

Solar Technical Assistance in the Region

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Committee of the Whole



Objectives

- Communicate the breadth of the Community Development division's solar efforts.
 - *Incorporating Solar & Resilience into our everyday work*
 - *Our Projects and Partnerships*
 - *Research & Analysis*
- Communicate the focus and workings of the “Solar-for-Vouchers” program specifically.

Incorporate Solar & Resilience into our everyday work

SOLAR RESOURCE PROTECTION

SOLAR RESOURCE PROTECTION REQUIREMENT

The Metropolitan Land Planning Act requires that the Comprehensive Plan shall contain "an element for the protection and development of access to direct sunlight for solar energy systems."

To satisfy the solar resource protection requirement within statute, the Council has provided the Minnesota Solar Suitability Analysis map clipped to your community, along with calculations of your community's gross solar and rooftop solar resource. To adequately plan for solar energy systems, communities should assess their existing, or baseline, conditions. The solar map and calculations provide baseline conditions for solar protection which will assist communities in creating appropriate solar policies and implementation strategies through the identification of key sites or land uses suitable for solar development, while correspondingly limiting solar development for other land uses or locations.

The sample map and calculations below are for the City of Afton, in Washington County. The solar map and calculations will differ based on the existing natural and built environment.

SOLAR MAP

In recent years, the declining prices and growing demand for solar panels have not been matched with publicly-available information for site suitability analysis to determine ideal solar panel placement. To better plan for solar development, communities need baseline solar resource information. The baseline provides necessary information for adopting appropriate solar policies and implementation strategies.

The Minnesota Solar Suitability Analysis Map, developed by the University of Minnesota and maintained by the Department of Commerce, provides solar insolation (total annual sun energy, measured in watts) data at a high resolution (1 meter). These data can be used to estimate total potential energy production of solar installations. Solar insolation varies, but the most important factor affecting small-scale photovoltaic solar installations is intermittent shading due to nearby structures and trees. More information on the methodology for creating the Solar Suitability Analysis Map can be found on the project website.

The Metropolitan Council has clipped the MN Solar Suitability Analysis Map to your community so that the map, along with the solar resource calculations, can meet the statutory requirement for the protection of the solar resource.

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SOLAR RESOURCE DEVELOPMENT

SOLAR RESOURCE DEVELOPMENT REQUIREMENT

The Metropolitan Land Planning Act requires that the Comprehensive Plan shall contain "an element for the protection and development of access to direct sunlight for solar energy systems."

For more success in incorporating the solar resource development requirement within the comprehensive plan, it is important to highlight a generalized comprehensive planning flow chart, for reference:

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    graph LR
      A[Existing Conditions] --> B[Desired Conditions - Goals & Policies]
      B --> C[Strategies & Evaluation]
    
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To satisfy the solar resource development requirement within statute, your community should include a policy or goal relating to the development of access to direct sunlight for solar energy systems within the comprehensive plan. Your community should also include any strategies needed to implement the policy or policies.

For more information on how to formulate your community's policies and strategies, you can begin by setting solar visions or goals for the comprehensive plan. Please see examples below of solar goals and visions, solar policies, and solar implementation strategies:

Goals by Community Type

- Urban Goal – Balance between the benefits of urban forests and the benefits of enabling solar development.
- Urban Goal – Create local community solar garden opportunities for residents and businesses who have limited on-site solar resources or do not own land or buildings.
- Urban Goal – Redevelopment projects will evaluate on-site solar resources and incorporate solar development into designs.
- Suburban Goal – Encourage residential solar development that maintains community character.
- Suburban Goal – Increase energy resilience of critical facilities such as police, fire, and emergency and hazard response centers.
- Suburban Goal – Fairly balance the development rights of land owners with solar resource with the community character rights of adjacent landowners.
- Suburban Goal – Protect access to solar resources in new developments and subdivisions, enabling individual landowners to choose to self-generate energy.
- Rural Goal – Encourage solar garden or farm development on marginal farmland rather than prime agricultural soils.
- Rural Goal – Enable solar garden development that enhances the community's and landowners' ability to limit non-agricultural housing or commercial development.

Goals by Plan Element

- Economic Goal – Increase use of local energy resources to capture job creation opportunities and diversify local economic base.
- Energy Goal – By 2030, all new housing has solar generation or is built to "solar-ready" standards.
- Land Use Goal – Encourage solar garden development on closed landfills and brownfields.
- Resilience Goal – Encourage investment in electric grid infrastructure and solar development that makes electric service more reliable and resilient to weather-related disruptions.

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Technical assistance programs & reviews

- Comprehensive Plans
- Environmental Reviews
- Livable Communities Accounts

Incorporate Solar & Resilience into our everyday work



SolSmart Solar Best Practices Program

- Permitting, Planning, Zoning
- Ordinances & MN Statutory Rights
- Utility & Community Engagement

Incorporate Solar & Resilience into our everyday work



The Edina Community Solar Garden, installed courtesy IPS Solar)



Why a Minnesota apartment project is a pioneer in solar development

Inventory & Elevate National & Local Equitable Solar Energy profiles

- Projects & Pilots
- Initiatives & Policies
- Practices & Priorities

Partnerships & Collaborations



**green
business**

City of Minneapolis
Green Business
Solar Cost Share 2018



Minneapolis
City of Lakes

Funds Available for Green Business Solar Projects

Minneapolis – Green Cost Share Applicant Review Committee

- Track solar development trends
- Lessons learned from new policies, practices, priorities, & procedures



Partnerships & Collaborations



MN Solar Pathways, Technical Committee

- Multi-sector, multi-agency, state-wide research project funded by the U.S. Department of Energy
- Technical & Land Use viability of 70% solar + wind statewide by 2045
- Project Duration 2015 - 2020

Partnerships & Collaborations

Solar Energy Innovation Network

The Solar Energy Innovation Network assembles diverse teams of stakeholders to research cutting-edge solutions for a more reliable and resilient grid.



Solar Energy Innovation Network

- Potential Co-Benefits to Solar Canopy & EV Charging Integration
- Private, Utility, Non-Profit, Federal, State, regional, and local government partners (Community Development & Metro Transit Divisions)

Partnerships & Collaborations



Office of
ENERGY EFFICIENCY &
RENEWABLE ENERGY



U.S. Department of Energy – Equitable Solar Grants Review Committee

- Learn about leading projects, initiatives, and potential partners for promoting solar equity
- Develop solar equity analysis skills

Partnerships & Collaborations



MN PV panel recycling stakeholder meeting

Amanda Cotton | Product Stewardship Coordinator

John Gilkeson | Toxics Reduction Coordinator

June 11, 2020

Minnesota Pollution Control Agency Solar PV Recycling Committee

- State & local agencies, scientists, solar developers, trade associations, and manufacturers
- Align regulations, policies, and permitting requirements.
- State recommendations Fall 2020

Partnerships & Collaborations



Education & Outreach

- Promote increased diversity in policy, planning, and public service pipeline
- Prioritize predominantly BIPOC schools & classrooms
- Promote our work and solicit feedback

Partnerships & Collaborations

Capstone Project

Met Council 4d Housing & Energy

Matt Jones, Courtney Overby, Lilly Richard, Bri Whitcraft



University Partnerships Supporting Solar Research

- “Carbon Sequestration benefits of Green Roof & BioSolar systems”
- “Region 4D, Efficiency, & Solar Analysis”
- “Climate Change Communications Strategies”

Partnerships & Collaborations



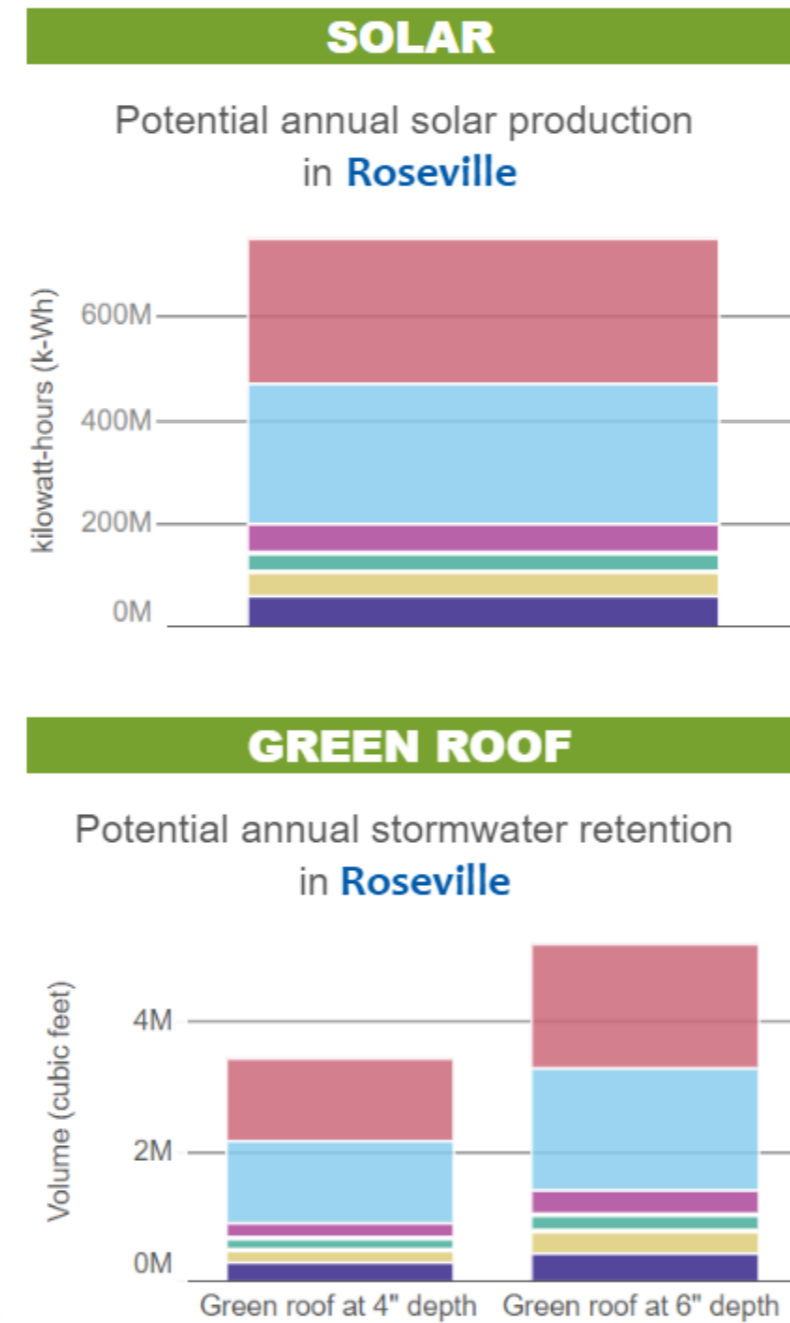
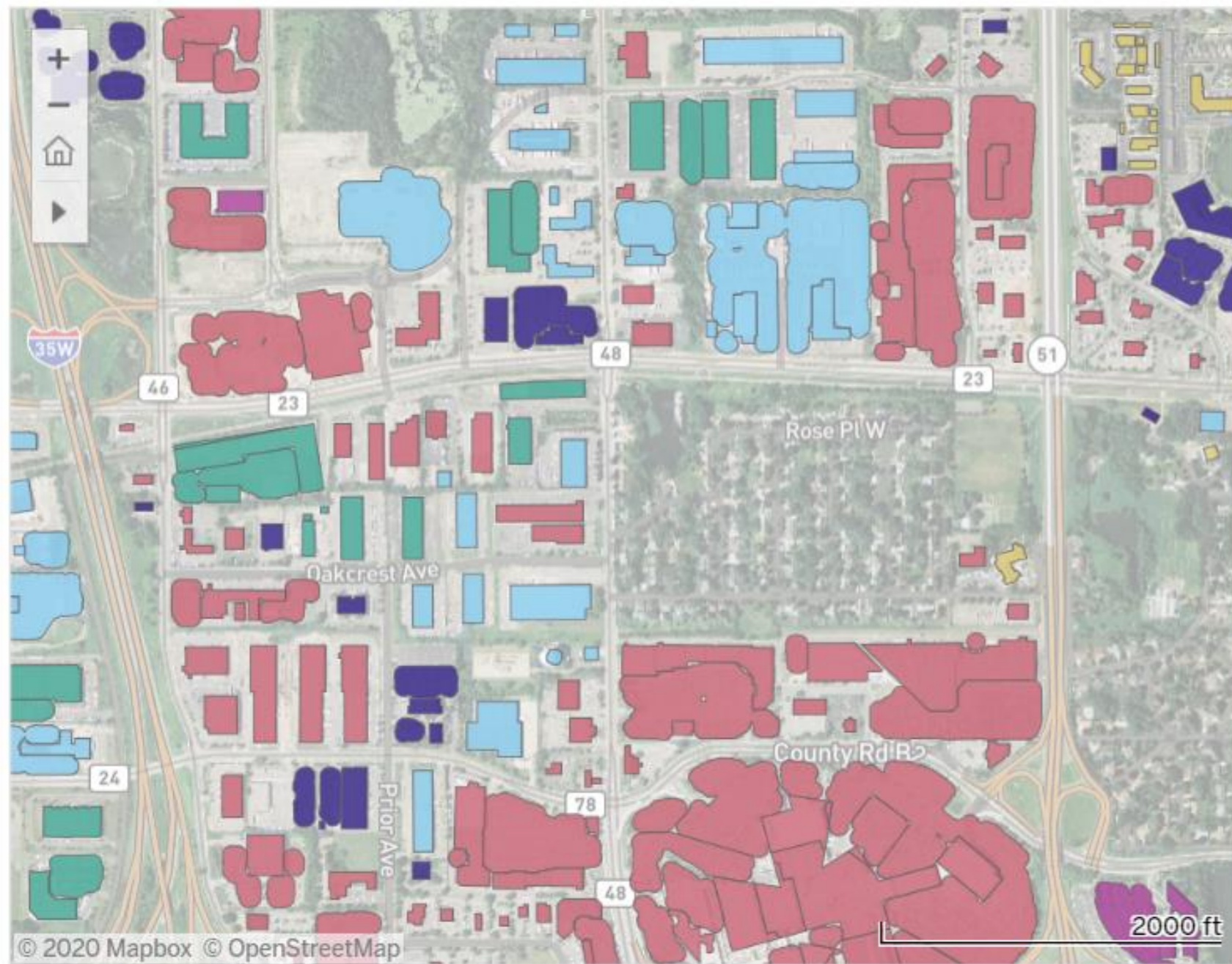
MN Brightfields Initiative

- MN Environmental Quality Board “Solar on Closed Landfill Study”
- Metro Closed Landfills could meet all electricity needs in City of Cottage Grove
- MN EQB Recommendations due December 2020

Research & Analyses

"SURFACE WITH PURPOSE" TOOL

Identifying opportunities for solar and green roof development for a more resilient region

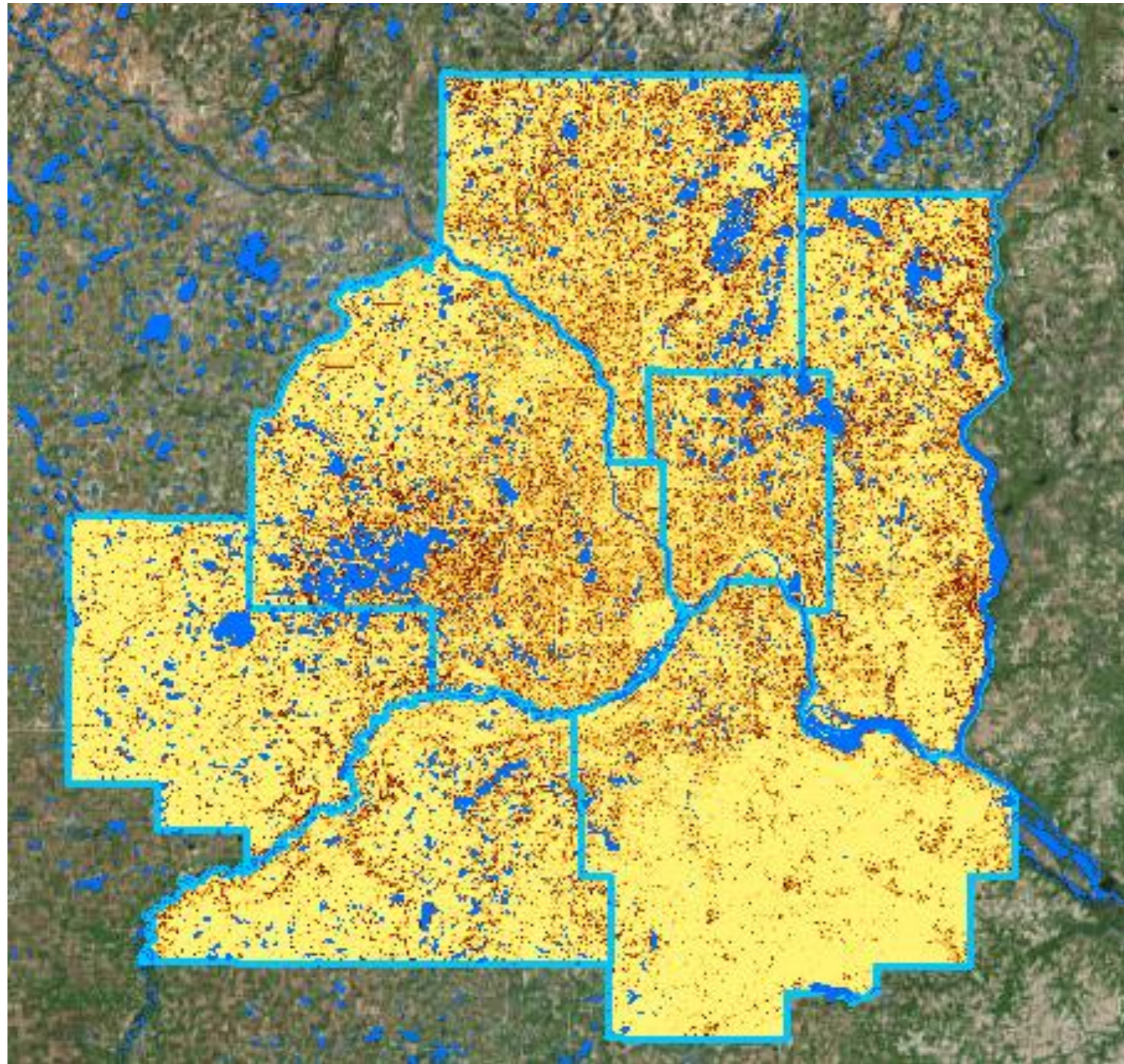


Surface with Purpose: Mapping & Impact Analysis for Climate Resilience & Equity Strategies

- Solar Production & Stormwater Retention
- Reduce Greenhouse Gas emissions, Urban Heat Island effect, localized flooding
- Improve air quality, water quality, and carbon sequestration

<https://metro council.org/Communities/Planning/Local-Planning-Assistance/Solar/Surface-with-Purpose-Interactive.aspx>

Research & Analyses



Solar Mapping & Offset Potential

- Xcel residents and businesses spent \$2.2B on electricity across 74 communities in 2017.
- Rooftop solar production could conservatively offset 2/3 of all metro area electricity use.
- Typical rooftop solar has payback period between 7-15 years.

Solar-for-Vouchers Technical Assistance Program



The Idea

Leverage solar energy assistance to expand housing choice for low-income residents.

Serve Two Thrive Goals through Thrive Outcomes

Equity

- Expand the housing choices of low-income residents.

Sustainability

- Promote the adoption of renewable energy sources.

Technical Assistance Structure

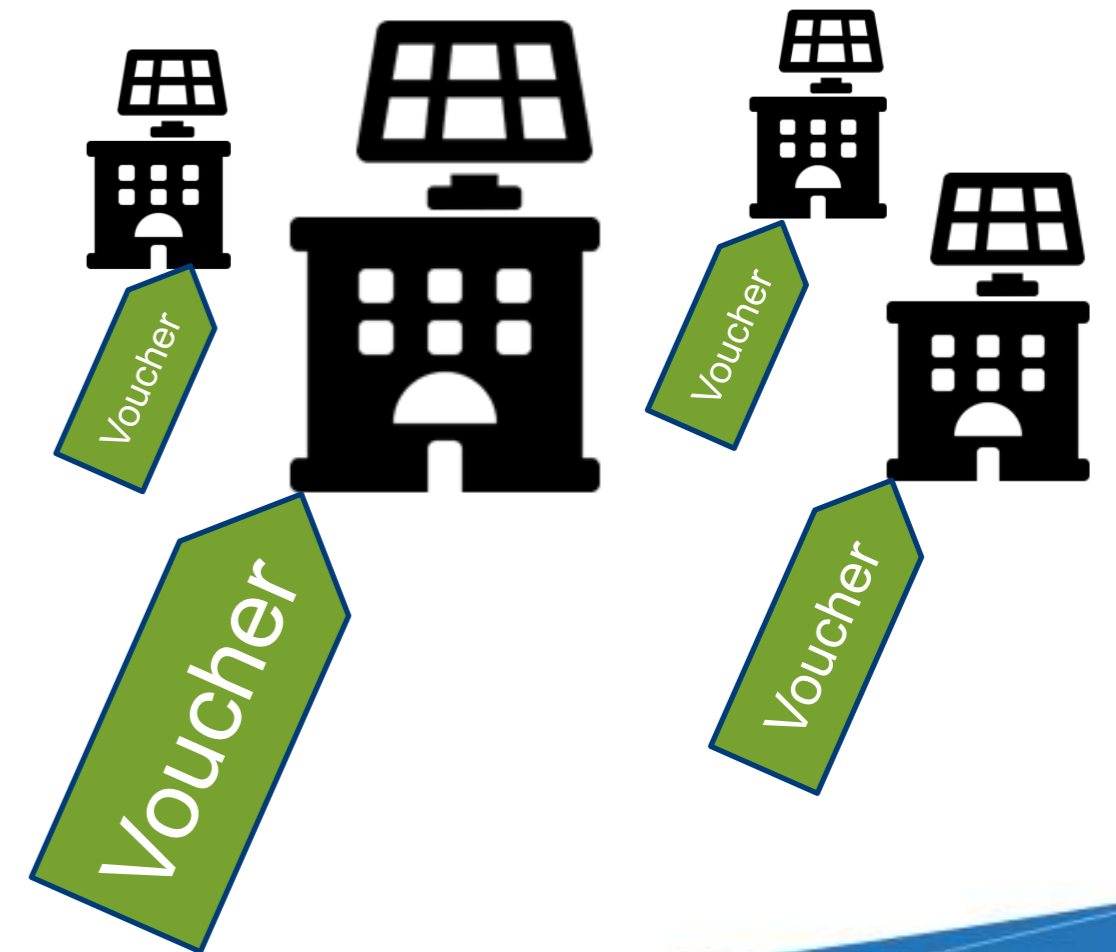
Solar Developer

Solar Developer

Solar Developer



Multi-Family Property Owners



Reasons for Program Participation

**Why would
Solar
Developers
Participate?**

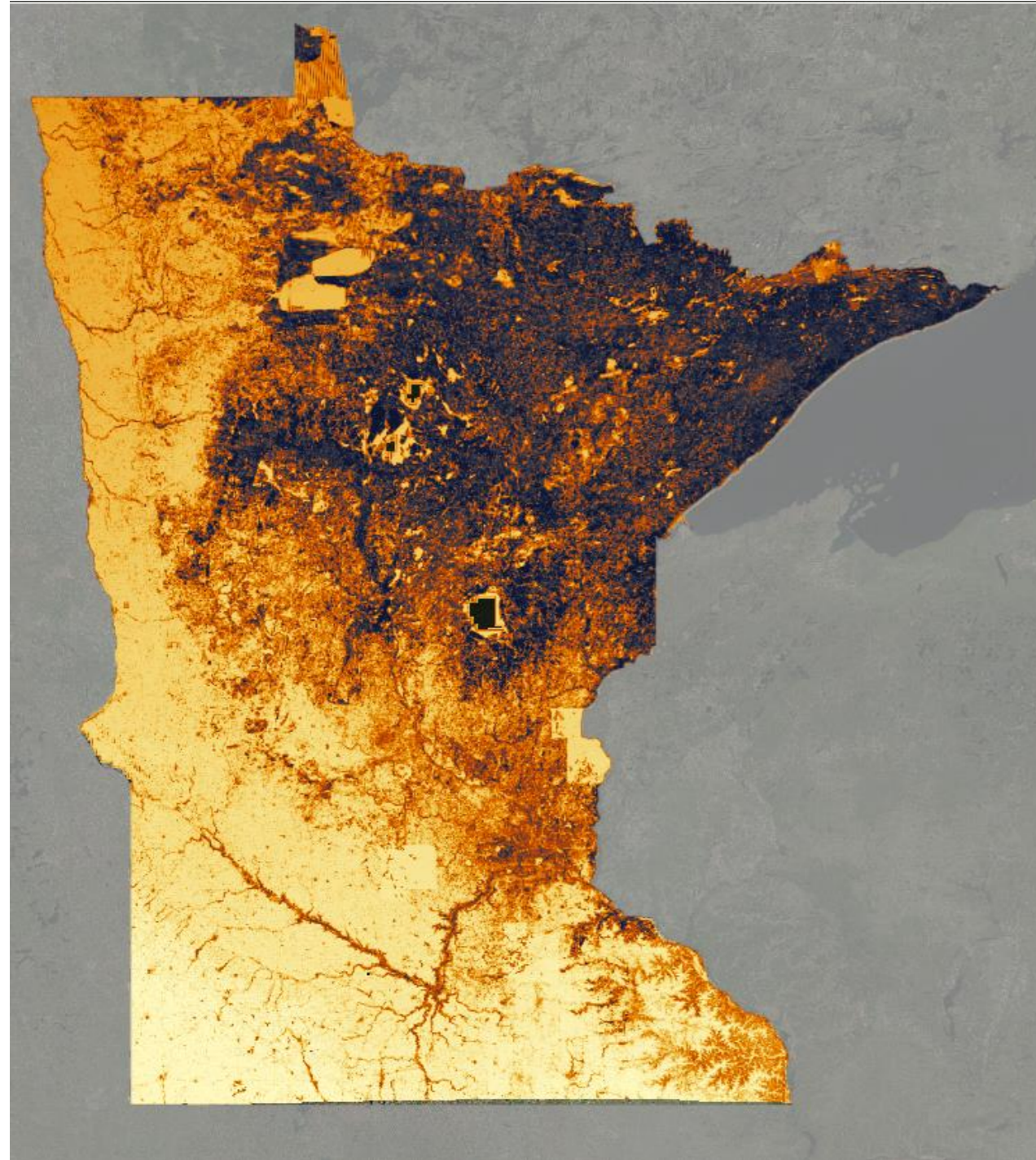
**Solar for Vouchers Technical
Assistance Program**

**Why would
property
owners
participate?**

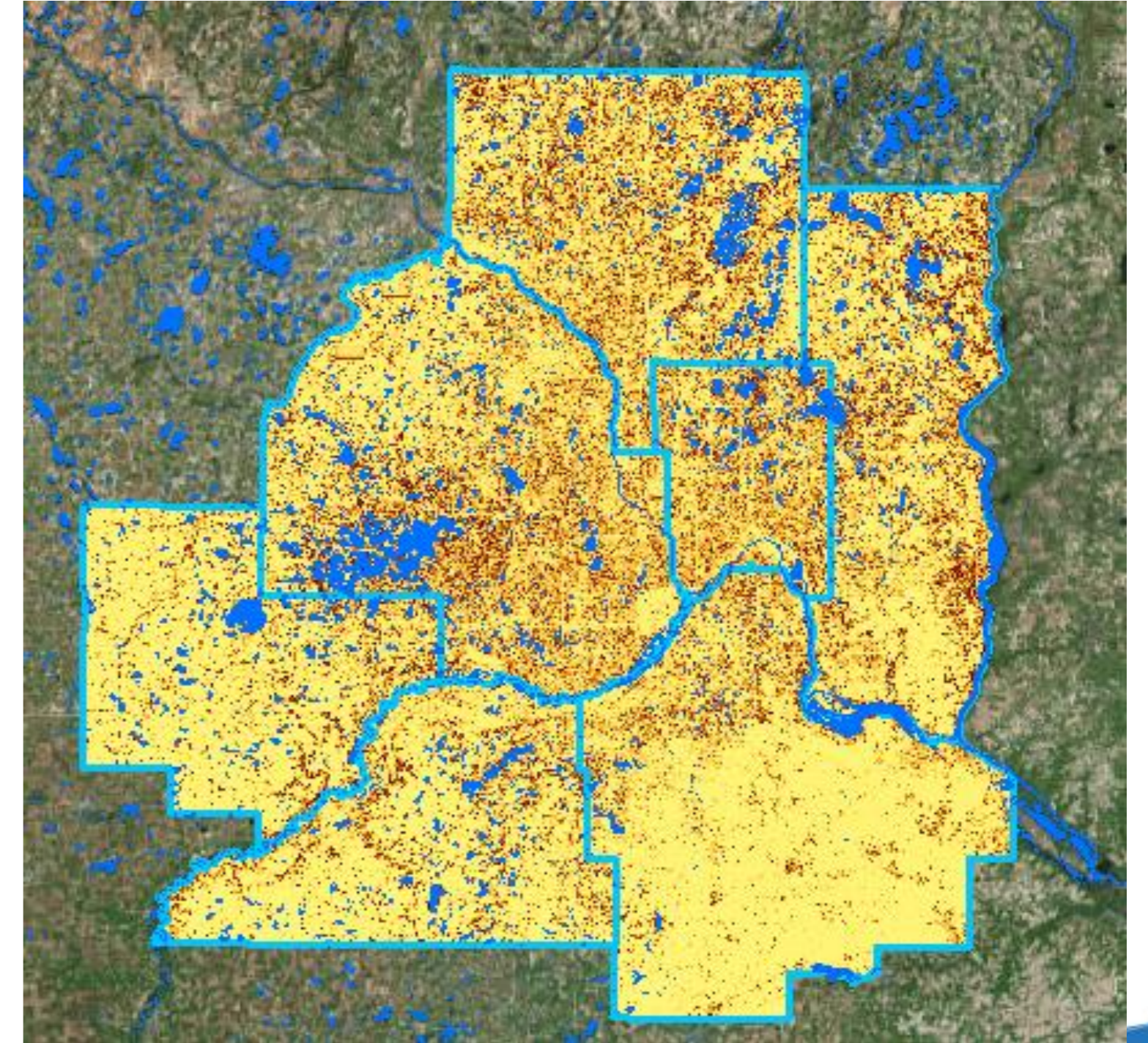
Pilot Program Timeline



Next Steps



- Evaluation, analyses, and reporting
- Develop recommendations for scale-up and roll-out of program



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