City of New Britain

Guidelines for Solar on Historic Properties

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1. OVERVIEW

A. Intent

These guidelines aim to assist property owners submitting applications to the City of New Britain for the installation of solar energy systems on buildings within historic districts. The City's overall objective is to preserve character-defining features and historic fabric in its historic districts, while accommodating the need for solar access to the greatest extent possible.

B. Applicability

Any property owner doing work on a property that is listed on the State or National Register of Historical Places, any property which is located within a National Historic District, or any property on New Britain's 1996 List of Historic Structures will need to apply, if they are doing any type of exterior work which requires a building permit and which is visible from the street. Call the Department of Planning & Development to confirm if your property requires historic review.

C. Secretary of the Interior Standards

All solar panel installations should conform to the applicable Secretary of the Interior's Standards for Rehabilitation. In particular, the following standards apply:

- "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 Two)
- 2. "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." (Standard Nine)

2. TYPES OF SOLAR SYSTEMS

A. Building Mounted – Photovoltaic and Solar Shingles

A solar system that is affixed to or an integral part of the principal or accessory building which are contained within roofing materials, windows, skylights, and awnings. There are two types of Building Mounted solar systems:

1. **Photovoltaic** - Consists of multiple components, including the photovoltaic modules, mechanical and electrical connections and mountings and means of regulating and/or modifying the electrical output.



Figure 1: Building Mounted Solar

2. Solar Shingles - 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 cells technologies that match conventional shingles in both in size and flexibility.



Figure 2: Solar Shingles

B. Freestanding

A solar energy system with a supporting framework that is placed on, or anchored in, the ground and that is independent of any building or other structure.



Figure 3: Freestanding Solar System

C. Parking Lot Canopy

A solar energy system with a supporting framework that is placed on, or anchored in, the ground and that is independent of any building or other structure, which is used in a parking lot or the top story of a parking structure to shade vehicles parked in such lot or structure.



Figure 4: Parking Lot Solar Canopy

3. APPLICATION

A. Certificate of Suitability

A Certificate of Suitability is required for installation where such installation is visible from a public street, view or right of way. A public hearing is required to obtain the Certificate of Suitability. Applications are available on the City of New Britain's website under the "Historic Preservation Commission" webpage or from room 311 in City Hall.

B. Application Materials

Applications shall provide photographs of the front and side of the building, detailed photographs of the area of work, and photographs of the streetscape and adjacent buildings. The applicant should also supply a description of the work to be done including materials to be used and the type of solar system being proposed.

4. GENERAL GUIDANCE

A. Disclaimer

Solar panels may cause permanent damage to your roof, particularly when installing on older roofs. To limit roof damage ensure that your roof is equip for solar panel installation. Solar panels shall also be maintained to ensure dust and other small particles are cleared, in order to maximize the solar panels efficiency, and that no birds have created nests under the panels.

B. Overall Goal

When planning the installation of solar panels on historic properties, the overall goal is to reduce the visual impacts of solar panels as seen from the public right-of-way (usually, the street) and to preserve character-defining features and historic fabric.

C. Case-By-Case Basis

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.

D. Not Recommended

Property owners should not submit applications that propose any of the following:

1. Remove historic materials in order to install, or during installation of, solar systems.

- 2. Remove or otherwise alter the historic roof configuration dormers, chimneys, or other features to add solar systems.
- 3. Use an installation procedure that will cause irreversible changes to historic features or materials.
- 4. Use solar systems in historic windows or on walls, siding, and shutters, unless consistent with the Secretary of the Interior's Standards for Rehabilitation.
- 5. Place or design solar panels that detract from the historical character of the site or destroy historic landscape materials.
- 6. Solar panel configurations that alter the flow of rainwater.
- 7. Place or design solar panels so they hang above gutters.

E. Solar Panel Design

1. Not Recommended Design

Silver frame, cells either black or white, open wire.



Figure 5: Example of not recommended design

2. More Desirable Design

Black frame, cells either black or white, open wire.



Figure 6: Example of more desirable design

3. Desirable Design

Black frame, black cell, white backing, hidden wires.



Figure 7: Example of desirable design

4. Very Desirable Design

Black frame, black cell, black backing, open wire.



Figure 8: Example of very desirable design

5. Extremely Desirable Design

Black frame, black cell, black backing, hidden wire.



Figure 9: Example of extremely desirable design

5. SPECIFIC GUIDANCE – MOUNTED SOLAR SYSTEM

A. Building Mounted Guidance

1. Mounted Solar Systems – General Guidance

- a) 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 screened to further limit visibility.
- b) In cases where new buildings or new additions to historic buildings are proposed and approvable, consider 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.
- c) 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 the solar installation on the significant features of the historic building as well as specifically protecting historic features of the historic building as well as specifically protecting historic features against alteration.

- d) Avoid disjointed and multi-roof solutions. Panels should be set at angles consistent with the slope of the supporting roof. In addition, panels should be located on a single roof and arranged in a pattern that matches the configuration of the roof upon which they are mounted.
- e) Avoid placing panels where they will be visible from a public right-of-way.



Figure 10: Photovoltaic Solar System on a pitched roof at 125 Fairview Street, New Britain, CT. The low profile and location of the solar panels makes them unobtrusive, even though they are visible from the public right-of-way.

2. Mounted Solar System – Photovoltaic Systems or Solar Shingles on Flat Roofs

- Position the system or shingles behind existing architectural features such as parapets, dormers, or chimneys – and set them back from the roof edge to limit visibility from the public right-of-way.
- b. Adjust pitch and elevation to reduce visibility from the public right-of-way.

3. Mounted Solar System – Photovoltaic Systems on Pitched Roofs

- a. Place the system on a roof face, such as the rear roof, which cannot be seen from the public right-of-way, as long as doing so does not materially impair the performance of the solar system.
- Position the system or shingles behind existing architectural features such as parapets, dormers, or chimneys – and set them back from the roof edge to limit visibility from the public right-of-way.
- c. Use equipment that is compatible in color to established roof materials so as to be as unobtrusive as possible.
- d. Solar panels should be flush or mounted no higher than a few inches above the roof face.

4. Mounted Solar Systems – Solar Shingles on Pitched Roofs

- a. Place the system on a roof face, such as the rear roof, which cannot be seen from the public right-of-way, as long as doing so does not materially impair the performance of the solar system.
- Position the system or shingles behind existing architectural features such as parapets, dormers, or chimneys – and set them back from the roof edge to limit visibility from the public right-of-way.
- c. Use equipment that is compatible in color to established roof materials so as to be as unobtrusive as possible.
- d. Choose solar shingles that are specifically designed for historic properties, including solar shingles that mimic slate or terra cotta tiles, where appropriate.

5. Mounted Solar Systems – Solar Windows

- a. Use transparent solar windows, rather than tinted or patterned solar windows, wherever possible.
- b. Place solar windows which would affect the profiles of historic window frames or which are not transparent on building facades not visible from the public right-of-way.

6. Mounted Solar Systems – Solar Awnings

- a. Place solar awnings on building facades not visible from the public right-of-way.
- b. Adjust pitch to conform to and complement historic rooflines.

8. SPECIFIC GUIDANCE – FREESTANDING SOLAR SYSTEM

A. Freestanding Guidance

- 1. Install a freestanding solar system in locations that minimize visibility from the public right-ofway, such as the side or rear yards.
- 2. Use a matte finish and a color scheme consistent with the primary structure for exposed hardware, frames, and piping.
- 3. Screen a freestanding solar system from the public right-of-way with fencing, landscaping, or vegetation.
- 4. Consider the visibility of a freestanding solar system from neighboring properties.
- 5. Consult with the Zoning Enforcement Officer for guidance on size, maximum height, and property line setbacks.



Figure 11: Freestanding solar system located on the side of the structure and screened by vegetation.

9. SPECIFIC GUIDANCE – PARKING LOT CANOPY

A. Parking Lot Canopy Guidance

Recognizing that solar parking lot canopies have the potential to be a highly impactful installation when located within a historic district, follow to the extent applicable the guidance set forth in Section 6.A. of these guidelines.



Figure 12: Parking lot solar canopy located at Westfarms Mall in Farmington, CT