Solar Access:
Recommendations for the City and County of Denver

Prepared for the City and County of Denver, Colorado

Prepared by Hannah Muller,
U.S. Department of Energy Solar Energy Technologies Program

March 2009

THE IMPORTANCE OF SOLAR ACCESS

The City and County of Denver has committed to investing in clean energy sources to spur economic development and meet environmental and climate change goals. With over 300 days of sun per year, Denver is rich in solar resources. This report discusses how Denver can maximize opportunities for harnessing the sun's energy through a set of solar access ordinances and enforcement guidelines to aid property owners in their efforts to install solar energy systems, as well as protect the investment of individual property owners.

The sustainability review of the proposed changes to Denver's Zoning Code completed by Doug Farr & Associates in November 2008 determined that solar access is one of the top two issues that Denver should address within its 2009 Zoning Update. Without a set of well-coordinated solar access laws, Denver will face conflicts between stated City priorities, such as higher density development, tree preservation, and renewable energy adoption. By logically incorporating solar energy considerations into zoning codes and ordinances, Denver can clarify the responsibilities of various parties, achieve balance between City priorities, and avoid costly and time-consuming lawsuits.

NATIONAL CONTEXT

As with most land-use related matters, solar access laws have traditionally been enacted at the state and local level. Many states passed solar access laws in the 1970s; currently, 34 states (including Colorado) and about a dozen municipalities have some form of solar access law. Colorado's solar access laws prohibit residential covenants that restrict solar access (with exceptions), and allow property owners to agree voluntarily to solar easements with their neighbors[1].

As solar energy systems become more affordable and available to mainstream property owners, solar access is re-emerging as a regulatory area in need of clarification and coordinated, thoughtful enforcement. At least 15 of the 25 major U.S. cities participating in the U.S. Department of Energy's Solar America Cities program are in the process of reviewing their solar access laws. The Solar America Board of Codes and Standards published a report in October 2008 reviewing the status of solar access laws nationwide, and recommended a model state statute and best practices for local governments, many of which are referenced in this paper.

UNDERSTANDING SOLAR ACCESS

In order to harness the sun's energy, a property owner must have access to sunlight, and the right to install a solar energy system that converts sunlight into useable energy[i]. Accordingly, consideration of solar access should be separated into two categories: *solar easements*, which deal with access to sunlight, and *solar rights,* which deal with the right to install a solar energy system.

Solar Easements

Solar easements are legal agreements that protect access to sunlight on a given property. Solar easements are necessary because U.S. courts have held that there is no common law right to sunlight. This means that if the sunlight falling on a property is disturbed by another party, the property owner has no cause of action for nuisance, damages, or injunctive relief[2]. Currently, in Denver, a property owner could invest $30,000 in a solar energy system, only to have that system rendered nearly useless when a neighbor builds a second story addition or lets nearby trees grow to shade the solar system.

In order for a property owner to protect solar access on their property, they must obtain a solar easement. Colorado state law allows property owners to agree voluntarily to solar easements with their neighbors. In most of the U.S., including Denver, a property owner must actively pursue a solar easement. This typically consists of retaining a lawyer to draft the easement document, obtaining the signatures of adjacent property owners approving the easement, and ensuring that the easement is properly recorded in public records. Easement terms vary, but typically the neighbors commit to not building any structure or installing any landscaping that would block the sunlight falling on the property with the easement. Under this process, one unsupportive neighbor can prevent a property owner from obtaining an effective solar easement.

Solar easements can be creatively negotiated to have flexible conditions and terms. For example, easements can be written to cover only certain areas of a property, or to allow a certain percentage of shading from neighboring structures or landscaping. Easements may also contain provisions requiring financial compensation if excess shading occurs. This flexibility allows easements to effectively protect solar energy system owners without overly limiting the activities of neighboring property owners. Once created, the easement is attached to the property deed and generally stays with the property at sale.

Voluntary solar easements as a mechanism to protect solar access have several shortcomings. They require the property owner to be aware of the importance and availability of an easement, and have the time and money to work with a lawyer, neighbors, and the local government to develop and record the easement. Even an educated and persistent property owner can be thwarted by an unsupportive neighbor. And should a conflict arise where a neighbor is accused of violating a solar easement, enforcement options are generally limited to a costly and time-consuming personal lawsuit.

Local governments can take steps to improve the solar easement process, such as tying easements to solar system permits, and creating enforcement mechanisms such as fees levied on any property owner in violation of a recorded easement. More detailed recommendations are provided below.

---

[i] This paper discusses solar access as it relates to active solar energy systems such as photovoltaics, solar water heaters, and solar thermal space heating and cooling. Passive solar energy systems such as south facing windows are also an effective way to use the sun's energy to light and heat a building; however, legislating access for passive solar is a complicated proposition. As discussed below, solar easements offer some protection for property owners interested in passive solar.

Solar Rights
Access to sunlight does no good if a property owner is prohibited from installing a solar energy system on their property by a restrictive covenant of a homeowners association or a local ordinance. Solar rights statutes and ordinances protect the rights of property owners to install solar energy systems.

Most homeowners associations (HOAs) have a set of covenants and restrictions that are intended to maintain certain characteristics of the community. These restrictions often focus on aesthetics. Through its bylaws, an HOA can directly or indirectly prohibit the installation of solar energy systems. Examples of indirect prohibition include height restrictions or restrictions on modifications to street-facing roofs.

A restrictive covenant that effectively prohibits the use of solar will not be upheld where state or local law expressly provides otherwise through a solar rights statute or ordinance[2]. Current Colorado law does limit the ability of HOAs to restrict solar energy systems; HOAs may only enforce restrictions that do not significantly increase the cost of installing or operating the system. The City of Denver does not currently have any ordinances that provide property owners with additional solar rights beyond what is specified in state law.

While residential property owners are given some solar rights under Colorado law, it is easy to imagine how these rights could be improperly exercised or contested in practice. The City of Denver therefore has a role to play in helping its residents understand their solar rights. This can be accomplished through a combination of outreach, clarifying ordinances, and enforcement; specific recommendations are provided below.

In addition to HOAs, local governments can also effectively prohibit the installation of solar systems through zoning codes and ordinances such as height restrictions and historic structure protections. Denver's codes and ordinances should be reviewed with an eye toward potential modifications that would retain the original intent of the ordinance without having the side effect of prohibiting solar system installation. Specific examples of how to incorporate solar exemptions or flexibility into existing code are provided below.

City staff should note that solar systems require adequate rooftop square footage in order to serve a reasonable portion of a building's energy load. For this reason, solar systems should be permitted on primary dwelling units, in addition to accessory dwelling units.

BEST PRACTICES FOR PROMOTING AND PROTECTING SOLAR ACCESS

Offer Solar Access Permits *(City of Boulder, CO; City of Ashland, OR)*
One way to protect a property owner's investment in a solar system is to tie the solar permitting process to a process of creating a solar easement. Solar systems typically require a permit from a local government authority, and by incorporating a solar easement into the permitting process, paperwork is minimized and solar systems are more likely to be protected. The cities of Boulder, CO and Ashland, OR have implemented solar access permit schemes that involve granting easements. A solar system registry that uses GIS mapping can assist in tracking solar installations.

The ordinance providing for the special permit process can address the following:

- What constitutes an impermissible interference with the right to direct sunlight granted by a solar access permit and how to regulate growing vegetation that may interfere with such right.
- Standards for the issuance of solar access permits, balancing the need of solar energy systems for direct sunlight with the right of neighboring property owners to the reasonable use of their property within other zoning restrictions.

- A process for issuance of solar access permits including, but not limited to, notification of affected neighboring property owners, opportunity for a hearing, appeal process and recordation of such permits on burdened and benefited property deeds.
- Enforcement mechanisms, such as fees levied on parties who violate the terms of an easement[2].

Create Solar System Registry *(County of Santa Cruz, CA)*
A solar system registry and map, in addition to being a useful tool for tracking solar energy adoption within a city, can help inform and expedite enforcement of solar access laws. Online mapping software can show the location of every solar energy system within a city, alerting contractors and city planners to the need to consider the impacts of development of a neighboring parcel.

Revise Local Ordinances Posing Unintended Obstacles *(City of Los Angeles, CA; City of Sacramento, CA)*
Careful review of zoning codes and ordinances can reveal areas where a well-intended ordinance has inadvertently restricted installation of solar energy systems. In many cases, these ordinances can be modified to serve the original purpose without preventing property owners from installing solar systems.

For example, the City of Los Angeles exempts solar systems from standard building height limitations, but requires that for each foot of additional height, the solar system must be set back from the roof edge by an additional foot. The City of Sacramento is encouraging urban forestry, but requires that city planners responsible for tree planting in residential areas consider solar access and minimize rooftop shading. The City of Gainesville, Florida protects certain species of trees but allows the removal or relocation of regulated trees if they are preventing the installation of a solar system.

In some cases, codes and ordinances related to aesthetics and historic structures can effectively prohibit installation of solar systems. Regulations based solely on aesthetic considerations will not stand in court unless they bear a reasonable relation to public welfare. In order to avoid court proceedings, Denver can review its aesthetic-related ordinances to ensure that they consider the benefit provided by solar systems and aim for a compromise that preserves aesthetics while allowing for clean energy production.

Set Standards for New Construction *(City of Sacramento, CA; City of Sebastopol, CA; Marin County, CA)*
Solar access can often be more easily addressed for new construction than existing construction. Local governments have developed an array of zoning ordinances for new construction that protect solar access and solar rights, including:

- Require east-west street and building orientation (typically within 30 degrees of the east-west axis)
- Require landscaping that complements solar energy systems
- Require dedication of solar easements for all newly constructed buildings

In addition to protecting access to sunlight for solar energy systems, these regulations also facilitate greater use of passive solar space heating and lighting, one of the most efficient ways to heat and light a building.

Require Clear Homeowners Association Rules *(State of Hawaii)*
A state or local government can require homeowners associations (HOAs) to establish rules for solar system installations within their community. By spelling out the exact aesthetic requirements and necessary approvals and distributing this information to its members, the HOA can avoid costly lawsuits. Because an HOA may not necessarily be equipped to develop such rules on its own, the state or local government should provide guidance to HOAs that explains state and local solar access laws, and suggests some parameters the HOAs may wish to follow.

ADDITIONAL RECOMMENDATIONS FOR DENVER

Consider Solar Access for Commercial Properties

The vast majority of solar access laws on the books relate to residential properties. However, commercial properties are often optimal sites for solar energy installations; they tend to have large flat roof areas and high energy loads. Furthermore, a commercial size solar energy system is a significant investment that is currently not protected by any state or local ordinances. If a car dealership installs a $500,000 solar system, and a year later another developer constructs a 10 story condo complex that shades the dealership's solar panels, the dealership has no recourse.

Many of the solar easement and solar rights provisions granted to residential properties can and should be made available to commercial properties.

Conduct Outreach and Provide an Information Center

Solar access is a complicated issue with which few people are familiar. As an increasing number of residents and businesses turn to solar as a clean, reliable energy source, more questions will arise about solar access and the responsibilities and liabilities of various parties. The best way to avoid lengthy and costly lawsuits involving property owners, the local government, and HOAs is to develop a website and conduct outreach to educate property owners, HOAs, contractors, and city officials about solar access laws. The City of Denver should identify a solar access point of contact within city government, to whom all inquiries can be directed.

THE BOTTOM LINE

Solar access will become a prominent issue over the next five to ten years as solar system costs drop and become competitive with conventional electricity rates. Thousands of Denver residents and businesses will turn to solar energy to power their homes and commercial buildings. Denver needs to recognize the great opportunities and complications of distributed generation such as rooftop solar, and do its part to facilitate a smooth transition to cleaner, more secure energy production. The City of Denver has an opportunity to comprehensively address solar access and ensure that its residents and businesses can take advantage of the city's sunny weather and power their homes and buildings with clean, reliable solar energy

References

[1] Database of State Incentives for Renewable Energy, www.dsireusa.org.

[2] Kettles, Colleen McCann, 2008. A Comprehensive Review of Solar Access Law in the United States. Solar America Board for Codes and Standards, www.solarabcs.org.