

# **The Development of the North Carolina Template Solar Ordinance**

## **I. Introduction**

The template solar development ordinance for North Carolina was created to provide guidance for local jurisdictions towards regulating solar development in a responsible manner (i.e.: encouraging business development and protecting the community interests). The ordinance was a product in which more than 50 stakeholders participated over a six-month drafting process. These stakeholders included members of non-profits, government (federal, state, local, and military), planners, concerned citizens, and the solar industry itself (see Appendix “L” in the ordinance for a complete list of participants). The final product represents a method of regulation supported by members of the various stakeholder groups; an agreement on the most responsible method of regulating development that protects the interests of the industry, the government, the environment, local jurisdictions, and local communities.

The initial influence and example of the ordinance derived from examples across North Carolina, as well as the country. A database of existing solar-specific ordinances within the state was compiled by NCSEA in order to understand trends in solar regulation among those jurisdictions. However, we also drew from model ordinance examples across the country, notably California, Oregon, and Kent Co. Maryland. These were considered best practices because of the states’ success with the technology and the consensus processes used to draft the templates.

The path to the final template ordinance included several rounds of public and private engagement methods. NCSEA and the NC Solar Center facilitated three rounds of solar industry and non-solar industry stakeholder working group meetings, two rounds of issue focus group meetings, five public engagement forums, and a final full working group meeting. The working group meetings generally attracted an audience of between 15-25 participants at each meeting, with often about half the audience attending in person. The focus group meetings were designed to only pertain to specific issues. The size of these meetings generally contained 5-15 industry and non-industry stakeholders. As evidenced from the turnout, these meetings garnered significant attention and input throughout the process.

The initial working groups were split between solar industry (developers, installers, EPCs, etc) and non-solar industry stakeholder (government officials, planners, non-profits, legal representatives). After each meeting, a draft of the ordinance was created that contained revisions suggested in that meeting. It was then circulated to the other group for further revisions. This process allowed for an organized debate to flesh out potential tensions between industry and extra-industry on particular issues. Specifically, the topics of decommissioning and abandonment seemed to spur significant debate.

After the first two rounds of working group meetings, NCSEA and the Solar Center organized three rounds of issue-specific focus group meetings. The three focus groups were Aesthetics, Permitting, Decommissioning. These meetings were intended to encourage members of both working groups to discuss these specific issues within the document. They also served as an arena for the two different groups to compromise on how the ordinance should address these topics in the most responsible way for the state. The first round of focus group meetings produced a document that closely resembles the final product, indicating that this served as a very effective method of consensus building. After the focus group rounds, we convened a final

combined (industry and non-industry stakeholders) working group in late-October to obtain final input. The ordinance was then sent for final review before its publishing.

In order to make this a more transparent process, NCSEA and the Solar Center held five public forums throughout the state. These forums were intended to educate the industry, government, and public stakeholders on the ordinance, its importance, and the progress made, as well as give a chance for input into its development. After the second forum, the most current version of the ordinance was presented for public discussion and revision. The order and locations of the forums were as follows: Raleigh, Greensboro, Asheville, Lumberton, and Charlotte. As an additional vehicle for public input we also utilized an online stakeholder engagement tool developed by NC State University's Emerging Issues Institute. However, very little input was collected via this channel.

The ordinance is a result of valuable input from many different types of stakeholders. The process was encouraged to retain as much transparency as possible as to ensure the legitimacy of the document, as well as to attract a maximum amount of experience and input upon which to draw during the drafting process. The following sections will discuss the major decision points for each section of the ordinance.

## **II. Definitions**

The first draft of the document segregated solar into two different "tiers". The idea to tier solar derived from the California template ordinance. However, after analyzing language across North Carolina ordinances, we revised the definition of solar into Major/Minor categories, similar to Huntsville, NC. This was considered broad enough to allow maximum flexibility of interpretation for jurisdictions when implementing the ordinance.

After a round of internal edits, defining solar evolved into a different system that resembles the final template. Defining solar in three different "levels" (similar to California) was deemed the most relevant for North Carolina. Since North Carolina has historically only net metered a small percentage of solar photovoltaic (PV) systems, each level was differentiated by the size, in land area, of the system as opposed to the type of use (accessory v principle). Very common in NC for a PV system is a Buy All/Sell All metering arrangement, in this situation it is difficult to accurately define a solar energy system (SES) based on the use of its electricity generation, particularly when installed on a parcel with a primary structure because all of the solar energy is being sold to the electric utility rather than being used onsite.

The nature of this section remained a relative constant after these initial changes suggested by sources within the industry as well as academia. The actual acreage limitations for Level 2 systems did change slightly throughout the process, however they did not represent major points of contention between any set of stakeholder groups.

In order to take into account future technological improvements and applications of solar, we included language for building integrated solar, canopy and other types of uses that could proliferate. These applications and technologies were placed under Level 1 SES in order to encourage these uses, as Level 1 is the least regulated pursuant to this template.

### **III. Applicability**

This type of section typically serves the purpose of describing the parties subject to these regulations. This section originally exempted already constructed SES and solely applied to any new SES or any “major modification” to an existing system. However, after the first working group rounds, the non-solar industry stakeholder group expressed concerns over the importance of existing regulations pertaining to issues such as storm water management, waste water treatment, historic preservation, etc. Additionally, the forum in Asheville highlighted the ambiguity in the term “major modification” to an existing SES. Thus, this section was revised to accommodate these concerns, as well as clearly define “major modification” to any modification greater than 5% of the footprint of the original SES. Since then, the section retained the same language throughout the rest of the process.

### **IV. Permits Required**

The permits section changed significantly from its original version through the first working group call. The first version only included a few zoning districts, and required a special use permit (SUP) for all construction within residential areas as well as for all Tier 2 systems.

More zoning districts were added that resembled the general structure of zoning districts within North Carolina. Additionally, the idea of meeting solar Development Standards (referred to as Limited Use Permit in some jurisdictions) was introduced and ultimately accepted. This administratively approved permit would require Level 2 systems to comply with several other requirements before being approved for development. However, these would still avoid the process for Special Use Permit (SUP), which can sometimes cause unneeded delays and additional cost in the construction of a system.

The last substantive changes occurred during the first permitting focus group call. Formerly, all systems over 10 acres required an SUP. However, the experts on the call agreed that a development permit would be sufficient for large (over 10 acres) systems in certain districts, specifically light and heavy industrial districts, because solar is so similar to traditional industrial uses. The SUP can add development cost and time, however it provides a well defined process for all stakeholders to raise concerns about a project and consider each project on a case by case basis. The vast majority of the working group was very supportive of SUP for level 3 systems. The one participant that stated concern over the use of SUP for many SESs felt that in many jurisdictions, especially locations with little SUP experience, that the process was not well understood or followed by all parties, thus minimizing its value yet still bearing its cost for the SES developer.

### **V. Setbacks**

Section five of the template ordinance provides guidance as to how parcel line setbacks for and SES should be considered by AHJs. Surprisingly, the exact numbers did not significantly change from the original draft, although, the current form did not appear until after the forum in Asheville.

The most notable changes were made to the overall layout of the setbacks, as well as how involved the ordinance will be with suggesting specific setback distances. The first drafts of the template included suggestions for all zoning districts and types of SES. After the Asheville forum, the focus groups agreed that setbacks for Level 1 and 2 SES should adhere to current district standards. The rationale rested upon the smaller-scale nature of Level 1 and 2 systems. When we analyzed how non-utility scale systems are treated in other NC ordinances, we noticed a trend to defer to zoning district requirements for issues such as setbacks or height limitations. Knowing this, the groups agreed to defer to the zoning district minimums for setbacks for Level 1 and 2 systems.

In order to reach this agreement, solar industry representatives within the focus groups stressed the importance of minimizing limitations to development when considering development standards. The exception of screening requirements for Level 1 systems was considered an acceptable condition for removing some unneeded regulation on the smallest of system sizes. The language pertaining to 100' setbacks from any residential dwelling unit was supported universally. The front-yard limitations was supported by planners in the focus group meetings to ensure that these (often existing) regulations would not be overridden during any implementation of the template ordinance.

## **VI. Height Limitations**

Just about every AHJ's (Authority Having Jurisdiction) ordinance includes height restrictions for development within a zoning district. Often, these restrictions are specific to each zoning district. In the first draft of the template solar ordinance, we utilized examples from across the state to estimate acceptable standards within each zoning district. The language and actual numbers fluctuated several times during subsequent drafting periods as a result of some debate between industry and other stakeholders (particularly local government) concerns.

After the first working group call, the industry stressed the importance of not restricting height too much. The main concerns were for Level 1 and 3 systems. Since Level 1 includes systems over surface parking, what is the appropriate height limit? After the working group meetings, as well as further deliberation within the focus group, the stakeholders agreed on referring to the zoning district for roof-mounted systems, and a 20' limit for ground-mounted. As for Level 2 and 3 systems, an agreement was struck for a compromise of 20' for all zoning districts. Once again, this decision was made during the focus groups meetings, which included stakeholders from both solar industry and other stakeholders.

## **VII. Aviation Notification**

This particular section was implemented after a special meeting held between NCSEA, NC Solar Center, and the FAA. Nationally, the FAA reported several instances of glare from solar panels interfering Air Traffic Controller (ATC) operations. The initial template proposal from FAA, which required FAA determination that there was no risk of solar glare hazard from the proposed system before a permit could be delivered, was quickly determined to provide too much uncertainty to the permit process because FAA does not have a formal process for providing this determination and because the requirement was out of the jurisdiction for a

development ordinance. After the second focus group meeting, the requirement was reduced to notification of the FAA or airport of the intent to install a solar energy system, with the thinking being that FAA could raise concerns at the SUP hearing if they had a concern. FAA representatives responded to this version with a major concern that the notification rule would not provide them enough information to determine if there may be a glare problem and they do not have the resources to send personal to each SES permit hearing. The compromise drafted in the final working group meetings was to require the permit applicant to run the solar glare analysis tool and submit the results to FAA or the airport in adequate time for them to raise concerns at the SUP hearing or before construction starts were they to have safety concerns. In this requirement the applicant will be required to run the glare analysis tool and know at this early stage if the system is at a high risk to produce problematic glare. Industry representatives raised the concern that often system designs change slightly after a permit is applied for and they would want to update the glare analysis on record to match the as-built system.

Military representatives requested that each system over ½ an acre inform the NC Commander's Council of some basic information about the system so that each military branch operating in NC will be able to determine if the project may impact any of their operations, most notably low-altitude flights. This correct contact and notification process was not discovered until the end of the drafting process.

### **VIII. Level 1 SES Requirements**

No major changes occurred to this section since its original creation during the internal review process.

### **IX. Level 2 & 3 SES Requirements**

The center of debate was over the nature and inclusion of decommissioning and abandonment of a SES. The industry's first stance concerned the inclusion of an abandonment clause in the ordinance. The abandonment clause defines when a SES is considered abandoned (based on not producing energy for a certain amount of time) and then defining what happens once a system is considered to be abandoned. Industry representatives argued the unlikelihood of this event because of the longevity of the contracts and the productive life of a system (15-20 years and >20 years respectively). Afterwards, the system owner will likely renew the contract for the system and continue to produce energy. Additionally, at the eventual end of life of the system arguments were made that the salvage value of the materials in the system will be worth more than the cost to decommission the system. Perhaps the strongest argument for not including an abandonment clause was that other types of private development generally do not have an abandonment clause. They are also much costlier to decommission and have higher maintenance costs. Furthermore, the planners representing local governments in this discussion said that their jurisdictions were not well prepared to handle the decommissioning of an abandoned SES, so had no interest in putting that burden on local governments.

After hearing this rationale during the decommissioning focus group meetings, the industry and other stakeholder representatives agreed to remove the abandonment section from

the actual template and include a sample abandonment clause within the appendix. However, the issue of decommissioning was required to remain in the text of the actual template.

Before the creation of the template ordinance for NC, decommissioning plans have been included in the development process of SES and other types of development. They have also been subject to numerous debates. Another common method used across the country to address decommissioning assurance is to require a bond, line of credit, or other financial assurance to cover the cost of decommissioning at the end of the project life. This concept did arise a couple of times during the working/focus group discussions on decommissioning, but each time the working groups members present unanimously agreed that such a requirement should not be part of the template solar ordinance for NC. Both stakeholder groups agreed this was an unnecessary demand.

The next round of debates over the language for decommissioning within the template resulted in a debate about the purpose of the plan so that we could best draft its details. Does the plan strive to conserve land-use or just visual and personal safety protection? The resulting section was a combination of the two concerns. The industry, planners, and other stakeholders agreed that this process is often dealt with between the system owner and the landowner (if leasing the land for the SES). The planning representatives agreed that their concern was not who removed the system, but that it would be removed if necessary. Additionally, government stakeholders and industry representatives agreed with the removal of equipment and foundations and the restoration of the property as an acceptable condition within a decommissioning plan. Thus, this plan both addresses the issue surrounding land-use and preservation, as well as alleviating pressure on regulators and industry by allowing contractual agreements to settle issues of responsibility.

Decommissioning proved to be a fairly contentious subject between various stakeholders. Thus, the language within the template ordinance can be viewed as an example accepted by both parties that minimizes barriers to business and maximizes the protection values relevant to the public. Considering the sensitivity of this issue, the language within this section should be carefully considered by an AHJ when incorporating a solar-specific ordinance into its development codes.

## **X. Appendices**

When drafting the template ordinance, it became apparent that certain topics not relevant for inclusion within the template still required attention. Some of these sections grew out of contentious issues that, while still needing to be addressed, were not included within the template itself. For example, the appendix discussing abandonment provides sample language on the topic, but was not included within the topic due to agreements made during the working/focus groups.

The appendices also provide more information on certain topics that are not appropriate to be included in an ordinance on solar energy development, but that are related to the topic and may be of use and interest to many of the readers of the template ordinance. For example, information on sustainable development and related model ordinances may be very helpful to planners considering other sustainable energy related ordinance amendments. Another example is the Appendix on PV and fire which covers many topics of interest to regulators, planners, building owners, and other stakeholders. Some of the ordinances provide additional detail about

a topic in the ordinance, for example the appendix on airports and the appendix with example NC solar buffering requirements.

These sections are not part of the template ordinance requirements, but provide important information pertinent to all stakeholder groups.

## **XI. Concluding Remarks**

The process of creating the template solar ordinance was designed to encourage maximum levels of transparency and expert involvement. NCSEA and the NC Solar center served as conveners and background researchers, but played a much smaller role in the final decision-making. The authors of the ordinance incorporated language from all of the working group meetings and public forums. The document, while not an official law, can be viewed as a prewritten ordinance, effectively created by experts on the subject matter within, ready for adaptation and adoption by local governments seeking to include solar energy regulation within their development codes. Both NCSEA and the NC Solar Center extend gratitude and thanks to all of those who contributed to this template.

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