4. Solar Ready Development

Solar-ready buildings, lots, and developments incorporate a range of techniques and technologies that make solar adoption easier, cheaper, and faster for current and future owners. Solar ready building techniques are not necessarily more difficult or more expensive, and solar-ready building requirements and/or incentives are an easy way for local governments to encourage both short-term and long-term solar development.

Solar Ready Buildings

Solar-ready buildings should take into account roof orientation to help maximize its solar potential. If the building has a sloped roof, orienting the slope to maximize the amount of south-facing area is optimal. In Utah, only solar PV systems with south-east to west-facing orientations will be eligible for state tax incentives, so the roof orientation is critical to maximizing the economic return of solar. The most optimal orientations are:

a. Between 165 degrees and 225 degrees if the tilt of the roof/system is greater than 30 degrees from horizontal, or

b. Between 165 degrees and 270 degrees if the tilt of the roof/system is 30 degrees or less from horizontal.

On a flat roof, solar collectors should be angled according to the site's latitude to maximize solar energy yield and should be installed on the south side of the roof. These collectors should be free from obstruction or shading from ventilation systems or other mechanical equipment. Major living, work, and study areas should face south to facilitate solar heating and day lighting, which make the building more comfortable and increase productivity.
Solar Ready Lots

A solar-ready lot takes into account orientation, lot shape, and size with the aim of maximizing both passive and active solar systems. Solar-ready lots should also take into account surrounding lots and landscaping in order to minimize shading issues from other buildings, trees, or other objects.

The layout of a site dramatically impacts whether or not a solar energy system is suitable for a given area, as illustrated in the figure to the right. Simple, low-cost siting adjustments can easily maximize viable solar options on the lot.

Solar Ready Developments

Solar-ready techniques can also be applied to entire developments, which can simultaneously provide solar access to an entire neighborhood or business district, while also mitigating future conflicts related to solar access. Streets that run within 25 degrees of east-west help limit the possibility of solar access obstructions by neighbors or structures to the south of a given site. Where streets run north/south, the use of cul-de-sacs can help provide solar access for residents. It's important to ensure that a building is neither obstructed by neighbors to the south, nor obstructing the solar access of neighbors to the north.

Designers and builders should give extra consideration to landscaping and other structures on a north/south-running street to mitigate solar access issues in the future. Proper side yard allowances can also improve long-term solar access.

East/west-running streets and north-south running streets both have the potential to create shading issues. On an east/west-running street, shading from obstructions such as trees can reduce viable solar siting, but shading generally affects only the homeowner's own property. On a north/south-running street, the potential to reduce a northern neighbor's solar access increases. Designers and builders should give extra consideration to landscaping and structures on a north/south-running street to ensure that shading a neighbor's home does not become an issue.
Solar-Ready Building Certifications

There are many certifications available to recognize buildings that are designed to minimize impact by using resources sustainably. Most green building certifications require energy-efficient construction to reduce energy waste, and some also require solar-ready building design or the use of renewable resources.

**LEED Certification**

The U.S. Green Building Council's LEED Certification is a third party certification program for the design, construction and operation of high performance green buildings. LEED Certifications are available for buildings of all types and sizes. LEED Certification is available at four levels: Certified, Silver, Gold, and Platinum.

**Solar specifications:** LEED certified buildings receive points for utilizing on-site renewable energy.

**DOE Challenge Home**

The U.S. Department of Energy's DOE Challenge Home program recognizes builders for their leadership in increasing energy efficiency, improving indoor air quality, and making homes zero net-energy ready.

**Solar specifications:** In Utah, DOE Challenge Homes must meet requirements to accommodate the future installation of both solar photovoltaic and solar thermal systems.

**Earth Advantage Net Zero & Net Zero Ready**

The EA Net Zero certification is designed to recognize homes that generate as much electricity as they use over the course of a year. The EA Net Zero Ready certification is for homes that are built to be “ready” for actual physical renewable systems to be built at a later date.

**Solar specifications:** EA Net Zero homes must generate 100% of the buildings annual energy needs from renewables; EA Net Zero Ready homes must have proper roof orientation, roof pitch, and roof area as well as EPA solar-ready compliance.

**ICC 700 National Green Building Standard**

The National Association of Home Builders and the ICC partnered to establish the ICC 700 National Green Building Standard, a residential green building rating system.

**Solar specifications:** National Green Building certified buildings receive points for utilizing renewable energy.

**Living Building Challenge**

The International Living Future Institute's Living Building Challenge is a green building certification program that scores buildings on seven performance areas: Site, Water, Energy, Health, Materials, Equity and Beauty.

**Solar specifications:** Living Building Challenge certified buildings must produce 100% of the buildings net energy needs from renewables on an annual basis.

**ASHRAE Advanced Energy Design Guides**

Guides to help commercial buildings exceed the energy code by 30% or 50%, moving the building toward net zero.

**Solar specifications:** Living Building Challenge certified buildings must produce 100% of the buildings net energy needs from renewables on an annual basis.