



## Planning and zoning for solar energy readiness: A hot proposition

**Solar energy systems are increasingly common around the nation. Local governments can help this technology expand through proactive planning and reasonable regulation.**

February 11, 2015 | Brad Neumann, Michigan State University Extension

Solar energy is hot, but it's not just the photons. The solar energy market continues to boom with decreasing costs and increasing use of leases and third party ownership of systems. In Michigan, there were at least 1,300 installed solar energy systems according to the [Michigan Public Service Commission](#) as of December 2013."

There is a role and responsibility for local governments in enabling installation of this technology and even incentivizing its use. There are two basic mechanisms through which local governments in Michigan can accomplish this – the [master plan](#) and the [zoning ordinance](#).

The master plan sets a community vision for the future with details goals, objectives and specific policies to make that vision a reality. The community master plan is a formal statement of various policies that the community is committed to implementing or achieving. It is the perfect document for establishing a future vision of widespread installation and solar energy consumption among public and private entities. The master plan accomplishes this by taking the solar resources in the community into account and detailing data and policies to guide community decisions.

In Michigan and other northern latitudes, the amount of [solar resource](#) is not ideal. However, when sited properly, it is more than sufficient for producing electricity (photovoltaics) or heating (solar thermal) for the majority of the year. So, the master plan would document the solar resource in general (like the map at right) and describe the siting considerations for maximizing solar potential. This would include specific policies related to solar access, street and building orientation for new development and recommended locations for installation of larger solar arrays.

With the vision, goals and policies established in the master plan through broad public engagement, it is the zoning ordinance (and possibly other development regulations) that decides the legal standards (and possibly incentives) for public and private entities to follow when building solar energy systems. Generally, zoning for solar systems includes considering solar access, siting of new construction, setbacks, permitting and aesthetics.

Solar access is the concept of protecting a property owner's right to make use of the sun's energy that is accessible. Property owners don't want to be shaded-out by structures on a neighboring property. In portions of the community that are already developed, one approach is to allow property owners to apply for a solar access permit (e.g. see [City of Tecumseh, MI](#)), which establishes a right to solar access for a planned system and prohibits neighbors from blocking the solar resource with new construction or vegetation. In undeveloped areas of the community, development regulations could require that developers orient streets, lots and buildings. The goal of this is to ensure that there is a location on each lot where there is access to solar resources without casting too much of a shadow on another structure. Flexibility could be arranged to protect certain site characteristics, such as topography and natural resources.

Clearly there are some policy decisions to be made with respect to solar access. During the planning process is when those options should be discussed. Specific policy decisions in the master plan are then implemented with language added to the zoning ordinance (and possibly subdivision ordinance).

For new development, some communities adopt solar setbacks for determining the appropriate buildable envelope on one property that minimizes impacts (shadows) on neighboring properties (particularly to the north).



This type of regulation requires some calculations based on latitude, height of structure, slope of the property and sun angles at certain times of the year (such as during the winter when the sun is lower in the sky).

Traditional zoning setbacks for structures are also relevant for ground-mounted systems or arrays (see photo). Typically, the same setback is prescribed for an array as it is for the principal or accessory structures in the zoning district.

Another solar energy aspect to address is where and how they will be approved on a property relative to other existing uses. In other words, where in the community will they be handled as accessory uses/structures vs. principal uses/structures? Once it has been reviewed by zoning administrators, many communities allow solar systems as accessory uses in all zoning districts. In certain districts, it may be appropriate for a solar system to be the principal use for the purpose of commercial-scale energy production or [community solar](#), depending on the size of the project.

Local regulation of solar systems may also attempt to address impacts on neighboring property owners resulting from glare. While glare is less of an issue with newer materials and technologies that increase absorption and minimize reflection, it is often handled with a subjective standard such as 'avoid directing glare on neighboring properties and streets or roads' (e.g. see [Dundee Township](#), MI).

There are also aesthetic concerns with placing solar systems on buildings with certain character, such as historic structures. There may be legitimate tradeoffs between the integrity of historic districts and solar energy production, and this discussion is best handled during the planning process with ample public and interest-group involvement. While a community may feel the two are incompatible, the [National Trust for Historic Preservation](#) coauthored the report [Implementing Solar PV Projects on Historic Buildings and in Historic Districts](#) to show what is possible. Example recommendations include locating solar systems that minimize their visibility from public thoroughfares, requiring low profiles and avoiding installations that would result in permanent loss of character-defining features.

Some communities also strive to require or incentivize newly constructed homes that are solar-ready, meaning they do not require any additional wiring, plumbing, or building modifications for installation of a solar system by the eventual homeowner. One way of doing so through zoning is to offer a density bonus incentive for the construction of solar ready homes or buildings in a new development.

Whether for reasons related to energy security, self-sufficiency, climate change or place-making, more communities are taking the proper steps to update plans and ordinances to allow and even incentivize solar energy. Local governments are encouraged to read [Becoming a Solar-Ready Community: A Guide for Michigan Local Governments](#) prepared by [Clean Energy Coalition](#) and the [Michigan Energy Office](#). For additional examples of planning and zoning approaches to renewable energy production, see the [American Planning Association's](#) frequently asked questions and community examples on the subject, or contact a [Michigan State University Extension land use educator](#).

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