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Minnesota Farmland & Solar by the Numbers

Fritz Ebinger, J.D.
Clean Energy Resource Teams
June 12, 2019

Helping Minnesotans build their clean energy future

MISSION

We connect individuals and their communities to the resources they need to identify and implement community-based clean energy projects

How does CERTs help?

Hands-on assistance

For cities, counties, utilities, farmers, businesses, and other organizations looking to make a change

Practical steps to clean energy

Resources for getting started, moving forward, and completing projects

Learning opportunities

We host events, create resources, and highlight clean energy stories and jobs

CERTs Partners

Regional Sustainable Development Partnerships
University of Minnesota Extension

Great Plains Institute

SRDC

Minnesota Commerce Department

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Farmland

Basics

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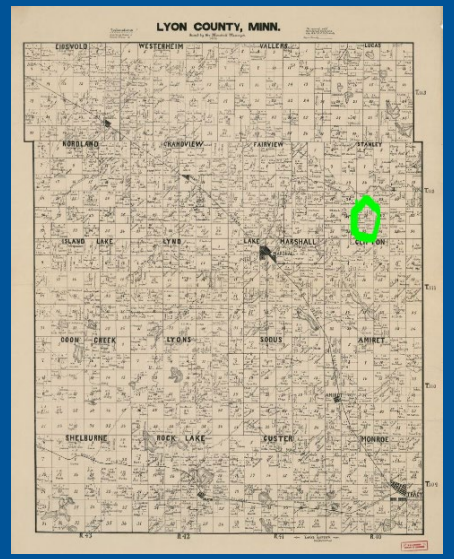
1 square mile = 640 acres

640 acres = 1 section of a township

6 square miles = 1 township



Marshall Solar, LLC

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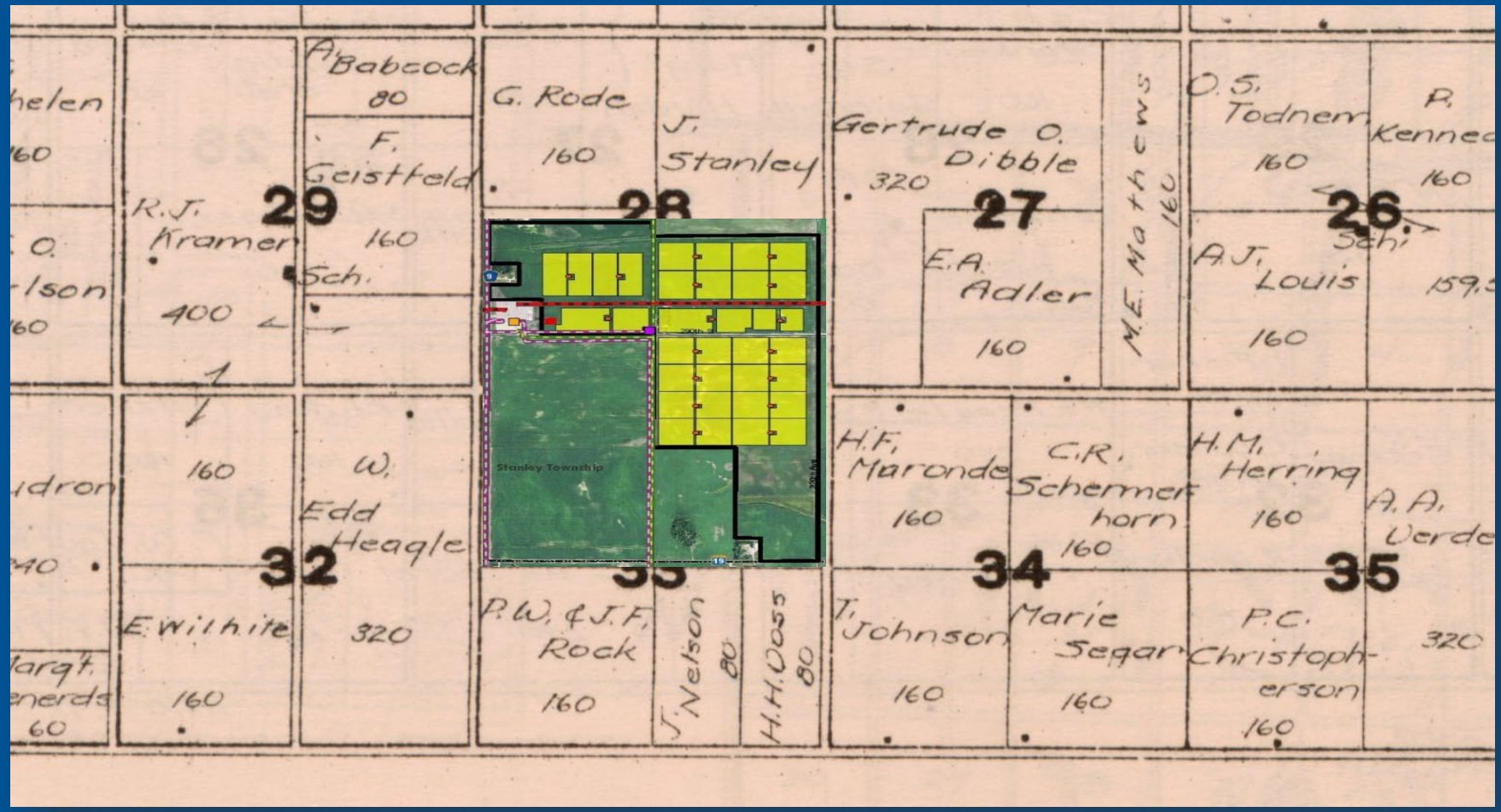
62.25 MW 515 Acres 8.27 ac/MW



Lyon County (1884)

Stanley Township
Township: 112N
Range: 40W
Sections 28 & 33

Land Acres in Farms

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25,516,982

39,870 of 86,943 sq miles statewide or 45.9%

Source: National Agricultural Statistics Service, 2017 Ag Census, Minnesota,Table 1

Downward Trend: Land in Farms

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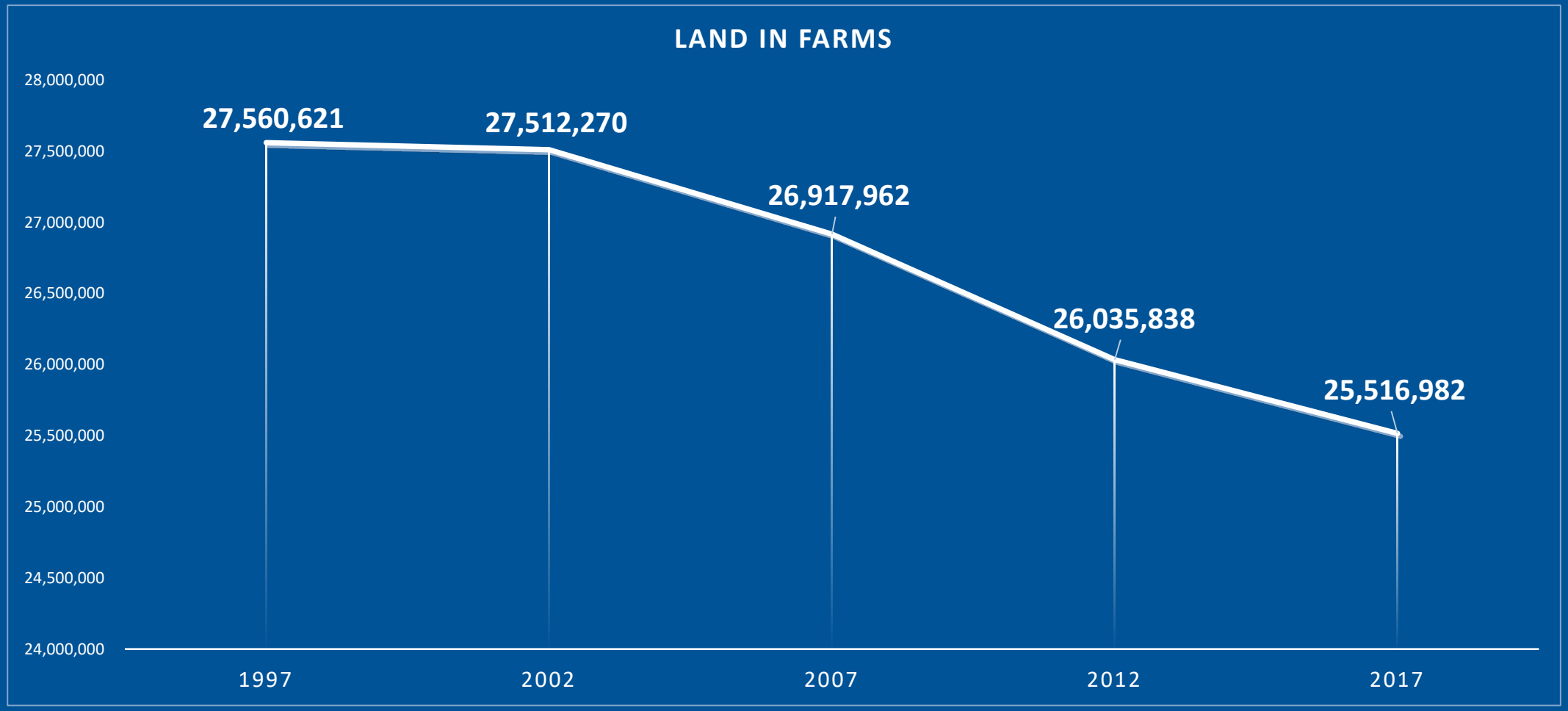
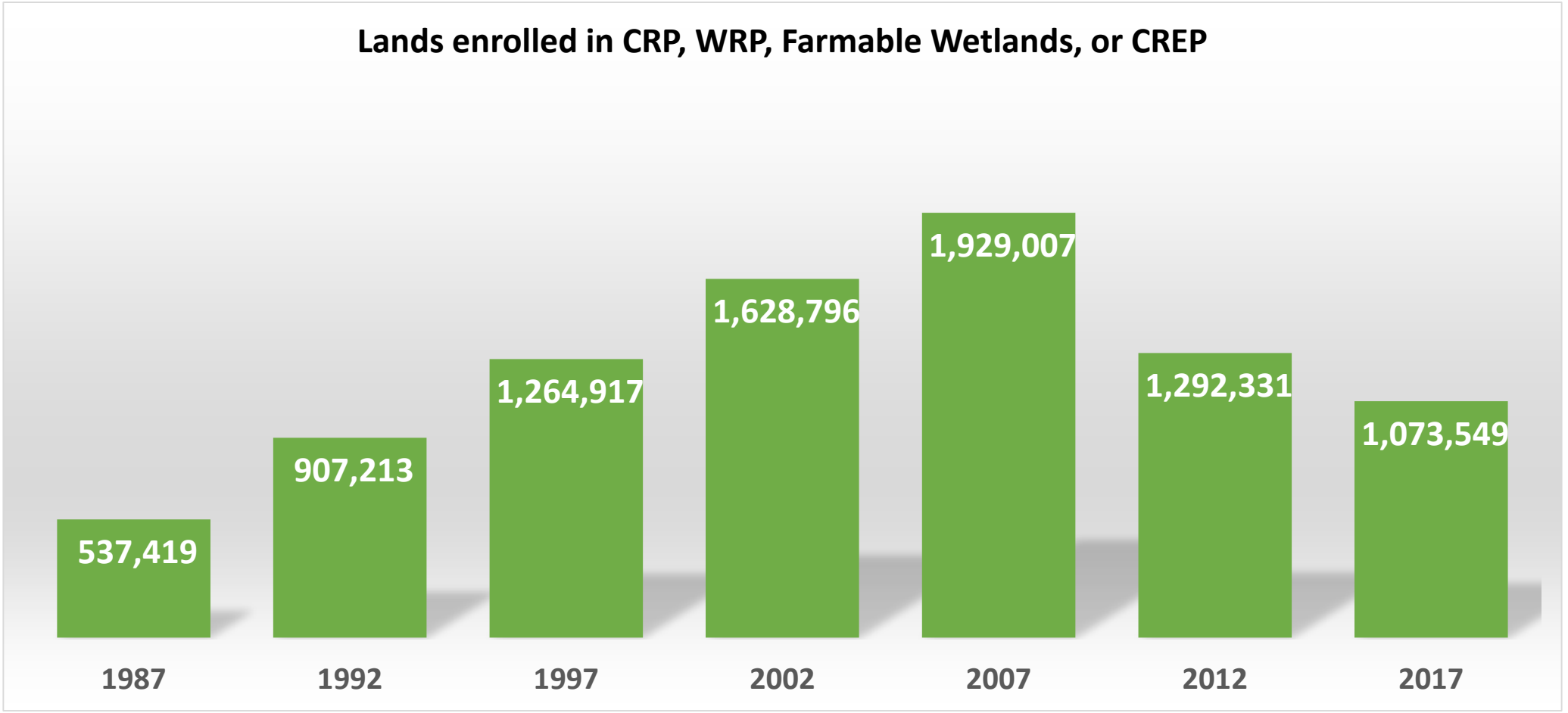


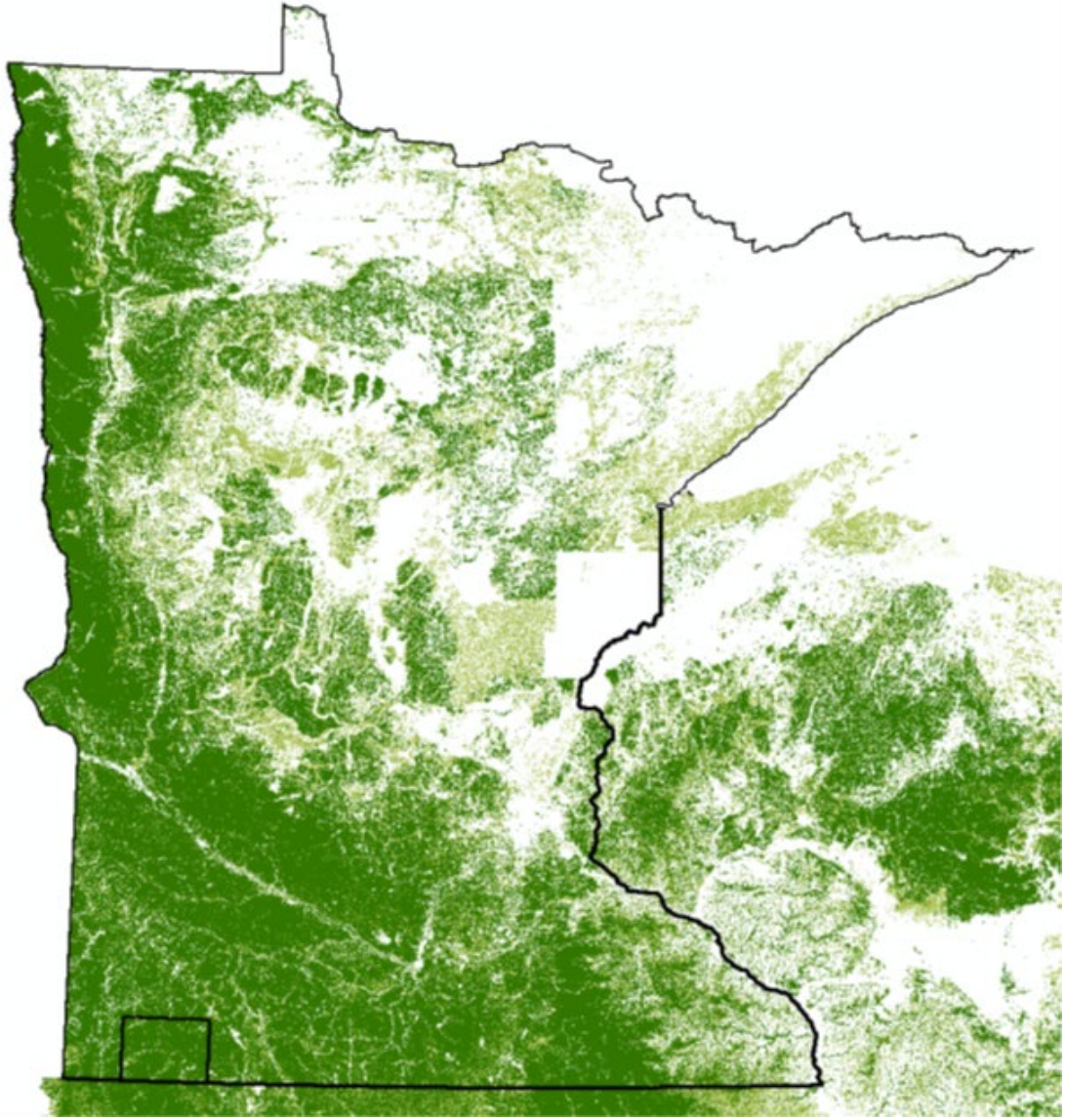
Source: National Agricultural Statistics Service, 2017 Ag Census, Minnesota, Table 1 (April 2019)

Conservation Lands



Source: National Agricultural Statistics Service, 2017-1987 Ag Censes, Minnesota, Tables 7 and 8

MN Prime Farmland



17,311,400 acres

USDA, 2015 Natural Resources Inventory, Table 13 (Sept. 2018)

• Cropland	15,323,800
• CRP Land (prime only)	258,800
• Pasture	1,160,000
• Other Rural Land	568,800
• Forest Land	2,650,000

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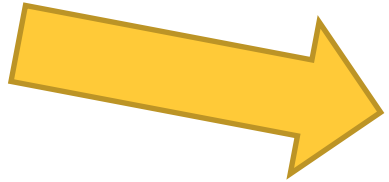
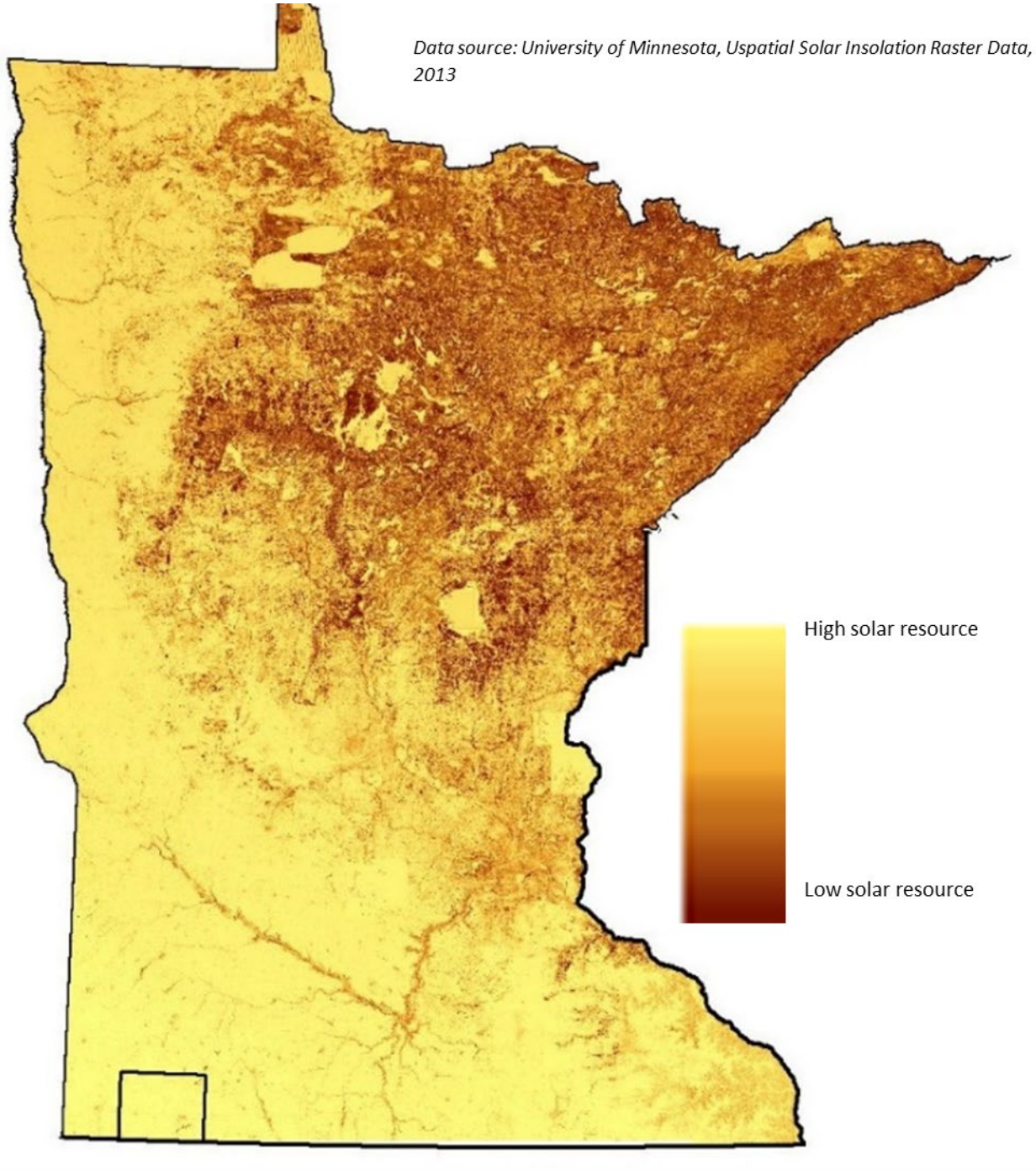
Solar

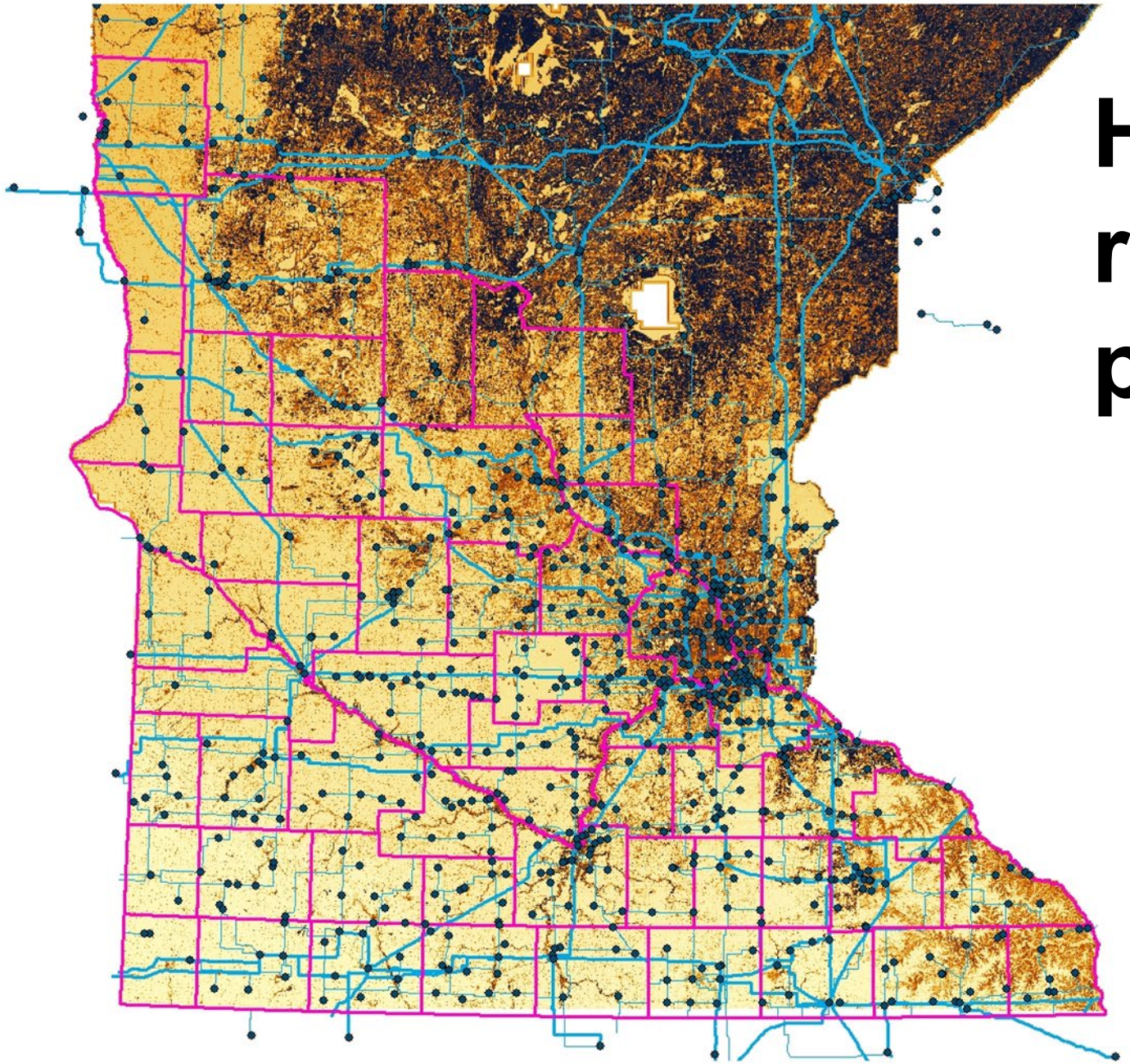
Minnesota Solar Insolation

You can get a wind burn
and a sun burn down here!

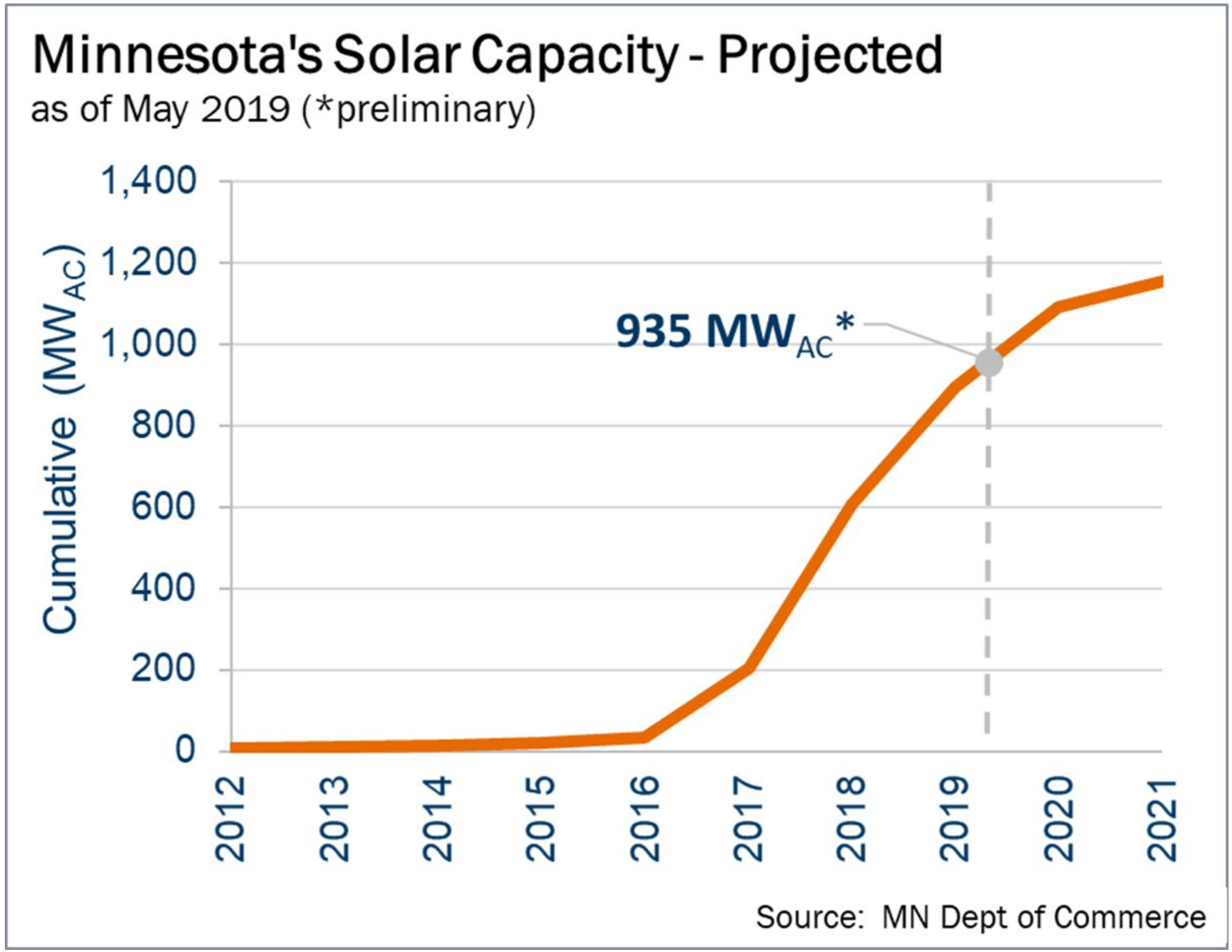




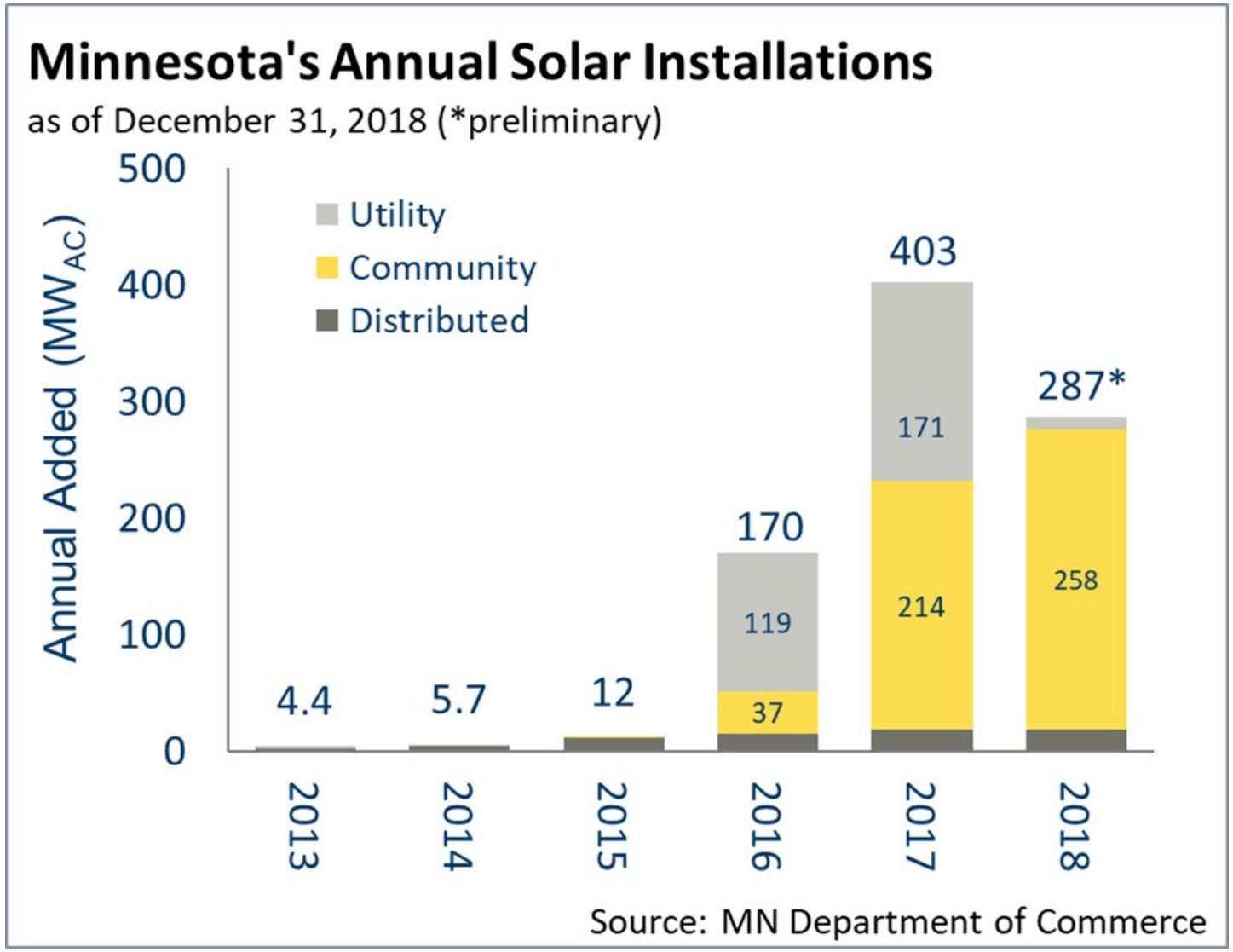
Data source: University of Minnesota, Uspatial Solar Insolation Raster Data, 2007 - 2013

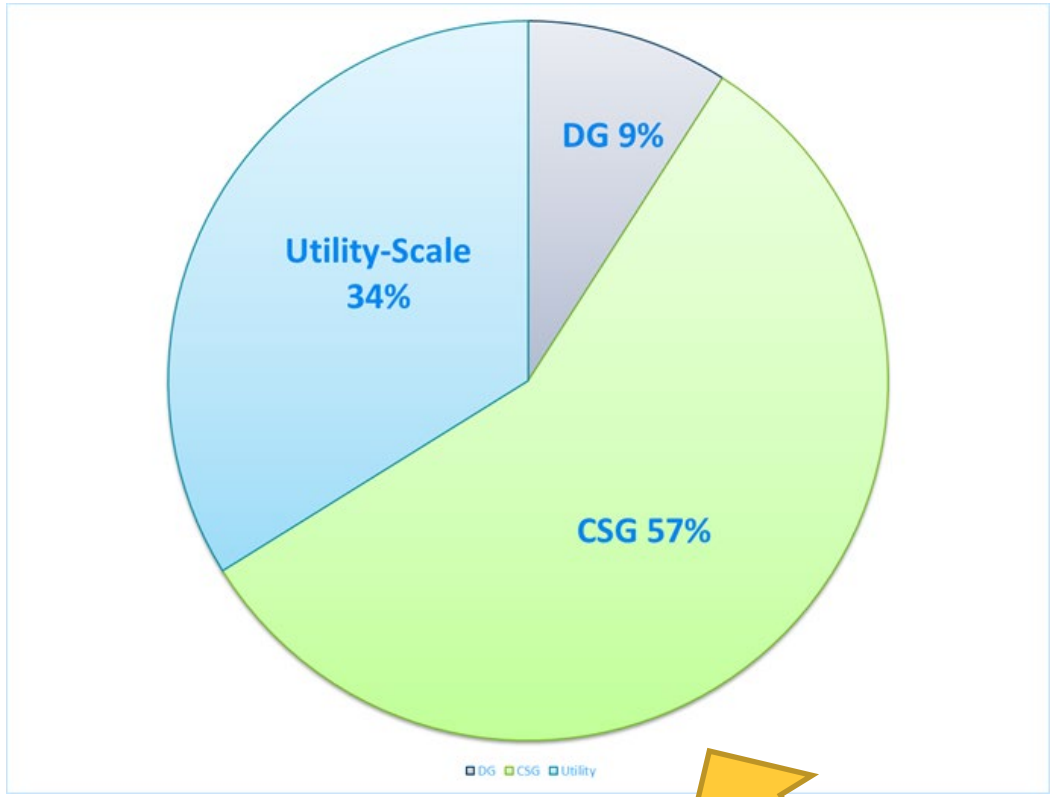


How will we route solar power to load?



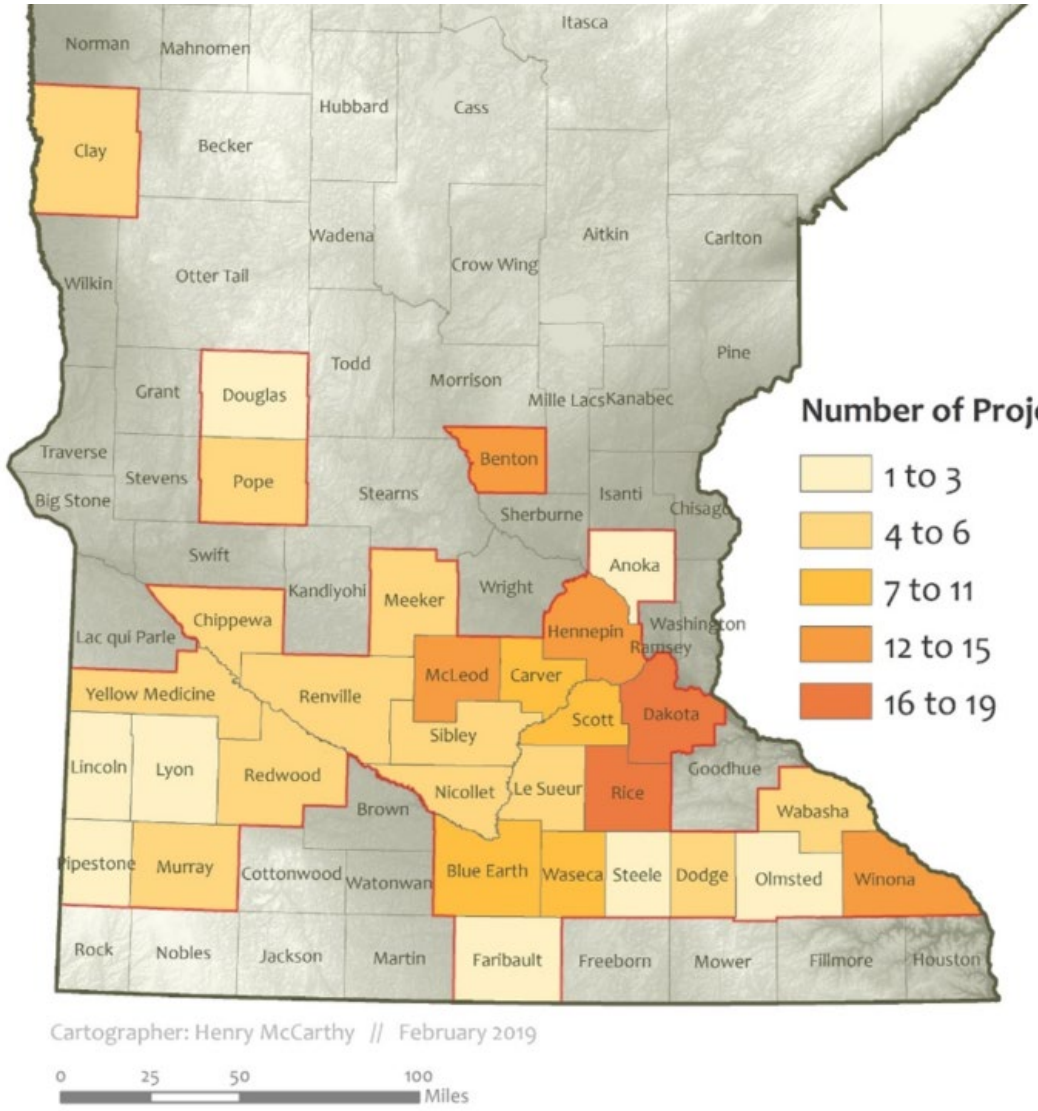
935 MW AC = 2.2% of Total Gen. in early 2019





Note: Utility-scale (50+ MW or more) will likely jump far ahead of CSG percentage in future years

Near-future Installations

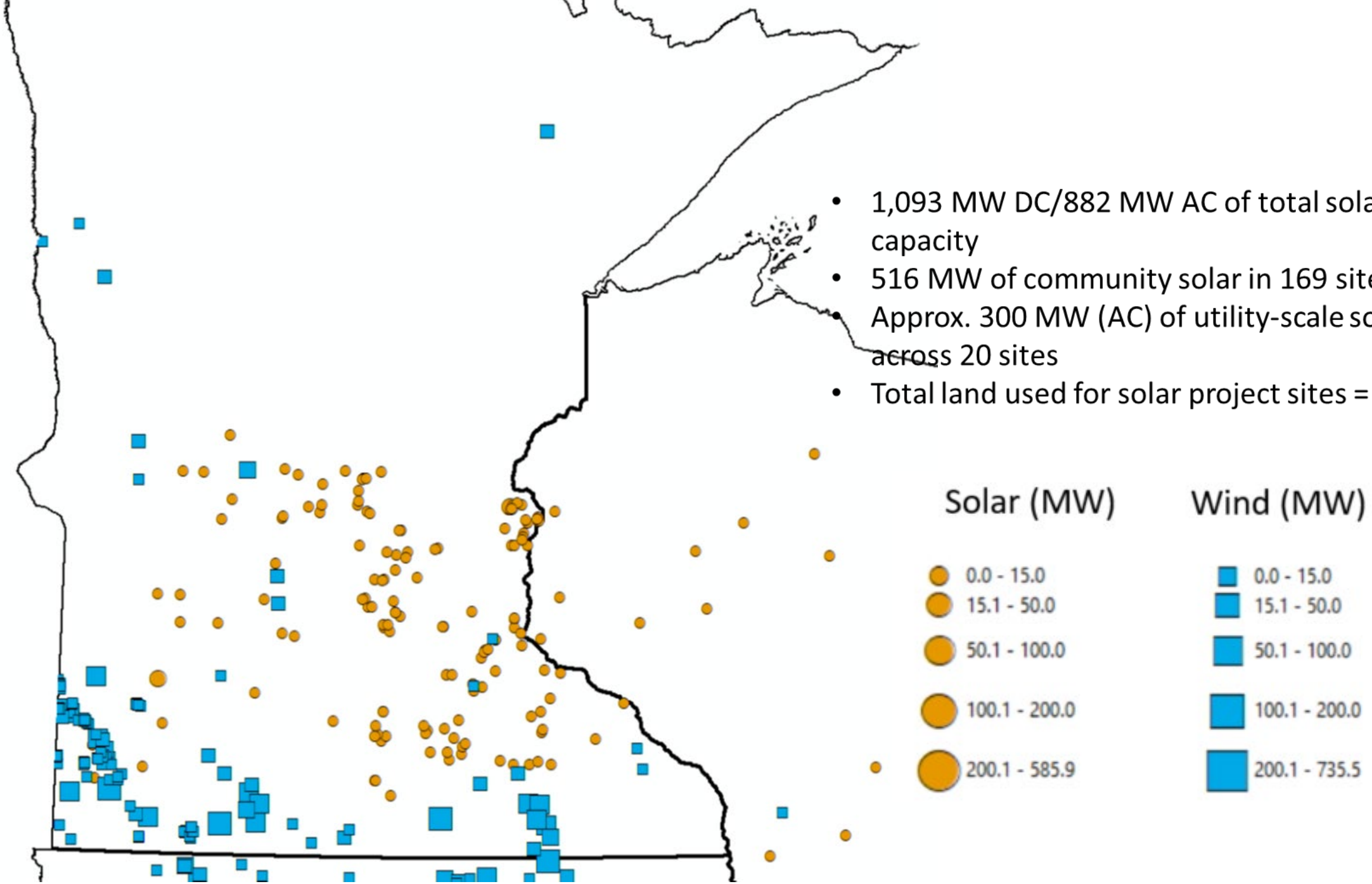


Xcel to build 3 GW of MN solar by 2030 – if it gets to own 50% or more

The deal that Xcel has reached with environmentalists and labor includes caveats maximizing the utility's ownership of the large-scale solar that it is promising.

MAY 20, 2019 CHRISTIAN ROSELUND

MARKETS POLICY UTILITY-SCALE PV MINNESOTA



- 1,093 MW DC/882 MW AC of total solar installed capacity
- 516 MW of community solar in 169 sites
- Approx. 300 MW (AC) of utility-scale solar farms across 20 sites
- Total land used for solar project sites = 8,500 acres

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How much land is the 10% solar energy goal* by 2030?

*Minn. Stat. § 216B.1691, subd. 2f (2018)

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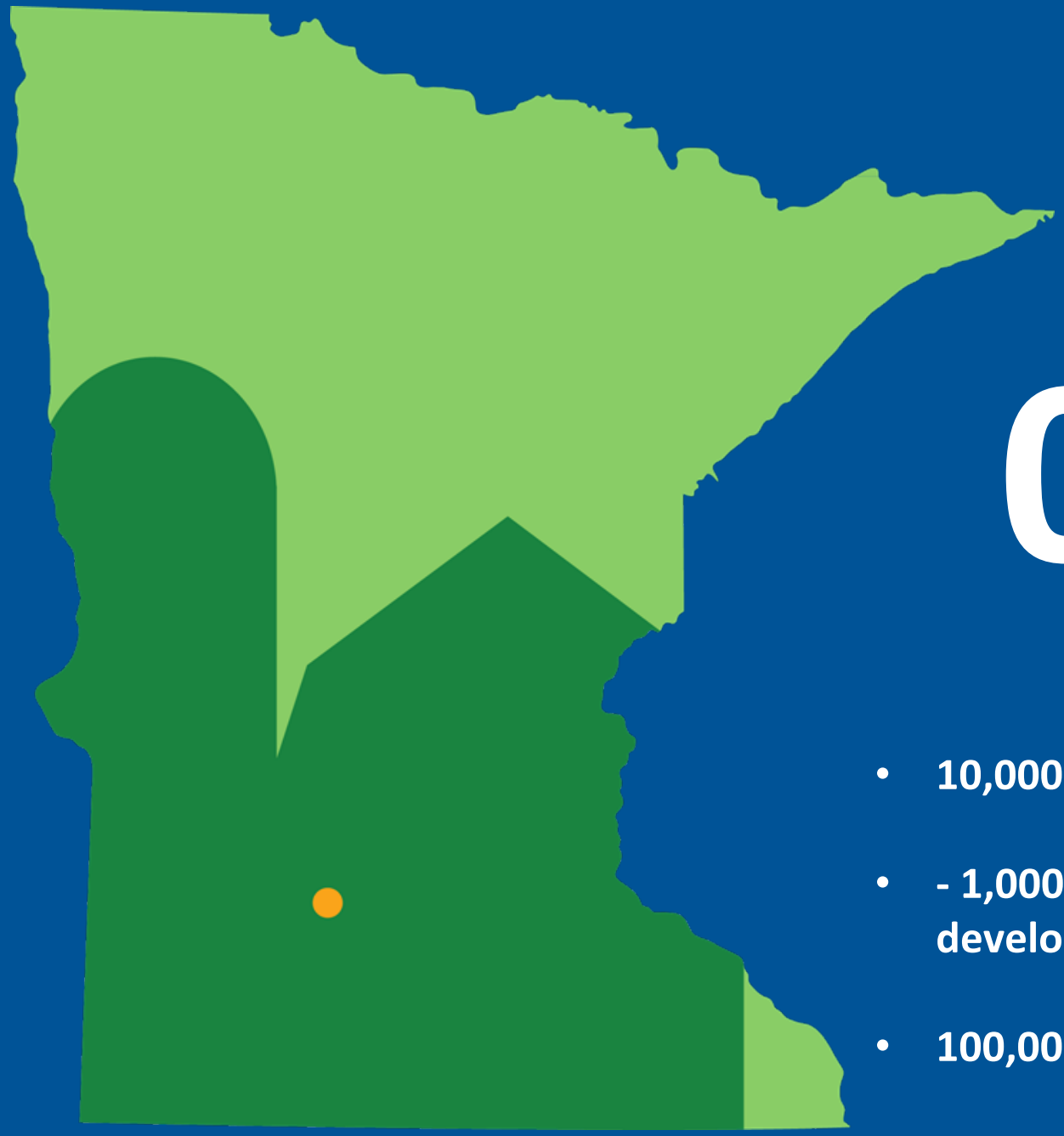
7-10 acres per MW solar

1 GW is 2.3% of 2018 Total Gen.

10% will be Distributed Gen. (urban)

Electrify transportation & heating?

≈ 10 GW of Solar



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0.4% of farmland in 2027

- 10,000 MW x 10 acres = 100,000 acres of solar
- - 1,000,000 decrease in farmland due to other development pressures over 10 years
- 100,000 solar acres / 24,500,000 farmland acres

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On which farmlands?

Why “right here”?

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Fritz Ebinger
Ebing007@umn.edu
612-626-1028