM Special Use Permit
PV SOLAR FARM with not more than 7.5 megawatt

nameplate rating…….$1,320 per megawatt (includes COMMUNITY PV SOLAR FARM)

PV SOLAR FARM with nameplate rating of more than 7.5 megawatts to 112.5 megawatts……..$9,240 plus $102 for each megawatt more than 7.5 megawatts and up to 112.5 megawatts

PV SOLAR FARM with more than 112.5 megawatt nameplate rating……. $180 per megawatt over 112.5 megawatts

Attachment S. Revised Proposed Amendment - Clean
April 26, 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.

PHOTOVOLTAIC (PV): A type of solar energy system that produces electricity by the use of photovoltaic cells that generate electricity when struck by light.

PV SOLAR FARM: A unified development intended to convert sunlight into electricity by photovoltaic (PV) devices for the primary purpose of wholesale sales of generated electricity. A PV SOLAR FARM is under a common ownership and operating control even though parts of the PV SOLAR FARM may be located on land leased from different owners. A PV 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. PV SOLAR FARM should be understood to include COMMUNITY PV SOLAR FARM unless specified otherwise in the relevant section or paragraph.

PV SOLAR FARM, COMMUNITY: A PV 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 PV 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 4.3.4 H.4.h. for wind farms):

i.. PV 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 "PV 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 PV SOLAR FARM County Board SPECIAL USE Permit and intended for PV SOLAR FARM, related substations, and PV SOLAR FARM maintenance and management

facilities are exempt from the requirements of Section 5.3 except as such regulations are required by Subsection 6.1.5.

6. Add new paragraph 5.4.3 F. as follows:

F. The Rural Residential Overlay Zoning District is prohibited from being established within a PV 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 PV 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 6.1.1 A.4.a., 6.1.1 A.4.b., and 6.1.1 A.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 6.1.4 P. and Section 6.1.5 Q., 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 6.1.1 A.5.

(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 6.1.1 A.4.a., Section 6.1.1 A.4.b., and Section 6.1.1 A.4.c., except a different amount may be required as a standard condition in Section 6.1.4 P. and Section 6.1.5 Q. This letter of credit, or a successor letter of credit pursuant to Section 6.1.1 A.6. or 6.1.1 A.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 6.1.4 P and 6.1.5 Q.

(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 6.1.1 A.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 6.1.1 A.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;

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 noted 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 6.1.1 A.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 6.1.1 A.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 6.1.1 A.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

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 6.1.1 A.4.a., and, for WIND FARMS, Section 6.1.4 P., and for PV SOLAR FARMS, 6.1.5 Q. 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 PHOTOVOLTAIC (PV) SOLAR FARM County Board SPECIAL USE permit

A PHOTOVOLTAIC (PV) SOLAR FARM County Board SPECIAL USE permit may only be authorized in the AG-1 Zoning District or the AG-2 Agriculture Zoning District subject to the following standard conditions.

A. In what follows, PV SOLAR FARM should be understood to include COMMUNITY PV SOLAR FARM unless specified otherwise in the relevant section or paragraph.

B. General Standard Conditions

(1) The area of the PV 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 PV SOLAR FARM STRUCTURES and ACCESSORY STRUCTURES including electrical distribution lines, inverters, transformers, common switching stations, and substations not under the ownership of a PUBLICLY REGULATED UTILITY and all waterwells that will provide water for the PV 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 R.

(2) The PV 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:

(a) A separation of one-half mile from the proposed PV SOLAR FARM, except for any power lines of 34.5 Kva or less, to the municipal boundary at the time of application for the SPECIAL USE Permit.

(b) The PV SOLAR FARM SPECIAL USE permit application shall include documentation that the applicant has provided a complete copy of the SPECIAL USE permit application to any municipality within one-and-one-half miles of the proposed PV SOLAR FARM.

(c) A municipal resolution regarding the PV SOLAR FARM by any municipality located within one-and-one-half miles of the PV SOLAR FARM must be submitted to the ZONING ADMINISTRATOR prior to the consideration of the PV SOLAR FARM SPECIAL USE permit by the Champaign County Board or, in the absence of such a resolution, the ZONING ADMINISTRATOR shall provide documentation to the County Board that any municipality within one-and-one-half miles of the PV SOLAR FARM was provided notice of the meeting dates for consideration of the proposed PV SOLAR FARM SPECIAL USE Permit for both the Environment and Land Use Committee and the 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 PV SOLAR FARM SPECIAL USE permit application shall include documentation that the applicant or PV 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 PV SOLAR FARM.

C. Minimum Lot Standards

(1) There are no minimum LOT AREA, AVERAGE LOT WIDTH, SETBACK, YARD, or maximum LOT COVERAGE requirements for a PV SOLAR FARM or for LOTS for PV SOLAR FARM substations and/ or PV SOLAR FARM maintenance and management facilities.

(2) There is no maximum LOT AREA requirement on BEST PRIME FARMLAND.

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

The location of each PV SOLAR FARM shall provide the following required separations as measured from the exterior of the above ground portion of the PV SOLAR FARM STRUCTURES and equipment including 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) For properties participating in the solar farm: No required separation from any existing DWELLING or existing PRINCIPAL BUILDING except as required to ensure that a minimum zoning lot is provided for the existing DWELLING or PRINCIPAL BUILDING.

(3) For properties not participating in the solar farm:

a. For any adjacent LOT that is five acres or less in area (not including the STREET RIGHT OF WAY):

(a) For any adjacent LOT that is bordered (directly abutting and/or across the STREET) on no more than two sides by the PV SOLAR FARM, the separation shall be no less than 200 feet from the property line provided that the noise level caused by the PV SOLAR FARM complies with the applicable Illinois Pollution Control Board regulations.

(b) For any adjacent LOT that is bordered (directly abutting and/or across the STREET) on more than two sides by the PV SOLAR FARM, the separation shall exceed 200 feet as deemed necessary by the BOARD provided that the noise level caused by the PV SOLAR FARM complies with the applicable Illinois Pollution Control Board regulations.

b. For any adjacent LOT that is five acres or more in area (not including the STREET RIGHT OF WAY), the separation shall be no less than 250 feet from any existing DWELLING or existing PRINCIPAL BUILDING provided that the noise level caused by the PV SOLAR

FARM complies with the applicable Illinois Pollution Control Board regulations. This separation distance applies to properties that are adjacent to or across a STREET from a PV SOLAR FARM.

c. Additional separation may be required as deemed necessary by the BOARD.

(4) 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 within five miles of the end of the AIRPORT runway; or

b. any RESTRICTED LANDING AREA that is NONCONFORMING or which has been authorized by SPECIAL USE permit and 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 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.

(5) A separation of at least 500 feet between substations and transmission lines of greater than 34.5Kva to adjacent dwellings and residential DISTRICTS.

(6) Electrical inverters shall be located as far as possible from property lines and adjacent DWELLINGS consistent with good engineering practice. Inverter locations that are less than 275 feet from the perimeter fence shall require specific approval and may require special sound deadening construction and noise analysis.

(7) Separation distances for any PV SOLAR FARM with solar equipment exceeding 8 feet in height, with the exception of transmission lines which may be taller, shall be determined by the BOARD on a case-by-case basis.

E. Standard Conditions for Design and Installation of any PV SOLAR FARM.

(1) Any building that is part of a PV 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 96-704 regarding building code compliance and conforms to the Illinois Accessibility Code.

(2) Electrical Components

a. All electrical components of the PV SOLAR FARM shall conform to the National Electrical Code as amended and shall comply with Federal Communications Commission (FCC) requirements.

b. Burying power and communication wiring underground shall be minimized consistent with best management practice regarding PV solar farm construction and minimizing impacts on agricultural drainage tile.

(3) Maximum height. The height limitation established in Section 5.3 shall not apply to a PV SOLAR FARM. The maximum height of all above ground STRUCTURES shall be identified in the application and as approved in the SPECIAL USE permit.

(4) Warnings

a. A reasonably visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and substations.

F. Standard Conditions to Mitigate Damage to Farmland

(1) All underground wiring or cabling for the PV SOLAR FARM shall be at a minimum depth of 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 R.

(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 PV SOLAR FARM access lanes or driveways, construction of any PV 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. The location of drainage district tile lines shall be identified prior to any construction and drainage district tile lines shall be protected from disturbance as follows:

(a) All identified drainage district tile lines and any known existing drainage district tile easement shall be staked or flagged prior to construction to alert construction crews of the presence of drainage district tile and the related easement.

(b) Any drainage district tile for which there is no existing easement shall be protected from disturbance by a 30-feet wide no-construction buffer on either side of the drainage district tile. The no-construction buffer shall be staked or flagged prior to the start of construction and shall remain valid for the lifetime of the PV SOLAR FARM SPECIAL USE Permit and during any deconstruction activities that may occur pursuant to the PV SOLAR FARM SPECIAL USE Permit.

(c) Construction shall be prohibited within any existing drainage district easement and also prohibited within any 30-feet wide no-construction buffer on either side of drainage district tile that does not have an existing easement unless specific construction is authorized in writing by all commissioners of the relevant drainage district. A copy of the written authorization shall be provided to the Zoning Administrator prior to the commencement of construction.

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 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 R. and shall not be waived or modified except as authorized in the SPECIAL USE Permit.

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 PV 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 PV SOLAR FARM construction shall be restored by the applicant to the pre-PV SOLAR FARM construction condition in a manner consistent with the Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture as required by paragraph 6.1.5 R.

(4) Topsoil replacement

For any open trenching required pursuant to PV 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 R.

(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 PV SOLAR FARM lease.

b. Unless specifically provided for otherwise in the PV 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 R.

(6) Land leveling

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

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

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

(b) 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 R.

(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 PV 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 PV 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.

(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 PV SOLAR FARM.

(9) Minimizing disturbance to BEST PRIME FARMLAND

a. Any PV SOLAR FARM to be located on BEST PRIME FARMLAND shall minimize the disturbance to BEST PRIME FARMLAND as follows:

(a) The disturbance to BEST PRIME FARMLAND caused by construction and operation of the PV SOLAR FARM shall be minimized at all times consistent with good engineering practice.

(b) Disturbance to BEST PRIME FARMLAND shall be offset by establishment of a vegetative ground cover within the PV SOLAR FARM that includes the following:

i. The vegetative ground cover shall use native plant species as much as possible and shall be based on a site assessment of the site geography and soil conditions.

ii. The species selected shall serve a secondary habitat purpose as much as possible.

iii. Maintenance of the vegetative ground cover shall use a combination of management approaches to ensure safe, cost-effective, reliable maintenance while minimizing environmental risks.

iv. The plan to establish and maintain a vegetative ground cover that includes native plant species as much as possible shall be detailed in a landscape plan included in the PV SOLAR FARM SPECIAL USE permit application. The landscape plan shall include the weed control plan required by Section 6.1.5 P.(3).

G. Standard Conditions for Use of Public Streets

Any PV SOLAR FARM Applicant proposing to use any County Highway or a township or municipal STREET for the purpose of transporting PV SOLAR FARM or Substation parts and/or equipment for construction, operation, or maintenance of the PV 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 PV 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 PV 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-PV SOLAR FARM construction baseline survey to determine existing STREET conditions for assessing potential future damage including the following:

(a) A videotape of the affected length of each subject STREET supplemented by photographs if necessary.

(b) 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 PV SOLAR FARM construction.

(c) Pay for any strengthening of STREET structures that may be necessary to accommodate the proposed traffic loads caused by the PV 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 PV SOLAR FARM construction and pay for any

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

l. The Applicant shall transport the PV SOLAR FARM loads so as to minimize adverse impact on the local traffic including farm traffic.

m. The Applicant shall schedule PV 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 PV 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- PV SOLAR FARM construction baseline survey similar to the pre- PV SOLAR FARM construction baseline survey to identify the extent of repairs necessary to return the STREET to the pre- PV 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 PV SOLAR FARM and restore such STREETS to the condition they were in at the time of the pre-PV SOLAR FARM construction inventory.

x. All PV 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 PV 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 PV 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 PV SOLAR FARM construction and following construction of the PV 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.

H. 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.

I. Standard Conditions for Allowable Noise Level

(1) Noise levels from any PV 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 PV 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 as follows:

a. The SPECIAL USE permit application for other than a COMMUNITY PV SOLAR FARM shall include a noise analysis that includes the following:

(a) The pre-development 24-hour ambient background sound level shall be identified at representative locations near the site of the proposed PV SOLAR FARM.

(b) Computer modeling shall be used to generate the anticipated sound level resulting from the operation of the proposed PV SOLAR FARM at all DWELLINGS and other PRINCIPAL STRUCTURES within 1,500 feet of the proposed PV SOLAR FARM.

(c) Results of the ambient background sound level monitoring and the modeling of anticipated sound levels shall be clearly stated in the application and the application shall include a map of the modeled noise contours within 1,500 feet of the proposed PV SOLAR FARM.

(d) The application shall also clearly state the assumptions of the computer model's construction and algorithms so that a competent and objective third party can as simply as possible verify the anticipated sound data and sound levels.

b. For a COMMUNITY PV SOLAR FARM the Board may require submission of a noise analysis that meets the standard of paragraph 6.1.5 I.3.(a).

(4) After construction of the PV 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.

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 PV 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

(1) Perimeter fencing

a. PV 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. PV SOLAR FARM perimeter fencing shall be 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 unless a greater separation is required by Section 6.1.5 D. and/or unless a greater separation is required for screening pursuant to Section 6.1.5 M.(2)a., 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.

e. Required location of fencing in relation to NON-PARTICIPATING properties:

(a) The perimeter fencing shall be a minimum of 200 feet from a SIDE or REAR LOT LINE of any adjacent LOT that is five acres or less in area (not including the STREET RIGHT OF WAY).

(b) The perimeter fencing shall be a minimum of 10 feet from a SIDE or REAR LOT LINE but not less than 250 feet from any existing DWELLING or existing PRINCIPAL BUILDING of any adjacent LOT that is greater than five acres in area.

(2) Screening

a. A visual screen shall be provided around the perimeter of the PV SOLAR FARM as follows:

(a) The visual screen shall be provided for any part of the PV 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 PV SOLAR FARM is not visible to a DWELLING or residential DISTRICT by virtue of the existing topography.

(b) 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.

(c) The visual screen shall be a vegetated buffer as follows:

i. A vegetated visual screen buffer shall include a continuous line of native evergreen foliage and/or

native shrubs and/or native trees and/or any existing wooded area and/ or plantings of tall native grasses and other native flowering plants and/or an area of agricultural crop production that will conceal the PV SOLAR FARM from view from adjacent abutting property.

ii. Any vegetation that is part of the approved visual screen buffer shall be maintained in perpetuity of the PV SOLAR FARM. If the evergreen foliage below a height of 7 feet disappears over time, the screening shall be replaced.

iii. The continuous line of native evergreen foliage and/or native shrubs and/or native trees 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. The planting shall conform to Natural Resources Conservation Service Practice Standard 380 Windbreak/Shelterbreak Establishment.

iv. A planting of tall native grasses and other native flowering plants may be used as a visual screen buffer for any PV module installation that is no more than 8 feet tall provided that ~~and~~ the planting shall be at least 30 feet in depth and shall be planted and maintained per the recommendations of the Natural Resources Conservation Service Practice Standard 327 Conservation Cover and further provided that the PV SOLAR FARM perimeter fence is opaque.

v. An area of agricultural crop production that is at least 30 feet in depth and provided that the PV SOLAR FARM perimeter fence is opaque. Any area of crop production that is used as a vegetated visual screen shall be planted annually and shall be replanted as necessary to ensure a crop every year regardless of weather or market conditions.

vi. Any vegetated screen buffer shall be detailed in a landscape plan drawing that shall be included with the PV SOLAR FARM SPECIAL USE permit application.

N. Standard Condition to Minimize Glare

(1) The design and construction of the PV 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 PV 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 PV 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.

P. Operational Standard Conditions

(1) Maintenance

a. The Owner or Operator of the PV 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 PV SOLAR FARM that increases the number of solar conversion devices or structures and/ or the land area occupied by the PV 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 PV 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 PV 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 PV 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 PV 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 PV SOLAR 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 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 PV 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 PV SOLAR FARM.

c. Authorization for the GOVERNING BODY and its authorized representatives for right of entry onto the PV 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 **t**he 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 **t**he Applicant shall be obliged to perform the work in the site reclamation plan before abandoning the PV SOLAR FARM or prior to ceasing production of electricity from the PV 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. Underground electrical cables at a depth of 5 feet or greater may be left in place.

j. The hole resulting from the removal of foundation concrete during decommissioning shall be backfilled as follows:

(a) 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 PV 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.

(b) The native soils excavated at the time of the original PV 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 PV SOLAR FARM. The methods for storing the excavated native soils during the operating lifetime of the PV SOLAR FARM shall be included in the site reclamation plan.

(c) 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.

(d) 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.

k. A stipulation that should the site reclamation plan be deemed invalid by a court of competent jurisdiction the PV SOLAR FARM SPECIAL USE permit shall be deemed void.

l. 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.

m. 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.

n. 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 PV 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 6.1.1 A.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 125% of the decommissioning cost as determined in the independent engineer's cost estimate to complete the decommissioning work described in Sections 6.1.1 A.4.a. and 6.1.1 A.4.b. and 6.1.1 A.4.c. and shall otherwise comply with Section 6.1.1 A.5.

b. Net salvage value may be deducted from decommissioning costs as follows:

(a) One of the following standards shall be met:

i. The Applicant shall maintain the PV 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 PV SOLAR FARM; 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 6.1.1. A.2 that the reclamation work be done.

(b) The Applicant shall provide proof of compliance with paragraph 6.1.5. Q.(4)b.(a) 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.

(c) 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.

(d) 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 PV SOLAR FARM STRUCTURES, equipment, and access roads.

(e) 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.

(f) 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.

(g) The total financial assurance after deduction of the net estimated salvage value shall not be less than $1,000 per acre.

(h) The credit for net estimated salvage value attributable to any PV SOLAR FARM may not exceed the estimated cost of removal of the above-ground portion of that PV 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:

(a) At least once every three years for the first 12 years of the financial assurance and at least once every two years 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.

(b) 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 PV SOLAR FARM was approved.

e. The applicant or PV 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 PV SOLAR FARM operation as follows:

(a) The applicant or PV SOLAR FARM owner and the GOVERNING BODY shall agree on a mutually acceptable financial institution at which an escrow account shall be established.

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

(c) The applicant or PV 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.

(d) The applicant or PV 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.

(e) 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 PV SOLAR FARM and the amount shall be equal to or exceed 125% of the amount of the independent engineer's cost estimate as increased by known and documented rates of inflation since the PV SOLAR FARM was approved;

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

(g) In order to provide funding for decommissioning at the time of decommissioning, the PV SOLAR FARM applicant or PV 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 6.1.5 Q.(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.

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

h. Unless the Governing Body approves otherwise, the Champaign County State's Attorney's Office shall review and approve every Letter of Credit and every agreement regarding the Escrow Account prior to formal acceptance by the Zoning Administrator.

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

a. In the event that any PV 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 PV SOLAR FARM or component.

b. In the event that the Owner declares the PV SOLAR FARM any PV SOLAR FARM component to be functionally obsolete for tax purposes.

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

d. Any PV 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 PV SOLAR FARM or component thereof is otherwise derelict for a period of 6 months.

f. The PV SOLAR FARM is in violation of the terms of the PV 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 6.1.5 D. 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 PV 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 PV 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 PV SOLAR FARM only. Upon completion of that reclamation work, the salvage value and reclamation costs shall be recalculated as to the remaining PV 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.

R. 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.

S. Complaint Hotline

(1) Prior to the commencement of construction on the PV 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.

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

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

U. 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 PV SOLAR FARM Project Summary, including, to the extent available:

(a) 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).

(b) The specific proposed location of the PV SOLAR FARM including all tax parcels on which the PV SOLAR FARM will be constructed.

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

(d) 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 PV SOLAR FARM County Board SPECIAL USE permit.

c. A site plan for the SOLAR FARM indicating the following:

(a) The approximate planned location of all PV 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 PV 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.

(b) The site plan shall clearly indicate the area of the proposed PV SOLAR FARM County Board SPECIAL USE Permit as required by subparagraph 6.1.5 A.(1).

(c) The location of all below-ground wiring.

(d) The location, height, and appearance of all above-ground wiring and wiring structures.

(e) The separation of all PV 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 PV SOLAR FARM County Board SPECIAL USE Permit. PV 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. PV SOLAR FARM with not more than 7.5 megawatt nameplate rating..... $1,800 per megawatt (includes COMMUNITY PV SOLAR FARM)

PV SOLAR FARM with nameplate rating of more than 7.5 megawatts…. $13,500 plus $1,260 for each megawatt more than 7.5 megawatts

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 PV 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 PV 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 PV 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

(7) BIG WIND TURBINE TOWER SPECIAL USE Permit per BIG WIND TURBINE TOWER……$3,300

(8) County Board PV SOLAR FARM Special Use Permit

PV SOLAR FARM with not more than 7.5 megawatt nameplate rating…….$1,320 per megawatt (includes COMMUNITY PV SOLAR FARM)

PV SOLAR FARM with nameplate rating of more than 7.5 megawatts to 112.5 megawatts……..$9,240 plus $102 for each megawatt more than 7.5 megawatts and up to 112.5 megawatts

PV SOLAR FARM with more than 112.5 megawatt nameplate rating……. $180 per megawatt over 112.5 megawatts

REVISED DRAFT 04/26/18

895-AT-18

FINDING OF FACT
AND FINAL DETERMINATION
of
Champaign County Zoning Board of Appeals

Final Determination: ***{RECOMMEND ENACTMENT/RECOMMEND DENIAL}***

Date: ***{APRIL 26, 2018}***

Petitioner: **Zoning Administrator**

Request: **Part A: Amend Section 3 by adding definitions for "NOXIOUS WEEDS" and "PV SOLAR FARM."**

Part B: Add paragraph 4.2.1 C.5. to indicate that PV 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 PV 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 PV 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 PV 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 "PV SOLAR FARM" as a new PRINCIPAL USE under the category "Industrial Uses: Electric Power Generating Facilities" and indicate that PV 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 PV 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 PV SOLAR FARM County Board SPECIAL USE Permit.

Part H. Amend Subsection 6.1.1 A. as follows:

1. **Add PV 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 PV SOLAR FARM County Board SPECIAL USE Permit with new standard conditions for PV SOLAR FARM.

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

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

CONTENTS

FINDING OF FACT

From the documents of record and the testimony and exhibits received at the public hearing conducted on **March 1, 2018, March 15, 2018, March 29, 2018, April 5, 2018, April 12, 2018, and April 26, 2018,** the Zoning Board of Appeals of Champaign County finds that:

1. The petitioner is the Zoning Administrator.

2. The proposed amendment is intended to establish the requirements for PV SOLAR FARMS in the Zoning Ordinance.

3. Municipalities with zoning and townships with planning commissions have protest rights on all text amendments and they are notified of such cases.

SUMMARY OF THE PROPOSED AMENDMENT

4. The proposed amendment is attached to this Finding of Fact as it will appear in the Zoning Ordinance. The proposed amendments have been included for the following reasons:
   A. Regarding Part A, to amend Section 3 by adding definitions including but not limited to "NOXIOUS WEEDS" and "PV SOLAR FARM", new definitions must be included to be as specific as possible in how the terms should be understood and applied in the Zoning Ordinance.

   B. Regarding Part B, to add paragraph 4.2.1 C.5. indicating that a PV 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, the Zoning Administrator has determined that PV SOLAR FARM property valuation is within the purview of the Champaign County Board, and it should thus be the County Board that approves or denies a Special Use Permit for a PV SOLAR FARM rather than the Zoning Board of Appeals.

   C. Regarding Part C, to amend Section 4.3.1 to exempt PV SOLAR FARM from the height regulations except as height regulations are required as a standard condition in new Section 6.1.5., Section 6.1.5 establishes that PV SOLAR FARM height will be considered on a case by case basis as part of the permitting process.

   D. Regarding Part D, to amend subsection 4.3.4 A. to exempt WIND FARM LOT and PV 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., there are no septic systems on a PV SOLAR FARM that would require a minimum amount of land to install.

   E. Regarding Part E, to amend subsection 4.3.4 H.4. to exempt PV 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., the proposed amendment is more specific in that it requires that no PV SOLAR FARM development take place within the Pipeline Impact Radius unless a crossing agreement has been entered into with the relevant party.

F. Regarding Part F, to amend Section 5.2 by adding "PV SOLAR FARM" as a new PRINCIPAL USE under the category "Industrial Uses: Electric Power Generating Facilities" and indicate that PV 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 PV 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., the proposed amendment establishes a PV SOLAR FARM as a unique use that does not exist in the Zoning Ordinance, and that has unique characteristics which require conditions specific to a PV SOLAR FARM development.

G. Regarding Part G, to add new paragraph 5.4.3 F. that prohibits the Rural Residential OVERLAY DISTRICT from being established inside a PV SOLAR FARM County Board SPECIAL USE Permit, the proposed amendment reflects that Rural Residential Overlay Districts have specific requirements that differ greatly from what would be required for a PV SOLAR FARM and the two uses cannot exist simultaneously.

H. Regarding Part H, to amend Subsection 6.1.1 A. by 1) adding a PV 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. and 2) revising subparagraph 6.1.1 A.11.c. by deleting reference to Section 6.1.1A. and adding reference to Section 6.1.1A.2., the proposed amendment cleans up the existing ordinance to ensure that the proper references are directed to WIND FARMS and PV SOLAR FARMS, as applicable.

I. Regarding Part I, to add new subsection 6.1.5 PV SOLAR FARM County Board SPECIAL USE Permit with new standard conditions for PV SOLAR FARM, the proposed amendment gives this new land use a similar level of consideration as subsection 6.1.4 for WIND FARMS.

J. Regarding Part J, to add new subsection 9.3.1 J. adding application fees for a PV SOLAR FARM zoning use permit, the proposed amendment reflects the unique characteristics of a PV SOLAR FARM in the proposed fees, and makes the Zoning Ordinance clear on the costs to developers for a Zoning Use Permit that differ from the standard Zoning Use Permit fees.

K. Regarding Part K, to add new subparagraph 9.3.3 B.8. adding application fees for a PV SOLAR FARM County Board SPECIAL USE permit, the proposed amendment reflects the unique characteristics of a PV SOLAR FARM in the proposed fees, and makes the Zoning Ordinance clear on the costs to developers for this Special Use that differ from the standard Special Use Permit fees.

L. Attachment B to Supplemental Memorandum #6 dated March 29, 2018, provides the source and/or justification for all proposed PV SOLAR FARM standard conditions.

GENERALLY REGARDING THE LRMP GOALS, OBJECTIVES, AND POLICIES

5. The *Champaign County Land Resource Management Plan* (LRMP) was adopted by the County Board on April 22, 2010. The LRMP Goals, Objectives, and Policies were drafted through an inclusive and public process that produced a set of ten goals, 42 objectives, and 100 policies, which

are currently the only guidance for amendments to the *Champaign County Zoning Ordinance*, as follows:

A. The Purpose Statement of the LRMP Goals, Objectives, and Policies is as follows:
"It is the purpose of this plan to encourage municipalities and the County to protect the land, air, water, natural resources and environment of the County and to encourage the use of such resources in a manner which is socially and economically desirable. The Goals, Objectives and Policies necessary to achieve this purpose are as follows:"

B. The LRMP defines Goals, Objectives, and Policies as follows:
(1) Goal: an ideal future condition to which the community aspires
(2) Objective: a tangible, measurable outcome leading to the achievement of a goal
(3) Policy: a statement of actions or requirements judged to be necessary to achieve goals and objectives

C. The Background given with the LRMP Goals, Objectives, and Policies further states, "Three documents, the *County Land Use Goals and Policies* adopted in 1977, and two sets of *Land Use Regulatory Policies*, dated 2001 and 2005, were built upon, updated, and consolidated into the LRMP Goals, Objectives and Policies.

REGARDING LRMP GOALS

6. LRMP Goal 1 is entitled "Planning and Public Involvement" and states that as follows:
Champaign County will attain a system of land resource management planning built on broad public involvement that supports effective decision making by the County.

Goal 1 has 4 objectives and 4 policies. The proposed amendment will ***NOT IMPEDE*** the achievement of Goal 1.

7. LRMP Goal 2 is entitled "Governmental Coordination" and states as follows:

Champaign County will collaboratively formulate land resource and development policy with other units of government in areas of overlapping land use planning jurisdiction.

Goal 2 has two objectives and three policies. ~~The proposed amendment will ***NOT IMPEDE*** the achievement of Goal 2.~~ Objective 2.2 does not appear to be relevant to the proposed text amendment. The proposed amendment will ***HELP ACHIEVE*** Goal 2 for the following reasons:

A. Objective 2.1 states: "**Champaign County will coordinate land resource management planning with all County jurisdictions and, to the extent possible, in the larger region**."

The proposed amendment will ***HELP ACHIEVE*** Objective 2.1 for the following reasons:

(1) The proposed amendment ***WILL NOT IMPEDE*** the achievement of Policy 2.1.1.

(2) Policy 2.1.2 states: "**The County will continue to work to seek a county-wide arrangement that respects and coordinates the interests of all jurisdictions and that provides for the logical extension of municipal land use jurisdiction by annexation agreements."**

The proposed amendment will ***HELP ACHIEVE*** Policy 2.1.2 for the following reasons:

a. The following testimony is being taken into consideration as revisions are made to the proposed amendment:

(a) No comments were received regarding this Objective at the March 1, 2018 public hearing for this case.

(b) At the March 15, 2018 public hearing for this case, testimony was received regarding coordination within overlapping jurisdictions:

i. Tim Osterbur, who resides at 302 Witt Park Road, Sidney, asked the Board if the Village of Sidney's one and one-half mile jurisdiction covers the solar farm or is it strictly the County's jurisdiction.

ii. In response to Mr. Osterbur's question, John Hall, Zoning Administrator, clarified that the County has the zoning jurisdiction up to the Village of Sidney's municipal boundary. He said that state law does not give municipalities or township plan commissions protest rights on special use permits, which is what the solar farm case will be, but the County has always asked municipalities if they have comments on a special use permit in their extra-territorial jurisdiction. He said that in this instance, staff has gone beyond that by writing in the standard conditions that when a special use permit is received for a solar farm that is within one and one-half mile of a municipality, it has to be documented that the municipality knows about it and before the County Board votes.

(c) At the March 29, 2018 public hearing for this case, testimony was received regarding coordination within overlapping jurisdictions:

i. Tim Osterbur, who resides at 302 Witt Park Road, Sidney, stated that the wind ordinance has a one and one-half mile jurisdiction requirement from incorporated municipalities, and he would hope that the Board would strongly consider making that same requirement for solar farms.

(d) At the April 5, 2018 public hearing for this case, testimony was received regarding concerns about solar companies developing too close to municipalities such that they cannot grow, limiting the enjoyment and use of individual properties, and solar companies not following through with decommissioning, testimony from the following witnesses can be found in the meeting minutes.

i. Cory Willard, 503 S. David, Sidney;
ii. Leroy Schluter, 8 Wesley Ct, Sidney;
iii. Charles White, Mayor of Sidney, 309 S Bryan, Sidney;
iv. Michael Bryant, 21 S. Scarborough Ct, Sidney;
v. Chris Bromley, 201 Austin Drive, Sidney;
vi. Rich Rutherford, 319 S. Scarborough, Sidney;
vii. Colleen Ruhter, 910 CR 2200 E, Sidney;

viii. Ted Hartke, 1183 CR 2300E, Sidney; and
ix. Kathy Schindler, 551 CR 2200E, Broadlands.

(e) At the April 12, 2018 public hearing for this case, testimony was received regarding concerns about solar companies developing too close to municipalities such that they cannot grow, limiting the enjoyment and use of individual properties, and solar companies not following through with decommissioning, testimony from the following witnesses can be found in the meeting minutes.

i. Paul Lewis, 2 Stewart Ln, Sidney;
ii. Patrick McIntosh, 204 N. Harrison, Sidney;
iii. Vince Kohrs, 603 W. Woodlawn, Danville;
iv. Jim Rector, 9 Dunlap Woods, Sidney;
v. Chris Hitz, 204 E. Main, Sidney;
vi. Rich Rutherford, 319 S. Scarborough, Sidney;
vii. Tannie Justice, 2268 CR 900N, Homer;
viii. Charles White, Mayor of Sidney, 309 S Bryan, Sidney;
ix. Tim Osterbur, 302 Witt Park Rd, Sidney;
x. Jeff Justus, 2155 CR 900N, Sidney;
xi. Colleen Ruhter, 910 CR 2200 E, Sidney; and
xii. Ted Hartke, 1183 CR 2300E, Sidney.

8. LRMP Goal 3 is entitled "Prosperity" and states as follows:

Champaign County will encourage economic growth and development to ensure prosperity for its residents and the region.

Goal 3 has three objectives and no policies. The proposed amendment will ***NOT IMPEDE*** the achievement of Goal 3.

9. LRMP Goal 4 is entitled "Agriculture" and states as follows:

Champaign County will protect the long term viability of agriculture in Champaign County and its land resource base.

Goal 4 has 9 objectives and 22 policies. Objectives 4.4, 4.5, 4.7, 4.8 and their policies do not appear to be relevant to the proposed text amendment. The proposed amendment will ***HELP ACHIEVE*** Goal 4 for the following reasons:

A. Objective 4.1 states as follows: **"Champaign County will strive to minimize the fragmentation of the County's agricultural land base and conserve farmland, generally applying more stringent development standards on *best prime farmland*."**

The proposed amendment will ***HELP ACHIEVE*** Objective 4.1 for the following reasons:

(1) The proposed amendment *WILL NOT* IMPEDE the achievement of Policies 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.7, 4.1.8, and 4.1.9.

(2) Policy 4.1.1 states: "**Commercial agriculture is the highest and best use of land in the areas of Champaign County that are by virtue of topography, soil and drainage, suited to its pursuit. The County will not accommodate other land uses except under very restricted conditions or in areas of less productive soils**."

The proposed amendment will ***HELP ACHIEVE*** Policy 4.1.1 for the following reasons:

a. The proposed standard conditions for a PV SOLAR FARM are very restrictive and will ensure the following:

(a) Proposed Section 6.1.5 D. requires minimum separations between any PV SOLAR FARM and existing adjacent use to minimize issues of land use compatibility.

(b) No PV SOLAR FARM shall interfere with agricultural operations (see Objective 4.2).

(c) No PV SOLAR FARM shall be located at any location that is not well-suited for that PV SOLAR FARM (see Objective 4.3).

(d) Proposed Section 6.1.5 E. requires minimum standard conditions for any PV SOLAR FARM related to building codes, electrical components, maximum height, and warning signs.

(e) Proposed Section 6.1.5 I. establishes standard conditions to ensure that the allowable noise level created by a PV SOLAR FARM is consistent with the Illinois Pollution Control Board regulations that are the same for all rural land uses including wind farms.

(f) Proposed Section 6.1.5 N. establishes minimum standard conditions to ensure that glare is minimized at any PV SOLAR FARM and to establish a process to resolve any complaints about glare that may arise regarding a PV SOLAR FARM.

(g) Proposed Section 6.1.5 O. requires a PV SOLAR FARM to carry minimum liability insurance to protect landowners.

(h) Proposed Section 6.1.5 P. requires operational standard conditions intended to ensure that nuisance conditions are not allowed to exist at a PV SOLAR FARM.

(i) Proposed Section 6.1.5 Q. requires any PV SOLAR FARM to have an approved Decommissioning and Site Reclamation Plan to ensure that funds will be available to remove a PV SOLAR FARM if the SOLAR FARM ever becomes non-functional.

b. The proposed amendment will require any PV SOLAR FARM to be authorized by a County Board Special Use Permit (which is a discretionary development as defined in the Land Resource Management Plan) which will allow for site specific review for any proposed PV SOLAR FARM.

(2) Policy 4.1.6 states: **"Provided that the use, design, site and location are consistent with County policies regarding:**

i. Suitability of the site for the proposed use;

ii. Adequacy of infrastructure and public services for the proposed use;

iii. Minimizing conflict with agriculture;
iv. Minimizing the conversion of farmland; and
v. Minimizing the disturbance of natural areas; then

a) On best prime farmland, the County may authorize discretionary residential development subject to a limit on total acres converted which is generally proportionate to tract size and is based on the January 1, 1998 configuration of tracts, with the total amount of acreage converted to residential use (inclusive of by-right development) not to exceed three acres plus three acres per each 40 acres (including any existing right-of-way), but not to exceed 12 acres in total; or

b) On best prime farmland, the County may authorize non-residential discretionary development; or

c) The County may authorize discretionary review development on tracts consisting of other than best prime farmland."

The proposed amendment will ***HELP ACHIEVE*** Policy 4.1.6 for the following reasons:

a. The ZBA has recommended that the proposed amendment will ***HELP ACHIEVE*** Objective 4.3 regarding location at a suitable site and adequacy of infrastructure and public services.

b. The ZBA has recommended that the proposed amendment will ***HELP ACHIEVE*** Objective 4.2 regarding no interference with agricultural operations.

c. The ZBA has recommended that the proposed amendment will ***HELP ACHIEVE*** Goal 8 regarding conserving and enhancing the County's landscape and natural resources.

d. The proposed amendment will ***HELP ACHIEVE*** the County's policies regarding minimizing the conversion of best prime farmland as follows:

(a) The only policy regarding conversion of best prime farmland by non-residential discretionary development is Policy 4.1.6b., which states, "on best prime farmland the County may authorize non-residential development." Policy 4.1.6b. has no limit on the conversion of best prime farmland for non-residential discretionary development and is merely a statement of fact and therefore, the proposed amendment does help achieve Policy 4.1.6.b.

(b) Best prime farmland to be developed as a PV SOLAR FARM will be 100% converted. However, there is a distinction between conversion of best prime farmland and actual disturbance of best prime farmland. An analysis of the actual disturbance of best prime farmland for two proposed PV SOLAR FARMS in Champaign County revealed that the actual land disturbance (not merely the conversion of use) that would result from the construction of the two PV SOLAR FARMS may be no more ~~would be far less~~ than the land disturbance that would result from by-right residential development and in some cases the disturbance may be far less, as follows:

i. The land disturbed by the construction of the PV SOLAR FARMS including by the installation of supports for the proposed single axis tracking PV arrays and the construction of the gravel and/or compacted earth access roads and the installation of underground trenching for medium-voltage underground wiring and the installation of electrical inverters and the construction of any required electrical substation, will total between 0.25 acres (0.44%) for a COMMUNITY PV SOLAR FARM proposed on a single 57.84 acre parcel and 37.7 acres (2.9%) of 1,299.1 acres for a utility scale PV SOLAR FARM proposed on 38 existing parcels.

ii. The amount of land that would be disturbed under "by-right" residential development on the same tracts would be about 1.00 acres (1.73%) for the COMMUNITY PV SOLAR FARM proposed on the single 57.84-acre parcel and 28.4 acres (2.2%) of the 1,299.1 acres for the utility scale PV SOLAR FARM proposed on 38 existing parcels.

e. PV SOLAR FARMS do not require the permanent conversion of farmland; solar arrays can be removed at the owner's choosing and the land can be put back into agricultural production.

f. There are also practical limits to how much PV SOLAR FARM development will occur in Champaign County, as follows:

(a) A utility scale PV solar farm must be located near an electrical substation with adequate electrical capacity, and in Champaign County there are only two such locations which are the Ameren Illinois substations near Rising and near Sidney. However, it is not clear what the capacity limits are at those two substations but there is only so much land that is located relatively close to each substation.

(b) A "community renewable generation project" type PV solar farm is a SOLAR FARM of not more than 2,000-kilowatt (2 megawatt) nameplate capacity that meets the requirements of Public Act 99-0906 for a "community renewable generation project". This is also referred to as "the distributed model" type of solar farm. Solar farm developers state that the principal locational requirement is short and easy access to a three-phase electrical power line. The location of three-phase lines has not been mapped by Planning & Zoning staff or by the Champaign County GIS Consortium, but three phase lines likely occur anywhere in the rural area where there are large grain elevators and therefore COMMUNITY PV SOLAR FARMS may be located throughout Champaign County. However, Public Act 99-0906 (the Future Energy Jobs Act) only calls for 400 megawatts of community solar projects to be developed in the entire State of Illinois by 2030.

B. Objective 4.2 is entitled "Development Conflicts with Agricultural Operations" and states, "Champaign County will require that each *discretionary review* development will not interfere with agricultural operations."

The proposed amendment will ***HELP ACHIEVE*** Objective 4.2 because of the following:

(1) **Policy 4.2.1 states, "The County may authorize a proposed business or other non-residential *discretionary review* development in a rural area if the proposed development supports agriculture or involves a product or service that is better provided in a *rural* area than in an urban area."**

The proposed amendment will ***HELP ACHIEVE*** Policy 4.2.1 for the following reasons:

a. The Land Resource Management Plan (LRMP) provides no guidance regarding what products or services are better provided in a rural area and therefore that determination must be made in each zoning case.

b. A PV SOLAR FARM ***IS*** a service better provided in a rural area as evidenced by the following:

(a) A PV SOLAR FARM requires a large land area that generally makes it uneconomical for a PV SOLAR FARM to be located inside a municipality.

(b) A PV SOLAR FARM serves an important public need for renewable energy because of the following:

i. The Future Energy Jobs Act was passed by the Illinois General Assembly in December 2016, and went into effect on June 1, 2017. The law creates more favorable conditions to develop renewable energy in Illinois for solar developers and consumers.

ii. "The Illinois Renewable Portfolio Standard requires large investor-owned electric utilities (EUs) and alternative retail electric supplies (ARES) to source 25% of eligible retail electricity sales from renewable energy by 2025. Electric cooperatives and municipal utilities are exempt from renewable portfolio standard (RPS) requirements" (*Source: dsireusa.org*).

(c) A PV SOLAR FARM must be located where there is an adequate and proper connection to the electrical distribution grid, which generally will be either near an electrical substation with adequate capacity (which is generally near to but outside of a municipality) or near a three-phase electrical distribution line with adequate capacity.

c. Even though a PV SOLAR FARM does not serve the surrounding agricultural uses directly, the land owner receives an annual payment from the PV SOLAR FARM operator far in excess of the value of a crop from that land.

d. The proposed amendment will require any PV SOLAR FARM to be authorized by a County Board Special Use Permit, which will allow for site specific review for any proposed PV SOLAR FARM.

(2) **Policy 4.2.2 states, "The County may authorize *discretionary review* development in a rural area if the proposed development:**

a) is a type that does not negatively affect agricultural activities; or

b) is located and designed to minimize exposure to any negative affect caused by agricultural activities; and

c) will not interfere with agricultural activities or damage or negatively affect the operation of agricultural drainage systems, *rural* roads, or other agriculture-related infrastructure."

The proposed amendment will ***HELP ACHIEVE*** Policy 4.2.2 for the following reasons:

a. Proposed Section 6.1.5 E. details standard conditions to mitigate damage to farmland, including agricultural drainage tile and soil disturbance.

b. Proposed Section 6.1.5 G. requires a Roadway Upgrade and Maintenance agreement with the relevant local authority, but provides for a waiver of that requirement for a "community" PV solar farm (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") when authorized by the relevant highway authority.

c. Proposed Section 6.1.5 M. requires the perimeter fencing to be a minimum of 10 feet from the lot line. This minimum separation is intended to minimize interference with adjacent agricultural operations.

d. Proposed Section 6.1.5 R. requires that a PV SOLAR FARM applicant shall enter into an Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture, including the following:

(a) 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.

(b) 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.

(c) Champaign County shall have the right to enforce all requirements of the signed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture.

C. Objective 4.3 is entitled "Site Suitability for Discretionary Review Development" and states: "Champaign County will require that each discretionary review development is located on a suitable site."

The proposed amendment will ***HELP ACHIEVE*** Objective 4.3 because of the following:

(1) **Policy 4.3.1 states "On other than best prime farmland, the County may authorize a discretionary review development provided that the site with proposed improvements is suited overall for the proposed land use."**

The proposed amendment will ***HELP ACHIEVE*** Policy 4.3.1 for the following reasons:

a. See the discussion under Policy 4.3.2 regarding achievement of Policy 4.3.2. If the proposed amendment achieves Policy 4.3.2, it will also achieve Policy 4.3.1.

(2) **Policy 4.3.2 states, "On best prime farmland, the County may authorize a discretionary review development provided the site with proposed improvements is well-suited overall for the proposed land use.**

The proposed amendment will ***HELP ACHIEVE*** Policy 4.3.2 for the following reasons:

a. Because so much of Champaign County consists of best prime farmland soils, any development of a PV solar farm is likely to be on best prime farmland.

b. PV solar farm development will either be development of a utility scale PV solar farm or a "community renewable generation project" type PV solar farm that meets the requirements of Public Act 99-0906 (the Illinois Future Energy Jobs Act). Regarding those two types of PV solar farms:

(a) A utility scale PV solar farm must be located near an electrical substation with adequate electrical capacity and in Champaign County there are only two such locations which are the Ameren Illinois substations near Rising and near Sidney and the soils in the vicinity of both of those locations meet the Zoning Ordinance definition of "best prime farmland".

(b) A "community renewable generation project" type PV solar farm is a SOLAR FARM of not more than 2,000 kilowatt (2 megawatt) nameplate capacity that meets the requirements of Public Act 99-0906 for a "community renewable generation project". This is also referred to as "the distributed model" type of solar farm. Solar farm developers state that the principal locational requirement is short and easy access to a three-phase electrical power line. The location of three-phase lines has not been mapped by Planning & Zoning staff or by the Champaign County GIS Consortium but three phase lines likely occur anywhere in the rural area where there are large grain elevators and therefore COMMUNITY PV SOLAR FARMs may be located throughout Champaign County. And again, because so much of Champaign County consists of best prime farmland soils, any

development of a COMMUNITY PV SOLAR FARM is likely to be on best prime farmland.

c. Proposed Section 6.1.5 C.2. exempts a PV SOLAR FARM from the maximum lot area requirement on best prime farmland. This exemption means that the presence of best prime farmland should not be the cause for denial of any proposed PV SOLAR FARM. Other proposed standard conditions for a PV SOLAR FARM will ensure that a PV SOLAR FARM shall not be approved on any location that is not well-suited for a PV SOLAR FARM as follows:

(a) Proposed Section 6.1.5 B.2. identifies areas where a PV SOLAR FARM should not be located.

(b) Proposed Section 6.1.5 F. details standard conditions to mitigate damage to farmland including underground agricultural drainage tile.

(c) Proposed Section 6.1.5 G. requires a Roadway Upgrade and Maintenance agreement with the relevant highway authority but provides for a waiver of that requirement for a "community" PV solar farm (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") when authorized by the relevant highway authority."

(d) Proposed Section 6.1.5 J. requires and Endangered Species Consultation with the IDNR and IDNR recommendations will be included in the Agency Action Report submitted with the Special Use Permit Application.

(e) Proposed Section 6.1.5 K. requires consultation with the State Historic Preservation Officer of IDNR and IDNR recommendations will be included in the Agency Action Report submitted with the Special Use Permit Application.

(f) Proposed Section 6.1.5 L. requires that the PV SOLAR FARM shall be located, designed, constructed, and operated so as to avoid and, if necessary, mitigate impacts to wildlife.

(g) Proposed Section 6.1.5 L. requires that a visual screen shall be provided for any part of a PV SOLAR FARM that is visible to and located within 1,000 feet of a dwelling.

d. The proposed amendment will require any PV SOLAR FARM to be authorized by a County Board Special Use Permit (which is a discretionary development as defined in the Land Resource Management Plan) which will allow for site specific review for any proposed PV solar farm including the determination of whether a proposed site is well suited overall for a proposed PV SOLAR FARM.

(3) **Policy 4.3.3 states, "The County may authorize a discretionary review development provided that existing public services are adequate to support to the proposed development effectively and safely without undue public expense."**

The proposed amendment will ***HELP ACHIEVE*** Policy 4.3.3 for the following reasons:

a. Proposed Section 6.1.5 G. requires the applicant for any PV SOLAR FARM to submit a copy of the site plan to the relevant Fire Protection District and to cooperate with the Fire Protection District to develop the Fire Protection District's emergency response plan for the proposed PV SOLAR FARM.

b. The proposed amendment will require any PV SOLAR FARM to be authorized by a County Board Special Use Permit (which is a discretionary development as defined in the Land Resource Management Plan) which will allow for site specific review for any proposed PV SOLAR FARM.

(4) **Policy 4.3.4 states, "The County may authorize a discretionary review development provided that existing public infrastructure, together with proposed improvements, is adequate to support the proposed development effectively and safely without undue public expense."**

The proposed amendment will ***HELP ACHIEVE*** Policy 4.3.4 for the following reasons:

a. Proposed Section 6.1.5 G. requires a Roadway Upgrade and Maintenance agreement with the relevant highway authority but provides for a waiver of that requirement for a "community" PV solar farm (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") when authorized by the relevant highway authority."

b. The proposed amendment will require any PV SOLAR FARM to be authorized by a County Board Special Use Permit (which is a discretionary development as defined in the Land Resource Management Plan) which will allow for site specific review for any proposed PV SOLAR FARM.

(5) **Policy 4.3.5 states, "On best prime farmland, the County will authorize a business or other non-residential use only if:**

a. It also serves surrounding agricultural uses or an important public need; and cannot be located in an urban area or on a less productive site; or

b. the use is otherwise appropriate in a rural area and the site is very well suited to it."

The proposed amendment will ***HELP ACHIEVE*** Policy 4.3.5 for the following reasons:

a. As reviewed for Policy 4.2.1 in this Finding of Fact:

(a) A PV SOLAR FARM ***IS*** a service better provided and therefore ***IS*** appropriate in a rural area.

(b) A PV SOLAR FARM serves an important public need for renewable energy.

(c) A PV SOLAR FARM requires a large land area that generally makes it uneconomic for a solar farm to be located inside a municipality.

b. Regarding location of a PV SOLAR FARM on a less productive site, the following is reviewed under Policy 4.3.2 in this Finding of Fact:

(a) A utility scale PV SOLAR FARM in Champaign County cannot be located on less than best prime farmland.

(b) It is unlikely that a COMMUNITY PV SOLAR FARM in Champaign County will be located on less than best prime farmland.

(c) Proposed Section 6.1.5 C.2. exempts a PV SOLAR FARM from the maximum lot area requirement on best prime farmland. This exemption means that the presence of best prime farmland should not be the cause for denial of any proposed PV SOLAR FARM.

c. The proposed amendment will require any PV SOLAR FARM to be authorized by a County Board Special Use Permit which will allow for site specific review for any proposed PV SOLAR FARM.

10. LRMP Goal 5 is entitled "Urban Land Use" and states as follows:

Champaign County will encourage urban development that is compact and contiguous to existing cities, villages, and existing unincorporated settlements.

Goal 5 has 3 objectives and 15 policies. The proposed amendment is ***NOT RELEVANT*** to Goal 5 in general.

11. LRMP Goal 6 is entitled "Public Health and Safety" and states as follows:

Champaign County will ensure protection of the public health and public safety in land resource management decisions.

Goal 6 has 4 objectives and 7 policies. ~~The proposed amendment is ***NOT RELEVANT*** to Goal 6 in general.~~ Objectives 6.2, 6.3, and 6.4 are not relevant to the proposed amendment. The proposed amendment ***WILL HELP ACHIEVE*** Goal 6 for the following reasons:

A. Objective 6.1 states, "**Champaign County will seek to ensure that development in unincorporated areas of the County does not endanger public health or safety**." Objective 6.1 has four subsidiary polices and policy 6.1.3 is the only relevant policy and it states the following:

(1) Policy 6.1.3 states, "**The County will seek to prevent nuisances created by light and glare and will endeavor to limit excessive night lighting, and to preserve clear views of the night sky throughout as much of the County as possible**." The proposed amendment will help ***WILL HELP ACHIEVE*** Objective 6.1.3 as follows:

a. PV SOLAR modules are made with non-reflective glass so there should be minimum glare.

b. Existing Section 6.1.2A. of the Zoning Ordinance requires that any SPECIAL USE Permit with exterior lighting shall be required to minimize glare onto adjacent properties by the use of full-cutoff type lighting fixtures with maximum lamp wattages.

c. Section 6.1.5 N. of the proposed amendment requires the following:

(a) The design and construction of the PV SOLAR FARM shall minimize glare that may affect adjacent properties and the application shall include an explanation of how glare will be minimized.

(b) After construction of the PV 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:

(c) The Zoning Administrator shall make the Environment and Land Use Committee aware of complaints about glare that have been received by the Complaint Hotline, and

(d) 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.

12. LRMP Goal 7 is entitled "Transportation" and states as follows:

Champaign County will coordinate land use decisions in the unincorporated area with the existing and planned transportation infrastructure and services.

Goal 7 has 2 objectives and 7 policies. Objective 7.2 and its policies do not appear to be relevant to the proposed text amendment. The proposed amendment will ***HELP ACHIEVE*** Goal 7 for the following reasons:

A. Objective 7.1 states, **"Champaign County will consider traffic impact in all land use decisions and coordinate efforts with other agencies when warranted."**
The proposed amendment will ***HELP ACHIEVE*** Objective 7.1 for the following reasons:

(1) Policy 7.1.1 states, **"The County will include traffic impact analyses in discretionary review development proposals with significant traffic generation."**

The proposed amendment will ***HELP ACHIEVE*** Policy 7.1.1 for the following reasons:

a. Proposed Section 6.1.5 F.2. requires the applicant to provide a Transportation Impact Analysis prepared by an independent engineer.

13. LRMP Goal 8 is entitled "Natural Resources" and states as follows:

Champaign County will strive to conserve and enhance the County's landscape and natural resources and ensure their sustainable use.

Goal 8 has 9 objectives and 36 policies. Objectives 8.1, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9 and their policies do not appear to be relevant to the proposed text amendment. The proposed amendment will ***HELP ACHIEVE*** Goal 8 for the following reasons:

A. Objective 8.2 states, "**Champaign County will strive to conserve its soil resources to provide the greatest benefit to current and future generations**."

The proposed amendment will ***HELP ACHIEVE*** Objective 8.2 for the following reasons:

(1) PV SOLAR FARMS do not require the permanent conversion of farmland; solar arrays can be removed at the owner's choosing and the land can be put back into agricultural production.

(2) Proposed Section 6.1.5 Q. requires the applicant to submit a Decommissioning Plan, which includes protections for soil resources and ensures that the land will be returned to its original condition.

14. LRMP Goal 9 is entitled "Energy Conservation" and states as follows:
Champaign County will encourage energy conservation, efficiency, and the use of renewable energy sources.

Goal 9 has 5 objectives and 5 policies. Objectives 9.1, 9.2, 9.3, and 9.4 and their policies do not appear to be relevant to the proposed text amendment. The proposed amendment will ***HELP ACHIEVE*** Goal 9 for the following reasons:

A. Objective 9.5 states, "**Champaign County will encourage the development and use of renewable energy sources where appropriate and compatible with existing land uses**."

The proposed amendment will ***HELP ACHIEVE*** Objective 9.5 for the following reasons:

(1) Solar power is a renewable energy source.

(2) Compatibility with existing land uses will be determined as part of the proposed Special Use Permit process for PV SOLAR FARMS.

15. LRMP Goal 10 is entitled "Cultural Amenities" and states as follows:
Champaign County will promote the development and preservation of cultural amenities that contribute to a high quality of life for its citizens.

Goal 10 has 1 objective and 1 policy. Goal 10 is ***NOT RELEVANT*** to the proposed amendment in general.

REGARDING THE PURPOSE OF THE ZONING ORDINANCE

16. The proposed amendment will ***HELP ACHIEVE*** the purpose of the Zoning Ordinance as established in Section 2 of the Ordinance for the following reasons:

A. Paragraph 2.0 (a) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to secure adequate light, pure air, and safety from fire and other dangers.

The proposed amendment is consistent with this purpose.

B. Paragraph 2.0 (b) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to conserve the value of land, BUILDINGS, and STRUCTURES throughout the COUNTY.

(1) Public testimony regarding property value impacts was as follows:

(a) At the March 15, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Tannie Justus, 2268 CR 900 N, Homer, testified that if her property were to be surrounded by a solar farm, their property values would likely decrease, which would affect their ability to use their home as collateral on loans for their trucking business.

b. Ms. Ann Ihrke, 1440 N 1800 East Road, Buckley, stated that the Board's job as a member of the zoning board is to promote the public health, safety, comfort and general welfare, along with conserving the values of properties throughout the County.

c. Ms. Cindy Ihrke, 1458 N 1700E Road, Roberts, stated that property values and the right of its enjoyment should be protected for each landowner. She provided several articles regarding impacts of zoning decisions on property values, which were distributed in Supplemental Memorandum #5, dated March 22, 2018.

d. Mr. Patrick Brown, BayWa r.e., stated that there is so much review that goes into land prices that you cannot pick one variable and determine that this is the reason why a land's value has gone up or down. He said that if a peer review journal article can be found regarding property values and wind and solar farms, he would like to read it, but it doesn't exist.

(b) At the March 29, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Ms. Colleen Ruhter, who resides at 910 CR 2200E, Sidney, stated that she and her husband worked really hard to afford their dream homestead property. She said that they have been told that property values won't drop, but we all know better. She asked how the ordinance would protect the property values for all the adjacent and nearby properties. She asked if there is some sort of property value guarantee provided. She said that one means of directly ensuring that property values don't drastically drop on any home directly affected by a large solar farm, within the same 1,000 feet setback as the fencing, would be to have the ordinance require a home solar system be installed on these properties. She said that if they are going to install 1,299 acres of solar panels around her home, what's another extra 2,000 square feet. She said that at least if she is going to have to look at solar panels, basically in her front yard, they could get the benefits of solar with a reduced electric bill, and it would be a prop up on their property value in case they ever decided to sell it.

b. Mr. Tim Osterbur, who resides at 302 Witt Park Road, Sidney, stated that the wind ordinance has a one and one-half mile jurisdiction requirement from incorporated municipalities, and he would hope that the Board would strongly consider making that same requirement for solar farms, as it will lower property values.

(c) At the April 5, 2018 public hearing for this case, the following people testified that they have concerns about decreasing property values due to solar farms; their full testimony can be found in the meeting minutes:
a. Leroy Schluter, 8 Wesley Court, Sidney;
b. Chris Bromley, 201 Austin Drive, Sidney; and
c. Rich Ruthorford, 319 S. Scarborough, Sidney.

(d) No comments were received regarding property values at the April 12, 2018 public hearing for this case.

(2) ~~No evidence has been provided that establishes a link between solar farm construction and surrounding property values~~. The ZBA reviewed two property value impact studies for photovoltaic solar farms and both studies found no impact to home values due to adjacency to a photovoltaic solar farm. The ZBA has concluded that, in general, a photovoltaic solar farm will not harm the value of adjacent or nearby property. The studies are summarized as follows:

a. The *Adjacent Property Value Impact Study: A Study of Nine Existing Solar Farms* dated March 20, 2018, was prepared by CohnReznick LLP, 200 South Wacker Drive, Suite 2600, Chicago IL 60606-5829, for Cypress Creek Renewables, solar farm developer with applications pending for development of PV SOLAR FARMS in Champaign County. Regarding this property value impact study:

(a) The study included nine existing solar farms but sufficient data was available for only seven of the solar farms. The study analyzed the property value trends of adjacent land uses and reviewed similar published studies and interviewed market participants.

(b) The seven existing solar panel farms analyzed were as follows

i. Grand Ridge Solar Farm is a 20 megawatt photovoltaic solar farm located on 11.90 acres outside of Streator, Illinois in LaSalle County, Illinois.

ii. IMPA Frankton Solar Farm is a 1 megawatt photovoltaic solar farm located on 13 acres outside of Frankton, Indiana in Madison County, Indiana.

iii. Dominion Indy Solar III is a 8.6 megawatt photovoltaic solar farm located on 134 acres outside of Indianapolis, Indiana in Marion County, Indiana.

iv. Portage Solar Farm is a 1.5 megawatt photovoltaic solar farm located on 56 acres just outside of Portage, Indiana in Porter County, Indiana.

v. Valparaiso Solar LLC is a 1.3 megawatt photovoltaic solar farm located on 27.9 acres in Porter County, Indiana.

vi. Middlebury Solar Farm Valparaiso Solar LLC is a 1.5 megawatt photovoltaic solar farm located on 33.86 acres in Elkhart County, Indiana.

vii. Rockford Solar Farm is a 3.06 megawatt (Phase 1) photovoltaic solar farm located on 15 acres at the Chicago-Rockford International Airport in Winnebago County, Illinois. The solar farm is anticipated to be a total of 62 megawatts on 70 acres after three phases are completed.

(c) The analysis consisted of paired sales analysis for sales adjacent to the solar farms, the Test Areas, compared to sales of similar properties not adjacent to solar farms, the Control Areas. The analysis included 16 adjoining property sales in Test Areas and 72 comparable sales in Control areas.

(d) The study concludes, "there was no demonstrated impact on adjacent property values that was associated with proximity to solar farms."

(e) Note that a few of the Test Area properties were bordered by a solar farm on two sides but in the analysis of the Dominion Indy Solar III solar farm the Test Area properties were all across the street from the solar farm. Also note that none of the solar farms studied were larger than 20 megawatts.

b. The *Oakwood Solar Impact Study* dated February 12, 2016, was prepared by Kirkland Appraisals, LLC, 9408 Northfield Court, Raleigh, North Carolina 27603 for a proposed 53.74 acre photovoltaic solar farm to be located outside of Mebane, North Carolina. Regarding this property value impact study:

(a) The study analyzed four existing solar panel farms and the property value trends of adjacent land uses and reviewed similar published studies and interviewed market participants.

(b) The four existing solar panel farms analyzed were as follows:

i. AM Best Solar Farm is adjacent to Spring Garden Subdivision near Goldsboro, North Carolina.

ii. White Cross Solar Farm was built in 2013 in Chapel Hill, North Carolina.

iii. Wagstaff Farm Solar Farm is approximately 30 acres in area and was constructed in 2013 near Roxboro, North Carolina.

iv. Mulberry Solar Farm near Selmer, Tennessee.

(c) The analysis consisted of matched pair analysis for sales of properties adjoining the solar farms compared to sales of similar properties that were nearby but not adjoining to the solar farm. The analysis included 16 adjoining property sales in Test Areas and 19 comparable sales in Control areas.

(d) Note that not much information was provided regarding the solar farms and it is not clear whether any of the solar farms bordered any residential property on more than one side.

(3) There will be positive effects on Equalized Assess Valuation that will benefit taxing districts as follows:

a. Under current law, a solar farm may be subject to assessment like any other real property, provided that the solar farm developer does not challenge the assessment, and the assessment would be based on the stated economic value of the solar farm and subject to the standard 33-1/3% assessed valuation. As an example, the 20-megawatt Grand Ridge Solar Farm that is situated on 160 acres near Streator, Illinois in LaSalle County has a current assessed valuation of $5,673,979 which is about $283,698 per megawatt or $35,462 per acre.

b. At least two bills have been proposed in the state legislature (Senate Bill 486 and House Bill 5284) to establish standard assessment guidelines for "commercial solar energy systems" which is generally defined as "any device or assembly of devices for generating electricity for the primary purpose of wholesale or retail sale and not primarily for consumption on the property on which the device(s) reside". Both bills establish a standard "commercial solar energy system real property cost basis" ($199,000 per megawatt in SB486 and $446,000 per megawatt in HB5284) for assessment of real estate taxes. Both bills also establish standard depreciation rates and adjustments for inflation. For the example 20-megawatt Grand Ridge Solar Farm that is situated on 160 acres near Streator, Illinois in LaSalle County, the current assessed valuation of about $283,698 per megawatt or $35,462 per acre would be reduced by about 30% under SB486 (down to $199,000 per megawatt and about $24,875 per acre) and possibly increased to as much as $446,000 per megawatt or $55,750 per acre under HB5284.

c. The highest assessed valuation for farmland in Champaign County is $707 per acre.

d. Solar farm development will have positive effects on Equalized Assess Valuation that should benefit any taxing district in which a solar farm is located. The larger the solar farm, the greater the positive effects on Equalized Assess Valuation. For a solar farm the same size as the example 20-megawatt Grand Ridge Solar Farm that is situated on 160 acres near Streator, Illinois in LaSalle County, under SB486 the solar farm would be assessed at $3,980,000, and $8,920,000 under HB5284. If the same 160 acres

were the highest quality Champaign County best prime farmland, it would be assessed at $113,120. The real estate taxes due just to Champaign County (using the current Champaign County real estate tax extension of 0.008481) and no other taxing body under these scenarios are as follows:

(a) 160 acres of the best quality Champaign County farm ground would owe real estate taxes to Champaign County in the amount of $953.37. The total real estate tax bill would be higher but that is the portion that would go directly to Champaign County.

(b) If those 160 acres were the site of a 20-megawatt solar farm, the tax bill to Champaign County would increase to $11,250.33 under SB486 or $25,214.32 under HB5284. The total real estate tax bill would be higher but that is the portion that would go directly to Champaign County. The relative increase in real estate taxes owed to other taxing bodies (such as townships) would be increased similarly as for Champaign County.

(4) Section 6.1.5 Q. of the proposed amendment includes a standard condition requiring a Decommissioning Plan and Site Reclamation Plan that is intended to ensure there is adequate financial assurance for removal of a PV SOLAR FARM at the end of its useful life. Ensuring adequate site reclamation is one method of protecting surrounding property values. Regarding Section 6.1.5 Q.:

a. The proposed Decommissioning Plan and Site Reclamation Plan requirements for a PV SOLAR FARM are like the existing Decommissioning Plan and Site Reclamation Plan requirements for a wind farm in Section 6.1.4P. except for the following:

(a) Paragraph 6.1.5 Q.3.(i) allows that underground electrical cables at a depth of 5 feet or greater may be left in place. This requirement is consistent with paragraph 21.B.5. of the Illinois Department of Agriculture's Agriculture Impact Mitigation Agreement.

(b) Paragraph 6.1.5 Q.4.(a) of the amendment requires the amount of financial assurance provided for the site reclamation plan of a PV SOLAR FARM to be 125% of the independent engineer's estimated decommissioning cost instead of the 210% required for a wind farm by paragraph 6.1.4 P.4.(a). The change to 125% is recommended based on an assumed inflation of 3% for five consecutive years (based on proposed updating of the financial assurance) and a minimum 10% contingency cost added to the estimated cost of decommissioning and then rounding that total to 125%.

(c) Paragraph 6.1.5 Q.4.(b)(7) requires that the total financial assurance after deduction of the net estimated salvage value shall be a minimum of $1,000 per acre, which is the same as required by Kankakee County.

(d) Paragraph 6.1.5 Q.4.(h) provides that any financial assurance required by the Illinois Department of Agriculture's Agriculture Impact Mitigation Agreement shall count towards the total financial

assurance required by Champaign County so there is no double coverage.

(e) Paragraph 6.1.5 Q.4.(h) requires the State's Attorney's Office to review and approve the Letter of Credit and Escrow Account, which is consistent with County practice.

b. Both an Escrow Account and a Letter of Credit may be used to upgrade a PV SOLAR FARM at the end of the useful life of the SOLAR PV modules, instead of decommissioning.

c. The cost of an Escrow Account is higher than the cost of a Letter of Credit, but the Escrow Account is the only form of financial assurance that can be guaranteed to be available even if the PV SOLAR FARM owner goes bankrupt.

(5) Attachment K to Supplemental Memorandum #5 dated March 22, 2018, was an alternative decommissioning standard for PV SOLAR FARMS that use SOLAR PV modules that have an unlimited warranty of at least 10 years and have a limited power warranty to provide not less not than 80% nominal power output up to 25 years and proof of that warranty is provided at the time of Zoning Use Permit approval. Regarding the alternative decommissioning standards:

a. The alternative decommissioning standard is based on a modification of the decommissioning requirements in the Illinois Department of Agriculture Agricultural Impact Mitigation Agreement (AIMA).

b. Attachment K to the Supplemental Memorandum #5 dated March 22, 2018, is a table comparing the REVISED (Alternative) Champaign County Solar Farm decommissioning requirement to the decommissioning requirements in the Illinois Department of Agriculture's Agriculture Impact Mitigation Agreement and the requirements proposed by BayWa r.e.

c. The alternative decommissioning uses the same amount of financial assurance (125% of the decommissioning estimate) as the basic version of the proposed amendment.

d. The alternative decommissioning uses an incremental approach in establishing the financial assurance in eleven years, which is the same as Illinois Department of Agriculture's Agriculture Impact Mitigation Agreement except that the first step is at the time of permitting, like the proposed amendment.

e. The three increments are 12.5%, 62.5%, and 125%, which are somewhat greater than used in the Illinois Department of Agriculture's Agriculture Impact Mitigation Agreement.

f. The conversion to an escrow account is not required until years 20 through 25, so that the escrow account will be in place by the end of the limited power warranty.

g. The alternative decommissioning should protect County interests without unduly burdening the solar farm developer with unnecessary costs.

h. If the County Board adopts the alternative decommissioning, it should also consider revising the existing decommissioning requirements for a wind farm using a similar approach, although warranties provided for wind farm turbines are nothing like the warranties available for this better class of PV modules.

(6) At the March 1, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Patrick Brown with BayWa r.e. located at 17901 Von Karment Avenue, Irvine, California, testified that his company believes decommissioning should be a requirement but that the proposed decommissioning requirements are unreasonable. He recommended that a Letter of Credit or a performance bond should be required rather than an Escrow Account.

(7) At the March 15, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Patrick Brown with BayWa r.e. that is located at 17901 Von Karment Avenue, Irvine, California, testified that his company is still concerned about the proposed decommissioning requirements and still suggest that a Letter of Credit should still be the only required financial assurance.

b. Tim Montague who resides at 2001 Park Ridge, Urbana, and is an employee of Continental Electrical Construction Company, a company that builds solar arrays of all sizes, testified that if the decommissioning requirements are too onerous then solar farm developers will go elsewhere in the State of Illinois to develop solar farms.

(8) At the March 29, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Patrick Brown with BayWa r.e. that is located at 17901 Von Karment Avenue, Irvine, California, testified that his company still believed that a Letter of Credit should be acceptable in lieu of an Escrow Account for the financial assurance for decommissioning.

b. Daniel Herriott who lives at 30 Dunlap Woods, Sidney, testified that he was concerned about what happens if the solar farm lease is for 40 years but the solar panels are only good for 25 years and he was concerned about decommissioning.

(9) At the April 5, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Cory Willard, 503 S. David, Sidney, was concerned that solar farm developers were opposed to having an escrow account for the decommissioning financial assurance. He said that a bond is useless if the bonding company goes bankrupt and he wanted the Board to consider that.

b. Jason Arrasmith, a Sidney resident and Trustee, sent an email dated April 3, 2018, in which he stated that it is very important that these companies be held responsible for the cleanup and return of the land to its natural state when the leasing is complete and a line of credit is not good enough and the County should insist on an escrow account that will cover all costs for restoration of the land.

(10) At the April 12, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Michael Crosby of 512 South Edwin Street, Champaign, urged the Board to avoid excessive decommissioning requirements.

b. Chuck White, Mayor of Sidney, 309 S Bryan, Sidney, asked what happens after the 20 to 30-year life of the solar panels- are the panels recycled or just staked in a building somewhere?

c. Jeff Justus, 2155 CR 900N, Sidney, asked if decommissioning had been thought out- how deep do the footings go and can they be removed?

C. Paragraph 2.0 (c) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to lessen and avoid congestion in the public STREETS.

The proposed amendment is consistent with this purpose.

D. Paragraph 2.0 (d) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to lessen and avoid hazards to persons and damage to property resulting from the accumulation of runoff of storm or flood waters.

The proposed amendment is consistent with this purpose.

E. Paragraph 2.0 (e) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to promote the public health, safety, comfort, morals, and general welfare.

(1) At the March 15, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Ted Hartke, 1183 CR 2300E, Sidney, stated that noise impacts should be 39 decibels or less, which is below what the Illinois Pollution Control Board and the proposed amendment to the Champaign County Zoning Ordinance require.

b. Ann Ihrke, 1441 N CR 1800E, Buckley, stated that any noise greater than 39 decibels does not comply with the purpose of the Zoning Ordinance to promote public health, safety, comfort, and general welfare.

c. Tannie Justus, 2268 CR 900 N, Homer, asked about electromagnetic field impacts of the solar farm on a nearby residence; overspray damage due to

weed control under the solar panels; and noise, glare, and obstructed views created by the solar farms.

d. Tim Montague, 2001 Park Ridge Drive, Urbana, urged the ZBA to not lose sight of the State of Illinois goal to have 25% renewable energy by 2025.

e. Max Kummerow, Urbana, asked that the ZBA maximize the global impacts of renewable energy, while minimizing its local impacts on nearby residents such as the concerns addressed by other witnesses.

f. Elise Doody-Jones, 2025 Burlison, Urbana, testified that solar development creates huge job creation that benefits local communities, and it is a means to save soil.

(2) At the March 29, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Cindy Shepherd, Central Illinois Outreach Director for Faith in Place, provided a handout of her presentation. She said that her organization supports the Future Energy Jobs Act and the opportunities it creates for solar energy. She said that Faith in Action believes that one way to support our neighbors who are economically challenged is lowering energy costs and providing good jobs, and the clean energy sector is poised to do that in Illinois. She said that community solar projects can be especially beneficial to those who would like to reduce their energy costs.

b. Colleen Ruhter, 910 CR 2200E, Sidney, wants to preserve the rural character that they sought when buying their 5 acre farm a few years ago. She is also concerned about the environmental impact of the fencing around solar farms, wildlife habitats, and ecosystems. She wants weeds on the solar farms to be maintained, and she is in favor of pollinator plants under the solar panels. She believes that a noise study should be required for solar farm developments.

c. Ted Hartke, 1183 CR 2300E, Sidney, testified that he thinks that solar farm developments should be required to produce less noise than what the proposed amendment stipulates. He said that solar energy is not needed, there is plenty of energy already produced in other forms, and that solar would steal from landowners' enjoyment of their land and surroundings.

(3) At the April 5, 2018 public hearing for this case, testimony was received regarding this purpose:

a. Regarding how solar energy benefits general welfare, testimony from the following witnesses can be found in the meeting minutes:

(a) Elise Doody-Jones, Urbana;
(b) Max Kummerow, Urbana; and
(c) Mike Wishall, Tolono.

(4) At the April 12, 2018 public hearing for this case, the following testimony was received regarding this purpose:

a. Regarding how solar energy benefits general welfare, testimony from the following witnesses can be found in the meeting minutes:
(a) Stuart Levy, 1108 Foley, Champaign;
(b) Michael Crosby, 512 S. Edwin, Champaign;
(c) Margo Chaney, 1602 Kingston Dr, Urbana;
(d) Jennifer Hixson, 209 W. Indiana, Urbana;
(e) Ron Becker, IBEW, from Livingston County;
(f) Harry Ohde, 9318 S. Longwood Drive, Chicago;
(g) Laura Schultz, 510 E. John St., Champaign;
(h) Anna Mae Dziallo, 403 S Coler Ave, Urbana;
(i) Dan Maloney, 1008 W. William, Champaign;
(j) Rebecca Laurent, 1005 W. Gregory, Urbana;
(k) Jason Lindsey, 606 Deer Run Drive, Mahomet;
(l) Cindy Shepherd, 2010 Burlison, Urbana; and
(m) Patrick Brown, BayWa r.e.

(~~2~~5) Regarding screening and fencing, the proposed amendment includes required fencing around the entire solar farm development, and vegetative screening for any part of a solar farm that is visible to and located within 1,000 feet of a dwelling or residential district. A landscape plan will be required as part of the County Board Special Use Permit application so that any vegetative screening will be reviewed prior to approval.

(~~3~~6) Regarding glare, the proposed amendment includes a standard condition to minimize glare that may affect adjacent properties. Photovoltaic modules utilize non-glare glass so there should not be much glare. The application for a County Board Special Use Permit shall include an explanation of how glare will be minimized.

(7) Regarding noise:

a. The sources of noise in a solar farm are the electrical inverter(s) that convert DC current to AC and related transformers.

b. Based on comments from PV SOLAR FARM developers, standard engineering practice is to have one inverter per approximately 15 acres of photovoltaic array. A review of various PV SOLAR FARM plans found that inverters are generally located approximately 263 feet to 282 feet from a property line.

c. The ZBA reviewed the report *Study of Acoustic and EMF Levels from Solar Photovoltaic Projects* published by the Massachusetts Clean Energy Center and dated December17, 2012. Regarding this study:
(a) The study analyzed sound levels at three non-residential solar installations that varied in size from 1 megawatt to 3.5 megawatts. All solar installations were bordered by open areas without buildings.

(b) The study analyzed sound at set distances from the inverters and at the perimeter of each solar farm and at 50 feet, 100 feet, and 150 feet from the boundary of each solar farm. Background noise levels were also measured. The noise levels were measured the time of peak solar

azimuth and only on days for which clear skies were forecast so as to ensure that the inverters would be operating at peak output.

(c) The study included the following noise findings:

i. "sound levels along the fenced boundary of the PV arrays were generally at background noise levels although a faint inverter hum could be heard at some locations."

ii. "Any sound from the PV array and equipment was inaudible and sound levels are at background levels at distances of 50 to 150 feet from the boundary."

d. The proposed amendment includes the following requirements to ensure acceptable levels of sound from any PV SOLAR FARM:

(a) Paragraph 6.1.5 D.3. requires a minimum 200 feet separation distance from the perimeter fence of a PV SOLAR FARM to any adjacent LOT that is five acres or less in area (not including the STREET RIGHT OF WAY) that is bordered by the PV SOLAR FARM on no more than two sides and a 250 feet separation to any existing DWELLING or existing PRINCIPAL BUILDING on any adjacent LOT that is five acres or more in area. These required separations are for properties that are not participating in the lease for the solar farm. The ZBA may also require a greater separation for any adjacent LOT that is bordered (directly abutting and/or across the STREET) on more than two sides by the PV SOLAR FARM.

(b) Paragraph 6.1.5 D.5. requires electrical inverters to be located as far as possible from property lines and adjacent DWELLINGS consistent with good engineering practice and inverter locations that are less than 275 feet from the perimeter fence shall require specific approval and may require special sound deadening construction and noise analysis.

(c) Section 6.1.5 I. of the proposed amendment requires a noise analysis for any proposed PV SOLAR FARM that is not a COMMUNITY PV SOLAR FARM and allows that ZBA may require a noise analysis for any COMMUNITY PV SOLAR FARM. The noise analysis must document that the sound level from the proposed PV SOLAR FARM will not exceed the Illinois Pollution Control Board noise standard.

e. The combination of the minimum required separation from an inverter to the perimeter fence and from the perimeter fence to adjacent properties results in the following minimum total separations:

(a) The combination of the minimum required 200 feet from the PV SOLAR FARM perimeter fence to any adjacent LOT that is five acres or less in area (not including the STREET RIGHT OF WAY) and bordered on more than two sides by the PV SOLAR FARM and the minimum separation of 275 feet from an inverter to the perimeter fence results in a total minimum required separation of 475 feet from any inverter to any adjacent LOT that is five acres or less in area (not including the STREET RIGHT OF WAY). A greater separation may

be required for any adjacent LOT that is bordered (directly abutting and/or across the STREET) on more than two sides by the PV SOLAR FARM.

(b) The combination of the minimum required 250 feet separation to any existing DWELLING or existing PRINCIPAL BUILDING on any adjacent LOT that that is five acres or more in area results in a total minimum required separation of 525 feet from any inverter to any adjacent existing DWELLING or existing PRINCIPAL BUILDING on any adjacent LOT that that is five acres or more in area.

f. The combination of minimum required separations will prevent any obvious noise impact from a PV SOLAR FARM and the noise study requirement will verify that there are no noise impacts.

g. Public testimony regarding noise impacts can be summarized as follows:

(a) No comments were received at the March 1, 2018 public hearing for this case.

(b) At the March 15, 2018 public hearing for this case, the following testimony was received regarding this purpose:

i. Ted Hartke, 1183 CR 2300E, Sidney, testified about his of abandoning his home due to noise from a wind turbine. He reviewed noise studies which showed that tolerable noise should be no higher than 39 dBA. He expressed that he opposes the proposed amendment that only limits noise to Illinois Pollution Control Board standards, which are insufficient.

ii. Ann Ihrke, 1440 N 1800 East Road, Buckley, stated that any decibel levels over 39 dBA would not meet the criteria for health, safety and general welfare; therefore, the ordinance should put restrictions on the decibel levels for both solar and wind at 39 dBA.

iii. Cindy Ihrke, 1458 N 1700E Road, Roberts, stated that when the Board writes the language in to their ordinance, they will be protecting the people who are not signing contracts and who do not have a vested interest.

iv. Tannie Justus, 2268 CR 900N, Homer, requested more information on noise and other construction impacts. She said that she would like assurances that they will be shielded in all directions from noise, glare, or view of the panels.

v. Cindy Shepherd, 2010 Burlison, Urbana, stated that while visiting the University of Illinois solar farm you can hear the kind of noise that is generated, and she does not feel like it is at a level of mildly annoying. She said that inverters and transformers do not operate during the night, so the idea that neighbors would be robbed of sleep due to the solar plant is

not something that needs to be included in the ordinance, but she encourages the Board to find out about those things.

vi. Patrick Brown, BayWa r.e., stated that he has done a lot of technical noise studies. He said that he comes from a county where the rural dBA noise limit, per the ordinance, is 45 dBA at night and 50 dBA during the day, which is very low, at least from his experience as a land use planner and developer who has prepared and paid for these noise studies. He said that he is going to do a noise study and acoustical analysis for his proposed solar farm. He said that he will get the spec sheets from the manufacturer and crunch it into a scientific model that spits out exactly what the dBA is, and it is not hard to do, but he has to say that the noise is not as doom and gloom as what is being told tonight.

(c) At the March 29, 2018 public hearing for this case, the following testimony was received regarding this purpose:

i. Colleen Ruhter, 910 CR 2200E, Sidney, believes that a noise study should be required for solar farm developments.

ii. Ted Hartke, 1183 CR 2300E, Sidney, testified that solar farm developments should be required to produce less noise than what the proposed amendment stipulates.

(d) At the April 5, 2018 public hearing for this case, the following testimony was received regarding this purpose:

i. The following people requested that noise level requirements be 39 dBA or lower:
   a. Leroy Schluter, 8 Wesley Ct, Sidney;
   b. Rich Rutherford, 319 S. Scarborough, Sidney;
   c. Colleen Ruhter, 910 CR 2200E, Sidney; and
   d. Ted Hartke, 1183 CR 2300E, Sidney.

ii. Jeremy Ruhter, 910 CR 2200E, Sidney, stated that noise can be mitigated in many different ways. He asked that the Board make a decision based on best public health, not what is economically feasible for a company. He asked that any solar development applicant prove that they have a FCC license for their inverters. He said that multiple inverters will create unexpected impacts that might not be seen with just one inverter.

(e) At the April 12, 2018 public hearing for this case, the following testimony was received regarding this purpose:

i. Vince Kohrs, 603 W. Woodlawn, Danville, requested that the requirements for noise not exceed 39 dBA.

ii. Tannie Justus, 2268 CR 900N, Homer, suggested that a noise demo could be provided because charts of numbers don't help explain what the inverters really sound like. She said that she would like to hear from someone who lives in the panels.

iii. Tim Osterbur, 302 Witt Park Road, Sidney, stated that a good inverter will make less noise, and companies will build as cheap a system as possible. He said that someone told him that the inverters proposed for the potential Sidney solar farm are loud and dirty.

F. Paragraph 2.0 (f) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to regulate and limit the height and bulk of BUILDINGS and STRUCTURES hereafter to be erected.

The proposed amendment is not directly related to this purpose.

G. Paragraph 2.0 (g) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to establish, regulate, and limit the building or setback lines on or along any street, trafficway, drive or parkway.

The proposed amendment is not directly related to this purpose.

H. Paragraph 2.0 (h) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to regulate and limit the intensity of the use of LOT areas, and regulating and determining the area of open spaces within and surrounding BUILDINGS and STRUCTURES.

The proposed amendment is not directly related to this purpose.

I. Paragraph 2.0 (i) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to classify, regulate, and restrict the location of trades and industries and the location of BUILDINGS, STRUCTURES, and land designed for specified industrial, residential, and other land USES.

The proposed amendment is consistent with this purpose.

J. Paragraph 2.0 (j) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to divide the entire County into DISTRICTS of such number, shape, area, and such different classes according to the USE of land, BUILDINGS, and STRUCTURES, intensity of the USE of LOT area, area of open spaces, and other classification as may be deemed best suited to carry out the purpose of the ordinance.

The proposed amendment is not directly related to this purpose.

K. Paragraph 2.0 (k) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to fix regulations and standards to which BUILDINGS, STRUCTURES, or USES therein shall conform.

The proposed amendment is consistent with this purpose.

L. Paragraph 2.0 (l) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to prohibit USES, BUILDINGS, or STRUCTURES incompatible with the character of such DISTRICTS.

(1) Item 9.C. lists how a solar farm will be reviewed for its suitability to surrounding areas.

(2) The proposed amendment will require any PV SOLAR FARM to be authorized by a County Board Special Use Permit (which is a discretionary development as defined in the Land Resource Management Plan) which will allow for site specific review for any proposed PV SOLAR FARM.

M. Paragraph 2.0 (m) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to prevent additions to and alteration or remodeling of existing BUILDINGS, STRUCTURES, or USES in such a way as to avoid the restrictions and limitations lawfully imposed under this ordinance.

The proposed amendment is consistent with this purpose.

N. Paragraph 2.0 (n) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to protect the most productive agricultural lands from haphazard and unplanned intrusions of urban USES.

(1) Item 9.B. reviews why utility-scale PV SOLAR FARMS are not urban uses.

(2) PV SOLAR FARMS do not require the permanent conversion of farmland; solar arrays can be removed at the owner's choosing and the land can be put back into agricultural production, so the agricultural nature of the County still exists.

O. Paragraph 2.0 (o) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to protect natural features such as forested areas and watercourses.

(1) PV SOLAR FARMS do not require the permanent conversion of farmland; solar arrays can be removed at the owner's choosing and the land can be put back into agricultural production.

(2) Proposed Section 6.1.5 Q. requires the applicant to submit a Decommissioning Plan, which includes protections for soil resources and ensures that the land will be returned to its original condition.

P. Paragraph 2.0 (p) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to encourage the compact development of urban areas to minimize the cost of development of public utilities and public transportation facilities.

The proposed amendment is not directly related to this purpose.

Q. Paragraph 2.0 (q) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to encourage the preservation of

agricultural belts surrounding urban areas, to retain the agricultural nature of the County, and the individual character of existing communities.

(1) The proposed text amendment limits PV SOLAR FARM development to areas outside 1.5 miles of the extraterritorial jurisdiction of an incorporated municipality unless the municipality signs a Resolution of Non-opposition for a development in that area.

(2) PV SOLAR FARMS do not require the permanent conversion of farmland; solar arrays can be removed at the owner's choosing and the land can be put back into agricultural production, so the agricultural nature of the County still exists.

(3) However, a solar farm is not an agricultural use; until the solar farm is decommissioned, it is not fostering or retaining agricultural uses and characteristics.

R. Paragraph 2.0 (r) of the Ordinance states that one purpose of the zoning regulations and standards that have been adopted and established is to provide for the safe and efficient development of renewable energy sources in those parts of the COUNTY that are most suited to their development.

The proposed amendment establishes the regulations under which PV SOLAR FARMS can be constructed, taking into account safe and efficient development, and compatibility with neighboring land uses.

17. The proposed text amendment ***WILL*** improve the text of the Zoning Ordinance because it ***WILL*** provide:

A. A classification under which PV SOLAR FARMS can occur while establishing minimum requirements that ensure the purposes of the Zoning Ordinance will be met.

B. A means to regulate an activity for which there is a demand by several solar farm companies to build in Champaign County's jurisdiction.

SUMMARY FINDING OF FACT

From the documents of record and the testimony and exhibits received at the public hearing conducted on **March 1, 2018, March 15, 2018, March 29, 2018, April 5, 2018, April 12, 2018, and April 26, 2018,** the Zoning Board of Appeals of Champaign County finds that:

1. The proposed Zoning Ordinance text amendment ***IS NECESSARY TO ACHIEVE*** the Land Resource Management Plan because:
   A. The proposed Zoning Ordinance text amendment ***IS NECESSARY TO ACHIEVE*** LRMP Goal 9.

   B. The proposed Zoning Ordinance text amendment will ***HELP ACHIEVE*** LRMP Goals 2, 4, 6, 7, and 8~~, and 9~~.

   C. The proposed Zoning Ordinance text amendment will ***NOT IMPEDE*** the achievement of LRMP Goals 1~~, 2,~~ and 3.

   D. The proposed Zoning Ordinance text amendment is ***NOT RELEVANT*** to LRMP Goals 5~~, 6,~~ and 10.

2. The proposed text amendment ***WILL*** improve the Zoning Ordinance because it will:
   A. ***HELP ACHIEVE*** the purpose of the Zoning Ordinance (see Item 16).

   B. ***IMPROVE*** the text of the Zoning Ordinance (see Item 17).

DOCUMENTS OF RECORD

1. Memo to the Environment and Land Use Committee dated December 27, 2017, with 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)

2. Memo to the Environment and Land Use Committee dated January 31, 2018 with attachment:
   - A Proposed Amendment dated January 31, 2018

3. Preliminary Memorandum dated February 22, 2018, with 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 (*posted online*)
   - 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

4. Supplemental Memorandum #1 dated February 23, 2018, with attachments:
   - A Legal advertisement
   - B Email from Ted Hartke dated 6/3/17 RE: solar project problems pointed out in Huron County, Michigan…moratorium enacted

C Email from Ted Hartke dated 6/13/17 RE: solar panel weed growth and fires during dry conditions
D Email from Ted Hartke dated 9/17/17 RE: Solar project moratorium and info about a New York project
E Email from Ted Hartke dated 1/2/18 at 12:02 p.m. RE: proposed Champaign County solar farm amendment
F Email from Ted Hartke dated 1/2/18 at 12:17 p.m. RE: Fwd: Dr. Schomer's Boone County testimony
G Email from Ted Hartke dated 1/2/18 at 12:51 p.m. RE: Fwd: Hartke pointers for establishing noise limits
H Email from Ted Hartke dated 2/22/18 at 2:59 p.m. RE: FW: Proposed Solar Farm Requirements
I Email from Ted Hartke dated 2/22/18 at 5:14 p.m. RE: FW: Proposed Solar Farm Requirements

5. Supplemental Memorandum #2 dated March 1, 2018, with attachments:
   A Legal advertisement
   B Email from Ted Hartke received May 9, 2017, with attachment: "Example Template Solar Energy Facility Ordinance (North Carolina)" by the Alliance for Wise Energy Decisions
   C Email from Patrick Brown received February 26, 2018, with attachments:
      - "Health and Safety Impacts of Solar Photovoltaics" by the NC Clean Energy Technology Center and NC State University
      - Presentation: "Solar Photovoltaic (PV) Health & Safety" by the NC Clean Energy Technology Center
   D Email from Patrick Brown received February 27, 2018 with comments on proposed text amendment
   E Ordinances Comparison Table created by P&Z Staff dated March 1, 2018

6. Supplemental Memorandum #3 dated March 8, 2018, with attachments:
   A Legal advertisement
   B Excerpt of DRAFT minutes from March 1, 2018 ZBA meeting (*for discussion only*)
   C Fee Schedules Comparison Sheet created by staff on March 8, 2018, with attachment: McLean County solar ordinance amendment
   D Draft Map of Airports and RLAs in Champaign County created by staff on March 8, 2018

7. Supplemental Memorandum #4 dated March 15, 2018, with attachments:
   A Legal advertisement
   B Letter from Patrick Brown of BayWa-re Solar Projects LLC received on March 14, 2018
   C Comparison table for decommissioning requirements dated March 14, 2018
   D Letter from Anne Bjornson Parkinson received on March 14, 2018
   E Plan views depicting required solar farm screening adjacent to a residential property created by staff on March 15, 2018

8. Supplemental Memorandum #5 dated March 22, 2018, with attachments:
   A Legal advertisement
   B Fact Sheet: Decommissioning solar panel systems, New York State Research and Development Authority (NYSERDA), received from Tim Montague on March 15, 2018
   C Cindy Ihrke's articles received during March 15, 2018 ZBA public hearing

D Article: Considerations for Transferring Agricultural Land to Solar Panel Energy Production, NC Cooperative Extension, received from Pattsi Petrie on March 19, 2018
E Example Specifications Sheets and Warranties for two Tier 1 solar modules, received from Patrick Brown on March 20, 2018
F Typical Solar Farm Layout received for 3 completed BayWa-re projects – 3 MW, 5 MW, and 20 MW, received March 21, 2018 from Patrick Brown, BayWa-re Solar Projects LLC
G Solar Spotlight: Illinois, Solar Energy Industries Association, received from Patrick Brown on March 20, 2018
H LRMP Land Use Goals, Objectives, and Policies
I Revised Proposed amendment (annotated) dated March 22, 2018
J Revised Proposed amendment (clean) dated March 22, 2018
K Alternative Decommissioning Requirements for Solar PV Farm and comparative table, dated March 22, 2018

9. Supplemental Memorandum #6 dated March 29, 2018, with attachments:
A Legal advertisement
B Source or Brief Justification of All Proposed Standard Conditions for Solar Farm dated March 23, 2018
C Email regarding Letters of Credit from Patrick Brown, BayWa r.e. Solar Projects LLC, received March 28, 2018
D Email regarding proposed amendment revision from Patrick Brown, BayWa r.e. Solar Projects LLC, received March 28, 2018
E Preliminary Draft Finding of Fact for Case 895-AT-18 dated March 29, 2018
F Draft minutes from March 15, 2018 ZBA meeting (*for discussion only*)
G "Study of Acoustic and EMF Levels from Solar Photovoltaic Projects", Massachusetts Clean Energy Center, December 17, 2012 – *provided on ZBA meetings website*

10. Supplemental Memorandum #7 dated April 5, 2018, with attachments:
A Legal advertisement
B Email from Patrick Brown, BayWa-r.e. Solar Projects LLC, received April 2, 2018, with attachment: White Paper BU-U-019: Sunny Central
C Email from Ted Hartke received April 2, 2018 (includes article – *Green Energy Poverty: Are Low Income Americans Impoverished by Alternative Energy?*)
D Email from Jason Arrasmith, Village of Sidney Trustee, received April 3, 2018
E Email from Valerie Hopkins Bernard received April 3, 2018
F Comparison of separation distances by land use in Champaign County Zoning Ordinance dated April 3, 2018
G *County ZBA to meet about solar farm on Thursday* by Christine Walsh, the News Gazette County Star, April 5, 2018
H Email from Jonathon Manuel, Resource Conservationist with the Champaign County Soil and Water Conservation District received April 5, 2018
I "Illinois Soil Conservation and Revitalization Using Native Vegetation" by Tim O'Connor, provided by Professor Scott Willenbrock, UIUC, received April 5, 2018
J Photos of the University of Illinois Solar Farm taken by Susan Burgstrom on April 5, 2018

11. Supplemental Memorandum #8 dated April 9, 2018, with attachments:
A Legal advertisement

B *On ZBA meetings website only* - "Adjacent Property Values Solar Impact Study: A Study of Nine Existing Solar Farms", prepared by CohnReznick for Cypress Creek Renewables, dated March 20, 2018 and received April 9, 2018

12. Supplemental Memorandum #9 dated April 11, 2018, with attachments:
    - A Legal advertisement
    - B Email from Patrick Brown received April 5, 2018, with attachment: Dudek Noise Data memorandum dated April 5, 2018
    - C Email from Mallory Seidlitz received April 6, 2018
    - D Email from Jeremy Ruhter received April 6, 2018
    - E Email from Patrick Brown received April 6, 2018
    - F Email from Tim Montague received April 9, 2018, with attachments: pictures with measurements
    - G Email from Pattsi Petrie received April 9, 2018
    - H Email from Nick Mento received April 9, 2018, with attachment posted online: Property Value Impact Study for Grundy County solar farm by Cohn Reznick
    - I Email from Pattsi Petrie regarding Alice Englebretsen Facebook post received April 11, 2018
    - J Email from Scott Willenbrock received April 10, 2018
    - K Email from Bruce Hannon received April 10, 2018
    - L Email string between Andy Robinson and John Hall dated April 9-11, 2018
    - M Email from Amanda Pankau received April 11, 2018
    - N Email from Patrick Brown received April 11, 2018
    - O Email from Nancy Holm received April 11, 2018
    - P Email from Eileen Borgia received April 11, 2018
    - Q Email from Rebecca McBride received April 11, 2018
    - R Email from Rebecca Sinkes received April 11, 2018
    - S Email from Dave Thornton received April 11, 2018
    - T Email from Elizabeth Kirby received April 11, 2018
    - U Email from Mark Ballard received April 11, 2018
    - V Email from Steve Errede received April 11, 2018
    - W Email from Marian Huhman received April 11, 2018
    - X Email from Staci Bromley received April 11, 2018
    - Y Email from Shannon Kurtenbach received April 11, 2018
    - Z Email from George Cruickshank received April 11, 2018
    - AA Email from Raymond Norton received April 11, 2018
    - AB Email from Valerie Bernard received April 11, 2018
    - AC Recommended noise level design goals and limits at residential receptors or wind turbine developments in the United States, by David M. Hessler and George F. Hessler, June 21, 2010, received from Frank DiNovo on April 11, 2018

    Studies posted online:
    - Property Taxes and Solar PV Systems: Policies, Practices, and Issues, by Justin Barnes, Chad Laurent, Jayson Uppal, Chelsea Barnes & Amy Heinemann, July 2013
    - Oakland NC Property Values Impact Study, Kirkland Appraisals LLC, February 12, 2016
    - Noise in Figures, European Agency for Safety and Health and Work, 2005, submitted by Rebecca Sinkes, received April 11, 2018

13. Supplemental Memorandum #10 dated April 12, 2018, with attachments:

A Legal advertisement
B Email from Joyce Mast received April 12, 2018
C Email from Mary Tiefenbrunn received April 12, 2018
D Email from Chris Bromley received April 12, 2018
E Email from Phillip Geil received April 12, 2018
F Email from Cloydia Larimore received April 12, 2018
G Email from Nancy Dietrich received April 12, 2018
H Email from William Brooks received April 12, 2018
I Email from Geraldine Theobald received April 12, 2018
J Email from Michael Bryant received April 12, 2018
K Email from Anna Keck received April 12, 2018
L Email from Terry McFall received April 12, 2018
M Email from Lois Cain received April 12, 2018, with attachment:
- Fact sheet on benefits of solar in your community by Sierra Club Illinois Chapter

N Email from Penny Sigler received April 12, 2018
O Email from Jason Arrasmith received April 12, 2018
P "Solar farms are cropping up in Will County", Susan DeMar Lafferty in the Chicago Tribune, September 5, 2017 and received from Pattsi Petrie on April 12, 2018
Q UI Solar Farm pictures with measurements taken by P&Z Staff, dated April 11, 2018
R Email from Randy Pankau received April 12, 2018

14. Supplemental Memorandum #11 dated April 20, 2018, with attachments:
A Legal advertisement
B Noise Table created by P&Z Staff on April 16, 2018; includes data from "Table of Various Indoor and Outdoor Sound Levels" from the *Study of Acoustic and EMF Levels from Solar Photovoltaic Projects* by the Massachusetts Clean Energy Center, 2012.
C Email from Chris Hitz (series of tables) received April 12, 2018
D Email from Curtis Frazier received April 12, 2018
E Email from Ming Kuo received April 12, 2018
F Email from Mona Jawad received April 12, 2018
G Email from Ron Becker received April 13, 2018
H Email from Nathaniel Forsythe received April 13, 2018
I Email from Daniel Maloney received April 13, 2018
J Email from Phillip Geil received April 13, 2018
K Email from Kathy Shannon received April 16, 2018
L Email from Marya Ryan received April 17, 2018
M Email from Suzanne Smith received April 18, 2018
N Email from Jonathan Livingood received April 18, 2018
O *Illinois Biology Technical Note No. 22: Planning Tree and Shrub Plantings for Wildlife*, Natural Resources Conservation Service, May 2007
P *Conservation Practice Standard 327: Conservation Cover*, Natural Resources Conservation Service, January 2017
Q *Conservation Practice Standard 380: Windbreak/Shelterbelt Establishment*, Natural Resources Conservation Service, October 2012
R Updated Revised Text Amendment dated April 26, 2018 – annotated
S Updated Revised Text Amendment dated April 26, 2018 – clean
T Revised Finding of Fact dated April 26, 2018

FINAL DETERMINATION

Pursuant to the authority granted by Section 9.2 of the Champaign County Zoning Ordinance, the Zoning Board of Appeals of Champaign County determines that:

> The Zoning Ordinance Amendment requested in **Case 895-AT-18** should ***{BE ENACTED / NOT BE ENACTED}*** by the County Board in the form attached hereto.

The foregoing is an accurate and complete record of the Findings and Determination of the Zoning Board of Appeals of Champaign County.

SIGNED:

Catherine Capel, Chair
Champaign County Zoning Board of Appeals

ATTEST:

Secretary to the Zoning Board of Appeals

Date

PROPOSED AMENDMENT

<To be added in final form upon approval>