

**427 SOLAR ACCESS STANDARDS**

**427-1 Intent and Purpose**

The purpose of this Section is to provide and protect property rights to solar access for urban single-family uses.

- A. The purpose of the Solar Access Standard for New Development, Section 427-3, is to ensure that land is developed so that structures can be oriented to maximize solar access and to minimize shade on adjoining properties from structures and trees.
- B. The purpose of the Solar Balance Point Standard, Section 427-4, is to promote the use of solar energy, to minimize shading of structures by structures and accessory structures, and, where applicable, to minimize shading of structures by trees. Decisions related to Section 427-4 are to be administered at the time of issuance of a building permit.
- C. The purpose of the Solar Access Permit Standard, Section 427-5, is to protect solar access to solar features on lots designated or used for a single family detached dwelling or a manufactured dwelling under certain circumstances. It authorizes owners of such lots to apply for a permit that, if granted, prohibits solar features from being shaded by certain future trees and hedges on and off the applicant's site.

**427-2 As used in this Section, the words below have the following meaning:**

427-2.1 Crown Cover The area within the drip line or perimeter of the foliage of a tree.

427-2.2 Development Any partition, subdivision or planned development that is created under the County's land division or development regulations.

427-2.3 Exempt tree or vegetation The full height and breadth of vegetation that is:

- A. A species of deciduous tree identified by the Director as solar friendly. Solar friendly trees are certain types of deciduous trees which cast very little shade in the winter; or
- B. Any vegetation which is identified as exempt on a plat, a document or site plan recorded with a plat, or a Solar Access Permit.

427-2.4 Front lot line For purposes of the solar access regulations, a lot line abutting a street. For corner lots the front lot line is that with the narrowest frontage. When the lot line abutting a street is curved, the front lot line is the chord or straight line connecting the ends of the curve. For a flag lot, the front lot line is the lot line adjoining the pole portion of the lot, excluding the unbuildable portion of the pole, which is parallel to the front of the dwelling (see Figure 1).

427-2.5 Nonexempt tree or vegetation Vegetation or trees that are not exempt. Solar unfriendly trees and vegetation are trees and vegetation which cast sufficient shade to affect the performance of a solar feature.

- 427-2.6 Northern lot line The lot line that is the smallest angle from a line drawn east-west and intersecting the northernmost point of the lot, excluding the pole portion of a flag lot. If the north line adjoins an undevelopable area other than a required yard area, the northern lot line shall be at the north edge of such undevelopable area. If two (2) lot lines have an identical angle relative to a line drawn east-west, or if the northern lot line is less than thirty-five (35) feet long, the northern lot line shall be a line thirty-five (35) feet in length within the lot parallel with and at a maximum distance from the front lot line (see Figure 2).
- 427-2.7 North-south dimension The length of a line beginning at the midpoint of the northern lot line and extending in a southerly direction perpendicular to the northern lot line until it reaches a property boundary (see Figure 3).
- 427-2.8 Protected solar building line A line on a plat or map recorded with the plat that identifies the location on a lot where the area two (2) feet above grade may not be shaded by structures or nonexempt trees (see Figure 10).
- 427-2.9 Shade A shadow cast by the shade point of a structure or vegetation when the sun is at an altitude of twenty-one and three tenths (21.3) degrees and an azimuth ranging from twenty-two and seven tenths (22.7) degrees east and west of true south.
- 427-2.10 Shade point The part of a structure or nonexempt tree that casts the longest shadow onto the adjacent northern lot(s) when the sun is at an altitude of twenty-one and three tenths (21.3) degrees and an azimuth ranging from twenty-two and seven tenths (22.7) degrees east and west of true south; except a shadow caused by a narrow object such as a mast or whip antenna, a dish antenna with a diameter of three (3) feet or less, a chimney, utility pole, or wire. The height of the shade point shall be measured from the shade point to either the average elevation at the front lot line or the elevation at the midpoint of the front lot line. If the shade point is located at the north end of a ridge line of a structure oriented within forty-five (45) degrees of a true north-south line, the shade point height computed according to the preceding sentence may be reduced by three (3) feet. If a structure has a roof oriented within forty-five (45) degrees of a true east-west line with a pitch that is flatter than five (5) feet (vertical) in twelve (12) feet (horizontal) the shade point will be the eave of the roof. If such a roof has a pitch that is five (5) feet in twelve (12) feet or steeper, the shade point will be the peak of the roof (see Figures 4 and 5).
- 427-2.11 Shade reduction line A line drawn parallel to the northern lot line that intersects the shade point (see Figure 6).
- 427-2.12 Shadow pattern A graphic representation of an area that would be shaded by the shade point of a structure or vegetation when the sun is at an altitude of twenty-one and three tenths (21.3) degrees and an azimuth ranging between twenty-two and seven tenths (22.7) degrees east and west of true south (see Figure 12).
- 427-2.13 Solar access height limit A series of contour lines establishing the maximum permitted height for nonexempt vegetation on lots affected by a solar access permit (see Figure 11).

- 427-2.14 Solar access permit A permit issued by the County that describes the maximum height that nonexempt vegetation is allowed to grow on lots to which a solar access permit applies.
- 427-2.15 Solar balance point The location on the lot where a structure would be an equal distance between the locations required by the maximum shade point height standard in Section 427-4.3 and the standard for allowed shade on a solar feature in Section 427-4.6.
- 427-2.16 Solar feature A device or combination of devices or elements that does or will use direct sunlight as a source of energy for such purposes as heating or cooling of a structure, heating or pumping of water, and generating electricity. Examples of a solar feature include a window or windows that contain(s) at least twenty (20) square feet of glazing oriented within forty-five (45) degrees east and west of true south, a solar greenhouse, or a solar hot water heater. A solar feature may be used for purposes in addition to collecting solar energy, including but not limited to serving as a structural member or part of a roof, wall, or window. A south-facing wall without windows and without other features that use solar energy is not a solar feature for purposes of Section 427.
- 427-2.17 Solar gain line A line parallel to the northern property line(s) of the lot(s) south of and adjoining a given lot, including lots separated by a street, that intersects the solar feature on that lot (see Figure 7).
- 427-2.18 South or south facing True south, or twenty (20) degrees east of magnetic south.
- 427-2.19 Space A plot of land within a manufactured dwelling park designed to accommodate one (1) manufactured dwelling.
- 427-2.20 Sunchart One or more photographs that plot the position of the sun between 10:30 a.m. and 1:30 p.m. on January 21, prepared pursuant to guidelines issued by the Director. The sunchart shall show the southern skyline through a transparent grid on which is imposed solar altitude for a forty-five (45) degree and thirty (30) minute northern latitude in ten (10) degree increments and solar azimuth from true south in fifteen (15) degree increments.
- 427-2.21 Undevelopable area An area that cannot be used practicably for a habitable structure because of:
- A. Natural conditions, such as slopes exceeding twenty (20) percent in a direction greater than forty-five (45) degrees east or west of true south, severe topographic relief, water bodies, or conditions that isolate one portion of a property from another portion so that access is not practicable to the unbuildable portion;
  - B. Man-made conditions, such as existing development which isolates a portion of the site and prevents its further development;
  - C. Setback or development restrictions that prohibit development of a given area of a lot by law or private agreement; or
  - D. Existence or absence of easements or access rights that prevent development of a given area.

**427-3 Solar Access Standard for New Development**

## 427-3.1 Applicability

The solar design standard in Section 427-3.2 shall apply to the following development applications, except to the extent the Review Authority finds that the applicant has shown one or more of the conditions listed in Sections 427-3.3 and 427-3.4 exist, and exemptions or adjustments provided for therein are warranted.

- A. Development applications to create lots or parcels for single family detached dwellings or manufactured dwellings in any urban residential district through a partition or subdivision application; and
- B. Development applications for a manufactured dwelling park in any urban residential district.

## 427-3.2 Solar Design Standard

## A. Requirements for New Lots or Parcels

At least eighty (80) percent of the lots or parcels in a development subject to Section 427 shall comply with one or more of the alternatives listed in Section 427-3.2, provided, a development may, but is not required to, use the alternatives listed in Sections 427-3.2 A. (2) or 427-3.2 A. (3) to comply with Section 427-3.

- (1) Basic Requirement (see Figure 9). A lot or parcel complies with Section 427-3.2 if it:
  - (a) Has a north-south dimension of ninety (90) feet or more; and
  - (b) Has a front lot line that is oriented within thirty (30) degrees of a true east-west axis.
- (2) Protected Solar Building Line Alternative (see Figure 10): In this alternative, a lot or parcel complies with Section 427-3.2 if a solar building line is used to protect solar access in the following manner:
  - (a) A protected solar building line is designated on the plat or in documents recorded with the plat;
  - (b) The protected solar building line is oriented within thirty (30) degrees of a true east-west axis;
  - (c) There is at least seventy (70) feet between the protected solar building line and the middle of the north-south dimension of the lot or parcel to the south, measured along a line perpendicular to the protected solar building line; and
  - (d) There is at least forty-five (45) feet between the protected solar building line and the northern edge of the buildable area of the lot or parcel, or habitable structures are situated so that at least eighty (80)

per cent of their south-facing wall will not be shaded by structures or nonexempt vegetation.

- (3) Performance Alternative: In this alternative, a lot or parcel complies with Section 427-3.2 if:
  - (a) Habitable structures built on the lot or parcel will have their long axis oriented within thirty (30) degrees of a true east-west axis, and at least eighty (80) percent of their ground floor south wall(s) will be protected from shade by structures and nonexempt trees using appropriate deed restrictions; or
  - (b) Habitable structures built on the lot or parcel will orient at least thirty-two (32) percent of their glazing and at least five-hundred (500) square feet of their roof area to face within thirty (30) degrees east or west of true south, and that glazing and roof area are protected from shade by structures and nonexempt trees using appropriate deed restrictions.

B. Requirement for Manufactured Dwelling Parks

At least eighty (80) percent of the manufactured dwellings in a manufactured dwelling park subject to Section 427 shall be oriented with their long axis within thirty (30) degrees of east-west.

427-3.3 Exemptions from the Solar Design Standard

A development is exempt from Section 427-3.2 if the Review Authority finds the applicant has shown that one or more of the following criteria are applicable to the site. A development is partially exempt from Section 427-3.2 to the extent the Review Authority finds the applicant has shown that one or more of the following criteria are applicable to a corresponding portion of the site. If a partial exemption is granted for a given development, the remainder of the development shall comply with Section 427-3.2.

A. Slopes:

The site, or a portion of the site for which the exemption is sought, is sloped twenty (20) percent or more in a direction greater than forty-five (45) degrees east or west of true south, based on a topographic survey by a licensed professional land surveyor or USGS or other officially recognized topographic information.

B. Off-site shade:

The site, or a portion of the site for which the exemption is sought, is within the shadow pattern of off-site features which will remain after development of the off-site property subject to compliance with one of the following criteria. Off-site features include but are not limited to structures, topography or nonexempt vegetation.

- (1) Shade from an existing or an approved off-site single-family dwelling or manufactured dwelling in an urban residential district is assumed to remain after development of the site.
- (2) Shade from off-site structures other than those listed in (1) above, is assumed to be the shadow pattern of the existing or approved development thereon or the shadow pattern that would result from the largest structure allowed at the closest setback on adjoining land, whether or not that structure now exists.
- (3) Shade from off-site vegetation is assumed to remain after development of the site if:
  - (a) The trees that cause the shade are situated in a required setback or they are part of a developed area, public park, or legally reserved open space;
  - (b) The trees are in or separated from the developable remainder of a parcel by an undevelopable area or feature; or
  - (c) The trees are part of landscaping required by this Code, a community plan or a prior development action.
- (4) Shade from topographic features is assumed to remain after development of the site.
- (5) Shade from other off-site sources is assumed to be shade that exists or that will be cast by development for which applicable permits have been approved on or before the date an application for the development is submitted.

C. On-site shade:

The site, or a portion of the site for which the exemption is requested, is:

- (1) Within the shadow pattern of on-site features, including but not limited to structures and topography which will remain after the development occurs; or
- (2) Contains nonexempt trees at least thirty (30) feet tall and more than six (6) inches in diameter measured four (4) feet above the ground which have a crown cover over at least eighty (80) percent of the site, or the relevant portion. The applicant can demonstrate such crown cover exists using a scaled survey or an aerial photograph. If granted, the exemption shall be approved subject to the condition that the applicant preserve at least fifty (50) percent of the crown cover that causes the shade that warrants the exemption. The applicant shall file a note on the plat or other documents in the Office of the County Recorder binding the applicant to comply with this requirement. The County shall be made a party to any covenant or restriction created to enforce any provision of this requirement. The covenant or restriction shall not be amended without written County approval.

- D. Completion of a phased subdivision which has received preliminary plat approval or a phased manufactured dwelling park which has received preliminary development review approval:

The site is part of a phased subdivision, or manufactured dwelling park none of which was subject to Section 427-3.

427-3.4 Adjustments to the Solar Design Standard:

The Review Authority shall reduce the percentage of lots or spaces that must comply with Section 427-3.2 to the minimum extent necessary if it finds the applicant has demonstrated it would cause or is subject to one (1) or more of the following conditions.

- A. Adverse impacts upon density, cost or amenities:

- (1) If the design standard in Section 427-3.2 A. is applied, either the resulting density is less than that proposed, or on-site site development costs (e.g., grading, water, storm drainage and sanitary systems, and roads) and solar related off-site site development costs (e.g., more extensive utility lines or street improvements are required due to the solar access requirements) are at least five (5) percent more per lot or space than if the standard is not applied.

The following conditions, among others, could constrain the design of a development in such a way that compliance with Section 427-3.2 A. would reduce density or increase per lot costs as previously described. The applicant shall demonstrate which if any of these or other similar site characteristics apply to a development.

- (a) The portion of the site for which the adjustment is sought has a natural grade that is sloped ten (10) percent or more and is oriented greater than forty-five (45) degrees east or west of true south based on a topographic survey of the site by a registered professional land surveyor or USGS or other officially recognized topographic information.
- (b) There is a significant natural feature on the site, identified as such in the community plan or this Code, that prevents given streets, lots or spaces from being oriented for solar access, and it will continue to exist after the site is developed.
- (c) Existing road patterns must be continued through the site or must terminate on-site in order to provide adequate circulation, comply with future roadway alignments designated in the Transportation Plan or an adopted study, or to comply with the standards of the Washington County Uniform Road Improvement Design Standards in a way that prevents proposed streets, lots or spaces in the development from being oriented for solar access.

(d) An existing public easement or right-of-way prevents proposed streets, lots or spaces in the development from being oriented for solar access.

(2) If the design standard in Section 427-3.2 A. applies to a proposed lot(s) or space(s), significant development amenities that would otherwise benefit the lot(s) or space(s) will be lost or impaired. Evidence that a significant diminution in the market value of the lot(s) or space(s) would result from having the lot(s) or space(s) comply with Section 427-3.2 A. is relevant to whether a significant development amenity is lost or impaired.

B. Impacts from existing shade:

The shadow pattern from nonexempt trees cover at least eighty (80) percent of the lot or space and at least fifty (50) percent of the shadow pattern will remain after development of the lot. A scaled survey of nonexempt trees on the site or a current aerial photograph of the site may be used to show the shadow pattern.

(1) Shade from nonexempt trees is assumed to remain if:

- (a) The trees are situated in a required setback;
- (b) The trees are part of an existing or proposed park, open space, or recreational amenity;
- (c) The trees are separated from the developable remainder of the parcel by an undevelopable area or feature; or
- (d) The trees are part of landscaping required by this Code, a community plan or a prior development action; and
- (e) The trees do not need to be removed for a driveway or other development.

(2) Also, to the extent the shade is caused by on-site trees or off-site trees on land owned by the applicant, it is assumed to remain if the applicant files in the office of the County Recorder a covenant binding the property owner to retain the trees causing the shade on the affected lots or spaces.

427-3.5 Protection from Future Shade:

Structures and nonexempt vegetation must comply with applicable solar balance point standards on all lots in a development subject to Section 427-3, including lots or spaces for which exemptions or adjustments to Section 427-3.3 have been granted.

The applicant shall file a note on the plat or other documents in the office of the County Recorder binding the applicant and subsequent purchasers to comply with the future shade protection standards in Section 427-3.5. The County shall be made a party of any covenant or restriction created to enforce any provision of Section 427. The covenant or restriction shall not be amended without written County approval.

427-3.6 Application:

An application for approval of a development subject to Section 427-3 shall include:

- A. Maps and text sufficient to show the development complies with the solar design standard of Section 427-3.2, except for lots or spaces for which an exemption or adjustment from Section 427-3.2 is requested, including at least:
  - (1) The north-south lot dimension and front lot line orientation of each proposed lot or space.
  - (2) Protected solar building lines and relevant building site restrictions, if applicable.
  - (3) For the purpose of identifying trees exempt from Section 427-3.5, a map showing existing trees at least thirty (30) feet tall and over six (6) inches diameter at a point four (4) feet above grade, indicating their height, diameter and species, and stating that they are to be retained and are exempt.
  - (4) Copies of all private restrictions relating to solar access.
- B. If an exemption or adjustment to Section 427-3.2 is requested, maps and text sufficient to show that given lots, spaces or areas in the development comply with the standards for such an exemption or adjustment in Section 427-3.3 or 427-3.4, respectively.

**427-4 Solar Balance Point Standard**

427-4.1 Applicability

- A. The solar balance point requirements of this subsection shall apply to the following structures in all urban residential districts:
  - (1) All new single family dwellings, additions to existing single family dwellings and structures that are accessory to a single family dwelling; and
  - (2) All new manufactured dwellings, additions to existing manufactured dwellings and structures that are accessory to a manufactured dwelling. However, these standards do not apply to manufactured dwellings in a manufactured dwelling park or a manufactured dwelling approved as a temporary use. In the event a manufactured dwelling that is being used as a temporary use is converted to a permanent residence, the manufactured dwelling shall comply with the requirements of Section 427-4.
- B. The Review Authority may grant an exemption or adjustment to the solar balance point standards if the applicant has demonstrated that one (1) or more of the conditions listed in Section 427-4.4 or Section 427-4.5 exists, and exemptions or adjustments provided for these conditions are warranted.

- C. Nonexempt vegetation planted on lots or parcels subject to the requirements of Section 427-4.5 shall comply with the shade point height standards listed in Section 427-4.3 or Section 427-4.4.
- D. The solar balance point requirements shall be administered through the building permit for the proposed structure.

#### 427-4.2 Solar Site Plan Required

An application for a building permit for a structure that is subject to the solar balance point standards shall include a site plan that shows the following:

- A. The maximum shade point height allowed by Section 427-4.3;
- B. The average elevation of the rear property line if the maximum shade point height is adjusted pursuant to Section 427-4.3 A. (2);
- C. The location of the shade point, its height relative to the average elevation of the front lot line or the elevation at the midpoint of the front lot line, and its orientation relative to true south; and, if applicable,
- D. The solar balance point for the structure as provided in Section 427-4.7.

#### 427-4.3 Maximum Shade Point Height Standard

The height of the shade point shall comply with the requirements of either Section 427-4.3 A. or Section 427-4.3 B.

##### A. Basic Requirement

- (1) The height of the shade point shall be less than or equal to the height specified in Table A, or it may be computed using the formula listed in Section 427-4.3 A. (2). However, the maximum allowed height of the shade point may be increased one (1) foot above the calculated height for each foot that the average grade at the rear property line exceeds the average grade at the front property line. The height of the shade point shall be measured from the shade point to either the average elevation at the front lot line or the elevation at the mid-point of the front lot line. It may be necessary to interpolate between the five (5) foot dimensions listed in Table A to determine the shade height when using Table A.
- (2) Formula to Determine the Height of the Maximum Shade Point

$$H = (2 \times \text{SRL}) - N + 150$$

Where: H = the maximum allowed height of the shade point (see Figures 4 and 5);

SRL = shade reduction line (the distance between the shade point and the northern lot line, (see Figure 6); and

N = the north-south lot dimension, provided that a north-south lot dimension more than ninety (90) feet shall use a value of ninety (90) feet for the purposes of the solar balance point standards.

#### B. Performance Alternative Requirements

The applicant shall comply with one of the following alternative requirements to determine the maximum shade point height standard.

- (1) The proposed structure, or applicable nonexempt vegetation, will shade not more than twenty (20) per cent of the south-facing glazing of habitable structure(s); or
- (2) The proposed structure or nonexempt vegetation shall comply with Section 427-3.2 B. or Section 427-3.2 C., whichever is applicable. For Section 427-3.2 B., nonexempt vegetation and the shade point of structures shall be set back from the protected solar building line two and one-half (2.5) feet for every one (1) foot of height of the structure or of the mature height of nonexempt vegetation over two (2) feet in height.

#### 427-4.4 Exemption from the Maximum Shade Point Height Standard

The Review Authority may exempt a proposed structure or nonexempt vegetation from the requirements of Section 427-4.2 and Section 427-4.3 if the applicant demonstrates that one or more of the following conditions exist, based upon site plans or plats, corner elevations or other topographical data, shadow patterns, suncharts or photographs, or other substantial evidence submitted by the applicant.

##### A. Pre-existing Shade

The structure or applicable nonexempt vegetation will shade an area that is shaded by one or more of the following:

- (1) An existing or approved structure;
- (2) A topographic feature; or
- (3) A nonexempt tree that will remain after development of the site. It is assumed a tree will remain after development if:
  - (a) The tree is situated in a required building setback;
  - (b) The tree is part of a developed or landscaped area required by this Code, a community plan or a prior development action;
  - (c) The tree is part of a public park or landscape strip, or legally reserved open space;
  - (d) The tree is in or separated from the developable remainder of a parcel by an undevelopable area or feature;

- (e) The tree is on the applicant's property and not affected by the development; or
- (f) A restrictive covenant, which requires the preservation of tree(s) creating the shade, has been recorded in the Washington County Records Department.

#### B. Slope

The site has an average slope that exceeds twenty (20) percent in a direction greater than forty-five (45) degrees east or west of true south based on a topographic survey by a licensed professional land surveyor or USGS or other officially recognized topographic information.

#### C. Insignificant Benefit

The proposed structure or nonexempt vegetation shades one or more of the following:

- (1) An undevelopable area;
- (2) The wall of an unheated space, such as a garage;
- (3) Less than twenty (20) square feet of south-facing glazing; or
- (4) An undeveloped lot or parcel, other than a lot or parcel that was subject to the Section 427-3, where:
  - (a) There are at least four (4) single family detached or attached dwellings or at least four (4) manufactured dwellings within the same subdivision that are within two-hundred and fifty (250) feet of the lot; and
  - (b) A majority of the homes identified in Subsection (a) above have an average of less than twenty (20) square feet of south-facing glazing.

#### D. Public Improvement

The proposed structure is a publicly owned improvement.

#### 427-4.5 Adjustments to the Maximum Shade Point Height Standard

The Review Authority may increase the maximum shade point height necessitated by one of the following conditions to the extent it finds the applicant has demonstrated that one or more of these conditions exist, based upon site plans or plats, corner elevations or other topographical data, shadow patterns, suncharts or photographs, or other substantial evidence submitted by the applicant.

##### A. Physical Conditions

Physical conditions preclude development of the site in a manner that complies with Section 427-4.3, due to such things as a public or private easement, a right

of way, a flood plain, a drainage hazard area, a Significant Natural Resource Area, slopes of twenty (20) percent or more, areas designated to be unbuildable by this Code, a community plan or a prior development action, or a lot size less than three-thousand (3,000) square feet.

B. Conflict Between the Maximum Shade Point Height and Allowed Shade on the Solar Feature Standards

A proposed structure may be sited to meet the solar balance point standard described in Section 427-4.7, or be sited as near to the solar balance point as allowed by Section 427-4.7, if:

- (1) When the proposed structure is sited to meet the maximum shade point height, its solar feature will potentially be shaded as determined using Section 427-4.6; and
- (2) The applicant signs and records a form provided by the County which:
  - (a) Releases the applicant from complying with Section 427-4.3, and stipulates that the proposed structure may shade an area otherwise protected by Section 427-4.3;
  - (b) Releases the County from liability for damages resulting from the adjustment; and
  - (c) Is signed by the affected property owner(s) of the properties that would be shaded beyond the requirements of Section 427-4.3.
- (3) Prior to the issuance of a building permit for the proposed structure, the applicant shall record the above prescribed form in the Washington County Records Department, indexed by the properties identified in Section 427-4.5 B. (2)(c).

427-4.6 Analysis of Allowed Shade on Solar Feature

An applicant may, but is not required to, perform the calculations in or comply with the standards of Section 427-4.6 unless the solar balance point for the structure must be calculated as required by Section 427-4.7.

- A. Applicants are encouraged, but are not required, to design and site a proposed habitable structure so the lowest height of any solar feature(s) will not be shaded by buildings or nonexempt trees or hedges located on property to the south. The applicant may use the procedure listed in Sections 427-4.6 B. through 427-4.6 D. to determine if a proposed solar feature will be shaded by off-site shade.
- B. To calculate the shade height at the subject property's north property line, the applicant should determine which of the following alternatives best describes the source of shade on adjacent lots or spaces to the south:
  - (1) Existing structure(s) or nonexempt trees or hedges; or

- (2) The maximum shade that can be cast from future buildings or nonexempt trees or hedges, based on Table C. If the lot(s) to the south can be further divided, the north-south dimension is assumed to be the minimum lot width required for a new lot in that district.
- C. The height of the lowest point of any solar feature of the proposed structure is calculated with respect to either the average elevation or the elevation at the midpoint of the front lot line of the lot to the south.
- D. The applicant can determine the height of the shadow that may be cast upon the applicant's solar feature by the source of shade selected in Section 427-4.6 C. by using the following formula or Table B.

#### Formula to Calculate the Maximum Shade Height at the North Property Line

$$\text{SFSH} = \text{SH} - (\text{SGL}/2.5)$$

Where:

- SFSH = the allowed shadow height on the solar feature (see Figure 8)
- SH = the height of the shade at the northern lot line of lot(s) to the south as determined in Section 427-4.6 C.
- SGL = the solar gain line (the distance from the solar feature to the northern lot line of adjacent lot(s) to the south, see Figure 7).

- E. If the allowed shade height on the solar feature calculated in Section 427-4.6 D. is higher than the lowest height of the solar feature calculated in Section 427-4.6 C., the applicant shall be encouraged to consider changes to the design of the house or its location which would make it practical to locate the solar feature so that it will not be shaded in the future.

#### 427-4.7 Calculation of the Solar Balance Point

If a structure does not comply with the Maximum Shade Point Height Standard in Section 427-4.3 and the standard for allowed shade on a solar feature in Section 427-4.6, the solar balance point of the lot or parcel shall then be calculated (see Figure 8). The solar balance point is the location on the lot or parcel where a structure would be an equal distance between the locations required by the maximum shade point height standard and the standard for allowed shade on a solar feature.

#### 427-5 Solar Access Permit

##### 427-5.1 Applicability

- A. An owner of property that is located in an urban residential district, that is or will be developed with a single family dwelling or a manufactured dwelling, may apply for a solar access permit for a solar feature to protect it from shade from future

trees and hedges. If granted, the permit prohibits solar features from being shaded by certain future trees and hedges on and off the applicant's site. For the purposes of Section 427-5, future trees and hedges means the full height and breadth that this vegetation will reach upon maturity.

- B. Property that is located in an urban residential district and that is or will be developed with a single family dwelling or a manufactured dwelling, may be subject to the requirements of Section 427-5.3 B., as the result of a solar access permit on adjacent or nearby property.
- C. The standards of Section 427-5 shall be administered through a Type II procedure prior to the issuance of a building permit for the proposed solar feature(s).

427-5.2 Approval Standards for a Solar Access Permit

The Review Authority shall approve an application for a solar access permit if:

- A. The applicant demonstrates that existing trees, hedges or structures on the applicant's property do not shade the proposed solar feature(s); and
- B. The applicant demonstrates the proposed solar feature will not be shaded by existing trees, hedges or structures on adjacent or nearby property.

427-5.3 Duties Created by Solar Access Permit

- A. Upon approval of a solar access permit, the applicant shall:
  - (1) Record the solar access permit in the Washington County Records Department, indexed by the properties identified in Section 427-5.4 A. The applicant shall pay all filing and recording fees. The solar access permit shall contain the following information:
    - (a) Legal description of the affected properties;
    - (b) The solar access height limit; and
    - (c) The site plan required by Section 427-5.4 C., with any modifications required by the Review Authority.
  - (2) Install the solar feature in a timely manner as provided in Section 427-5.7; and
  - (3) Maintain trees and hedges on the site so they do not shade the solar feature.
- B. An owner of property affected by a solar access permit shall be responsible for and pay all costs for keeping nonexempt trees and hedges from exceeding the solar access height limit. Trees or hedges which are identified as exempt on the site plan required by Section 427-5.4 C. trees or hedges an affected property owner shows were in the ground on the date an application for a solar access

permit is filed, and solar friendly trees are exempt from the requirements of Section 427-5.

#### 427-5.4 Application Contents

In addition to the requirements of Section 203-3, an application for a solar access permit shall contain the following information:

- A. A legal description of the subject property and all affected properties. For the purposes of Section 427-5, affected properties means all property within one-hundred and fifty (150) feet and fifty-four (54) degrees east and west of true south measured from the east and west corners, respectively, of the subject property's south property line.
- B. An accurate and to scale site plan of the applicant's property showing:
  - (1) Trees and hedges in the ground as of the date of the application that when mature, could shade the solar feature;
  - (2) The location of all existing structures; and
  - (3) The height, above grade, of the solar feature, its location, and its orientation relative to true south.
- C. An accurate and to scale site plan of the properties described in Section 427-5.4 A. showing:
  - (1) The dimensions of the properties;
  - (2) The approximate location of all existing structures, trees and hedges on each property that could shade the proposed solar feature on the applicant's property; and
  - (3) The requested solar access height limit for each affected lot. The solar access height limit is determined by a series of contour lines which establishes the maximum permitted height for nonexempt trees and hedges on lots impacted by a solar access permit (see Figure 11). The contour lines begin at the bottom edge of the proposed solar feature and rise in five (5) foot increments at an angle to the south not less than twenty-one and three-tenths (21.3) degrees from the horizon and extend not more than fifty-four (54) degrees east and west of true south. Notwithstanding the preceding, the solar access height limit at the northern lot line of any lot impacted by a solar access permit shall allow nonexempt trees or hedges on that lot when their mature height will not create more shade on the applicant's property than would be created by a structure that complies with the requirements of Section 427-4.
- D. If available, a statement signed by the owner(s) of all or a portion of the properties to which the permit will apply verifying that:
  - (1) The property is or will be developed for a single family dwelling or a manufactured dwelling; and

- (2) The trees and hedges shown on the site plan submitted pursuant to Section 427-5.4 C. accurately represents trees or hedges in the ground on the property on the date of the application.
- (3) The Department shall provide a form for this purpose.

427-5.5 Application Review Process

- A. An application for a solar access permit shall be reviewed through a Type II procedure.
- B. In addition to the requirements of Section 204-3.2, the public notice sent to the owners of affected property identified in Section 427-5.4 A. shall contain:
  - (1) The site plan of the applicant's property required by Section 427-5.4 B.
  - (2) The proposed solar access height limits;
  - (3) A description of the duties created by the solar access permit; and
  - (4) The site plan of the owners' properties required by Section 427-5.4 C., if the owner did not verify the accuracy of the site plan of the owner's property pursuant to Section 427-5.4 D. These property owners shall be asked to:
    - (a) verify the accuracy of the site plan of their property, including the accuracy of nonexempt trees and hedges; and
    - (b) submit written comments during the fourteen (14) day comment period describing any inaccuracies in the site plan. If written comments are not received during the comment period, the Review Authority may assume the submitted site plan is accurate.
- D. Upon review of written comments or inspection of the subject property and impacted properties, the Review Authority may modify the site plan(s) of impacted property owners and the solar access permit to be consistent with the additional information.
- E. If the application is approved:
  - (1) The Review Authority shall send, with the notice of decision, a copy of the solar access permit and the solar access height limits to the owners of each property impacted by the permit.
  - (2) The applicant shall record the following information in the County Records Department with the deeds to the properties impacted by the permit. The solar access permit shall not be effective until this information is recorded.
    - (a) The approved solar access permit;
    - (b) Associated solar access height limits;

- (c) Legal description of the affected properties; and
- (d) Site plan(s) required by Section 427-5.4 C., with any modifications required by the Review Authority.

#### 427-5.6 Permit Enforcement Process

##### A. Enforcement Request

A solar access permittee may request the County to enforce the solar access permit by providing the following information to the Director:

- (1) A copy of the solar access permit and the site plans recorded with the permit;
- (2) A completed copy of the Department's Complaint Alleged Code Violation Form;
- (3) The legal description of the property on which the alleged nonexempt tree or hedge is situated, the address of the owner(s) of that property, and a scaled site plan of the property showing the nonexempt tree or hedge; and
- (4) Evidence that the alleged tree or hedge violates the solar access permit. Evidence may include a sunchart, photograph, shadow pattern, or photographs.

##### B. Enforcement Process

If the Director determines the request for enforcement is complete, the Director shall initiate an enforcement action pursuant to Section 215 (Enforcement). However, the Director shall not enforce the requirements of the solar access permit against trees or hedges the owner of which shows were in the ground on the date the application for the solar access permit was filed with the County.

#### 427-5.7 Expiration of a Solar Access Permit

- A. A solar access permit shall automatically expire one-hundred and eighty (180) days from the date of issuance unless one of the following occurs first:
  - (1) Development of the protected solar feature has commenced as provided in Section 201-6;
  - (2) An application for an extension is filed pursuant to Sections 201-5 and 427-5.8; or
  - (3) The permit is revoked as provided for in Section 201-7 or as otherwise invalidated by a body of competent jurisdiction.

- B. If after construction of the solar feature has commenced, construction is suspended or abandoned for a period of one-hundred and eighty (180) days or more, the permit shall automatically expire. A new solar access permit must be obtained before work can begin again.
  - C. Upon expiration of a solar access permit, the Director shall record a notice of expiration in the County Records Department with the deeds to the subject site and impacted properties.
- 427-5.8 Extension of a Solar Access Permit

- A. If an extension is desired, the holder of the solar access permit must file an application for an extension prior to the expiration of the permit pursuant to the requirements of Section 201-5.
- B. An extension may be granted for a maximum of one-hundred and eighty (180) days. No permit shall be extended more than once.