

Challenges and Opportunities in Renewable Energy



Chris Meyer

Clean Energy Resource Teams (CERTs)

UMN Regional Sustainable Development Partnerships & Extension



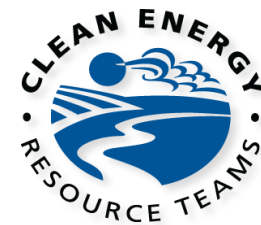
CERTs: We're here to help



CERTs Mission: Connect individuals and their communities to the resources they need to identify and implement community-based clean energy projects

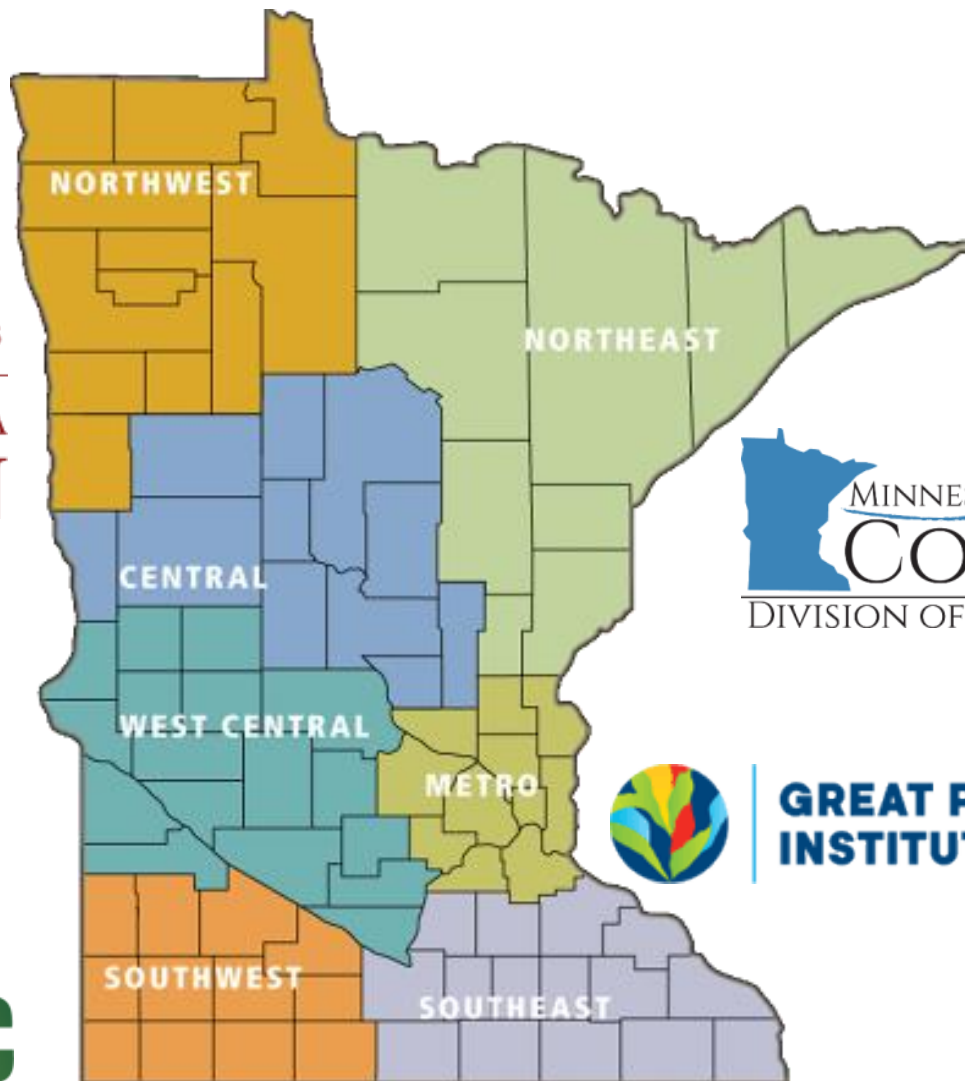


Statewide Partnership & Collaboration



Regional Sustainable
Development Partnerships

UNIVERSITY OF MINNESOTA
EXTENSION

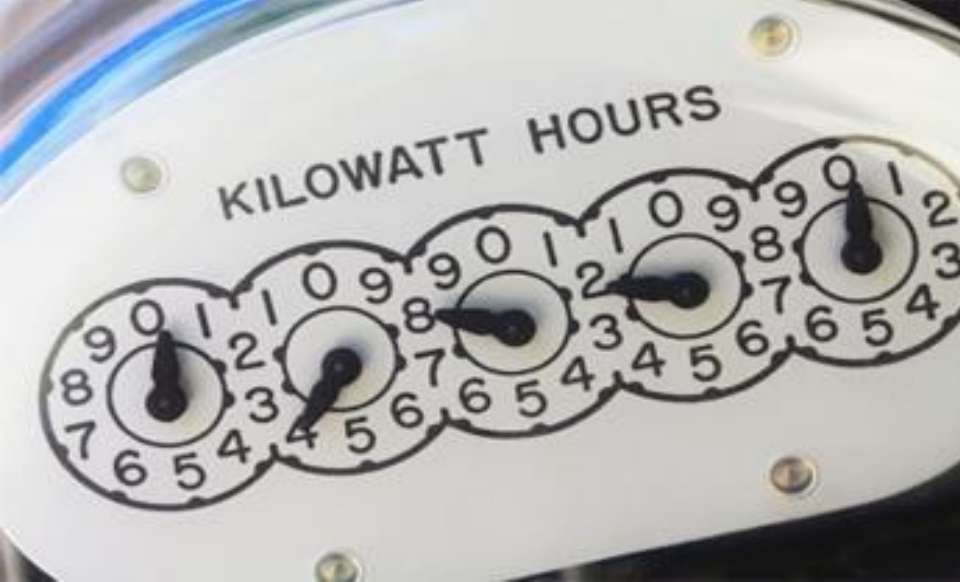


**GREAT PLAINS
INSTITUTE**

Better Energy.
Better World.

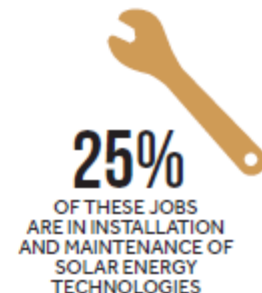
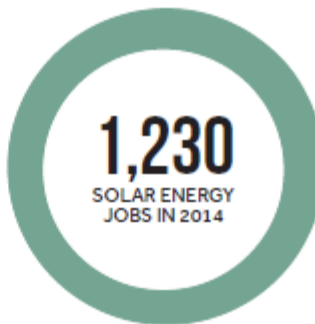
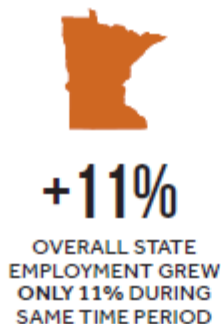
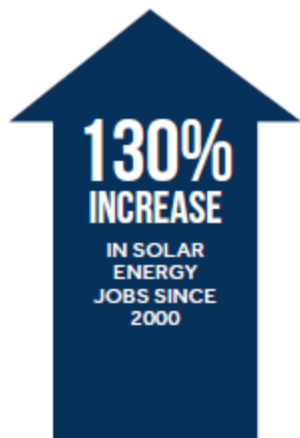


Communities are Choosing Clean Energy

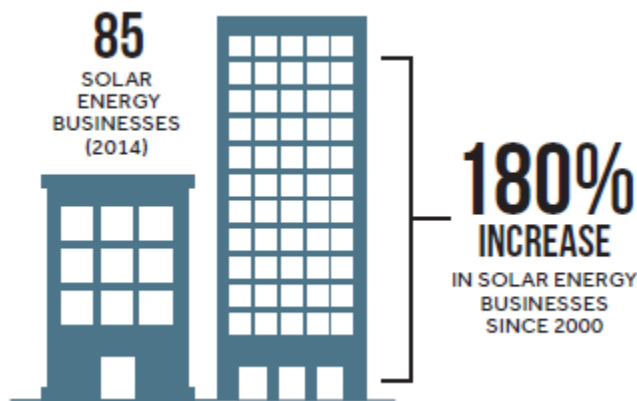
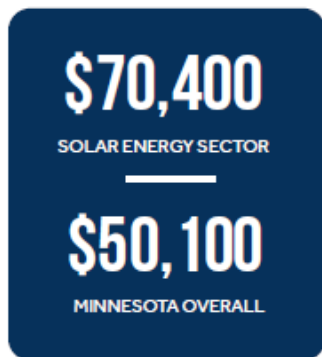




Drivers: Economic Development



\$ AVERAGE ANNUAL WAGE



Drivers: MN Solar Energy Standard



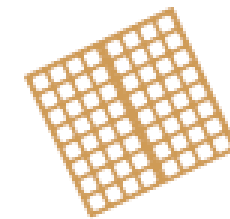
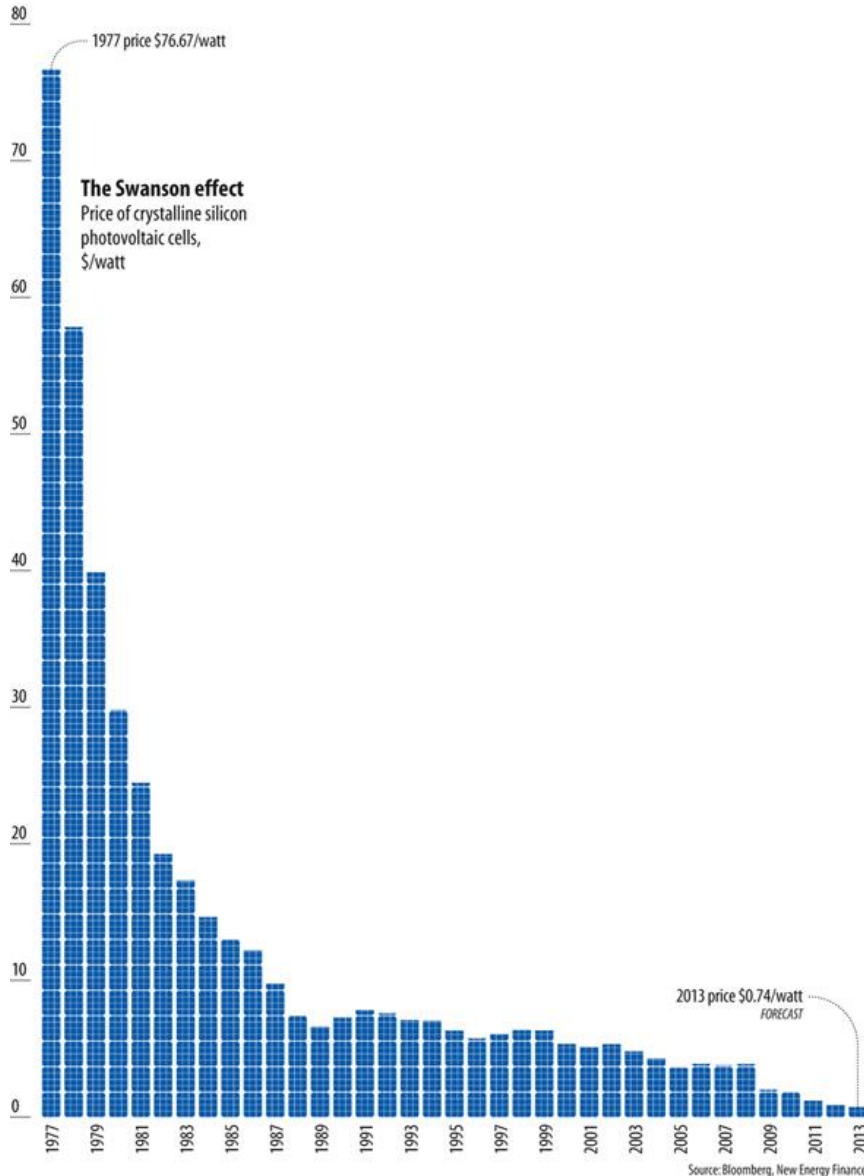
2013 Policy

- 1.5 % Solar Energy Standard
- Applies to Investor Owned Utilities:
Xcel Energy, Minnesota Power,
Otter Tail Power
- Utility scale and utility scale
“distributed generation”

1.5%
Solar by
2020:
400 MW

Total as
of 2014:
19 MW

Drivers: Solar Prices are Falling



86%

OF SOLAR CAPACITY
WAS INSTALLED
BETWEEN 2010
AND 2013

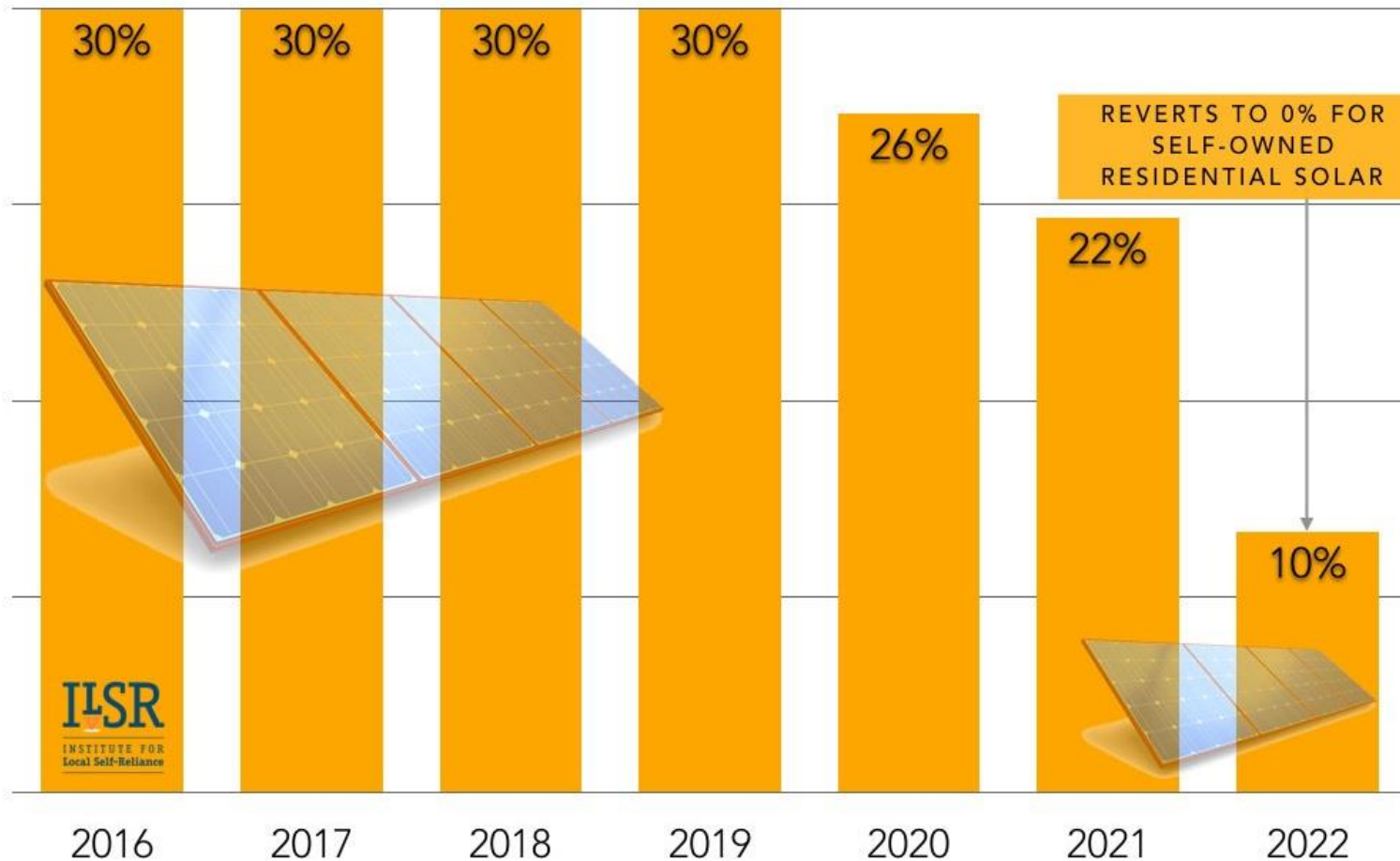
Sources: <http://cleantechnica.com/2014/09/04/solar-panel-cost-trends-10-charts/> and

Drivers: Federal Tax Credits



FEDERAL SOLAR TAX CREDIT PHASE OUT

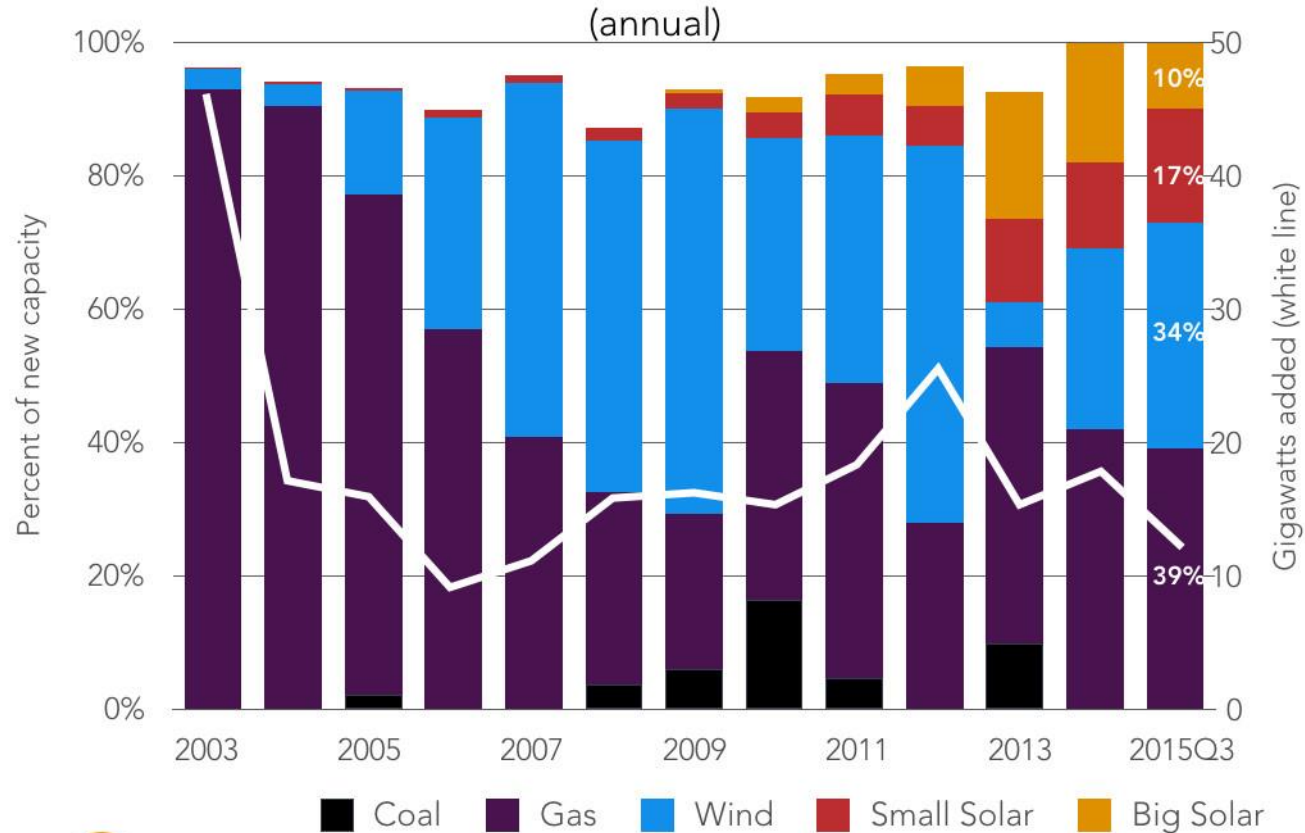
ADOPTED DEC. 2015



Trends: New Installed Capacity



U.S. POWER PLANT CAPACITY ADDITIONS



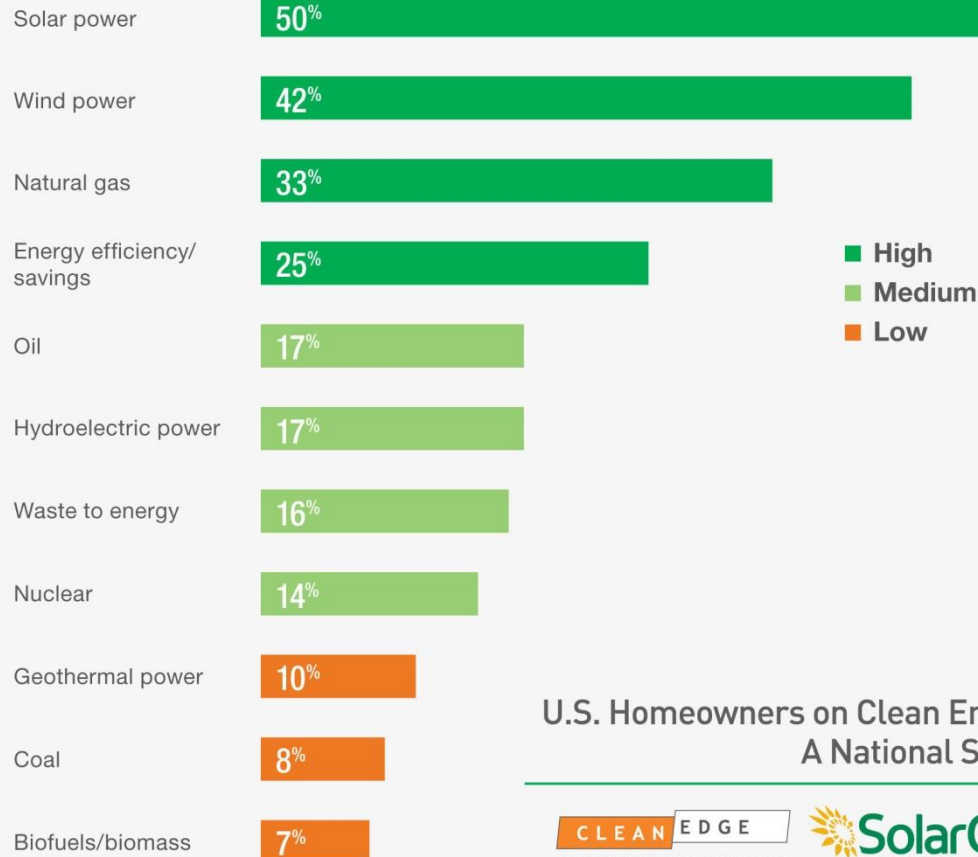
Sources: EIA and SEIA

December 14, 2015

Drivers: Individual Choices



Which energy sources do you believe are most important to America's energy future? (Pick up to three)



U.S. Homeowners on Clean Energy:
A National Survey



Available for download at www.solarcity.com/newsroom/reports and www.cleantech.com/reports

Challenges: Financing



Challenges: Technology



CERTs Can Help



We have tools for:



Businesses



Civic Organizations



Economic Developers



Faith Groups



Farmers



Local Governments



Residents

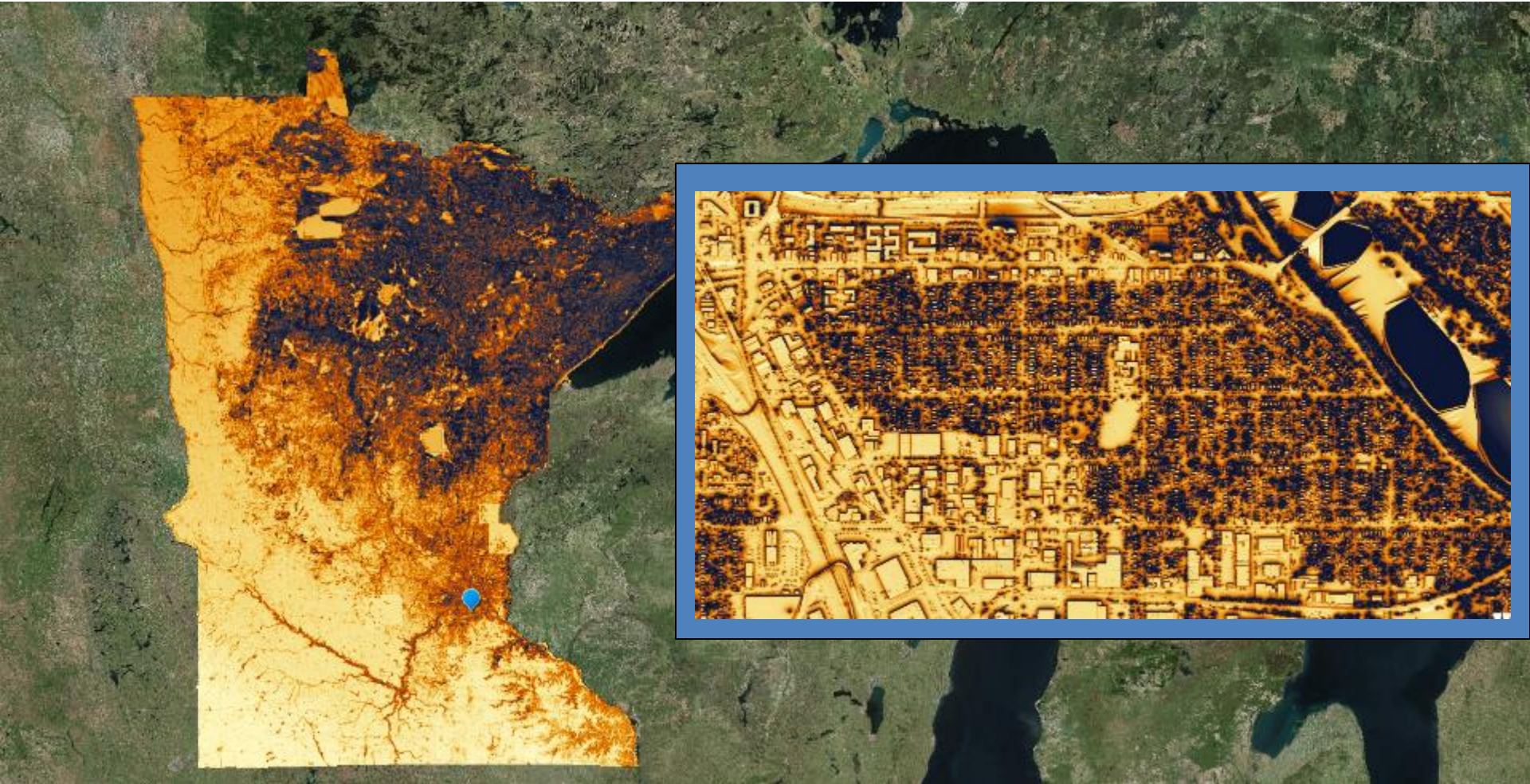


Schools



Utilities

Tools: Solar Suitability App



solar.maps.umn.edu/app

Tools: Clean Energy Project Builder



90 listings

SOLAR INSTALLER

Site assessment, installation & maintenance of solar systems...



64 listings

COMMUNITY SOLAR

Developers, operators, installers, educators & more for CSGs...



23 listings

SMALL WIND

Installers and supporters of distributed wind energy systems...



23 listings

SOLAR MANUFACTURER

Manufacturers of solar PV, thermal hot water & thermal air heat systems...



178 listings

SOLAR ENERGY

Browse all companies under the sun working on solar energy...



123 listings

WIND ENERGY

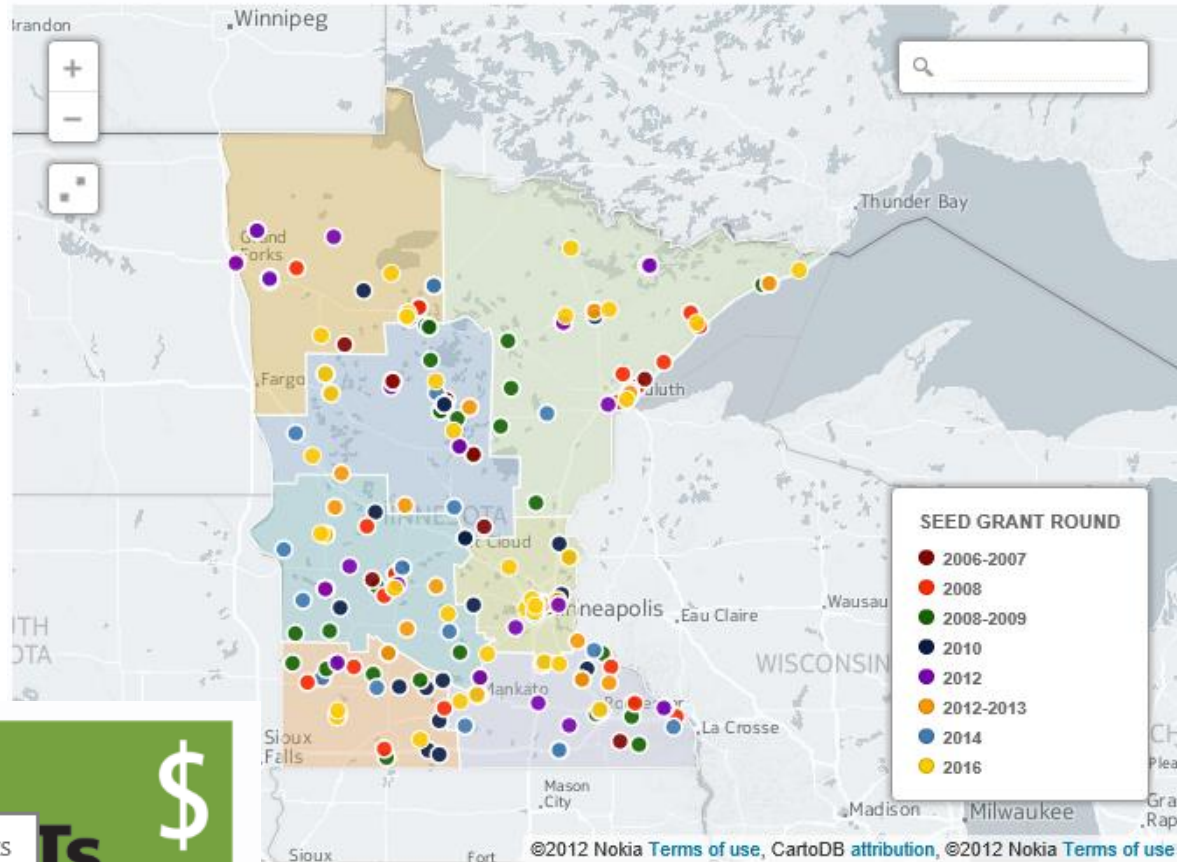
Providers of products & services for small, medium & commercial wind...



CLEAN ENERGY PROJECT BUILDER

cleanenergyprojectbuilder.org

Tools: Seed Grants



<http://www.cleanenergyresourceteams.org/projects>



Tools for Farms and Businesses



Renewable Energy for Greater Minnesota: Solar, wind, and biomass are plentiful sources of clean energy in Minnesota, and we're here to help farmers and rural small businesses get projects done. CERTs offers tools to pursuing renewable energy projects.



Milk the Savings: Dairy Energy Efficiency Program: CERTs can answer questions about energy efficiency for dairy barns and will guide you through the funding options available for barn energy efficiency upgrades. We can help you consider renewable energy options, too.

<http://www.cleanenergyresourceteams.org/project-planning/farmers>

Tools for Governments



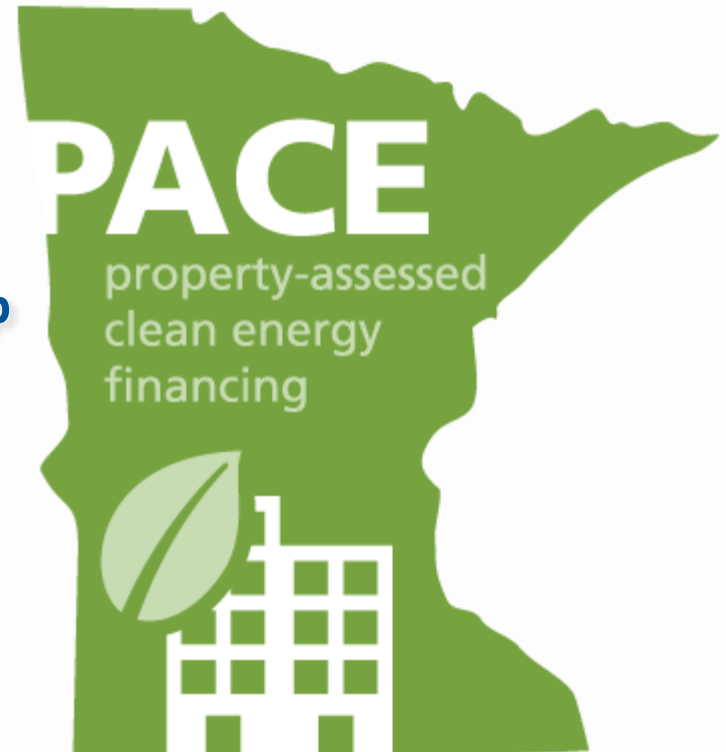
**GUARANTEED ENERGY
SAVINGS PROGRAM**

<http://www.cleanenergyresourceteams.org/gesp>



Minnesota
GreenStep Cities

<http://www.cleanenergyresourceteams.org/greenstep>



<http://www.cleanenergyresourceteams.org/pace>

CERTs: Minnesotans Building a Clean Energy Future



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