



City of Auburn, Maine

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To: Auburn Planning Board
From: Megan Norwood, City Planner II
Re: Solar Energy Generating Systems: Review Draft Ordinance
Date: January 14, 2020

I. ORDINANCE OVERVIEW & UPDATES – At the December meeting the Planning Board discussed the draft Solar Energy Generating Systems Ordinance and posed several questions for Staff to research, answer (*or in some instances pose a follow-up question for clarification from the board*) and ultimately incorporate into the latest draft. Amendments to the draft are in red, underlined track changes. There are also 4 attachments to this Staff Report. These are tables Staff prepared for the Planning Board to more effectively compare the language in other communities on various solar standards (Attachment #1: Height Standards, Attachment #2: Buffering Standards, Attachment #3: Lot Coverage Standards Attachment #4: Performance Bond Requirements).

The questions below are organized based on the order they appear in the draft ordinance to make the review process easier for the Planning Board. Staff recommends the Planning Board review this Staff Report with the draft ordinance while keeping in mind the following overarching questions and suggestions:

- Does the Planning Board feel that the ordinance fits in with the rest of the Zoning Ordinance (Chapter 60)?
- Does the Planning Board feel that the ordinance achieves what it is intended to: To continue to allow “commercial” solar developments in the Industrial District while laying out reasonable standards for the use?
- Read through the ordinance through the eyes of the public, solar developers, a member of the Planning Board and Staff trying to implement the ordinance.
 - Does it make sense?
 - What questions would you have if you were new to the City as a Planning Board member, Staff, Developer or the Public and you picked up the ordinance and were trying to decipher what the rules are with no insight into the drafting process?
 - Are the standards clear and unambiguous?
 - Are the items that are left to the Planning Board to decide reasonable? For example, items that say, “as approved by the Planning Board.” (namely the visual impacts and accessway sections).
 - Are there items that should be left up to the Planning Board to decide but are not? Perhaps the regulations as drafted are too stringent and there should be some leeway?
 - What about from a Staff perspective? If an Applicant dropped off a proposal for a Solar Project and Staff had to decide the type of review process it required and what the standards are for that, are they clear? What questions would you have as a Staff person?
 - Would you feel your property is adequately protected from adverse impacts as an abutter or member of the public?

Questions from the Planning Board at the December Meeting

1. **Sec. 60-1425. – Definitions.** The PB was seeking additional information on what sort of height restrictions should be in place for ground-mounted panels and what impacts this could/should have on buffering requirements. The proposed draft under Sec. 60-1425. – defines total height of a solar energy system as “*the total vertical distance as measured from the average elevation of the*

finished grade adjacent to the fixed base of the support structure, to the highest part of the system.”
Attachment # 1 are examples of height restrictions imposed by other communities.

Most of the communities researched in Massachusetts cap ground mounted solar projects at 15 feet in height and have separate standards for appurtenant structures. For example, Canton Massachusetts requires equipment shelters, storage facilities, transformers, and substations to be architecturally compatible with each other and they are subject to *reasonable regulations* concerning the bulk and height of structures, lot area, setbacks, open space, parking and building coverage requirements. This allows the Planning Board the flexibility to determine what a *reasonable regulation* would be in terms of space and bulk requirements which can be a good or a bad thing. Does the Planning Board want that type of flexibility or would the Planning Board rather have standards spelled out directly in the ordinance that the Board can point to?

A lot of ordinances are also silent on height requirements while others regulate both the height of ground-mounted installations and the height of roof mounted installations. The average height of a ground mounted solar panel varies based on the type of model used. Staff spoke to Revision Energy who does a lot of work in Maine and the average height of their installations are 3 feet off the ground and up to 12 feet tall. Due to the amount of snow in Maine, using an estimate from a Maine-based company is a good figure to base an ordinance on. Most solar companies estimate 5-7 feet in height for their panels so 12 feet is a conservative figure.

The Industrial District allows buildings to be 75 feet in height, except in the airport approach zone where Federal Aviation Administration height regulations apply. Staff believes the Planning Board should be more restrictive when it comes to the height limit for solar installations, whether it is 15 feet which is commonly used or 30 feet which is a little more lenient. Staff proposes the following draft language based on research of other communities:

Sec. 60-1425(3) Height Regulations: The total height of the Solar Energy Generating System and all appurtenant structures, including but not limited to, equipment shelters, storage facilities, transformers, and substations shall not exceed thirty (30) feet.

This language limits the height of Solar Energy Generating Systems as well as appurtenant structures (equipment shelters, storage facilities, transformers and substations) associated with them to 30 feet. Without this standard, the ordinance would prevail and could allow solar projects to be 75 feet in height.

2. **The Planning Board was fortunate enough to have the Airport Manager present at the meeting in December. The Board asked Staff to discuss the comments from the Airport Manager and include language in the draft to address applicable FAA regulations and glare analyses.** The Airport Manager thinks solar projects are compatible uses with the airport. However, wants there to be clear standards in the ordinance so that Owners and Operators understand applicable FAA regulations for both by-right (rooftop/accessory ground mounted uses) and larger solar projects regulated by the Planning Board under Special Exception. Staff recommends including the following in the draft ordinance to address the concerns by the Auburn Lewiston Airport:

Under Sec. 60-1427. – Applicability. (b) This section shall apply to all Solar Energy Generating Systems except the following: (b) Building Integrated and Roof-Mounted Solar Energy Generating Systems which are permitted by right in all Zoning Districts in accordance with applicable FAA regulations if within the Airport Overlay Zone.

Under Sec. 60-1427. – Applicability. (d) This section shall apply to all Solar Energy Generating Systems except the following: Ground-Mounted Solar Energy Generating Systems intended to satisfy the electricity needs of the principal use of the lot provided the Owner or Operator completes FAA requirements if within the Airport Overlay Zone.

Under Sec. 60-1426. – Application Requirements. (6) All parcels within a 2 nautical mile radius of the Auburn Lewiston Municipal Airport, as measured based on the runway centerline closest to the location in question, shall submit a Solar Glare Hazard Analysis Tool (SGHAT) report, outlining solar panel glare and ocular impacts, for each point of measurement approved by the Airport Manager at the time of application to the Planning Board.

3. **Sec. 60-1427. – Applicability. The Planning Board wanted “expansion” defined as it pertains to “an expansion of a Solar Energy Generating System” under the exemptions.** Many other communities have defined “expansion” as being a change in the land area or location of the system and its associated equipment. A change in the land area could be expanding the Solar Energy System to occupy an area not currently used or simply the construction of a new access road. This definition would also require someone moving the solar project around on the site, but not actually expanding the project to come back for Planning Board review so it is twofold in what “changes” would trigger Special Exception review. However, should the public be notified if a project is amended and proposed to occupy an area not originally proposed at the Planning Board meeting? Staff proposes the following draft language based on research of other communities:

Sec. 60-1427(c): This section shall apply to all Solar Energy Generating Systems except the following: (c) Non-Structural maintenance, like-kind repair or reconstruction of equipment, provided that it does not constitute an expansion of a Solar Energy Generating System. *For the purposes of this section, expansion of a Solar Energy Generating System means a change in the land area or location of the system and its associated equipment.*

4. **Sec. 60-1430 (a)(1) The PB wanted to know what language already exists for buffering of Solar projects and if the buffer requirement should be altered based on the height of the panels and associated equipment. The Planning Board wondered if a buffer should even be necessary unless a project is proposed adjacent to a residence.** The buffering language is currently included under “yard requirements” of the draft ordinance. It is the same language that is used under the landscaping provisions for the Industrial District for projects on lots that abut the side or rear lot lines in residential and nonresidential districts/uses. Attachment #2 to the Staff Report are some examples of buffering requirements for other communities.

Several ordinances require the Solar Energy Generating Systems to be located *at least* 50 feet from a property line. Some mention side/rear property lines while others mention front property lines. The current setbacks for the Industrial District are Rear (50Ft), Side (35Ft) and Front (35Ft). It is the opinion of Staff that setback requirements for solar installations should not be **more** stringent than the setback requirements for a structure in the Industrial District and propose the following draft language for the Planning Board to review:

Sec. 60-1430(a)(1)(a): The setbacks for Solar Energy Generating System installations, including appurtenant structures and parking areas, shall be subject to the dimensional regulations under Sec. 60-579(3)(a)(b)(c).

The setback area referenced by Sec. 60-579(3)(a)(b)(c) above are the setback requirements of the Industrial District.

In addition, Sec. 60-1430(a)(7) of the proposed ordinance addresses visual impacts associated with solar projects. A lot of communities use the same boiler plate language for a visual impact section. However, Belfast incorporated specific screening measures such as preserving natural vegetation, planting new vegetation, fencing, etc. as examples that Staff thought might be important for the PB to consider.

Westerly, RI also included specific choices for buffering such as: A 50-foot wooded buffer, 25-foot partial landscape screen, 10-foot full landscape screen, or fencing with design and materials appropriate to the surrounding and natural built environment.

Does the Planning Board want to leave this section vague enough to allow the Board the flexibility to choose what types of buffering the board “deems appropriate,” on a case-by-case basis or would the PB like there to be specific types of buffering available for choose from explicitly listed in the ordinance

language? Visual impacts vary greatly depending on the type, magnitude and location of the proposed project. Staff recommends the Planning Board leave this section vague enough to review on a case-by-case basis with the following language:

Sec. 60-1430(a)(8) Visual Impact. An applicant shall make reasonable efforts, as determined by the Planning Board, to minimize visual impacts associated with the installation of a Solar Energy Generating System. The Board shall consider the size, location and topography of the site, the characteristics of the surrounding property and the amount of type of development on said properties in determining the amount and type of screening and buffering that it deems appropriate. Screening measures shall include but are not limited to the following: Preserving natural vegetation, planting new vegetation,

In addition, some communities regulate buffering based on the height of the solar panels. **Attachment #2** has language from Belfast where they are proposing to do this. All small and medium projects over 16 feet in height have a 20-35-foot setback difference than those less than 16 feet in height. If the Planning Board is in favor of the 30-foot height limit and following the same setbacks as required in the Industrial District, the ordinance would not necessarily need a setback that is based on project height because buildings in the Industrial District could be up to 75 feet in height and solar installations would be capped at 30 feet.

5. ***Sec. 60-1430(a)(1)(b): Yard Requirements. The Planning Board was inquiring about the status of Portland’s Ordinance and if it required State review?***

Portland’s ordinance was adopted in November of 2016. Staff reached out to Portland but has not heard back at the time of writing this Staff Report regarding the review process for the ordinance. However, York recently went through the process of creating an ordinance for Solar projects and as part of that process, they coordinated with DEP regarding how they review solar installations within shoreland zones. Like York, Staff recommends including the following language in the Staff Report to address any projects in the Shoreland Zone as there are parcels in the Industrial Zone that are also in the Shoreland Zone (Hotel Road area):

Sec. 60-1430(a)(1)(b) Yard Requirements: All Solar Energy Generating System installations shall be regulated by the dimensional setback regulations, stipulated in Article XII, Division 5, Shoreland Overlay District, or a prescribed in other sections of this ordinance.

6. ***Sec. 60-1430 (a)(2) The Planning Board wanted more information on how DEP reviews impervious area for solar projects.*** Staff discussed this with DEP in December and they consider “impervious area” for solar projects to be the access row and pipes, not the panel surface. DEP also said that if the Owner/Operator does not mow the area underneath the panels more than 2 times per

year, they consider it to be a “meadow buffer” and therefore, look at solar installations as “self-treating” projects.

- a. Along this same thought, **the Planning Board wanted to spend more time reviewing the lot coverage requirement. For example, how do Portland and other communities review lot coverage for solar installations?** The language in the draft currently exempts solar installations from lot coverage requirements of the Industrial District. **Attachment #3** includes examples for the Planning Board to consider when it comes to lot coverage for solar energy systems. There are several communities that do not mention lot coverage in their solar ordinances. Staff thought the best example is a combination of the Belfast, Dekalb County, Illinois and Delaware ordinances highlighted in **Attachment #3** and proposes the following draft language:

Sec. 60-1430. – Approval. (2) Lot Coverage. The paved, mounting block, or otherwise impervious areas of sites on which ground mounted solar energy systems are installed shall comply with the lot coverage standards as defined in section 60-579(2). For the purposes of this section, photovoltaic cells, panels, arrays, and inverters shall not be considered impervious areas provided the soil underneath the collector is not compacted and remains vegetated.

The reason for this recommendation is that it remains consistent with how DEP is reviewing these projects. It is also important, whichever option the PB chooses to pursue, that the board ensures the standard is measurable and reasonably straight forward for Staff, the board and Applicant to understand and implement when reviewing proposals. The references Sec. 60-579(2) are the lot coverage standards for the Industrial District which allows for up to 40% lot coverage. Only counting the mounting blocks, access roads and other structures associated with the solar project should not approach this amount and seems reasonable.

7. **Under the proposed Sec. 60-1430. – Approval(a)(5): Maintenance – The PB wanted this section to say that proper maintenance of the system means that it is operating as designed and intended.** As proposed, the Owner or Operator of the Solar Energy Generating System is required to maintain the facility in good condition, the maintenance section also includes types of maintenance (i.e. repairing damaged panels) and site access provisions. The latest draft also adds in the italicized language below:

The other ordinances that Staff reviewed for “maintenance” requirements included similar language to what is in the proposed draft.

Sec. 60-1430(a)(5) Maintenance. The Owner or Operator of the Solar Energy Generating System shall maintain the facility in good condition. *Proper maintenance of the facility means that it is operating as designed and approved.* Maintenance shall include, but not be limited to, painting, structural repairs, *repairing damaged panels* and integrity of security measures. *The Solar Energy Generating System must be properly maintained and kept free from all hazards, including, but not limited to, faulty wiring, loose fastenings, being in an unsafe condition or detrimental to public health, safety or general welfare.* Site access shall be maintained to a level acceptable by the local Fire Prevention Officer *for emergency response.* The owner or operator shall be responsible for the cost of maintaining the Solar Energy Generating System and any access road(s), unless accepted as a public way.

8. **Sec. 60-1430(a)(10) – Approval. The Planning Board wanted to know what materials should be required for the road network, the board did not want impervious road materials internal to the development itself.** Research into *several* other communities revealed that none regulate the specific types of materials used for access networks within solar projects. The communities in Maine, Massachusetts and Rhode Island are all subject to stormwater permits as promulgated by the Clean Water Act yet none require pervious materials for the road networks. Several communities do require the area under and around the solar panels to be pervious and that the soils not be compacted.

In speaking with different solar companies, traffic is not a concern with these types of projects because there is very minimal traffic after the system is functioning. It is usually one small vehicle every month to perform maintenance on the system, everything else, maintenance related, is handled remotely. There is an added cost associated with pervious road materials and most solar companies propose to use gravel accessways, some accessways already exist as old skid roads like the project proposed on Lewiston Junction Road.

The Planning Board could require “the use of permeable surfaces as approved by the Planning Board” which would give the Planning Board some leeway into the type of material proposed based on the project. If the Planning Board is set on requiring pervious materials for the road network, Staff has included the following draft language in the ordinance that achieves this:

Sec. 60-1430(a)(10) In unbuilt areas, where possible, Solar Energy Generating System installations shall maintain the permeability of the ground. Clearing of natural vegetation shall be limited to what is necessary for the construction, operation and maintenance of the Solar Energy Generating System or as otherwise prescribed by applicable laws, regulations and bylaws/ordinances. *Any internal accessways shall consist of permeable surfaces as approved by the Planning Board.*

9. **Under the Proposed Sec. 60-1431. – Abandonment or Decommissioning. The Planning Board wanted there to be a requirement for a bond in place for removal of the solar project. This bond should include a contingency for the unpredictable cost of removal in the future. The Planning Board also wanted “abandonment” to be defined differently.** Staff discussed a standard like this with a solar company interested in doing a project in the City and their recommendation was that the requirements for the bond subtract out the cost of materials on site, for example, copper piping which is salvageable. Staff could not find examples where communities have included salvage materials in abandonment provisions. **Attachment #4** is a comparison among communities on how they handle abandonment of solar projects and the requirements for performance bonds. Each community alters the percentage they require for a Performance Bond and leaves the decision on the adequacy of the amount up to either the Planning Board, Public Works Director or Code Officer.

The Wireless Telecommunications ordinance for the City requires an estimated cost of construction and removal of a facility to be prepared by a professional engineer registered in the State of Maine and evidence from the Owner/Operator of financial capacity to construct and operate the facility. It also requires a letter of commitment from a financial institution agreeing to provide an irrevocable letter of

credit sufficient to cover the cost of removal of the facility. Using this language and the language in other communities specific to solar projects, Staff proposes the following draft language:

Sec. 60-1431(a)(3) Financial Surety: Before the start of construction, the Owner or Operator of a solar energy system shall provide a form of surety, either through escrow account, performance bond or letter of credit from a creditable financial institution, in an amount sufficient to cover the cost of decommissioning in the event the City determines the solar energy system to be abandoned in accordance with Sec. 60-1431(a)(2) above. The financial guarantee shall include a provision granting and guaranteeing the City the authority to access the funds and property and perform the decommissioning should the facility be abandoned and the owner or operator fails to meet their obligations to remove the solar energy system. This amount shall be based upon a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer, and submitted to the Planning Board at the time of application. The amount shall include a mechanism for calculating increasing removal costs due to inflation.

Bridgewater, Massachusetts requires the Owner or Operator to physically remove the installation within a specified timeframe of discontinuance, as proposed in the draft ordinance and standard among communities. However, they further say that the Owner or Operator must notify the Planning Board by certified mail of the proposed date of discontinued operations and plans for removal. In Auburn's case, this could be the Economic and Community Development Department. Bridgewater also provides a bulleted list of what decommissioning should consist of. Staff recommends including the following language which will address the Planning Board concerns about defining abandonment:

The "Abandonment" definition under Sec. 60-1425 was also amended to say, "the date at which *any part* of a Solar Energy Generating System has been out of service for a continuous period of 12 months."

Doing the math, a solar project could technically be out of service for 12 months, be classified as "abandoned" and then have 6 months to decommission which seems like an ample amount of time before the City uses the performance bond to do the work.

Sec. 60-1431. – Abandonment or Decommissioning.

(a) Abandonment and Removal of Ground Mounted and Dual Use Solar Energy Systems.

1. The Owner or Operator shall, at their expense, complete the removal of the solar energy system within 6 months of the end of the useful life of the solar energy system or within 6 months of the date of abandonment *as defined in Sec. 60-1425. The Owner or Operator shall notify the Economic and Community Development Department by certified mail of the proposed date of discontinued operations and plans for removal. Decommissioning shall consist of:*
 - a. *Physical removal of all ground-mounted Solar Energy Generating Systems including solar photovoltaic installations, structures, equipment, security barriers and transmission lines from the site.*
 - b. *Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations.*
 - c. *Stabilization or re-vegetation of the site as necessary to minimize erosion. The Economic and Community Development Department, in conformance with applicable regulations, may allow the Owner or Operator to leave existing landscaping or specifically designated below-grade foundations in place in order to minimize erosion and disruption to vegetation.*

10. **The Planning Board wanted there to be a clear definition as to what the 1-acre threshold should include. Should it include panels, equipment, AND access roads? Should it be inclusive of required setbacks and buffers? What about the area underneath the panels/bases, should that be included? Or just the square footage of the actual panels? The Board recommended the 1-acre threshold also be grounded on a technical basis.** Depending on the type of module used, each panel is roughly 3' x 6'. Staff has spoken to a few different solar companies interested in doing an installation in the City and each one presents different figures in terms of how many MW of solar energy can be generated per acre and how many homes that powers.

The reason for this being that each site is different in terms of topography, sun exposure and the angle needed for the solar panels, other site constraints such as wetlands and soils, space for the road network and access in between panels, buffering/fencing, and appurtenant equipment. The figures we have received:

Comparable: EXAMPLE 1: 1MW is 200-250 homes and 3-4 acres & **EXAMPLE 2:** 2MW is 10 acres
Low Acreage Requirement: EXAMPLE 3: 5MW is 700-1,000 homes and 7-10 acres
High Acreage Requirement: EXAMPLE 4: 5MW is 45 acres
ACTUAL PROPOSED SOLAR FARM on Lewiston Junction Road: 14.6MW and 137 acres with 36,072 panels

The first and second examples are comparable and would seem to require the *least* amount of space per MW. The first example averaging about 4 acres per MW and the second about 5 acres per MW.

The third example does not require a lot of land area with about 2 acres per MW.

The fourth example requires a lot of land area with about 9 acres per MW.

An application was recently submitted for a Solar Farm off Lewiston Junction Road. The project is split between Auburn and Poland and is proposed to occupy 137 acres for the 14.6MW project. BD Solar Auburn is proposing to install 36,072 panels on the parcel. Doing the math, that is about 263 panels per acre and 9 acres per MW. This equals 2,367 panels on 9 acres and will generate 1MW of power for 200 homes. Of course, the 200 homes per MW threshold is a conservative assumption and varies largely upon the energy use of individual homes.

The Planning Board is tasked with determining a reasonable threshold to trigger Planning Board review for Solar Projects and what that acreage figure should include. At the last meeting, some Board members suggested the easiest measurement might be *just* the face of the solar panels. With each panel measuring roughly 3 x 6, theoretically there may be up to 1,500 panels on one acre (43,560SF/18SF and subtracting out some space between the panels, etc.) This is also assuming a perfect site with no topographical constraints, perfect sun exposure, space for access roads and a low amount of required equipment. Using the math for the proposed BD Solar Auburn project, one acre could theoretically produce about 1/10 of a MW and power about 20 homes (assuming the homes are not large energy consumers).

All of the solar companies Staff has met with so far are proposing to occupy, at a minimum 10-acre sites. The question for the Planning Board is, using this information/math: ***Does a 1-acre threshold make sense if the intent is to regulate large-scale “commercial solar projects?”*** The table below summarizes the research Staff conducted of other communities. For larger scale projects, which is where the majority of the “commercial projects” would fall, most communities are bringing them under a more stringent review process once they hit between 1 – 4 acres. Also noteworthy is that several communities regulate solar projects based on their rated nameplate capacity and amount of electricity generated. Rated nameplate capacity is the *maximum* amount of electric power production for the solar project.

As discussed with the Board last month, the original draft language incorporated electricity generation as well as a square footage/acreage threshold. However, the overarching objective of the Planning Board is to regulate land uses so should the Planning Board be concerned with *how much electricity* the project is going to generate other than to use that figure as a technical basis to solidify the acreage threshold?


Staff reached out to the other communities for their input on this and the comments back were that there really is no clear understanding as to what should require Planning Board review for solar projects. Belfast did have concerns about the amount of acreage covered in relation to rated nameplate capacity as the technology continues to develop and we see improved electrical production out of the same amount of space.

The easiest way to measure the land area of a solar project would be to use the total size of the parcel occupied. However, this would also bring a lot of projects before the Planning Board and may be prohibitive to companies interested in pursuing smaller projects in the City. As discussed below, quite a few communities use “surface area” or “physical size” for the acreage threshold. This could be defined as the “*total airspace projected over the ground, footprint of accessways and any appurtenant structures associated with the Solar Energy Generating System.*” The definition would be different from the “lot coverage” definition proposed in the draft ordinance which is consistent with DEP standards for impervious area. However, by including the square footage of only the impervious areas (mounting posts, access roads, equipment, etc.), many large scale projects could fall under the less than an acre permitted by right category and the ordinance would not achieve its intended purpose of regulating the “*large-scale commercial solar projects.*” Included in the draft is that definition for surface area under Sec. 60-1425 Definitions. The Industrial District Permitted Uses and Special Exception Uses were also updated by adding the following:

Sec. 60-578 – Use Regulations (a)

Permitted uses. Public utility uses, such as electric substations, storage of material and trucks, repair facilities, offices and electric generating plants *including ground-mounted and dual use Solar Energy Generating Systems less than one acre in surface area as defined in Sec. 60-1425.*

Sec. 60-578 – Use Regulations (b) Special exception uses. *Ground-Mounted and Dual-Use Solar Energy Generating Systems Greater than one acre in surface area as defined in Sec. 60-1425.*

Ground Mounted Solar Installations & Threshold for Review: A Community Survey			
	Small Scale	Medium Scale	Large Scale
Agawam, MA	1,750SF of surface area of less. Less than 10kW DC Rated Nameplate Capacity	More than 1,750SF of surface area but less than 1 acre. 10-250kW DC Rated Nameplate Capacity	More than 1 Acre of Surface Area 250kW DC Rated Nameplate Capacity
Belfast, ME	Physical Size Based on Total Airspace Projected Over the Ground less than 20,000SF and generated nameplate capacity of 125kw or less.	Physical Size Based on Total Airspace Projected Over the Ground Equal to or Greater than 20,000SW but less than 4 Acres and generated nameplate capacity of 125kw to 1MW	Physical Size Based on Total Airspace Projected Over the Ground Equal to or Greater than 4 Acres and generated nameplate capacity of 1MW or greater
Bridgewater, MA	Review Required for all Small/Medium Scale Located on a Parcel of Land that Contains the Required Min. Lot Size & Large Scale on a Parcel that Contains a Minimum of 5 acres.		
Canton, MA	Any installation with 250kW or larger of rated nameplate capacity		
Dekalb, IL	Single ground, roof or bldg. integrated Solar System is permitted as an Accessory Use in all districts where there is a principal structure. Solar gardens ⁱ (up to 20 acres) require a Special Use permit whether accessory or principal use. Solar Farms ⁱⁱ in certain districts require Special Use permit		
Middleborough, MA	Town is split into two "SOLAR Districts," one requires Special Use permit for large scale installations and the other does not. <i>Large-scale installation</i> is defined as: A solar powered Photovoltaic system that is structurally mounted on the ground (not roof mounted) and has a nameplate capacity of 50kW or greater. <i>Nameplate Capacity</i> defined as the maximum rated output of the electric power production of the photovoltaic system stated in Kilowatts Direct Current (kWDC)		
Portland, ME	20kW or less & < 1,000SF Physical Size ⁱⁱⁱ	20-250kW & 1,001-9,999SF Physical Size ³	Over 250kW & 10,000SF or Greater Physical Size ³
Thorndike, ME	(Accessory) 1,750SF or less of surface area (equivalent to a rated nameplate capacity of about 10kW DC or less)	More than 1,750SF but less than 40,000SF of surface area (equivalent to a rated nameplate capacity of 10-250kW DC)	More than 40,000SF of surface area (equivalent to a rated nameplate capacity of 250kW DC or greater)
Westerly, RI	Review required for all solar installations except accessory installations which are incidental and subordinate to the principal use(s) of the parcel and generate no more than 125% of the energy necessary to support the principal use of the parcel.		
York, ME	1,750SF or less of surface area measured by the total surface area of the solar collector at a maximum tile that occupies a given space.	1,750SF – 40,000SF of surface area measured by the total surface area of the solar collector at a maximum tile that occupies a given space. 	More than 40,000SF of surface area measured by the total surface area of the solar collector at a maximum tile that occupies a given space.

II. STAFF RECOMMENDATIONS –

Staff recommends the Planning Board review this Staff Report and the draft ordinance side by side while keeping in mind the overarching questions prefaced at the beginning of the Staff Report.

There are ten items Staff has made recommendations on based on research of other communities and direction given by the Planning Board at the December meeting as to what this ordinance should entail.

1. The Planning Board should be more restrictive than the Industrial District when it comes to height limitations for solar installations which is 75 feet. Staff proposes capping the height of solar installations at 30 feet.
2. The Planning Board should incorporate language based on the FAA regulations and glare concerns posed by the Airport Manager. Staff recommends incorporating language under exemptions to address “by-right” installations and also under the application requirements for Special Exception, ensuring the Planning Board has a copy of the SGHAT report required by the Airport and knows it has been completed at the time of project review.
3. Staff proposes defining expansion of a Solar Energy Generating System as a change in the land area or location of the system and its associated equipment.
4. The Planning Board should not be more stringent in terms of setback requirements than the requirements for structures in the Industrial District. Staff recommends the setback requirements be the same as for structures in the Industrial District and that “Visual Impact” standards be included in the draft to give the Planning Board leeway to review solar installations on a case-by-case basis.
5. Staff recommends including language to ensure solar installations comply with applicable Shoreland Zoning regulations as there are properties in the Industrial District that are within the Shoreland Zone. This clears up any ambiguity associated with whether a solar panel is a “structure” in the Shoreland Zone.
6. Staff recommends keeping the lot coverage definition consistent with how DEP is reviewing impervious coverage associated with solar projects and using the same 40% lot coverage restriction as imposed by the Industrial District which should be easily attainable if it only includes the mounting posts, access roads and appurtenant structures associated with solar installations.
7. Staff recommends additional language under the Maintenance section to incorporate safety measures as well as ensure the facility is operating as designed and intended.
8. The Planning Board will have to decide the type of material that should be required for the internal road network. As discussed, communities do not include standards for road materials in their ordinances. If the Planning Board does want to require pervious surfaces, Staff recommends adding language in the draft ordinance that says “the use of permeable surfaces as approved by the Planning Board” which would give the Planning Board some leeway into the type of material used based on the size/scope and amount of access was proposed for the project.
9. Staff recommends including language that requires a performance bond for the City to decommission the facility if it is to be abandoned. The draft language requires the amount to be submitted before construction and for it to be based on an estimate prepared by a Qualified

Engineer and submitted to the Planning Board for review. The draft language also includes provisions for what “decommissioning” should entail, in the event a facility is “half-decommissioned” or only the salvageable parts that have value are removed.

10. Staff recommends basing the 1-acre threshold for requiring Planning Board review off of the “surface area” of the panels which is defined as the total airspace projected over the ground, footprint of accessways and any appurtenant structures associated with the Solar Energy Generating System. The definition is different from the “lot coverage” definition. However, by using only the “lot coverage” definition, many large-scale projects could fall under the “less than an acre” permitted by right category because the calculation would only include mounting posts, access roads, appurtenant equipment, etc. as opposed to the actual surface area of the panels.

As the Planning Board is aware, there are several large-scale solar projects pending. The Planning Board may see one in February that will not be subject to this new ordinance. Ideally at this meeting the Planning Board will make any changes decided during deliberations to this proposed draft and formulate a recommendation to the City Council.



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ⁱ Solar Garden is defined as a commercial solar-electric (photovoltaic) array, of no more than 20 acres in size, that provides retail electric power (or a financial proxy for retail power) to multiple households or businesses residing in or located off-site from the location of the solar energy system. A county solar garden may be either an accessory use, when a part of an existing or a proposed subdivision or a special use if it is a stand-alone garden.

ⁱⁱ A commercial facility that converts sunlight into electricity, whether by photovoltaics (PV), concentrating solar thermal devices (CST), or other conversion technology, for the primary purpose of wholesale sales of generated electricity. A solar farm is the principal land use for the parcel on which it is located.

ⁱⁱⁱ Portland defines “physical size” as: The size of the system will be based on the physical size of the panels based on total airspace occupied over the ground, or the grid area for ground mounted arrays. It should be noted that the physical size as defined here is different from the area that would be the basis for calculating the impervious surface associated with the system.