Solar Soft Cost Reduction Resources

Solar Powering Minnesota
March 7, 2014

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2013 Energy Legislation

Solar Policies

- Solar Electricity Standard
- Made in Minnesota Incentives
- Xcel Solar*Rewards
- Net Metering
- Community Solar
- Value of Solar Tariff

Local Jurisdictions' Role

Not every community has oil, gas, or coal—

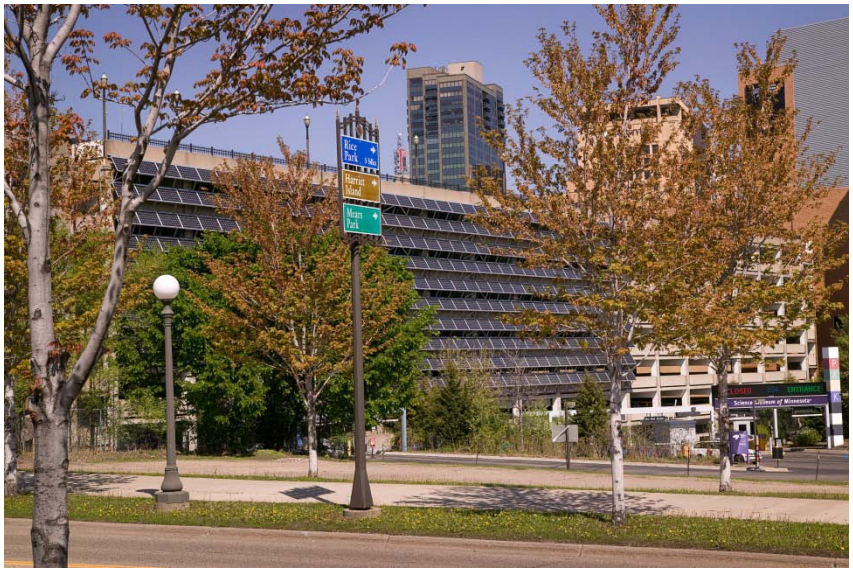
But all have a solar resource

Solar Electricity Standard

In 2003, Minnesota was home to approximately 50 solar electric installations. Today, the state has more than 1,500 installations—

Solar Electricity Standard

In 2023, Minnesota will have thousands of NEW solar installations.



Local Jurisdictions' Role

Standardization makes solar simpler and more affordable

Local governments can help residents and businesses by standardizing the permitting process

Streamlined permitting

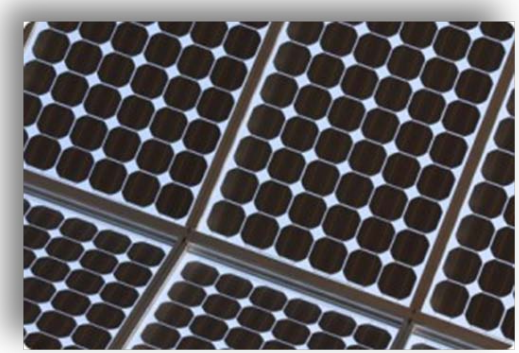
- Decreases cost
- Saves time
- Encourages development

Solar Ready Communities

Minnesota Solar Challenge

Goals for Permitting Best Practices:

1. Reduce time on permits and inspections
2. Make the permit process clear to both staff and applicants
3. Reflect industry best practices
4. Establish permit fees that appropriately reflect review and inspection costs



CR PLANNING

Resources for Local Governments

Search

“Minnesota Solar Challenge”

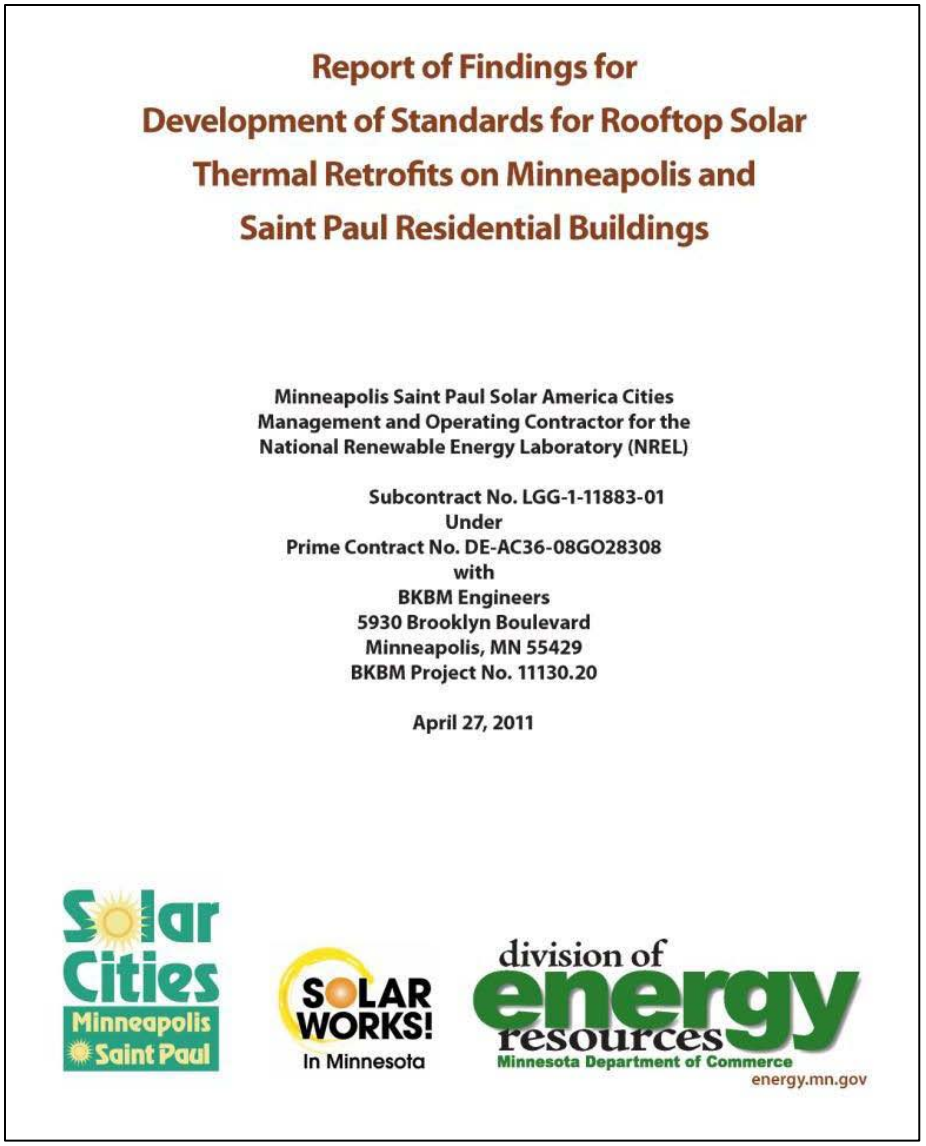
for Solar Support in the following areas…

Resources for the Building Official

- Standardized Load Tables Characterizing Residential Solar Installations For Residential Structures in Minnesota
- Building Official Free Online Training
- Solar ABC's Expedited PV Permit Process
- Model Expedited Permit Process and Fee Structure

Standardizing the Permitting Process

- Solar thermal specific
- Commissioned by Minneapolis Saint Paul Solar America Cities
- Completed by a structural engineer



Report of Findings for
Development of Standards for Rooftop Solar Thermal Retrofits on Minneapolis and Saint Paul Residential Buildings

Minneapolis Saint Paul Solar America Cities
Management and Operating Contractor for the
National Renewable Energy Laboratory (NREL)

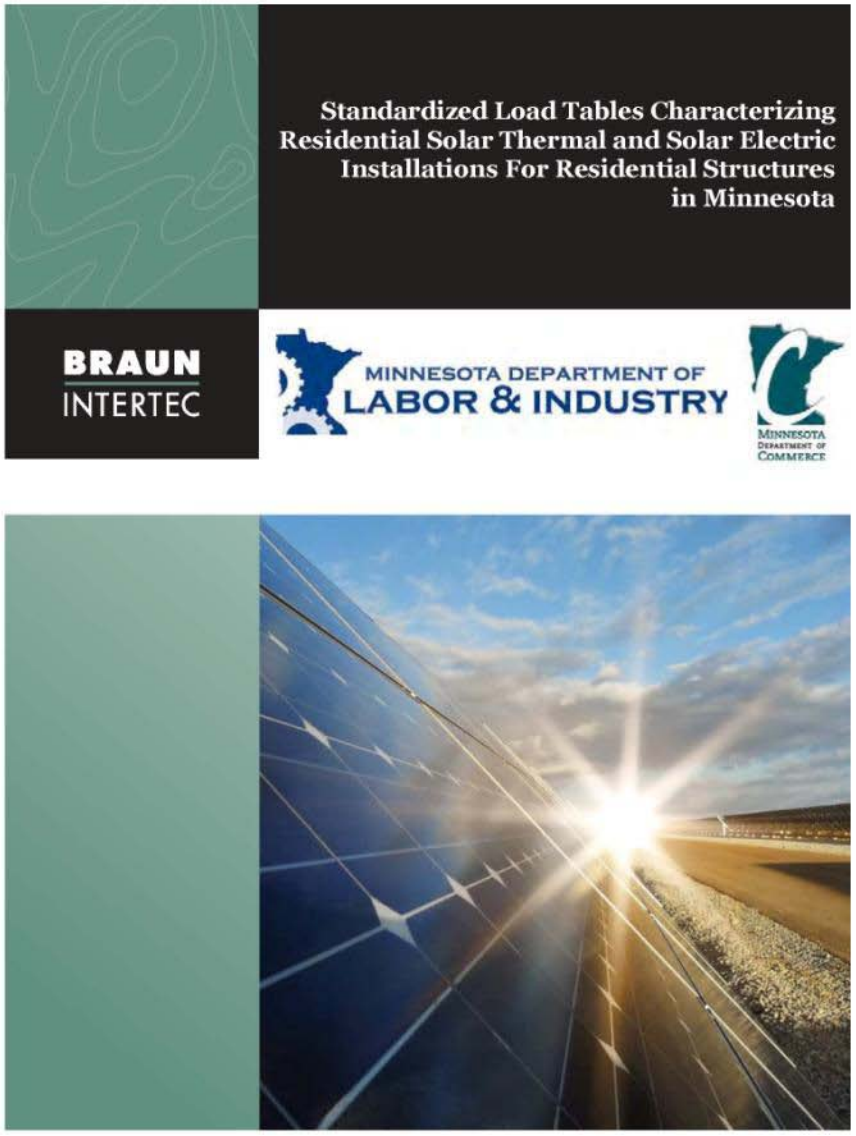
Subcontract No. LGG-1-11883-01
Under
Prime Contract No. DE-AC36-08GO28308
with
BKBM Engineers
5930 Brooklyn Boulevard
Minneapolis, MN 55429
BKBM Project No. 11130.20

April 27, 2011

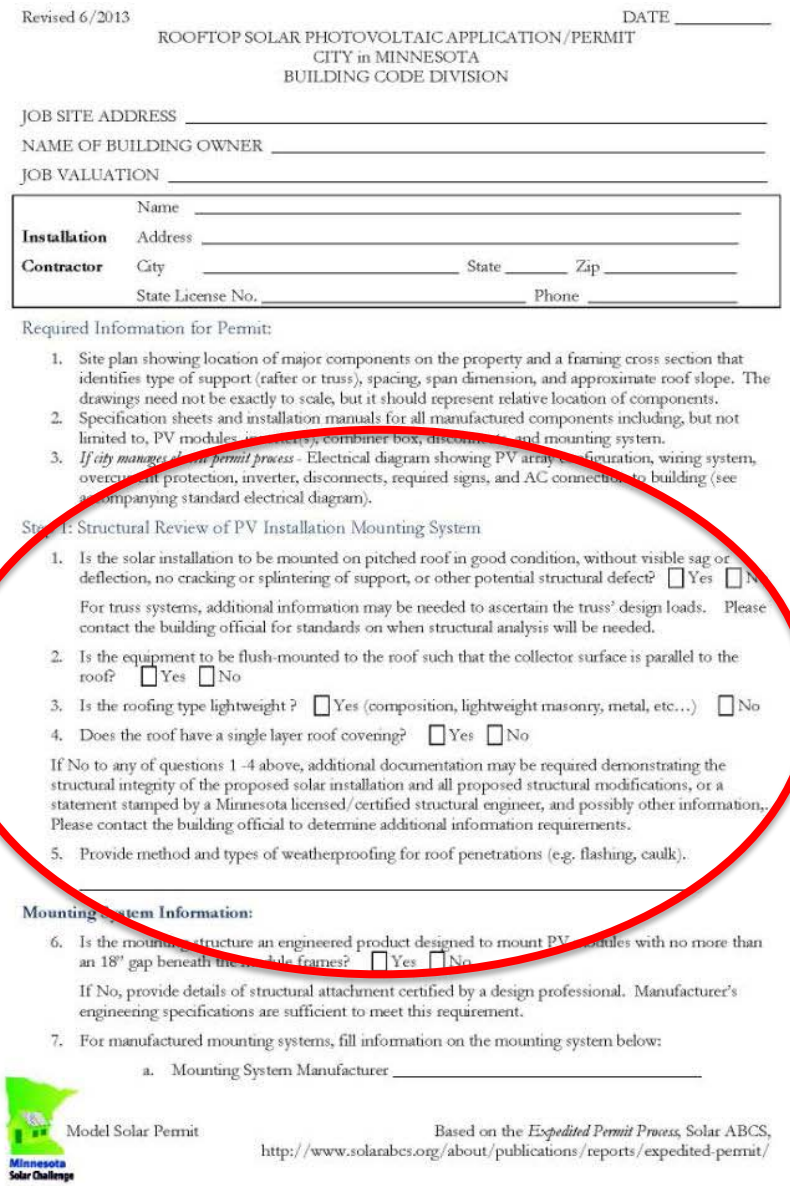
Solar Cities Minneapolis Saint Paul
SOLAR WORKS! In Minnesota
division of energy resources
Minnesota Department of Commerce
energy.mn.gov

Standardizing the Permitting Process

- Commissioned by Minnesota Solar Challenge
- Completed by a structural engineer
- Covers most residential rooftop solar installations



Sample Permit Application



Revised 6/2013 DATE _____

ROOFTOP SOLAR PHOTOVOLTAIC APPLICATION/PERMIT
CITY in MINNESOTA
BUILDING CODE DIVISION

JOB SITE ADDRESS _____

NAME OF BUILDING OWNER _____

JOB VALUATION _____

Installation Contractor	Name	
	Address	
	City	State _____ Zip _____
	State License No.	Phone _____

Required Information for Permit:

1. Site plan showing location of major components on the property and a framing cross section that identifies type of support (rafter or truss), spacing, span dimension, and approximate roof slope. The drawings need not be exactly to scale, but it should represent relative location of components.
2. Specification sheets and installation manuals for all manufactured components including, but not limited to, PV modules, inverter(s), combiner box, disconnects, and mounting system.
3. *If city manages electrical permit process* - Electrical diagram showing PV array configuration, wiring system, overcurrent protection, inverter, disconnects, required signs, and AC connection to building (see accompanying standard electrical diagram).

Step 1: Structural Review of PV Installation Mounting System

1. Is the solar installation to be mounted on pitched roof in good condition, without visible sag or deflection, no cracking or splintering of support, or other potential structural defect? ☐ Yes ☐ No

   For truss systems, additional information may be needed to ascertain the truss' design loads. Please contact the building official for standards on when structural analysis will be needed.

2. Is the equipment to be flush-mounted to the roof such that the collector surface is parallel to the roof? ☐ Yes ☐ No
3. Is the roofing type lightweight ? ☐ Yes (composition, lightweight masonry, metal, etc…) ☐ No
4. Does the roof have a single layer roof covering? ☐ Yes ☐ No

If No to any of questions 1 -4 above, additional documentation may be required demonstrating the structural integrity of the proposed solar installation and all proposed structural modifications, or a statement stamped by a Minnesota licensed/certified structural engineer, and possibly other information,. Please contact the building official to determine additional information requirements.

5. Provide method and types of weatherproofing for roof penetrations (e.g. flashing, caulk).

   _____

Mounting System Information:

6. Is the mounting structure an engineered product designed to mount PV modules with no more than an 18" gap beneath the module frames? ☐ Yes ☐ No

   If No, provide details of structural attachment certified by a design professional. Manufacturer's engineering specifications are sufficient to meet this requirement.

7. For manufactured mounting systems, fill information on the mounting system below:
   a. Mounting System Manufacturer _____

Model Solar Permit

Based on the *Expedited Permit Process*, Solar ABCS, http://www.solarabcs.org/about/publications/reports/expedited-permit/

Minnesota Solar Challenge

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Resources for Planners

Planning, Zoning & Permitting for Solar Energy Webinar

Model Ordinance Examples

- Model county ordinance
- Model city ordinance

Thank You!

Stacy Miller

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www.energy.mn.gov

MINNESOTA DEPARTMENT OF COMMERCE