



DEPARTMENT OF COMMUNITY DEVELOPMENT SERVICES

Planning Division

m e m o r a n d u m

TO: The Urbana Plan Commission

FROM: Marcus Ricci, Planner II

DATE: May 17, 2019

SUBJECT: **Plan Case 2359-T-18:** An application by the Urbana Zoning Administrator to amend the Urbana Zoning Ordinance with changes to Article II (Definitions), Article V (Use Regulations), and Article VI (Development Regulations), and other relevant sections, to facilitate solar energy system installation.

Introduction

The Zoning Administrator will soon be requesting an amendment to the Zoning Ordinance to add language to allow principal use solar renewable energy systems (“solar arrays”) and to modify existing language that regulates accessory use solar arrays. The requested changes would more accurately reflect the nature of solar arrays and their operation, and would regulate solar arrays based on their intended use and size. Staff seek direction from the Plan Commission on the scope and detail of the amendment’s purview, and will return to the Commission with draft language at a later date. Staff have had internal discussions with select Community Development staff and the Sustainability Advisory Commission, and now would like the Plan Commission’s guidance on the general framework being developed.

Background

As the popularity of solar arrays continues to grow, both for residential and commercial/industrial uses, two main issues have arisen that call for considering a text amendment to the Zoning Ordinance.

First, the Zoning Ordinance currently contains no language to permit a large solar array that would be the principal use on a parcel. After Champaign County began receiving proposals to install principal use solar arrays in their jurisdiction, the County Board passed a Solar Farm Text Amendment to the Champaign County Zoning Ordinance.

Although the City is not as likely to receive as many or as large of proposals as the County, it would have been helpful to have had regulations in place for the recent principal use solar array at the city landfill, and having such regulations in place will streamline the process for future projects. Plan Case 2365-SU-18 was a recent request by the City of Urbana to allow a 41-acre, principal use solar array on the grounds of the closed landfill. Because “Solar Renewable Energy System” is not listed in Table V. Table of Uses, staff had to rely on Section V-1.B., which subjects the proposed use to the regulations of the use it is most similar to, as determined by the Zoning Administrator. In this case, the most similar use was an “Electrical Substation,” although there are key differences between the two uses. The primary difference is that while electrical substations transmit and regulate electricity, they do not

generate electricity like solar arrays do. The secondary difference is that even a large electrical substation is substantially smaller than a medium-sized solar array. For example, the Rising Sun substation is 16 acres and the Sidney substation is 18 acres; larger solar arrays in the area have ranged from the 21-acre University of Illinois solar array to the 1,200-acre BayWa solar array near Sidney. These two differences highlight the need to add “Solar Renewable Energy System” to the Table of Uses.

Second, the Zoning Ordinance does not directly address small solar arrays. It allows small solar arrays up to six feet in height in a residential district to encroach into required side and rear yards up to 18” from a property line, similar to the encroachment permitted for accessory structures no greater than 750 square feet in residential districts.¹ Past interpretation of the Zoning Ordinance directed staff to treat small solar arrays as a “mechanical system” similar to a condensing unit for a heating/cooling system, rather than as an accessory structure, which can create issues, especially for solar arrays associated with non-residential uses. For example, Section VI-6.D. requires screening of ground-mounted mechanical equipment – such as solar arrays – for non-residential uses from view from public rights of way and adjacent residential districts. Staff have received inquiries from potential installers who expressed concern about the additional cost of extensive screening and inquired why solar arrays were required to be screened from view but a large accessory structure like a utility building were not. Current planning and zoning practices recommend treating small solar arrays as an accessory structure rather than as a mechanical system.

In preparation for this amendment, staff have participated in planning conference sessions, virtual and live seminars, and are currently reviewing over forty solar documents (Exhibit A):

- 33 documents from in-state, 6 documents from three other states
- 19 city documents, 13 county documents, 5 organizational documents, 2 state documents
- 32 existing zoning ordinances, 7 model zoning ordinances

Discussion

The main questions staff has considered and request guidance on to craft the text amendment are:

- How should we differentiate between Principal Use and Accessory Use solar arrays?
- How should we regulate Principal Use and Accessory Use solar arrays?
- Which zoning districts should allow Principal Use and Accessory Use solar arrays?

Differentiating Uses

Staff settled on two options to differentiate between “larger” and “smaller” solar arrays: intended end user and array size.

The intended end user is the user for which the solar array was designed. If the solar array was designed with the intention to direct the majority of the energy produced onto the energy grid – whether or not some small portion might be used on the zoning lot – then the solar array would meet the definition of a “principal use solar array.” If the solar array was designed to meet the energy demand of an existing or proposed use on the zoning lot – even if at times the daily energy production may exceed

¹ VI-5.B.13. Ground-mounted solar panels; VI-5.B.9. Accessory structures.

the daily energy consumption – then the solar array would meet the definition of an “accessory use solar array.”

Array size is relative: a one-acre solar array on a 40-acre agricultural or industrial parcel would be small; a one-acre solar array on a two-acre residential lot would be extremely large. Size can also change over time. As technology improves, a smaller array can produce more electricity than larger, older arrays.

Staff believe that intended end user is the best way to differentiate between principal and accessory uses: if the solar array is designed to produce energy for the energy grid, it is a principal use solar array; if it is designed to supply energy to another use on the zoning lot, it is an accessory solar array. Staff also recommend using the array size to determine whether the use should be permitted by right or with a Conditional or Special Use Permit.

Regulating Principal and Accessory Structure Solar Arrays

The Table of Uses regulates 13 different uses based on floor area, where the use is permitted by right but requires a Conditional or Special Use Permit if it exceeds a certain amount of floor area.²

A similar approach could be used to regulate principal use solar arrays. If floor area-based regulations are used, staff proposes the following for principal use solar arrays:

- Permitted by Right if it is one acre or less;
- Require a Conditional Use Permit if greater than one acre and less than five acres; or
- Require a Special Use Permit if five acres or greater.

Staff believe that it would be reasonable and equitable to regulate smaller, accessory use solar arrays the same way that accessory structures are regulated. For example:

- Accessory solar arrays 750 square feet or smaller in an R-1 through R-7 zoning district could encroach into a required side or rear yard up to 18” from a property line.
- Accessory solar arrays on a lot with a single- or two-family dwelling would be included in the maximum combined area of accessory structures.

The above two regulations would only apply to ground-mounted solar arrays, as a roof-mounted solar arrays would automatically meet applicable zoning regulations except for total structure height.

- Accessory solar arrays could be 15 feet tall in R-1 through R-4 zoning districts, and 15 feet or up to half the height of the principal building in R-5 through R-7 zoning districts.

² Permitted by Right, but Conditional Use when greater than 3,500 sf per floor: Health/Fitness Club; Antique Sales & Service; Art & Craft Store and/or Studio; Bicycle Sales & Service; Clothing Store; Pet Store; Photographic Studio/Sales & Service; Shoe Store; Sporting Goods Store; Dancing School. Permitted by Right, but Special Use when greater than 3,500 sf per floor: Supermarket; Video Store. Permitted by Right, but Special Use when greater than 3,500 sf per floor: Supermarket; Video Store. In addition, Mail Order Businesses under 10,000sf are permitted by right in several districts, but over 10,000 sf are permitted in fewer districts. They also sometimes require a Conditional or Special Use Permit.

- Accessory solar arrays would be excluded from gross floor area calculations (and in turn, from floor-area ratio calculations).³

If a proposed accessory solar array did not meet applicable zoning regulations, it would require a variance, just like any accessory structure. For example, if a proposed solar array would bring the aggregate area of all accessory structures above the maximum allowable area for accessory structures, it would require a variance.

Question 1a. Should principal use solar arrays be regulated based on their size, with smaller arrays being permitted by right, and with larger arrays being permitted with Conditional or Special Use Permits? If not, is there some other way to regulate principal use solar arrays?

Question 1b. If so, is the proposed breakdown acceptable (1 acre = by right, 1-5 acre = Conditional Use, 5+ acre = Special Use)? If not, are there other suggestions?

Question 2. Should solar arrays be regulated the same as other accessory structures, so that they would be permitted by right if they meet the accessory structure requirements in the zoning district? If not, are there other suggestions?

Question 3. Should ground-mounted, accessory solar arrays be excluded from gross floor area calculations?

Zoning Districts Permitting Solar Arrays

Principal Use Solar Arrays

To reduce conflicts between incompatible land uses, staff feel it would be prudent to allow principal use solar arrays only in AG, Agricultural zoning districts. There are very few AG-zoned parcels in Urbana currently; however, many parcels just outside the City limits are agriculturally-zoned and would be automatically zoned AG if annexed into the City.

The areas currently zoned AG in Urbana include the following, totaling 155 acres of land:

- Urbana Landfill complex (95 acres)
- Birkey’s Farm Implements parcel (20 acres)
- Eastlawn Cemetery and land around Speed Lube (18 acres)
- Betty Routh Farms parcel northeast of Interstate 74 (8 acres)
- Illinois Power parcel at Windsor Road & SR130 (7 acres)
- six residential lots between East Anthony Drive & Interstate 74, west of SR130 (1 acre each)
- west half of Animal Hospital parcel on East Windsor (0.6 acres)

³ Sheds and garages for single- and two-family dwellings, and mechanical systems, are all excluded from floor area calculations (subsections VI-4.A.2.d. and A.2.f.).

Due to size and existing development on these sites, only the Urbana Landfill could accommodate a large principal use solar array. The proposal to allow principal use solar arrays only in the AG district is therefore a longer-term consideration which would allow larger arrays in the future on land that is currently outside the City boundaries.

While industrially-zoned areas may seem like logical locations for solar arrays, they generally have expensive, high-quality infrastructure already in place, with good access to state and national highways and rail, all of which are not needed for solar arrays. Industrial areas are best used for uses that can make use of the existing infrastructure and can generate tax revenue for the City. Staff therefore does not recommend principal use solar arrays in industrial zones.

Accessory Solar Arrays

By definition, accessory solar arrays are designed to generate power for a nearby principal use. For example, the Riggs Beer Company has a solar array that powers its operations.

Staff believe that accessory solar arrays should be permitted in all zoning districts, as long as they meet all other relevant zoning regulations for accessory structures.

Question 4. Should principal use solar arrays be permitted only in AG, Agricultural zoning districts, or should they be permitted in other zoning districts?

Question 5. Should accessory solar arrays be permitted in all zoning districts, as long as they comply with other zoning regulations? If not, does the Commission have other suggestions?

Closing

Staff will consider comments from the Commission and from the public while they are drafting the proposed zoning ordinance text amendment.

Attachments: Exhibit A: Compilation of Solar Zoning and Development Regulations

Exhibit A: Compilation of Solar Zoning and Development Regulations

Organization	State	Level	Date	Regulation Type	Regulated by Size	Size Regulation Details	Principal use	Accessory use	US solar facility description	Zoning Districts	Min Lot Size	Height		Setbacks
												Ground-mounted	Roof-mounted	Roof-mounted
IL Solar Energy Ass. (Specific Recs.)	IL	Org.	8/30/2017		N/M	N/M		Yes	Utility Scale Solar	Permitted in all zones (accessory use for behind-the-meter systems and principal use for other systems) as "by-right" if meets certain reqs	N/M limits if meet other reqs and conform to project size	20 feet		subject to same setbacks as other standard structures in same zone or 25 feet, whichever is less; waivers ok
MN Model County Solar Ordinance	MN	State		Permit for GM	N/M	N/M	Yes w/ permit	Yes	SES	All zones	N/M	GM SES: Should not exceed Zoning District height reqs.	RM SES treated as Mechanical	Zoning req Setbacks
Bloomington	IL	City	12/12/2018	Building Permit/Special use	N/M	N/M	Yes	Yes	Solar Energy Conversion Facilities	Comm'l SECF:B-1, B-2 Private SECF: All except R1-H	Comm'l: 1 acre Area; Lot Width: 200ft. Res'l: N/M	Comm'l: 20ft	Res'l: 4ft	Comm'l :15ft rear and side yard. 25ft front yard
Wadsworth	IL	City	10/16/2018	Permit	Yes	The total solar panel surface area shall be included in calculating the max allowable lot coverage	Yes	Yes	SES	Varies by Solar type: any type for accessory use. Utility SES: LI,LI-1,LI-2	N/M	GM: based on zoning accessory use height	BM: 5ft above highest roofline point.	Setbacks based on zoning for accessory use
Riverwoods	IL	City	8/21/2018	Permit	Yes	Surface area of panels in freestanding SES shall be limited to 100 sf per 1/2 acre of land and count toward the max sf for accessory buildings allowed on such lot.	Yes	Yes	SES	All Zoning Districts a Accessory Use	Free Standing SES: Max size of 1/2 acre	GM: 15ft	RM:5ft above roof	Freestanding SESs shall not be located in required yards nor located over public utility easement
Woodridge	IL	City	11/15/2018	Permit	Yes	GM SESs shall not exceed a total surface area of one hundred sixty eight (168) square feet.	Yes	Yes	SES	Any zoning district as accessory use. Solar Shingles allowed on any building by right. Permit required for any large scale SES	GM not to exceed 168 sqft	GM: 6 ft	RM: 5 ft	5 ft from any property line
Montgomery	IL	City		Permit	Yes (GM non-utility scale SES)	A max of forty percent (40%) of the GM-SES area, which is defined as the vacant buildable area plus the rear yard setback minus the easement.	Yes	Yes	SES	Permitted in all zoning districts Utility Scale only allowed in Manufacturing Districts	N/M	GM-SES: 12 ft in res'l, max of accessories in other areas. US-SES max height dictated by SUP	RM-SES 1ft of highest roofline of a pitched roof building.	GM-SES Rear yard setback to the zoning area
DeKalb	IL	City		Permit (Building and electrical?)	Yes	Shall comply with applicable City codes, including height and location reqs for buildings or other structures. Where City reqs for buildings or other structures in a given zoning district are more restrictive, City reqs shall apply.	Yes	Yes	SES	Res'l, Comm'l, Industrial, Public	Unspecified in solar	GM: Res'l 10ft, Comm'l 12 ft, Industrial 15ft, Public 15ft	R&S/M: Res'l 1ft above roof; Comm'l 2ft above roof; Industrial/Public 3ft above roof	GM SES Setback is equal to the max height of the system when oriented at min design tilt or a min of six ft, whichever is greater.
Moline	IL	City		Accessory transportation and Utility Land Uses	Yes (Res'l Only)	one system per lot with a max overall height of 15 feet and a max array size of 240 square feet.	Yes	Yes	SES	Conservation, General Agricultural, One-Family, Res'l, Multi-Family Res'l, Office District, Office/Research Park, Neighborhood Center, Central Business, Community, Business, Highway/Intensive Business, Light Industrial, General Industrial	N/M	GM: 15 feet	R&S/M: SES Attached: 5 feet if on roof, 18 inches if mounted on side	Setbacks required to Article III for zoning district.
Sibley	IL	County	6/14/2016	Permits	Yes	Permits depend on location and proposed size. Large SES are conditional, if small solar exceeds x area then it changes to conditional use. If GM in suburban area, cannot exceed 10% of lot in addition to early restrictions	Yes	Yes	SES	Permitted on a zone by zone basis based on acreage	No	GM: 35ft in any district aside from suburban. 8ft in suburban districts	RM: 10 ft above roof	GM: not extend in any right of way setbacks when at min design tilt
Benton	MN	County	6/21/2016	Permits	Yes	Accessory Limited by less than 120 sqft will not need land use permit	Yes	Yes	SES	Utility Scale requires CUP or IUP	No	GM: 25ft		Equal to setback structures of accessory for the given zone

Notes: All Solar required Compliance with building code, electric code and all Federal/State reqs
 All Solar required Power and communication lines to be placed underground unless soil conditions and reqs by the utility provider were otherwise deemed necessary

Exhibit A: Compilation of Solar Zoning and Development Regulations

Setbacks Ground-mounted	Perimeter Fencing	Screening	Airports	Ground cover and buffer areas*	Glare	Inspection by Zoning Dept.	Agricultural protection	Decommissioning plan required	Time period for requiring decomm.	Time allowed for decomm.	Fees
	8 feet, waivers ok	yes	Projects developed near airports subject to FAA approval. Regulation at local level is unnecessary.	native vegetation is typical, and mowing maintenance is common	Panel technology is antireflective, so glare risk is minimal. Projects around airports need approval from the FAA	N/M	Should be clear how county will use LESA score, if required	N/M	established by each county	established by each county	Industry prefers clear delineation of permit application fees.
	N/M	N/M	See "Glare"	N/M	Solar Glare Hazard Analysis Tool (SGHAT) for Airport Traffic Control Tower cab and final approach paths, consistent with FAA Solar Energy Project Review Policy,	N/M	Yes	Yes	12 consecutive months	N/M	Waive the fees
Res'!: 3ft from rear & side property line. 10ft from principal structure	Comm'!: Yes; Res'!: N/M	Comm'!: Yes Res'!: N/M	Comply with Local, State and Federal reqs	N/M	Within 500 feet of an airport or approach zones, requires SGHAT report, consistent with FAA guidance or reqs and Central Illinois Regional Airport Master Plan.	N/M	N/M	N/M	4 months since last functioning date	120 days since last functioning date	N/M
	Only for Utility SES	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M
	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M
	N/M	N/M	N/M	N/M	N/M	Review by Zoning board	N/M	N/M	N/M	N/M	N/M
	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	six months	three months	SUP
Subject to same setbacks as other structures in the same zone for BM SES.		BM SES must blend into design of area structures. Encourage obscuring GM systems; screening optional	N/M	not required but encouraged (See perimeter fencing)	Glare considered only in the case of nuisance	Only if SES is considered abandoned	N/M	Yes. Decommissioning plan must be submitted 30 days before removal	Twelve months	Six months	Permit Fee, others N/M
Res'!: SES must be located behind principal structure, opposite of street, or in rear yard. Display areas shall be separated from parking or by min 10 feet	Shall meet Mechanical equipment screening reqs at section 35-5502	yes	N/M	Separation will be clearly delineated by physical separation such as greenway, curb, fence, line of planter, or clearly marked paved area.	N/M	N/M	N/M	N/M	N/M	solar N/M; wind 90 days after Zoning administrators notice	Special Use Fees for historic district
RM: set back by 2ft from roof edge	Res'!: Yes Not specified for other districts	Res'!: Yes; N/M for other districts	N/M	N/M	N/M	N/M	N/M	Yes	Twelve months	Subject to Zoning Administrators schedule	N/M
	If Visual Impact analysis shows negative impacts on area		N/M	N/M	Yes if located within 2 miles of an airport	N/M	N/M	Yes	Twelve months	Subject to Zoning Administrators schedule	N/M

Terms: BM: Building-mounted Comm'!: Commercial CUP: Conditional Use Permit GM: Ground-mounted IUP: Individual Use Permit reqs: requirements N/M: Not mentioned Res'!: Residential RM: Roof-mounted SES: Solar energy system SUP: Special Use Permit US: Utility scale