



# Carroll County Environmental Advisory Council (EAC)

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## **SOLAR SURFACE AREA REQUIREMENTS IN RESIDENTIAL DISTRICTS SCOPE**

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### **Background**

In October 2015, Commissioner Dennis Frazier requested that staff review the maximum size requirements for solar energy conversion facilities in the residential zoning districts and provide a recommendation if warranted. Currently, §158.153 Solar Energy Conversion Facilities, of the Carroll County Code of Public Local Laws, permits a maximum surface area in residential districts of 120 square feet. The County Administrator then directed the project to the Environmental Advisory Council (EAC) to be added to the EAC's 2016 Work Plan, with work to begin in January 2016.



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### **Options for Solar Surface Area Requirements in Residential Districts**

Jurisdictions across Maryland and across the country take varying approaches to prescribing the maximum surface area permitted for solar facilities in residential districts. Solar facilities in residential districts can be ground-mounted (or "freestanding"), roof-mounted, or building/wall-mounted. Building-mounted systems are less common, but some jurisdictions allow solar facilities to be mounted on the sides of buildings. Carroll County's zoning code currently does not specifically permit building-/wall-mounted systems. Some jurisdictions address roof-mounted and building/wall-mounted systems as one under the heading of "attached" systems.

Setting the maximum allowable surface area is most commonly considered within the context of the impacts on aesthetics, impervious area, and safety. Generally, the maximum, or minimum, area or disturbance zone of the system is measured in acres, square feet, percentage of lot coverage, or percentage of the primary structure's footprint, depending on the type and location of the system. Other bulk requirements or standards within the zoning code may contribute to the maximum size limit as well, such as setbacks and weight limitations.

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The following are basic descriptions of the most common options used by other jurisdictions.

**Fixed Maximum:** The maximum square footage of surface area remains the same regardless of lot size, zoning district, or building area or regardless whether the system is ground-mounted or roof-mounted. Carroll County currently uses this approach, with 120 square feet as the maximum surface area in residential districts, including the Conservation Zoning District.

**Maximum Based on Lot Size:** A percentage of the lot area serves as the basis for prescribing the maximum surface area in some jurisdictions. Generally, this is applied to ground-mounted systems, rather than roof-mounted. Other jurisdictions prohibit the surface area from exceeding the maximum lot coverage standard of the applicable zoning district.

**Maximum Based on Footprint of Principal Building:** The maximum allowable size of the system is a percentage of the footprint of the principal building on the property. With this option, often the maximum is set as a percentage of the footprint or a fixed amount, whichever is greater. This approach is most often applied to freestanding or ground-mounted systems.

**Maximum Based on Roof Area:** The maximum size of a roof-mounted system may also be based on a percentage of the size of the roof area. Some jurisdictions base the calculation on the entire roof area; others base the calculation only on the south-facing roof surface.

**No Maximum:** Many jurisdictions either do not address surface area size at all for roof-mounted (“attached”) systems, or specifically include text to indicate there is no surface area size limitation. Some jurisdictions also omit maximums for ground-mounted systems as well, leaving setbacks, height requirements, and other bulk requirements to restrict size of the system.

**Hybrid:** Many jurisdictions apply different requirements to ground-mounted systems than roof-mounted systems – some combination of the above options. Most often a surface size limit is set on ground-mounted systems, but the roof-mounted systems are limited only by setbacks.

### **Additional Conditions:**

Additional restrictions can be placed on systems that have the effect of restricting size. Most jurisdictions apply several or all of these restrictions.

- **Setbacks:** The limiting setbacks on roof-mounted systems are often prohibited from extending beyond the edge of the roof, or must be no closer than one foot from the edge of the roof. For ground-mounted systems, setbacks from property lines or buildings may also limit the size of the system.
- **Safety:** Many jurisdictions require demonstration or certification that the roof can safely support the weight of the solar system. The system may be restricted to a smaller

area than the surface area of the roof if the roof cannot support the weight of a system that covers the entire roof.

- **Screening:** Ground-mounted systems may be required to be screened. This may apply only to certain types of adjoining uses, or it may apply to any adjoining use. Space used for screening may reduce the space available, and, therefore, the size, of a ground-mounted system.
- **Height Limit:** Many jurisdictions apply height limits to roof-mounted systems. Often these systems are required to be flush with the roof if the roof is sloped. However, many jurisdictions apply different requirements to flat roofs. Most jurisdictions apply height-limits to ground-mounted systems, particularly to ensure they do not exceed the maximum height limit of the residential zoning district.

### **Overall Task**

The EAC will research, review, and discuss the various options used by other jurisdictions in Maryland, as well as other areas of the country, for approaching surface area requirements for solar facilities in residential areas. A specific approach will be chosen from the options above, and the EAC will recommend specific numeric requirements associated with that option if applicable.

### **Work Product**

The EAC will provide a memo of findings and recommendations.

### **Timeline**

The EAC anticipates forwarding their final memo to the Board by the end of April 2015.