Town of Petersham, Massachusetts
Historic District Commission & Historical Commission

Design Guidelines for Solar Energy Installations within the Petersham Historic District

When considering retrofitting measures, historic building owners should keep in mind that there are no permanent solutions. One can only meet the standards being applied today with today's materials and techniques. In the future, it is likely that the standards and the technologies will change and a whole new retrofitting plan may be necessary. Thus, owners of historic buildings should limit retrofitting measures to those that achieve reasonable energy savings, at reasonable costs, with the least intrusion or impact on the character of the building.
– National Park Service. From *Conserving Energy in Historic Buildings.*

One way for local Historic District Commissions to advance their mission while considering the policy of the Commonwealth to encourage the use of solar energy systems and to protect solar access is to adopt thoughtful design guidelines that can help ensure that solar energy systems are sited in a manner that also meets the goals of historic preservation.
– Massachusetts Department of Energy Resources.

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Overview

The Petersham Historic District Commission (HDC) has jurisdiction over proposed solar energy systems within the Historic District which alter the historic characteristics of a building or site visible from the public way. The HDC recognizes Mass. General Law Chapter 40C, Section 7. (See page 5 for the MGL and excerpts of the Petersham By-law.)

The Petersham HDC appreciates that there is keen interest in conserving energy through the use of renewable energy technology. Integrating these systems into historic buildings can be challenging and requires a great deal of care and planning by all parties. Solar panels are one of the most common options in use within Historic Districts but may not be appropriate for every site or structure. In reviewing these installations, the HDC will consider the building's architectural and historical importance, prominence, and significance, along with the visual impact of the proposed system on the District's overall built landscape.

Location, visibility, and appearance of solar panels are key concerns when working with historic resources. The HDC encourages solutions that protect historic features, materials, and spatial relationships, and work to minimize the visibility of all solar energy system installations.

Project Applications will be considered on a case-by-case basis and approvals are not considered precedent setting for any future Applications. Factors the HDC will consider include:

- **Siting options (solutions that achieve solar access yet protect historic fabric and character)**
- **Screening potential**
- **Integrity and condition of resource, especially for rooftop installations**
- **Impact on historic fabric**
- **Impact on surrounding landscape**
- **Overall size of panel array**
- **Panel arrangement and design**
- **Color, reflectivity, mechanical fixture details**
- **Reversibility of Installation**

Per the Town of Petersham HDC Bylaw and standard processing by the Commission for project Applications, an HDC Certificate of Appropriateness must be obtained before installation can occur.

Project Considerations

Property owners should consider how the solar panels can be installed to avoid negatively impacting the integrity of both the building's architectural features and the property's surrounding streetscape. Solar panel installations which permanently alter the building's defining architectural features or historic construction materials are inappropriate to the Historic District and are discouraged.

The utilization of alternative energy producing technologies, such as photovoltaics should only be considered after every effort to reduce a structure's energy consumption have been made. Investigation of off-site, renewable energy options should be undertaken when considering installation of on-site solar devices which alter the historic character of the building or site.

Solar panels should always be installed in the least publicly visible area possible, and ideally in an area which has no visibility from any public way(s). To the greatest extent possible, solar panels on primary roofs should be avoided.

Panels must be mounted parallel to the existing roof slope with the distance to the top of the panel surface not more than 4 inches from the roof. Any required framing, wiring, piping, or other panel mechanisms should blend in with the building's existing roof surface. Any additional system fixtures and mechanical systems must be installed in areas that are concealed from view from the public way.

Freestanding (ground mount) solar installations avoid the complications associated with altering an historic structure but are still not visually appropriate within the Historic District. As such, care should be taken to install these systems in areas where they will not be visible from the public way(s). Screening with fencing or vegetation may be an option for these installations and will be considered in the context of its suitability to the Historic District and the specific streetscape.

The applicant shall provide the following information in their Application:

- ❑ 1. Location of the proposed installation.
- ❑ 2. Explain need and goals for the installation including energy saving measures already undertaken (energy surveys conducted, interior building updates implemented, updated appliances, etc.).
- ❑ 3. For rooftop systems: provide information about current condition of the roof (age of shingles; structural; visible roof penetrations such as vents, chimneys, antennae, etc).
- ❑ 4. Recent photographs of the existing building and site; images should also show the visibility of the proposed location from any surrounding public way(s).
- ❑ 5. Scale drawings and visual materials which depict the installation.
- ❑ 6. Dimensions, design, color, location, and materials of solar energy panels and equipment; include any proposed accessories (for example, rooftop snow & ice guards).
- ❑ 7. Manufacturer's and installer's names.
- ❑ 8. Manufacturer's specific system information including product cut sheets; photographs, panel samples.
- ❑ 9. Addresses of locations of existing installations by the installer.
- ❑ 10. Location and route of any exterior wiring, plumbing, and other related equipment.
- ❑ 11. Description of how layout of solar panels will allow for any existing roof penetrations.
- ❑ 12. Description of operation including any required safety access requirements.
- ❑ 13. For ground-mounted arrays: a site plan showing the proposed location of the solar panels and how they will be screened from view (if applicable). Depending upon the complexity of the project, a professionally completed site plan with placement and elevation information may be required.
- ❑ 14. Any other information which the applicant feels supports their case is welcomed by the Commission.

The following Guidelines should be followed for the Application process:

- ❑ 1. For proposed roof top solar panels, they should be placed on non-contributing ancillary structures or secondary massing (e.g. ells); primary roofs that are visible from the public way should be avoided.
- ❑ 2. The removal of distinctive materials and/or alteration or covering of features, spaces, and spatial relationships that characterize a property must be avoided.
- ❑ 3. Solar panels should be selected to best blend with the surrounding surfaces; solar panels and hardware must be non-reflective.
- ❑ 4. Solar energy and mounting systems shall be comparable in color to the roofing materials; if a match cannot be made, then all visible rooftop materials must be black (panels, mounting, circuitry, electrical, etc.).
- ❑ 5. Any electrical wiring, plumbing, and peripheral fixtures and mechanical systems must be concealed from view.
- ❑ 6. Solar panels mounted on roofs must follow the slope of the roof line – they must be parallel to the roof.
- ❑ 7. Solar rooftop panels must not extend beyond the roof edges. Visible roof borders around the solar panels will be considered on a case-by-case basis.
- ❑ 8. Rooftop panels must be installed so that the top of the panel is not more than 4 inches above the roof surface.
- ❑ 9. Solar roof panels should be arranged in a pattern that matches the general roof shape and configuration, not scattered upon and among several roofs. Pieced or stepped panel layouts are not acceptable.
- ❑ 10. Solar panels may not be installed on siding, windows, shutters, or other parts of a building other than the roof.
- ❑ 11. All solar energy installations must be installed such that they can be removed with no permanent damage to the structure on which they are housed.
- ❑ 12. For proposed ground mounted solar energy systems, they should be positioned in a limited visibility location in a secondary area of the property, possibly with screening to make it inconspicuous from a public way.
- ❑ 13. Replacement of solar energy system parts must be of like kind otherwise a new HDC Application is required.
- ❑ 14. The rooftop or ground mounted solar energy system must be removed in its entirety at the end of its functional life and repair of any resulting damage to the rooftop or structure shall be made.
- ❑ 15. New innovations in solar energy technology shall be considered on a case by case basis.

ADOPTED by Town of Petersham Historic District Commission DATE: February 25, 2019

February 25, 2019

ADDITIONAL INFORMATION

Ten Design Principles for Solar Energy Systems in Historic Settings Developed by the National Trust for Historic Preservation and the U.S. Department of Energy

1. **Locate solar panels on the site of a historic resource**
   If possible, use a ground-mounted solar panel array. Consider solutions that respect the building's historic setting, locating the solar panel arrays in an inconspicuous location, such as a rear or side yard, low to the ground and sensitively screened to further limit visibility. Care should be taken to respect the historic landscape, including both its natural and designed features, including materials and topography.

2. **Locate solar panels on new construction**
   In cases where new buildings or new additions to historic buildings are proposed, encourage the placement of solar panels on the new construction. To achieve overall compatibility with the historic building and its setting, consider solutions that integrate the solar panel system in less visible areas of the new design.

3. **Locate solar panels on non-historic buildings and additions**
   If the site cannot accommodate solar panels, and the project does not include new construction, consider placing solar panels on an existing, non-historic addition or accessory structure, thereby minimizing the Impact of solar installation on the significant features of the historic resource as well as specifically protecting historic fabric against alteration.

4. **Place solar panels in areas that minimize their visibility from a public thoroughfare**
   The primary facade of a historic building is often the most architecturally distinctive and publicly visible, and thus the most significant and character defining. To the greatest extent possible, avoid placing solar panels on street facing walls or roofs, including those facing side streets. Installations below and behind parapet walls and dormers, or on rear facing roofs, are often good choices.

5. **Avoid installations that would result in permanent loss of significant, character defining features of historic resources**
   Solar panels should not require alterations to significant or character-defining features of a historic resource, such as altering existing roof lines or dormers. Avoid installations that obstruct views of significant architectural features, such as overlaying windows or decorative detailing, or intruding on views of neighboring historic properties in a historic district.

6. **Avoid solutions that would require or result in the removal or permanent alteration of historic fabric**
   Solar panel installations should be reversible. The use of solar roof tiles, laminates, glazing and other technologies that require the removal of intact historic fabric, or which permanently alter or damage such fabric, should be avoided. Consider the type and condition of existing building fabric upon which solar panels installation is proposed, as well as the method of attachment and removal in the future. Minimizing the number of points of attachment, including the use of brackets, will avoid damaging historic fabric.

7. **Require low profiles**
   Solar panels should be flush with, or mounted no higher than a few inches above, the existing roof surface and should not be visible above the roofline of a primary facade.

8. **On flat roofs, set solar panels back from the edge**
   Flat roofs, because they are generally hidden from view, can provide an ideal surface for solar panel arrays. To ensure that a solar installation is minimally visible, set the solar panels back from the roof's edge and adjust the angle and height of the panels as necessary.

9. **Avoid disjointed and multi-roof solutions**
   Solar panels should be set at angles consistent with the slope, or pitch, of the supporting roof. For example, avoid solutions that would set panels at a 70 degree angle when the roof pitch is 45 degrees. In addition, solar panels should be located on one roof plane (as opposed to scattered among several roofs) and arranged in a pattern that matches the general shape and configuration of the roof upon which they are mounted.

10. **Ensure that solar panels, support structures, and conduits blend into surrounding features of the historic resource**
    The overall visibility and reflectivity of solar panels and their support structures can be substantially reduced if elements of the solar installation match the surrounding building fabric in color.

Massachusetts General Law – MGL Chapter 40C, Section 7: Factors to be considered by commission

Section 7. In passing upon matters before it the commission shall consider, among other things, the historic and architectural value and significance of the site, building or structure, the general design, arrangement, texture, material and color of the features involved, and the relation of such features to similar features of buildings and structures in the surrounding area.

In the case of new construction or additions to existing buildings or structures the commission shall consider the appropriateness of the size and shape of the building or structure both in relation to the land area upon which the building or structure is situated and to buildings and structures in the vicinity, and the commission may in appropriate cases impose dimensional and set-back requirements in addition to those required by applicable ordinance or by-law.

When ruling on applications for certificates of appropriateness for solar energy systems, as defined in *section one A of chapter forty A,* the commission shall also consider the policy of the commonwealth to encourage the use of solar energy systems and to protect solar access.

The commission shall not consider interior arrangements or architectural features not subject to public view.

The commission shall not make any recommendation or requirement except for the purpose of preventing developments incongruous to the historic aspects or the architectural characteristics of the surroundings and of the historic district.

Excerpts from Town of Petersham By-Laws: Article XII – Petersham Historic District, Historic District Commission, and Historical Commission By-law

SECTION 1. PURPOSE

The purpose of this By-law is to promote the educational, cultural, economic, and general welfare of the public through the preservation and protection of the distinctive characteristics of buildings, places, and districts of historic and architectural significance in the Town of Petersham, through the maintenance of appropriate settings for such buildings, places, and districts as a tangible reminder of the historic tradition of the Town of Petersham.

SECTION 5. REQUIRED CERTIFICATES AND PERMITS

Except as provided in Section 6, any person who desires to erect, build, construct, reconstruct, restore, alter, move, demolish, remove, or change any building or structure within the Historic District shall file with the Commission an application for a Certificate of Non-applicability; or a Certificate of Appropriateness, together with such plans, elevations, specifications, material and other information as shall be deemed necessary by the Commission to enable it to make a determination with respect to the application.

1) No building or structure, except as provided in Section 6, shall be erected within the Historic District unless and until either a Certificate of Appropriateness or a Certificate of Non-applicability has been issued by the Commission.
2) No building or structure within the Historic District, except as provided in Section 6, shall be changed as to exterior features until either a Certificate of Appropriateness or a Certificate of Non-applicability has been issued by the Commission.

The Petersham Historic Commission reviewed and utilized the following sources for these Guidelines:

~ Numerous existing solar installation guidelines from local Historic Districts Commissions across Massachusetts and the country; specifically referencing adopted guidelines from the Historic District Commissions of Concord, Lexington, Nantucket, and Royalston, Massachusetts. *Information available at individual town web sites.*

~ National Trust for Historic Preservation. http://www.preservationnation.org/issues/sustainability/

~ U.S. Department of Energy. https://www.energy.gov/

~ Massachusetts Department of Energy Resources. www.mass.gov/orgs/massachusetts-department-of-energy-resources

~ Massachusetts Historical Commission. https://www.sec.state.ma.us/mhc/

~ National Alliance of Preservation Commissions. https://napcommissions.org/