Policy Landscape For Rural Utility-Scale Solar Deployment

A Comparative Policy Analysis of Four US states

Humphrey School Capstone Report

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Abstract

As utility-scale solar systems continue to expand across the United States, rural agricultural communities are increasingly at the forefront of land use decisions that will shape the renewable energy transition. While these large infrastructure projects offer significant climate and economic benefits, their sizable footprint and perceived impacts on farmland, rural character, and local autonomy can create significant resistance. This capstone report provides a comparative policy analysis of four states, Illinois, Iowa, Minnesota, and New York, to examine how both local and state policies affect the deployment of utility-scale solar and align with community values, environmental protection, and agricultural preservation.

The report identifies policies and practices that balance the needs of solar developers with the priorities of communities in which that are sited. Key areas of focus include zoning and local regulatory processes, community benefits and participation, and strategies for minimizing land use impacts through dual-use approaches such as agrivoltaics or ecovoltaics. The analysis is based on review of state regulatory frameworks, ordinance reviews, and specific case studies that illustrate how policy tools have been implemented in both supportive and restrictive ways.

Findings emphasize that well-crafted policy instruments, such as specialized zoning districts, vegetation and agricultural mitigation plans, solar scorecards, and community benefit mechanisms, can be designed to align with community values and foster more mutually beneficial and environmentally integrated approaches to utility-scale solar development. This report aims to support the ongoing efforts of the Great Plains Institute and the PV-SuCCESS project to develop a comprehensive decision-making framework for solar development that integrates science-based environmental factors with the sociocultural priorities of Midwest communities.

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Research Limitations

Policy and best practice review was limited to the four states described below, therefore other innovative state or local policies deployed in other regions of the country are largely excluded in the following report. Additionally, all local policies from each of the four states were not able to be comprehensively reviewed due to the high number of counties and municipalities in each state and time constraints of the project.

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Defining Key Terms

Agrivoltaics

Agrivoltaics is the practice of co-locating agricultural activities with solar energy production. Agricultural activities that are considered to constitute agrivoltaics vary, including livestock grazing and crop production.

Dual-Use

Dual-use is the practice of co-locating solar production with a range of secondary land uses. This extends beyond agricultural activities to include uses such as the establishment of pollinator-friendly habitat or ecosystem restorations.

Ecovoltaics

Ecovoltaics is the practice of co-locating and co-prioritizing ecological function and ecosystem services alongside solar energy production [1].

Prime Farmland

Prime farmland is defined by the US Department of Agriculture Natural Resource Conservation Service (USDA-NRCS) as “land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses” [2].

Solar Energy System

Different organizations and institutions use unique terms for defining the equipment and associated facilities necessary for solar energy production. Most frequently used are solar energy systems and solar energy facilities. In this report, solar energy system (SES) will be the default terminology to describe utility-scale ground-mounted solar production facilities, unless other terminology is specifically used in regulatory language.

Utility-Scale Solar

Different organizations and institutions will have unique definitions for what constitutes utility-scale, typically based on size or capacity of the system. For this report, utility-scale solar will be defined as solar energy systems with nameplate capacities 1 megawatt (MW) or greater.

Introduction

The State of Solar Development

In 2024, solar accounted for 66% of new electricity generation capacity added to the US grid, marking a high point in the industry's monumental growth trajectory over the past decade [3]. This trajectory has largely been driven by major reductions in material costs, growing public interest in decarbonizing the energy sector, and strong support from Biden-era federal policies. As a result, solar is now one of the cheapest and fastest growing energy sources in the United States [4].

The majority of new solar developments are utility-scale and commercially operated. While more cost-effective than residential or commercial photovoltaics, utility-scale projects are typically ground-mounted and require extensive areas of land for development [5]. One MW of solar energy typically requires around seven to ten acres of land for generation. Given limited land availability in more developed areas, the flat and spacious acres of sun-soaked agricultural land are often viewed as the best option for the development of utility-scale solar projects [6].

Although these utility-scale facilities can confer significant benefits on the communities in which they are deployed, the size of the facilities and potential displacement of agricultural land can be significant drawbacks for community members, leading to local opposition of utility-scale solar development. As a result, communities may establish local regulations or policies that actively oppose local solar development. This can be a major barrier to solar development, with utility-scale solar developers citing "community opposition" and "local ordinances or zoning" as two of the top three leading causes of solar project cancellation [7].

However, oppositional dynamics do not need to be a hallmark of the relationship between local communities and utility-scale solar developments, and many communities are beginning to find success integrating solar in a manner that reinforces community identity. When development is properly coordinated, utility-scale solar can provide communities with a wide array of ecological and economic benefits without detracting from community priorities and values. Supportive policies that recognize local identities and priorities, and work to tailor solar development to reflect them are crucial for gaining social license and unlocking the full potential of utility-scale solar.

Identifying Policy Supportive of Solar Development

What constitutes a supportive policy can very much depend on the perspective the policy is being considered from. On one end of the spectrum developers are likely to view supportive policies as those that remove development barriers and provide clear guidance for development practices, allowing for reduced project risk and development costs. Such policies may serve to increase solar development, but may not align with community values or best practices for ecosystem protections, resulting in opposition and diminished community benefits. At the other end of the spectrum, local communities are likely to view supportive policies as those that

enhance their control over the solar development process to ensure community values are prioritized. Such policies can succeed in preventing solar development that clashes with community identity, but can often place uneconomic or impractical restrictions on solar developers that prevent solar development entirely.

The intent of this project was to identify best practices and policies that exist at the midspan of this spectrum, where the values of a community are taken into account in a meaningful way so development can occur in a manner that maintains or even enhances community identities. When done well, such policies can create a more supportive and proactive community environment for developers to navigate and ensure tangible ecosystem, agricultural, and economic benefits from solar energy systems. Policies and best practices deployed in Illinois, Iowa, Minnesota, and New York were the primary focus of this project, with the objective of identifying a wide range of policies that could be effectively deployed in a Midwest context. Although not a Midwestern state, New York was included in the analysis due to its advanced level of solar development. Because the solar policy landscape remains heavily fragmented across local and state jurisdictions, identified policies and best practices were broadly organized into the following categories.

1. Zoning and Local Regulatory Processes
2. Community Benefits and Participation
3. Encouraging Dual Use Solar

This report is intended as a stepping stone for broader efforts by the Great Plains Institute as part of the PV-SuCCESS project, which aims to integrate policy best practices with physical science and sociocultural considerations into a comprehensive decision-making framework for solar development.

The report is broken up into four parts:

1. State Solar Policy Snapshots - Brief overviews of solar policy landscapes in Illinois, Iowa, Minnesota, and New York.
2. Rural Utility Scale Solar Policy Landscape - Analysis of policies and practices across the three categories described above.
3. Case Studies - Examples of communities that succeed, or struggle, in balancing local values against utility-scale solar development.
4. Takeaways and Next Steps - How the findings of this report can be applied to the ongoing work of PV-SuCCESS and beyond.

State Solar Policy Snapshots

The states reviewed in this report each have unique priorities for the deployment and management of solar resources. These state-level contexts can have significant impacts on how solar projects are developed as well as how community values and priorities are incorporated into solar development. Understanding of these state-level contexts is therefore essential to understanding why particular best practices or policies may be suitable for some states, but not others. The following section provides a high-level overview of these state contexts, with specific emphasis on the states' renewable energy goals, siting and permitting requirements, and agricultural contexts.

Table 1. Comparison of Foundational Solar Policies Across 4 States in Analysis

	Illinois	Iowa	Minnesota	New York
State Renewable Energy Goals	**2040**: 50% Renewable Electricity **2050**: 100% Emissions Free	105 MW of Total Renewable Energy Deployed by State's Two IOUs	**2035**: 55% Renewable Energy **2040**: 100% Carbon-Free Electricity	**2030**: 70% Renewable Energy **2040**: 100% Emissions-Free Electricity
Solar Siting Authority	Local Gov With State-Determined Backstops	**< 25 MW**: Local Gov **> 25 MW**: IA Public Utilities Commission Permit, Local Standards Still Apply	**< 50 MW**: Local Gov **> 50 MW**: MN Public Utilities Commission	**< 20 MW**: Local Gov **20-25 MW:** Developer's Choice **> 25 MW**: NY Office of Renewable Energy Siting
% State Electricity From Solar (% Utility-Scale)[1]	2.49% (1.45%)	1.65% (0.96%)	4.73% (4.04%)	6% (2.57%)
% Agricultural Land	74%	84%	50%	22%
% Prime Agricultural Lands[2]	54%	49%	34%	9%

[1] U.S. Energy Information Administration, 2024: Solar Generation, See Reference [8]
[2] USDA Prime Soils / total statewide acres: USDA Natural Resource Survey 2017, See Reference [9] and [10]

Illinois State Snapshot

Climate and Renewable Energy Goals

The passage of the Climate and Equitable Jobs Act (CEJA) in 2021 saw Illinois (IL) strengthen its renewable ambitions by expanding the state's Renewable Portfolio Standard (RPS) to a 40% renewable electricity mix by 2030 and a 50% mix by 2050. The act also requires any coal and gas generation facilities to have zero emissions by 2045. Alongside the state's robust nuclear portfolio, these requirements aim to achieve 100% carbon-free energy by 2050 [11].

CEJA builds on nearly two decades of proactive renewable energy policy, beginning with the passage of the Illinois Power Agency Act in 2007. This act established the state's first RPS, which targeted 25% renewable energy by 2025, and created the Illinois Power Authority to oversee clean energy procurement to meet this RPS [12]. The passage of the Future Energy Jobs Act in 2016 further built on this progress by updating the RPS targets and, most notably, establishing the Illinois Shines program, which provides significant financial support to community-oriented solar projects [13].

Solar Siting Authority

Siting and permitting authority for all solar projects has traditionally been delegated to local governments in Illinois. Legislation passed in 2023, Public Act 102-1123, reaffirmed county authority over siting and permitting requirements, however limited these county-level requirements to be no more restrictive than as described in the legislation [14]. These limits included maximum setback and dimensional requirements for SES, maximum timelines for carrying out certain procedural processes, and banning counties from enacting local moratoriums. Counties were required to adhere to these requirements within 120 days, however authority for enforcement was not clearly allocated, leading to many counties failing to comply and a litany of lawsuits between developers and noncompliant counties.

Agricultural Landscape

All solar facilities sited on farmland and greater than 500 kW are required to enter into an Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture prior to construction. Illinois has approximately 27 million acres of farmland that account for about 75% of the state's total land area. Corn and soybeans are the state's largest crops, with hogs being the primary livestock. Agricultural commodities generate $19 billion for the state annually. Farmland in Illinois has steadily declined in recent decades, with over 1.5 million acres of farmland being removed from operation between 1990 and 2021. In an attempt to preserve agricultural land, Illinois passed the Agricultural Areas Conservation and Protection Act (AAPA) which began creating agricultural areas where land use was required to be confined to agriculture. There are currently 123,000 acres of protected agricultural land in the state [15].

Iowa State Snapshot

Climate and Renewable Energy Goals

Iowa's (IA) Alternative Energy Production Law, which established the nation's first renewable portfolio standards in 1983 and initially spurred utility investment in wind projects, is now outdated and ineffective at driving further growth [16]. The discontinuation of key incentives, including the Alternative Energy Revolving Loan Program (1996–2021) and the Solar Energy System Tax Credits (2012–2021), has further stalled progress [17] [18]. Without state-level policy support for large solar generation, the responsibility for incentivizing solar development largely falls to local governments.

Solar Siting Authority

In Iowa, municipalities and county governments hold authority over land use and permitting for utility-scale SES. Projects of 25 MW or larger require additional approval from the Iowa Utilities Board [19]. Local authorities have primary control over siting, setbacks, and other planning considerations, which can either promote or restrict utility-scale solar development. Currently, approximately one-fourth of Iowa's 99 counties have defined ordinances regulating large solar projects (Appendix D).

Agricultural Landscape

Iowa has long been defined by its fertile soils and agricultural land use, with over 85% of its 36 million acres dedicated to farming [20]. As a national leader in corn and soybean production, agriculture remains the backbone of Iowa's economy, contributing approximately 22% to the state's total economic output in 2022 [21]. However, climate change threatens this sector, with rising temperatures, droughts, and extreme weather increasing irrigation demands and jeopardizing crop yields.

Minnesota State Snapshot

Climate and Renewable Energy Goals

In 2013, Minnesota (MN) passed its Solar Energy Standard to increase the share of solar energy generated within the state. The legislation requires utilities to obtain 1.5% of their electricity sales from solar by 2020, with a goal for the state to produce 10% of its electricity from solar by 2030 [22]. In 2023, MN enacted a Carbon-Free Energy Standard (CES) which requires all electric utilities to source 100% of the electricity they sell from non-carbon-emitting sources by 2040 [23]. The legislation also revised the state's Renewable Portfolio Standard (RPS), requiring 55% of energy sold to come from eligible sources by 2035 [24].

Solar Siting Authority

In MN, siting and permitting authority for solar energy systems is contingent on project size. Local entities have jurisdiction over solar energy projects under 50 MW. Site permits for projects sized 50 MW and larger are issued by the state's Public Utilities Commission (PUC) and supersede local zoning, building, and land use rules. However, the PUC does consider land use conflicts and impacts to humans and the environment when reviewing permit applications for solar energy projects. Local and state agencies including the MN Department of Agriculture (MDA), Department of Natural Resources (DNR) and Board of Water and Soil Resources (BWSR) assist solar developers throughout project planning, construction, and post-planning maintenance and assist the PUC with reviewing project plans.

Agricultural Landscape

MN has about 25.5 million acres of farmland and about 17.3 million acres of prime farmland [9]. Solar energy projects that fall under the jurisdiction of the PUC are subject to the state's Prime Farmland Exclusion Rule, which prohibits the siting of energy generating facilities installations where it includes more than 0.5 acres of prime farmland per MW of net generation capacity [25]. If the Rule is triggered, applications must include an analysis of prudent and feasible siting alternatives for the project. The PUC may grant a variance to the Rule if its exemption criteria have been satisfied [26].

New York State Snapshot

Climate and Renewable Energy Goals

New York's (NY) Climate Leadership and Community Protection Act was passed in 2019, requiring 70% renewable energy by 2030, 100% emissions free electricity by 2040. NY's Clean Energy Standard was also updated by the NY Public Service Commission to meet the goals set by the Climate Act in 2019 [27]. The Clean Energy Standard features two mechanisms – the renewable energy standard (RES) and zero-emissions credit (ZEC) requirements – that require every load serving entity (utilities, electric companies) to procure renewable energy certificates (RECs) and ZECs. Starting in 2025 all RECs must be purchased through NY's Energy Research and Development (NYSERDA) through an annual solicitation process [28].

Solar Siting Authority

NY's Office of Renewable Energy Siting (ORES) has sole siting authority on solar projects greater than 25 MW. Local government laws, generally towns, have authority to regulate through zoning laws any solar project under 25 MW. Projects between 20-25 MW have the option of going through local review or the state permitting process. ORES has statutory authority to supersede local government ordinances when siting solar projects over 25 MW. The state permitting process was revised in 2020 in an effort to expedite the process, which had been plagued by delays and cumbersome procedural requirements under the previous process [29]. The revised process introduced strict timeline requirements for permit approvals and appeals, uniform development and operation standards, and greater authority to override local authority. Some in development projects remain under the previous permitting process, while some have chosen to transfer to the new process.

Agricultural Landscape

22% of NY's land is dedicated to agriculture. These acres produce nation leading amounts of dairy products (milk, sour cream and cottage cheese), maple syrup, and fruit [30]. Most of this agricultural productivity occurs on the 2.6 million acres of prime agricultural land within the state. Since 1971, NY's Agricultural Districts Law has provided incentives for keeping land in agriculture by reducing property tax bills and limiting property tax assessments to the agricultural assessment value. The agricultural districts framework limits unreasonable local regulation on farm practices and provides protection from private nuisance suits, among other provisions. The agricultural districts align with NY's constitutional requirements for the state, "to conserve and protect its natural resources and scenic beauty and encourage the development and improvement of its agricultural lands for the production of food and other agricultural products" [31]. This constitutional requirement for agricultural development and improvement permeates solar development throughout the state.

Utility-Scale Solar Policy Landscape

The following sections outline the general policies and practices that were found to uniquely impact the deployment of utility-scale solar. The categorization of these policies was informed by what was found in the multi-state analysis as well as review of existing literature and research on the topic. For each of the three categories discussed below, various policy tools are evaluated to determine how they can be utilized to support community-oriented solar development. These evaluations are accompanied by real examples of how these policy tools have been deployed. The policy tools are categorized into the following sections:

1. Zoning and Local Regulatory Processes
2. Community Benefits and Participation
3. Encouraging Dual Use

The section is bookended by a discussion of solar scorecards as a potential best practice to address priorities from each of the three categories discussed.

Zoning and Local Regulatory Processes

Zoning and other regulatory processes that are administered at the county or municipal level can play a significant role in determining where developers choose to locate solar facilities and how a solar facility ultimately takes shape. These processes can be utilized by local governments to publicly signal a willingness and desire to accommodate solar development, or create a more oppositional landscape that pushes developers elsewhere. As part of utility-scale solar development, regulatory processes that are proactive and well-crafted can ensure that the facility aligns with the community's cultural and economic identity, or result in the facility remaining an unwelcome addition to the community's landscape for the duration of its service life. This section examines zoning practices and regulatory processes that are engaged by local governments which impact utility-scale solar, and identifies how local governments within the four states considered are using these processes in unique or impactful ways. Other notable zoning practices and regulatory practices not discussed in this section are provided in Appendix A.

Comprehensive plans can help local governments plan for and encourage solar development

Comprehensive plans serve as a key tool for local governments to outline and communicate a vision for the future of a county or municipality. These plans serve as both a guide and legal foundation for local regulations, and can be utilized to establish goals and strategies for local governments to support the development of solar projects. However, local comprehensive plans frequently lack formal discussions of local goals and priorities related to solar development, or are outdated such as to not reflect the current value proposition of solar for communities. This can result in high levels of uncertainty related to what value solar can bring to the community, how solar can be integrated into the community, and what can be done to facilitate solar

deployment. The comprehensive plan of Piatt County, Illinois, for example, hasn't been updated since 2010 and includes outdated information on the cost-prohibitive nature of solar energy at the time of writing. The plan identifies opportunities for solar energy to improve local infrastructure as part of a SWOT analysis, but provides no clear goals or strategies to capitalize on the opportunity [32].

Including clear strategies and goals for solar development in the comprehensive plan can help provide a framework for local authorities to incorporate solar into the community in a manner that reflects local goals and priorities. These frameworks can help to reduce key uncertainties for local authorities while also signalling to outside stakeholders, such as developers or policymakers, these local goals and priorities in regard to solar development.

An example of this can be seen in the comprehensive plan for Stearns County, MN which clearly establishes the county's objectives for solar and how development can be balanced against other local priorities. The plan specifically addresses the role of solar energy in the county, which includes a discussion of the financial and environmental benefits the county derives from its current solar resources and a map of solar resources deployed in the county. The plan further establishes clean energy policies for the county that balance the county's solar development goals against protection of the county's agricultural and natural resources, including requirements for beneficial habitat ground cover and considerations for reducing conflicts with adjacent land uses. This approach allows the discussion around solar development to be centered within a more locally-applicable context, and signals to both county residents and outside parties why and how solar should be approached within the county [33].

Clear zoning codes and special-purpose districts can tailor zoning to better reflect unique community contexts

Local zoning codes typically include classification of land parcels as distinct zoning districts, with each district being governed by unique zoning standards. These classifications can include districts zoned for commercial, agricultural, industrial, and residential use, amongst many others. Zoning codes will typically identify whether an activity is considered a principal or accessory use on a given parcel, and whether that activity is permitted, prohibited, or conditionally permitted [34]. These zoning decisions are typically handled at the local level, however some aspects of this authority are restricted in IL where state law prevents local ordinances from restricting solar development on agricultural or industrial zoned land. A streamlined example of zoning for permissible use can be found in Bond County, IL, which has 11 unique zoning districts generally categorized into Agricultural, Residential, Office, Commercial, and Industrial Use. In conformance with state requirements, Bond County specifically designates all "solar farm energy systems" as a permitted use for Agricultural, Commercial, and Industrial Districts [35].

Zoning codes that fail to specifically address particular activities and land-uses can result in confusion and uncertainty related to how the zoning codes apply on a case-by-case basis. Therefore as utility-scale solar deployment continues to expand into new communities,

well-defined standards that specifically address the permissible uses of solar are fundamental to its orderly development.

The establishment of special-purpose districts can improve the process by providing a degree of flexibility to these otherwise somewhat rigid classifications. Special-purpose districts can be subcategories of the aforementioned districts or an entirely unique district that doesn't neatly fit the bill of preexisting districts. The districts can serve as their own base district, or be overlaid onto other existing base districts to add to or modify the standards of the district. These districts can allow communities to adapt their zoning strategies to better reflect the unique characteristics and contexts of the community [34] [36]. For communities considering the development of utility-scale solar, these special-purpose districts can allow communities to strategically and selectively determine ideal locations for deployment and paint their allowances with a more refined stroke.

We can look to Johnson County, IA for how these are applied in practice. Johnson County has 18 unique zoning districts ranging from light industrial districts to agritourism districts. However, utility-scale solar is only a permitted use in two of these districts: Agricultural and Renewable Energy Zoning Districts. The Renewable Energy Zoning Districts were specifically developed in 2022 with the intent to "allow for the orderly development of utility scale solar energy systems." These districts have distinct siting and design requirements and allow the county to tailor zoning requirements to the specific needs of utility-scale solar. Any planned utility-scale solar facility greater than 20 acres must be developed on a lot that has been rezoned to a Renewable Energy District [37].

Plans that minimize development impacts can help preserve agricultural identity of communities

Construction and site maintenance practices for utility-scale solar development frequently involve site grading and replacing existing vegetation with low-cost gravel or turfgrass [38]. These practices can create conditions for increased soil degradation and stormwater runoff generation, often having negative impacts on the long-term health and productivity of the soil [39]. Reflecting community concerns over farmland preservation, many local authorities may seek to prevent solar development on productive agricultural land altogether. For example, Cedar County, IA restricts utility-scale solar development on lands that have a Corn Suitability Rating 2 (CSR2) of 65 or higher, as determined by state criteria [40].

However, rather than avoiding productive agricultural land, alternative techniques can be applied during the construction, operation, and decommissioning phases of development to minimize impacts on long-term agricultural productivity. Across the states studied, efforts to address these concerns most commonly included ordinance tools such as Vegetation Establishment and Management Plans (VMP), Agricultural Impact Mitigation Plans (AIMP), and Decommissioning Plans. These ordinance tools primarily establish requirements for developers to identify, protect, and often enhance the ecosystem services or agricultural assets of the developed land.

VMPs are typically designed to outline the vegetation requirements of the project site, as well as ensure proper maintenance and monitoring throughout its operation. The plans often include language to minimize soil compaction during development, require the use of native or perennial species mixes, and promote pollinator, wildlife, or grazing-friendly practices. Additionally, many jurisdictions incorporate explicit requirements for vegetation species, planting methods, or environmental monitoring directly into ordinance language, sometimes without the establishment of formal plans.

Ordinance language focused on the protection of agricultural resources were most often included in AIMPs. Required for utility-scale solar permits in both MN and IL, these plans were also consistently found throughout IA and NY. AIMPs are particularly useful in agricultural counties, as they outline how potential adverse impacts to farmland will be avoided, corrected, and mitigated throughout project development and operation. These plans typically focus on preserving the long-term viability of agricultural production by addressing issues that affect land productivity. They also commonly consider impacts to agricultural infrastructure, such as drain tile and irrigation systems.

Despite differing objectives, VMPs and AIMPs often contain considerable overlap in their approach to protecting natural resources. The methods important for the successful establishment and maintenance of native vegetation align with the soil health principles vital for enabling the continued protection of the underlying agricultural land over the course of development. Champaign County, IL represents a strong example of a locality where both agricultural and vegetation minimization strategies have been implemented into the ordinance language with extensive protection for agricultural drain tiles, reductions in soil compaction and topsoil removal with a requirement for native vegetation that “shall serve a secondary habitat purpose as much as possible.” [41]

Decommissioning plans were one of the most ubiquitous minimization tools represented across our multiple state analysis. MN and NY each have statewide decommissioning requirements, and a significant number of local jurisdictions also mandate decommissioning plans [42]. These plans consider the end of life for the solar panels and often include mechanisms to ensure the removal of SES infrastructure through financial security such as bonds, escrow accounts, or abandonment provisions. They also often include requirements for the restoration of soils and vegetation to a predevelopment state, or recycling of equipment.

These actions address many of the major concerns of communities located near solar facilities like soil health, water quality and loss of agricultural productivity. It is crucial for a local entity to understand these concerns of their community so they can effectively tailor policies and practices to ensure concerns are being heard and incorporated into the development process.

Site requirements can address local concerns and ensure SES align with community identity and character

Site requirements for how a SES must be situated within its designated footprint can be just as impactful on how it integrates into a community as the zoning requirements that dictate where it

is situated. The spatial and aesthetic requirements for the site can often be the biggest drivers of this, with the visual and auditory effects of SES frequently being cited as a concern for new solar development. Given the unique characteristics of SES, existing site requirements for other commercial or industrial facilities are typically a poor fit for solar, and therefore requirements specifically crafted for solar are essential for ensuring solar development aligns with community values.

Local authorities can require the layout of solar facilities to adhere to a variety of spatial requirements, including setback distances from property lines or roads, maximum component heights, and lot coverage limits. These setbacks can serve a wide variety of purposes, such as in MN where numerous counties are enacting specific setback requirements near wildlife travel corridors and preservation areas, which is further discussed in Appendix A.

Local authorities may also require solar facilities to meet certain aesthetic requirements, such as requiring vegetative screening or fencing to surround the facility. These site requirements can be particularly impactful for resolving community concerns related to the visual and auditory impact of a solar facility, especially when the facility is located near occupied residences or high traffic areas [39]. For example, the town of Franklin, NY requires that solar facilities minimize their visual impact “using architectural features, earth berms, landscaping, or other screening methods that will harmonize with the character of the property and surrounding area.” By specifically requiring these facilities acknowledge and conform to the local character of the surrounding area, the facilities will be significantly less likely to disrupt the landscape community members have become accustomed to [43]. When carefully crafted with local contexts in mind, site requirements such as Franklin’s can help mitigate the impact of a solar facility and allow it to blend in with the local character of the community, helping it to gain approval and become an accepted aspect of the local landscape.

However, site requirements can also be deployed in a manner that disproportionately restricts how solar can be deployed in comparison to other industrial or commercial facilities. Such restrictions can be seen in Dubuque County, IA, which is in the process of developing a renewable energy ordinance. The latest edition of the ordinance’s working draft, published in July 2024, proposed that utility-scale solar facilities maintain a minimum setback of 1,320 feet from adjacent roads and property lines. This is in stark contrast to other heavy industrial districts in the county, which are only required to maintain a maximum 50 ft setback. Such large setbacks would be highly unorthodox and heavily restrict where solar can be developed [44] [45]. Therefore, it’s essential that site requirements are calibrated to maintain a balance between addressing community concerns without placing unreasonable restrictions on solar development.

Clear procedural processes can shape how developers approach projects and ensure community-aligned development

Most permitting authorities for SES have specific procedural standards that define requirements for applications and the decision-making process for determining approval of the facility [34]. These can range from pre-application meetings to required fees to an array of other,

miscellaneous requirements a permitting authority may deem relevant to the application process. Procedural requirements can significantly impact how a developer approaches their application and, when approached at the local level, can help to ensure that development aligns with community priorities and values.

Permitting authorities commonly have a fixed set of submittals that must be provided as part of the application process for approval of a solar facility. The required submittals frequently include site plans, topographic maps, environmental assessments, decommissioning requirements, and proof of insurance, amongst many others [34]. Requirements will often have considerable variance between permitting authorities, and a proactive effort by counties to create clear and accessible application requirements can help to ease the application process for potential developers and ensure that the project proceeds in line with local expectations.

To create a clear and orderly application process, Lake County, IL maintains resources on the County's website that provide an in-depth walkthrough of the application process. These resources include an overview of the steps in the review process of the application, background on the criteria by which a permit application is assessed, a list of key requirements for the application, and a list of frequently asked questions regarding solar facilities. Additionally, as part of the application process, developers are required to meet with the staff of the County's Planning, Building and Development Department prior to preparing a permitting application. The intent of the meeting is to facilitate discussion between parties to identify potential issues and limitations of the project while ensuring developers have a comprehensive understanding of Lake County's application requirements [46].

The review of permitting applications can also be a time- and resource-intensive process for permitting authorities, and fees are necessary for these authorities to recuperate the expenses of these reviews. Multiple fees may be required as part of the application process, including building permit fees, engineering and testing fees, road use agreement fees, and legal fees, amongst others. These fees are typically charged up-front and can take on many forms, such as a cost per MW or a simple flat fee. Fees are an expected cost of any planned solar facility, however the structure and scale of the fees charged by permitting authorities can serve to attract or deter the attention of solar developers. As a result, fees can be reflective of broader community attitudes towards solar development, leading to some significant outliers such as Ogle County, IL charging a flat $100,000 fee for all utility-scale solar applications, which is further discussed in the Ogle County case study. Permitting authorities should ensure that fee structures are clearly structured to remove uncertainties and reasonably calibrated to cover required costs without placing excessive financial requirements on applicants.

Moratoriums can be used strategically to allow for community participation and adequate planning

The plans and ordinances described above can be time consuming and complex for local authorities to develop. When faced with a proposal for a large development, such as utility-scale solar, that local institutions have not previously dealt with, these institutions may lack the

technical expertise or staffing capacity to effectively update their ordinances to accommodate the development. In such instances, moratoriums can provide local authorities with the opportunity to update ordinances and adequately prepare for new forms of development. Unlike outright bans, moratoriums restrict development for a limited period of time and typically for a specific purpose. However, moratoriums and bans are frequently treated as synonymous, leading to negative perceptions of moratoriums as a whole from developers and renewable energy advocates. This can be seen in moratoriums on wind and solar development being prohibited under IL state law.

When used in good faith, moratoriums can allow local authorities time to better understand how new developments will impact the community and how local ordinances can ensure the development aligns with community values and priorities. Many of the standout local ordinances described throughout this report have been the product of such good faith moratoriums, such as that of Mills County, IA. On using the moratorium to allow time to develop a new solar ordinance, Mills County Building and Zoning Technician Holly noted “The goal is not to deter this but to be conscious of those in the surrounding areas and how we want this to affect Mills County.” The new ordinances resulting from this moratorium are discussed in the Mills County case study [47].

Section Summary

Table 2. Exemplary Zoning and Local Regulatory Process Examples

Jurisdiction	Policy Tool	Key Features
Stearns County, MN	Comprehensive Plan	➔ Discusses environmental and financial benefits of solar ➔ Establishes clean energy policies balancing support for development against local goals and priorities
Johnson County, IA	Zoning Districts	➔ Permits solar up to 20 acres in area on agricultural zoned land ➔ Creates a specific renewable energy zoning district for solar greater than 20 acres
Town of Franklin, NY	Site Requirements	➔ Requires visual screenings that “harmonize with character of the property and surrounding area”
Lake County, IL	Procedural Requirements	➔ Resource database that walks developers through the application process and identifies key requirements ➔ Requirement for developers to meet with county staff prior to application to review steps and ensure mutual understanding
Mills County, IA	Moratorium	➔ Usage of moratorium to establish comprehensive new solar ordinances in preparation for future development

Community Benefits and Participation

Successfully deploying utility-scale solar projects requires more than meeting development requirements, it also depends on fostering public support through equitable distribution of benefits and meaningful public engagement. Ensuring that host communities receive tangible advantages from developments and understand the assets of dual-use or agrivoltaic components is vital to reducing the feelings of distrust and lack of transparency often felt by community members [48].

This section explores mechanisms to maximize community benefits and promote informed participation, including tax revenue structures, state-mandated benefit programs, developer-community agreements, and mechanisms for direct community engagement. Together, these strategies help ensure that utility-scale solar projects support local economies, ecosystems, and the communities most affected by their deployment. Other notable practices regarding community benefits and participation not discussed in this section are provided in Appendix B.

Local tax revenue structures can support public services and provide communities with flexible, predictable benefits

In the context of utility-scale solar, local tax revenues refer to the funds contributed by solar projects to local governments through property taxes or similar replacement taxes. These revenues are typically based on the assessed value of the solar infrastructure or the amount of electricity generated, delivered, or transmitted. They can serve as important community benefits, helping to offset the potential impacts of large-scale energy development. By supporting essential public services, such as roads, emergency response, education, and infrastructure, these revenues ensure that host communities receive meaningful returns from solar development. While the structure and scale of these revenues vary by state and project, a well-designed tax system can align with local needs and provide a reliable, long-term source of funding.

To better understand these variations, the University of Michigan's Gerald R. Ford School of Public Policy categorizes state utility-scale solar tax structures into four types: exemption and replacement, exemption or abatement, no special treatment, and local control [49]. MN exempts utility-scale solar projects over 1 MW from standard property taxes, replacing them with a Solar Energy Production Tax based on electricity output [50]. IL uses an exemption or abatement model. Projects over 2 MW in counties with fewer than three million residents are assessed using a standardized "fair cash value" formula, which includes both land and solar infrastructure [51]. IA does not provide solar-specific tax treatment but applies a statewide Replacement Tax originally designed for electric and gas utilities. This tax now covers all electricity generators, including solar, and is composed of generation, delivery, and transmission components [52].

NY's Real Property Tax Law § 487 stands out amongst this group of states, providing a 15-year exemption from property tax increases for the increase in assessed value resulting from the

installation of utility-scale solar projects [53]. Local jurisdictions can opt out of this exemption and tax solar projects like any other property, though many instead require developers to negotiate Payments in Lieu of Taxes (PILOTS). These PILOT agreements, often calculated based on a project's generating capacity, offer predictable revenue streams for municipalities while allowing developers to avoid full taxation [54]. This model allows flexibility for local governments while still incentivizing development. Lewis County, for example, has used its PILOT policy to offer reduced rates for projects sited on non-prime farmland, aligning tax incentives with broader land use goals [55].

State mandated benefit programs can distribute money to localities and individuals

Some states have established formal programs that require developers to provide payments to host communities. These programs are typically standardized across all projects that meet a certain threshold, and are intended to simplify the benefit process while ensuring equitable compensation. The state often plays a role in setting program rules, assigning administrative responsibility, and monitoring compliance. In contrast to direct payments negotiated by developers or mandated by statute, other states operate programs that redistribute revenue collected from renewable energy development, typically in the form of taxes or levies. These revenues are pooled at the state level and then allocated to local governments based on criteria such as project size or electricity generation. This approach links financial benefit to the actual energy output of projects rather than up-front commitments or flat payments.

NY's Host Community Benefit Program is a premier example of a state-mandated benefit program. The program requires owners of large-scale solar projects to provide annual payments of $500 per MW for the first ten years of operation. These payments are administered by electric utilities, which also take on the program's administrative costs. The program is intended to reduce local utility bills and strengthen community support for renewable energy projects. As of 2024, at least eight planned projects are expected to contribute between $45,000 and $250,000 annually, though no projects are yet operational, and the program's long-term effectiveness remains to be seen [56].

Developers and host localities have a variety of community focused agreements at their disposal

As utility-scale solar projects expand across the country and impact communities, developers are increasingly expected to demonstrate accountability and responsiveness to local priorities. One of the most effective ways to formalize this commitment is through voluntary agreements negotiated with residents or local stakeholders. These agreements, while often not required by permitting authorities, serve as tools for building trust, addressing local concerns, and ensuring that community needs are considered throughout the developmental process.

Two of the most common tools for developer-community engagement are Community Benefit Agreements (CBAs) and Good Neighbor Agreements (GNAs). CBAs are legally binding contracts between a solar developer and a group of local stakeholders, such as community organizations, nonprofit groups, or government representatives. These agreements are negotiated outside of formal permitting procedures and drafted to reflect the specific priorities of the community. Typical provisions may include commitments to local hiring, infrastructure improvements, education partnerships, or financial contributions to community funds. Because CBAs are context-specific, they can vary widely in content and scope, but their primary goal is to ensure the project generates lasting, locally recognized value [57].

Good Neighbor Agreements are voluntary contracts between developers and non-participating landowners who, while not hosting the solar infrastructure, may still be directly affected by the project. These agreements often address concerns related to viewshed, noise, property value, and land use impacts [58]. In some cases, GNAs offer compensation, landscaping improvements, or other mitigation measures in exchange for the neighbor's support or non-opposition [59]. While less comprehensive than CBAs, GNAs are useful tools in reducing opposition from residents who may otherwise be excluded from direct project benefits.

While these agreements are often negotiated outside formal permitting processes, they play a crucial role in building trust and fostering a social license to operate within communities. By proactively addressing local concerns and distributing benefits more equitably, CBAs and GNAs contribute to the successful integration of utility-scale solar projects into communities.

Community participation is an essential part of the utility-scale solar development process

Strong community engagement is a critical component of any successful utility-scale solar development process. Best practices involve engaging local residents, landowners, and other stakeholders early and meaningfully to ensure that projects reflect community values, build trust, and minimize conflict [60]. This approach helps developers establish a social license to operate and fosters long-term community support.

State requirements for community participation in solar permitting vary, though most mandate some form of public engagement. IA and IL emphasize county-level control, requiring engagement processes at the local level, while MN and NY centralize permitting at the state level but integrate local input through structured procedures.

In IA, projects over 25 MW must obtain a Generating Certificate from the Utilities Board, which includes public meetings on environmental impacts and permit conditions. Smaller projects are subject to county-level requirements, which vary by jurisdiction. For instance, Greene County, IA requires a community open house before a conditional use permit can be issued. Applicants must notify the County Board, Zoning Administrator, and property owners within 1,000 feet at least ten days in advance, and hold the event on a weekday evening within five miles of the site or at the Greene County Courthouse. Applicants must then present detailed project information,

collect community feedback, and submit a report summarizing the event as part of the permit application [61].

In IL, state law (Public Act 102-1123) mandates that counties hold at least one public hearing within 60 days of receiving a project application. A siting or permitting decision must then be made within 30 days after the hearing concludes. This ensures a clear timeline for community input and project review at the county level.

In MN, the Public Utilities Commission is responsible for permitting utility-scale solar projects. State law requires the Commission to hold at least one public meeting near the proposed project site. At this meeting, the Commission must outline the permitting process, present key issues, and collect public comments on the scope of environmental review. Written comments are accepted for at least ten days following the meeting, allowing additional time for community feedback.

In comparison, NY has a more structured approach to community engagement through the state's Office of Renewable Energy Siting (ORES). Through the ORES framework utility-scale solar developers are required to conduct outreach to host municipalities and community members at least 60 days before submitting a permit application. They must also prepare a formal Community Engagement Plan outlining how the public will be engaged, educated, and consulted throughout the permitting process. This plan must demonstrate meaningful opportunities for input and collaboration [56].

NY also requires applicants to pay into an intervenor fund for local governments, political organizations, or community members to ensure informed local participation. The intervenor fee is assessed at $1,000 per MW of generating capacity up to $400,000 [62]. These funds are held and administered through NYSERDA and distributed through an application process at the direction of the Executive Director of the Siting Office [63].

Effective community engagement mechanisms facilitate inclusive community input and long-term planning

Proactive community engagement serves as a valuable planning tool, enabling developers and local governments to align solar development with long-term land use priorities. Our analysis identified a range of participation strategies, including citizen committees, surveys, open houses, and public mapping tools, that were used to amplify local feedback and align projects with shared goals such as agricultural preservation and water quality protection.

A strong example of a public mapping tool can be found in Murray County, MN, where a community-informed solar siting project helped guide development in a way that respected both technical constraints and local values. Led by the Great Plains Institute, the initiative combined stakeholder input with geospatial analysis to identify areas best suited for solar based on factors like grid access, ecological sensitivity, and conservation priorities. By centering public participation in the planning process, the county developed a replicable model that supports

clean energy growth while promoting long-term land stewardship [64]. Murray County is further discussed in Appendix B.

In some cases, these more innovative tools also informed ordinance language and offered recommendations to ensure compatibility with surrounding land uses. For example, in 2022, after enacting a one-year moratorium on new solar developments to allow for the drafting of a new utility-scale solar ordinance, Linn County, IA formed four renewable energy committees. Composed of both supporters and concerned residents, these committees drafted sets of recommendations to encourage cooperation between developers and the public and better align the language of the ordinance with the desires of the community. The recommendations included statements on ideal setback, screening, and noise requirements, enforcement mechanisms, the explicit promotion of agrivoltaics, encouragement of cooperation between developers and adjacent landowners, and proactive engagement by the county with the broader community on strategic growth plans [65].

These more innovative and inclusive engagement strategies go beyond collecting feedback and give communities a voice in shaping what solar development looks like and where it occurs. Tools such as public mapping platforms and advisory committees empower residents to identify preferred siting areas, raise concerns, and ensure that renewable energy development supports the broader goals of the community.

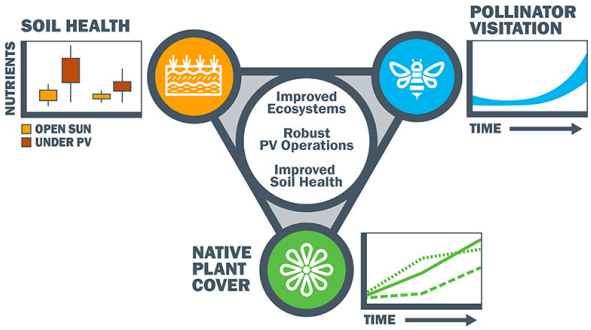
Section Summary

Table 3. Exemplary Community Benefits and Participation Examples

Jurisdiction	Policy Tool	Key Features
New York	Payments-In-Lieu-Of-Taxes Program	➔ Payments are based on project capacity ➔ Agreements provide predictable revenue in place of property taxes ➔ Local governments can negotiate terms to align with land use goals while incentivizing solar development
New York	Community Benefits Program	➔ Requires annual payments of $500/MW for large-scale solar projects for ten years ➔ Administered by utilities to residents in host communities
New York	Intervenor Payment	➔ $1000/MW Payment for Community Participation
Linn County, IA	Renewable Energy Committees	➔ Composed of both supporters and concerned residents ➔ Drafted recommendations to align ordinance language with community values ➔ Explicitly advocated for dual-use practices
Murray County, MN	Solar Land-Use Mapping Tool	➔ Created a replicable model for balancing solar development with local land use goals ➔ Used public input and geospatial analysis to guide future solar siting

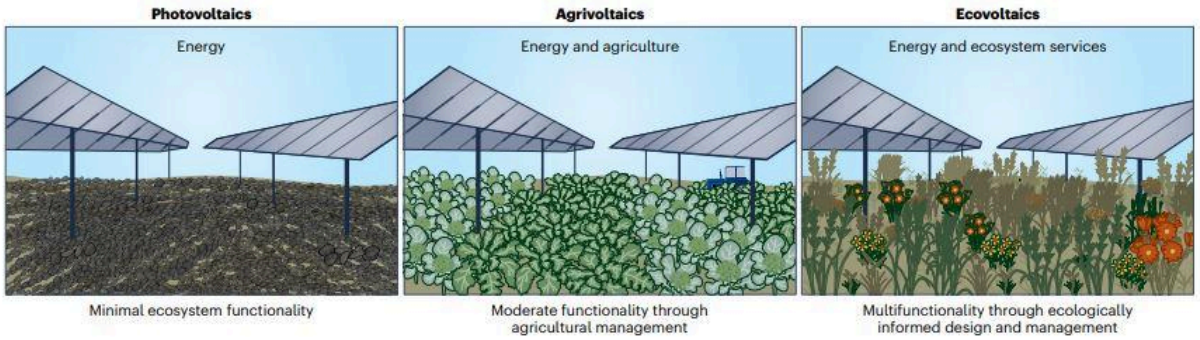
Encouraging Dual-Use Solar

Dual-use solar refers to the co-location of solar energy production and another land use. While there are no universally agreed upon definitions, dual-use solar systems are generally differentiated in their primary focus and scope. One type of dual-use is agrivoltaics, which involves the combination of agricultural and solar energy production on the same land. Ecovoltaics, another type of dual-use solar, focuses on the co-location and co-prioritization of ecosystem services with solar energy production [66]. These alternative approaches to solar development are promising pathways for addressing land use conflicts while also providing benefits to local communities and the environment beyond climate change mitigation from energy sector decarbonization [67]. This section examines the extent to which existing state and local-level policies enable ecovoltaic and agrivoltaic models of solar development.



(Left) Graphical representation of the main findings of InSPIRE research on solar development at ecovoltaic sites in MN, See Reference [68]

(Below) Examples of Agrivoltaics and Ecovoltaics in comparison to non-dual use solar, See Reference [67]



States co-prioritize solar energy deployment and ecosystem services through pollinator-friendly designation programs

The widespread conversion of prairie ecosystems across the Great Plains into agricultural land has had negative consequences for wildlife, particularly for pollinator species [69]. In the face of growing concerns over the decline of pollinator species and other externalities associated with habitat loss and fragmentation, conservation groups recognized the opportunity to restore native grasses and forbs on the land beneath and between solar arrays. This ecovoltaic approach allows for the buildout of solar energy systems while also rebuilding critical wildlife habitat and ecological function. These restored natural processes deliver other positive environmental, social and economic outcomes, which enhances the overall impact and value of the SES.

One of the most prominent policies implemented by states to encourage developers to establish and maintain beneficial habitat within solar sites is through pollinator-friendly solar certification programs. MN has led the way on these initiatives. In 2016, lawmakers passed legislation building on established pollinator habitat restoration and protection guidelines to promote the development of pollinator habitat at solar sites. H.F. 3353 tasked MN's Board of Water and Soil Resources with developing beneficial habitat standards for solar sites and established the country's first voluntary Habitat Friendly Solar designation program [70]. Solar projects that meet and maintain the requirements outlined in MN BWSR's Solar Site Pollinator Habitat Assessment Scorecard may claim that the site provides beneficial habitat and be designated as pollinator-friendly. Despite being voluntary, the program has gained significant traction among developers. As of October 2024, MN has 67 pollinator-friendly sites covering nearly 7,100 acres [71].

The movement to protect pollinators by restoring critical foraging and nesting resources within solar sites took root in MN and gave way to other states taking action to direct the development of their own pollinator-friendly solar designation programs often using the exact same language. IL and NY, for example, have recognized the important role solar developments can play in incorporating native grassland habitat back to the landscape and have passed pollinator-friendly solar laws of their own.

The co-benefits associated with incorporating pollinator habitat into solar development expand beyond direct insect beneficiaries. These practices also have the potential to enhance food security and agricultural productivity, particularly when these systems are established in close proximity to land used for cultivating pollinator-dependent crops like soybeans and alfalfa [72]. A major benefit for rural agricultural communities of the Midwest and beyond.

State level policy comparison for agricultural protection and agrivoltaic encouragement

Large swaths of relatively flat, undeveloped land make ideal locations for solar development and, in the Midwest that usually means farmland. Converting farmland into SES often involves conflicts with the potential impact on loss of food production, local industry, cultural identity, and

long term soil health. However, agrivoltaic models of solar development can optimize land use by simultaneously producing renewable energy and food. The benefits of agrivoltaics vary depending on factors such as climatic conditions, farming activities, and the scale of operation, but these strategically combined systems have been recognized as an innovative pathway for deploying SES on agricultural land while also helping to alleviate some concerns for reduced agricultural production. Comparing MN and NY approaches to protecting agricultural land and encouraging agricultural production alongside solar generation showcases two different policy tactics.

Close to half of the 51.2 million land acres in MN are used for agriculture, around two-thirds of which are considered prime farmland [9]. Solar energy projects under the Commission's jurisdiction are subject to the state's Prime Farmland Exclusion Rule, which prohibits the siting of SESs where it includes more than 0.5 acres of prime farmland per MW of net generation capacity. However, the Rule includes an exception if there is no "feasible and prudent" alternative [25]. Consequently, any developer seeking to obtain a site permit where the Rule applies must submit an analysis of "feasible and prudent" siting alternatives for the Commission to consider in determining whether or not an exception to the prime farmland exclusion is warranted [26]. Since ideal sites for solar development are generally coterminous with productive farmland, the deployment of solar frequently conflicts with this Rule. In 2019, the Commission tasked the MN Departments of Agriculture and Commerce with providing input on the siting constraints leading to conflicts between solar development and farmland preservation.

The following year, *Guidance for Evaluating Prudent and Feasible Alternatives* was released. This resource points to implementation of mitigations and offsetting benefits as an important consideration, stating that "while these alone do not constitute an excuse for exemption or variance, a critical determination could be any mitigations employed by the developer or any offsetting benefits inherent in the location or installation of a particular facility." As previously discussed, a VMP is a permitting requirement for all SESs under the jurisdiction of the Commission. Additionally, applications for SESs subject to the Prime Farmland Exclusion Rule must include an AIMP. The Guidance describes ecovoltaic and agrivoltaic approaches as examples for how mitigations and offsetting benefits can be implemented as part of or a supplement to the vegetation and agricultural mitigation plan requirements. Specifically, these additional practices may include developing pollinator habitat, co-locating agricultural activities like grazing, establishing perennial vegetation to improve the current soil quality over the life of the project, and locating on land vulnerable to nitrate contamination of groundwater to protect drinking water sources [26].

MN has a notably higher share of agricultural land (50%) and prime farmland (22%) than NY, where just 34% of land is agricultural and only 9% is considered prime farmland. Likely due to the relative scarcity of agriculturally productive land, and their constitutional requirement for agricultural protection, NY has passed strong measures to protect the state's most valuable farmland and discourage solar from being developed on it. In contrast to MN, where state statute explicitly prohibits the siting of SES on prime farmland, NY policy deters it through financial disincentives through agricultural mitigation payments. In 2020, NY revised its

permitting process to include disclosure of agricultural lands and recent agricultural activity as a requirement for proposed solar projects.

For developments that would impact more than 30 acres of prime farmland (i.e., soils graded at Mineral Soil Group (MSG) 1-4, close equivalent to prime USDA soils), developers must pay an Agricultural Mitigation Payment [73]. These per acre, one-time payments increase on a basis relative to the quality of soil. A proposed development that would impact higher quality soils would therefore require higher payments. Developers are able to reduce or completely forgo these payments if they complete and execute a co-utilization plan which incorporates agrivoltaics or ecovoltaics.

As of April 2025, NY's Department of Taxation and Finance values one acre of the highest quality soil (MSG 1a) at $1267 while the lowest category still considered valuable soil for agriculture (4b) costs the developer $735 [74]. Alternatively, solar developers may create and execute a co-utilization plan. NY's policy recognizes three types of co-utilization strategies for developers to consider when determining which approach to take [75]. Two of these options are agrivoltaic models. Developers must detail how one or more crops will be cultivated on the same land or how livestock production will be integrated into the operations of the SES site. Lastly, developers may choose to adopt an ecovoltaic model and detail how the site will be designed to incorporate ecological principles, for example, by establishing and maintaining pollinator habitat. After five years, and based on adherence to the plan, developers can get the agricultural mitigation payment waived or reduced. In order to verify the adherence to these practices, the developer must hire a third-party to monitor and verify their compliance with the co-utilization practices they agreed to. When the 177 MW Morris Ridge Solar plant became operational in 2024, EDF submitted a co-utilization plan as a part of this program to reduce their potential payment. The plan incorporates sheep grazing and an apiary for their permit application [76].

The money generated from the fee goes to creating and implementing local agricultural and farmland protection plans through a Farmland Protection Planning Grant program [77]. Any local government or nonprofit in NY is eligible to receive the funds, yet most often these plans are done by counties. Due to the pressure of solar development on agricultural lands in the state, plans developed as recently as 2016 directly confront how solar development might impact their county's agricultural producers, lands (prime soils), and how municipalities are permitting utility scale development, if at all. The Agricultural and Farmland Enhancement Plan mentioned in our Lewis County Case Study was funded using this mechanism resulting in their proactive solar planning efforts and attempts for a countywide solar overlay district.

Local governments can enable dual-use solar through zoning and renewable energy ordinances

Local zoning ordinances can include site design or performance standards to enable ecovoltaic approaches. Multiple counties in MN require the footprint of SES sites to be re-vegetated with a pollinator friendly seed mix, but this language varies. For example, zoning ordinances for Murray County, Otter Tail County, and Stevens County state that "ground cover shall consist of

perennial vegetation and incorporate pollinator friendly species," whereas Carlton County, Clay County, Dodge County, and Stearns County require sites to meet and maintain the state's Habitat Friendly Solar standard (See Appendix E).

Some local governments have also adopted definitions of agrivoltaic dual-use solar approaches in their ordinances. Clay County, MN and Clinton County, IA both define agrivoltaics as "an SES co-located on the same parcel of land as agricultural production, including crop production, grazing, apiaries, or other agricultural products or services". Both counties also include near-identical language declaring their authority to require mitigation for use of prime soils for solar array placement, and specify examples of potential mitigative efforts. Clay County details the following options: "a. Demonstrating co-location of agricultural uses on the project site (agrivoltaics); b. Placing agricultural conservation easements on an equivalent area of prime agricultural land adjacent to or surrounding the project site; c. Locating the project in a Drinking Water Supply Management Area or wellhead protection area" [78] [79].

Town of Avon, NY updated zoning provisions for SES in 2024 to include, among other things, a definition of agrivoltaic dual use as "a solar energy system existing on a lot alongside agricultural uses, so the lot is used both for energy generation and farming concurrently". Projects proposed to developed as an agrivoltaic dual use must submit to the Town a plan delineating the scope and frequency of maintenance associated with the system, annual reports on the site's agricultural productivity, and a description of how the site will be monitored to "ensure that agricultural uses within the project area are active, maintained and productive" [80]. Adoption of similar language in Clay County, MN or Clinton County, IA could help ensure greater success of agrivoltaic systems. However, in contrast to Clay County, MN and Clinton County, IA ordinances, the Town of Avon, NY does not detail any potential co-benefits provided by agrivoltaic dual use systems, nor does it recognize it as a mitigation strategy. Absent those provisions, it is unclear whether or not SESs developed as an agrivoltaic dual use are desired by the Town of Avon, NY. In isolation, the additional planning, reporting, and monitoring activities required may deter solar developers from considering agrivoltaics.

Section Summary

Table 4. Exemplary Dual Use Examples

Jurisdiction	Policy Tool	Key Features
Minnesota	Solar Site Pollinator Habitat Assessment Scorecard	➔ Voluntary certification program. ➔ Incentivizes developers to establish and maintain beneficial habitat for pollinators, songbirds, and other species within SES.
Minnesota	Prime Farmland Exclusion Rule	➔ Prohibits siting any SES where it includes more than 0.5 acres of prime farmland per MW net generation capacity generation capacity. ➔ An exception to the Rule can be made if there is no "feasible and prudent" alternative.
New York	Agricultural Mitigation Payments	➔ Developers must pay per acre, one-time payments for use of more than 30 acres of prime farmland for SES. ➔ Payments reduced or waived if a co-utilization plan is executed.
Clinton County, IA	Agrivoltaic Language in Solar Ordinance	➔ Defines agrivoltaics as "an SES co-located on the same parcel of land as agricultural production, including crop production, grazing, apiaries, or other agricultural products or services." ➔ Ordinance describes agrivoltaics as a potential mitigation for use of prime soils for SES.
Town of Avon, NY	Agrivoltaic Language in Solar Ordinance	➔ Defines agrivoltaic dual use as "a solar energy system existing on a lot alongside agricultural uses, so the lot is used both for energy generation and farming concurrently." ➔ Ordinance does not promote agrivoltaics as a mitigative effort.

A Best Practice for Value Focused Solar: Broad Objective Scorecards

A few of the jurisdictions researched have implemented scorecards with more expansive scopes. These tools incorporate point systems for evaluating proposed SES projects across a wide range of factors, including operational practices, avoidance of farmland, and community engagement efforts or benefits. By assessing proposed developments based on the extent to which they avoid highly valued lands, plan to minimize impacts, provide clear communication and engage with communities, these scorecards include many of the key values at the core of the other policies analyzed in the report. Incorporating these elements into a single tool makes it easier for permitting entities to adopt these tools, and can make SES developments more consistent across jurisdictions. Linn County, IA represents a strong local example of using a scorecard to site solar projects according to the values of the community; more information on this scorecard can be found in Appendix C. The rest of this section will focus on NY's statewide approach to incorporating scorecards into the permitting process for large solar bids due to its unique approach and lesser known status in the Midwest.

New York's Smart Solar Scorecard

Permit applications for utility scale projects (>25MW) sited by NY's ORES office require Smart Solar Siting Scorecards as part of the application [75]. The scorecards award proposed projects up to 160 points with those aligning to state priorities for agricultural and forest land avoidance, co-utilization and minimization measures, community benefits, outreach strategies and innovation with higher scores receiving permitting preference. Beyond the voluntary actions which receive points for completion, the scorecard also lays out 26 mandatory practices. These mandatory practices provide clarity and guidance for solar developers on what practices are expected of them to receive a permit. Example mandatory practices include creation of Agricultural, Decommissioning and Site Restoration Plans, and Community Engagement Plans, as well as the appointment of environmental monitors to validate commitments. The scorecard as a communication cannot be understated as it showcases the siting values of the agency and provides clear and direct ways for solar developers to increase their chances of project success by meeting those values.

Additionally NYSERDA publishes the scorecards once the projects have been awarded, providing a very useful set of data on the dual use and community engagement practices in use by solar developers and the soil types impacted by solar [81]. This dataset serves two valuable purposes: 1) Creating a more transparent process for the public allowing access to the commitments and what information was made to make siting decisions. 2) The data as a whole provides a valuable tool for NYSERDA as the regulating agency to track whether the solar development they are approving is in line with their goals and values and make changes as necessary. Over the last four years the scorecard has undergone consistent refinement through feedback from the New York Technical Working Group (A-TWG) a cross sector solar and agriculture working group that helped develop the scorecard [82].

Broad Solar Scorecard Challenges and Opportunities

Scorecards have immense potential as a solar siting policy instrument due to their ability to easily communicate priorities to developers and permit based on practices implemented. Additionally they allow for the regulating agency to more easily track and justify their permitting decisions while creating more transparency in the process with the recommended public data access. Yet scorecards are not perfect and face their own set of challenges.

A lack of enforcement, or funding to conduct monitoring of the promised practices can give solar developers the opportunity to take preferred actions on paper only or do the bare minimum. For practices that need more care and commitment in long term maintenance such as vegetation establishment this is especially important but “operationally challenging” [83]. Scorecards also simplify complex processes and systems into neat practices which may not always fit neatly into the scored actions. For example, a public meeting requirement for the permit may not meaningfully encourage participation in the project.

Next, when putting numeric values on specific actions there is the ever present possibility that the scorecard will lead to unintended consequences or result in an unforeseen outcome. For example, by highly valuing apiaries a scorecard could displace native bees and pollinators as honey bees may compete with native pollinators [84]. Or a specific example, in NY’s 2023 Smart Solar Scorecard, the 19.99 MW Little Pond Solar received a perfect score for avoiding agricultural lands; the development didn’t include any prime soils or actively farmed lands. Yet the project’s entire footprint inhabited a forested area which required removal of 146 acres of timber.

Finally, the influence of scorecards depends on how its score is weighed against other factors like price of the solar bid, potential tax revenue to the community, or other economic benefits. For example, the NY scorecard’s influence, although comprehensive, still remain fairly marginal with the price of the solar development being the primary factor (70%) in determining whether the project will receive a permit with the scorecard being secondary (20%) and economic benefits as tertiary (10%) [83].

Opportunities for the Midwest

New York is a unique state example because of the state’s role in procuring renewable energy over 25 MW. This allows for a value oriented scorecard to hold greater weight in their permitting process. Yet there are lessons that could carry over to Midwest contexts. Nearly all of the Midwest states have voluntary pollinator scorecards. These tools could be expanded to consider community benefits and participation or even be expanded as communication tools for both mandatory and voluntary practices.

Case Studies

The following select narrative case studies provide political and social context to specific, primarily, local geographies that have handled solar development in their jurisdictions. Not all of these case studies are examples of a good solar policy, with Ogle County, IL having a very conflicted solar landscape. We highlight areas that the Great Plains Institute has not covered or may not be as familiar with, so very well known areas like Linn or Johnson County, IA were left out despite their very exemplary policy landscape and processes.

Mills County, Iowa

Relevant Policy Tools	- Comprehensive Plan - Moratorium - Vegetation Management Plan - Agricultural Impact Mitigation Plan - Pollinator Scorecard

In 2022, MidAmerican Energy proposed constructing a 50 MW solar project in Mills County, IA and presented the plan to the county's Planning and Zoning Commission [85]. In response, Mills County initiated the development of a solar ordinance to regulate the proposed project and future utility-scale solar installations. To allow time for the Planning and Zoning Commission to draft and finalize the ordinance language, the county enacted and then extended a moratorium on utility-scale solar applications through February 2023 [47]. In May 2023, the Mills County Board of Supervisors approved an updated solar ordinance with language pertaining to utility-scale development and incorporated a renewable energy chapter into the county's comprehensive plan [86].

Like many rural Midwestern counties, Mills County is a sparsely populated, agriculture-centered community. According to its 2024 Comprehensive Plan, 95.2% of the county's 270,220 acres are dedicated to agricultural production. In a community survey, 100% of respondents identified maintaining the county's rural and small-town feel as important to its future growth; 95% agreed that supporting local food production is vital; 85% prioritized preserving agricultural land; and 67% viewed renewable energy development as important to the county's future [87].

The updated solar ordinance reflects these community priorities and aligns closely with the survey responses documented in the comprehensive plan. One of the ordinance's most distinctive features is its VMP requirement. Applicants must submit this plan with their solar permit application, and it must be approved by the Zoning Administrator based on the county's Pollination Score Card. The plan mandates the establishment of perennial vegetative ground cover under and around arrays for the project's lifespan to prevent erosion, manage runoff, and build soil health. Topsoil removal must be minimized unless necessary for site remediation [88].

The VMP must also outline annual management practices, include a three-year establishment period, and provide for replanting if vegetation fails. It prohibits the use of seed mixes treated with systemic insecticides and encourages adherence to practices recommended by qualified natural resource professionals. Annual maintenance reporting is required for the first five years, after which reduced reporting may be allowed. Additionally, the ordinance allows for agrivoltaic practices, noting that small-scale farming, beekeeping, or grazing may be permitted within the vegetative ground cover area at the Zoning Administrator's discretion [88].

The ordinance requires both an AIMP and a landscaping buffer. The AIMP must include a soil analysis to determine topsoil depth and identify potential construction limitations, along with appropriate mitigation strategies. It must outline best practices for protecting topsoil, with an emphasis on avoiding its removal. If removal is necessary, the plan must specify how topsoil will be segregated, stockpiled, and replaced, and address grading minimization, compaction prevention, and post-construction decompaction. The AIMP also mandates environmental monitoring throughout the life of the project to manage invasive species, erosion, sediment control, and debris. The landscaping buffer must incorporate native trees, shrubs, grasses, and forbs, or naturalized and non-invasive species when appropriate [88].

The language in this ordinance reflects the community values outlined in Mills County's Comprehensive Plan. By conditionally allowing solar projects in agricultural zoning districts and requiring vegetative buffers and pollinator habitat practices, the ordinance helps maintain the county's rural and small-town character, in contrast to the appearance of a solar project sited in a graded industrial park. Allowances for agrivoltaic practices, such as small-scale farming, beekeeping, and grazing, further support local food production. Additionally, the VMPs and AIMPs are designed to prioritize the preservation of agricultural land and soil quality. Together, these community-oriented regulations enable the proper siting of renewable energy development in the county, another important local priority.

Ogle County, Illinois

Relevant Policy Tools	- Zoning Districts - Site Requirements - Procedural Requirements - Pollinator Scorecard

When the IL legislature passed Public Act 102-1123 in early 2023, which restricted local authority over renewable siting, members of the Ogle County Board were swift in announcing their discontent. The Board, which represents 50,000 residents of the primarily rural county in northwest IL, were no strangers to solar developed and had approved three utility-scale SES in the county over the previous five years. However, many board members were affronted by the perceived loss of autonomy that the bill was introduced, with board member Benjamin Youman stating "It's not just about wind or solar. What's next? What are they going to take away from local control?" [89]

The Act gave counties 120 days to update their siting standards to comply, and in May 2023 the Ogle County board approved an solar ordinance complying with applicable requirements, despite lingering opposition. This new ordinance saw Ogle leveraging the authority it was still permitted to implement various policies that would help to minimize impacts of new utility-scale solar. The ordinances required all solar sites to maintain designation as Pollinator Friendly Solar Sites, as defined by the IL Department of Natural Resources (IDNR). Every 36 months, the facility owner is additionally required to pay for the county to hire a qualified wildlife expert to conduct a study determining whether the facility is in compliance with IDNR recommendations. The ordinance also prescribes strict vegetative screening requirements. Two-tiered vegetative screening is required, with the height, spacing, and native variety of vegetation specifically defined in the ordinance. Application fees were set at two percent of the proposed commercial value of the facility, capped at $25,000 [90].

The question of solar siting remained largely dormant in Ogle until a pair of utility-scale solar applications were received by the board in early 2024. The first application was for a 5 MW community solar project located on relatively poor-agricultural land. The second application was also for a 5 MW community project, however this project was intended to be located on highly productive agricultural land. The county uses a Land Evaluation and Site Assessment (LESA) score to quantify farmland productivity, with the proposed solar development area having a LESA score of 92 out of a possible 100. The Board unanimously approved the former application while unanimously rejecting the latter application, noting the LESA score of both pieces of land were pivotal in both decisions [91].

Cenergy Power, the developer for the rejected proposal, revised the application to decrease the site size and lower the LESA score of the impacted area. Cenergy simultaneously filed a lawsuit against Ogle County, alleging the board's rejection of the application violated Public Act 102-1123, which restricted counties from passing ordinances that prevented solar development on agriculturally-zoned lands. The county hired a law firm to take on this case, however the high estimated cost of fighting the lawsuit and low likelihood of winning resulted in the board agreeing to reconsider the petition in exchange for Cenergy temporarily suspending the lawsuit. In December 2024, the county board approved Cenegy's revised application by a divided vote of 13-11. Lyle Hopkins, who voted against the approval, questioned the decision, stating "I have a hard time conceding to them and losing good land when the county board voted to support agriculture and preserve it. There's other places and rougher ground where these things can be placed. Why take good farm ground and put these things on it?" [92]

At the very next meeting of the county board, held in January 2025, the board unanimously approved a quadrupling of application fees. Rather than two percent of commercial value with a $25,000 cap, any application for a solar or wind project would be required to pay a flat $100,000 fee. Public Act 102-1123 doesn't provide any specific requirements for fees, only that they are not "unreasonable" without further clarification. The potential cost of the previous lawsuit with Cenergy was cited as one of the more prominent justifications for the dramatic increase, with board member Dan Jones the need to protect against future lawsuits from developers. "Due to the number of potential applications out there, we need to increase our fees to be prepared for

further litigation. It's fine if you want to go to war, but make sure you're armed with some ammunition," Jones said during the meeting [93].

Ogle County is a prime example of why local considerations are critical for utility-scale solar to gain social license in rural communities, and how that social license can be lost when local values and priorities are diminished in the development process. Many communities are open to allowing solar development, as demonstrated by Ogle's willingness to approve solar prior to the lawsuit, however ensuring that communities are not excluded from the development process is necessary to build on this good faith and accelerate rural solar deployment.

Lewis County, New York

Relevant Policy Tools	- Local Tax Revenue - Unique Agricultural Land Avoidance Incentive - Community Participation - Clear Procedural Guidance

In 2020, following increased interest in solar across the region, Lewis County, NY began to take steps to prepare for utility-scale solar development. Much of this interest stemmed from NY's expanded clean energy goals under the Climate Leadership and Community Protection Act, which mandated 70% renewable electricity by 2030 and spurred investment in solar infrastructure across the state [94].

Situated in the North Country region, Lewis County reflects many characteristics common to upstate NY, with modest farmland acreage and average solar development. Still, it has become a notable case study for how rural counties can proactively respond to state-led energy policy while preserving local land use values.

NY plays a major role in shaping renewable energy development through policies like the Accelerated Renewable Energy Growth and Community Benefit Act and Real Property Tax Law § 487. The former established the state's Host Community Benefit Program, which requires large-scale solar projects to provide funds per MW annually for ten years, with utilities covering administration costs [95]. The latter created the Payment-in-Lieu-of-Taxes (PILOT) program, allowing local governments to opt out of the property tax exemption and instead negotiate annual payments with project owners. These frameworks streamline aspects of permitting and taxation for utility-scale solar projects [96].

In response, Lewis County developed its own planning tools to better align state-level policy with local needs. The county published a planning report titled "Planning for Solar Energy Projects", offering guidance on solar siting, land use, and regulatory frameworks for municipalities. That same year, the county also revised its Universal Tax Exemption Policy to offer reduced PILOT rates for projects sited on prime farmland, aiming to direct development toward less sensitive agricultural areas [55]. Lewis County also adopted smart growth principles

and collaborated with Clarkson University to create a solar overlay map identifying more suitable development areas [97].

To further align energy development with farmland conservation, Lewis County completed its Agricultural and Farmland Enhancement Plan with support from NY's Farmland Protection Planning Grant Program. The plan included extensive community engagement, mapping of low-impact solar zones, and strategic recommendations to integrate solar development without displacing productive agricultural land [98].

The County's PILOT framework reinforces this alignment. While RPTL § 487 provides a 15-year property tax exemption for new renewable energy systems, counties may opt out or negotiate terms. Lewis County incentivizes solar siting on non-prime lands by reducing the standard $7,500/MW PILOT payment by up to 40% if projects are proposed on active or high-quality farmland [55].

In addition, the county provides resources such as a dedicated webpage that offers information on solar development within its municipalities. These resources include siting guidance, summaries of zoning laws, and explanations of dual-use practices like agrivoltaics. Agrivoltaics is presented as a promising approach to combining farming with solar energy production, especially through methods like sheep grazing and planting pollinator-friendly ground cover.

Takeaways and Next Steps

Each section of this report was intended to provide a policy option currently in use to reduce opposition to solar deployment, these are the primary takehomes of our analysis. All of the best practice policy options are summarized below:

- Zoning and Regulatory Policies
    - Comprehensive plans can help local governments plan for and encourage solar development
    - Clear zoning codes and special-purpose districts can tailor zoning to better reflect unique community contexts
    - Plans that minimize development impacts can help preserve agricultural identity of communities
    - Site requirements can address local concerns and ensure SES align with community identity and character
    - Clear procedural processes can shape how developers approach projects and ensure community-aligned development
    - Moratoriums can be used strategically to allow for community participation and adequate planning
- Community Benefits and Participation
    - Local tax revenue structures can support public services and provide communities with flexible, predictable benefits
    - State Mandated Benefit programs can distribute money to localities and individuals
    - Developers and host localities have a variety of community focused agreements at their disposal
    - Community participation is an essential part of the utility-scale solar development process
    - Effective community engagement mechanisms facilitate inclusive community input and long-term planning
- Encouraging Dual Use Solar
    - Pollinator-Friendly Solar Programs build Co-Benefits
    - Agricultural Protection can encourage Agrivoltaics
    - Local Governments Enable Dual-Use Solar Through Zoning and Ordinances
- A Best Practice for Value Focused Solar: Broad Objective Scorecards

These core policies represent the actions being taken now as best practices for improving local acceptance to utility scale solar development in rural areas. The common thread through these policies generally consists of bolstering the benefits, both financial and ecological, for local communities from these projects and providing adequate time and resources for the planning process to ensure communities can feel engaged in the decision making. We believe the

widespread implementation of these policies would allow for increased acceptance of solar across rural areas despite likely extra burdens placed on developers.

Beyond the current policy landscape, greater opportunities exist and are worthy of further exploration. Particularly in the Midwest we find advocating for more consistency across local jurisdictions, providing financial or technical resources for planning and dual use practices (similar to the agricultural mitigation payments) and/or implementing permitting strategies like New York and Linn County's Solar scorecard would allow for more transparency, clear communication, and signalling of priorities. Moving beyond policy actions, opportunity exists to improve the communication of dual use benefits and encourage those supportive of renewable energy to participate in the ordinance or project development process. Interestingly, research has found solar is supported relatively equally as it is opposed but those that support it do not organize as effectively as the oppositional groups [48] [99]. These gaps in knowledge and willingness for vocal support among local policy makers, community leaders and the public means that every solar development not utilizing dual use principles is a missed ecological opportunity.

Looking specifically at the incorporation of this work into the greater PV-SuCCESS project and the work of greater GPI, we have multiple recommendations to continue from where left off.

1. The findings outlined in this report could be incorporated into the PV-SuCCESS framework to better capture the wide variety of policy nuance in this space.
2. The policy framework and database could be expanded in geographic scope beyond the 4 states we reviewed.
3. The included states and potential future states could be incorporated into a geospatial element to better understand the relationship between solar development, solar regulatory policy and other factors such as transmission capacity. An example of this has been completed for Iowa (Appendix D) to showcase the potential format and result.
4. The next step beyond the spatial dynamic could attempt to incorporate a quantitative element to establish a statistically significant relationship between some of the policies we have identified and solar development or community perceptions of solar development. This could also take more of a qualitative form focused on interviews or focus groups before and after policy creation or a development is built.

In conclusion, the utility-scale solar landscape presents significant opportunities to both improve deployment practices and foster more mutually beneficial outcomes for local communities and the environments in which they are developed. This report illuminates innovative state and local policy approaches that exemplify how solar development can be better aligned with community values and land use priorities. By learning from these examples, policymakers, developers, and local stakeholders can help accelerate the transition away from fossil fuels while improving the financial and environmental well-being of rural communities. These insights offer a potential roadmap for crafting balanced policy frameworks that reduce local conflict while supporting long-term renewable energy goals.

Appendix

Appendix A: Additional Notable Zoning and Local Regulatory Process Examples

Johnson County, IA Comprehensive Plan

Jurisdiction	Policy Tool	Key Features
Johnson County, IA	Comprehensive Plan	➔ Explicitly statement supporting solar development ➔ Specific action steps for supporting utility-scale solar development

Johnson County, IA's Comprehensive Plan states "The County supports expanded renewable energy production, including both private and utility-scale solar and wind, to reduce dependency on fossil fuels", providing a clear vision for the county's energy future. In support of this vision, the plan further includes specific action steps that "support the development of utility-scale solar" as part of the County's broader strategies related to sustainability, growing the local economy, improving local infrastructure and amenities. These action steps include the identification and mitigation of barriers for development of utility-scale solar, promotion of new and existing incentive programs to provide equitable access to renewable energy deployment, and ensuring the consideration of agricultural protection and natural resources for utility-scale solar developments. These action steps not only provide specific plans for the county to pursue its solar goals, but also signals how solar development should be approached in order to ensure community priorities and values are being accommodated [100].

Cerro Gordo County, IA Agriculture District Restriction

Jurisdiction	Policy Tool	Key Features
Cerro Gordo County, IA	Comprehensive Plan/ Moratoriums/ Zoning Districts	➔ 18 month moratorium used to update county ordinances and comprehensive plan prior to solar development ➔ Ordinances updated to prohibit development of utility-scale solar, wind, and battery system on agricultural zoned land

In 2019, Ranger Power began approaching landowners of Cerro Gordo County, IA regarding a proposed solar farm covering 3,600 acres. In response to the pending proposal, in May 2023 the county issued an 18-month moratorium on all permit applications for utility-scale solar, wind, and battery facilities in order to update the county's ordinances and comprehensive plan [101]. During the interim period of the moratorium, the county's Planning and Zoning Commision produced a 100-page report recommending against agricultural land being used for renewable energy systems, citing conflicts with the agricultural priorities in the county's comprehensive plan. In December of 2024, eight days prior to the expiration of the moratorium, the county

board unanimously approved a revised solar ordinance that prohibited the development of utility-scale wind, solar, and battery systems on agricultural zoned land, essentially banning it from rural areas of the county. “I do believe in renewables, I do believe in wind, I do believe in solar. But what’s happening right now here in Cerro Gordo County, I just don’t believe it is right,” said board member Chris Watts following the vote [102].

Lewis County, NY Solar Overlay Districts

Jurisdiction	Policy Tool	Key Features
Lewis County, NY	Zoning Districts/Site Requirements	➔ County-wide solar overlay map identifying low priority agricultural land suitable for solar development ➔ Open for incorporation into local zoning codes

With the increasing number of solar developments popping up in the area, Lewis County hopes to ensure new developments minimize impacts on community identity. The county’s solar resource webpage notes “While we acknowledge that such developments, when balanced, can be beneficial, we are committed to equipping our municipalities with the tools they need to protect agricultural land, scenic viewsheds, and the overall well-being of their communities.”

In order to ensure this, the development of a solar overlay district has been a top priority for Lewis County in recent years. The county has recently partnered with Clarkson University to establish a county-wide map of parcels most suitable for solar development. Parcels were evaluated based on soil type, productivity, slope, forest coverage, and several other factors to determine their agricultural viability. Parcels that score on the low/medium end of the spectrum are considered most suitable, and included in the overlay district. This proposed overlay district has not yet been incorporated into the county zoning code, however they maintain a publicly available map of the overlays for potential use in municipal zoning codes [97].

Lee County, Illinois Vegetative Screening Requirements

Jurisdiction	Policy Tool	Key Features
Lee County, IL	Site Requirements	➔ Nonparticipating residence owners within ¼ mile entitled to payment for vegetative screening on property

As part of the solar ordinances for Lee County, IL, unique visual screening options are provided to all nonparticipating residences within one-quarter mile of the property. The owner of these affected residences can choose to receive a one-time payment from the SES owner for the cost of design, installation, maintenance, and removal of a visual screen on the nonparticipating property that is designed by a registered landscape architect. This payment would be required before the county issues a building permit. If the non-participating property’s owner declines this

option, the SES owner is instead required to install a visual screen on its own property immediately adjacent to the exterior fencing [103].

Champaign, IL Noncompliant Site Requirements

Jurisdiction	Policy Tool	Key Features
Champaign County, IL	Zoning Districts/Site Requirements	➔ 60 ft setback from roadway and 240 ft setback from adjacent properties ➔ Ordinances are not compliant with state law

Similar to Ogle County, IL, the limiting of local control over solar siting established by the IL State Legislature in Public Act 102-1123 was not well received by the zoning board of Champaign, IL. “In my opinion, the new state legislation provides no protections to rural communities,” said County Zoning Board member Nolan Herbert [104]. One of the many requirements of the new law is that counties are prohibited from requiring setbacks for SES greater than 50 feet for roads and property lines, and 150 feet for occupied dwellings. However, Champaign’s solar ordinances dictate a minimum setback of 60 feet for major roads and 240 feet for adjacent properties. In November 2023, a revised solar ordinance, which brought these setback requirements as well as other elements of the ordinance in line with state law, was proposed to the Zoning Board and rejected in a divided vote. Board members voted against the revised ordinance citing the Board’s obligation to protect farmland and rural communities as rationale for rejection. Consequently, the County’s solar ordinances continue to not meet the State’s requirements, leading to friction between the County and solar developers currently attempting to navigate the permitting process [41].

Other Miscellaneous Procedural Requirements

Jurisdiction	Policy Tool	Key Features
Champaign County, IL	Procedural Requirement	➔ Solar owner must maintain hotline to log and respond to questions and complaints from the community
Piatt County, IL	Procedural Requirement	➔ Solar owner must provide training and necessary equipment to emergency responders related to the SES

A wide variety of miscellaneous procedural requirements can be introduced by local governments to help ensure that community concerns are being addressed and considered in development. For example, Champaign County, IL requires the owner of a utility-scale solar facility to maintain a publicly-available hotline for questions and complaints related to the facility for the full duration of the facility’s permit. All legitimate calls are required to be logged and submitted to the Zoning Administrator monthly. Such a hotline can help assuage some

community concerns by providing a direct line of communication between community members and the facility owner [41].

In numerous counties throughout IL, including Piatt County, owners of utility-scale solar facilities are required to provide annual trainings for local emergency responders related to potential emergency response scenarios at the solar facility. Furthermore, the owner must provide, at its expense, any specific equipment is required for such emergency response at the facility. Such a requirement can again help to assuage some community concerns, specifically related to potential hazards introduced by the facility [32].

Minnesota Setbacks from Wildlife Management Areas and Corridor Preservation

Jurisdiction	Policy Tool	Key Features
Carlton County, MN Chisago County, MN Isanti County, MN Morrison County, MN Scott County, MN	Setback	➔ 600 ft from areas designated or formally protected from development by the federal, state or county agencies as wildlife habitat, wildlife management areas or designated as National Wild and Scenic land or corridor
Mower County, MN	Setback	➔ 500 ft from federal or state wildlife areas and hunting preserves
Lyon County, MN	Setback	➔ 200 ft from Public Conservation Lands
Isanti County, MN	Corridor Preservation Requirement	➔ "Natural wildlife, wetland, woodland or other lineal corridors shall remain open to travel by native fauna, reptilian and avialae. Perimeter fencing and security measures must accommodate unimpeded wildlife migration through large solar array development sites and areas".

Across the state, some counties in Minnesota have adopted setbacks from areas protected from development by federal, state and county agencies such as public conservation lands, wildlife habitat, wildlife management areas (WMA), land or corridors designated as National Wild and Scenic land, hunting preserves, or a combination of them. Of the counties researched, Carlton, Chisago, Isanti, Morrison and Scott had the most restrictive setbacks of 600 feet from any property designated or protected from development by Federal, State or County agencies as wildlife habitat and wildlife management areas. Lyon had the shortest setback of 200 feet from Public Conservation Lands and Mower County had a 500 foot setback from federal or state wildlife areas and hunting preserves. These six counties are well distributed across the state and not consolidated in one region of the state. See resources in Appendix E for further information.

Appendix B: Additional Notable Community Benefits and Participation Examples

New York State, Host Community Benefits Program

Jurisdiction	Policy Tool	Key Features
New York	Host Community Benefits Program	➔ Requires annual payments of $500/MW for large-scale solar projects for ten years ➔ Administered by utilities to residents in host communities

NY's Host Community Benefit Program requires owners of large-scale solar projects (>25 MW) to provide host communities with annual payments of $500 per MW for the first ten years of operation. Electric utilities administer the program and cover the associated costs. The State is working with utilities to streamline implementation and reduce administrative fees. At least eight planned projects are expected to contribute between $45,000 and $250,000 annually to offset utility bills. However, as of 2024, no projects are yet operational, so the program's effectiveness in improving community acceptance remains unproven [56].

New York State, Intervenor Payments and Community Participation

Jurisdiction	Policy Tool	Key Features
New York	Intervenor Payments	➔ $1000/MW Payment for Community Participation

When utility-scale solar projects are sited through NY's ORES, developers are required to conduct community outreach at least 60 days before submitting a permit application. This includes consulting with host municipalities and community members to guarantee meaningful public input. Developers must also submit a Community Engagement Plan outlining how the public will be "engaged, educated, and collaborated with" throughout the permitting process [56].

Solar developers are also required to provide funding ($1,000/MW) for local governments or community intervenors (political organizations or community members) to conduct or participate in public participation meetings, assist with local government law compliance and "ensure effective participation in the permitting process" [62]. This money is held and distributed by NYSERDA through an application process [63].

Green County, IA Community Open House

Jurisdiction	Policy Tool	Key Features
Green County, IA	Community Engagement Requirement	➔ Required community open house meeting for community members to engage with owner and zoning administration ➔ Owner required to collect and respond to community concerns

Greene County, IA mandates a community open house as part of its solar ordinance. Applicants must notify the County Board, Zoning Administrator, and property owners within 1,000 feet at least ten days in advance. The open house must take place on a weekday evening (Monday–Thursday) within five miles of the site or at the Greene County Courthouse. The applicant or their representative must present detailed information on the project, including site and landscape plans, construction timelines, and decommissioning plans. A representative from the Zoning Administrator's office must attend. The applicant is required to collect and respond to community concerns and submit a report with the conditional use permit application summarizing the event and public input [61].

Murray County, MN Community Open House

Jurisdiction	Policy Tool	Key Features
Murray County, MN	Solar Land-Use Mapping Tool	➔ Created a replicable model for balancing solar development with local land use goals ➔ Used public input and geospatial analysis to guide future solar siting

Great Plains Institute's Murray County Solar Siting Project represents a unique example of community-driven decision-making on the siting of utility-scale solar development. Located in southwest MN, Murray County is defined by its rural agricultural landscape, with large wind farms dotting its southwest corner. With growing interest from solar developers, the project enabled broader public engagement through community-informed geospatial analysis.

The initiative paired an ArcGIS StoryMap with a GIS land-use mapping tool that allowed local stakeholders, including residents and county staff, to identify preferred areas for solar development based on both technical and environmental criteria. The tool overlaid conventional siting factors, such as grid interconnection feasibility, with ecologically sensitive areas and conservation priorities. This approach helped community members identify locations where solar could support native habitat restoration, water quality protection, and soil health.

Introduced to county commissioners and community members in 2021, the model now serves as a replicable framework for other rural areas seeking to align clean energy development with local values, environmental goals, and long-term land stewardship [64].

Linn County, Iowa Good Neighbor Agreement

Jurisdiction	Policy Tool	Key Features
Linn County, IA	Good Neighbor Agreement	➔ Drafted recommendations to align ordinance language with community values ➔ Explicitly advocated for dual-use practices

In 2022, after enacting a one-year moratorium on new solar developments to allow for the drafting of a new utility-scale solar ordinance, Linn County formed a Good Neighbor Practices Committee alongside three other renewable energy review committees. Composed of both supporters and concerned residents, this Good Neighbor Practices Committee drafted a set of recommendations to encourage cooperation between developers and adjacent landowners, and better align the language of the ordinance with the desires of the community. The recommendations included statements on ideal setback, screening, and noise requirements, enforcement mechanisms, the explicit promotion of agrivoltaics, encouragement of cooperation between developers and adjacent landowners, and proactive engagement by the county with the broader community on strategic growth plans [65].

Town of Riverhead, New York Community Benefit Agreement

Jurisdiction	Policy Tool	Key Features
Town of Riverhead, NY	Community Benefit Agreement	➔ $1.5 million payment from applicant to support various local improvement funds

The Calverton Solar Energy Center is a 22.9 MW, 198-acre utility-scale solar project developed by NextEra Energy in Riverhead, NY. As a condition of permit approval, the town required a CBA with the developer. The agreement mandates a $1.5 million payment in two installments: the first within five days of signing, and the second within five days of receiving a temporary certificate of occupancy. The funds are to be allocated across six categories: $350,000 for community health and welfare; $250,000 for agriculture and open space; $250,000 for environmental improvement; $350,000 for police, fire, and emergency medical services; $150,000 for education; and $150,000 for employment advancement [105].

Livingston County, New York Good Neighbor Agreement

Jurisdiction	Policy Tool	Key Features
Livingston County, NY	Good Neighbor Agreement	➔ Applicant required to pay adjacent landowners a fee in exchange for certain allowable disturbances (e.g. shadows, noise)

A publicly available good neighbor agreement between Invenergy, a utility-scale solar developer, and an adjacent property owner was recorded in 2022. The agreement grants Invenergy certain rights over the owner's property, including the ability to cast shadows, generate noise, and emit electromagnetic interference. The owner acknowledges and accepts potential disturbances from the construction and operation of the solar facility. In exchange, Invenergy agrees to pay the owner a fee, the amount of which is detailed in an unrecorded exhibit [58].

City of Grand Mound, Iowa Community Benefit Agreement

Jurisdiction	Policy Tool	Key Features
City of Grand Mound, IA	Community Benefit Agreement	➔ Applicant agrees to pay $9,500 to city for various amenity improvements

The Hawkeye Solar Project, a utility-scale solar project being developed by Ranger Power near Grand Mound, IA, has a CBA with the local community organizations in the area. The agreement provided $5,000 to the City of Grand Mound for a splash pad, $1,500 to the American Legion for a cemetery project, and $3,000 to Central DeWitt and its school district to enhance playground accessibility [106].

City of Polo, Illinois Developer Contributions to Community Fund

Jurisdiction	Policy Tool	Key Features
City of Polo, IL	Community Benefit Agreement	➔ Applicant agrees to make contribution of $50,000 over 30 years to local development fund

Lupine Solar 2 is a planned 2 MW community solar project being developed by OneEnergy near the City of Polo, IL. In December 2024, when requesting the Polo City Council provide a letter of recommendation approving the project, OneEnergy proposed a $50,000 contribution to the Polo Economic Development Corporation that would be paid over a 30 year period. The project was approved by the Polo City Council at the following council meeting [107].

Appendix C: Additional Notable Examples

Linn County, Utility Scale Solar Scorecard

Jurisdiction	Policy Tool	Key Features
Linn County	Utility Scale Solar Scorecard	➔ Scores projects based on 13 metrics including vegetation, dual use and community participation

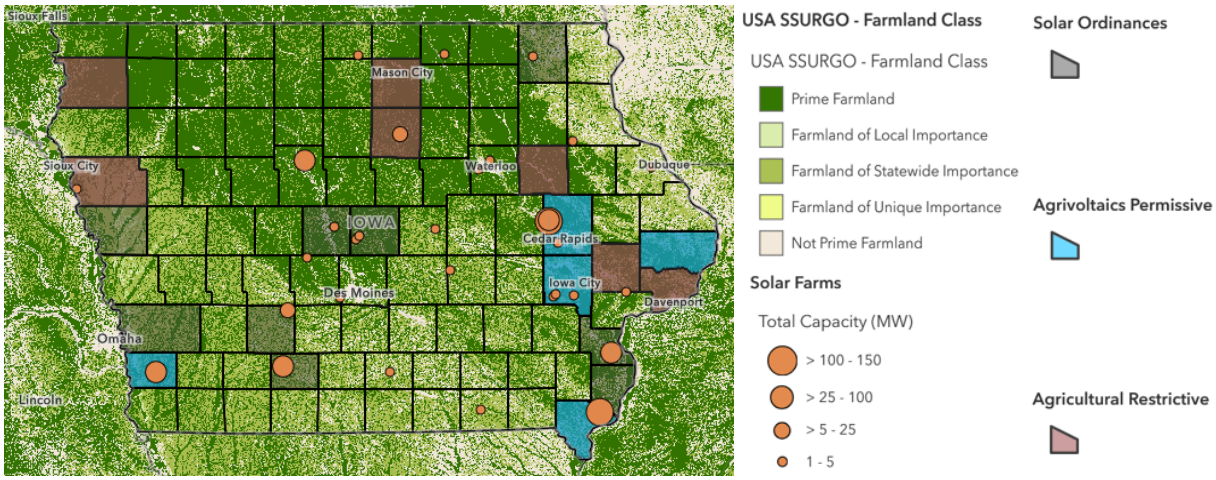
At the local level within the Midwest, Linn County, IA is an exemplar of the incorporation of a scorecard into the local permitting process which addresses values and concerns of the community inclusive of and beyond pollinator habitat and native vegetation. In 2023, Linn County adopted the Utility-Scale Solar Scorecard as a requirement for all utility-scale solar projects in the county. It awards points for soil protection, native vegetation, pollinator habitat, community benefits, and site planning and management with a minimum passing score of 100 [108]. Projects featuring agrivoltaic practices on site earn additional points. While not binding, the scorecard guides comprehensive project evaluation and encourages sustainable dual land use practices [109]. This effort was a direct response to the concerns of the community to large solar developments during a moratorium used to plan for solar development. This time to plan and consider the concerns of the community allowed for the scorecard to come to fruition and incorporate the desires of the residents into the county's planning process [65].

New York Power Authority Agrivoltaics Requirements

Jurisdiction	Policy Tool	Key Features
New York	Zoning Districts	➔ NYPA-sponsored solar developments are prohibited on agricultural-zoned land unless using agrivoltaics

In 2023 the New York Power Authority (NYPA), the largest public power utility in the nation, published a report on agrivoltaic practices in collaboration with the Electric Power Research Institute and American Public Power Association. The report examined the feasibility of agrivoltaics as a dual-use land solution, with special consideration for potential deployment in NY [110]. Following the publication of this report, the NYPA updated its operational procedures to prohibit any NYPA-sponsored development on land zoned for agricultural production, unless that development was "in furtherance of an agrivoltaics project" [111].

Appendix D: Iowa County Solar Ordinances Analysis



As of 2025, 22 of the 99 counties in Iowa were identified to have adopted ordinances regulating utility-scale solar development. This map highlights those counties alongside farmland classifications from the Soil Survey Geographic Database (SSURGO) and total installed utility-scale solar capacity (MW). Because permitting authority rests entirely with local governments, there is significant variation in ordinance provisions across the state. All counties with utility-scale solar ordinances are shaded: those that permit agrivoltaic practices, such as crop production or livestock grazing, are labeled “agrivoltaics permissive” and highlighted in blue; those that completely or substantially restrict solar development on farmland are labeled “agricultural restrictive” and highlighted in red; all others are displayed in gray.

This map illustrates the geospatial relationship between total utility-scale solar capacity and county ordinances that either actively permit agrivoltaic practices or restrict solar development on agricultural land. Across the five counties with language permissive of agrivoltaics, there are eight projects totaling over 550 MW. In contrast, the seven counties with restrictive language have only three projects, totaling just over 10 MW.

Sources: References [112], [113], [114], and County Ordinances provided in Appendix E

Iowa County Solar Ordinances

County	Associated Zoning District	Allowed in Agricultural Districts	Prime Farmland Restrictions	Comprehensive Plan Alignment	Reference of Agrivoltaic Practices	Agricultural Impact Mitigation Plan	Vegetation Management Plan	Decommissioning Plan	Acreage Cap	Installed Utility-Scale Capacity (MW)	Ordinance Link
Buchanan	No	No	Yes	No	No	No	No	Yes	No	0	Ordinance
Cerro Gordo	No	No	Yes	No	No	No	No	No	No	0	Ordinance
Monona	No	Yes	No	No	No	No	No	Yes	No	0	Ordinance
Story	No	Yes	No	Yes	No	No	No	Yes	No	2	Ordinance
Franklin	No	Yes	Yes	No	No	No	No	No	No	7	Ordinance
Scott	Utility Solar-Floating District	Yes	Yes	No	No	No	No	Yes	No	0	Ordinance
Adair	No	Yes	No	No	No	No	No	No	Yes	25	Ordinance
Des Moines	No	Yes	No	No	No	No	Yes	Yes	No	0	Ordinance
Boone	No	Yes	No	Yes	No	No	Yes	Yes	No	0	Ordinance
Clinton	No	Yes	No	Yes	Yes	No	Yes	Yes	No	0	Ordinance
Louisa	No	Yes	No	Yes	No	No	Yes	Yes	No	100	Ordinance
Winneshiek	No	Yes	No	Yes	No	No	Yes	Yes	No	1.5	Ordinance
Cedar	No	Yes	Yes	Yes	No	No	Yes	Yes	No	0	Ordinance
Pottawattamie	No	Yes	No	No	No	No	Yes	Yes	No	0	Ordinance
Woodbury	No	No	Yes	No	No	Yes	Yes	Yes	No	4	Ordinance
Johnson	Renewable Energy Zoning District	Yes	No	Yes	Yes	Yes	Yes	Yes	No	3	Ordinance
Mills	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	0	Ordinance
Linn	Renewable Energy Overlay District	Yes	No	Yes	Yes	Yes	Yes	Yes	No	355	Ordinance
Sioux	No	Yes	Yes	No	No	Yes	Yes	Yes	No	0	Ordinance
Greene	No	Yes	No	No	No	No	Yes	Yes	Yes	0	Ordinance
Union	No	Yes	No	No	No	No	Yes	Yes	Yes	50	Ordinance
Lee	No	Yes	No	No	Yes	No	No	No	No	150	Ordinance

Appendix E: Local Policy Database

Policy Type	Notable Policy Instruments	State	Name	Jurisdiction	Year of Implementation (N/A if Unknown)	Link to Ordinance or Policy	Key Features	Additional Comments
	Procedural Process, Restriction	Iowa	Adair	County	2021	Adair County Utility-Scale Solar Ordinance	- County Cap of 400 Total Developed Project Acres for Utility Scale Solar Systems	
Zoning and Regulatory	Minimization Plans, Procedural Process	Iowa	Boone	County	2023	Boone County Utility-Scale Solar Ordinance	- Project Cap of 1,000 Acres for Any Single Utility-Scale Solar System - Vegetation Management Plan - Decommissioning Plan	
Zoning and Regulatory	Procedural Process, Zoning Districts, Restriction	Iowa	Buchanan	County	2022	Buchanan County Solar Energy Standards	- Not Allowed in Agricultural Zones - Decommissioning and Site Reclamation Plan	
Zoning and Regulatory	Minimization Plans, Procedural Process, Zoning Districts, Restriction	Iowa	Cedar	County	2023	Cedar County Utility-Scale Solar Ordinance	- County Cap of 640 Total Developed Project Acres for Utility-Scale Solar Systems - Prime Farmland Restrictions (CSR2 of 65 or less) - Vegetation Management Plan - Decommissioning Plan	
Zoning and Regulatory	Procedural Process, Zoning Districts, Restriction	Iowa	Cerro Gordo	County	2023	Cerro Gordo County Utility-Scale Solar Ordinance	- Not Allowed in Agricultural Zones	
Zoning and Regulatory	Dual Use, Minimization Plans, Procedural Process	Iowa	Clinton	County	2016	Clinton County Utility-Scale Solar Ordinance	- References Agrivoltaic Practices - Vegetation Management Plan - Decommissioning Plan	
Zoning and Regulatory	Minimization Plans, Procedural Process	Iowa	Des Moines	County	2023	Des Moines County Solar Farm Ordinance	- Soil Maintenance Plan - Decommissioning Plan	
Zoning and Regulatory	Procedural Process, Zoning Districts, Restriction	Iowa	Franklin	County	2023	Franklin County Code of Ordinances	- Prime Farmland Restrictions (CSR of 50 or less) - Restrictive Setbacks	
Zoning and Regulatory	Minimization Plans, Procedural Process, Community Participation	Iowa	Greene	County	2022	Greene County Code of Ordinances	- Project Cap of 1,000 Acres for Any Single Utility-Scale Solar System - Community Information Open House - Vegetation Management Plan - Decommissioning Plan	
Zoning and Regulatory	Minimization Plans , Dual Use, Procedural Process	Iowa	Johnson	County	2022	Johnson County Utility-Scale Solar Ordinance	- References Agrivoltaics Practices - Agricultural Impact Mitigation Plan - Vegetation Management Plan - Decommissioning Plan - Associated with Renewable Energy Zoning District	
Zoning and Regulatory	Dual Use, Procedural Process	Iowa	Lee	County	2025	Lee County Solar Ordinance	- References Agrivoltaics Practices	
Zoning and Regulatory	Scorecard, Dual Use, Minimization Plans , Procedural Process	Iowa	Linn	County	2023	Linn County Code of Ordinances	- References Agrivoltaics Practices - Agricultural Impact Mitigation Plan - Vegetation Management Plan - Decommissioning Plan - Requires Conformance with Linn County Utility Scale Solar Scorecard - Associated with Renewable Energy Overlay District	
Zoning and Regulatory	Procedural Process, Minimization Plans	Iowa	Louisa	County	2024	Louisa County Solar Energy Systems Ordinance	- Vegetation Management Plan - Decommissioning Plan	
Zoning and Regulatory	Dual Use, Minimization Plans , Scorecard, Procedural Process	Iowa	Mills	County	2023	Mills County Solar Energy Systems Ordinance	- References Agrivoltaics Practices - Agricultural Impact Mitigation Plan - Vegetation Mitigation Plan - Conformance with Mills County Pollinator Scorecard - Decommissioning Plan	
Zoning and Regulatory	Procedural Process	Iowa	Monona	County		Monona County Code of Ordinances	- Decommissioning Plan	
Zoning and Regulatory	Minimization Plans , Procedural Process	Iowa	Pottawattamie	County	2024	Pottawattamie County Solar Energy Systems Ordinance	- Vegetation Management Plan - Decommissioning Plan	
Zoning and Regulatory	Minimization Plans, Procedural Process, Zoning Districts, Restriction	Iowa	Scott	County	2022	Scott County Utility-Scale Solar Ordinance	- Associated with Utility Solar-Floating District - Prime Farmland Restrictions (CSR2 of less than 60) - Restrictive Setback Requirements - Agricultural Mitigation Planning Requirements - Decommissioning Plan	
Zoning and Regulatory	Procedural Process, Minimization Plans, Zoning Districts, Restriction	Iowa	Sioux	County	2024	Sioux County Solar Energy Systems Ordinance	- Prime Farmland Restrictions - Agricultural Impact Mitigation Plan - Vegetation Management Plan - Decommissioning Plan	
Zoning and Regulatory	Procedural Process	Iowa	Story	County	N/A	Story County Code of Ordinances	- Decommissioning Plan	
Zoning and Regulatory	Minimization Plans , Procedural Process, Restriction	Iowa	Union	County	2021	Union County Solar Ordinance	- County Cap of 800 Total Developed Project Acres for Utility-Scale Solar Systems - Vegetation Management Plan - Decommissioning Plan	
Zoning and Regulatory	Minimization Plans , Procedural Process	Iowa	Winneshiek	County	2020	Winneshiek County Solar Ordinance	- Vegetation Management Plan - Decommissioning Plan	
Zoning and Regulatory	Procedural Process, Minimization Plans, Restriction	Iowa	Woodbury	County	2024	Woodbury County Utility-Scale Solar Ordinance	- Agricultural Impact Mitigation Plan - Vegetation Management Plan - Decommissioning Plan - Not Allowed in Agricultural Zones	
Comprehensive Plan	Community Participation, Procedural Process, Comprehensive Plan	Iowa	Linn	County	2013	Linn County Comprehensive Plan	- Prioritizes renewable energy as the first of seven guiding elements - Created energy-focused work group - Included county energy plan, utility partnerships, and ordinance amendments as key strategies	
Comprehensive Plan	Community Participation, Procedural Process, Comprehensive Plan	Iowa	Johnson	County	2024	Johnson County Comprehensive Plan	- Explicitly supports utility-scale solar development - Emphasizes integration of best siting practices into policies, programs, and codes - Stresses balancing energy development with natural resource and farmland protection	First passed in 2018, and amended last in 2024
Comprehensive Plan	Comprehensive Plan, Procedural Process	Iowa	Cedar	County	2018	Cedar County Comprehensive Plan	- Encourages development of renewable energy - Includes strategy to review and revise zoning to remove barriers for solar - Promotes renewables over non-renewables for long-term sustainability - Supports regulatory adjustments to facilitate renewable energy adoption	
Comprehensive Plan	Community Participation, Comprehensive Plan, Procedural Process	Iowa	Mills	County	2024	Mills County Comprehensive Plan	- Includes survey question on renewable energy development - Aims to balance solar promotion with land protection and community well-being	

Policy Type	Notable Policy Instruments	State	Name	Jurisdiction	Year of Implementation (N/A if Unknown)	Link to Ordinance or Policy	Key Features	Additional Comments
Community Benefit	Community Benefits, Zoning Districts	New York	Lewis	County	2022	Uniform Tax Exemption Policy (UTEP) and Guidelines	- PILOT requirements $7500/MW - Reductions for avoiding actively farmed and/or Prime Farmland (30%, 40% for both)	
Community Benefit	Community Benefits	New York	Cortland	County	2020	Local Law 5	- PILOT requirements $7000/MW	
Zoning and Regulatory	Minimization Plans, Community Participation	New York	Chateaugay	Town	2018	Local Law 3	- Public Meeting Requirement - Decommisioning Plan - Requires native perennial vegetation and foraging habitat	
Zoning and Regulatory	Minimization Plans, Community Participation	New York	Burke	Town	2019	Local Law 1	- Public Meeting Requirement - Decommisioning Plan - Requires native perennial vegetation and foraging habitat	
Zoning and Regulatory	Zoning Districts	New York	Ballston	Town	2021	Local Law 3	- Solar considered structure and impervious surface - Large Solar >60 acres cannot exceed 150 acres town wide - Decommissioning Plan	
Zoning and Regulatory	Zoning Districts	New York	Summer Hill	Town	2022	Local Law 1	- Siting restriction for prime agricultural lands	
Zoning and Regulatory	Zoning Districts	New York	Franklin	Town	2024	Local Law 4	- Density cap: max 2% of acreage allowed for ground mounted solar -Prime farmlands prohibited - Strict Setbacks	
Zoning and Regulatory	Restriction	New York	Seneca	Town	2014	Local Law 6	- Limit Solar to 16MW	
MInimizing Solar Impacts	Dual Use	New York	Avon	Town	2024	Local Law 1	- Defines Dual Use and Agrivoltaics - Requires Agivoltaic projects report and monitor	
Zoning and Regulatory, MInimizing Solar Impacts	Minimization Plans , Dual Use	New York	Caledonia	Town	2021	Ch. 106 Article 2	- Required agricultural integration plan and native vegetation that attracts pollinators -PILOT	
Zoning and Regulatory	Dual Use	New York	Conesus	Town	2023	Ch. 155 Article 10	- Restricts solar on agricultural lands no more than 50% ~prime soils - Allows exeedance if maintained as farm operation	
Zoning and Regulatory	Site Requirements	New York	Genesso	Town	2019	Ch. 104 Article 1		
Zoning and Regulatory	Dual Use	New York	Mohawk	Town	2023	Local Law 1	-Defines agrivoltaics - Native and perrenial vegetation	
Zoning and Regulatory	Dual Use, Restriction	New York	Montgomery	Town	2022	Local Law 11	- Agricultural restriction - Agricultural Dual-use reduces restriction	
Zoning and Regulatory	Restriction	New York	Franklin	Town	2023	Local Law 1	- 6 Month Moratium (No Longer Active, See 2024 Ordinance)	
Zoning and Regulatory	Restriction	New York	Ancram	Town	2021	Local law No.1	Prohibition on Utility Scale Solar (>10 acres, < 20MW)	
Zoning and Regulatory	Minimization Plans , Dual Use	New York	Dunkirk	Town	2021	Local Law No. 4	-Defines agricultural dual use - Operation and Maintance plan with native perennial veg requirement	
Zoning and Regulatory	Procedural Process	New York	Livingston	County	N/A	Local Solar Ordinances Information	- Provides information on local solar ordinances within the county	
Zoning and Regulatory	Procedural Process, Zoning Districts	New York	Lewis	County	N/A	Zoning Overlay and Ordinance Map	- Map of Local Ordinances - Draft Zoning Overlay prioritized parcels for solar based on local priorities	
MInimizing Solar Impacts		New York	Lewis	County	2021	Agricultural Farmland Enhancement Plan	- Agricultural plan incorporates solar development - Planning efforts were funded at least partially by agricultural mitigation payments	
MInimizing Solar Impacts		New York	Essex	County	2022	Farmland and Food System Protection Plan	- Agricultural plan incorporates solar development - Planning efforts were funded at least partially by agricultural mitigation payments	
Comprehensive Plan		New York	Binghamton	Town	2017	Binghamton Comp Plan	Encourages local laws to regulate solar energy so that they can be developed. Review and modify zoning and subdivision regulations to encourage new building lots are compatable with solar orientation. -Primarily focused on residental solar development. Compiled significant public input on solar and wind from public comments.	
Zoning and Regulatory	Zoning Districts, Site Requirements, Procedural Process	Illinois	Ogle	County	2025	Ogle County Solar Ordinance	- Decommissioning and Site Reclamation Plan - Pollinator friendly vegetative cover requirement - Strict Vegetive Screening Requirements - Study by wildlife expert required every 3 years	
Zoning and Regulatory	Site Requirements, Procedural Process	Illinois	Lee	County	2023	Lee County Solar Ordinance	- Option for adjacent landowners to request payments for vegetative screening - Extensive insurance requirements - Decomissioning Plan	
Zoning and Regulatory	Zoning Districts, Site Requirements, Procedural Process	Illinois	Champaign	County	2023	Champaign County Zoning Ordinance	- Setbacks do not comply with state-level requirements - Vegetation management plan for prime farmland - Decomissioning plan - Questions and complaints hotline	
Zoning and Regulatory	Site Requirements, Procedural Process	Illinois	Lake	County	2025	Lake County Zoning Ordinance	- Required preapplication meeting with county staff - Vegetation management plan - Decomissioning plan	
Zoning and Regulatory	Zoning Districts, Procedural Process	Illinois	Piatt	County	2024	Piatt County Zoning Ordinance	- Utility-scale solar not allowed on lots smaller than 10 acres - Decomissioning plan	
Zoning and Regulatory	Dual Use, Procedural Process, Site Requirements	Illinois	Bond	County	2024	Solar Farm Checklist and Ordinances	- Maintains checklist for solar farm applications - Pollinator friendly vegetative cover requirements - Decommissioning plan - On county web page, link to article on agrivoltaics provided alongside to solar checklist	
Zoning and Regulatory	Site Requirements, Procedural Process	Illinois	Boone	County	2023	Boone County Solar Ordinance	- Vegetative screening regulated by Boone County Conservation District requirements - Preapplication meeting requirement for developers - Annual soil tests to monitor for contamination - Decommissioning plan	
Zoning and Regulatory	Procedural Process, Site Requirements	Illinois	Dekalb	County	2023	Dekalb County Zoning Ordinance	- Projects on agr. land required to obtain a Natural Resources Inventory report from county - Decomissioning requirement but no formal plan - Landscape monitoring and maintenance plan that details plan for mantaining ecological quality	
Zoning and Regulatory	Dual Use	Illinois	Will	County	2024	Will County Zoning Ordinance	- Notes crops may be used in solar setbacks in place of vegetative ground cover - Stormwater calculations showing net benefit can be accepted in lieu of a stormwater mgmt plan	
Comprehensive Plan		Illinois	Ogle	County	2023	Ogle County Comprehensive Plan	- Use of renewable energy sources as a goal for utilities and community facilities. No explicit mention of solar.	
Comprehensive Plan		Illinois	Lee	County	2010	Lee County Comprehensive Plan	- Notes explicity support for "green" energies such as solar. No other mention of solar.	
Comprehensive Plan		Illinois	Champaign	County	2010	Champaign County Land Resource Management Plan	- Last updated in 2010 - Notes, at the time of publishing, solar is a cost prohibitive energy technology, same language as Piatt County, IL	
Comprehensive Plan		Illinois	Lake	County	2014	Lake County Regional Framework Plan	- Sets goal to encourage renewable energy development to reduce reliance on fossil fuels - Sets specific policies to achieve this goal, such as forming a task force to research renewable development and establishing an education center for electricity generation	

Policy Type	Notable Policy Instruments	State	Name	Jurisdiction	Year of Implementation (N/A if Unknown)	Link to Ordinance or Policy	Key Features	Additional Comments
Comprehensive Plan		Illinois	Piatt	County	2010	Piatt County Comprehensive Plan	- Identifies opportunity for local solar development in SWOT analysis - Notes, at the time of publishing, solar is a cost prohibitive energy technology, same language as Champaign County, IL	
Comprehensive Plan		Illinois	Boone	County	2019	Boone County Comprehensive Plan	- Energy discussion only centers around energy efficiency, no mention of renewables	
Comprehensive Plan		Illinois	Dekalb	County	2022	Dekalb 2050 Comprehensive Land Use Plan	- Notes contribution of solar collectors in achieving sustainability goals, no other mention of solar	
Zoning and Regulatory, MInimizing Solar Impacts	Site Requirements, Restriction, Dual Use, Scorecard, Zoning Districts	Minnesota	Carlton	County	2017	Carlton County Renewable Energy Ordinance #32	- SES must be located on parcels of land no less than five acres in size - 600 ft wildlife setback - Habitat Friendly Solar requirements - Decommissioning plan - SES permitted within the Closed Landfill Restricted Overlay District	
Zoning and Regulatory, MInimizing Solar Impacts	Site Requirements, Restriction, Dual Use	Minnesota	Chisago	County	2020	Chisago County Solar Energy Systems Ordinance	- SES must be located on parcels of land no less than five acres in size - 600 ft wildlife setback - Aggregate impact review for SES proposed within 1320 ft of an existing project - Pollinator friendly vegetation requirement	
Zoning and Regulatory, MInimizing Solar Impacts	Site Requirements, Dual Use, Minimization Plans , Scorecard	Minnesota	Clay	County	2025 (Draft)	Clay County Chapter 8-4. Use Regulations	- Agrivoltaics definition - Screening if the county determines there is a clear community interest in maintaining a viewshed - Habitat Friendly Solar requirements - Potential nspection fee to support inspection of the beneficial habitat ground cover - Vegetation and Agricultural Mitigation Planning (projects sited on prime farmland, includes agrivoltaics, conservation easements and water quality protection) - Financial guarantee equal to 125 percent of the costs to meet the beneficial habitat standard and screening requirements - Decommissioning plan	Clay County is in the process of updating the Land Development Ordinance, adopted in 2012.
Zoning and Regulatory, MInimizing Solar Impacts	Site Requirements, Zoning Districts, Minimization Plans , Scorecard, Dual Use	Minnesota	Dodge	County	2020	Dodge County Zoning Ordinance Chapter 16	- Conditional Use Permit - Erosion Prevention and Sediment Control Plans required - Habitat Friendly Solar requirements - Specific screening requirements including earthen mounds/berms/ neutral colored fences, or landscaping of 80% opacity prior to the SES operation and tree requirements - Decommissioning and Restoration Plan - Decommissioning Financial Assurance	Screening and visual impact analysis provisions amended August 10, 2021 Decommissioning and Restoration Plan & Decommissioning Financial Assurance provisions amended February 8, 2022
Zoning and Regulatory, MInimizing Solar Impacts	Minimization Plans , Zoning Districts	Minnesota	Goodhue	County	2017	Goodhue County Zoning Ordinance	- Tree removal must be minimized and mitigated - Natural ground cover required - Vegetative screening or buffering may be required as part of the conditions of approval. - Plan outlining the use, storage, and disposal of chemicals used in the cleaning of the SES unless certified organic cleaning products are used - Criteria to determined potential impacts on agricultural production include: number of acres of prime agricultural acres and acres in A-1 agricultural protection zone to be impacted - Decommissioning Plan required - Decommissioning Financial Assurance	
Zoning and Regulatory, MInimizing Solar Impacts	Restriction, Zoning Districts, Site Requirements, Dual Use, Minimization Plans	Minnesota	Isanti	County	2016	Isanti County Solar Energy Ordinance	- SES must be located on parcels of land no less than five acres in size - Conditional Use Permit required for SES sited for >20 acres - 600 ft wildlife setback - Screening/buffering plan required, including tree and vegetation specifications - Landscaping requirement: bare ground shall be re-vegetated with a low growing pollinator friendly seed mix - Corridor Preservation Plan required: Perimeter fencing and security measures must accommodate unimpeded wildlife migration	
MInimizing Solar Impacts, Zoning and Regulatory	Zoning Districts, Site Requirements, Minimization Plans	Minnesota	Lyon	County	2015	Lyon County Zoning Ordinance	- Erosion and sediment control measures - Decommissioning Plan - Decommissioning Financial Assurance - SES permitted based on the generating capacity and land use district. Conditionally Permitted in Agricultural (A) and Urban Expansion (UE) Districts - 200 ft setback from Public Conservation Lands	
Zoning and Regulatory, MInimizing Solar Impacts	Zoning Districts, Site Requirements, Restriction, Minimization Plans	Minnesota	Martin	County	2015	Martin County Renewable Energy Ordinance	- Large SES Conditionally Permitted in Agricultural (A) District - Erosion and sediment control measures must be included in site plan and meet County requirements. - Maintenance plan requirement - Plan outlining the use, storage, and disposal of chemicals used in the cleaning of the SES required - Total surface area of SES infrastructure may not exceed 50% of the building footprint in the Agricultural (A) District - SES must have natural ground cover under and between the collectors and surrounding the system's foundation or mounting device(s) - Vegetative screening must consist of canopy and conifer trees - Decommissioning Plan required - Decommissioning Financial Assurance	
Zoning and Regulatory, MInimizing Solar Impacts	Restriction, Site Requirements, Zoning Districts	Minnesota	McLeod	County	2023	Zoning Ordinance of McLeod County	- SES shall be placed on land considered hard to farm if the parcel is 3 acres or greater in an Agricultural District. Hard to farm is 30% wooded, small (less than 10 acres) and irregular shaped, or soils that have a Crop Productivity Index of less than 50 as scored on the USDA McLeod County Soil Survey issued Nov. 1997 - 660 ft setback from any existing or new dwelling not on the same parcel - Must submit a bond, letter of credit, or cash escrow to County's Environmental Services for reclamation surety of the project prior to the issuance of a land use permit	
Zoning and Regulatory, MInimizing Solar Impacts	Zoning Districts, Site Requirements, Procedural Process, Restriction	Minnesota	Meeker	County	2024	Meeker County Solar Energy Ordinance (Sec. 22.24.1.)	- Large SES Conditionally Permitted in Agricultural (A-1) District - Any setback distance within 1320 ft of a non-owner residence and 1320 ft from an incorporated municipality for a large SES requires a signed waiver from the non-owner residence or from the municipality. - No more than 10% of land per township in the A-1 Agricultural Preservation District shall be utilized for solar energy	Setback from non-owner residence and incorporated municipality amended from 750 ft to 1320 ft in August 2024
Zoning and Regulatory	Restriction, Site Requirements, Zoning Districts	Minnesota	Morrison	County		Morrison County Land Use Control Ordinance	- SES Conditionally Permitted in Agriculture and Commerical Districts - 600 ft setback from areas designated or protected from development by Federal, State, or County agencies as wildlife habitat	
Zoning and Regulatory, MInimizing Solar Impacts	Restriction, Dual Use, Minimization Plans , Site Requirements, Zoning Districts	Minnesota	Mower	County	2018	Mower County Zoning Ordinance	- SES Conditionally Permitted in Agriculture and Rural Management Districts. SES prohibited within Urban Expansion District - SES will be decommissioned after 25 years based on district and proximity to municipalities - 500 ft setback from federal or state wildlife areas, hunting preserves, and any dwelling not owned by an owner/benefactor of the SES - Vegetative Buffers required for Roadways and Public Trails - Top soils shall not be removed during development - Native perennial vegetation and pollinator habitat requirement, describes benefits and specifies seed mixes - Plant material must not have been treated with systemic insecticides, particularly neonicontinoids. - Decommissioning Plan required - Decommissioning Financial Assurance	
Zoning and Regulatory, MInimizing Solar Impacts	Dual Use, Minimization Plans , Site Requirements	Minnesota	Murray	County	2020	Murray County Renewable Energy Ordinance	- 200 ft setback from a residential dwelling not located on the property - Ground cover must consist of perennial vegetation and incorporate pollinator friendly species - Abandonment and Decommissioning Plan required - Avoidance and Mitigation of Damages to Public Infrastructure required, including road maintenance during and after construction, and repair of public and private drainage systems stemming from construction, operation, maintenance, or decommissioning	
MInimizing Solar Impacts, Zoning and Regulatory	Dual Use	Minnesota	Otter Tail	County	2021	Otter Tail County Renewable Energy Ordinance	- Large SES defined as systems with a nameplate capacity of 40 kilowatts or more - 200 ft setback from a residential dwelling not located on the property - Ground cover must consist of perennial vegetation and incorporate pollinator friendly species	

Policy Type	Notable Policy Instruments	State	Name	Jurisdiction	Year of Implementation (N/A if Unknown)	Link to Ordinance or Policy	Key Features	Additional Comments
Zoning and Regulatory, MInimizing Solar Impacts	Dual Use, Zoning Districts, Site Requirements	Minnesota	Pine	County	2020	Pine County Zoning Ordinance	-SES allowed as interim use in Agriculture (AG1/AG2/AG4) District - 275 ft setback from any dwelling - Decommissioning Plan required - Decommissioning Financial Assurance - Requires low-growing pollinator-friendly seed mix, as certified by BWSR. Vegetation must be maintained throughout the life of the project except where safety requires hardscaping. - Barbed wire security fencing is not permitted. It must consist of woven wire agricultural or chain link fencing.	
Zoning and Regulatory	Minimization Plans, Restriction	Minnesota	Pipestone	County	2018	Pipestone County Zoning Ordinance	- 400 ft setback from the foundation of a non-participating occupied dwelling - Decommissioning Plan required - Decommissioning Financial Assurance	
MInimizing Solar Impacts, Zoning and Regulatory	Dual Use, Minimization Plans , Site Requirements	Minnesota	Stevens	County	2024	Stevens County Renewable Energy Ordinance	- Ground cover shall consist of perennial vegetation and incorporate pollinator friendly species - Vegetative management plan may be required, and may include specific requirements related to weed management, allowable vegetation types, and frequency of maintenance activities.- Vegetation Plan Financial Assurance - Habitat Friendly Solar requirements and maintaining them until the site is decommissioned is included in ordinance language as optional	
Zoning and Regulatory	Zoning Districts	Minnesota	Swift	County	2022	Swift County Solar Power Ordinance	- Variable Zoning restrictions based on SES size: up to 1 MW Permitted in Agricultural (A) and Urban Expansion (UE) Districts. SES 1.1 to 5 MW Conditionally Permitted in A and UE Districts. SES 5.1 MW and larger Conditionally Permitted in A Districts and Not Permitted in UE Districts. - Variable setbacks based on SES system size and Zoning district ranging from 200 to 350 ft	

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