

SOLAR ENERGY REGULATIONS - HAWTHORNE WOODS

9-18A-1: INTENT:

A. The intent of these standards is to allow for the safe and effective development of solar energy systems that reduce the on-site consumption of fossil fuels or utility supplied electric energy throughout the Village of Hawthorn Woods. These regulations are intended to encourage the use of local renewable energy resources and promote sustainable building design and management practices. (Ord. 1791-17, 10-23-2017)

9-18A-2: DEFINITIONS:

GLARE: The sensation of brightness within the visual field which causes annoyance, discomfort, or loss of visual performance and visibility.

PHOTOVOLTAIC CELL: A semiconductor device that converts solar energy into electricity.

PHOTOVOLTAIC SYSTEM: An active solar energy system that converts solar energy directly into electricity.

RENEWABLE ENERGY EASEMENT, SOLAR ENERGY EASEMENT: An easement that limits the height or location, or both, of permissible development on the burdened land in terms of a structure or vegetation, or both, for the purpose of providing access for the benefited land to wind or sunlight passing over the burdened land.

SOLAR ACCESS: A property owner's right to have unobstructed access to direct sunlight on a lot or building through the entire year, including access across adjacent parcel air rights, for the purpose of capturing direct sunlight to operate a solar energy system.

SOLAR COLLECTOR: A device, structure or a part of a device or structure for which the primary purpose is to transform solar radiant energy into thermal, mechanical, chemical or electrical energy.

SOLAR COLLECTOR SURFACE: Any part of a solar collector that absorbs solar energy for use in the collector's energy transformation process. Collector surface does not include frames, supports and mounting hardware.

SOLAR ENERGY: Radiant energy received from the sun that can be collected in the form of heat or light by a solar collector.

SOLAR ENERGY SYSTEM (SES): A system for which the primary purpose is to convert solar energy into thermal, mechanical or electrical energy for storage and use and reduce on-site consumption of utility power.

SOLAR ENERGY SYSTEM, ACTIVE: A solar energy system whose primary purpose is to harvest energy by transforming solar energy into another form of energy or transferring heat from a collector to another medium using mechanical, electrical or chemical means.

SOLAR ENERGY SYSTEM, BUILDING-INTEGRATED: A solar energy system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural part of the building. Building-integrated systems include, but are not limited

to, photovoltaic or hot water systems that are contained within roofing materials, windows, skylights, awnings, shading devices and similar architectural components.

SOLAR ENERGY SYSTEM, BUILDING-MOUNTED: A solar energy system that is mounted on the roof of a principal building or accessory structure or facade.

SOLAR ENERGY SYSTEM, FLUSH-MOUNTED: A solar energy system that is mounted flush with a finished surface, at no more than twelve inches (12") in height above that surface.

SOLAR ENERGY SYSTEM, FREESTANDING OR GROUND-MOUNTED: A solar energy system not attached to another structure and is ground mounted on a rack or pole that is attached to the ground.

SOLAR ENERGY SYSTEM, JOINT: A solar energy collector or storage mechanism that supplies energy for structures or processes on more than one lot or in more than one dwelling unit or leasehold, but not to the general public and involves at least two (2) owners or users.

SOLAR ENERGY SYSTEM, OFF GRID: A photovoltaic solar energy system in which the circuits energized by the solar energy system are not electrically connected in any way to electric circuits that are served by an electric utility company.

SOLAR ENERGY SYSTEM, PASSIVE: A solar energy system that captures solar light or heat without transforming it to another form of energy or transferring the energy via a heat exchanger.

SOLAR ENERGY SYSTEM, ROOF-MOUNTED: A solar energy system mounted on a rack that is fastened to or ballasted on a building roof.

SOLAR FARM: A commercial facility that converts sunlight into electricity, whether by photovoltaics (PV), concentrating solar thermal devices (CST), or other conversion technology, for the primary purpose of wholesale sales of generated electricity.

SOLAR GARDEN: A commercial solar-electric (photovoltaic) array that provides retail electric power (or a financial proxy for retail power) to multiple households or businesses residing or located off-site from the location of the solar energy system.

SOLAR HEAT EXCHANGER: A component of a solar energy device that is used to transfer heat from one substance to another, either liquid or gas.

SOLAR MOUNTING DEVICES: Racking, frames, or other devices that allow the mounting of a solar collector onto a roof surface or the ground.

SOLAR PANEL: A group of photovoltaic cells are assembled on a panel. Panels are assembled on-site into solar arrays.

SOLAR RESOURCE: A view of the sun from a specific point on a lot or building that is not obscured by any vegetation, building, or object for a minimum of four (4) hours between the hours of nine o'clock (9:00) A.M. and three o'clock (3:00) P.M. standard time on all days of the year.

SOLAR SKYSPACE: The maximum three-dimensional space extending from a solar collector to all positions of the sun necessary for efficient use of the collector.

A. Where a solar energy system is used for heating purposes only, solar skyspace shall mean the maximum three-dimensional space extending from a solar energy collector to all positions of the sun between nine o'clock (9:00) A.M. and three o'clock (3:00) P.M. local apparent time from September 22 through March 22 of each year.

B. Where a solar energy system is used for cooling purposes only, solar skyspace shall mean the maximum three-dimensional space extending from a solar collector to all positions of the sun between eight o'clock (8:00) A.M. and four o'clock (4:00) P.M. local apparent time from March 23 through September 21 of each year.

SOLAR SKYSPACE EASEMENT: A right, expressed as an easement, covenant, condition, restriction or other property interest in any deed, will or other instrument executed by or on behalf of any landowner or in any order of taking, appropriate to protect the solar skyspace of a solar collector at a particularly described location to forbid or limit any or all of the following where detrimental to access to solar energy: structures on or above ground; vegetation on or above ground; or other activities. Such right shall specifically describe a solar skyspace in three-dimensional terms in which the activity, structures or vegetation are forbidden or limited or in which such an easement shall set performance criteria for adequate collections of solar energy at a particular location.

SOLAR STORAGE MECHANISM: Equipment or elements such as piping and transfer mechanisms, containers, heat exchangers or controls thereof and gases, solids, liquids or combinations thereof that are utilized for storing solar energy, gathered by a solar collector, for subsequent use.

SOLAR THERMAL SYSTEM: A system that includes a solar collector and a heat exchanger that heats or preheats water for building heating systems or other hot water needs, including residential domestic hot water and hot water for commercial processes. (Ord. 1791-17, 10-23-2017)

9-18A-3: GENERAL REQUIREMENTS AND INFORMATION:

A. Permitted Systems; Requirements: Solar energy systems (SES) are permitted in any zoning district, unless otherwise specified in this article, provided that all building permit requirements and general regulations are met including the Building Code, Zoning Code and the requirements referenced herein.

B. Prohibited Systems: The following shall be prohibited in all zoning districts: freestanding or ground-mounted solar energy system, solar farm, and solar garden.

C. Accessory Structure: SESs are permitted as accessory structures as detailed in this article.

D. On-Site Use: Energy produced through the solar energy system shall be utilized on site; however, the energy output may be delivered to a power grid.

E. Utility Provider Notification: Written evidence must be provided at the time a building permit is requested that the utility company has been notified of the customer's intent to install a solar energy system.

F. Glare: Installation of the solar collection system shall not adversely impact adjacent properties. A solar collection device or combination of devices shall be designed and located to avoid glare or reflection onto adjacent properties, businesses, residential homes and adjacent roadways and shall not interfere with traffic or create a safety hazard. All solar energy systems using a reflector to enhance solar production shall minimize glare from the reflector that impacts adjacent or nearby properties.

G. Emergency Disconnect: An external disconnect switch, readily accessible by emergency responders, and which is clearly identifiable and unobstructed, shall be provided to disconnect power at the solar panel.

H. Tree Removal: Tree removal shall be minimized. If trees or vegetation are to be removed or reduced to allow for the proper functioning of an SES, adherence to the Village's tree preservation ordinance will be required, which may include the replacement of trees.

I. Additional Height: Additional height may be requested through the variation process outlined in section 9-16-7 of this title.

J. Review: In reviewing the request for additional height, such factors as height of the system in relationship to existing and potential structures, manmade or natural, and their impact on the system's efficacy shall be considered.

K. Arrangement: Where feasible, solar collector units shall be consolidated into array groupings located toward the center of the roof, rather than situated in a disjointed manner.

L. Building Permit Required: No solar energy system (SES) shall be constructed or installed without first obtaining a building permit.

M. Approved Solar Components: Electric solar energy system components must have an Underwriters Laboratory (UL) listing or approved equivalent and solar hot water systems must have a Solar Rating and Certification Corporation (SRCC) rating.

N. Compliance With Building Code: All solar energy systems shall meet approval of local Building Code officials, consistent with Village of Hawthorn Woods' current adopted codes; and solar thermal systems shall comply with HVAC-related requirements of the current edition of the International Energy Conservation Code as adopted by the State of Illinois.

O. Compliance With National Electrical Code (NEC): All photovoltaic systems shall comply with the current edition of the National Electrical Code (NEC) adopted by the Village.

P. Compliance With State Plumbing Code: Solar thermal systems shall comply with applicable State of Illinois Plumbing Code requirements. (Ord. 1791-17, 10-23-2017)

9-18A-4: BUILDING-MOUNTED SOLAR ENERGY SYSTEMS:

A. Building-Mounted Solar Energy Systems: Building-mounted solar energy systems shall be developed according to the following parameters. Refer to section 9-18B-1, figures 1 through 3 of this chapter.

1. Residential:

a. Location: Building-mounted systems are permitted in the following locations:

(1) Principal and accessory structures. Solar collection panels shall be allowed on the roof of only the principal structure of the property and must be mounted flush with the slope of the roof to ensure the lowest profile permissible per manufacturer specifications. If solar shingles are integral to the roof of the structure on which they are installed, then they may be installed on any roof face of accessory structures. Solar collection devices shall not be constructed on any part of the vertical portion of a mansard roof.

b. Orientation: Panels shall be oriented to maximize solar access.

c. Height: Height is measured from the roof surface, on which the solar collection device is mounted, to the highest edge of the system. Refer to section 9-18B-1, figure 1 of this chapter.

(1) Sloping Roof: Solar energy systems shall be mounted flush with the roof, shall not have a highest finished pitch steeper than the roof pitch on which the system is mounted, and the surface of the collector shall not extend any further than twelve inches (12") from the roof surface at any point. No portion of the solar collectors shall extend beyond the ridgeline of the roof at any point. The total height of the building, including the solar collection devices, shall comply with the height regulations of the zoning district.

(2) Flat Roof: Solar collection devices mounted on a flat roof may be oriented to achieve maximum sun exposure but shall not exceed two feet (2') in overall height, or extend above the building parapet. No such mounted panel shall exceed the height regulations of the zoning district.

d. Projection: The collector surface and mounting devices for building-mounted solar energy systems shall not extend beyond the roof edge or the exterior perimeter of the principal structure.

e. Roof Access: Building-mounted solar energy systems shall allow for adequate roof access for fire-fighting purposes.

2. Nonresidential:

a. Location: Building-mounted systems are permitted in the following locations:

(1) Principal and accessory structures.

(2) Any roof face, with the exception of mansard roofs.

(3) Side and rear building facades.

(4) Front or corner building facades, if the following conditions are met:

(A) Solar access is optimized on the front and corner facades.

(B) Systems are simultaneously used to shade the structure's windows. Refer to section 9-18B-1, figures 2 and 3 of this chapter.

b. Orientation: Panels shall be oriented to maximize solar access.

c. Height: Height is measured from the roof surface, on which the system is mounted, to the highest edge of the system. Refer to section 9-18B-1, figure 1 of this chapter.

(1) Sloping Roof: Solar collection devices mounted on a sloping roof shall be mounted parallel to the roof whenever possible, and shall not exceed a height of fifteen inches (15") above the ridge of the roof. No such mounted panel shall exceed the maximum permitted height of the structure.

(2) Flat Roof: Solar collection devices mounted on a flat roof may be angled to achieve maximum sun exposure but shall not exceed eight feet (8') in overall height, or extend above the building parapet whichever results in less height. Solar collection devices shall be consolidated into array groupings located toward the center of the roof, where feasible, rather than situated in a disjointed manner. No such mounted panel shall exceed the maximum permitted height regulations of the zoning district.

d. Projection: The collector surface and mounting devices for building-mounted solar energy systems shall not extend beyond the exterior perimeter of the building on which the system is mounted or built, unless the collector and mounting system has been explicitly engineered to safely extend beyond the roof edge or building facade as follows. Refer to section 9-18B-1, figure 2 of this chapter on how to measure projection.

(1) May project up to four feet (4') from a building facade or roof edge provided the systems are simultaneously used to shade the structure's windows.

(2) May project into a side or rear setback, but shall be no closer than five feet (5') to the side or rear property line.

e. Roof Access: Building-mounted solar energy systems shall allow for adequate roof access for fire-fighting purposes. (Ord. 1791-17, 10-23-2017)

9-18A-5: SOLAR ACCESS PROTECTION:

A. Solar Access:

1. Creation Of Easements: Solar access easements across contiguous or nearby lots, tracts, or land may be created to establish a window of exposure to the sun so as to protect an existing or intended solar collector's exposure to the sun from obstruction of buildings and trees.

a. Such easements may be purchased, reserved, granted, or otherwise obtained.

b. Adverse possession cannot create such an easement.

c. An easement infringed upon is a compensable property right through private remedy.

2. Recording Of Easements: Solar access easements shall be recorded with the Lake County Recorder of Deeds and filed with the Community Development Department.

3. Construction In Easement Areas: Any person seeking a building permit to construct or modify any structure or building so as to increase the consumption of airspace over that lot shall certify in writing that no solar access easement exists over that lot.

4. Denial Of Permit: Should the Community Development Department determine that the proposed construction would intrude upon the easement, no building permit shall be granted. (Ord. 1791-17, 10-23-2017)

9-18A-6: DECOMMISSIONING:

A. An SES that is visibly damaged or not capable of operating for a period exceeding thirty (30) consecutive days shall be deemed abandoned. The owner of an abandoned SES and the owner of the property on which the SES is located shall cause either: 1) the SES to be repaired and made operable within ninety (90) days after receipt of a notice of abandonment from the Village; or 2) the removal of all SES structures and facilities within ninety (90) days after receipt of a notice of abandonment from the Village.

B. Any abandoned SES that is not removed within ninety (90) days after receipt of a notice of abandonment shall be deemed a public nuisance, which nuisance the Village shall have the right, but not the obligation, to: 1) summarily abate by removing such system at the joint and several expense of the owners of the system and of the property on which the system is located; or 2) address through other means. In the case of such removal, the Village shall have the right, but not the obligation, to file a lien for reimbursement of any and all expenses incurred by the Village in connection with the SES removal and related roof repair, including, without limitation, attorney fees and accrued interest.

C. Upon removal of the SES, the owner of record of the subject property shall restore that portion of the subject property on which the system was installed in accordance with the standards required by the Village's then-current applicable codes. (Ord. 1791-17, 10-23-2017)

9-18A-7: PENALTY:

Any person who violates, disobeys, omits, neglects or refuses to comply with any of the provisions of this article shall, upon conviction, be subject to penalty as provided in section 1-4-1 of this Code for each offense, and a separate offense shall be deemed committed for each day during, or upon which a violation occurs or continues. (Ord. 1791-17, 10-23-2017)