

Case Study: Eau Claire, Wisconsin

Over the course of 2015 and 2016, the City of Eau Claire developed a solar ordinance to remove barriers and enable local investment in Eau Claire’s solar resource. The City’s efforts can act as a guide for others by modeling the obstacles and solutions the City discovered during the process of drafting the ordinance and getting it passed.

City Background

Eau Claire is a city of about 68,000 people in western Wisconsin. Eau Claire has been diligently addressing sustainability issues for years. In 2009, the City became an “eco-municipality” by adopting [The Natural Step](#) sustainability framework. City staff formed a “Green Team” that focuses on education, energy issues, and greening city operations using the eco-municipality framework. Also in 2009, Eau Claire added a chapter on sustainability to its [comprehensive plan](#), ensuring that the City would continue to integrate sustainability into its future actions. Eau Claire also participates in Wisconsin’s [Energy Independent Community](#) program and has adopted the State of Wisconsin’s goal of obtaining 25% of its energy from renewable sources by the year 2025. In 2013, the City Council appointed its first [Sustainability Advisory Committee](#). This committee has since undertaken a multitude of projects, including an ordinance to allow beekeeping, a reusable shopping bag campaign, supporting property assessed clean energy (PACE) and advising staff on Eau Claire’s solar ordinance.



The Sustainability Chapter of Eau Claire’s Comprehensive Plan supports modifying the City’s ordinances to promote solar development, as well as undertaking other renewable energy projects. The City has pursued renewable energy in multiple ways, including generating biogas from its waste water plant, utilizing geothermal at its water plant, and installing solar hot water on public housing. Most significantly, the City investigated the potential for solar installations on a closed landfill, and is now leasing space there for a community solar garden offered by Xcel Energy. The City subscribed to the solar garden to offset 100% of its public swimming pool’s electric load. With the passage of its new solar ordinance language in late 2016, Eau Claire is in an even better position to develop its solar resource.

Timeline

- **December 2014** – Eau Claire agrees to participate as a “beta city” in the U.S. Department of Energy SunShot-funded Grow Solar partnership.
- **July 2015** – Under Grow Solar, the Great Plains Institute completes an ordinance scan.
- **Summer 2015** – City staff completes photovoltaic code training in Superior, WI.
- **August 2015** – Eau Claire City Planner attends MREA/Green Tier Legacy Communities training where Grow Solar local government best practices and resources are shared.
- **Fall 2015** – Initial ordinance is developed in conjunction with City’s Sustainability Advisory Committee and in consultation with Grow Solar Partnership.



- **January 2016** – City’s Plan Commission reviews draft ordinance and directs staff to develop a solar educational brochure describing city solar standards and development process, consistent with Grow Solar best practices.
- **Spring & summer 2016** – Staff and sustainability committee draft informational brochure and fine tune the new solar development ordinance language.
- **August 2016** – Plan Commission reviews final materials and directs staff to set up the public hearing.
- **November 2016** – Plan Commission and City Council approves solar ordinance language.

The Solar Ordinance

Eau Claire’s existing zoning ordinance was assessed in July 2015 as part of the Grow Solar Beta city program. The assessment identified potential regulatory barriers and opportunities for encouraging solar development. It also made recommendations to the City based on Wisconsin state statute and Grow Solar best practices. Eau Claire staff, Sustainability Advisory Committee and Plan Commission used the recommendations to guide ordinance changes.

Wisconsin law provides an inherent property right for solar development, which defines and constrains the city’s zoning authority over solar development. According to Wisconsin Statute 66.0401(1m), no political subdivision may place any restriction, either directly or in effect, on the installation or use of a solar energy system, unless restrictions satisfy one of the following:

- (a) Serves to preserve or protect the public health or safety.
- (b) Does not significantly increase the cost of the system or significantly decrease its efficiency.
- (c) Allows for an alternative system of comparable cost and efficiency.

This means that local standards can only limit solar based on health and safety, not based on aesthetics. Eau Claire had not previously limited solar based on aesthetics; however, the City’s new ordinance clarifies this and brings the ordinance into compliance with state law. For instance, solar installations are now explicitly exempted from a provision that states "all roof-mounted mechanical equipment, vents, and ductwork shall be concealed by the building mass, or shall be screened from public view in a manner that will harmonize with the building design." Shielding solar installations from view would likely also shield them from the sunlight they need to produce energy. The City chose to preserve functionality by exempting solar installations from this provision.

In order to be consistent with Wisconsin statute, Eau Claire explicitly made solar arrays a permitted accessory use in all districts where buildings are allowed. For solar principal uses, Eau Claire made solar farms a conditional use in all districts to allow for development while retaining case-by-case ability to mitigate risks or objections.

Grow Solar best practices recommend considering how zoning height limit might limit homeowners from capturing their solar resources. Eau Claire opted to allow solar installations to exceed height limits via a conditional use permit. This way, the City maintains discretion in specific cases while leaving landowners a pathway for installing solar above height limits if necessary to access the solar resource on their property (for example, to get out from under the shade of a neighbor’s house or trees).

Grow Solar best practices recommend addressing storm water runoff and impervious surfaces either by setting a separate coverage limit for solar installation or by exempting solar structures from impervious surface limits if the ground below the solar collector is maintained in vegetation. Eau Claire decided to leave this issue up to the discretion of staff, stating that "Ground mounted solar arrays or solar farms considered by the Zoning Administrator to create impervious surface above lot restrictions for improved surfaces shall only be conditionally approved if appropriate mitigation measures for storm water runoff can be demonstrated." This wording acknowledges the potential for storm water runoff issues, but gives City staff the flexibility to determine when mitigation measured need to be taken.

Lessons Learned

City staff developed the solar ordinance in conjunction with the Sustainability Advisory Committee and the Plan Commission. Staff presented the ordinance to both bodies while it was being written, and they both provided feedback and suggested changes. During these rounds of discussions, a number of considerations had to be addressed. In particular, the ordinance had to be edited to address array size, setbacks, and impervious surfaces.

Array Size: Staff and the commissions discussed what size a solar array could be before it would require a conditional use permit. In the end, they decided on a 1,000 square foot maximum threshold before a conditional use permit would be needed for residential zones containing less than four units. Less sensitivity was needed for multi-family and non-residential zones because these sites are often larger and proximity of neighbors is less of an issue. For reference, 1,000 sq. ft. is roughly the size of six parking spaces or half a volley ball court, and a solar array of that size can potentially fully power a home. The threshold also ensures that solar accessory structure size limits are consistent with other detached accessory structures.

Setback Requirement: When the ordinance was presented to the Plan Commission, the members wanted to be sure that the setback requirements for solar installations were the same as for buildings (both principal and detached). This is similar to the consideration for array size— and so it was best to keep the size and distance requirements consistent across projects.

Impervious Surfaces: The Plan Commission also discussed how solar arrays should be considered under the City's stormwater management regulations that regulate runoff from impervious surfaces. Solar arrays have the potential to create stormwater runoff risks similar to other impervious surfaces, such as rooftops or pavement. However, the runoff issues may be mitigated if vegetation under the panel is

Advice from Eau Claire's City Planner:

Ned Noel, Eau Claire's Associate Planner, notes that there are two important points to consider when cities create an ordinance to promote solar development. The first is the usefulness of an ordinance scan to compare the existing ordinance to national and state best practices. An ordinance scan includes recommendations on areas that could be edited to more easily allow for solar installation. Second, Mr. Noel notes the importance of clearly communicating ordinance information to residents. The Plan Commission recommended that staff create a document for those interested in installing solar that would provide relevant information in a way that could be easily understood. Staff and members of the Commission on Sustainability collaborated on a [solar brochure](#) that describes the solar ordinance, building permit pathways, financing strategies, and best practice considerations. Permitting improvements were deemed unnecessary because turnaround is often less than 3 days, fees are low, application forms are straightforward and inspections are not difficult to schedule.

maintained to allow for water infiltration. The Commission elected to recommend that stormwater issues be left to staff judgement.

Benefits and Outlook

Eau Claire city staff suspected that 2016 and 2017 would be big years for solar in their community.

The City developed new zoning language to clarify how solar land uses, from small scale residential systems to large solar farms, fit into development regulations in order to be prepared for an increase in installations. Now everyone involved in the process of developing solar energy in Eau Claire can be on the same page about what is allowed, as well as how to handle projects that might cause concern among neighbors. A number of solar projects were completed or begun in 2016, including a solar

group buy, the City's largest rooftop solar array (100 kW at Huebsch Services), and a 1 MW community solar garden. The citizen-led [Chippewa Valley Affordable Solar Group](#) initiated the solar 'group buy' project to lower costs. After holding numerous education 'solar power hours' with the assistance of the Midwest Renewable Energy Association, 31 Chippewa Valley home and business owners purchased a state record-breaking 186kW of solar electric capacity. Program-wide, participants should save \$31,000 in the first year, or an average of \$1,000 per household. Reaching beyond expectations, a third benchmark price per watt was met lowering prices 20 cents per watt. There were over 80 other completed site assessments with proposals delivered for a total of 780kW worth of possible future projects. Eau Claire's ordinance and easy permitting process will serve these and other projects well. Next up for Eau Claire in 2017 is to create a local solar resource [landing page](#) on its website and seek Solmart solar-friendly gold level status to signify the community is ready for increased solar business.



Photo Credit: Steve and Ellen Terwilliger. The Terwilligers are local solar champions—they are leading the Chippewa Valley solar group-buy as well as an annual solar conference. This is their shed, on which they are having solar panels



Sky Park Landfill site. Source: [NREL Feasibility Study](#)

Eau Claire's new 1 MW community solar garden will be located on the closed, city-owned Sky Park landfill, which operated from 1948 to 1965. Since then, it has been left empty and has had little beneficial use. The City of Eau Claire began exploring the possibility of installing solar panels on the site in 2012, with the support of the Wisconsin Department of Natural Resources. In 2013, the National Renewable Energy Laboratory completed a [feasibility study](#) of the project as part of the Environmental Protection Agency's [RE-Powering America's Land](#) initiative. The City of Eau Claire is now partnering with Xcel Energy for this community solar garden project. Pristine Sun, a private developer leases the site from the City, and will develop the solar arrays and manage customer subscriptions. Energy produced by the solar garden will be credited to subscribers on their Xcel Energy bill. The developer received a conditional use permit, in keeping with the updated ordinance, to build the solar garden.