

15. SOLAR ENERGY GENERATION TECHNICAL STANDARDS

15.1 APPLICABILITY

15.1.1 All solar energy generation systems are subject to the standards set out in the *Solar Energy Generation Ordinance* section **14-780 (a)**, whether permitted (and subject to a building permit) or site plan/conditional (requiring site plan review and a building permit). Section 14-779 (a) *Permitting* of this ordinance outlines the level of review required for solar energy generation systems.

15.1.2 Permitted solar energy systems include most small roof mounted and small ground mounted solar energy systems as per **14-779 (a) Permitting**). They must comply with section **14-780 (a)** as above as well as technical, safety and maintenance standards as per Building and Fire Code requirements and as determined by the Permitting and Inspections Department when a building permit is submitted. Permitted solar energy systems must obtain a building permit but are not subject to the detailed Technical Standards in 15.2 below.

15.1.3 It should be noted that roof mounted systems potentially present a safety issue for the Fire Department in the event of a fire, and it is recommended that any roof mounted solar energy system be discussed with the Fire Department prior to design.

15.1.4 The following technical standards in 15.2 below apply to any solar energy generation system that requires a Level II or Level III site plan approval/Planning Board approval (through the Planning Division) in accordance with the ordinance section **14-779 (a) Permitting**. These solar energy systems also require a Building Permit and other permits as required by Permitting and Inspections Department. The Permitting and Inspections Department may have additional submittal requirements for solar energy systems.

15.1.5 The following technical standards are referenced in section **14-780 (a)** of the *Solar Energy Generation Ordinance* and aim to complement this ordinance and the existing codes and site plan review standards. Together the aim is to ensure safe, effective and efficient installation of solar energy systems compatible with surrounding uses. Within this aim the overall intent is to encourage the installation of solar energy systems.

15.2 TECHNICAL STANDARDS

15.2.1 Site Layout: Wherever possible solar energy systems should be located on the side or rear (ie least visible) part of the site as specified in Sections **14-780 (b), (c) and (d)** of the Ordinance. This also applies to associated features such as lighting and infrastructure. Applicants shall take all reasonable efforts to place utility connections underground, unless making use of existing lines, or as otherwise required by the utility. The proposed placement of new poles for

electrical connections shall be included in the site plan and construction management plan.

15.2.2 Site Plan Review Standards: Proposals should address the specific requirements of the *Solar Energy Generation* ordinance sections **14-780 (b), (c) and (d)** and the *Site Plan* Standards in section **14-526**. It is recognized that some of the *Site Plan* standards in **14-526** may not be relevant, as determined by the Planning Division/Planning Board during the review. It is likely that the review of any solar energy system would focus on how the proposals avoid or minimize impacts on the following:

- Existing vegetation and other natural resources - location on brownfield sites and on areas that are already impervious are encouraged;
- Wetlands and areas subject to flooding - DEP approval may be required;
- Wildlife and wildlife habitats - information may be requested on resources, impacts and potential mitigation eg through specified maintenance regimes;
- Septic systems, leach fields (unless explicitly allowed by the relevant regulator);
- Existing topography - ensure adequate temporary and permanent erosion and sedimentation control;
- Water quality of the stormwater runoff;
- Airport flight paths (FAA approval may be required);
- Other specific or local site characteristics as referenced in ordinance standards.

15.2.3 Security: The siting and design of the solar energy installation shall ensure that unauthorized access is prevented, and shall be in conformance with all applicable electrical code requirements. Knox boxes at gates (or similar arrangements as approved during the review) shall be provided for emergency access. [DC1]

15.2.4 Screening: The ordinance specifies screening from nearby residential/institutional uses and public ways. The proposals should take advantage of existing topography and vegetation where possible to integrate the development (including fencing, infrastructure and connections to the grid) into the landscape, and introduce vegetated buffer areas. Fencing shall be wildlife friendly and as unobtrusive as possible, utilizing measures such as locating the fencing along topographical contours and screening with planting. The selection of new planting would be in accordance with the *Technical Standards* in Section 4 *Site Landscaping*.

15.2.5 Construction Impacts: Proposals should include information regarding the methods of construction and a Construction Management Plan may be requested. Clearing of existing trees and vegetation shall be restricted to the minimum amount needed for construction access and to avoid shading of the solar development. Construction work should be performed in such a way that erosion

and sedimentation is minimized, and measures should be taken to permanently stabilize disturbed areas of the site as soon as possible.

15.2.6 Lighting, signage and materials: Where lighting is necessary it should be at the lowest level to meet functional needs, activated by motion sensors, fully shielded and of cut off design to meet the *Site Lighting* standards in Section 12 of the *Technical Standards*. Similarly, signage should meet functional needs of safety/security and emergency contacts and not include advertising. Materials would ideally be of neutral colors and manufactured with a low “carbon footprint”.

15.2.7 Stormwater Management: A new solar development will be required to comply with the *Technical Standards* in Section 5 *Portland Stormwater Management Standards* and Maine DEP Chapter 500 Stormwater Management.

15.3 SAFETY STANDARDS

15.3.1 Building Permit: All solar energy systems require a building permit prior to installation, whatever level of site plan review. All shall be installed by a qualified solar installer.

15.3.2 Certification: Solar energy systems shall be designed, erected and installed in accordance with all applicable codes, regulations and standards, with equipment approved under a certification program certified by the US Department of energy or similar. Experimental, homebuilt and prototype models would not be permitted.

15.3.3 Hazardous Materials: The city is concerned about the creation of hazardous waste in the future and requires a statement from the applicant regarding the content of toxic materials (eg cadmium) in the proposed system. Where the panels contain potentially toxic materials, the Operations and Maintenance Plan (for medium and large ground mounted or dual use systems - see below) shall address future disposal.

15.4 MAINTENANCE STANDARDS

15.4.1 Maintenance: Maintenance includes, but is not limited to: cleaning, mowing, painting, structural repairs, integrity of security measures, maintenance of site access adequate for emergency and maintenance services, planned maintenance of fencing, stormwater systems and vegetation/ground cover, plans for cleaning panels and any specific mowing or other regimes to support the wildlife habitat value of the site.

15.4.2 Operations and Maintenance Plan: Under 14-782 of the Ordinance all medium and large ground mounted systems, and dual-use systems of an equivalent scale, are required to provide an *Operations and Maintenance Plan* that is prepared and stamped by a licensed Professional Engineer or other licensed

professional as appropriate. The *Plan* will vary depending on the site, the method of connecting to the grid, and the number and type of panels- but is expected to address the maintenance items listed in 15.4.1 and any operational time tables as relevant, and include the following:

- Clarification of the responsible party;
- Any maintenance items that are particularly important from a public safety perspective;
- An estimate of the life of the project
- What options/actions are anticipated when it has reached the end of its estimated useful life; and
- How the disposal of any toxic materials will be handled when the system is dismantled.