Solar Orientation and Siting


Dubuque (Iowa), City of. 2014. Municipal Code. Title 16, Unified Development Code; Chapter 11, Land Subdivision; Section 16-11-10, Sustainable Subdivision Development Tools. See also Section 16-11-12, Solar Subdivision. Coeur d'Alene, Id.: Sterling Codifiers, Inc.


1017  SOLAR ACCESS ORDINANCE FOR NEW DEVELOPMENT  (3/24/05)

1017.01  PURPOSE

The purposes of the solar access ordinance for new development are to ensure that land is divided so that structures can be oriented to maximize solar access and to minimize shade on adjoining properties from structures and trees.

1017.02  APPLICATION OF SECTION  (3/24/05)

The solar design standard in Subsection 1017.04 shall apply to applications for a development to create lots in VR-4/5, VR-5/7, R-5, R-7, R-8.5, R-10, R-15, R-20, and R-30 zones and for 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 1017.05 and 1017.06 exist, and exemptions or adjustments provided for therein are warranted.  (3/24/05)

1017.03  DEFINITIONS

Words and terms used in Sections 1017, 1018, and 1019 are defined as follows:

A.  CROWN COVER: The area within the drip line or perimeter of the foliage of a tree.

B.  DEVELOPMENT: Any short plat, partition, subdivision, or planned unit development created under the County's land division or zoning regulations.

C.  EXEMPT TREE OR VEGETATION: The full height and breadth of vegetation that the Planning Director has identified as "solar friendly"; and any vegetation listed as exempt on a plat map, a document recorded with the plat, or a solar access permit.

D.  FRONT LOT LINE: For the 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 that is most parallel to and closest to the street, excluding the pole portion of the flag lot (see Figure 1).
E. NONEXEMPT TREE OR VEGETATION: Vegetation that is not exempt.

F. 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 lot lines have an identical angle relative to a line drawn east-west, the northern lot line shall be a line 10 feet in length within the lot parallel with and at a maximum distance from the front lot line.
G. 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).

![Figure 3: North-South Dimension of the Lot](image)

H. PROTECTED SOLAR BUILDING LINE: A line on a plat or map recorded with the plat that identifies the location on a lot where a point two feet above may not be shaded by structures or nonexempt trees (see Figure 10).

I. SHADE: A shadow cast by the shade point of a structure or vegetation when the sun is at an altitude of 21.3 degrees and an azimuth ranging from 22.7 degrees east and west of true south.

J. 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 21.3 degrees and an azimuth ranging from 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 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 ridgeline of a structure oriented within 45 degrees of a true north-south line, the shade point height computed according to the preceding sentence may be reduced by 3 feet. If a structure has a roof oriented within 45 degrees of a true east-west line with a pitch that is flatter than 5 feet (vertical) in 12 feet (horizontal), the shade point will be the eaves of the roof. If such a roof has a pitch that is 5 feet in 12 feet or steeper, the shade point will be the peak of the roof (see Figures 4 and 5).
K. SHADE REDUCTION LINE: A line drawn parallel to the northern lot line that intersects the shade point (see Figure 6).

L. 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 21.3 degrees and an azimuth ranging between 22.7 degrees east and west of true south (see Figure 12).
M. 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).

N. SOLAR ACCESS PERMIT: A document 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.

O. SOLAR FEATURE: A device or combination of devices or elements that use or will use direct sunlight as a source of energy for such purposes as heating or cooling a structure, heating or pumping water, or generating electricity. Examples of a solar feature include a solar greenhouse, a solar hot water heater, or a window that contains at least 20 square feet of glazing oriented within 45 degrees east and west of true south. 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 this ordinance.

P. 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 only by a street, that intersects the solar feature on that lot.

Q. SOUTH OR SOUTH-FACING: True south, or 20 degrees east of magnetic south.

R. 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 Planning Director (?). The sunchart shall show the southern skyline through a transparent grid on which is imposed solar altitude for a 45-degree and 30-minute northern latitude in 10-degree increments and solar azimuth from true south in 15-degree increments.
S. UNDEVELOPABLE AREA: An area that cannot be used practicably for a habitable structure because of natural conditions, such as slopes exceeding 20 percent in a direction greater than 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; or man-made conditions, such as existing development which isolates a portion of the site and prevents its further development; setbacks or development restrictions that prohibit development of a given area of a lot by law or private agreement; or existence or absence of easements or access rights that prevent development of a given area.

1017.04 DESIGN STANDARD

At least 80 percent of the lots in a development subject to this ordinance shall comply with one or more of the options in this subsection.

A. Basic Requirement: (See Figure 9). A lot complies with Subsection 1017.04 if it

1. Has a north-south dimension of 90 feet or more; and
2. Has a front lot line that is oriented within 30 degrees of a true east-west axis.

B. Protected Solar Building Line Option: (See Figure 10). In the alternative, a lot complies with Subsection 1017.04 if a solar building line is used to protect solar access as follows:

1. A protected solar building line for the lot to the north is designated on the plat or documents recorded with the plat; and

2. The protected solar building line for the lot to the north is oriented within 30 degrees of a true east-west axis; and

3. There is at least 70 feet between the protected solar building line on the lot to the north and the middle of the north-south dimension of the lot to the south, measured along a line perpendicular to the protected solar building line; and

4. There is at least 45 feet between the protected solar building line and the northern edge of the buildable area of the lot, or habitable structures are situated so that at least 80 percent of their south-facing wall will not be shaded by structures or nonexempt vegetation.

C. Performance Option: In the alternative, a lot complies with Subsection 1017.04 if:

1. Habitable structures built on that lot will have their long axis oriented within 30 degrees of a true east-west axis and at least 80 percent of their ground floor south wall protected from the shade of structures and nonexempt trees; or
2. Habitable structures built on that lot will have at least 32 percent of their glazing and 500 square feet of their roof area facing within 30 degrees of south and protected from the shade of structures and nonexempt trees.

1017.05 EXEMPTIONS FROM DESIGN STANDARD

A development is exempt from Subsection 1017.04 if the Planning Director finds the applicant has shown that one or more of the following conditions apply to the site. A development is partially exempt from Subsection 1017.04 to the extent the Planning Director finds the applicant has shown that one or more of the following conditions apply 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 Subsection 1017.04.

A. Slopes: The site, or a portion of the site for which the exemption is sought, is sloped 20 percent or more in a direction greater than 45 degrees east or west of true south, based on a topographic survey by a licensed professional land surveyor.

B. Off-site Shade: The site, or a portion of the site for which the exemption is sought, is within the shadow of off-site features such as, but not limited to, structures, topography, or nonexempt vegetation, which will remain after development occurs on the site from which the shade is originating.

1. Shade from an existing or approved off-site dwelling in a single family residential zone and from topographic features is assumed to remain after development of the site.

2. Shade from an off-site structure in a zone other than a single family residential zone 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: the trees that cause it are situated in a required setback; or they are part of a developed area, public park, or legally reserved open space; or they are in or separated from the developable remainder of a parcel by an undevelopable area or feature; or they are part of landscaping required pursuant to local law.

4. Shade from other off-site sources is assumed to be shade that exists or that will be cast by development for which applicable local permits have been approved on the date a complete application for the development is filed.
C. On-site Shade: The site, or a portion of the site for which the exemption is requested:

1. Is within the shadow pattern of on-site features such as, but not limited to, structures and topography which will remain after the development occurs; or

2. Contains nonexempt trees at least 30 feet tall and, when measured 4 feet above the ground, more than 6 inches in diameter, 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 trees that cause 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 of any covenant or restriction created to enforce any provision of this ordinance. The covenant or restriction shall not be amended without written County approval.

3. Compliance with Subsection 1017.04 would prevent the development from meeting the minimum density provisions in Section 1012. (11/5/98)

1017.06 ADJUSTMENT TO DESIGN STANDARD

The Planning Director shall reduce the percentage of lots that must comply with Subsection 1017.04 to the minimum extent necessary if he/she finds the applicant has shown that one or more of the following site characteristics apply:

A. Density and Cost: If the design standard in Subsection 1017.04 is applied, either the resulting density is less than that proposed, the minimum density is less than that required in Section 1012, 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 are at least 5 percent more per lot 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 Subsection 1017.04 would reduce density or increase per-lot costs in this manner. The applicant shall show which, if any, of these or other similar site characteristics apply in an application for a development. (11/5/98)

1. The portion of the site for which the adjustment is sought has a natural grade that is sloped 10 percent or more and is oriented greater than 45 degrees east or west of true south, based on a topographic survey of the site by a professional land surveyor.

2. There is a significant natural feature on the site, identified as such in the Comprehensive Plan or development ordinance, that prevents given streets or lots from being oriented for solar access, and it will exist after the site is developed.
3. Existing road patterns must be continued through the site or must terminate on-site to comply with applicable road standards or public road plans in a way that prevents given streets or lots in the development from being oriented for solar access.

4. An existing public easement or right-of-way prevents given streets or lots in the development from being oriented for solar access.

B. Development Amenities: If the design standard in Subsection 1017.04 is applied to a given lot or lots, significant development amenities that would otherwise benefit the lot(s) will be lost or impaired. Evidence that a significant diminution in the market value of the lot(s) would result from having the lot(s) comply with Subsection 1017.04 is relevant to whether a significant development amenity is lost or impaired.

C. Existing Shade: Nonexempt trees at least 30 feet tall and, when measured 4 feet above the ground, more than 6 inches in diameter, have a crown cover over at least 80 percent of the lot and at least 50 percent of the crown cover will remain after development of the lot. The applicant can show such crown cover exists using a scaled survey of nonexempt trees on the site or using an aerial photograph.

1. Shade from nonexempt trees is assumed to remain if: the trees are situated in a required setback; or they are part of an existing or proposed park, open space, or recreational amenity; or they are separated from the developable remainder of their parcel by an undevelopable area or feature; or they are part of landscaping required pursuant to local law; and 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, the shade is assumed to remain if the applicant files in the office of the County Recorder a covenant binding the applicant to retain the trees causing the shade on the affected lots.

1017.07 PROTECTION FROM FUTURE SHADE

Structures and nonexempt vegetation must comply with the Solar Balance Point Ordinance for existing lots (Section 1018) if located on a lot that is subject to the solar design standard in Subsection 1017.04 or if located on a lot south of and adjoining a lot that complies with Subsection 1017.04.
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 Subsection 1017.07. The County shall be made a party of any covenant or restriction created to enforce any provision of this ordinance. The covenant or restriction shall not be amended without written County approval.

1017.08 APPLICATION

An application for approval of a development subject to this ordinance shall include:

A. Maps and text sufficient to show the development complies with the solar design standard of Subsection 1017.04, except for lots for which an exemption or adjustment from Subsection 1017.04 is requested, including at least:

1. The north-south lot dimension and front lot line orientation of each proposed lot.

2. Protected solar building lines and relevant building site restrictions, if applicable.

3. For the purpose of identifying trees exempt from Subsection 1017.07, a map showing existing trees at least 30 feet tall and over 6 inches diameter at a point 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 Subsection 1017.04 is requested, maps and text sufficient to show that given lots or areas in the development comply with the standards for such an exemption or adjustment in Subsection 1017.05 and 1017.06, respectively.

1017.09 REVIEW PROCESS

Review of new developments for compliance with these standards shall be a part of the review process stipulated in Section 1105 and Section 1106. (6/6/02)
Title 18 ZONING
Chapter 18.23 DESIGN REVIEW COMMISSION

18.23.170 Single-family dwellings, duplexes and secondary living units design standards.

H. A single-family dwelling, duplex or detached secondary living unit should be designed and oriented on the lot to enhance its energy conservation features, including both passive and active solar systems.

I. Where feasible, the design should incorporate solar energy including, but not limited to, photovoltaic systems and solar hot water systems. Design shall comply with the conservation regulations, as provided in Chapter 18.36 DMC.

Chapter 18.36 CONSERVATION REGULATIONS

18.36.010 Title and purpose.

The provisions of this chapter shall be known as the conservation regulations. The purpose of these provisions is to implement the General Plan’s air quality and energy element by encouraging the conservation of nonrenewable energy resources and water resources, to facilitate the utilization of alternative, renewable energy resources, including wind and solar energy, reduce vehicle miles traveled, and reduce the urban heat island effect of development. [Ord. 13-008 § 2; Ord. 13-009 § 2(1).]

18.36.020 Conservation guidelines.

B. Efficient Use of Solar Energy.

1. Subdivision and residential planned developments shall be designed to the maximum extent possible so that dwelling units are oriented to the south to permit maximum exposure to the winter sun for solar heating. When necessary in order to achieve a southerly orientation for individual dwelling units, the Planning Commission, upon application for conditional use permit as provided by Chapter 18.25 DMC, may waive minimum yard requirements.

2. Buildings, landscaping, vegetation, fences, and other solar screens should be located and sited to the minimum extent possible so that they do not preclude or discourage the use of solar energy in adjacent properties and buildings. Where necessary, the Planning Director may require submission of a map showing shadows cast by solar screens, including landscaping and vegetation at maturity, for 12:00 noon (solar time) on December 21st.

3. Exterior clothes drying facilities shall not be prohibited in subdivisions and shall be provided in apartment house and condominium developments.
4. Exterior active and passive solar energy collectors and ancillary equipment shall not be prohibited in subdivisions, apartment houses, and condominiums.
Section 16-11-10, Sustainable Subdivision Development Tools

A. After the effective date hereof, the sustainable subdivision development tools apply to all new major subdivisions.

B. After a preapplication conference, the subdivider shall submit a preliminary plat and other written or graphic materials necessary to demonstrate what sustainable subdivision tools will be incorporated into the proposed subdivision.

C. New subdivisions shall achieve a minimum score of forty (40) points by utilizing the following list of sustainable subdivision development tools:

<table>
<thead>
<tr>
<th>Sustainable Subdivision Development Tool</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation subdivision. Development is clustered to optimize open space, preserve natural features, protect environmentally sensitive areas, and minimize infrastructure demands.</td>
<td>40</td>
</tr>
<tr>
<td>Cottage design subdivision. Development reflects traditional neighborhood design, with smaller lots, reduced setbacks, narrower rights of way, smaller building footprints, alleys and/or clustering.</td>
<td>30</td>
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<tr>
<td>Solar subdivision. Development includes 70 percent &quot;solar lots&quot; that have a minimum north-south dimension of 75 feet and a front line orientation that is within 30 degrees of the true east-west axis.</td>
<td>30</td>
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<tr>
<td>Complete street design throughout the subdivision.</td>
<td>15</td>
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<tr>
<td>Permeable street pavement throughout the subdivision.</td>
<td>15</td>
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<tr>
<td>The development incorporates walking/bike trails. These trails should be connected to the development and trails outside the development to the greatest extent possible.</td>
<td>15</td>
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<td>Green building code compliance for 100 percent of dwelling units throughout the subdivision.</td>
<td>10</td>
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<td>Rain gardens required by covenant for at least 80 percent of lots throughout the subdivision.</td>
<td>10</td>
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<td>Green building code compliance for 50 percent of dwelling units throughout the subdivision.</td>
<td>5</td>
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<td>Native and regionally appropriate trees and vegetation are preserved or planted which limits turf grass, limits water demand, improves infiltration or filtration, and enhances the natural environment. Such vegetation is phased so denuded areas are quickly vegetated. Turf grass should not exceed 30 percent of the landscaped area.</td>
<td>5</td>
</tr>
</tbody>
</table>
No curb and gutter on city streets with appropriate bioswales and sidewalks. The development incorporates detention basins for property on site stormwater management. Retention basins can be used as an open water amenity feature for on site stormwater management.

Parkway/street trees are planted at approximately 35 foot intervals to reduce wind speeds, help stabilize the soil, and improve air quality.

Specify the planting of trees on private property to increase site shading and reduce energy needs for houses. Place trees that lose their leaves in the fall on the south and west sides of the house to provide shade to lower cooling costs. Evergreen trees planted on the north and west sides protect against winter winds, which can help reduce heating costs.

The development implements innovative infiltration or filtration techniques such as rain gardens, bioswales, French drains, etc.

Use of any pavement that reduces the heat island effect throughout the subdivision, such as light colored concrete.

Other best management practices, as per city planner or city engineer.

**Section 16-11-12: Solar Subdivision**

A. Definition: A "solar subdivision" is a development that includes at least seventy percent (70%) "solar lots", which have a minimum north-south dimension of seventy five feet (75') and a front line orientation that is within thirty degrees (30°) of the true east-west axis.

B. Solar Access: To facilitate solar access, streets in a solar subdivision shall be oriented in an east-west direction to the maximum extent possible or to within twenty degrees (20°) of such orientation. This requirement shall not apply to preliminary plats approved prior to the effective date hereof, provided the final plat of the preliminary plat is submitted within six (6) months, or to final plats submitted within six (6) months of the preliminary plat approval or to portions of the subdivision where the applicant demonstrates that:

1. There are other means of assuring solar access to lots in question, including, but not limited to, cluster development on large parcels or through the use of building setback or solar access easements.

2. Topographic conditions on or surrounding the land being subdivided make such orientation unreasonable.

3. The shape and size of the property being subdivided make such orientation unreasonable.

4. Adopted stormwater management plans or policies indicate a different street orientation.

5. Existing or approved future development contiguous to the subject property precludes adequate solar access to the portion in question.
6. Existing street patterns contiguous to the subject property make such orientation unreasonable.

7. Specific adverse environmental impacts would occur on the site if such orientation were achieved.

8. Desirable street circulation patterns require some streets to be in a more north-south direction.

9. The final platting of only a portion of an approved preliminary plat precludes changes in remaining portions of the preliminary plat which are necessary to provide adequate solar access to the portion in question. (Ord. 52-09, 10-19-2009)
To the maximum extent possible, all new development proposals totaling 10 acres of site area or more may be designed so the maximum number of buildings shall receive direct sunlight sufficient for using solar energy systems for space, water, or industrial process heating or cooling. Buildings and vegetation should be sited and maintained so that unobstructed direct sunlight reaches the southern exposure of the greatest number of buildings according to the following guidelines:

A. Solar access shall be protected between the solar azimuths of -45° (east of due south) to +45° (west of due south).

B. In considering dimensional modifications permitted in Article VI and Article VII of this chapter, the Planning Board shall also consider solar access and design considerations.

C. For purposes of solar access, roads, lots and building setbacks should be designed so that the buildings are oriented with their long axes running from east to west for one-unit development and north to south for townhouse and multiunit development.

D. In order to maximize solar access, the highest densities shall, to the maximum extent possible, be placed on the south-facing slopes, with lower densities sited on north-facing slopes.

E. Roads should be oriented on an east-west axis to the greatest possible extent.

F. Buildings shall, to the greatest extent possible, be sited as close to the north lot line or lines as possible to increase yard space to the south for better owner control of shading.

G. Tall buildings shall, to the greatest extent possible, be sited to the north of shorter ones and be buffered from adjacent development.

H. Existing vegetation shall be retained and incorporated into the design as practicable.

I. A description of any mechanisms, such as deed restrictions, covenants, etc., that are to be applied shall be provided.
City of Gothenburg, Nebraska  
*Code of Ordinances (2013)*  
Title XV, Land Usage  
Chapter 151, Subdivisions  
Minimum Design Standards  

**Section 151.054, Solar Access for Energy Conservation.**

(A) In order to promote the conservation of energy through the use of both passive and active solar systems, streets in residential subdivisions should, where possible, have an east-west alignment. Lots intended for detached dwelling should be of sufficient width to allow the structure to be built with its longest axis running east-west.  
(Ord. 628, passed 7-11-1995; Ord. 816, passed 6-19-2007, § 571; Ord. 851, passed 8-4-2009, § 571)

(B) In order to allow the orientation of structures on the site so as to maximize potential solar gain, side lot lines should run as near to north-south as possible, providing that the angle between the side of the lot line and the street right-of-way line on a straight street or the tangent to a curved street shall not be less than 80 degrees.  
(Ord. 628, passed 7-11-1995; Ord. 816, passed 6-19-2007, § 572; Ord. 851, passed 8-4-2009, § 572)
§ 302-36 Passive solar energy techniques.

A. The applicant shall demonstrate to the Commission that he (she) has considered, in developing the plan, using passive solar energy techniques. "Passive solar energy techniques" mean site design techniques which maximize solar heat gain, minimize heat loss and provide thermal storage within a building during the heating season and minimize heat gain, and provide for natural ventilation during the cooling season. The site analysis to be submitted by the applicant shall include, but not be limited to, an evaluation of:

1. House orientations;
2. Street and lot layout;
3. Vegetation;
4. Natural and man-made topographical features; and
5. Protection of solar access within the development.

B. Incorporation of such site design techniques shall be reviewed and discussed, on a preliminary basis, with the Town Planner and/or with the aid of the Passive Solar Subdivision Design Checklist attached to the subdivision application. Where such techniques are found to be appropriate and feasible, as weighed against other Commission concerns for the particular site, they shall be included as part of the presentation of the proposed subdivision.

C. In analyzing the appropriateness and feasibility of incorporating passive solar energy techniques into a subdivision plan, the Planner shall consider the following when attempting to apply the five basic design techniques mentioned above:

1. Where topographic, soil, vegetation and other physical (natural and man-made) conditions allow or to the extent practical:
   a. Street and building orientation.

   [1] The plan shall show principal buildings located and oriented so that the longest side of the building faces within 30° of true south, the primary and reserve areas for septic systems shall be located to the south of the proposed building, and the building shall be located to avoid shadows cast by other buildings, vegetation or other features.

   [2] Plans shall provide for east-west street orientation; and for the purpose of this regulation, the east-west street refers to any street with its axis within 30° of true east.
[3] Where lot sizes are sufficiently large and on south-facing slopes or flatland, efforts shall be made to orient the street(s) within 30° of true south when an east-west orientation is not feasible.

(b) Plans shall show vegetation that could be removed and places where vegetation should not be planted on a lot to take full advantage of a lot’s solar potential. This would include areas in which vegetation would block sunlight more than 10% of the time on any given day on the south face of a building. Vegetation (except for some deciduous plant life) should remain outside the solar access zone (i.e., 45° off the south-facing corners of the building).

(c) Development shall be encouraged on south-facing slopes, and buildings should be arranged and measures taken so as to minimize north exposure. Regrading activity that would decrease solar access or increase north exposure shall be minimized.

(d) No building or structure should be sited or constructed if the effect of such construction will interrupt solar access. Solar easements may prove necessary in order to effectively carry out and maintain the above solar considerations.

(e) The applicant shall indicate on the subdivision plan which lots are "particularly suited for passive solar energy" and demonstrate why.

(2) Lots for which solar access cannot be achieved through minimal cutting, orientation or other measures necessary to avoid casting shadows within the solar access zone shall be labeled, "poor passive solar energy potential."
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.14.010</td>
<td>PURPOSE</td>
<td>1</td>
</tr>
<tr>
<td>15.14.010.A</td>
<td>Purpose</td>
<td>1</td>
</tr>
<tr>
<td>15.14.010.B</td>
<td>Applicability</td>
<td>1</td>
</tr>
<tr>
<td>15.14.020</td>
<td>NATURAL RESOURCE PROTECTION AND SUSTAINABILITY</td>
<td>3</td>
</tr>
<tr>
<td>15.14.020.A</td>
<td>Purpose</td>
<td>3</td>
</tr>
<tr>
<td>15.14.020.F</td>
<td>Stormwater Management – Redevelopment of Existing Lot or Parcel</td>
<td>4</td>
</tr>
<tr>
<td>15.14.030</td>
<td>ALTERNATIVE ENERGY</td>
<td>5</td>
</tr>
<tr>
<td>15.14.040</td>
<td>PARKING AND OFF-STREET LOADING</td>
<td>12</td>
</tr>
<tr>
<td>15.14.040.A</td>
<td>Purpose</td>
<td>12</td>
</tr>
<tr>
<td>15.14.040.D</td>
<td>Drive-Thru and Vehicle Stacking Requirements</td>
<td>27</td>
</tr>
<tr>
<td>15.14.040.E</td>
<td>Loading Areas</td>
<td>27</td>
</tr>
<tr>
<td>15.14.050</td>
<td>LANDSCAPING AND SCREENING STANDARDS</td>
<td>28</td>
</tr>
<tr>
<td>15.14.050.A</td>
<td>Purpose</td>
<td>28</td>
</tr>
<tr>
<td>15.14.050.B</td>
<td>Applicability</td>
<td>29</td>
</tr>
<tr>
<td>15.14.050.C</td>
<td>General Provisions for Multifamily (Four or more Dwelling Units)</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Commercial, Institutional and Industrial Uses</td>
<td>30</td>
</tr>
<tr>
<td>15.14.050.F</td>
<td>Site Perimeter Landscaping</td>
<td>34</td>
</tr>
<tr>
<td>15.14.050.H</td>
<td>Screening Standards</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Facilities</td>
<td>42</td>
</tr>
<tr>
<td>15.14.060</td>
<td>TRANSPORTATION, MOBILITY, AND CONNECTIVITY</td>
<td>44</td>
</tr>
<tr>
<td>15.14.060.A</td>
<td>Purpose</td>
<td>44</td>
</tr>
<tr>
<td>15.14.060.F</td>
<td>Pedestrian Circulation</td>
<td>51</td>
</tr>
<tr>
<td>15.14.070</td>
<td>PARKS AND OPEN SPACE</td>
<td>53</td>
</tr>
<tr>
<td>15.14.070.A</td>
<td>Purpose</td>
<td>53</td>
</tr>
<tr>
<td>15.14.070.B</td>
<td>Public Park and Open Space Dedication and Fees In-Lieu</td>
<td>53</td>
</tr>
<tr>
<td>15.14.070.D</td>
<td>Private Common Open Space</td>
<td>58</td>
</tr>
<tr>
<td>15.14.080</td>
<td>RESIDENTIAL DESIGN STANDARDS</td>
<td>61</td>
</tr>
<tr>
<td>15.14.080.A</td>
<td>Purpose</td>
<td>61</td>
</tr>
</tbody>
</table>
15.14.030 ALTERNATIVE ENERGY


1. Solar Energy Systems
   a. Purpose
      This section is intended to promote the compatible use of solar energy
      systems and to assist in decreasing the city’s dependence upon non-
      renewable energy systems through the encouragement of solar energy
      systems for the heating of buildings and water.
   b. Standards
      Solar energy systems shall be a permitted use in all zoning districts
      subject to the following requirements. Private restrictions on solar
      energy systems, such as homeowners association covenants or
      restrictions, shall not be permitted.
   c. Height
      In solar retrofit installations: Solar energy collectors, storage tanks and
      equipment, roof ponds, or other solar equipment appurtenant to a solar
      energy system may exceed by three feet the maximum height limits
      established by this code. Systems taller than three feet above any
      maximum height shall be subject to the conditional use permit process
      set forth in subsection 15.06.060.E.
   d. Setbacks
      In solar retrofit installations, solar energy collectors, storage tanks and
      equipment, roof ponds, or other solar equipment appurtenant to a solar
      energy system may extend into the required setbacks a maximum of
      three feet. Systems extending more than three feet into any required
      setback shall be subject to the conditional use permit process set forth
      in subsection 15.06.060.E.
   e. Conflict with Other Municipal Policies and Ordinances
      Nothing in this subsection does, or is intended to, abrogate the owner’s
      responsibility to meet all other requirements of this code, including, but
      not limited to the following: preservation of private and public views,
      the quality of architectural design, the preservation of historic landmark
      structures, or the like.

2. Solar Rights
   a. Purpose
      The purpose of this section is to protect the health, safety and general
      welfare of the residents of the city by encouraging the use of solar energy
      systems. It is the intent of this section to provide a means of protection for the
      use of solar collectors without causing undue hardships on the rights of
Chapter 15.14 DEVELOPMENT STANDARDS
15.14.030 Alternative Energy

adjacent property owners.

b. Procedure and Applicability
   (i) The procedure for the issuance of a solar access permit is found in subsection 15.06.060.L.
   (ii) Solar access permits shall not be permitted for properties in the Downtown Commercial zoning district.

c. Solar Access Permit Required for Protection of Solar Right
   (i) A solar permit shall be issued before a solar right may be established under this chapter.
   (ii) A solar permit shall be granted for any proposed or existing solar collector that complies with the requirements of this chapter and other city ordinances and state law.
   (iii) Solar rights under applications filed subsequent to the effective date of the ordinance codified in this chapter shall vest on the date the solar permit is issued, which date shall also be the priority date of the solar right. The solar collector shall be put to beneficial use within two years of that time, except additional time may be granted by the city engineer for good cause shown. The department shall certify the right and its beneficial use within two years of its vesting. In the event beneficial use has not been established, the department shall revoke the permit and record the revocation with the Albany County Clerk.
   (iv) Users of solar collectors that existed prior to the effective date of the ordinance codified in this section shall apply for permit(s) within five years after the effective date. Failure to apply for and receive such permit(s) shall require that the collectors be removed. The priority date for these solar rights shall be the first date the solar collector was beneficially used, which shall be determined by the department. (Ord. 1625 § 13, 2012)

d. Restrictions on Solar Rights
   (i) Solar collectors shall be located on the solar user’s property so as not to unreasonably or unnecessarily restrict the uses of neighboring property. Unreasonable or unnecessary restriction shall include, but not be limited to, any restriction that would prohibit the uses allowed by city code (but not including planting of trees).
   (ii) No solar right shall attach to a solar collector or a portion of a solar collector, that would be shaded by a hypothetical nonlight-transmitting, 10-foot high wall located on the
property line on a winter solstice day.

(iii) The solar right to radiation of the sun before nine a.m. or after three p.m. Mountain Time is de minimus and may be infringed without compensation to the owner of the solar collector.

(iv) A solar right that is not applied to a beneficial use for a period of five years or more shall be deemed abandoned and without priority.

(v) The priority of new construction with regard to interference in solar rights shall vest as of the date of application for a building permit.

e. Prior Existing Uses

(i) The lawful location of structures in existence prior to the time of beneficial use of an existing solar energy collection system or in existence at the effective date of the ordinance codified in this title may be continued, even though the location does not conform to the requirements of this section, provided the structure conforms or is legally non-conforming in other aspects under this title.

(ii) The solar applicant shall be required to take the permit subject to the natural growth of all vegetation that exists at the time of filing the application.

(iii) Such structure or vegetation that has been damaged by fire or a calamity may be restored to its original condition or replanted, provided the work is commenced within 18 months of the calamity. In addition, normal and routine maintenance of structures may be carried on.

(iv) Whenever the use of such a structure or presence of vegetation has been discontinued for a period of 18 months, the structure or vegetation shall not thereafter be re-established, unless such future use shall be in conformance with provisions of this title.
3. **Solar Oriented Lots**
   
a. **Purpose**

   It is the city’s intent to encourage the use of both active and passive solar energy systems for heating air and water in homes and businesses, as long as natural topography, soil, or other subsurface conditions or other natural conditions peculiar to the site are preserved. While the use of solar energy systems is optional, the right to solar access is protected. Solar collectors require access to available sunshine during the entire year, including between the hours of 9:00 am and 3:00 pm, Mountain Time on the winter solstice date, when the longest shadows occur. Additionally, a goal of this Section is to ensure that design review plan elements do not excessively shade adjacent properties, creating a significant adverse impact upon the solar potential of adjacent property owners. Thus, standards are set forth to evaluate the potential impact of shade caused by buildings, structures, and trees.

b. **Solar-Oriented Residential Lots**

   At least 40 percent of the lots less than 15,000 square feet in area in single- and two-family residential developments shall conform to the definition of a "solar-oriented lot" in order to preserve the potential for solar energy usage.

c. **Access to Sunshine**

   The elements of the development plan (e.g., buildings, circulation, open space, and landscaping) shall be located and designed, to the maximum extent feasible, to protect access to sunshine for planned solar energy systems or for solar-oriented rooftop surfaces that can support a solar collector or collectors capable of providing for the anticipated hot water needs of the buildings in the project between the hours of 9:00 am and 3:00 pm Mountain Time, on December 21.

4. **Clothes Lines**

   Clothes lines shall be permitted in all residential and mixed-use zoning districts.

15.14.030.B. **Wind Energy**

1. **Wind Energy Systems – Generally**

   a. **Purpose**

   This section is intended to promote the compatible use of wind energy systems that are designed for compatibility with urban and suburban locations. Wind energy is an abundant, renewable, and nonpolluting energy resource. When converted to electricity, it reduces our dependence on nonrenewable energy resources and reduces air and water pollution that result from more conventional sources. Distributed
Section 275-85, Energy Conservation Standards.

A. Intent. It is the intent of this chapter to promote the conservation of energy by encouraging development that takes advantage of the southern orientation of buildings, utilizes building design and materials to save energy over the expected life of the building and employs landscaping to complement building design in taking advantage of solar energy.

B. Development standards.

(1) Southern orientation of buildings. New lots, streets and buildings shall be designed so that, to the maximum extent practical, all new buildings may be oriented with their longer building axis running within 22 1/2° of a true east-west direction.

(2) Buildings. To the maximum extent practical, provisions shall be made to maximize winter solar access to buildings and to shade south and west walls and windows from the summer sun.

(3) Landscaping. To the maximum extent practical, landscaping shall be designed and installed to maximize winter solar access to buildings, to shade south and west walls and windows from the summer sun and to protect the building from excessive exposure to the northwest wind. Consideration shall be given to the selection of tree species, the size, length and intensity of their shadows, the siting of new trees and removal of existing trees.

(4) Solar easements and restrictive covenants. Solar access to principal buildings and landscaping improvements for solar energy may be protected by utilizing solar easements and restrictive deed covenants.

C. Energy conservation plan. All commercial or industrial facilities greater than 15,000 square feet and all residential development greater than 25 dwelling units shall submit an energy conservation plan to the municipality with an application for development approval. The plan shall include the following items:

(1) The extent to which the site design enables the maximum number of buildings to receive sufficient sunlight for using solar energy systems for space, water or industrial process heating or cooling.

(2) The extent to which existing vegetation, topography and landscaping are utilized to maximize the potential use of solar energy systems for space, water or industrial process heating or cooling.

(3) The extent to which the site design minimizes the impact on potential use of solar energy by adjacent buildings or properties.
(4) The extent to which energy-efficient building techniques are used, including building openings, awnings, windows, color of roof and exterior surfaces, construction materials and insulation.

(5) The extent to which energy-efficient lighting, heating and cooling techniques are employed for buildings.