Solar Standards

9.2780 **Purpose of Solar Standards.** Solar standards are utilized to create lot divisions, layouts and building configurations to help preserve the availability of solar energy to one and two family dwellings.
(Section 9.2780, see chart at front of Chapter 9 for legislative history from 2/26/01 through 6/1/02.)

9.2790 **Solar Lot Standards.**
    (1) **Applicability.** Solar lot standards apply to the creation of lots within subdivisions in R-1 and R-2 zones.
    (2) **Solar Lot Requirements.** In R-1 and R-2, at least 70% percent of the lots in a subdivision shall be designed as "solar lots" and shall have a minimum north-south dimension of 75 feet and a front lot line orientation that is within 30 degrees of the true east-west axis. For purposes of this subsection, a lot proposed for more than one dwelling unit shall count as more than one lot, according to the number of units proposed (e.g. a lot proposed for a fourplex shall be considered 4 lots). **(See Figure 9.2790(2) Solar Lot Requirements.)**
    (3) **Exceptions to the Solar Lot Requirements.** A proposed subdivision shall be exempt from EC 9.2790(2) if either of the following exists:
        (a) <u>Density</u>. The proposed subdivision provides at least 70% of the maximum allowed density according to the zoning of the property.
        (b) <u>Site Constraints</u>. One of the following circumstances is present:
            1. Compliance with applicable street standards or public street plans requires a street configuration that prevents the lots from being oriented for solar access.
            2. An existing public easement or right-of-way prevents the lot from being oriented for solar access.
            3. There is a significant natural feature on the site, identified as such in the <u>Metro Plan</u>, adopted refinement plan, or in any city-adopted natural resource inventory that will continue to exist after the site is developed, and that prevents the lot from being oriented for solar access.
    (4) **Exemptions to the Solar Lot Requirements.** A proposed lot shall not be identified as a "solar lot" but shall be counted as a lot that satisfies EC 9.2790(2) Solar Lot Requirements when the lot satisfies (a)(b)(c) or (d) of this subsection.
        (a) <u>Slopes</u>. The lot is sloped 20 percent or more in a direction greater than 45 degrees east or west of true south.
        (b) <u>Existing Off-Site Shade</u>. The lot is within the shadow pattern of off-site features, such as but not limited to buildings, topography, or coniferous trees or broadleaf evergreens, which will remain after development occurs on the site from which the shade is originating.
            1. Shade from existing or approved off-site buildings or structures and from topographic features is assumed to remain after development of the site.
            2. Shade from vacant developable areas off-site is assumed to be the shadow pattern that would result from the largest building allowed at the closest setback allowed on adjoining land, whether or not that building now exists.
            3. Shade from coniferous trees or broadleaf evergreens is assumed

to remain after development of the site if that vegetation is situated in a required setback; or part of a developed area, public park, or legally reserved open space; or part of landscaping or other features required pursuant to this land use code.

(c) Existing On-Site Shade. The site, or portion of the site for which the exception is sought complies with at least one of the following:

1. The site is within the shadow pattern of on-site features such as, but not limited to, buildings and topography which will remain after the development occurs.

2. The site contains coniferous trees or broadleaf evergreens at least 30 feet tall and more than 8 inches in diameter measured four feet above the ground which have a crown cover over at least 80 percent of the site or relevant portion. The applicant can show 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 50 percent of the non-solar friendly vegetation that cause the shade that warrants the exemption. The applicant shall file a note on the plat or documents in the office of the county recorder binding the applicant to comply with this requirement.

(d) Housing Mix. The lot is designated for a housing type other than one-family detached dwellings in a proposed subdivision that identifies at least 10% of the lots for a housing type other than one-family detached dwellings.

(Section 9.2790, see chart at front of Chapter 9 for legislative history from 2/26/01 through 6/1/02.)

9.2795 **Solar Setback Standards**.

(1) **Applicability.** These standards apply to all structures on R-1 and R-2 zoned lots, 4000 square feet or greater, with a minimum north-south dimension of 75 feet.

(2) **Solar Setback Requirements.** Buildings shall be setback from the northern property line according to the standards in this section. An applicant for a development permit for a building subject to this section shall submit verification on a form approved by the city manager that shows either the solar setback or how the structure qualifies for an exemption. If buildings on separate lots are attached or connected at a common lot line, the solar setback standards apply as if the buildings are a single building on a single lot composed of both lots. **(See Figure 9.2795 Solar Setback Standards, Figure 9.2795(2) Shade Point Height (SPH) Measurement, Figure 9.2795(2)(a) R-1 Solar Setback Calculation, and Figure 9.2795(2)(b) R-2 Solar Setback Calculation.)**

(a) Solar Setback for R-1 Zone. The solar setback of the shade point shall be greater than or equal to the following formula:

$$SSB = (2.5 \times SPH) + (N \text{ divided by } 2) - 82.5$$

Where:

SSB = Solar setback (the shortest horizontal distance between the shade point and the plane of the northern lot line).

SPH = Shade point height (Reduce this dimension by 3 feet if the shade point is a ridgeline between 45 degrees east or west of true north.)

N = North-south lot dimension. Maximum allowable "N" for purposes of calculating the solar setback shall be 90 feet.

The following table, which accurately applies the formula, can be used to determine compliance with the solar setback standard.

Table 9.2795(2)(a) Solar Setback From Northern Lot Line for R-1 [SSB] (All figures are in feet.)*				
Shade Point Height [SPH]	North-South Lot Dimension			
	90 feet [N]	**85 feet [N]**	**80 feet [N]**	**75 feet [N]**
18 feet	7.5	5	2.5	0
20 feet	12.5	10	7.5	5
22 feet	17.5	15	12.5	10
24 feet	22.5	20	17.5	15
26 feet	27.5	25	22.5	20
28 feet	32.5	30	27.5	25
30 feet	37.5	35	32.5	30
32 feet	42.5	40	37.5	35
34 feet	47.5	45	42.5	40
36 feet	52.5	50	47.5	45
38 feet	57.5	55	52.5	50
40 feet	62.5	60	57.5	55

*Solar setback is usually measured from an eave or from a ridge line of a roof. See Shade Point definition in EC 9.0500 and Figure 9.2795.

(b) Solar Setback for R-2 Zone . The solar setback of the shade point shall be greater than or equal to the following formula:

SSB = (2.5 X SPH) + (N divided by 2) - 95
Where:
SSB = Solar setback (the shortest horizontal distance between the shade point and the plane of the northern lot line).
SPH = Shade point height (Reduce this dimension by 3 feet if the shade point is a ridgeline between 45 degrees east or west of true north.)
N = North-south lot dimension. Maximum allowable "N" for purposes of calculating the solar setback shall be 90 feet.

The following table, which accurately applies the formula, can be used to determine compliance with the solar setback standard.

Table 9.2795(2)(b) Solar Setback From Northern Lot Line for R-2 [SSB] (All figures are in feet.)*				
Shade Point Height [SPH]	**North-South Lot Dimension**			
	90 feet [N]	**85 feet [N]**	**80 feet [N]**	**75 feet [N]**
22 feet	5	2.5	0	0
24 feet	10	7.5	5	2.5
26 feet	15	12.5	10	7.5
28 feet	20	17.5	15	12.5
30 feet	25	22.5	20	17.5
32 feet	30	27.5	25	22.5
34 feet	35	32.5	30	27.5
36 feet	40	37.5	35	32.5
38 feet	45	42.5	40	37.5
40 feet	50	47.5	45	42.5
42 feet	55	52.5	50	47.5
44 feet	60	57.5	55	52.5
46 feet	65	62.5	60	57.5

*Solar setback is usually measured from an eave or from a ridge line of a roof. See Shade Point definition in EC 9.0500 and Figure 9.2795.

    (3)   **Exemptions to Solar Setback Requirements.** A building is exempt from the solar setback standards when any of the following conditions exist:
        (a)   Slopes. The lot on which the building is located has an average slope of 20 percent or more in a direction greater than 45 degrees east or west of true north.
        (b)   Existing Shade. The building will shade an area that is already shaded by one or more of the following:
            1.   An existing or approved building or structure.
            2.   A topographic feature.
            3.   Coniferous trees or broadleaf evergreens that will remain after development of the site.
        (c)   Insignificant Benefit. The building will shade one or more of the following:
            1.   A non-developable area, such as designated open space, a public utility easement, street or alley.
            2.   The wall of an unheated space, such as a garage, excluding solar greenhouses and other similar solar structures.
            3.   The wall of a non-residential structure.
            4.   No more than 20% of a south wall of an existing habitable dwelling. See Figures 9.2795(2), 9.2795(2)(a) and 9.2795(2)(b).
        (d)   Neighbor Approval. The owner of the abutting property to the north, for which a certificate of occupancy has been issued by the city, grants an exemption to the solar setback requirement on a form supplied by the city and subject to a fee set by the city manager.
        (e)   PUD Exemption. The lot is identified as being exempt from solar setback provisions through an approved PUD application where one or more of the following exists:

1.   The lot has been identified as being exempt from solar setback standards.
2.   The proposed building locations and heights were approved.

(Section 9.2795, see chart at front of Chapter 9 for legislative history from 2/26/01 through 6/1/02; and amended by Ordinance No. 20353, enacted November 28, 2005, effective January 1, 2006.)