



Sample Guidelines for Solar Systems in Historic Districts

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The rapidly growing trend toward retrofitting homes to be more energy efficient has brought an increase in the number of applications for installing solar energy systems on buildings within locally designated historic districts. The increase in solar systems applications in recent years has prompted numerous local preservation commissions to hastily develop guidelines for them with varying degrees of success.

The following Sample Guidelines for Solar Systems for Locally Designated Historic Properties were developed in 2009 by Kimberly Kooles, NAPC support staff and revised by Caty Rushing in 2011. They are intended to serve as a starting point for local preservation commissions developing their own guidelines for solar systems.



Types of Systems:

- **Photovoltaic**

A photovoltaic system (or PV system) is a system which uses one or more solar panels to convert sunlight into electricity. It consists of multiple components, including the photovoltaic modules, mechanical and electrical connections and mountings and means of regulating and/or modifying the electrical output.



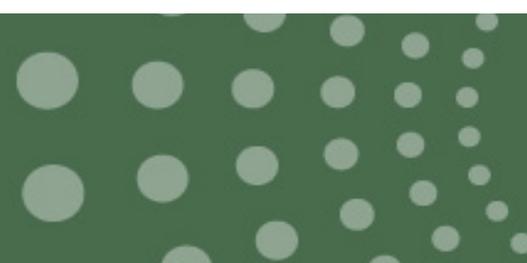
- **Solar Shingles**

Solar shingles, also called photovoltaic shingles, are solar cells designed to look like conventional asphalt shingles. There are several varieties of solar shingles, including shingle-sized solid panels that take the place of a number of conventional shingles in a strip, semi-rigid designs containing several silicon solar cells that are sized more like conventional shingles, and newer systems using various thin film solar cell technologies that match conventional shingles both in size and flexibility



- **Freestanding**

Freestanding PV panels or freestanding arrays allow the benefits of renewable solar power without disrupting the roofline or altering the house. They are placed away from the residence and connected through an underground wiring. When a roof may be blocked by trees or not receiving direct sunlight, the mobility of a freestanding panel allows the ability to move into optimal sunlight areas that may change seasonally.



Sample Guidelines for Solar Systems for Locally Designated Historic Projects

When planning the installation of solar panels the overall objective is to preserve character-defining features and historic fabric while accommodating the need for solar access to the greatest extent possible. All solar panel installations must be considered on a case by case basis recognizing that the best option will depend on the characteristics of the property under consideration. Some guidelines apply to virtually all installation options and are repeated in each section.

All solar panel installations should conform to the Secretary of the Interior's Standards for Rehabilitation.

Applicable Standards are:

Standard Two: The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

Standard Nine: New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.



1 Primary Elevations

For most properties, locating solar panels on the primary facade is the least desirable option because it will have the greatest adverse effect on the property's character defining features. All other options should be thoroughly explored.

- Utilization of low-profile solar panels is recommended. Solar shingles laminates, glazing, or similar materials should not replace original or historic materials. Use of solar systems in windows or on walls, siding, and shutters should be avoided.
- Panels should be installed flat and not alter the slope of the roof. Installation of panels must be reversible and not damage to the historic integrity of the resource and district.
- Solar panels should be positioned behind existing architectural features such as parapets, dormers, and chimneys to limit their visibility.
- Use solar panels and mounting systems that are compatible in color to established roof materials. Mechanical equipment associated with the photovoltaic system should be treated to be as unobtrusive as possible.



These solar panels low profile and location make them unobtrusive even though they are visible from the public right of way. Photo by Paul Trudeau

2 Secondary Elevations

- Solar panels should be installed on rear slopes or other locations not easily visible from the public right-of-way. Panels should be installed flat and not alter the slope of the roof. Installation of panels must be reversible and not damage the historic integrity of the resource and district.
- Flat roof structures should have solar panels set back from the roof edge to minimize visibility. Pitch and elevation should be adjusted to reduce visibility from public right-of-way.
- Solar panels should be positioned behind existing architectural features such as parapets, dormers, and chimneys to limit their visibility.

2 Secondary Elevations (Continued)

- Use solar panels and mounting systems that are compatible in color to established roof materials. Mechanical equipment associated with the solar panel system should be painted or treated to be as unobtrusive as possible
- Use of solar systems in non-historic windows or on walls, siding, or shutters should be installed as to limit visibility from the public right of way.

3 Historic Accessory Structures



Solar panels placed on an accessory structure not visible from the public right of way should still follow the slope of the roof and have a low profile. Photo courtesy of Dan Corson

- Solar panels should be installed on rear slopes or other locations not highly visible from the public right-of-way. Panels should be installed flat and not alter the slope of the roof. Installation of panels must be reversible and not damage the historic integrity of the resource and district.
 - Flat roof structures should have solar panel installations set back from the roof edge to minimize visibility. Pitch and elevation should be adjusted to reduce visibility from public right-of-way.
 - Solar panel installations should be positioned behind existing architectural features such as parapets, dormers, and chimneys to limit their visibility.
- Use solar panels and mounting systems that are compatible in color to the property's roof materials. Mechanical equipment associated with the photovoltaic system should be as unobtrusive as possible.
 - Use of solar systems in non-historic windows or on walls, siding and shutters should be installed as to limit visibility from the public right of way.

4 Freestanding or Detached

- Freestanding or detached on-site solar panels should be installed in locations that minimize visibility from the public right of way. These systems should be screened from the public right of way with materials elsewhere in the district such as fencing or vegetation of suitable scale for the district and setting.
- Placement and design should not detract from the historic character of the site or destroy historic landscape materials.



Freestanding solar panels should be installed in locations that minimize visibility from the public right of way.

Consideration to the visibility of solar panels from neighboring properties should be taken, without infringing upon the required solar access.

5 New Construction On-Site

- Solar panels should be integrated into the initial design of new construction or infill projects, when possible, to assure cohesion of design within a historic context.
- Solar panels should be installed on rear slopes or other locations not highly visible from the public right of way whenever possible. Panels should be installed flat and not alter the slope of the roof.
- Flat roof structures should have solar panels set back from the roof edge to minimize visibility. Pitch and elevation should be adjusted to reduce visibility from the public right-of-way.
- Use solar panels and mounting systems that are compatible in color to established roof materials. Mechanical equipment associated with the solar panel system should be treated to be as unobtrusive as possible.
- Use of solar systems in windows or on walls, siding, or shutters should be installed with limited visibility from the public right-of-way.

Not Recommended for Any Reason

- Removal of historic roofing materials during the installation of solar systems.
- Removing or otherwise altering historic roof configuration – dormers, chimneys, or other features – to add solar systems.
- Any other installation procedure that will cause irreversible changes to historic features or materials.

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. Preservation Brief 3: Conserving Energy in Historic Buildings. Available from <http://www.nps.gov/history/hps/TPS/briefs/brief03.htm#Preservation%20Retrofitting>. Accessed on August 10, 2009.)

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