



# Bulletin

## Permits Licence and Inspection Services

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### Solar Hot Water Systems

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This Bulletin outlines the Township of Langley's permitting and inspection process for the installation of a **Solar Hot Water System** in an existing single family dwelling. The Township of Langley has recognized the environmental benefits that this type of system can provide and is supportive of this type of sustainable innovation in construction. In an effort to ensure the safety of occupants in a building where this type of system will be installed, this bulletin has been developed to provide guidance related to this process.

*In conjunction with this bulletin, it should be noted that for inclusion of a **Solar Hot Water System** in the construction of a new single family dwelling, a separate procedure is applicable as part of the Solar Hot Water Ready regulation developed by the Province of British Columbia.*

### **General Information**

A Solar Hot Water System (SHWS) is an effective method to take action against climate change by utilizing solar energy to heat domestic water. The installation of a SHWS will allow individuals to embrace green technologies, reduce greenhouse gas emissions, and increase energy efficiency.

The Solar Hot Water System usually consists of:

- **Solar collector(s)** - mounted typically on the roof to absorb solar energy to heat the transfer fluid (antifreeze)
- **Heat exchanger, pump, and pipes**- transfer the heat from the collectors to the fluid to the storage tank(s)
- **Storage tank(s)** - act as a pre-heat tank for the existing hot water tank.

Since the system may not always supply 100% of the daily demand, the conventional hot water heating system will operate in conjunction with the SHWS in order to ensure that an adequate amount of hot water can typically be supplied at all times.

### **Building Permit Application Requirements**

The following documentation is required for building permit application for the installation of a SHWS into an existing single family dwelling:

Three copies of plans and specifications showing the scope and installation of the SHWS, including:

- System materials, components, and specifications
- Architectural drawings to show roof plans and building elevations to show the location of the solar collectors and their height relative to grade (in compliance with the Township Zoning Bylaw).
- Structural attachment detail drawings of the solar collectors to the roof / walls.
- Plumbing schematic drawings to indicate all necessary plumbing and electrical cables for installation of the solar domestic hot water system.

Please note the following:

- Architectural drawings are to indicate building envelope detailing to ensure that the integrity of the environmental separation will not be compromised.
- Structural attachment drawings are required to show the structural loading and attachments to ensure that the additional loads imposed by the solar collector panels can be safely supported by the corresponding roof / walls associated with the solar collector panels. Please note that all structural drawings are to be signed and sealed by a structural engineer along with applicable Letters of Assurance, Schedule B.
- All specifications, including those of a double wall heat exchanger with leak detection, as well as the plumbing schematic drawings shall be signed and sealed by mechanical engineer along with applicable Letters of Assurance, Schedule B.

The industry standards governing the domestic Solar Hot Water Systems are:

- **CSA F378-87 (R2004)** – “Solar Collectors”
- **CSA F379-09** – “Packaged Solar Domestic Hot Water Systems  
*(liquid to liquid heat transfer)*”
- **CSA F379.1-88** – “Solar Domestic Hot Water Systems *(liquid to liquid heat transfer)*”  
*(Equipment for heating of potable water shall conform to this standard)*
- **CSA F383-87** – “Installation Code for Solar Domestic Hot Water Systems”

Although the CSA F379.1-88 allows the use of both single and double wall heat exchangers, the Permit Licence & Inspection Services Department only accepts double wall heat exchangers with leak detection to protect the potable water system from potentially being contaminated by the heat transfer fluid in the event of a system failure.

## **Inspections Requirements**

Onsite inspections are required to verify that the installation of the SHWS is in general conformance with the appropriate professional's design and the approved building permit drawings. The inspection process will typically include two inspections (framing and final). The following items are to be noted with regards to the inspection process:

- Prior to requesting a framing inspection, the installation of the solar panel attachment system and the rough in plumbing component of the system are to be completed. Two field inspection reports, from both the mechanical and structural engineers are required to be made available on site for the Building Inspector confirming that the system has been installed in accordance with the appropriate professional's design and approved building permit drawings.
- Prior to requesting a final inspection by the Building Inspector, the system shall be inspected and accepted by both the mechanical engineer and the structural engineers. The Schedule C-B documents from both the mechanical and structural engineers are required to be submitted to the Building Inspector prior to requesting the final inspection.

Please note that a separate process is involved with the pre piping for Solar Hot Water Systems only as part of the Solar Hot Water Ready Regulation.

For more information, please visit the [!\[\]\(cbe80b694ebd74fcfe136a095b608235\_img.jpg\) Solar BC](#) or [!\[\]\(27df6be88af07602ea392719b144fe7f\_img.jpg\) Canadian Solar Industries Association](#) websites.

If you have any questions please contact the Permit, Licence & Inspection Services Department for further information at 604.533.6018.