Fact Sheet

Installing Solar Panels

Installing solar panels and related renewable energy equipment can be an important component of improving the sustainability and resiliency of buildings throughout New York City. The Commission supports the City's initiatives for reducing greenhouse gas emissions by addressing building energy use and operation and expanding the utilization of solar as a clean, renewable energy source.

The Commission has a long history of approving proposals for work involving environmental and technological advancements, often finding such proposals to be appropriate or otherwise have no effect on the special architectural and historic character of the landmark or historic district. Proposals for solar panel installations, for example, are now reviewed and approved on a regular basis at staff level. These installations are found at a range of building types, from freestanding single-family homes to large commercial buildings, and on a variety of roof types, including both flat and sloped roofs.

Key considerations for typical solar panel proposals reviewed by LPC:

- Solar panel installations should be reversible and not result in loss or damage to any significant historic fabric or architectural features of the building.
- Solar panel installations should be positioned in a way that minimizes their visibility and conspicuousness to the greatest extent possible. For instance, on flat roofs, they should set back from the roof edge and/or be positioned behind existing architectural features such as parapets, dormers, and chimneys to minimize or eliminate visibility from public thoroughfares. On sloped roofs, installations should be located over secondary facades if feasible, or should be discreet and limited in footprint in most instances if they must be located over a primary facade.
- If visible, the quantity, position, slope and/or height of solar panel installations may need to be adjusted to consolidate, minimize and/or eliminate visibility from public thoroughfares. In some instances, solar panels on sloped roofs may be fully visible.
- The material, color and finish of solar panels and mounting systems may need to be chosen for compatibility with existing wall and roof materials and features and/or the surrounding context to varying degrees, if visible. In some instances, "black-on-black" solar panels are required.

LPC Regulation

As described in the Commission's Rules (Title 63 of the Rules of the City of New York), solar panel installations fall under the definition of "mechanical equipment." In general, mechanical equipment is considered to be building infrastructure that is subject to change over time due to technological advances and the needs of occupants, and is therefore temporary and reversible in nature, limiting its effects on the building. Thus, solar panels are regulated objectively in the same way as a variety of other mechanical equipment installations.

Flat Roof Installations

The majority of solar panel installations approved by Commission staff occur on buildings with flat roofs, and often these installations are not visible, or are minimally visible from any public thoroughfares. Flat roof installations typically consist of solar panel arrays mounted close to the roof deck, on sloped racking systems, or on elevated canopy structures. For the purposes of flat roof installations, "Minimally visible," as defined in the Rules, refers to any installation which when viewed from any public thoroughfare, projects into the maximum line of sight from such public thoroughfare by not more than 12 inches in height if less than 60' above the ground, or, due to its placement and size does not call attention to itself nor detract from any significant architectural features. Factors such as distance, angle and range of visibility are taken into account in determining whether the installation is considered "minimally visible," as are the context and character of surrounding buildings and rooftops and the primary or secondary nature of the façade for which the installation would be visible above. Solar panel installations on flat roofs may be more than minimally visible over a secondary façade if the installation is seen through a "gap view", defined as an opening of 25' or less in the streetwall.

Sloped Roof Installations

Following the Rules updates that went into effect in August of 2023, the options for staff-level approval have greatly increased, particularly for solar panel installations on sloped roofs. Sloped roofs can be found on free-standing houses, rowhouses and semi-attached houses, and other building types as well as some bulkheads. Solar panel installations are not eligible for staff level review at "designed roofs", which include a roof that is part of the composition of the building, such as a mansard roof, a character-defining architectural feature, such as a spire, turret or cupola, and in some cases a dormer, or a crowning element seen in the round, such as a tower or dome.

Solar panel installations on sloped roofs at the front-facing or side-facing slope of a roof may be visible over a primary façade provided that other locations are deemed infeasible due to lack of sufficient sunlight (this must be documented). Solar panels at these locations must generally be discrete and limited in footprint, installed parallel and close to the surface of the sloped roof, and be subservient to more prominent rooftop features (e.g., dormers) as viewed from a public thoroughfare. Additionally, installations over a primary façade cannot attach to any historic roofing material, such as slate or clay tiles, and the building cannot be an individual landmark. At rear-facing or side-facing slopes, if the installation requires the removal of historic roofing material, the material must be retained and stored on site for future reuse. All visible installations on sloped roofs must utilize "black on black" panels and "skirts" or critter guards at the lower edge, and the solar panels should be organized in a manner that results in a simple, rectilinear footprint and avoids stepping or separation of panels, to the greatest extent possible.

LPC Review

LPC staff familiar with solar panel installations will review each application to ensure the proposal meets the criteria for staff level approval, if feasible, and will recommend modifications to make it eligible if needed.

Applications for solar panel installations must include typical LPC submission materials, including:

- Completed permit application.
- Color photographs of the facades, roof, and the surrounding context.
- DOB filing drawings, including fully dimensioned and noted roof plans, elevations, details and sections. See the next section for key information.
- Solar panel product "cut sheets" of the specific panels proposed to be used.
- Mock-ups to document visibility:
    - **In-Person Review:** LPC staff may need to review the mock-up in person, so it should be replicable if the visibility study is undertaken in advance of filing. For the purposes of assessing visibility, the eye level of the viewer must be 6'-0" for both sightline drawings and mock-up studies.
    - **Flat roof installations:** Mock-ups do not necessarily need to be rigidly framed; instead, a series of poles mounted on base plates with brightly colored construction netting or rigid tape lines tightly wrapping the perimeter to represent the volume and profiles of the array can be a simple, cost-effective way of accomplishing this. Once constructed, photos should be taken of the mock-up on the roof, as well as photos from various points on the public thoroughfares surrounding the property.
    - **Sloped roofs installations:** a photomontage and/or taped outline on the roof may be used in lieu of a built mock-up.

Drawings and Other Specifications

Accurate dimensions should be provided on the drawings for staff to assess the potential for visibility of the solar installation. Because solar panel arrays often slope, sometimes in two directions, and because rooftops also typically slope and may have irregular end conditions like parapets, curbs and cornices, it is critical to provide key dimensions that illustrate the volume and profiles of the arrays and the surrounding roof conditions.

Drawings for solar panel installations must including the following:

- The total height of each array, at all corners, measured above the roof.
- The total distance of each array, at all sides, measured from the closest roof edge.
- The total heights of any parapets, curbs, or cornices at each unique condition surrounding the roof, measured above the roof.
- The location of any exterior wall mounted equipment and conduit associated with the solar installation, as well as identification of the building material which the equipment and conduit will attach to. If visible from a public thoroughfare, specifications to paint the conduit to blend with its surroundings, where possible, should be included. A photo of the area should also be provided.

- The location, height, design, material, and finish of any rooftop guardrails associated with the solar installation. The number of guardrails should be minimized, and feature a simple a design, while still complying with applicable codes. Guardrails should be no more than minimally visible over primary facades. If the guardrails are more than minimally visible or will significantly interrupt a pristine roofline, the number of panels should be reduced to make the guardrail less visible. If visible from a public thoroughfare, specifications to paint the guardrails a neutral grey or black should be included.
    - Documentation demonstrating that safety tie-back anchors have been deemed unacceptable under DOB and/or FDNY review, and fencing or guardrails are required instead for more than minimally visible installations over a primary facade.
- Additional requirements:
    - For sloped roof installations, unless the installation is not visible, or the LPC staff directs you otherwise, “black on black” solar panels must be specified, and product cut sheets must be provided.
    - A black finished skirt or mesh critter guard must be specified at the lower edge of the panels, unless the installation is not visible.
    - All panel racking should be designed and noted as fully concealed below the solar panels.

Additional LPC Considerations for Proposals that Fall Outside of the Rules

As demand for solar panel installations grows and the number of proposals reviewed by LPC increases, some may fall outside of the range and variety of Commission approvals granted thus far. Though LPC has recently amended the Rules to allow for a greater number of approvals at staff level, there still may be instances that require a Public Hearing. Applicants whose solar panel proposals do not qualify for staff level approval are strongly encouraged to submit an application and have their proposal reviewed at a Public Hearing. The Public Hearing process is an opportunity for applicants to make a case for appropriateness, even for more challenging or otherwise atypical proposals. LPC staff will work closely with applicants to help them through the process.

Examples

In the following pages, a range of images is provided to guide applicants in preparing an application to install solar panels. Examples are provided showing solar panel installations in historic districts, including at both flat and sloped roofs. These examples illustrate the degree of visibility and conspicuousness that may be reviewed and approved at staff level. Images are also provided illustrating the procedures and specifications that staff may ask applicants to provide during the review process, including mock-ups for flat-roof installations, and the “black-on-black” panel specifications and black-finished skirts that may be required for visible installations.

Figure 1: This solar panel installation is minimally visible over the secondary façade of a rowhouse, which is acceptable for staff level review.

Figure 2: Solar panel installation as seen on the roof.

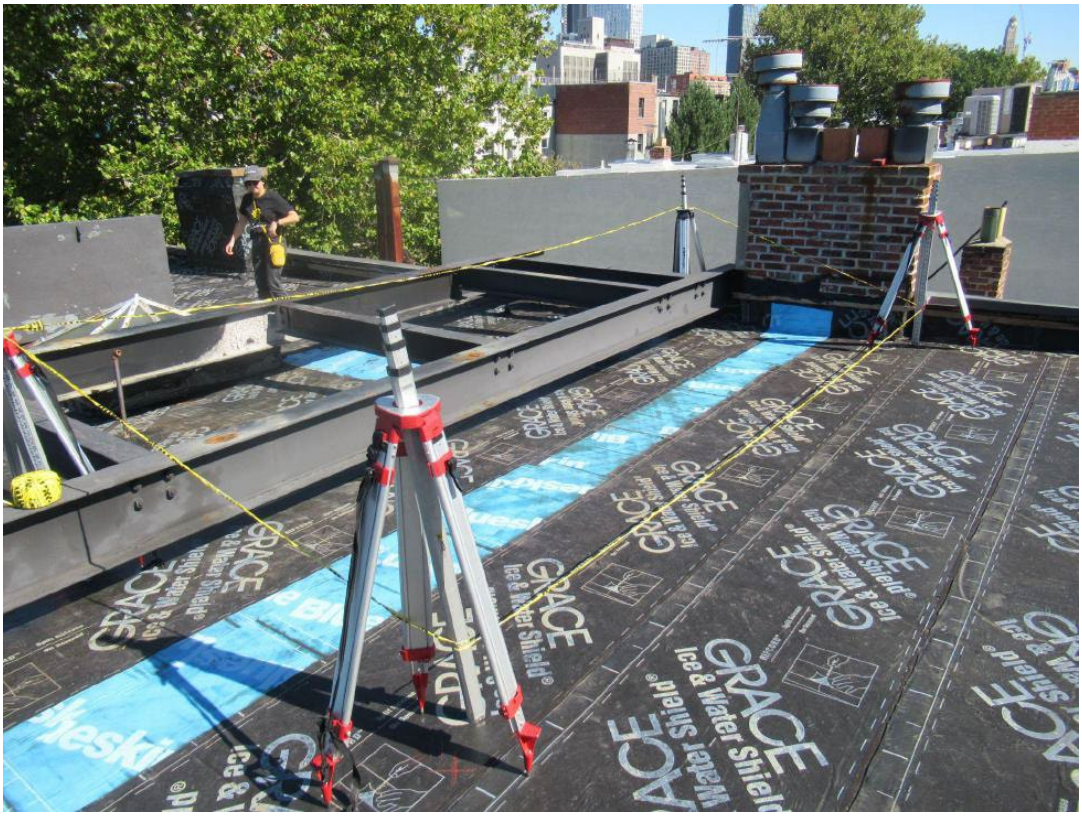

Figure 3: This is an example of a flat roof installation mock-up, using tripods and rigid construction tape lines to represent the size, placement, and height of the proposed installation. With this in place, applicants should then take a series of photos from surrounding public thoroughfares to document visibility.

Figure 4: This shows an example of photos taken from public thoroughfares while the mock-up is in place in order to demonstrate visibility. The top photo is the actual view, while the bottom photo has been zoomed in.

Figure 5: This shows an example of photos taken from public thoroughfares while the tapeline mock-up is in place to demonstrate visibility. The left photo is the actual view, while the right photo has been zoomed in.

Figure 6: This photo shows an example of a sloped roof panel installation that meets LPC staff level rules for review. Staff level rules do allow some panels to be visible over the primary façade(s) if they are limited in footprint as much as possible, mounted parallel to the roof slope, feature a simple "non-stepped" configuration, and use a "black on black" panel specification.

Figure 7: This shows an example of panels visible over a secondary façade. The panels are in a simple configuration, are mounted close to the roof surface, and follow the slope of the roof.

Figure 8: In addition to freestanding houses with sloped roofs, solar panels may be installed on other building types with sloped roofs, including large commercial buildings. Staff looks at each application on a case-by-case basis to determine compliance with the LPC staff level rules.

Figure 9: Visible solar panel installations should be specified as “black on black” panels, unless specifically directly otherwise by LPC Staff.

Figure 10: Visible solar panel installations should also feature black finished “skirts” or mesh critter guards at the panel perimeters

Figure 11: Solar panel installations may be more than minimally visible through gap views into the donut. This exception is only applicable if the gap between buildings is no greater than 25 feet in width.