

What Makes A Good Solar Ordinance?

A Guide To Local Regulatory Approaches That Let Utility-Scale Solar Grow

Solar energy is a crucial part of the clean energy transition. Large-scale solar projects offer the <u>cheapest electricity</u> in history, bringing communities across the country huge economic benefits and safe, reliable power. For hundreds of projects a year, the path to permitting rests with town, county, and state governments – where **overly restrictive solar siting rules are an** <u>increasing obstacle</u> **to building this clean energy source**.

To diversify our power grid with homegrown clean energy, create enormous economic opportunities for landowners and local communities, and meet our climate goals, we need to adopt smart local regulatory approaches that enable solar power to grow. You can shape your community's future for the better by advocating for thoughtful local rules that make utility-scale solar projects possible.

This guide will help you understand the balanced approaches that create a responsible path forward for more solar projects while still addressing local priorities, and the most common "poison pills" found in local solar regulations – restrictions that may sound reasonable but, intentionally or not, can have the effect of banning solar altogether.

Note: This guide focuses on local ordinances affecting "utility-scale" solar projects built by commercial developers, often defined as 20 megawatts or greater. We need solar at all scales to make the clean energy transition happen, but utility-scale projects are crucial to meeting our climate goals and ensuring the biggest local economic benefits.

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Highlights

Here's a quick look at some of the most important advice and solar ordinance Do's and Don'ts in this guide.

<u>Proactive regulation matters</u>: Explicitly including solar in local ordinances (separately or as part of existing rules) will make more beneficial projects possible by setting community priorities, enabling public input, and creating a consistent approach.

Zoning: It's normal for solar siting standards to vary by zone, but avoid these poison pills:

- **Zone limits:** Commercial and industrial zones should not be the only ones available for solar. Solar should not be banned from rural or agricultural zones.
- **Size limits:** Height limits under 15 feet will make it difficult to build any solar project. Bans on projects of a certain capacity or acreage are not recommended.

Setbacks: Requiring a buffer of 1,000 feet from neighboring property lines would likely make it difficult to find anywhere at all to build a solar project in the town or county. Fifty to 100 feet from neighboring property lines and 100 to 150 feet from neighboring residences is more reasonable.

Noise: A normal solar inverter runs at the quiet level of about 45 decibels (like a refrigerator), so imposing noise limits below this level can make solar projects difficult.

Permitting: A flexible, efficient approach will help both to enable beneficial local solar projects and limit the burden on local government offices. Avoid these poison pills:

- **Exorbitant fees:** A permitting fee of \$1,000 per solar panel would lead to a permitting cost of tens or hundreds of millions of dollars for typical projects, making it unlikely any companies would be able to build in that community.
- Interconnection up front: Ordinances should not require an approved interconnection agreement to the local power grid during permitting. All projects will secure this agreement before construction, and moving that up could push permit review too late in the process, limiting public input and adding delay.

Decommissioning: Avoid these poison pills:

- **Excessive financial assurance:** Requiring the entire decommissioning cost to be set aside for the lifespan of the project (typically 30 years) is unrealistic.
- **Unrealistic land restoration:** Requiring the site to be restored to its exact original condition at the end of the project's life could be impossible.

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What To Expect From This Guide

This guide is for **local residents and volunteers** who want to support utility-scale solar energy where they live, and **local officials** who want advice on crafting smart ordinances that will help solar grow in their communities. Our goals are to:

- Educate you on balanced, flexible regulatory approaches that will help enable solar projects in your community while still accounting for site-specific concerns.
- Help you identify "poison pills" that can have the effect of all but banning solar energy in your community when included in a local ordinance.
- Prepare you to speak up in favor of smart solar siting policies that will help your community reap the benefits of utility-scale projects.

Below, we'll break down **common considerations** in utility-scale solar ordinances. We'll explain **reasonable approaches** to these regulations that make projects possible, along with **overly restrictive approaches** to avoid. You'll see those colors throughout, along with a few symbols:

- **Poison pills** are rules or requirements that can make it very difficult to bring any utility-scale solar projects to your community when included in a local ordinance. This symbol will highlight examples of these no-go approaches to look out for and avoid.
- **Farmland solar siting** can have huge benefits for farmers and rural economies and is an important issue to get right. This symbol denotes tips about local rules on this topic, including on agrivoltaics or "dual-use" projects that combine solar and farming activities.
- **Battery energy storage systems** are increasingly common as part of new utility-scale solar proposals. This pairing has huge benefits for grid reliability and cost savings, and comes with many of its own regulatory considerations. We won't go in-depth on energy storage in this guide, but will use this symbol to flag overlaps with solar regulations.

This guide reflects extensive research on state and local approaches to solar, as well as current best practices as of early 2025. In practice, the applications of this guide will vary by jurisdiction and project. This guide is not a model ordinance and should not be used as legal advice.

About Greenlight America: We're an independent national nonprofit dedicated to accelerating the build-out of clean energy at the local level by helping community groups and residents show up and speak up in favor of local clean energy projects and effective local siting ordinances. We don't work for or receive funding from clean energy developers. <u>Learn more about us here</u>.

How Are Solar Projects Regulated, Anyway?

Whether you're in a city, town, or rural area, your local municipal leaders – such as on the planning board or county commission – will likely have at least some say in solar siting.

A little over half of states allow **local governments** to oversee utility-scale solar siting, while a little under half require **state agencies** to review projects above a certain size, usually in megawatts. No matter who has the final say, **local officials tend to control zoning and will have to give certain project approvals,** giving them real power to make solar possible. At this local level, solar regulations can take many forms and may vary across zoning districts.

What to know about common local regulatory methods for utility-scale solar		
Solar ordinances: Separate zoning or land-use rules that dictate where and how projects can be built.	Pros: Balanced approaches clarify local priorities, creating consistency and helping projects succeed.	<u>Cons</u> : Overly restrictive rules can make solar too costly or difficult to build, or can have the effect of an all-out ban .
Naming solar as an allowed use in existing rules: Calls out solar as a type of use that's allowed or permissible in certain zones.	Pros: Sets community intentions around solar and creates clarity and confidence for developers without adding unique permitting hurdles.	<u>Cons:</u> A one-size-fits-all approach can impose rules that don't make sense for solar , such as on parking, so sometimes a separate ordinance is more effective.
<u>By right:</u> Projects that meet local standards can proceed without special review. Can be applied in separate or existing rules or by zone.	Pros: Can streamline typical projects that suit the area. The community can weigh in on this overall approach by zone rather than on a per-project basis.	<u>Cons:</u> Even with a chance to weigh in at the standard-setting level, residents may feel blindsided if they can't give as much input on each individual project.
<u>Conditional-use or</u> <u>special-use permitting:</u> Solar projects need special approval (also known as a CUP or SUP) in certain zones or community-wide.	Pros: Can encourage public input and let solar developers get on the same page with the community. May be appropriate in certain zones.	Cons: Can cause inconsistent treatment between similar kinds of solar projects, and may cause delays or more exposure to opposition . May not be reasonable if similar uses don't get special review.

Where no solar regulations exist, projects will be treated case-by-case – they might need no approval, or not be possible at all. A proactive approach to solar regulation creates consistency, transparency, and predictability, helping more projects succeed with more community support.

Ingredients of a Typical Ordinance

Solar regulations can look complicated. Before we get into specific advice, here's a breakdown of the most common sections¹ you might see in a typical ordinance.

Opening sections	These introduce the ordinance and the projects it covers. We won't go in-depth on these issues in this guide, but here are some topline <u>tips</u> on approaches clean energy volunteers should support in local regulations.
<u>Purpose</u>	Describes what the ordinance aims to do and why. <u><i>Tip:</i></u> Put solar in context of existing community priorities by mentioning local or state plans, resolutions, laws, etc. that encourage clean energy or climate action.
<u>Definitions</u>	Defines key terms and jargon used in the ordinance. <u>Tip:</u> Tee up a consistent approach to special project types with extra benefits (such as for a grivoltaics or storage components) by defining those terms here.
<u>Applicability</u>	Sets a minimum size for projects that will need to follow the rules, either in terms of capacity (e.g., megawatts), acreage, or both. <i>Tip:</i> If local rules don't address solar otherwise, a lower size threshold means the ordinance will cover more projects, potentially enabling more consistent, successful permitting. On the other hand, if smaller projects are allowed "by right," a higher threshold will let more projects use that simpler path.
<u>Timeline</u>	Lays out how long it should take for officials to review and approve the project. <u>Tip</u> : A clear timeline keeps projects on track and ensures transparency. A typical approach might span six months, with an initial review within 30 days, a public hearing within 45 days of the application being deemed complete, and a final decision within 120 days after that.
Main sections	As the bulk of the ordinance, these are where we see the most common poison pills" that result in bans. The rest of this guide gives advice on each of these sections (linked below), as well as advice on <u>Zoning</u> .
<u>Siting</u> <u>Standards</u>	Covers <u>setbacks</u>, requirements on <u>noise and visual screening</u> (also known as view blocking), and other site-specific considerations.
Permitting	Lists what developers must do to apply for local project approval, including site plan requirements and various environmental standards.
Decommission- ing	Describes what should happen at the end of the project's lifespan and any related up-front requirements for plans and financial assurances.

¹ Based on American Clean Power's <u>model ordinance</u>. Specific terms and structure will vary by location.

Solar Ordinance Do's and Don'ts

Now we'll get into detailed advice on the issues that can make or break whether a local ordinance enables a community to take advantage of utility-scale solar and its benefits.

Zoning

What does this mean? Zoning regulations determine where and how utility-scale solar projects can be built within the community. Definitions of different zones and districts will vary by town and county. Solar requirements may also vary across zones to ensure that projects fit the area.

Why does it matter? Zoning is key to helping a community embrace solar. A balanced approach ensures sufficient space for beneficial projects while accounting for land-use priorities.

Examples of reasonable and overly restrictive approaches to utility-scale solar zoning		
Utility-scale solar projects can be well suited to commercial and industrial zones (with caveats – see opposite). Solar may already be going on commercial rooftops, so ground-mounted solar is likely also an appropriate land use.	Commercial and industrial zones should not be the only ones available for solar because they may not have sufficient space for many projects. Rezoning to enable solar in these districts may also raise community concerns about build-out of more intrusive industrial uses.	
✓ Rural residential and agricultural zones work well for solar, with plenty of open space and low housing density. Many farmers want to lease unused or lower-yielding acreage for a solar array. These projects generate cheap power and steady revenue to keep farms in business. With agrivoltaics, farming and grazing can even continue underneath solar panels.	 Solar should not be banned outright from rural or agricultural districts, since this can make it very difficult to bring solar's benefits to a community. Many farmers will want to access the economic benefits of adding solar to their properties – and they have a right to do so! Restricting solar from higher-value soils may seem reasonable, but can also be a slippery slope. Even on prime soil, a solar project may be what makes the most economic sense for that landowner at that time. These areas should remain an option for flexible consideration. 	

Land use in context: The use of farmland for solar is a common concern – but in the grand scheme, solar <u>rarely takes up more than 1% of any one county's land</u>. Groups like the American Farmland Trust <u>support solar growth</u> and say low-density housing sprawl is a <u>much bigger risk</u>.

Storage tip: Restricting energy storage facilities in zones where solar is otherwise permissible could make projects less beneficial and limit the likelihood of solar growth.

Zone-specific requirements: Within each zone where solar is permitted, ordinances may set additional requirements that can have a big effect on how complex the permitting process will be, and therefore on how likely projects are to get built. It's important for these rules to balance the needs of the district and the potential drawbacks for enabling solar in the community.

Examples of reasonable and overly restrictive zone-specific requirements		
Height maximums of 20-25 feet are typical for solar in any zone. Most solar panels are about 15 feet tall at full tilt.	Height maximums of less than 15 feet will make it difficult to build any utility-scale solar project, no matter the zone.	
exception , as panels are raised to allow farming activities beneath.		
Setbacks will vary by zone, but in general, solar should be subject to similar setbacks as other types of development in the same zone.	Solar ordinances should not require permanent off-street parking or extensive internal access roads . In fact, limiting these can be good for preventing soil compaction and mitigating stormwater runoff.	
Any environmental testing rules should reflect that solar is very low-impact and do not need to exceed requirements for other uses in the zone.	Solar farms <u>do not cause air or water pollution or</u> <u>harmful runoff</u> , so frequent or annual soil testing is likely unnecessary and could deter otherwise beneficial projects.	
	Most solar arrays produce glare similar to a body of water, so glare studies should not be needed, and any such requirements should be flexible.	
Projects should be considered on their individual merits, in accordance with other requirements for uses in that zone. Size requirements can be averted by breaking projects into phases, so they're not necessarily effective anyway.	Blanket bans on projects of a certain size can be arbitrary and unfairly single out projects that would otherwise comply with local rules and could bring big local economic benefits. Note that most solar projects need at least 5 to 7 acres of space per megawatt.	

Setbacks

What does this mean? Setbacks dictate the minimum distance between solar projects and neighboring property lines and residences, ecosystems, and/or infrastructure, such as buildings and roads. They act as a buffer, just like a setback at the edge of a yard, addressing safety, aesthetics, and environmental considerations for adjacent land uses and residents.

Why does it matter? Excessive setbacks can limit available land for utility-scale solar and even make projects all but impossible, especially in the case of smaller or irregularly shaped sites. Larger setbacks may be warranted around certain protected ecosystems (e.g., to protect electrical wiring near a body of water), but these should be the exception rather than the rule.

If setbacks mean a potential solar site can't fit enough panels for the project to make financial sense, the developer may scrap it, or at most will build a smaller project with fewer benefits.

Examples of reasonable and overly restrictive approaches to typical setbacks		
Setbacks of 50-100 feet from neighboring property lines or 100-150 feet from neighboring residences are common and reasonable. These buffers maintain local aesthetics while still making typical solar projects, and all their benefits, possible.	A setback of 500 feet would drastically limit the space within a given project site where solar panels can actually be built, leading to a smaller project with fewer benefits, or potentially making the project impossible to pursue. Setbacks of 1,000 feet or a quarter mile would likely make it difficult to find anywhere in the town or county where solar projects can realistically be built.	
Here's a rough hypothetical visual of how a reasonable setback distance (in green) affects the space available for solar (in blue) within an irregularly shaped lot.	Here's how a larger setback distance (in red) takes up nearly all of the space for solar on the same lot. The more narrow angles or odd shapes involved, the more excessive setbacks can hurt a project's feasibility. And in reality, most lots are not going to be perfect squares.	

Storage tip: Reasonable setbacks are generally similar for energy storage components.

Noise & Visual Screening

What do these mean? Rules on this topic aim to prevent a solar farm from being seen or heard in a way deemed unacceptable by the surrounding community.

Why does it matter? These rules are important to help a solar project blend in appropriately with its surroundings, but it's easy to pile on unnecessary requirements or restrictions that can inflate project costs and may wind up deterring solar growth or limiting its local benefits.

Examples of reasonable and overly restrictive noise and screening requirements		
Noise: Solar projects don't actually produce sound at levels that necessitate restrictions – the project's inverter, which connects the panels to the grid, typically runs at or below the decibel level of a refrigerator. So noise limits are not necessary , or should be no less than about 50 decibels.	Noise: Imposing overly strict decibel limits far below the quiet level of a normal inverter (around 45 decibels) can make solar projects difficult or impossible.	
<u>Noise:</u> Depending on other setbacks, an ordinance could require the inverter to sit a certain distance from residential property lines (e.g., 50 feet) so neighbors don't hear it.	Noise: There is lots of public data available about normal solar operations, so requiring duplicative studies about noise adds unnecessary expense that may deter solar growth.	
Screening: Ordinances set the ground rules and minimum standards for projects, but each one will be unique. Solar project developers should be able to choose from a range of screening options to find what fits the location best.	<u>Screening:</u> Overly prescriptive or one-size-fits-all screening rules will make it hard to tailor projects to their location and could add unnecessary costs that discourage good projects.	

Storage tip: Ordinances covering both solar and storage may need to offer different noise rules for each. Energy storage systems are also quiet from a reasonable distance, but up close can run at around 75 decibels (like a vacuum cleaner) due to HVAC systems used for cooling. This noise level is manageable with setbacks, time restrictions, or screening.

More detail on visual screening options: Solar developers often use a mix of methods to shield projects from public view or help them blend in with the area. Rules should allow for flexibility to suit the surroundings without piling on unnecessary expense. Reasonable costs in this department mean more economic benefits that can flow to the community.

Common screening methods, reasonable and cost-effective approaches, and costly choices that could deter projects if required		
Vegetative buffers: Common in rural and suburban areas to blend in the installation with the natural landscape.	More reasonable: Fast-growing native shrubs and trees that can fill in to create a natural barrier over time and maintain a healthy ecosystem across the long life of a solar project.	Less reasonable: Mature trees, ornamental plants.
Fencing: Suitable for both urban and rural settings, useful for quick installation.	More reasonable: Chain-link fences with privacy slats. For a middle-ground approach, an urban solar project might use a simple wooden lattice fence for both screening and aesthetics.	Less reasonable: Decorative wooden, wrought-iron, or custom fences.
Earthen berms: Effective in areas with sufficient space that need a natural look.	More reasonable: Simple berms from on-site soil. A large solar farm might use earthen berms planted with natural grass and native plants to create a visually appealing barrier.	Less reasonable: Berms with landscaping and irrigation systems.
Architectural screens: Good for urban settings where space is limited and a more structured appearance is required.	More reasonable: Simple wooden or metal panels. A solar installation in a commercial area might employ decorative metal panels that can also host public art projects.	Less reasonable: Custom-designed architectural elements.

Permitting

What does this mean? Here, developers will apply for a permit (conditional-use, building, land-use, etc.) that lets them proceed with their solar project. This involves submitting a plan including details about layout, location, safety and environmental plans, and <u>decommissioning</u>.

Why does it matter? The project won't be allowed to proceed if it doesn't get its permits, and it won't get its permits if its plans don't or can't meet local standards. Clear, consistent permitting requirements – and reasonable permitting fees – help make good solar projects possible.

Examples of reasonable and overly restrictive approaches to permit applications		
Permitting fees should be similar to those for other uses in the same zone, and should cover local administrative costs.	A fee of \$1,000 per solar panel (this really happened in Nebraska!) would lead to a permitting cost of tens or hundreds of millions of dollars for typical projects, making it unlikely any companies would be able to build there.	
Likewise, application requirements should be consistent with other uses in the same zone and should avoid requiring levels of detail that may not be available at an early stage.	Crdinances should not require an approved interconnection agreement to the local power grid during permitting. All projects will secure this agreement before construction. Moving that requirement up would stack two of the longest parts of the process instead of allowing them to happen in parallel, and could push local review too late, limiting public input. Long timelines also cost money and may reduce local benefits, while delaying the clean energy itself.	
Unified solar permitting consolidates all necessary permits into a single application, keeping things simple for all involved. The same goes for allowing flexible, consolidated, or virtual site inspections.	Requiring multiple separate inspections or mandating reviews by special boards (unless specifically required for all uses in a particular site or zone) can lead to delays and increased costs for both the project and the municipality. Local jurisdictions should consider any state or federal permits the project will also require (e.g., on stormwater management) to avoid imposing duplicative local requirements.	

Try a win-win approach: Some municipalities may be able to consider relaxing requirements for projects with extra community benefits, e.g., reduced permitting fees for projects that will clean up a brownfield site or help upgrade the local power grid, or γ reduced setbacks or height restrictions for agrivoltaics projects that further local regenerative agriculture goals.

Storage tip: Separate fire and emergency response plans, including coordination with local officials, are typical requirements for energy storage components of solar projects.

Decommissioning

What does this mean? Decommissioning ensures proper restoration and protection of a project's land once the solar energy system reaches the end of its lifecycle (usually 25-35 years after the project goes online). This part of an ordinance usually lays out the requirements for that restoration and may require a decommissioning plan or financial assurances up front.

Why does it matter? It's important and normal to plan ahead on decommissioning, but it's an expensive process, so piling on unnecessary requirements could make good solar projects difficult to build in your area. (For example, typical solar decommissioning costs in New York were around \$30,000 per megawatt in 2024, meaning decommissioning a 100-megawatt project could cost \$3 million – and that's before we even factor in inflation 30 years out.)

Examples of reasonable and overly restrictive decommissioning requirements		
Requiring plan reviews every 5-10 years is sufficient to keep the decommissioning plan relevant, staying on top of changes in technology, costs, and recycling availability.	Requiring annual or biannual plan updates is too frequent and unnecessary for all involved, especially if lots of new documentation or reapprovals are required. The factors that affect decommissioning simply don't change that often.	
Offering flexible and realistic options on financial assurance – e.g., a <u>surety bond</u> , an escrow account with 5% the estimated decommissioning cost, or a letter of credit – provides confidence that the developer can pay for the decommissioning without over-inflating project costs up front.	Requiring most or all of the estimated decommissioning cost to be set aside for the lifespan of the project is unnecessary and unrealistic. Having to tie up those funds for decades could deter especially smaller companies from proposing local projects.	
It's normal to require the property to be returned to a useful condition similar to pre-construction, such as with re-seeding, re-grading, or by removing all infrastructure and equipment not needed for ongoing use. This is enough to reset and restore the property for whatever comes next.	Specifying that land should be restored to its exact original condition might sound reasonable, but in reality could be highly costly, complex, or even impossible, and is not normal for other kinds of commercial development.	

Storage tip: Similar decommissioning requirements work for energy storage components.

Conclusion

Utility-scale solar projects offer major economic opportunities for communities across the country, with big health and environmental benefits to boot. Local governments will have the power to make or break thousands of these projects in the coming years.

We've just seen that flexible, consistent regulatory approaches can make projects far more likely to deliver local benefits – and we've learned about the reasonable-sounding but overly restrictive regulations that too often result in shadow solar bans.

Your voice matters in shaping the local rules that will make solar growth possible. Use this guide to educate yourself and your neighbors about what regulations make sense for your community. When you see a solar ordinance proposed in your area – or if there isn't one yet – you can get involved. Speak up against poison pills that can lead to solar bans, and in favor of approaches that will enable beneficial projects to succeed.

Greenlight is here to help you determine whether specific parts of ordinances in your area are reasonable. Use the Ask an Organizer form on our <u>Local Resources</u> <u>Hub</u> to send us your questions and get support. There, you'll also find a DIY guide to speaking up for local clean energy projects, tips on combating disinformation, and more.

Thanks for reading and taking action!