

PZ-1 Zoning Review

Community: Columbia Heights, MN



PZ-1: Review zoning requirements and identify restrictions that intentionally or unintentionally prohibit solar PV development. Compile findings in a memo. (Required for Bronze)

To assist your local government, the national solar experts at SolSmart have conducted a review of your community's zoning and land use regulations to assess the use of best practices, possible barriers (i.e. height restrictions, set-back requirements, etc.) and gaps related to solar PV development. The Columbia Heights [Zoning Code](#) was accessed and reviewed during December 2024. The code was accessed via the Columbia Heights [website](#) (with a redirect to the [American Legal Publishing Corporation website](#)).

Below, please find the outcome of the review.

As the SolSmart expert reviewed your community's zoning and land use regulations, they have provided recommendations for improvements and additional language that can support growth of the solar market in your community. Zoning codes should provide clear and transparent regulations on the development and use of solar energy within the jurisdiction. Recognizing that zoning codes must be specific to each community to address unique needs and local factors, SolSmart recommended language may need additional local context. Incorporating clear and transparent solar PV guidelines and regulations into zoning codes can help streamline development processes and reduce costs related to new solar PV installations.

By reading the narrative and signing the statement at the bottom of the page, your community will satisfy the PZ-1 pre-requisite and be one step closer to achieving SolSmart designation.

Summary

- A search for "photovoltaic" yielded 0 results.
- A search for "solar" yielded 0 results.
- A search for "renewable energy" yielded 0 results.
- A search for "clean energy" yielded 0 results.

Next Steps

We recommend the following steps to best utilize the zoning review.

- 1) This zoning review can be presented to the Planning & Zoning Commission or relevant zoning body to achieve credit PZ-2.
- 2) Based on the zoning review and the dialogue from the Planning Commission meeting, staff can draft proposed language for changes to the zoning code to achieve credit PZ-3.
- 3) SolSmart staff are available to help present the zoning review and/or provide guidance and feedback on draft language.

Best Practice Review & Recommendations

The code was reviewed to determine if it incorporates best practice regulations for solar energy. Incorporating best practices improves transparency of processes and clarity of development standards and can enhance the growth of the local solar market in an organized and efficient manner. The review

is split into four sections: **Solar Purpose and Definition, Roof-mounted Solar, Ground-mounted Solar Accessory Use, and Ground-mounted Solar Primary Use.** Each section reviews code language applicable to that topic area or type of solar PV. Where needed, the review will include suggested language that the community could adopt to align the code with SolSmart recommendations. Codifying zoning code best practices for solar development can help prevent misinterpretation, changes in how the code is read, or future challenges to solar installations.

Solar Purpose and Definitions

Purpose or Intent	
The code does NOT contain a purpose or intent for including solar energy regulations in the code.	
Code Language	Section:
Reviewer Comments	Aligned with SolSmart Recommendations: <input type="checkbox"/> Needs Improvement: <input checked="" type="checkbox"/>
The purpose section of the zoning code provides an opportunity to include goals related to solar to link solar energy development to specific community goals and plans. Referencing specific goals and plans in the purpose section can create a stronger foundation for future solar projects.	
Suggested Language	
<p><i>Below are examples of how solar energy could be included in the zoning purpose.</i></p> <p>Columbia Heights has adopted the following regulations to encourage the efficient and effective development and use of solar energy systems while protecting the public health, safety, and welfare of its residents.</p> <p>Solar energy is a renewable energy resource and valuable economic resource that can be utilized throughout Columbia Heights for the following purposes (<i>the following bullet points are optional depending on community goals and plans</i>):</p> <ol style="list-style-type: none"> 1) To implement the following objectives of the Comprehensive Plan: <ol style="list-style-type: none"> a) Encourage the use of local renewable energy resources. b) Promote sustainable building design and practices. c) Encourage economic development while preserving the community’s historic resources and character. 2) To meet the goals of the Climate Action Plan, Sustainability Plan, Clean Energy Resolution. <ol style="list-style-type: none"> a) [REFERENCE GOALS OR TARGETS] 3) To decrease the community’s reliance on fossil fuel power sources and reduce greenhouse gas emission/achieve carbon reduction goals. <ol style="list-style-type: none"> a) [REFERENCE SPECIFIC GOALS OR TARGETS] 4) To enhance the reliability and resiliency of the local power grid and make more efficient use of the local electric distribution infrastructure. 5) To promote consumer choice and allow residents and businesses to use local, renewable energy while displacing fossil fuel generation. 6) To improve air quality and protect public health. 	

Definitions		
The code does NOT contain definitions for solar energy.		
Code Language	Section:	
Reviewer Comments	Aligned with SolSmart Recommendations: <input type="checkbox"/>	Needs Improvement: <input checked="" type="checkbox"/>
Needs Improvement		
<p>Definitions form the basis of understanding for the terms used throughout the solar energy section of the code and reduce the chance for misinterpretation. At a minimum, a local government should include definitions that distinguish between solar energy system type (roof-mounted vs ground-mounted) and use (accessory vs primary) to provide clarity and a foundation on which to specify permissible uses in specific zoning districts and provide development standards. Definitions that may be beneficial for communities to include in their zoning codes are provided.</p>		
Suggested Language		
<ol style="list-style-type: none"> 1) <i>Solar energy system</i>: A device, array of devices, or structural design feature, the purpose of which is to provide for generation or storage of electricity from sunlight, or the collection, storage, and distribution of solar energy for space heating or cooling, daylight for interior lighting, or water heating. 2) <i>Solar photovoltaic system</i>: A solar energy system that converts solar energy directly into electricity, the primary components of which are solar panels, mounting devices, inverters, and wiring. 3) <i>Grid-connected solar energy system</i>: A solar photovoltaic system that is connected to an electric circuit served by an electric utility company. 4) <i>Roof-mounted solar energy system</i>: A solar photovoltaic system mounted on a rack that is ballasted on, or is attached to, the roof of a building or structure. Roof-mount systems are accessory to the primary use. 5) <i>Ground-mounted solar energy system (Accessory Use)</i>: A solar photovoltaic system mounted on a rack or pole that is ballasted on, or is attached to, the ground and the system is accessory to the primary use. 6) <i>Ground-mounted solar energy system (Primary Use)</i>: A solar photovoltaic system mounted on a rack or pole that is ballasted on, or is attached to, the ground and is the primary land use for the parcel(s) on which it is located. Primary use systems are permitted through a discretionary approval process. 7) <i>Community-scale solar energy system</i>: A solar photovoltaic system that qualifies for the [STATE COMMUNITY SOLAR PROGRAM NAME – if applicable]. 		

Roof-Mounted Solar

Roof-mounted Accessory Use Solar		
The code does NOT explicitly permit accessory use roof-mounted solar PV systems as a by-right or allowed use.		
Code Language	Section:	
Reviewer Comments	Aligned with SolSmart Recommendations: <input type="checkbox"/>	Needs Improvement <input checked="" type="checkbox"/>
Needs Improvement		

The zoning code does not clearly state that certain types/sizes of solar energy systems are considered an allowed or by-right accessory use.

Zoning often provides additional processes, which can be long and costly, to consider special exceptions when a proposal is inconsistent with current land use regulations. Codifying solar as an accessory use and as an allowed or by-right use in all major zoning categories provides policy certainty and clarity which can promote easier and more equitable solar deployment. It can increase solar development and save property owners time and money if they're able to avoid going through a more extensive discretionary process to have their solar system considered. For example, removing the need for a planning commission or equivalent entity to make a judgement prior to approving the project can reduce the time and expense of a solar installation (this can also allow local government staff to focus on other priorities and projects).

Often accessory use solar is not listed as a permitted use in a zoning code, even though it may be treated as such in practice (though in other instances, if it is not listed it may be considered prohibited). This lack of clarity on language could cause confusion and open the door to various interpretations/determinations of use. Including explicit language that clearly states that rooftop solar is allowed by right can help prevent misinterpretation, changes in how the code is read, or future challenges to rooftop installations.

Applicable SolSmart Credit: PZ-5, Codify in the zoning ordinance that accessory use rooftop solar PV is explicitly allowed by-right in all major zones.

Suggested Language

Roof-mounted solar energy systems are a permitted accessory use within all zoning districts, subject to the following development standards.

Roof-mounted Solar Height

The code does NOT exempt roof-mounted solar PV from height restrictions.

Code Language

Section:

Reviewer Comments

Aligned with SolSmart Recommendations:

Needs Improvement

Needs Improvement

The current zoning language indicates that solar equipment shall meet the height requirements for the zone that the system is installed in.

It is best practice to exempt roof-mounted solar energy systems from district height requirements. Height restrictions are often imposed on buildings within specific zoning districts to satisfy several planning objectives such as protection of views, controlling neighborhood character, density, and access to sunlight. In many districts, buildings, particularly those with flat rooftops, are constructed up to the maximum allowed height, thereby limiting a buildings ability to install solar unless exemptions are provided. Many local governments exempt antennas, chimneys, flagpoles, and mechanical equipment from height limits to allow for their placement and use. Since solar panels are most efficient when installed at an angle equal to a location's latitude, local governments should consider exempting solar energy systems from height restrictions. Alternatively, local governments can permit solar energy systems to exceed the maximum building height in all applicable districts.

Applicable SolSmart Credit: PZ-6, Ensure the zoning ordinance language does not include intentional or unintentional barriers to accessory use rooftop solar PV.

Suggested Language

Sloped Roof

On a pitched/sloped roof, solar energy systems shall be installed parallel to the roof surface and may not extend beyond the edge of the roof peak.

Flat Roof

For flat roofs, local governments can select from one of the following two options depending on how the zoning ordinance addresses the height of rooftop appurtenances, chimneys, antennas, and/or rooftop mechanical equipment.

1. *If the ordinance exempts certain features/structures from height limits, then it is recommended that roof-mounted solar energy systems also be exempted from height limits.*

On a flat roof, solar energy systems are exempt from zoning district height limits.

2. *If the ordinance does not include any exemptions, then it is recommended to allow roof-mounted solar energy systems to exceed a districts height limit.*

On a flat roof, solar energy systems are permitted to exceed the zoning district height limits by up to 10 feet.

Ground-mounted Accessory Use Solar

Ground-mounted Accessory Use Solar

The code does NOT explicitly permit accessory use ground-mounted solar PV systems as a by-right or allowed use in at least 1 zoning district.

Code Language

Section:

Reviewer Comments

Aligned with SolSmart Recommendations:

Needs Improvement

Needs Improvement

The zoning code does not clearly state that certain types/sizes of ground-mounted solar energy systems are considered an allowed or by-right accessory use.

Sometimes a property is not suitable for a roof-mounted solar system because the building has structural limitations, or the rooftop is shaded. In these instances, a small ground-mounted solar PV system can still allow the property owner to install solar and enjoy the benefits.

Allowing accessory use ground-mounted solar may not be appropriate for dense urban cores or highly developed areas but can be suitable for less dense parts of a community, in areas where lot sizes are bigger, and/or in commercial and industrial zoning districts where a primary use might have available land for a ground-mounted system.

Applicable SolSmart Credit: PZ-7, Ensure the zoning ordinance permits small ground-mounted solar PV as an accessory use in at least one zoning district.

Suggested Language

Ground-mounted solar energy systems are a permitted accessory use within all zoning districts, when incidental to one or more permitted primary and/or accessory structure(s), subject to the following development standards.

Ground-mounted Solar Setbacks and Placement		
The code does NOT contain setback or placement standards for accessory use ground-mounted solar PV.		
Code Language	Section:	
Reviewer Comments	Aligned with SolSmart Recommendations: <input type="checkbox"/>	Needs Improvement: <input checked="" type="checkbox"/>
Needs Improvement		
Setback standards or placement requirements should not hinder the efficiency and effectiveness of accessory use ground-mounted solar. Accessory use ground-mounted solar energy systems should have similar setback requirements to other residential accessory use structures. These setbacks generally allow accessory structures to be built closer to a property line than primary structures. Applying less restrictive setback requirements allow a ground-mounted solar PV system to operate efficiently through appropriate sizing, optimal siting, and ensuring access to adequate sunlight. Depending on the character and typical lot size of the community, it may be appropriate to encourage the siting of accessory use ground-mounted PV systems in the side or rear yard of a property. Rural communities or those with large lots can be less restrictive and allow solar energy systems to encroach into established residential accessory use setbacks. Zoning codes should be clear on the standards and placement requirements that apply to accessory use ground-mount solar.		
Applicable SolSmart Credit: PZ-8, Ensure the zoning ordinance exempts small ground-mounted solar PV from certain restrictions on accessory uses (e.g. setbacks, coverage or impervious surface calculations, or other restrictions).		
Suggested Language		
Ground-mounted solar energy systems shall comply with the accessory structure setback requirements of the zoning district in which it will be installed.		

Ground-mounted Solar Lot Coverage/Impervious Surface		
The code does NOT exempt accessory use ground-mounted solar PV from lot coverage and/or impervious surface standards.		
Code Language	Section:	
Reviewer Comments	Aligned with SolSmart Recommendations: <input type="checkbox"/>	Needs Improvement <input checked="" type="checkbox"/>
Needs Improvement		
As long as the area beneath a ground-mounted solar PV system is pervious (e.g. grass, native vegetation, etc.) the system should be exempt from lot coverage and impervious surface requirements. The tilt and spacing of solar panels allow for precipitation to drain into the pervious ground cover. Ground-mounted PV systems are not analogous to paved driveways or accessory structures like sheds, garages, or accessory dwelling units and therefore do not need to be included in lot coverage or impervious surface calculations.		

Applicable SolSmart Credit: PZ-8, Ensure the zoning ordinance exempts small ground-mounted solar PV from certain restrictions on accessory uses (e.g. setbacks, coverage or impervious surface calculations, or other restrictions).

Suggested Language

Ground-mounted solar energy systems are exempt from lot coverage and impervious surface requirements if the area under the system contains vegetative ground cover.

Ground-mounted Solar Primary Use

Ground-mounted Solar Primary Use

The code does NOT include standards for primary use ground-mounted solar PV.

Code Language

Section:

Reviewer Comments

Aligned with SolSmart Recommendations:

Needs Improvement

Needs Improvement

The code doesn't contain any requirements for primary use solar energy systems. If the community has enough usable land that could be developed for a large-scale solar energy system, they should include development standards for primary use solar energy systems into the zoning code. This could be of particular interest if there is a brownfield site such as a landfill available for development.

Applicable SolSmart Credits: PZ-9, Ensure the zoning ordinance establishes a clear regulatory pathway for large-scale solar PV (e.g. through a special use permit or through inclusion among allowed conditional uses).

Suggested Language

See pages 12 -13 in SolSmart's [Best Practice Guidance for Solar and Zoning](#) for a list of state model solar ordinances that contain template language for primary use solar energy systems.

Barrier Review

Solar energy standards should serve to guide and enable solar development, not create ambiguity, or restrict solar development. Certain design and performance standards can create significant barriers to solar PV. The inclusion of any of the following standards are not best practices and will likely impact the local government's ability to achieve SolSmart Gold designation. The statements containing NOT align with best practices. In addition to removing existing barriers, this review can help ensure that barriers are not introduced if the community updates their zoning code to include additional solar language.

Roof-mounted Solar Screening

The code does NOT require screening for roof-mounted solar PV systems.

Code Language

Section:

Reviewer Comments

Aligned with SolSmart Recommendations:

Barrier:

It is not best practice to require screening for roof-mounted solar energy systems. Screening requirements may increase installation costs and decrease system efficiency. Solar PV performance depends on optimal siting of the system and clear access to solar radiation. Screening requirements could negatively impact system performance if the screening results in shading. Screening requirements could also hide the location of important system components that are necessary to shut off a system in case of a fire or other type of emergency.

Limits to System Visibility		
The code does NOT include standards to limit system visibility (e.g. not visible from public rights of way).		
Code Language	Section:	
Reviewer Comments	Aligned with SolSmart Recommendations: <input checked="" type="checkbox"/>	Barrier: <input type="checkbox"/>
It is not a best practice to suggest the placement of solar panels should be done to reduce their visibility. In fact, it could severely limit where solar energy systems are installed. Solar PV performance depends on panel location with the best performance occurring when panels are located on a southerly exposure. Less than optimal siting for solar panels can decrease the amount of sunlight a system receives and thereby negatively impact performance.		

Aesthetic Standards		
The code does NOT include aesthetic standards for solar PV systems.		
Code Language	Section:	
Reviewer Comments	Aligned with SolSmart Recommendations: <input checked="" type="checkbox"/>	Barrier: <input type="checkbox"/>
It is not a best practice to require systems to blend into the architecture of the structure, be camouflaged from public view, be constructed of dull or dark colors, or be non-reflective. Aesthetic requirements can increase installation costs but would most likely prohibit a solar energy system from being installed since key system components like solar panels cannot be altered or painted to blend into the architecture or color scheme of a building. Aesthetic requirements could also hide the location of important system components that are necessary to shut off a system in case of a fire or other type of emergency.		

Glare, Glint, and/or Noise Standards		
The code does NOT include glare, glint, and/or noise standards for solar PV systems.		
Code Language	Section:	
Reviewer Comments	Aligned with SolSmart Recommendations: <input checked="" type="checkbox"/>	Barrier: <input type="checkbox"/>
It is not a best practice to require a glare study prior to the installation of a solar energy system. Solar PV panels are designed to absorb incoming solar radiation and limit the amount of reflected light. Solar panels are designed with anti-reflective glass. A glare study will increase installation costs.		
It is not a best practice to suggest the placement of solar panels should be done to minimize glare. In fact, it could severely limit where solar energy systems are installed. Solar PV performance depends on panel location with the best performance occurring when panels are located on a southerly exposure. Less than optimal siting for solar panels can decrease the amount of sunlight a system receives and thereby negatively impact performance. Additionally, solar PV panels are designed to absorb incoming solar radiation and limit the amount of reflected light. Solar panels are designed with anti-reflective glass.		

[The glare from a solar panel is similar to that of smooth water](#). A glare study is recommended if solar panels will be sited close to an airport but otherwise the analysis is usually unnecessary, adding time and cost to a project.

It is not a best practice to require an acoustic study or have maximum level of noise the system can produce. Roof-mounted solar energy systems produce very minimal noise. An acoustic study will increase installation costs.

Roof Space Coverage Limit

The code does NOT limit solar PV system coverage to a percentage/part of the available roof space.

Code Language Section:

Reviewer Comments Aligned with SolSmart Recommendations: Barrier:

It is not a best practice to limit the coverage of a roof-mounted solar energy system. All buildings should have the opportunity to install a roof-mounted solar energy system to the maximum extent possible, so long as the roof is structurally capable of holding the load and applicable emergency access requirements are maintained. Maximizing a solar PV systems roof coverage is important goal since buildings are transitioning to electric appliances and systems and incorporating electric vehicle charging equipment.

Prohibition on Flat or Low Sloped Roofs

The code does NOT prohibit solar PV systems on flat or low sloped roofs.

Code Language Section:

Reviewer Comments Aligned with SolSmart Recommendations: Barrier:

It is not a best practice to prohibit solar energy systems on flat or low sloped roofs. All buildings should have the opportunity to install a roof-mounted solar energy system regardless of roof slope, so long as the roof is structurally capable of having a solar energy system. Many buildings with flat roofs like warehouses, data centers, distribution centers, and big box retail stores are excellent candidates for roof-mounted solar energy systems.

Limits on Electricity Production

The code does NOT include limits on how much electricity a solar PV system can produce.

Code Language Section:

Reviewer Comments Aligned with SolSmart Recommendations: Barrier:

It is not a best practice to include limits on the amount of electricity a solar energy system can produce. Regulations and policies like this are normally set by a state entity (Public Utility Commission/Public Service Commission) and/or local electric utility and are not appropriate for zoning codes.

Limits on Electricity Consumption

The code does NOT include limits on where a solar PV system's energy is consumed.

Code Language Section:

Reviewer Comments Aligned with SolSmart Recommendations: Barrier:

It is not a best practice to include limits on where a solar energy system's electricity can be consumed. Regulations and policies like this are normally set by a state entity (Public Utility Commission/Public Service Commission) and/or local electric utility and are not appropriate for zoning codes.

Discretionary Review Process		
The code does NOT identify a discretionary review process for accessory use solar PV.		
Code Language	Section:	
Reviewer Comments	Aligned with SolSmart Recommendations: <input checked="" type="checkbox"/>	Barrier: <input type="checkbox"/>
It is not a best practice to have a discretionary review process for accessory use solar PV. This has the potential to be an onerous and/or subjective process for accessory-use solar energy systems and could increase a project's timeline and costs. Roof-mounted systems should be an allowed or by-right use and only need to go through the building permit process to ensure compliance with applicable building and electrical codes. Depending on the complexity of a conditional use permit process, the time it takes to permit a small, accessory-use solar energy system may increase the cost of the project and therefore decrease the ability of all residents and business to be able to access and afford solar.		

Conclusions

The Columbia Heights Zoning Code does not currently mention solar energy. The code could be enhanced by defining key solar energy systems, specifying where solar is permitted, and defining development standards for roof-mounted and ground-mounted accessory use solar.

Please see [Best Practice Guidance for Solar and Zoning - Accessory Use](#) for additional recommendations.

I, Andrew Boucher as City Planner of the City of Columbia Heights, Minnesota, have received the zoning review and read its findings.

Signature:  Date: 1-2-25

Please note that this review is not an endorsement or recommendation for changing and/or updating the zoning code. This is an informational review only.

If the local government has clarifying comments, please provide them in a memo to the SolSmart team.