

**SOLAR ENERGY SYSTEMS**  
**DRAFT ORDINANCE - Durham, New Hampshire**  
**Presented at Planning Board Public Hearing on April 25, 2018**  
***Changes made by Planning Board through July 11 meeting***

The Planning Board has made the changes shown below. The board’s review is not completed and it may make additional changes and revisit the ones shown below. Once the board completes its review it will post another public hearing on the revised draft.

Addition made

~~Deletion made~~

-----

Proposed amendments to the Durham Zoning Ordinance to accommodate solar energy systems.

❖ *Make the following changes in Article II. Definitions.*

- *Add this new section for “Solar Energy Systems.” Place this section right before “Solid Waste” and retain the order as shown here.*

SOLAR ENERGY SYSTEMS – Specific definitions pertinent to solar energy systems follow.

Solar Energy – Radiant energy, whether direct, diffuse, or reflected, received from the sun at wavelengths suitable for conversion into electricity ~~thermal, chemical, or electrical energy~~.

Solar Energy System – A structure and the related components used to transform solar energy into electricity ~~thermal, chemical, or electrical energy~~.

Solar Photovoltaic System – A solar collection, inversion, storage and distribution system that converts sunlight into electricity.

Solar Thermal System – A solar collection system that directly heats a heat-transfer medium using sunlight for such purposes as space heating and cooling, heating domestic hot water and heating pool water.

Roof- or Building-Mounted Solar Energy System – A solar energy system attached to and completely supported by a building and not extending beyond the building footprint more than ~~15~~ 5 feet. The system may include limited accessory equipment that is ground mounted. *This definition includes a system mounted on top of a carport for a single-family or duplex residential solar energy system where the carport is attached to the main house/duplex.*

*[Should clarify how to handle an attached car port for a multiunit/nonresidential system. I also changed “car port” to “carport”.]*

Freestanding Solar Energy System – A ground-mounted solar energy system, which includes: a) a stationary or tracking system; **and** b) a system mounted on top of a freestanding carport over a parking lot (for a solar energy system other than for a single-family or duplex residence); or c) a system mounted on top of a carport for a single-family or duplex residential solar energy system where the carport is not attached to the main house/duplex.

Single-Family or Duplex Residential Solar Energy System – An accessory use that is designed to provide energy for the principal use.

Multiunit Residential or Nonresidential Solar Energy System – An accessory use that is designed to provide energy for the principal use.

Enterprise Solar Energy System – A principal use designed to generate energy for use off site.

Shared Solar Energy System – A solar energy system that serves houses and/or developments situated on two or more separate lots, which are not necessarily contiguous. The system is considered accessory to the uses on each of the lots that it serves.

*[Need to review this definition. Need to distinguish clearly from an enterprise system.]*

Rated Nameplate Capacity – Maximum rated direct current (DC) output of a solar collection system based on the combined capacity of the solar modules present in the system.

DC – Direct current (unidirectional flow of electrical charge).

➤ **Delete existing text that is crossed out here under “Building Height.”**

BUILDING HEIGHT – The vertical distance from the mean grade elevation (average grade around the perimeter of the building) to the mean roof elevation. For sloped roofs this is equal to one-half (1/2) of the vertical distance from eave to ridge. For flat roofs, including those with parapets, this is measured to the surface of the roof. Approved roof-mounted appurtenances such as ~~solar arrays~~, utilities, and telecommunications structures are not considered part of the “building height.”

❖ *Modify the Table of Uses as follows:*

*Add the new uses below in the Table of Uses in Section 175-53 under Subsection VI. Utility & Transportation Uses at the end after Personal Wireless Services Facility:*

CATEGORY OF USES	RESIDENTIAL ZONES				COMMERCIAL CORE ZONES					RESEARCH-INDUSTRY ZONES			
	Rural (R)	Residence A (RA)	Residence B (RB)	Residence C (RC)	Central Business (CB)	Professional Office (PO)	Church Hill (CH)	Courthouse (C)	Coe's Corner (CC)	Office Research - Route 108 (OR)	Mixed Use and Office Research (MUDOR)	Office Research Light Industry (ORLI)	Durham Business Park (DBP)
<b>VI. UTILITY &amp; TRANSPORTATION USES</b>													
Single family or duplex residential solar energy system (accessory use) (See Article XX)	P	P	P	P	P	P	P	P	P	P	P	P	P
Multiunit residential or nonresidential solar energy system (accessory use) (See Article XX)													
• Roof- or building-mounted	P	P	P	P	P	P	P	P	P	P	P	P	P
• Freestanding	SE	SE	SE	SE	SE	P	P	P	P	P	P	P	P
Enterprise solar energy system (principal use) (See Article XX)													
• Roof- or building-mounted	P	X	X	X	P	P	P	P	P	P	P	P	P
• Freestanding	<del>SE</del> <u>CU</u>	X	X	<del>X</del> <u>CU</u>	X	<del>SE</del> <u>CU</u>	<del>SE</del> <u>CU</u>	<del>SE</del> <u>CU</u>	<del>SE</del> <u>CU</u>	<del>P</del> <u>CU</u>	<del>P</del> <u>CU</u>	<del>P</del> <u>CU</u>	<del>P</del> <u>CU</u>

❖ *Modify the Wetland Conservation Overlay District and Shoreland Preservation Overlay District as follows:*

➤ *Add the following use at the end of Section 175-60. Permitted Uses in the WCOD A.:*

8. Roof- or building-mounted solar energy system.

➤ *Add the following use at the end of Section 175-71. Permitted Uses in the SPOD A.:*

9. Roof- or building-mounted solar energy system.

➤ *Add the following use at the end of Section 175-61. Conditional Uses in the WCOD:*

7. Freestanding solar energy system.

➤ *Add the following use at the end of Section 175-72. Conditional Uses in the SPOD:*

6. Freestanding solar energy system.

❖ *Add the following as a new section in Article XX – Standards for Specific Uses, Section 175-109, and reletter R. Temporary Sawmill (including the table shown at the end).*

R. **Solar Energy Systems.** Solar energy systems shall be allowed in conformance with the following standards and procedures (See Definitions for solar energy systems).

1. **Authority.** This ordinance is adopted pursuant to RSAs 362-F, 374-G, 477:49, 672:1 III-a, and 674:17 (I)(j).

2. **Purpose.** The purpose of this ordinance is to:

a. encourage the implementation of solar ~~transition to renewable~~ energy sources in accordance with the recommendations stated in the Energy Chapter of the Durham Master Plan;

b. promote environmental sustainability while respecting the aesthetics and the landscape of Durham ~~protecting the character of rural and scenic lands~~ and the use of productive agricultural lands in accordance with the Durham Master Plan; and

c. comply with and support the State of New Hampshire’s goal of developing clean, safe, renewable energy resources as provided for in the statutes referred to in 1., above.

3. Applicability. Minor accessory solar installations that use less than X kilowatts and are not connected to the electrical grid (such as an installation used to power

*a freestanding sign or light) are not covered by this ordinance, though they may be subject to other specific regulations.*

*[Suggested language per discussion on May 23. Need to determine kilowatt threshold. \*June 12 – discussion with Audrey – could add “self-contained and/or portable”. Self contained not require an electrical permit.]*

*[Applicability. Minor self-contained solar products (such as garden fountains and walkway lighting) are exempt from this article.]*

4. **Single-Family or Duplex Residential Solar Energy System (accessory use).**

a. **Basic requirements.** This accessory use serves single-family or duplex residences situated on the same lot. Both roof- or building-mounted and freestanding systems are a permitted accessory use in all zoning districts. Only a building permit is required (except under c. below). ~~*The maximum allowed rated nameplate capacity for a single-family or duplex residential solar energy system is 30 kilowatts (DC)<sup>1</sup>.*~~

b. **Placement.** For a freestanding solar energy system, no part of the system may be placed closer to the front property line (and side property line in the case of a corner lot) than the fully enclosed part of the house closest to the street, ~~*provided, however, that the system need not be set back further than 100 feet from the front property line.*~~ *In addition, for a freestanding solar energy system that exceeds 10 feet in height (any part of the system), no part of the system may be placed closer to the front property line (and side property line in the case of a corner lot) than the fully enclosed part of the house furthest from the street.*

*[The board needs to clarify the height threshold for the second sentence. 10 feet is inserted as a placeholder. I also added “fully enclosed” in the first sentence to be consistent with the new second sentence.]*

c. **Special Exception.** A proposed system that does not conform with b. above, may be approved by a special exception provided it is not practical to place the system as specified in b., above (See Section 175-26 Special Exceptions). ~~*The Zoning Board of Adjustment may require an analysis of potential glare at its discretion.*~~

5. **Multiunit or Nonresidential Solar Energy System (accessory use).** This accessory use serves all uses other than single-family or duplex residences – multiunit developments, commercial uses, other nonresidential uses, mixed uses, and shared systems, including systems serving residential subdivisions.

---

<sup>1</sup>~~*The size of solar photovoltaic systems is described in terms of installed power in kilowatts (DC), based on typical solar photovoltaic panel ratings and sizes being installed in 2018.*~~

A roof- or building-mounted system is a permitted accessory use in all zoning districts. Only a building permit is required.

The following standards and procedures apply to freestanding multiunit residential or nonresidential systems.

- a. Site plan review with the Planning Board is required.
- b. The maximum allowed rated nameplate capacity for the system is ~~500 kilowatts (DC)~~ the capacity that is needed to serve the accessory use.
- d. No part of the system may be placed closer to the front property line (and side property line in the case of a corner lot) than the part of the fully enclosed principal building closest to the street. In addition, for a system that exceeds 10 feet in height (any part of the system), no part of the system may be placed closer to the front property line (and side property line in the case of a corner lot) than the fully enclosed part of the principal building furthest from the street.

*["fully enclosed" added to the first sentence consistent with new second sentence]*

- c. In cases where there is no building or no distinct principal building on the lot or where there are multiple lots, the system shall be set back at least ~~30~~ 100 feet from the front property line and buffered from the road.
  - d. A proposed system that does not conform with c. or d., above, may be approved by a special exception (separate from the special exception if one is needed for the accessory use) provided: 1) it is not practical to place the system as specified in c. or d., above; and 2) the system is screened from the road and from neighbors in accordance with a plan submitted by the applicant and approved by the Planning Board.
  - e. The Planning Board may require an analysis of potential glare at its discretion.
6. **Enterprise Solar Energy System (principal use).** This designation refers to a system that is designed to provide electricity to uses off site. The following standards and procedures apply to enterprise solar energy systems.
- a. Site plan review is required for all systems, including roof- or building-mounted systems.
  - ~~b. Systems of any size are allowed.~~
  - c. The system shall be set back 100 feet from the front property line.

- c. The system shall be buffered from neighboring roads and properties in accordance with the Site Plan Regulations and as reasonably determined by the Planning Board.
  - d. The applicant shall submit an analysis about potential glare at the Planning Board's request ~~and other potential nuisances caused by the installation.~~
7. **Other provisions.** The following additional provisions apply to all solar energy systems.
- a. Building permit. A building permit is required for the installation of any system.
  - b. Setbacks. Every part of a freestanding system, including components elevated above the ground and moving components, shall conform to required setbacks for the zoning district. ~~This requirement, however, does not apply to the lines and components that connect the system with the grid and to the lines crossing lot boundaries for shared solar energy systems.~~
  - e. Maximum Height. For roof- or building-mounted systems located in any of the four residential zoning districts, the maximum height for any part of the system is ten feet above the ridge of the roof or ten feet above the highest part of the roof where there is no ridge. For roof- or building-mounted systems not located in one of the residential zoning districts, there is no height limit. The maximum height for freestanding systems is 25 feet. ~~as specified for building heights in the Table of Dimensions.~~
  - d. Impervious surface. The maximum impervious surface ratio in the Table of Dimensions does not apply to solar energy systems.
  - e. Submission requirements. Applicants for projects that require a site plan shall submit all pertinent information, including specifications for the equipment, to the Planning Board, as specified in the Site Plan Regulations. Applicants for a special exception shall submit plans showing all pertinent aspects of the project and all elements specified by the Zoning Board of Adjustment.
  - f. Decommissioning. Applicants for freestanding Multiunit Residential or Nonresidential Solar Energy System and freestanding Enterprise Solar Energy Systems shall submit a plan as part of site plan review for the removal of the structures and reclamation of the site when the system is no longer in use.
  - g. Historic District. Additional procedures and standards for proposed solar energy systems located within the Durham Historic District are contained in Article XVII of this ordinance. ~~Proposed solar energy systems within~~

~~*the Durham Historic District are regulated under Article XVII of this ordinance.*~~

~~*h. Nuisance. Should any solar energy system become a nuisance by virtue of glare or other impacts, as determined by the Zoning Administrator, the property owner shall mitigate the impacts as appropriate.*~~

- h. Review process. The process for review of proposed solar energy systems is specified in Table 175-109 R below. In case of any conflict between this table and the text of the ordinance or the Table of Uses, the text of the ordinance and the Table of Uses shall prevail.
- i. Solar easements. Private property owners may establish solar skyspace easements to preserve access to solar energy at their option pursuant to RSAs 477:49, 50, and 51.



**TABLE 175-109 R - REVIEW PROCESS FOR SOLAR ENERGY SYSTEMS**

<i>Type of use</i>	<i>Roof- or Building-mounted</i>	<i>Freestanding</i>
Single family or duplex residential system (accessory use)	Permitted as accessory use to any single family or duplex residence  Building permit only	Permitted as accessory use to any single family or duplex residence  Building permit only  Special exception if system does not meet placement requirement
Multiunit residential or nonresidential system (accessory use) including shared systems	Permitted in all zones  Building permit only	Permitted in all commercial core and research-industry zones (except for Central Business District, below)  Special exception in CB, R, RA, RB, and RC zones  Site plan review
Enterprise solar system (principal use)	Permitted use in R and all Commercial Core and Research-Industry zones  Site plan review	<del><b>Permitted in all Research-Industry zones</b></del>  <del><b>Special exception in R and all Commercial Core (except for CB) zones</b></del>  <u><b>Conditional use in R, RC, all Commercial Core zones except for CB, and all Research-Industry zones</b></u>  Site plan review