



June 1, 2020

**Subject: TPIC Position Regarding Solar-Panel Installations on Existing Roofs**

To Whom It May Concern:

It is position of the TPIC technical committee that existing roof systems involving wood truss components, need to be analyzed by a qualified structural engineer to evaluate the structure's ability to support a new solar installation.

With the advent of the solar panel industry and historical government incentives around 'green energy' and 'net-zero' construction, solar panel installations on truss-based roof systems have increased in popularity over the past decade. This has generated many industry discussions around requirements for retrofitting existing structures to support new solar panel installations.

Solar installations involve connecting solar racking systems to existing roof surfaces in a grid-based support pattern. This means that each rack connection point on an existing roof surface needs to resist a concentrated load based on the tributary area bounded by racking support points (an area which may vary by panel manufacturer). This becomes problematic for existing roof systems, which are typically designed for uniform loading on each truss, with little-to-no redundancy to handle more complex loading profiles.

Some concerns with retrofitting existing truss systems for solar panels include:

- Load concentrations on the roof surface, not accounted for in the original truss design, which may lead to overloading of some trusses within the system
- Potential loss of load-sharing due to the new grid-based loading profiles on the roof surface, decreasing the strength and overall performance of the trusses
- Additional weight of the solar panel systems (typically 5.0 PSF) not accounted for in the original truss designs (which are typically designed to maximum limits, with no redundancy for additional loads)
- Possible wind load considerations and adverse effects on the roof system due to wind interacting with the solar panel assemblies
- Rack connections to the roof structural elements may be case-specific and generic details may not always be acceptable. Generally, it is not permitted to drive lag screws directly into the narrow edge of the truss chords

Based on the above, installing solar panels on existing roof trusses without professional review, may result in lowering the performance of the roof system, causing a reduction in safety for the homeowners and occupants of the existing buildings supporting new solar installations.

Sincerely,

Truss Plate Institute of Canada