

## Supplemental Information

### Proposed Land Use Ordinance Update for Solar Electricity Installations

#### **Why are these changes being proposed? If Carrboro is seeking to be recognized as a solar friendly community, why is more regulation of solar installations needed?**

An absence of specific provisions in land use/zoning regulations relating to solar installations can create a sense of uncertainty as to what is permitted. According to the National Renewable Energy Laboratory, many communities indicate that they allow solar installations even though there is no mention of solar in their zoning code. In these instances, the communities without clear land use categories, including definitions and permitting requirements, may find that both the city and the solar energy system owner are vulnerable, for example, if a resident opposes a neighbor's installation or sues the city for allowing a land use that is not defined nor explicitly allowed in their local land use laws. According to the American Planning Association, "a conspicuous silence on the part of local policies, plans, and regulations on the topic of solar energy use constitutes a significant barrier to adoption and implementation of these technologies."<sup>1</sup>

Allowing small rooftop and ground mounted solar installations as accessory uses may streamline the process, as small-scale PV systems would not necessarily need a land permit prior to obtaining a building permit. Details regarding permitting requirements for larger systems similarly would help both applicants and the Town consider future installations. The Town's new provisions are designed to clarify solar PV permitting processes and submittal requirements.

In addition, the solar PV market is growing, and is expected to continue to accelerate. These provisions therefore are proactive in the sense of anticipating this growth and avoiding conflicts before they arise, and providing clear thresholds for when zoning, special use, and conditional use permits are required.

#### **The four different categories of solar arrays (accessory use and Levels 1-3) are based on their size/area. How does the area relate to the amount of electricity that can be generated?**

As estimated by NC Clean Energy Technology Center staff, with current technology (assuming a 250 watt panel is 18 square feet (sf)), 1 kW of electricity can be generated from a 72 sf roof mounted array. Large ground mounted arrays can end up using up more total area per kW since they can have more void space. It is generally estimated that a 5 kW array (or just over

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<sup>1</sup> American Planning Association Planning for Solar Energy Briefing Papers [https://planning-org-uploaded-media.s3.amazonaws.com/legacy\\_resources/research/solar/briefingpapers/pdf/solarpaperscompendium.pdf](https://planning-org-uploaded-media.s3.amazonaws.com/legacy_resources/research/solar/briefingpapers/pdf/solarpaperscompendium.pdf)

350 sf) is a sufficient size to generate the annual onsite electricity use for an average single family residence.<sup>2</sup>

**In practice, what percentage of the solar installations in Carrboro will require a land use permit? For example, how many of the solar arrays that have already been installed in Carrboro would have needed to get a permit if these ordinance provisions had been in place?**

Assuming a continuation of the same general pattern of most PV systems being small residential systems (primarily rooftop) and based on the previous question, a small percentage will need a land use permit. Staff have not yet identified a current solar installation in Carrboro that would not fit the requirements for being allowable as an accessory use. As examples, the largest residential system in Carrboro currently is about 20 kW (ground mount) on a large lot and uses roughly 1/10 of an acre. The largest commercial system currently is a rooftop 27 kW system. Therefore, the Level 1 and higher systems requiring permits will only be seen to the degree that Carrboro property owners choose to start installing larger solar arrays, or arrays of the size of the current larger systems on smaller lots.

**Where can I see a map of the solar installations that have already occurred in Carrboro?**

As of early 2017, there about [80 PV installations](#) in Carrboro. Almost all of these are relatively small rooftop systems, with 95% being residential.

**What exactly has Carrboro done to be recognized as a bronze level SolSmart community?**

Carrboro has achieved credits towards designation in six separate categories and for about 30 different actions, as described in a separate memorandum.

**How close is Carrboro to receiving a silver or gold level SolSmart designation?**

Because of actions for which Carrboro has already received credit, Carrboro appears to be in position to receive both silver and gold level designation if Land Use Ordinance updates are adopted. Ultimately, designation for silver or gold will be at the SolSmart program's discretion.

**What communities have received a SolSmart designation?**

As of May, 2017 there are 58 communities in the US that have received SolSmart designation. The list of designees can be seen at <http://www.gosparc.org/solsmart-designees/>

**What provisions are currently in the Land Use Ordinance for photovoltaics?**

The following LUO sections have relevant provisions for future photovoltaic installations.

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<sup>2</sup> Note that over time solar panels have become more efficient. In other words, the electricity generated per unit area of collection has increased, and it is anticipated that this trend will continue over time.

### [Section 15-83.3: Covenants May Not Prohibit Devices that Generate or Conserve Energy.....](#)

This section limits the ability of residential homeowner’s associations to prohibit solar installations under State legislative authority granted to Carrboro. It specifically allows the Town to hold final plat approval for a subdivision if the “the covenants or restrictions prohibit..... the orderly installation of solar collectors.....” It was passed in 2011, and applies to all subsequent (but not to previously approved) subdivisions.

### [Sections 15-141.3 and 15-141.4: Conditional Use and Conditional Zoning Districts](#)

Specific solar performance measures are included and can be considered in the establishment of new conditional use and conditional zoning districts.

### [Section 15-185: Building Height Limitations](#)

This section includes language that may be relevant to rooftop installation for buildings approaching height limitations, and that may limit the total roof area that can be covered by a solar array (15-185(d)).

### [Section 15-319\(b\): Modifications to Canopy Coverage Standards](#)

This section allows for relaxation of tree canopy requirements to encourage solar installations.

The Town of Carrboro’s Land Use Ordinance (LUO) does not currently include detailed provisions for PV arrays. There are no restrictions or special provisions for: the types and sizes of solar PV permitted or definitions for PV arrays; no specific provisions for PV under permissible or accessory uses; and no PV supplementary use regulations.

### [Other Information](#)

The policy document [Vision 2020](#) does include policy guidance that encourages solar PV. Specific recommendations include:

2.44 *Solar power..... should be incorporated into the Town infrastructure.*

2.45 *The Town should be known as a practitioner of climate change mitigation and adaptation practices.*

5.51 *.... The Town’s own alternative and renewable energy targets should include passive and active solar.....*

5.55 *The Town should encourage and promote efficient generation of renewable energy..... whether through public private partnerships.... or by supporting residential initiatives.....*

A [Community Climate Action Plan](#) that provides recommendations in support of PV was completed in early 2017.