

## MEMORANDUM

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To: Loudoun County Planning Commission

From: Judi Birkitt, AICP, CZA, Deputy Director, Planning and Zoning  
Daniel Galindo, AICP, Director, Planning and Zoning

Date: December 2, 2022

Re: December 8, 2022, Planning Commission Work Session  
**ZOAM-2020-0001 Zoning Ordinance Rewrite – Solar Facilities  
Information Item**

### **PURPOSE**

The purpose of this item is to provide responses to questions and concerns from the Planning Commission (Commission) regarding solar facility standards in the Draft Zoning Ordinance.

The Loudoun County 2019 General Plan (2019 GP) identifies the need for the County to establish regulations and standards for alternative electrical generation. As part of the Zoning Ordinance Rewrite, the revised draft ordinance addresses the need for solar facility standards at multiple levels of service and identifies where such facilities may be permitted.

Alternatively, the Commission may recommend solar facilities be considered separately in a future Comprehensive Plan Amendment (CPAM) and Zoning Ordinance Amendment (ZOAM) to consider allowing solar facilities in the Rural Policy Area zoning districts. The 2019 GP has little to no guidance on solar facilities. Large industrial scale uses are understood to be appropriate in industrial districts. Other applications of the use do not have established guidance, and the purpose of a CPAM would be to establish that guidance, to include appropriate location, scale, and design criteria for this use.

### **PREVIOUS DRAFT TEXT**

As discussed at the [September 8, 2022 Commission Work Session](#), the previous draft text provided for two types of solar facilities: Site Specific and Commercial.

1. **Site Specific Solar Facility** (Accessory Use,<sup>1</sup> Consumed Onsite): These facilities provide solar power only to the site on which they are located and may be roof-mounted or ground-mounted.

Current Zoning Ordinance Requirements: The *Revised 1993 Loudoun County Zoning Ordinance* (Revised 1993 Zoning Ordinance) allows “solar power panels, to include ground-mounted solar facilities and ground-mounted solar energy generating facilities” as an accessory use to principal residential, agricultural, commercial, and industrial uses in all zoning districts. Such accessory solar panels are limited to the height and setback requirements of the underlying zoning district and provisions related to historic, architectural preservation, and corridor protection requirements (Code of Virginia § 15.2-2288.7. Local regulation of solar facilities).

Original Draft Zoning Ordinance (August 2022) Requirements: The Draft Zoning Ordinance allows solar as an accessory use in all zoning districts. As originally drafted, the only difference from the current Zoning Ordinance was for clarity; the Draft Zoning Ordinance defines the use with the term “Site Specific Solar Facility.”

*Solar Facility, Site Specific: A photovoltaic system, such as but not limited to solar panels, that is accessory to a principal use and that provides solar power to the site on which it is located.*

2. **Commercial Solar Facility** (Principal Use, Offsite to Power Grid): Sometimes referred to as “solar farms,” these utility level facilities supply solar power through the electrical grid for offsite consumption. Commonly, either an electrical utility owns the project or an independent project owner enters into a power purchase agreement to sell electricity to wholesale utility buyers.

Current Zoning Ordinance Requirements: Under the Revised 1993 Zoning Ordinance, a utility-scale solar energy generation facility is classified as an “Electric Generating Plant and Transmission Facility,” which is a Special Exception (SPEX) use in the PD-GI and MR-HI zoning districts.

Currently, this use is not permitted by-right in any zoning district. However, an active Zoning Ordinance Amendment (ZOAM-2022-0001, Amendment to the Revised 1993 Loudoun County Zoning Ordinance Regarding Ground-Mounted Solar Energy Generation Facilities) proposes to allow a “Utility

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<sup>1</sup> Accessory Use: A use or structure is “accessory” when it is associated with and incidental to the principal use or structure.

Principal Use: The primary use and chief purpose for which a lot or the main building thereon is designed, arranged, or intended.

generating plant and transmission facility, ground-mounted solar energy generation facility only” as a permitted (by-right) use, subject to new “Use Limitations.” The “Use Limitations” were adapted from the new standards being developed as part of the ZO Rewrite. Significant differences in this ZOAM are the minimum lot size for the use is 500 acres and is permitted only within the PD-GI and MR-HI zoning districts, which limits the use to the Dulles Airport. The August 2022 version of the Draft Zoning Ordinance, as originally provided to the Commission, stated a minimum lot size is 2 acres for solar facilities.

Original Draft Zoning Ordinance (August 2022) Requirements: The original draft ordinance, dated August 2022, allows Commercial Solar Facilities as a principal use upon Board of Supervisors (Board) approval of a SPEX only in the following industrial zoning districts: PD-GI and MR-HI. Utility-scale solar facilities are ideally located in industrial areas, as such uses are part of the larger utility network and tie into a substation, which transmits energy through either low-voltage distribution lines or high-voltage transmission lines. Also, a Commercial Solar Facility could include an onsite substation and switching yard.

For clarity, the Draft Zoning Ordinance adds a definition for Commercial Solar Facilities as follows:

*Solar Facility, Commercial: A photovoltaic system, including but not limited to a ground-mounted solar energy generation facility, built to supply commercial solar power into the electricity transmission or distribution network. It is comprised of a large, decentralized solar panel installation that aims to provide its power to the power grid at the utility level.*

## **UPDATES AND REVISIONS TO DRAFT TEXT**

The following information is provided in response to Commission comments and questions at the September 8, 2022, Commission Work Session.

1. Request: Clarify the difference between a residence that is off the grid and stores energy onsite and a residence that has solar and is still on the grid.

Staff Response: There are several factors to consider with providing solar power to your residence. Primarily, if installing roof-mounted panels a residence will need to have roof area facing south or alternatively, have property where ground-mounted panels can be installed facing south. If you choose to operate off the grid using solar as your sole energy source, onsite storage of that energy will be necessary. Based on staff research, most average-sized homes need at least two energy storage batteries to reliably store all the energy necessary to live off the grid for three to four days. Also, the off the grid option will not provide any surplus power back to the power

grid and thus not allow the residence to take advantage of any energy credits that are available to on the grid residences.

2. Request: Draft setbacks will not work on a 2-acre/small lot. Revisit setbacks.

Staff Response: Staff has reconsidered the draft setbacks and minimum lot size standards. As revised, three levels of solar facilities and their standards, to include lot size, have been drafted. Utility Scale facilities will have a minimum lot size of 20 acres, Community Scale facilities will have a maximum use area of 30 acres, and Site-Specific solar facilities will be controlled by the zoning district standards in which the facility is located.

3. Request: Clarify whether a solar facility can cross property lines.

Staff Response: As drafted, Utility Scale facilities can be made up of more than a single lot, but the minimum size of any single lot is 20 acres. Community Scale facilities must be located on a single parcel of no more than 30 acres. Site-Specific facilities would need to be located on the parcel being served.

4. Request: Clarify site-specific solar does not preclude net metering. Define net metering.

Staff Response: Based on staff research, net metering or net energy metering, is available to any customer with a facility connected to the power grid. This would include Site-Specific facilities. Although this is not a function that can be regulated by the zoning ordinance, staff has drafted the following definition:

**Net Metering/Net Energy Metering**: Measuring the difference between the electricity distributed to and the electricity generated by a customer-generator that is fed back to the distribution system during the applicable billing period. The purpose of which allows customers to interconnect their solar energy systems to the utility grid and offset their utility electricity purchases by receiving a bill credit for excess energy generated by their solar energy system that is exported to the grid.

5. Request: Support rooftop parking canopy and selling excess to the grid.

Staff Response: This is supported by staff. Staff has revised the draft language to address how height will be calculated for roof-mounted and ground-mounted solar panels within all zoning districts. This will include canopies on parking structures. Currently, the R93ZO permits solar panels as an accessory use in residential districts only and limits their height to the accessory structure standards.

6. Request: Make draft language clear on how the 20-foot height limitation applies to ground mounted panels.

Staff Response: Staff has revised this language to clarify that the 20-foot height limitation is measured from grade to the top of the solar panel or its support structure when at maximum tilt.

7. Request: Clarify how lot coverage works with small scale solar.

Staff Response: Small scale solar, or site-specific solar, is an accessory use and as such is subject to the lot coverage standards of the zoning district in which the facility is located.

8. Request: Consider a solar category in the middle/a 3-tier approach based on scale.

Staff Response: Staff has revised the standards to consist of three levels of solar facilities: Utility Scale, Community Scale, and Site-Specific.

Utility Scale (formerly Commercial Solar Facility) is intended to address large scale projects that exceed 5,000 kilowatts of alternating current and provide service to a wide consumer base. Utility Scale facilities would be permitted by SPEX in all Rural districts.

Community Scale (New Facility type) is intended to address medium scale projects. As provided in the Code of Virginia [Section 56-594.3](#), facilities at this level do not exceed 5,000 kilowatts of alternating current, have a minimum of 3 subscribers, and have at least 40% of its capacity subscribed by customers with subscriptions of 25 kilowatts or less. Community Scale facilities would be permitted by SPEX in all zoning districts except the Rural districts.

Site-Specific (On-Site Accessory Use) (formerly Site Specific Solar Facility) is intended to serve the electric or thermal needs of only the property on which it is located. Site-Specific facilities would be permitted by-right in all zoning districts.

Staff believes a CPAM and ZOAM, separate from the ZOR, is the appropriate process for the Board to consider expanding the allowance of solar facilities in districts other than those suggested. A separate CPAM and ZOAM will allow adequate public engagement.

The standards for all three facility types are provided in the attached revised draft text.

9. Request: Viewshed regulations are hard to enforce. Delete policy language.

Staff Response: Staff has revised the visual impacts standards to remove any policy language.

In addition to addressing the Commission’s comments, staff has revised other standards to provide clarity:

1. With the addition of Community Scale facilities, general standards are provided to address Utility Scale and Community Scale facilities.
2. The visual impact standards have been revised to remove policy language and state specific requirements for sunlight glint and glare.
3. The standard for a minimum distance from airports has been removed to no longer prohibit solar facilities on airport property.
4. The standard restricting a driveway in a required buffered setback has been removed.
5. For Site-Specific (On-Site Accessory Use) facilities, the standards were relocated from the Accessory Uses section of the draft ordinance and placed in the Use Specific Standards section. The definition for Site Specific Solar Facility was revised to clarify that such facilities can be roof-mounted or ground-mounted.

*Solar Facility, Site Specific: A photovoltaic system, such as but not limited to roof-mounted or ground-mounted solar panels, that is accessory to a principal use and that provides solar power to the site on which it is located.*

6. The Utilities Section (7.08) has been revised to exempt solar panels from the provisions of that section.

Table 2 provides a comparison of the original draft ordinance (August 2022) provided to the Commission at their September 8, 2022, Work Session and the current revisions.

<b>Table 2. Solar Facilities – Comparison of Original (August 2022) and Revised (December 2022) Draft Zoning Ordinances</b>			
<b>Use</b>	<b>Use Type</b>	<b>Original Draft Zoning Ordinance</b>	<b>Revised Draft Zoning Ordinance</b>
Utility Scale Solar Facility	Principal	Entitled “Commercial Solar Facility”	Retitled “Utility Scale Solar Facility”
Utility Scale Solar Facility	Principal	Minimum lot size of 2 acres	Minimum lot size of 20 acres

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<b>Use</b>	<b>Use Type</b>	<b>Original Draft Zoning Ordinance</b>	<b>Revised Draft Zoning Ordinance</b>
		No capacity standard	Capacity rating must exceed 5,000 kilowatts of alternating power
		Minimum 1 mile distance from airport	No minimum distance from airport
Community Scale Solar Facility	Principal	N/A	<p>Maximum lot size of 30 acres</p> <p>Capacity rating must not exceed 5,000 kilowatts of alternating power</p> <p>Minimum of 3 subscribers and have at least 40% of its capacity subscribed by customers with subscriptions of 25 kilowatts or less</p> <p>Must be located on a single parcel of land in the service territory and connected to the electric distribution grid</p> <p>Setbacks: 75 feet from public roads and principal buildings on adjoining parcels. 25 feet from adjoining property lines.</p>
Utility Scale and Community Scale Solar Facilities	Principal	Standards for Visual Impacts, Location/Dimensional, Access/Driveways, Landscaping/Buffering/S creening, Decommission	General Standards for Visual Impacts, Dimensional/Placement, Access, Landscaping/Buffering/S creening, Decommission

**Table 2. Solar Facilities – Comparison of Original (August 2022) and Revised (December 2022) Draft Zoning Ordinances**

Use	Use Type	Original Draft Zoning Ordinance	Revised Draft Zoning Ordinance
		<p>Plan/Security, and Unsafe or Abandoned Facility/Decommissioning were provided for Utility Scale Solar Facilities (Commercial Solar Facilities) only.</p> <p>Height must not exceed 20 feet measured from highest natural grade to top of panel or structure</p>	<p>Plan/Financial Assurance, and Unsafe or Abandoned Facility/Decommissioning are provided for Utility Scale (Commercial Solar) and Community Scale Solar Facilities.</p> <p>Height must not exceed 20 feet measured from highest natural grade to top of panel at <u>maximum tilt</u> or structure</p> <p>Distance from Landmarks. The facility must not be located within 1 mile of a landmark identified on the National Register of Historic Places or on the list of candidates for that list.</p>
Site-Specific (On-Site Accessory Use)	Accessory	Entitled "Site Specific Solar Facility"	Retitled "Site-Specific (On-Site Accessory Use)"
Site-Specific (On-Site Accessory Use)	Accessory	General Standards located in 3.03 Accessory Uses	Relocated to 4.07.04 Solar Facilities
Site-Specific (On-Site Accessory Use)	Accessory	General Standards located in 3.03 Accessory Uses	Must serve the on-site electric or thermal needs of the property on which it is located



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<b>Use</b>	<b>Use Type</b>	<b>Original Draft Zoning Ordinance</b>	<b>Revised Draft Zoning Ordinance</b>
			<p>Residential Districts: Solar panels may be roof-mounted of the principal structure or ground-mounted</p> <p>Agricultural Districts: Solar panels may be roof-mounted of a dwelling unit, the roof of another building or structure or ground-mounted</p> <p>Commercial, Industrial, Institutional, and Mixed-Use Districts: Solar panels may be roof-mounted on one or more buildings or ground-mounted</p> <p>Height: Roof-mounted solar panels are subject to the standards of the underlying zoning district. Ground-mounted solar panels must not exceed 20 feet in height.</p> <p>Subject to General Standards for Accessory Uses (3.03.C)</p>
Utility Scale Solar Facilities, Community	Principal and Accessory	N/A	7.08 Utilities. Include solar panels in the list of exempt uses from the

<b>Table 2. Solar Facilities – Comparison of Original (August 2022) and Revised (December 2022) Draft Zoning Ordinances</b>			
<b>Use</b>	<b>Use Type</b>	<b>Original Draft Zoning Ordinance</b>	<b>Revised Draft Zoning Ordinance</b>
Scale Solar Facilities, and Site-Specific (On-Site Accessory Use)			standards of the Utilities section
Utility Scale Solar Facilities, Community Scale Solar Facilities, and Site-Specific (On-Site Accessory Use)	Principal and Accessory	N/A	Provide definition for Net Metering/Net Energy Metering

Should the Board adopt ZOAM-2022-0001, Amendment to the Revised 1993 Loudoun County Zoning Ordinance Regarding Ground-Mounted Solar Energy Generation Facilities, staff will incorporate these amendments into the Zoning Ordinance Rewrite.

**GENERAL PLAN POLICY GUIDANCE**

The *Loudoun County 2019 General Plan* (2019 GP) includes the following policy guidance for solar power development:

- Establish zoning regulations and design standards that permit alternative electrical generation such as wind and solar generation by and for individual users. (Chapter 6, Action 6.1.A)
- Adopt solar zoning and permitting best practices for accessory use solar development. (Chapter 3, Strategy 9.5, Action A)
- Become certified as a “solar-ready” community under the Department of Energy’s SolSmart program. (Chapter 3, Strategy 9.5, Action B)
- Support solar farms with locational criteria to be identified. (Chapter 3, Strategy 9.5, Action C)

The 2019 GP supports alternative electrical generation in general. The 2019 GP also identifies the need for the County to develop criteria for where these uses should be

located. Staff finds the 2019 GP does not provide policy guidance and the Board has not provided direction to expand utility scale or community scale solar facilities beyond where they are currently allowed as part of the Zoning Ordinance Rewrite project. Should the Commission wish to consider allowing solar facilities in districts in the Rural policy areas, the Commission may choose to recommend that the Board initiate a separate Comprehensive Plan Amendment (CPAM) and subsequent stand-alone ZOAM after adoption of the Zoning Ordinance Rewrite project.

### **ZONING ORDINANCE COMMITTEE**

Staff presented the draft solar facility use specific standards to the Zoning Ordinance Committee in a subcommittee in April 2022. After lengthy discussion, the subcommittee recommended and the committee of the whole agreed that given the sensitivity of this issue and the level of detail in the proposed standards, if solar facilities cannot be adequately addressed during the Zoning Ordinance Rewrite project, the Board may choose to consider solar facilities as a separate ZOAM.

### **PUBLIC COMMENT**

A primary [public comment](#) theme calls for a future amendment, separate from the Zoning Ordinance Rewrite project, to consider whether to allow solar facilities in urban, suburban, and certain rural areas with standards protecting habitats and other environmental, natural, and cultural resources.

Another comment theme is to better address energy storage. Energy storage is a system that collects energy generated from solar panels of all solar facility types that can be used at a later time. Staff is actively revising text for energy storage and will discuss that language as part of the discussion on Uses and Use-Specific Standards, which will come to the Commission at a Public Hearing planned for January.

### **ATTACHMENTS**

1. Draft Text for Solar Facilities (December 8, 2022) - Clean
2. Draft Text for Solar Facilities (December 8, 2022) - Redline
3. Virginia Code 15.2-2288.7 – Local Regulation of Solar Facilities
4. Virginia Code 56-594.3 – Shared Solar Programs
5. Virginia Code 15.2-2241.2 – Bonding Provisions for Decommissioning of Solar Energy Equipment, Facilities or Devices