

Topic:	Solar Energy; Zoning
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State:	Colorado
Jurisdiction Type:	Municipal
Municipality:	City of Boulder
Year:	2012
Community Type – applicable to:	Urban; Suburban
Title:	City of Boulder Code § 9-9-17 Solar Access Regulations; Solar Zoning
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Abstract

The City of Boulder, Colorado’s solar access regulation divides the city into three solar access areas to provide maximum solar access protection for each area, consistent with planned densities, topography, and lot configurations and orientations. The regulation then establishes solar fences in two of these solar access areas. Each solar fence completely encloses a lot in question, and its foundation is contiguous with lot lines. Further, solar fences are vertical, opaque, and lack any thickness. The regulation then forbids the construction of a structure on an adjacent lot that would shade a protected lot to a greater degree than the lot would be shaded by a solar fence, 12 or 25 feet in height (depending on solar access area), between two hours before and two hours after local solar noon on a clear winter solstice day. City of Boulder, CO, Code § 9-9-17.

Resource

9-9-17. - Solar Access.

- (a) Purpose: Solar heating and cooling of buildings, solar heated hot water and solar generated electricity can provide a significant contribution to the City's energy supply. It is the purpose of this section to regulate structures and vegetation on property, including City-owned and controlled property, to the extent necessary to ensure access to solar energy, by reasonably regulating the interests of neighboring property holders within the City.
- (b) Applicability of Section:
 - (1) Private Property: All private property is subject to this section.
 - (2) Development Approval: No proposed development permit may be approved for any structure that would violate the basic solar access provided by this section unless the object or structure is exempt or an exception is granted by the city manager or the BOZA for such purpose.

- (3) Government Property: Governmental organizations not under the jurisdiction of the City may elect to enjoy the benefits of solar access under this section if they also consent in a written agreement with the City to be bound by its restrictions.
 - (4) City Property: Property owned or possessed by the City is subject to, and enjoys the benefits of this section. The City may submit applications, make objections and take actions that are afforded to any other person subject to the provisions of this section.
- (c) Solar Access Areas Established: Three solar access areas are hereby established: SA Area I, SA Area II and SA Area III. The purpose of dividing the City into solar access areas is to provide maximum solar access protection for each area of the City consistent with planned densities, topography and lot configurations and orientations.
- (1) Solar Access Area I (RR-1, RR-2, RE, RL-1 and MH): SA Area I is designed to protect solar access principally for south yards, south walls and rooftops in areas where, because of planned density, topography or lot configurations or orientations, the preponderance of lots therein currently enjoys such access and where solar access of this nature would not unduly restrict permissible development. SA Area I includes all property in RR-1, RR-2, RE, RL-1 and MH zoning districts.
 - (2) Solar Access Area II (RL-2, RM, MU-1, MU-3, RMX, RH-1, RH-2, RH-3, RH-4, RH-5 and I): SA Area II is designed to protect solar access principally for rooftops in areas where, because of planned density, topography or lot configuration or orientation, the preponderance of lots therein currently enjoys such access and where solar access of this nature would not unduly restrict permissible development. SA Area II includes all property in RL-2, RM, MU-1, MU-3, RMX, RH-1, RH-2, RH-3, RH-4, RH-5 and I zoning districts.
 - (3) Solar Access Area III - Permits - Other Zoning Districts: SA Area III includes areas where, because of planned densities, topography or lot configurations or orientations, uniform solar access protection for south yards and walls or for rooftops may unduly restrict permissible development. Solar access protection in SA Area III is provided through permits. SA Area III initially includes property in all zoning districts other than those set forth in paragraph (c)(1) or (c)(2) of this section.
- (d) Basic Solar Access Protection:
- (1) Solar Fence: A solar fence is hereby hypothesized for each lot located in SA Area I and SA Area II. Each solar fence completely encloses the lot in question, and its foundation is contiguous with the lot lines. Such fence is vertical, is opaque and lacks any thickness.
 - (A) No person shall erect an object or structure on any other lot that would shade a protected lot in SA Area I to a greater degree than the lot would be shaded by a solar fence, twelve feet in height, between two hours before and two hours after local solar noon on a clear winter solstice day.
 - (B) No person shall erect an object or structure on any other lot that would shade a protected lot in SA Area II to a greater degree than the lot would be shaded by a solar fence, twenty-five feet in height, between two hours before and two hours after local solar noon on a clear winter solstice day.
 - (C) Solar fences are not hypothesized for lots located in SA Area III. Solar access protection in SA Area III is available under this section only through permits, as hereinafter provided.
 - (2) Height: Unless prohibited by another section of this title, nothing in this section prevents a structure in SA Area III from being erected up to a height of thirty-five feet if located within

the allowed building envelope. However, unless an exception is granted pursuant to subsection (f) of this section, no such structure may exceed thirty-five feet in height if any such excess height would cause the structure to violate, or to increase the degree of violation of, the basic solar access protection provided for any lot in SA Area I or SA Area II.

- (A) Nothing in this section shall be deemed to prevent the principal building on a lot in SA Area I or II from being erected within the building envelope up to the height of the solar fence in the area in which the structure is located.
 - (B) Each application for a development permit for a building of a height greater than allowed by this subsection shall:
 - (i) Include a graphic representation showing the shadows that would be cast by the proposed structure between two hours before and two hours after local solar noon on a clear winter solstice day;
 - (ii) The solar fences on all lots that the shadows would touch;
 - (iii) All possible obstructions of solar access protected by permit; and
 - (iv) Provide additional information as may be required by the city manager.
 - (3) **Insubstantial Breaches and Existing Structures:** Insubstantial breaches of the basic solar access protection or of the protection provided by a solar access permit are exempt from the application of this section. A structure in existence on the date of establishment of an applicable solar access area, or structures and vegetation in existence on the date of issuance of an applicable solar access permit, are exempt from the application of this section. For purposes of this section, structures are deemed to be in existence on the date of issuance of a development permit authorizing its construction.
 - (4) **Temporary Solar Obstructions:** Unavoidable temporary obstructions of protected solar access necessitated by construction activities or other necessary and lawful purposes are exempt to the extent that they do not exceed ten days in any three-month period and thirty days in any year.
 - (5) **Solar Analysis:** When a solar analysis is required for any review process, it shall be prepared in compliance with the methods described in materials provided by the city manager.
- (e) **Amendment of Solar Access Areas:**
- (1) **Purpose:** The planning board may amend solar access areas on its own motion or on petition of any person with a property interest in the subject area. A petitioner shall submit a list to the planning board of the names and addresses of all owners of property within and adjacent to the subject area and within one hundred feet to the north and sixty feet to the east and west of the subject area.
 - (2) **Public Hearing and Notice Required:** Before amending a solar access area, the planning board shall conduct a public hearing on the proposal. The board shall provide notice for the hearing pursuant to the requirements of section 9-4-3, "Public Notice Requirements," B.R.C. 1981.
 - (3) **Review Criteria:** A solar access area may be amended only after the planning board determines that one or more of the following conditions applies to the subject area:
 - (A) The subject area was established as a particular solar access area in error, and as currently established it is inconsistent with the purposes of the solar access areas;

- (B) Permissible land uses and densities in the subject area are changing or should change to such a degree that it is in the public interest to amend the solar access area for the area; or
 - (C) Experience with application of this ordinance has demonstrated that:
 - (i) The level of solar access protection available in the subject area can be increased without significant interference with surrounding property; or
 - (ii) Application of the ordinance has unreasonable interference with use and enjoyment of real property in the subject area.
 - (4) Impact of Changes: When any area is amended from SA Area I to another solar access area or from SA Area II to SA Area III, any solar access beneficiary whose solar access is affected by such change may apply for a permit to provide solar access protection to any solar energy system installed and in use on the date the change becomes effective.
- (f) Exceptions:
- (1) Purpose: Any person desiring to erect an object or structure or increase or add to any object or structure, in such a manner as to interfere with the basic solar access protection, may apply for an exception.
 - (2) Application Requirements: An applicant for an exception shall pay the application fee prescribed by subsection 4-20-33(b), B.R.C. 1981, and apply on a form furnished by the city manager that includes, without limitation:
 - (A) The applicant's name and address, the owner's name and address, and a legal description of the lot for which an exception is sought;
 - (B) Survey plats or other accurate drawings showing lot lines, structures, solar systems, dimensions and topography as necessary to establish the reduction of basic solar access protection expected on each lot that would be affected by the exception, together with a graphic representation of the shadows that would be cast by the proposed structure during the period from two hours before to two hours after local solar noon on a clear winter solstice day. The requirements of this subparagraph may be modified by the city manager, depending upon the nature of the exception sought;
 - (C) A list of all lots that may be affected by the exception, including the names and addresses of all owners of such lots;
 - (D) A statement and supporting information describing the reasons that less intrusive alternatives, if any, to the action that would be allowed by the exception cannot or should not be implemented; and
 - (E) A statement certifying that the proposed structure would not obstruct solar access protected by permit.
 - (3) Public Notice: The city manager shall provide public notice pursuant to section 9-4-3, "Public Notice Requirements," B.R.C. 1981.
 - (4) City Manager Action: The city manager may grant an exception of this section following the public notification period if:
 - (A) The applicant presents the manager with an affidavit of each owner of each affected lot declaring that such owner is familiar with the application and the effect the exception would have on the owner's lot, and that the owner has no objection to the granting of the exception, and

- (B) The manager determines that the application complies with the requirements in paragraph (f)(2) of this section, and
 - (C) The manager finds that each of the requirements of paragraph (f)(6) of this section has been met.
- (5) Appeal of City Manager's Decision: The city manager's decision may be appealed to the BOZA pursuant to the procedures of Section 9-4-4, "Appeals, Call-Ups and Public Hearings," B.R.C. 1981. Public notification of the hearing shall be provided pursuant to Section 9-4-3, "Public Notice Requirements," B.R.C. 1981. The sign posted shall remain posted until the conclusion of the hearing.
- (6) Review Criteria: In order to grant an exception, the approving authority must find that each of the following requirements has been met:
- (A) Because of basic solar access protection requirements and the land use regulations:
 - (i) Reasonable use cannot otherwise be made of the lot for which the exception is requested;
 - (ii) The part of the adjoining lot or lots that the proposed structure would shade is inherently unsuitable as a site for a solar energy system; or
 - (iii) Any shading would not significantly reduce the solar potential of the protected lot; and
 - (iv) Such situations have not been created by the applicant;
 - (B) Except for actions under subparagraphs (f)(6)(D), (f)(6)(E), and (f)(6)(F) of this section, the exception would be the minimal action that would afford relief in an economically feasible manner;
 - (C) The exception would cause the least interference possible with basic solar access protection for other lots;
 - (D) If the proposed structure is located in a historic district designated by the city council according to section 9-11-2, "City Council May Designate or Amend Landmarks and Historic Districts," B.R.C. 1981, and if it conformed with the requirements of this section, its roof design would be incompatible with the character of the development in the historic district;
 - (E) If part of a proposed roof which is to be reconstructed or added to would be incompatible with the design of the remaining parts of the existing roof so as to detract materially from the character of the structure, provided that the roof otherwise conformed with the requirements of this section;
 - (F) If the proposed interference with basic solar access protection would be due to a solar energy system to be installed, such system could not be feasibly located elsewhere on the applicant's lot;
 - (G) If an existing solar system would be shaded as a result of the exception, the beneficiary of that system would nevertheless still be able to make reasonable use of it for its intended purpose;
 - (H) The exception would not cause more than an insubstantial breach of solar access protected by permit as defined in paragraph (d)(3) of this section; and

- (I) All other requirements for the issuance of an exception have been met. The applicant bears the burden of proof with respect to all issues of fact.
 - (7) Conditions of Approval: The approving authority may grant exceptions subject to such terms and conditions as the authority finds just and equitable to assist persons whose protected solar access is diminished by the exception. Such terms and conditions may include a requirement that the applicant for an exception take actions to remove obstructions or otherwise increase solar access for any person whose protected solar access is adversely affected by granting the exception.
 - (8) Planning Board: Notwithstanding any other provisions of this subsection, if the applicant has a development application submitted for review that is to be heard by the planning board and that would require an exception, the planning board shall act in place of the BOZA, with authority to grant exceptions concurrent with other actions on the application, pursuant to the procedures and criteria of this section.
- (g) Solar Siting:
- (1) Siting Requirements: For purposes of insuring the potential for utilization of solar energy in the city, all planned unit developments and subdivisions shall be designed and constructed in compliance with the following solar siting requirements:
 - (A) All residential units in Solar Access Areas I, II, and III have a roof surface that meets all of the following criteria:
 - (i) Is oriented within thirty degrees of a true east-west direction;
 - (ii) Is flat or not sloped towards true north;
 - (iii) Is physically and structurally capable of supporting at least seventy-five square feet of un-shaded solar collectors for each individual dwelling unit in the building; and
 - (iv) Has unimpeded solar access under either the provisions of this section or through easements, covenants, or other private agreements among affected landowners that the city manager finds are adequate to protect continued solar access for such roof surface;
 - (B) Each residential unit in Solar Access Area I has an exterior wall surface that meets all of the following criteria:
 - (i) Is oriented within thirty degrees of a true east-west direction;
 - (ii) Is located on the southernmost side of the unit; and
 - (iii) Is immediately adjacent to a heated space;
 - (C) Each nonresidential building with an anticipated hot water demand of one thousand or more gallons a day has a roof surface that meets all of the following criteria:
 - (i) Is flat or oriented within thirty degrees of a true east-west direction;
 - (ii) Is physically and structurally capable of supporting a solar collector or collectors capable of providing at least one-half of the anticipated hot water needs of the building; and
 - (iii) Has unimpeded solar access under either the provisions of this section or through easements, covenants, or other private agreements among affected

landowners that the city manager finds are adequate to protect continued solar access for such roof surface;

- (2) Waivers: Upon request of any applicant for a building permit or a subdivision or planned unit development approval, the approving authority may waive such of the requirements of this paragraph as it deems appropriate if it finds that any of the following criteria are met:
 - (A) Any structure or structures subject to the requirements of this paragraph are designed and intended to be unheated;
 - (B) Topographic features, land slope, shading by objects, structures, or vegetation outside the control of the applicant, or the nature of surrounding development or circulation patterns when combined with the requirements of this paragraph:
 - (i) Makes use of solar energy not feasible in some or all of the structures to be erected;
 - (ii) Will result in a substantial decrease in the density of land use in the subdivision or planned unit development;
 - (iii) Will result in an increase in transportation or other energy use that substantially outweighs the potential for increased solar energy use created by adherence to these requirements; or
 - (iv) Will be inconsistent with the floodplain management requirements of section 9-3-2, "Floodplains," B.R.C. 1981;
 - (C) Substantial planning, design, or other preliminary expenditures have been incurred by the applicant prior to July 1, 1982, and adherence to the standards of this paragraph would work an undue hardship on the applicant; or
 - (D) The applicant's proposal incorporates the following additional energy resource and conservation option points in excess of the requirements of subsection 10-5.5-2(y), "Resource Conservation - Green Points," B.R.C. 1981:
 - (i) 2 points - to qualify for a waiver of the requirement of subparagraph (g)(1)(A) of this section;
 - (ii) 3 points - to qualify for a waiver of the requirement of subparagraph (g)(1)(B) of this section; and
 - (iii) The city manager finds that adequate protection for any solar energy systems to be installed is provided either under the provisions of this section, or through covenants, easements, or other agreements among affected landowners.
- (h) Solar Access Permits:
- (1) Purpose of Solar Access Permit: In order to promote opportunities for the use of solar energy and where basic solar access protection established by this section is inadequate to protect potential solar energy users, or to insure maximum utilization of solar energy resources consistent with reasonable use of surrounding property, persons may obtain permits under this section. Beneficial use is the limit and measure of any right conferred by permit and no permit shall restrict use of other property beyond the extent reasonable to insure efficient and economical beneficial use of solar energy by the permittee. Further, no permit shall restrict the reasonable use and enjoyment of adjacent properties.

- (2) Eligibility Standards: Any owner or possessor of property who has installed a solar energy system or who intends to install such a system within a year from the date of application may apply for a permit if:
- (A) The lot for which a permit is requested is included in SA Area III;
 - (B) The system that has been or will be installed is capable of applying to beneficial use substantial amounts of solar energy outside the hours of the day during which basic protection is provided for under this section;
 - (C) A solar energy system is in existence on the lot or is planned to be built within a year and the lot is changed from SA Area I to another solar access area or is changed from SA Area II to SA AREA III, resulting in a diminution or elimination of protection previously afforded the user or potential user of the solar energy system;
 - (D) A new structure is built on a lot in SA Area I or SA Area II after the effective date of this section whose locations renders the basic solar access protection inadequate, and the structure could not reasonably have been constructed at a location where it would have substantially benefited from the basic solar access protection provided by this section; or
 - (E) The applicant demonstrates that there are substantial technical, legal, or economic factors that render it infeasible to collect a reasonable amount of solar energy by utilizing the basic solar access protection available under this section without a permit. Such factors include, without limitation, structural characteristics of the applicant's building that limit possibilities for economical retrofit of a solar energy system or shading by objects, structures, or vegetation that are beyond the applicant's control and are exempt from the requirements of this section.
- (3) Application Requirements: An applicant for a permit shall pay the fee prescribed by subsection 4-20-33(a), B.R.C. 1981, and complete an application in writing on a form furnished by the city manager that includes, without limitation:
- (A) The applicant's name and address, the owner's name and address, and a legal description of the lot where the solar energy system is located or will be located;
 - (B) A statement by the applicant that the solar energy system is already installed or that the applicant intends to install such a system on the lot within one year of the issuance of the permit;
 - (C) A description of the existing or proposed size and location of the system, its orientation with respect to south, and its elevation and orientation from the horizontal;
 - (D) A statement describing the beneficial use to which solar energy is or will be applied and certifying the energy capacity of the system in BTUs or BTU equivalents and its reasonable life expectancy;
 - (E) A statement and accurate drawings describing the access protection desired beyond the basic solar access protection provided by this section, specifying the hours of the day, seasons of the year, and locations on the applicant's lot for which protection is desired;
 - (F) A description of all existing vegetation, objects, and structures wherever located that will or may in the future shade the solar energy system, together with a map or drawing showing their location to the extent possible;

- (G) Information showing that the applicant has done everything reasonable in designing and locating the system so as to minimize the impact it will have on use and development on nearby land;
 - (H) Survey plats or other accurate drawings showing lot lines, dimensions, and topography of the lot on which the solar energy system is or will be located and all surrounding properties that are intended to be subject to the permit; and
 - (I) A list of all lots that may be affected by the permit, including the names and addresses of all owners of such lots.
- (4) Public Notice: The city manager shall provide public notification pursuant to the requirements of section 9-4-3, "Public Notice Requirements," B.R.C. 1981.
- (5) Permit Issuance: The city manager shall issue a solar access permit and may impose additional conditions or restrictions as the manager deems appropriate if the application complies with the requirements of paragraph (h)(7) of this section.
- (6) Appeal of City Manager's Decision: The city manager's decision may be appealed to the BOZA pursuant to the procedures of Section 9-4-4, "Appeals, Call-Ups and Public Hearings," B.R.C. 1981. Public notification of the hearing shall be provided pursuant to Section 9-4-3, "Public Notice Requirements," B.R.C. 1981.
- (7) Permit Requirements: In order to issue a permit, the approving authority must find that each of the following requirements has been met:
- (A) The applicant meets at least one of the eligibility standards of paragraph (h)(2) of this section;
 - (B) The applicant has done everything reasonable in designing and locating the proposed solar energy system to minimize the impact it will have on use and development of nearby land. However, the fact that an alternate design or site may be more expensive does not necessarily establish that the applicant's failure to select that alternate design or site is reasonable. In making this finding, the board or the city manager may consider whether the additional cost of alternative, less intrusive sites or solar energy systems, if any, would exceed the difference between the adverse effects, if any, imposed on other lots by the proposed site and solar energy system and the adverse effects, if any, that would be imposed on other lots by alternative sites or solar energy systems;
 - (C) Issuance of the permit is consistent with reasonable use and enjoyment of nearby land, excluding landscaping considerations. Issuance of the permit will be presumed not to be consistent with reasonable use and enjoyment of nearby land if issuance would prevent any affected property owner from erecting, consistent with legal requirements, a structure of a size, character and usefulness reasonably typical of those in existence on similar lots subject to the same zoning requirements located within one-fifth mile of the lot in question. However, nothing in this subsection prohibits issuance of a permit only because it would impose requirements on a neighboring lot owner that are more restrictive than the height or setback requirements that would otherwise apply, if reasonable use and enjoyment of such lot is preserved; and
 - (D) Issuance of the permit is consistent with reasonable landscaping of nearby land. In determining consistency, the board shall consider the need for any additional landscaping in the future, including any energy conservation value that such landscaping may have.

- (8) Conditions of Approval: The board may grant permits subject to such terms and conditions as it finds just and equitable.
- (9) Records: The city manager shall maintain complete records of all permits that have been issued and shall make them readily available for public inspection.
- (10) Expiration of Permit: A solar access permit expires if:
 - (A) A functioning system is not installed within a year after the issuance of the permit;
 - (B) The solar energy system protected by the permit has not functioned to fulfill its intended purpose for a continuous period of two or more years; or
 - (C) The term established under paragraph (h)(11) of this section expires.
- (11) Term of Solar Energy System: The city manager or the BOZA shall specify the term of each solar access permit, which shall be for the reasonable life expectancy of the particular solar energy system, as determined by the manager or the board. At the expiration of a permit, it may be renewed in the same manner as new permits are issued.
- (12) Renewal of Permit: If no functioning solar energy system is installed within a year of the issuance of the permit, the city manager may grant a renewal of up to one additional year to the holder of the expired permit if the permittee demonstrates that the permittee has exercised due diligence in attempting to install the system.
- (13) Enforcement: A solar access permit is enforceable by the beneficiary if, and only if, the beneficiary has properly recorded the permit in the real property records of the Boulder County Clerk and Recorder with respect to each affected lot in such a manner that it could be detected through a customary title search.
 - (A) On sale, lease or transfer of the lot on which the protected solar system is located, the right to enforce its terms passes to the beneficial user of the system.
 - (B) No property owner shall be requested to remedy vegetative shading unless a protected solar system is installed and functioning.
- (14) Impacts of Vegetation on an Issued Permit: Upon application of a beneficiary to the BOZA, vegetative shading may be remedied to the extent necessary to comply with the terms specified in a solar access permit. However, no vegetation in the ground and growing at the time the permit application is filed may be ordered removed or trimmed. After notice to at least the beneficiary and the vegetation owner, the board shall hold a hearing and, based on evidence submitted by any interested party, may issue any necessary order and specify the time in which actions thereunder must be performed. Absent unusual circumstances, the cost of remedying shading from vegetation not in the ground and growing at the time the permit application is filed shall be borne by the vegetation owner. If an owner or possessor of real property who receives an order to remedy vegetative shading fails to comply within the specified time, the city manager may order the condition remedied and charge the actual cost thereof to the person to whom the order is directed, who shall pay the bill. If any person fails or refuses to pay when due any charge imposed under this subsection, the manager may, in addition to taking other collection remedies, certify due and unpaid charges to the Boulder County Treasurer for collection as provided in section 2-2-12, "City Manager May Certify Taxes, Charges and Assessments to County Treasurer for Collection," B.R.C. 1981.
- (i) Authority to Issue Regulations: The city manager and the BOZA are each authorized to adopt rules and regulations necessary in order to interpret or implement the provisions of this section that each administers.

Ordinance Nos. 7484 (2006); 7522 (2007); 7535 (2007); 7568 (2007); 7655 (2009); 7878 (2012)

