

1018 SOLAR BALANCE POINT/INFILL ORDINANCE (3/24/05)

1018.01 PURPOSE

The purposes of this ordinance are to promote the use of solar energy, to minimize the shading of structures by structures and accessory structures, and, where applicable, to minimize the shading of structures by trees. Decisions related to this ordinance are intended to be ministerial.

1018.02 APPLICATION OF SECTION (3/24/05)

This section shall apply to an application for a building permit for all structures in VR-4/5, VR-5/7, R-7, R-8.5, R-10, R-15, R-20, and R-30 zones and all detached single-family dwellings in any zone, except to the extent the Planning Director finds the applicant has shown that one or more of the conditions listed in Subsections 1018.06 and 1018.07 exists, and exemptions or adjustments provided for therein are warranted. In addition, nonexempt vegetation planted on lots subject to Subsection 1017.07 shall comply with the shade point height standards as provided in Subsections 1018.05 and 1018.06. (3/24/05)

1018.03 DEFINITIONS

Words and terms used in this section shall be as defined under Subsection 1017.03.

1018.04 SOLAR SITE PLAN REQUIRED

An applicant for a building permit for a structure subject to this ordinance shall submit a site plan that shows the maximum shade point height allowed under Subsection 1018.05 and the allowed shade on the proposed structure's solar features as provided in Subsection 1018.08. If applicable, the site plan also shall show the solar balance point for the structure as provided in Subsection 1018.09.

1018.05 MAXIMUM SHADE POINT HEIGHT STANDARD

The height of the shade point shall comply with either A or B below.

- A. Basic Requirement: The height of the shade point shall be less than or equal to the height specified in Table A or computed using the following formula. If necessary, interpolate between the 5-foot dimensions listed in Table A.

$$H = \frac{(2 \times \text{SRL}) - N + 150}{5}$$

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 of more than 90 feet shall use a value of 90 feet for this section.

Adjustment to shade point height on sloped lots: The maximum allowed height of the shade point may be increased one foot above the amount calculated using the formula or Table A for each foot that the average grade at the north property line exceeds the average grade at the south property line.

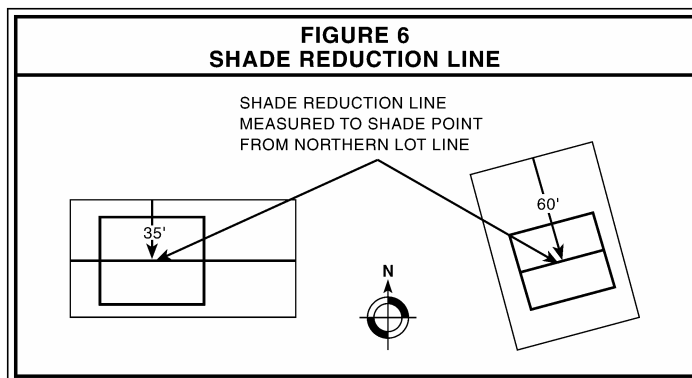
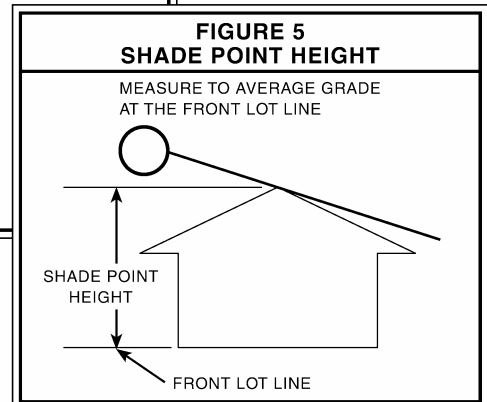
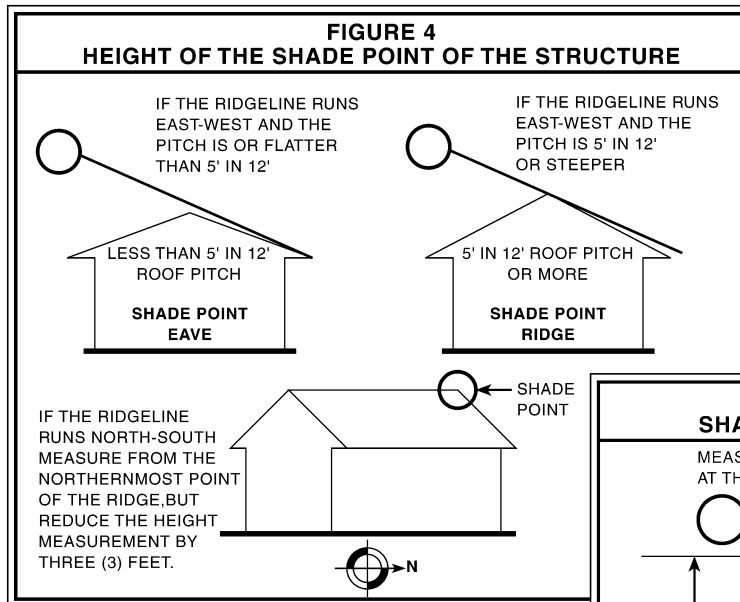


TABLE A  
 MAXIMUM PERMITTED SHADE POINT HEIGHT (In Feet)

<u>LENGTH OF SHADE REDUCTION LINE</u>	<u>North-South Lot Dimension (in Feet)</u>											
	<u>90+</u>	<u>85</u>	<u>80</u>	<u>75</u>	<u>70</u>	<u>65</u>	<u>60</u>	<u>55</u>	<u>50</u>	<u>45</u>	<u>40</u>	
70	40	41	42	43	44							
65	38	39	40	41	42	43						
60	36	37	38	39	40	41	42					
55	34	35	36	37	38	39	40	41				
50	32	33	34	35	36	37	38	39	40			
45	30	31	32	33	34	35	36	37	38	39		
40	28	29	30	31	32	33	34	35	36	37	38	
35	26	27	28	29	30	31	32	33	34	35	36	
30	24	25	26	27	28	29	30	31	32	33	34	
25	22	23	24	25	26	27	28	29	30	31	32	
20	20	21	22	23	24	25	26	27	28	29	30	
15	18	19	20	21	22	23	24	25	26	27	28	
10	16	17	18	19	20	21	22	23	24	25	26	
5	14	15	16	17	18	19	20	21	22	23	24	

- B. Performance Option: The proposed structure or applicable nonexempt vegetation will shade not more than 20 percent of the south-facing glazing of an existing habitable structure(s), or, where applicable, the proposed structure or nonexempt vegetation will comply with Subsections 1017.04B or 1017.04C of the Solar Access Ordinance for New Development. If Subsection 1017.04B, Protected Solar Building Line, is used, nonexempt trees and the shade point of structures shall be set back from the protected solar building line 2.5 feet for every 1 foot of height of the structure or of the mature height of nonexempt vegetation over 2 feet.

1018.06 EXEMPTIONS FROM THE MAXIMUM SHADE POINT HEIGHT STANDARD

The Planning Director shall exempt a proposed structure or nonexempt vegetation from Subsections 1018.04 and 1018.05 of this ordinance if the applicant shows that one or more of the conditions in this section exist, based on plot plans or plats, corner elevations or other topographical data, shadow patterns, suncharts or photographs, or other substantial evidence submitted by the applicant.

- A. Exempt Lot: When created, the lot was subject to the Solar Access Ordinance for New Development and was not subject to the provisions of Subsection 1017.07 of that ordinance.
- B. Preexisting Shade: The structure or affected nonexempt vegetation will shade an area that is shaded by one or more of the following:

1. An existing or approved building or structure;
  2. A topographic feature;
  3. A nonexempt tree that will remain after development of the site. It is assumed a tree will remain after development if it: is situated in a building setback required by local law; is part of a developed area or landscaping required by local law, a public park or landscape strip, or legally reserved open space; is in or separated from the developable remainder of a parcel by an undevelopable area or feature; or is on the applicant's property and not affected by the development. A duly executed covenant also can be used to preserve trees causing such shade.
- C. Slope: The site has an average slope that exceeds 20 percent in a direction greater than 45 degrees east or west of true south, based on a topographic survey by a licensed professional land surveyor.
- D. Insignificant Benefit: The proposed structure or nonexempt vegetation shades one or more of the following:
1. An undevelopable area; or
  2. The wall of an unheated space, such as a typical garage; or
  3. Less than 20 square feet of south-facing glazing.
- E. Public Improvement: The proposed structure is a publicly owned improvement.

1018.07 ADJUSTMENTS TO THE MAXIMUM SHADE POINT HEIGHT STANDARD

The Planning Director shall increase the maximum permitted height of the shade point determined using Subsection 1018.05 to the extent he/she finds the applicant has shown one or more of the following conditions exists, based on plot 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 Subsection 1018.05, due to such things as a lot size less than 3000 square feet, unstable or wet soils, a drainageway, public or private easement, or a right-of-way.
- B. Conflict Between Maximum Shade Point Height and Allowed Shade on Solar Feature Standards: A proposed structure may be sited to meet the solar balance point standard described in Subsection 1018.09 or be sited as near to the solar balance point as allowed by Subsection 1018.09 if:

1. When the proposed structure is sited to meet the maximum shade point height standard determined using Subsection 1018.05, its solar feature will potentially be shaded as determined using Subsection 1018.08; and
2. The application includes a form provided by the County that:
  - a) Releases the applicant from complying with Subsection 1018.05 and agrees that the proposed structure may shade an area otherwise protected by Subsection 1018.05;
  - b) Releases the County from liability for damages resulting from the adjustment; and
  - c) Is signed by the owner(s) of the property(ies) that would be shaded by the proposed structure more than allowed by the provisions of Subsection 1018.05.

Before the County issues a permit for a proposed structure for which an adjustment has been granted pursuant to Subsection 1018.07B, the applicant shall file the form provided for in Subsection 1018.07B2, above, in the office of the County Recorder with the deeds to the affected properties.

#### 1018.08 ANALYSIS OF ALLOWED SHADE ON SOLAR FEATURE

- A. The applicant is exempt from Subsection 1018.08 if the lot(s) south of and adjoining the applicant's property is exempt from Subsection 1018.05 of this ordinance.
- B. Applicants shall be encouraged to design and site a proposed habitable structure so that the lowest height of the solar feature(s) will not be shaded by buildings or nonexempt trees on the lot(s) to the south. The applicant shall complete the following calculation procedure to determine if the solar feature(s) of the proposed structure will be shaded. To start, the applicant shall choose which of the following sources of shade originating from the adjacent lot(s) to the south to use in calculating the maximum shade height at the north property line:
  1. Existing structure(s) or nonexempt trees; or
  2. The maximum shade that can be cast from future buildings or nonexempt trees, based on Table C. If the lot(s) to the south can be further divided, the north-south dimension shall be assumed to be the minimum lot width required for a new lot in that zone.

- C. The height of the lowest point of any solar feature of the proposed structure shall be 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 shall determine the height of the shadow that may be cast upon the applicant's solar feature by the source of shade selected in Subsection 1018.08B by using the following formula or Table B.

$$SFSH = SH(SGL/2.5)$$

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 the lot(s) to the south as determined in Subsection 1018.08B

SGL = The solar gain line (the distance from the solar feature to the northern lot line of the adjacent lot(s) to the south)

**TABLE B**  
**MAXIMUM PERMITTED HEIGHT OF SHADOW AT SOLAR FEATURE (In Feet)**

Distance from Solar Gain Line to Lot Line (in Feet)	<u>Allowed Shade Height at Northern Lot Line of Adjacent Lot(s) to the South (In Feet)</u>												
	<u>22</u>	<u>21</u>	<u>20</u>	<u>19</u>	<u>18</u>	<u>17</u>	<u>16</u>	<u>15</u>	<u>14</u>	<u>13</u>	<u>12</u>		
50			2	1									
45			4	3	2	1							
40			6	5	4	3	2	1					
35			8	7	6	5	4	3	2	1			
30			10	9	8	7	6	5	4	3	2	1	
25			12	11	10	9	8	7	6	5	4	3	2
20			14	13	12	11	10	9	8	7	6	5	4
15			16	15	14	13	12	11	10	9	8	7	6
10			18	17	16	15	14	13	12	11	10	9	8
5			20	19	18	17	16	15	14	13	12	11	10

Table C may be used to determine (SH) in the above formula.

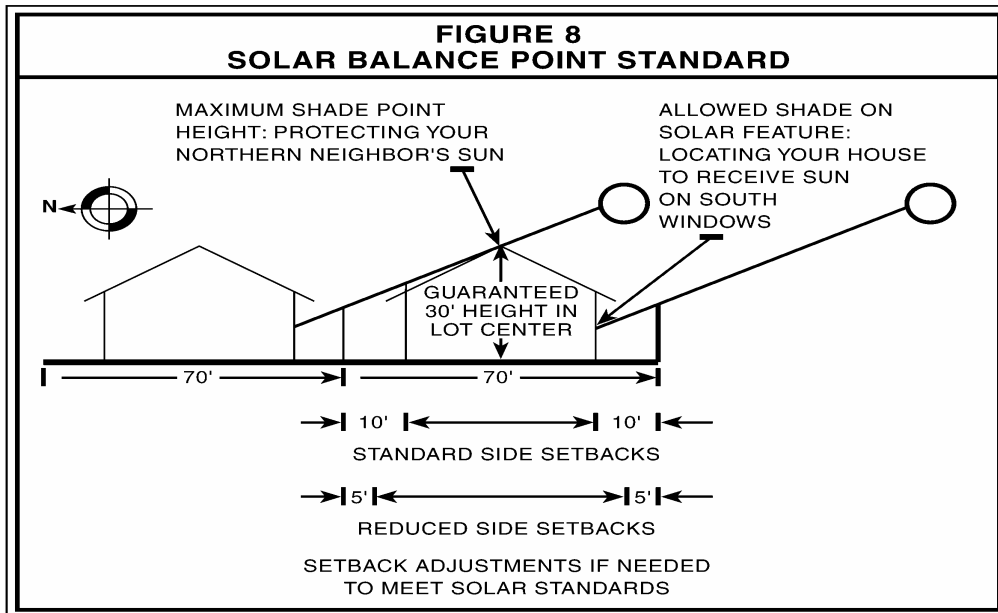
TABLE C

North-South Lot Dimension of Adjacent Lot(s) to the South	100	95	90	85	80	75	70	65	60	55	50	45	40
Allowed Shade Height at the North Property Line of Adjacent Lot(s) to the South	12	12	12	13	14	15	16	17	18	19	20	21	22

E. If the allowed shade height on the solar feature calculated in Subsection 1018.08D is higher than the lowest height of the solar feature calculated in Subsection 1018.08C, the applicant shall be encouraged to consider any changes to the structure design or location which would make it practical to locate the solar feature so that it will not be shaded in the future.

1018.09 SOLAR BALANCE POINT

If a structure does not comply with the maximum shade point height standard in Subsection 1018.05 and the allowed shade on a solar feature standard in Subsection 1018.08, the solar balance point of the lot shall be calculated (see Figure 8). The solar balance point is the point on the lot where the location of a structure would be the same for complying with both of these standards.



1018.10 YARD SETBACK ADJUSTMENT

The County shall grant an adjustment to the side, front and/or rear yard setback requirement(s) by up to 50 percent if necessary to build a proposed structure so it complies with either the shade point height standard in Subsection 1018.05, the allowed shade on a solar feature standard in Subsection 1018.08, or the solar balance point standard in Subsection 1018.09 as provided herein (see Figure 8). This adjustment is not intended to encourage reductions in available solar access or unnecessary modification of setback requirements, and shall apply only if necessary for a structure to comply with the applicable provisions of this ordinance. The following are permitted yard setback adjustments:

A. In R-7 and R-8.5 zones:

1. A front yard setback may be reduced to not less than 10 feet.
2. A rear yard setback may be reduced to not less than 10 feet.
3. A side yard setback may be reduced to not less than 3 feet.

B. In R-10, R-15, and R-20 zones:

1. A front yard setback may be reduced to not less than 15 feet.
2. A rear yard setback may be reduced to not less than 15 feet.
3. A side yard setback may be reduced to not less than 5 feet.

1018.11 REVIEW PROCESS

The provisions of this Section shall be administered by the Planning staff at the time of building permit application. Appeals of staff actions under this section shall be to the Hearings Officer as stated in Section 1305.01K.