



PZ-1 Zoning Review

Community: Portsmouth, NH

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. Below, please find the outcome of the review. 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

The **Portsmouth Zoning Code** was accessed and reviewed during October 2023. The code was accessed via the Portsmouth [website](#) (through the [Planning & Sustainability](#) link.)

- A search for “photovoltaic” yielded **0** result.
- A search for “solar” yielded **2** results.
- A search for “renewable energy” yielded **1** result.
- A search for “clean energy” yielded **0** results.

The **Portsmouth current Zoning Ordinance was amended through: August 7, 2023**. The Ordinance shows Portsmouth is generally silent on the development and use of solar energy systems. The current language does not align with SolSmart’s solar energy systems best practices.

Best Practice Review

The City of Portsmouth’s - **Zoning Ordinance** 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.

Purpose or Intent			
The code does NOT contain a purpose or intent for including solar energy regulations in the code.			
Code Language			
Reviewer Comments	Best Practice: <input type="checkbox"/>	Needs Improvement: <input checked="" type="checkbox"/>	Barrier: <input type="checkbox"/>
Purpose or intent for including solar energy regulations in the code is absent from the code.			
This section outlines the goals of including solar energy systems in the zoning code and provides an opportunity to link solar energy development to specific community goals and plans.			
Suggested Language			
Portsmouth 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 Portsmouth’s citizens.			
Solar energy is a renewable energy resource and valuable economic resource that can be utilized throughout Portsmouth for the following purposes (the following bullet points are optional depending on community goals and plans):			

- 1) To implement the following objectives of the **Comprehensive Plan**:
 - 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.
 - 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.
 - 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: ARTICLE 15 DEFINITIONS	
None			
Reviewer Comments	Best Practice: <input type="checkbox"/>	Needs Improvement: <input checked="" type="checkbox"/>	Barrier: <input type="checkbox"/>
<p>The Definitions section does not contain all the definitions for solar PV listed in the “Suggested Language” below.</p> <p>Definitions form the basis of understanding for the terms used throughout the solar energy section of the ordinance and reduces 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.</p>			
Suggested Language			
<ol style="list-style-type: none"> 1) Solar energy system: 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) Solar photovoltaic system: 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) Grid-connected solar energy system: A solar photovoltaic system that is connected to an electric circuit served by an electric utility company. 4) Roof-mounted solar energy system: 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) Ground-mounted solar energy system (Accessory Use): 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) Ground-mounted solar energy system (Primary Use): 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) **Community-scale solar energy system:** A solar photovoltaic system that qualifies for the [STATE COMMUNITY SOLAR PROGRAM NAME – if applicable].

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

Sections:

None

Reviewer Comments

Best Practice

Needs Improvement

Barrier

Solar energy systems or roof-mounted solar (**solar panel**) needs to identify as a by-right or allowed accessory use.

Zoning often provides additional processes, which can be long and costly, to consider special exceptions when a proposal is inconsistent with, or not clearly addressed in, current land use regulations. Codifying roof-mounted solar as an accessory use and **as an allowed or by-right use in all major zoning districts** provides **policy certainty and clarity** which can promote easier and more equitable solar deployment. It can increase solar deployment and save property owners time and money because they avoid going through a more extensive discretionary review process to have their solar system considered. For example, allowing solar as a by-right use removes the need for a zoning permit or the planning commission (or equivalent entity) to make a judgement prior to approving the project. This can also save staff capacity, allowing them more time to focus on other priorities and projects. By-right solar energy systems should still go through the building permit process to ensure compliance with applicable building and electric codes.

Applicable SolSmart Credit: PZ-5, accessory use solar codified and allowed

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

Option 1

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

Option 2

The code does NOT allow roof-mounted solar PV to exceed height restrictions by a defined number.

Code Language

Section: **10.5A43.32 A roof appurtenance may exceed the maximum allowed building height as specified on Map 10.5A21B 10.517 Roof Appurtenances and Other Rooftop Features**

10.5A43.32 A roof appurtenance may exceed the maximum allowed building height as specified on Map 10.5A21B (Building Height Standards) by 10 feet, subject to the following:

(b) Solar energy panels shall not be subject to the 33 percent limitation provided that they are not visible from a point 20 feet above the edge of the street right-of-way on the opposite side of the street.

Reviewer Comments

Best Practice

Needs Improvement

Barrier

While it is a best practice to allow solar energy systems to exceed height standards, it is not a best practice to include a visibility restriction alongside that exemption. Height limits 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 building’s 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 limits.**

Height limits should not be a barrier for solar energy systems on pitched or sloped roofs. Solar energy systems are usually attached at the same slope as the roof but with a few inches of space in between to allow for access to wiring and to promote airflow around the panels. There should be space, usually **3 feet**, between the roof peak and the edge of the panels to allow for emergency access and ventilation opportunities in case of a fire.

Applicable SolSmart Credit: PZ-6, roof-mounted solar exemptions

Suggested Language

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.

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

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:
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Reviewer Comments	Best Practice <input type="checkbox"/>	Needs Improvement <input checked="" type="checkbox"/>	Barrier <input type="checkbox"/>
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Solar energy systems or **ground-mounted solar** is identified as a by-right or allowed accessory use in some zoning districts.

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 it 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, accessory use ground-mounted solar codified and allowed in at least 1 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

The code does NOT contain setback standards for accessory use ground-mounted solar PV.

Code Language

Reviewer Comments

Best Practice

Needs Improvement

Barrier

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. Rural communities or those with large lots can be less restrictive and allow solar energy systems to encroach into established residential accessory use setbacks.

Applicable SolSmart Credit: PZ-8, accessory use ground-mounted solar exemptions

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 Placement

The code does NOT contain placement standards for accessory use ground-mounted solar PV.

Code Language

Sections:

Reviewer Comments

Best Practice

Needs Improvement

Barrier

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 in front yards.

Suggested Language

Ground-mounted solar energy systems shall be located in the side or rear yard of the property.

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: **Section 10.03.28: Accessory Land Uses and Structures**

Reviewer Comments	Best Practice <input type="checkbox"/>	Needs Improvement <input checked="" type="checkbox"/>	Barrier <input type="checkbox"/>
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, accessory use ground-mounted solar exemptions			
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			
The code does NOT include standards for primary use ground-mounted solar PV.			
Code Language	Sections:		
Reviewer Comments	Best Practice <input type="checkbox"/>	Needs Improvement <input checked="" type="checkbox"/>	Barrier <input type="checkbox"/>
The code contains the 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 . Some preexisting uses in residential zones with difficult redevelopment potential may be appropriate and desirable areas for SES such as landfills, brownfields, scrap yards, and or defunct gravel banks and may warrant special consideration for streamlined review regardless of the district where they are located.			
Applicable SolSmart Credits: PZ-9, primary use ground-mounted solar pathway			
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.

Roof-mounted Solar Screening	
The code does NOT require screening for roof-mounted solar PV systems.	
Code Language	Section:
None	
Reviewer Comments	
It is not a 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 includes standards to limit system visibility (e.g. not visible from public rights of way).	
Code Language	Section:
10.517.31 Solar energy panels shall not be subject to the 33 percent limitation provided that they are not visible from a point 20 feet above the edge of the street right-of-way on the opposite side of the street.	
Reviewer Comments	
<p>It is not a best practice to:</p> <ul style="list-style-type: none"> prohibit solar energy systems from being visible from public rights-of-way, neighboring or adjacent properties, or public view or suggest the placement of solar panels should be done to minimize their visibility. <p>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.</p>	

Aesthetic Standards	
The code does NOT include aesthetic standards for solar PV systems.	
Code Language	Section:
Reviewer Comments	
<p>It is not a best practice to:</p> <ul style="list-style-type: none"> require systems to blend into the architecture of the structure or be consistent with the color of roofing materials or architecture or be constructed of dull or dark colors. <p>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.</p>	

Glare, Glint, and/or Noise Standards	
The code does NOT include glare, glint, and/or noise standards for solar PV systems.	
Code Language	Section:
None	
Reviewer Comments	
<p>It is not a best practice to:</p> <ul style="list-style-type: none"> require a glare study prior to the installation of a solar energy system or suggest the placement of solar panels should be done to minimize glare or require an acoustic study or have maximum level of noise the system can produce. <p>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</p>	

[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.

Roof-mounted solar energy systems produce very minimal noise. An acoustic study will increase installation costs.

Roof Space Coverage Limit

The code limits solar PV system coverage to a percentage/part of the available roof space.

Code Language	Section:
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10.517.30 All roof appurtenances and other features that exceed the allowed structure height for the zoning district shall not exceed 33 percent of the total roof area of the structure and, except for elevators and stair towers, shall be set back at least 10 feet from any edge of the roof.

Reviewer Comments

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 as buildings transition to electric appliances and systems and incorporate 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:
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None

Reviewer Comments

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 holding the load. 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:
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None

Reviewer Comments

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:
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None

Reviewer Comments

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:
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Reviewer Comments

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 roof-mounted 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.

Additional Notes

The **Portsmouth Zoning Ordinance** has not incorporated best practices for solar energy systems. Therefore, the SolSmart team has listed recommendations under categories that **need additional improvement** related to the use of solar energy. It does provide basic information about the use of solar energy – but it is necessary to include a *purpose, definitions, and general regulations including clarification on accessory use and primary use solar*. Including basic information about solar energy **improves transparency of processes and clarity of development requirements** and can enhance the growth of the local solar market in an organized and efficient manner.

Next Steps

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.

Recommended Reading

Please see [Best Practice Guidance for Solar and Zoning - Accessory Use](#) for template language that can be used to develop organized, transparent, and consistent accessory use solar energy regulations for zoning codes.

I, [full name] as [title] of [community], [state] have received the zoning review and read its findings.

Signature: _____

Date: _____

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.