

Guidelines for the Installation of Photovoltaic Technology on Heritage Designated Properties

Heritage designated properties within the City of London can be adapted to include new services and technologies. In most cases, adaption can be done without adverse impacts on these cultural heritage resources. Installation of photovoltaic technologies is no different.

Photovoltaic (PV) technology is a form of technology that converts solar energy into electrical energy, typically by way of photovoltaic cells that are used in solar panels and shingles¹. This technology has become a favoured form of renewable energy technology in Canada² and Londoners have already started adapting their properties.

Technologies that assist with climate change adaption is encouraged in The London Plan (2016), but all works should be designed to protect the heritage attributes and character of the City's cultural heritage resources by minimizing visual and physical impact. As each property presents a unique set of considerations, each installation of PV technology must be considered on an individual basis. These considerations include, but are not limited to, heritage attributes, materials, location, and policies related to the property, such as Heritage Conservation District plans and by-laws.

Goals and Objectives

The goal of these guidelines is to ensure the installation of PV technology does not result in adverse impacts to heritage designated properties. Objectives of the guidelines are to:

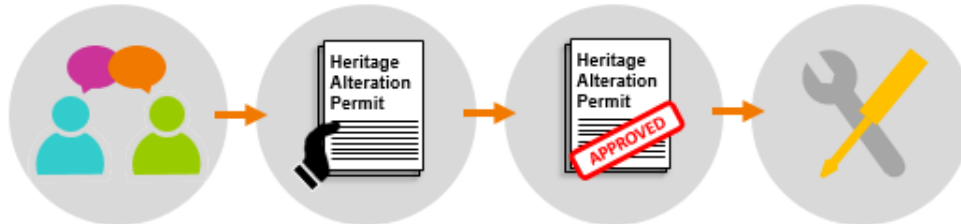
- Provide direction on the installation of PV technology on properties designated under Part IV and/or Part V of the *Ontario Heritage Act*
- Supplement Heritage Conservation District Plans
- Ensure installation of PV technology on heritage designated properties conform to the Ontario Ministry of Culture's "Eight Guiding Principles for the Conservation of Built Heritage Properties"
- Encourage consultation with a Heritage Planner for heritage designated properties as well as non-designated properties that are listed on the City of London's Register (*Inventory of Heritage Resources*)

¹ Ministry of Energy, Northern Development and Mines, "Renewable energy development in Ontario: A guide for municipalities", 2015, <https://www.ontario.ca/document/renewable-energy-development-ontario-guide-municipalities/10-overview>.

² Natural Resources Canada, "Solar Photovoltaic Energy", 2016, <http://www.nrcan.gc.ca/energy/renewables/solar-photovoltaic/7303>.

Process

Installation of PV technology on properties designated under the *Ontario Heritage Act* requires submission and approval of a Heritage Alteration Permit application prior to installation. Consultation with a Heritage Planner is encouraged as part of the review and approval process. Other permits to install PV technology may also be required. Please consult with the Building Division at City Hall (7th Floor, building@london.ca, 519-661-4555) to identify any other permit or approval requirements prior to undertaking any work.



Principles

Principles from the Ontario Ministry of Culture’s “Eight Guiding Principles for the Conservation of Built Heritage Properties” provide the basis for decisions concerning good practice in heritage conservation. Four of these principles provide direction to Londoners when installing PV technology on a heritage designated property. These principles are:

- 1 RESPECT FOR HISTORIC MATERIAL:** Repair/conservate rather than replace materials and finishes, except where absolutely necessary. Minimal intervention maintains the heritage content of the built resource.
- 2 RESPECT FOR ORIGINAL FABRIC:** Repair with like materials. Repair to return the resource to its prior condition, without altering its integrity.
- 3 REVERSIBILITY:** Alterations should be able to be returned to original conditions. This conserves earlier building design and technique.
- 4 LEGIBILITY:** New work should be distinguishable from old. Buildings or structures should be recognized as products of their own time, and new additions should not blur the distinction between old and new.

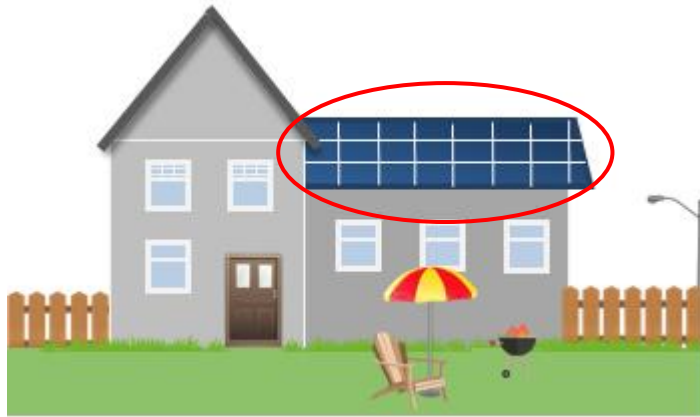
Guidelines

Although installing PV technology is encouraged, this alteration may not be suitable for some properties due to existing conditions, such as material, space, roofline, or complicated massing (i.e. mix of chimneys, dormers, gables, turrets, etc). The following guidelines are to ensure complimentary integration of PV technology on heritage designated properties. These guidelines apply to all components of PV technology systems including, but not limited to, photovoltaic cells, panels, pipes, water tanks, glazing, tiles, trim, support structures, inverters, and wiring.

Goals of Guidelines	Guidelines
<p>1. Structural integrity should be maintained. Installation of PV technology should maintain or enhance the structural integrity of the heritage designated property.</p>	<ol style="list-style-type: none"> 1. Assess the condition of roof and/or area prior to installation
<p>2. Installation should be reversible. Installation of PV technology should avoid the removal, alteration or permanent damage of intact materials.</p>	<ol style="list-style-type: none"> 1. Installation process must respect existing materials (i.e. not drilling through slate roofing tiles) 2. Points of attachment, including the use of brackets, should be minimal 3. Materials that are removed should be retained for future use
<p>3. Location should be discreet. Installations located on building elevations, roof planes, or ground should respect the landscape and have minimal visibility from the street.</p>	<ol style="list-style-type: none"> 1. Locate PV technology: <ol style="list-style-type: none"> a. at the rear of the building b. on new buildings or additions c. on one roof plane (i.e. avoid multi-plane solutions) d. behind architectural features e. away from edge for flat roofs f. low to the ground g. in interior side yards 2. PV technology is to be: <ol style="list-style-type: none"> a. flush mounted or surface mounted directly above existing materials (i.e. keep a low profile, inset with shingles or directly above shingles) b. consistent with the slope or pitch of area c. arranged in a pattern to match the general shape of the roof or area (i.e. not fragmented) d. within the existing ridge lines (i.e. frames should not extend beyond)
<p>4. New materials should be complimentary to existing materials. Colour, shape and proportions of the PV technology and mounting systems should compliment the colour, shape and proportions of the roof and/or other heritage attributes.</p>	<ol style="list-style-type: none"> 1. PV cells should fully cover an area (i.e. using faux panels if necessary) 2. Colour of faux panels or shingles should match the colour of the PV cells 3. Colour of PV cells should be compatible existing materials (i.e. roof shingles) 4. Wiring should run with existing wiring or along existing features (i.e. eaves)

Examples

Example of a preferred installation

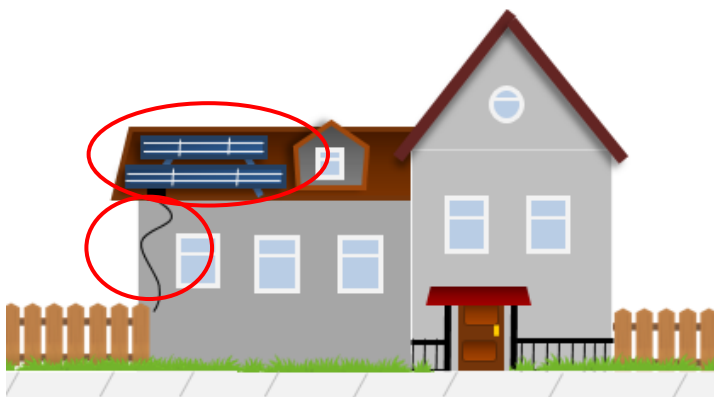


- ✓ Installation is 100% reversible
- ✓ Located in the rear of the building
- ✓ Located on one roof pane
- ✓ Surface mounted directly above existing shingles
- ✓ Consistent with the slope of the roof
- ✓ Arranged in a pattern of the general shape of the area
- ✓ Within the existing ridge lines

Rear View

- ✓ Full coverage of area
- ✓ Colour of faux panels match the colour of the PV cells
- ✓ Structural integrity is maintained

Example of what to avoid



Front View

- ✗ Installation is not reversible
- ✗ Located in the front of the building
- ✗ Not flush mounted or surface mounted directly above existing shingles
- ✗ Not consistent with the roof's slope (i.e. panels are angled towards the sky)
- ✗ Not arranged in a pattern of the general shape of the roof
- ✗ Partial and divided coverage of roof
- ✗ Wiring is not discreet
- ✗ Colour does not match existing roof

Resources

City of London. "The London Plan". 2016. <http://www.london.ca/business/Planning-Development/Official-Plan/Documents/The-London-Plan-Policies-in-Effect-April-2018-reduced.pdf>.

Government of Canada. "Standards and Guidelines for Conservation of Historic Places in Canada". 2010. <https://www.historicplaces.ca/media/18072/81468-parks-s+g-eng-web2.pdf>

Ministry of Energy, Northern Development and Mines. "Renewable Energy Development in Ontario: A guide for municipalities". 2015. <https://www.ontario.ca/document/renewable-energy-development-ontario-guide-municipalities/10-overview>

Ministry of Tourism, Culture and Sport. "Guiding Principles in the Conservation of Built Heritage Properties". 2007. http://www.mtc.gov.on.ca/en/publications/InfoSheet_8%20Guiding_Principles.pdf

Natural Resources Canada. "Solar Photovoltaic Energy". 2016. <http://www.nrcan.gc.ca/energy/renewables/solar-photovoltaic/7303>

For information about the City of London's Heritage Conservation Districts visit, www.london.ca