

# ***Solar Ready Trusses for New Construction***

*WWTA – Saskatchewan, Manitoba , N.W. Ontario  
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# Overview

- The purpose of this presentation is to:
  - Provide background on solar ready trusses for use in new construction.
  - Provide the basis for discussion at the November 18<sup>th</sup> meeting of the Western Wood Truss Association meeting in Winnipeg for a session with Manitoba Hydro, City of Winnipeg and WWTA Association members



# ***Why should you want Roof Solar Panel capability on a Prefabricated Truss Roof Design ?***

- Projected Hydro increases for the foreseeable future.
- Potential estimated min. savings of 30% / year on Hydro Bill ?
- One Time Truss cost is comparatively inexpensive. ( \$ 300 - \$ 500 estimated truss cost ).
- Very difficult to retrofit existing Truss Systems.
- Solar application is more common, more efficient, more popular than in the past.
- Home life expectancy is 50 years, what is the chance it is not wanted in that time, needed or mandated ?
- Two Home Builders in Ontario and 1 in Nova Scotia using SR Trusses.
- Zoning, Developments and Local Jurisdictions moving toward mandatory ( Vancouver ).

## ***What do you need to do ?***

- Preplan with Builder / Owner for Truss Design incorporating Solar Ready Trusses.
- Plan roof design with site plan for optimum solar panel location.
- South facing (mostly) roof area minimum 10'-0" X 12'-0"
- Roof Slope min 5/12 to 18/12 where allowable by development.
- Property with unblocked Sun exposure South facing.
- Designed, labeled and installed SR Trusses. ( Scabs connected labeled or painted ends )
- Solar Panels must be secured to Truss TC scabs only, max 4'-0" O/C.
- No Solar Panels located on overhangs.
- Scabs to be marked SR for Bldg Inspector and Installers at overhang under soffit.
- Home to be identified to NRCan's SR Guidelines & TPIC SR for Authority Building Inspector.



# How do you meet the requirements of Prefabricated Truss Design TPIC Tech Bulletin #7

- House Roof Plan showing orientation and proposed Solar Panel location and size for Roof Truss fabricator Design.
- Fabricator to supply a Truss Layout indicating Solar Panel area and special design SR Trusses.
- SR Truss special design. Add 5 psf DL. Pt Loads at 4'-0" O/C moving at 1'-0" incr up TC
- Pt Loads 16 sq ft Tributary area Wpg ( 26 ) ( 16 ) = 416 lb Snow, ( 3+5 )( 16 ) = 128 lb DL
- Truss TC panel max 8'-0", no load Sharing  $K_h$  , no modified formula, Part 9 NBC.
- Alternate to Pt Load design use uniform 8 psf DL with reduced CSI/ JSI below.
- Truss Design Max LBR CSI's TC max 0.7, BC 0.8, Webs, 0.8. Moment Conn's JSI, 0.63
- Truss Design Drawing must show SR Chord for Solar Panels.
- Shop install TC Scab with size and fasteners as per TPIC #7 5.A. and site specific Point Loads.
- Winnipeg Trusses, SL = 416 lb, DL = 128 lb , Pf = 784 lb. To be shown on Design Drawing.
- For above, 2X4 TC , 784 point load, add one 2X4 scab to the side of the Truss Top Chord nailed as follows; 2 rows 8" O/C .131" ( 3" common ) nails or 2 rows 6" O/C .120" nail ( 3" spiral )
- Solar Panels must be parallel to the roof slope and no more than 4" above surface.

# ***What should WWTA / Hydro do to promote SR Trusses in new Home design ?***

- Enlighten Home Builders, Lumber Yards and future home buyers of the need to preplan for Solar with thought to the Roof Truss Layout in the initial House Plan Roof Design.
- Show an illustrated example of a Roof Truss Layout with SR trusses included, where and what additional cost that would be over the conventional design. Illustrate a Truss Design Drawing showing added design loads and TC Scab.

# References

Hydro Power Smart Fall Rebates Incentive and loans offered.

Solar Ready Guidelines Vers 1.1 Natural Resources Canada 2013.

Edmonton Energy Transition 2.3.5 New Bldgs Jan 2014

Solar Ready Canadian Solar Industries Association Mar 2007

TPIC Technical Bulletin #7 March 12 / 2012 ( [tpic.ca](http://tpic.ca) ).

Green Building technic. Parade of Homes magazine “ Green Code Article “