



Minnesota Community Financing Roadmap

October 2024



About this document

RMI prepared the Minnesota Community Financing Roadmap to help regional stakeholders understand and take ownership of cleantech-led economic development opportunities and maximize the local economic impact and benefits of these opportunities. This roadmap identifies feasible, equitable pathways toward the clean economy and economic mobility by identifying priority industries, local investment barriers, and key coordination needs. Stakeholders like economic development organizations and community lenders will be able to use the roadmap to chart a collaborative path forward while leveraging available public resources to attract private capital for locally driven impact. The roadmap was conceived as a way to maximize benefits from the federal Inflation Reduction Act's Greenhouse Gas Reduction Fund (GGRF) but remains applicable beyond that program as well. The IRA and the GGRF are subject to change by legislative or executive action.



Table of Contents

1. [Key Findings](#)
2. [Minnesota Clean Manufacturing and Clean Energy Context](#)
3. [Regional Economic Competitiveness Opportunities](#)
4. [Regional Constraints](#)
5. [Regional Coordination Opportunities and Needs](#)
6. [Green Steel Manufacturing](#)
7. [Clean Repowering and Transmission](#)
8. [GGRF Preparedness](#)
9. [Appendix: Twin Cities Regional Analysis](#)

Community financing roadmaps are place-based investment strategies that will help communities maximize GGRF potential



**Accelerate
bankability of clean
energy projects**



**Attract private capital
to previously
overlooked markets**

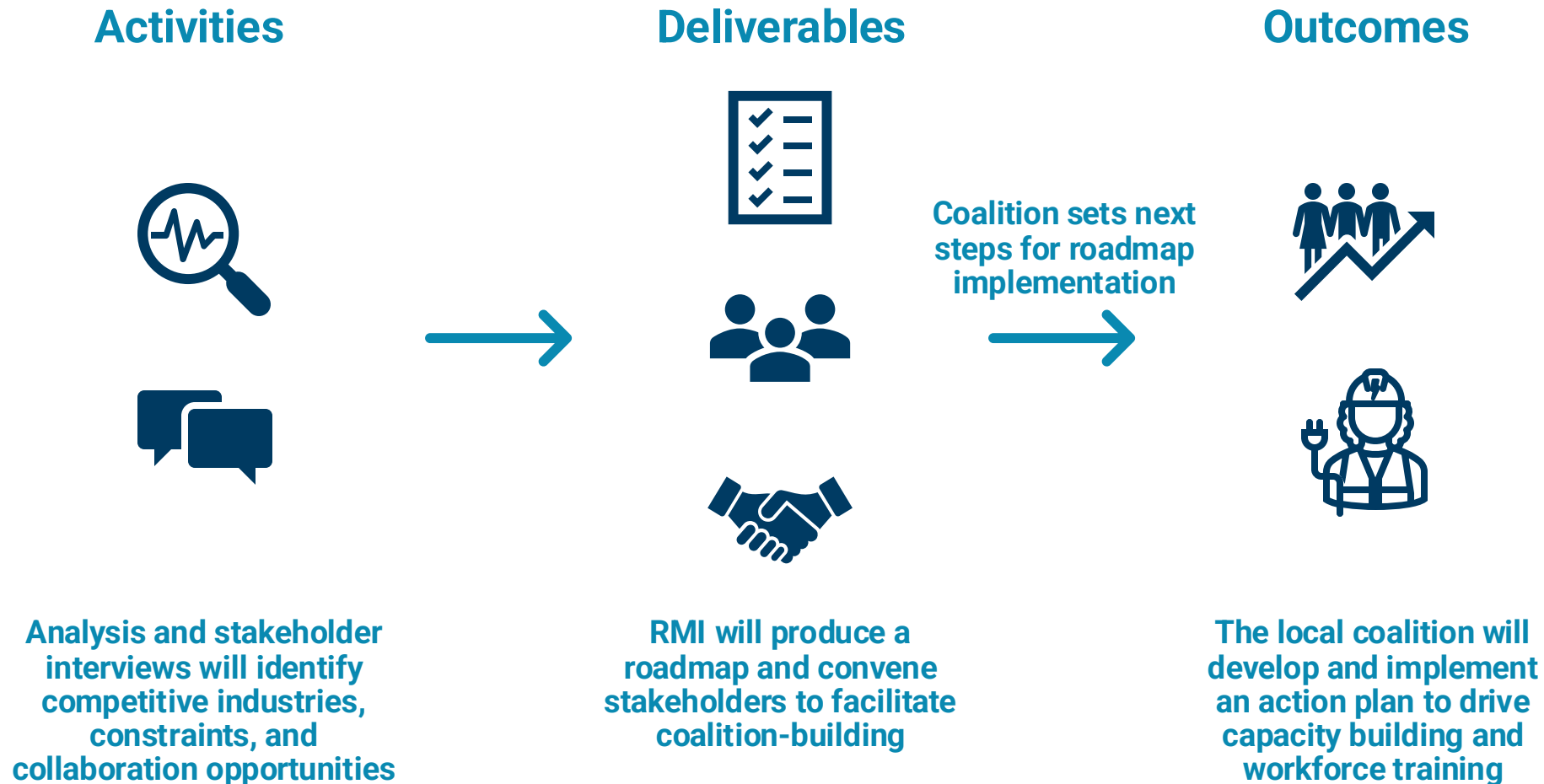


**Build wealth through
new approaches to clean
energy financing**



**Foster green jobs to
capture green
development benefit**

RMI analysis will provide insights and recommendations that inform community-driven action



Community Financing Roadmap

Project Overview & Goals

WHY

To maximize local GGRF benefits



Accelerate bankability of clean energy projects



Attract private capital to previously overlooked markets



Build wealth through new approaches to clean energy financing



Foster green jobs to capture green development benefit

WHO

Economic and community development stakeholders



Community lenders



Industry



Business associations



Economic development organizations



Community-based organizations



State and local government



Workforce training organizations

WHAT

- Place-based investment strategy to help maximize GGRF potential
- Highlight areas of competitiveness, constraints, and coordination
- Facilitate community ownership and collaboration among local stakeholders



Key Findings

Project Key Findings

Competitiveness

Minnesota is well positioned to attract **wind and solar generation investments**, crucial for meeting its 100% clean energy law.

The state's workforce has the **skills** to support the energy transition, including **manufacturing** key materials and components.

Constraints

Minnesota lacks a coherent cleantech economic development **strategy** and supporting **policies and incentives**.

Red tape, siloing, and local opposition slow clean energy and cleantech deployment.

Workforce development efforts are not fully aligned with cleantech opportunities.

Community development financial institutions (CDFIs) are **new to green finance**, while GGRF awardees are looking for experience.

Coordination

Minnesota has a strong **stakeholder ecosystem** without major gaps.

Coordination will be essential to **securing investment** to scale cleantech and clean energy deployment.

- Workforce development
- Utility-scale renewables
- Green industry
- Green finance

Existing **connectors and coalitions** could **overcome silos**.

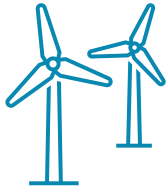


Minnesota Clean Manufacturing and Clean Energy Context

Minnesota Context Key Messages



Minnesota has passed nation-leading climate legislation, but other policy gaps have slowed clean energy deployment and cleantech investment.



The state possesses substantial wind generation potential, which will be essential for a renewables-based grid.



The state's strong community lender landscape can be an asset for the shift to green finance.

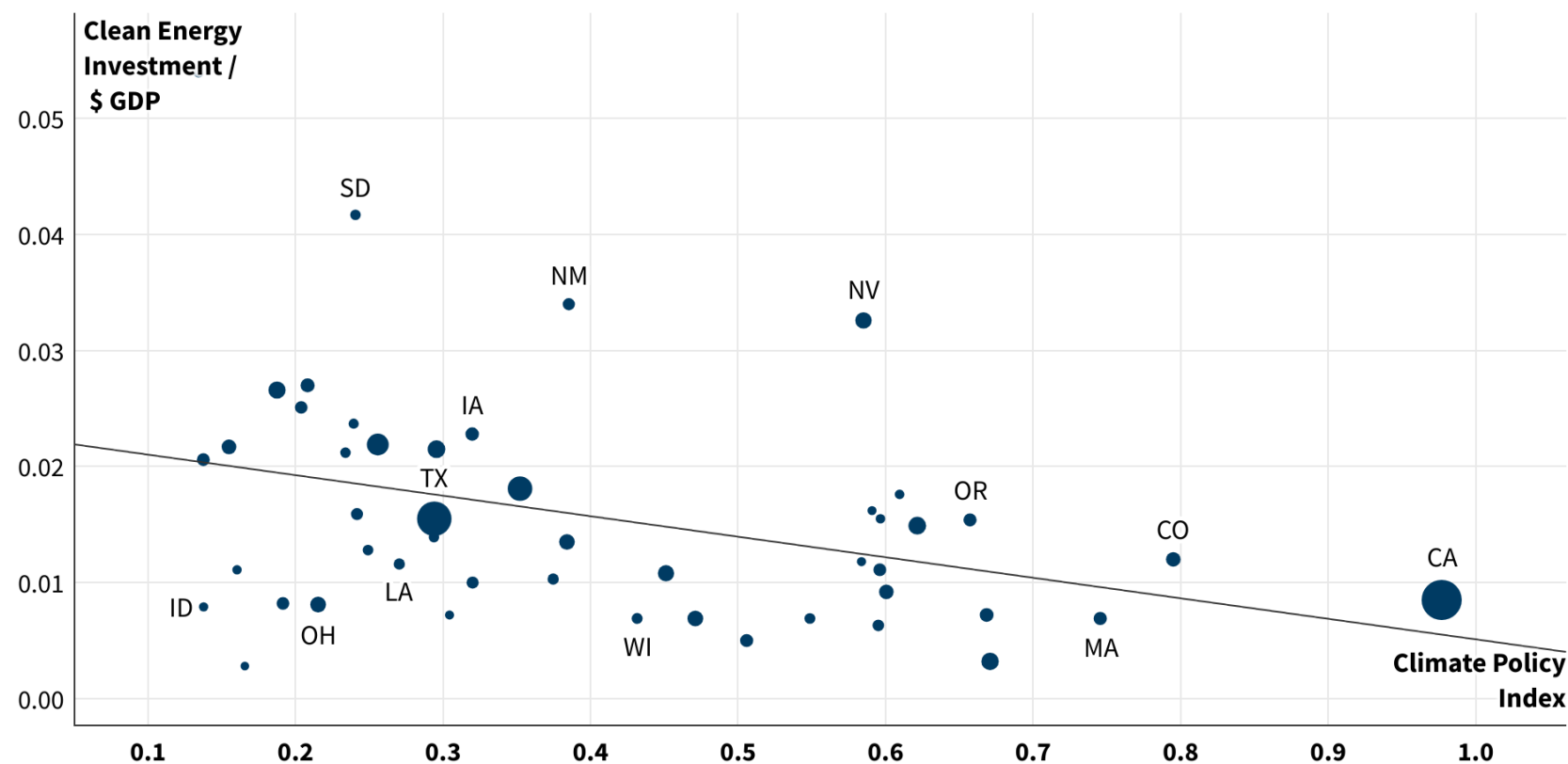
Minnesota passed significant clean energy and climate legislation in recent years

- **Minnesota passed legislation to move to 100% clean energy by 2040.**
 - The law will prevent 31 air-pollution-related deaths, 352 asthma attacks, and 1,665 lost workdays due to illness each year.
- **Recent permitting reforms will accelerate its clean energy boom and can serve as a model nationally.**
- **Minnesota passed a nationally leading bill to promote investments in clean transportation.**
 - Minnesotans stand to see \$91 billion in benefits by 2050.

But climate policy ≠ clean energy economic development policy

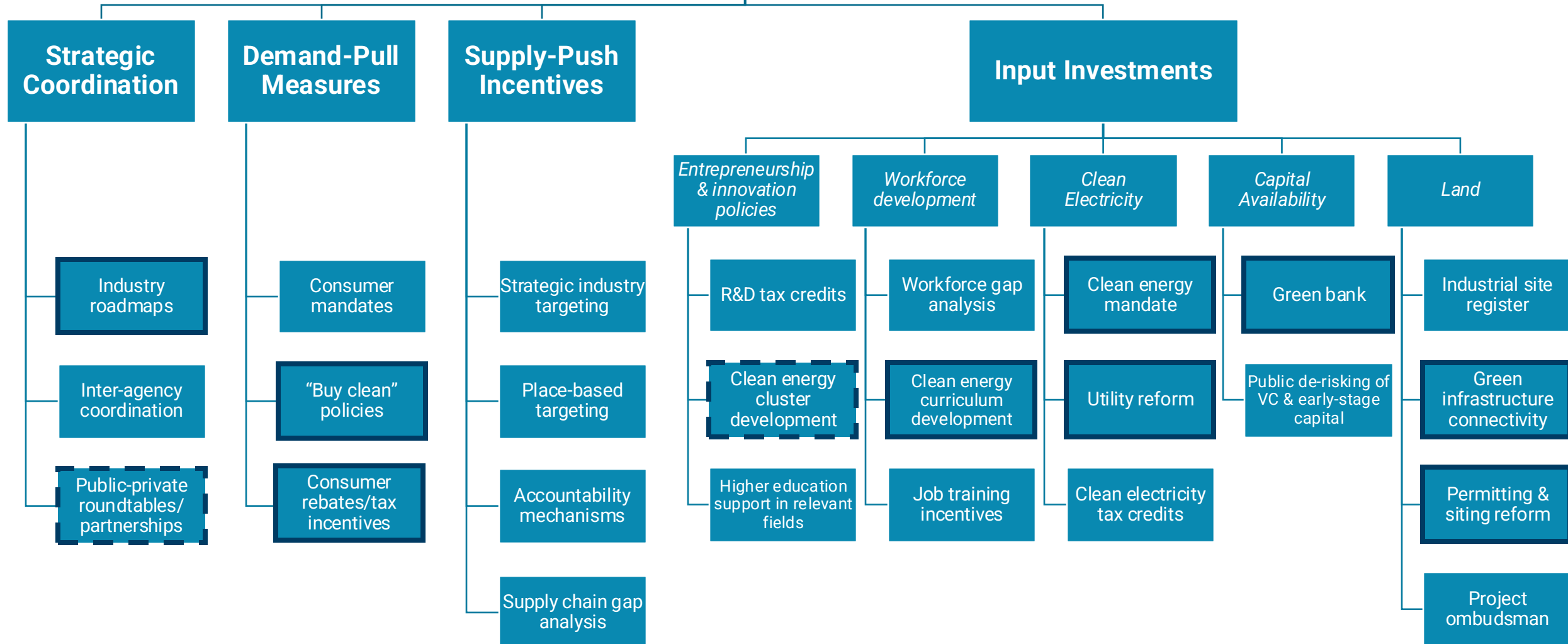
Clean Energy Investment Doesn't Necessarily Follow Climate Policy

Some of the states with the most ambitious climate policies have seen the least clean energy investment since 2018, and vice versa.



Source: Clean Investment Monitor; Climate Xchange

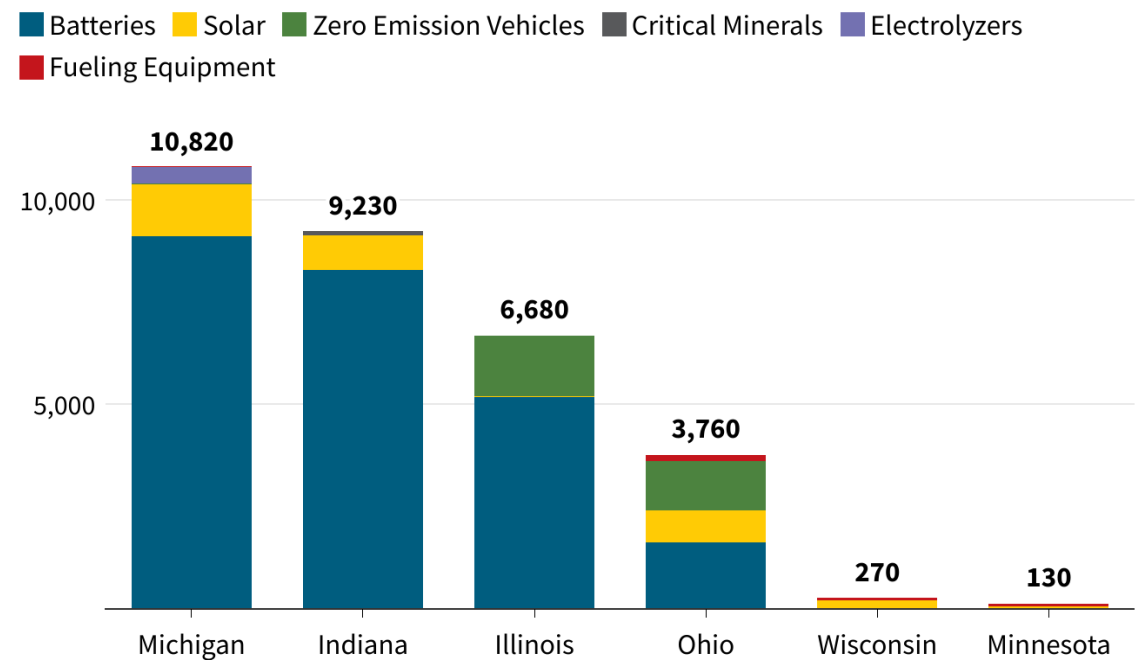
Minnesota has taken limited action to support cleantech-led economic development



The state lags in securing cleantech investments

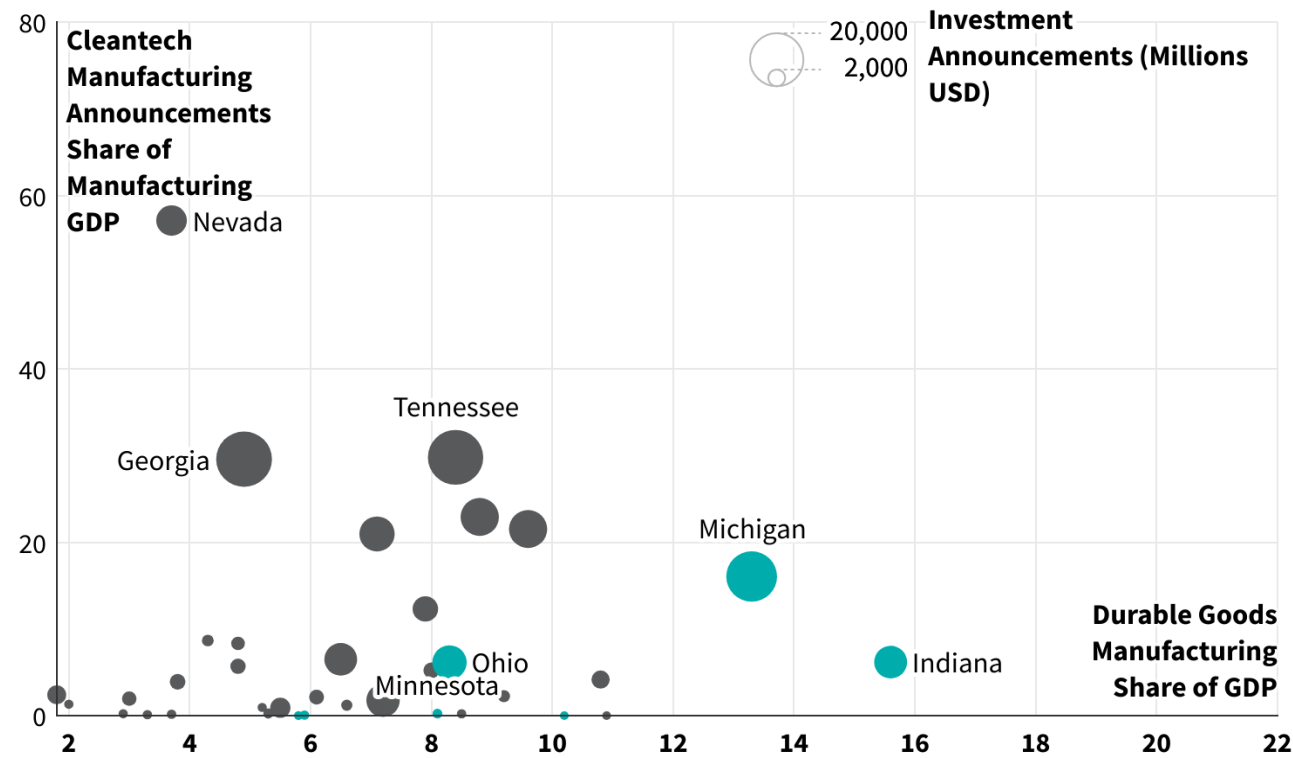
Minnesota has seen the lowest investment in clean energy manufacturing in the Great Lakes region since IRA Passage

Total Facility CAPEX Estimated, Millions 2022 USD



Source: Clean Investment Monitor

Minnesota is underperforming in clean technology manufacturing relative to the size of its broader manufacturing industry

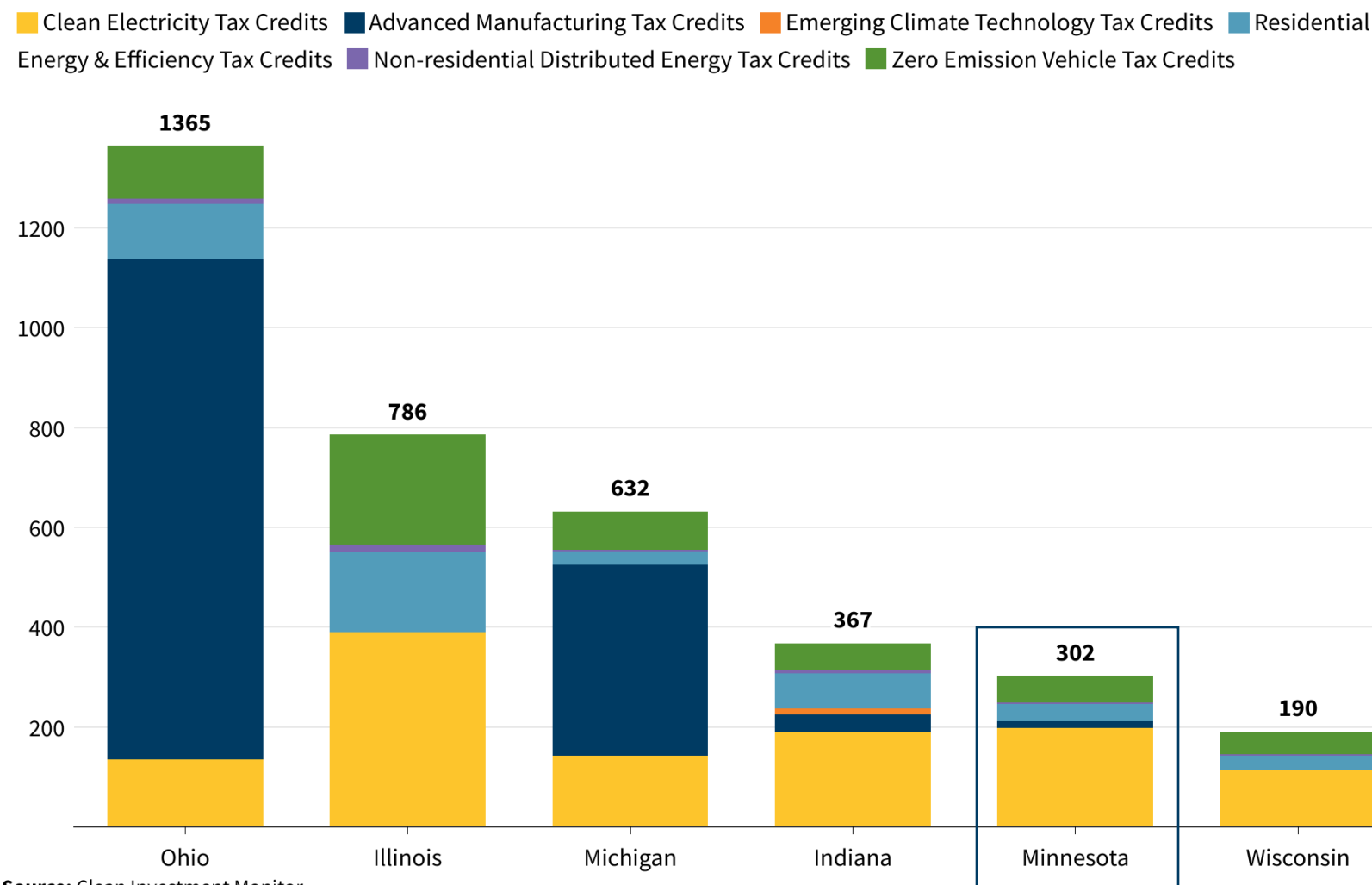


Source: Clean Investment Monitor

Minnesota also lags behind its neighbors in securing IRA tax credits

IRA Tax Credits in the Great Lakes Region

Tax credits in millions 2022 USD. Data through 2024 Q2.



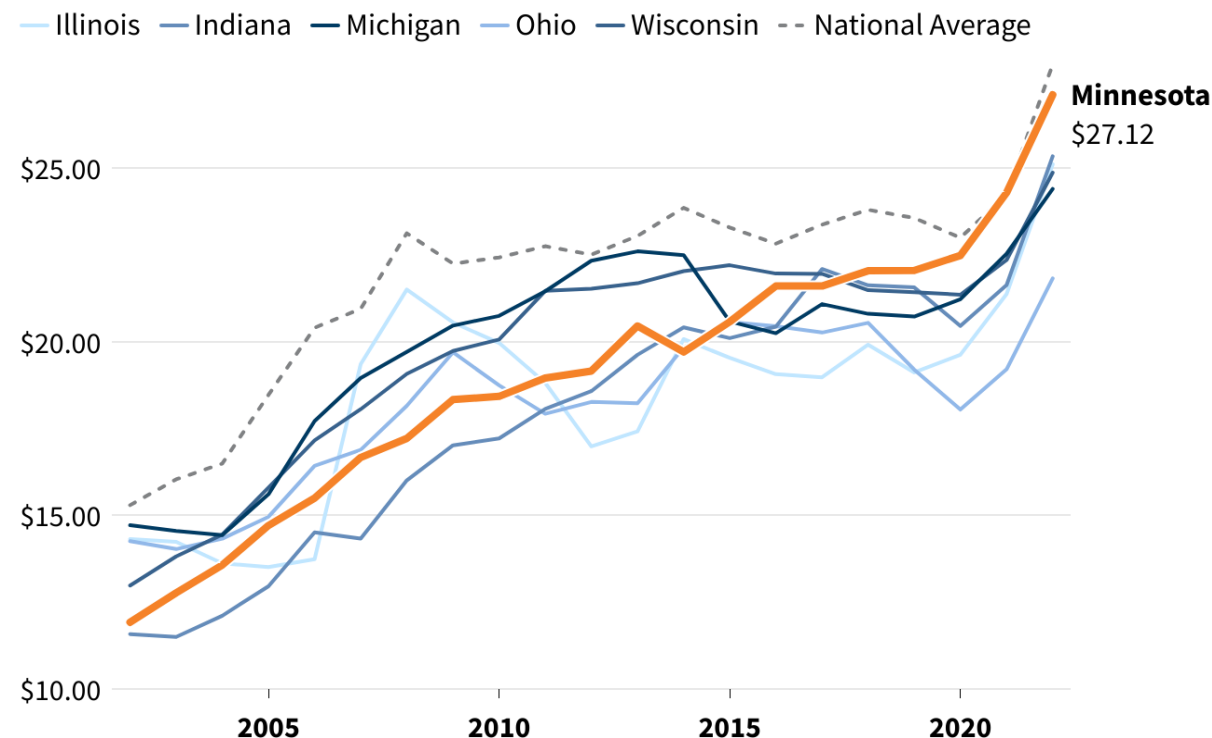
Source: Clean Investment Monitor

Minnesota's high industrial electricity prices hinder the state's competitiveness in attracting major investments

- Prices in MN are 22% higher than the average in other Great Lakes states.
- Cleantech industries increasingly require access to clean electricity.
- Energy-intensive industries including manufacturing across the Iron Range are particularly vulnerable to rising electricity rates.
 - Hibbing Northern Foundry cited high energy costs in its decision to close its plant in 2024.

Industrial Sector Electricity Prices in the Great Lakes since 2002

In 2022 USD per MMBtu



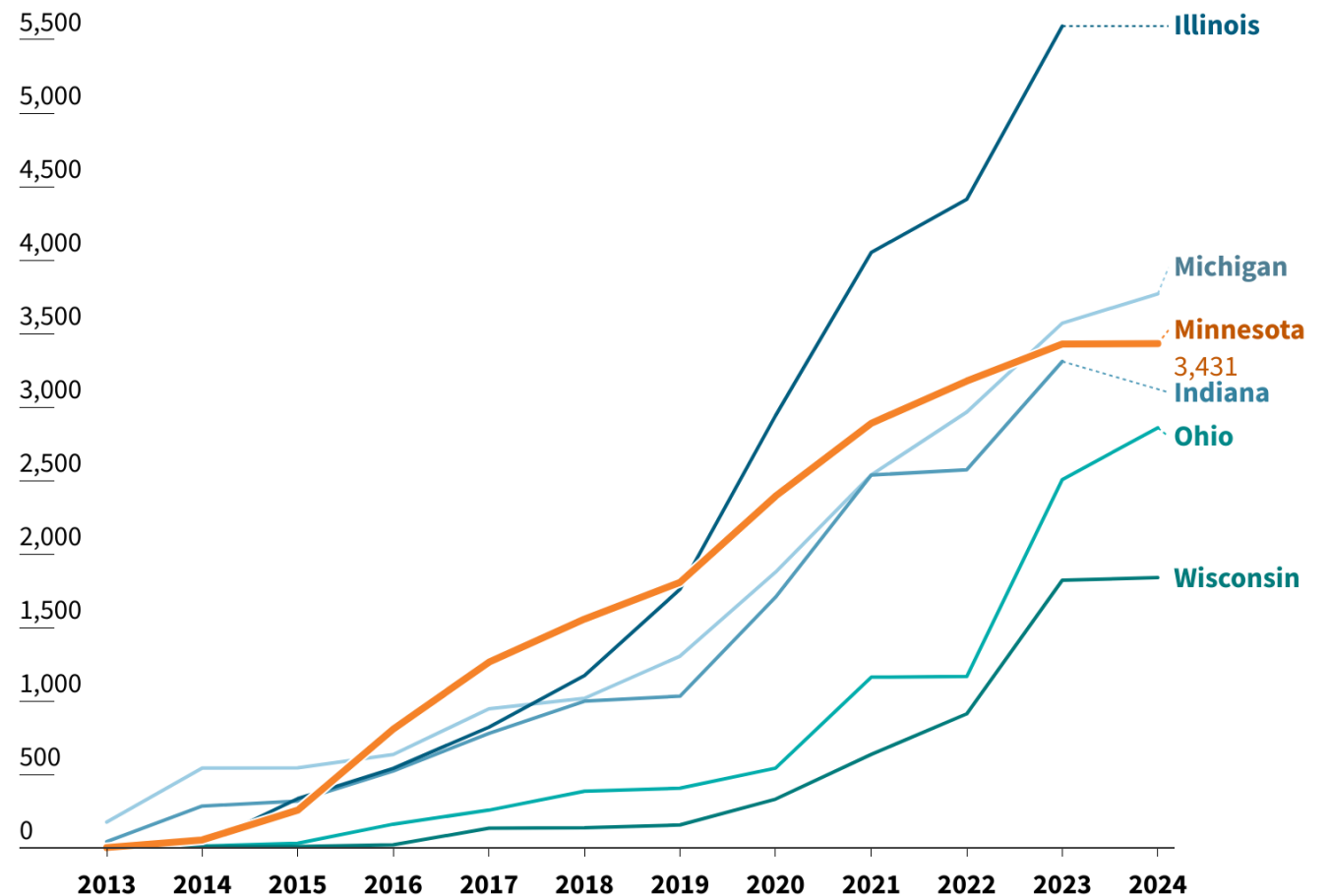
Source: EIA SEDS

Minnesota has barely increased its renewable energy generation capacity since IRA passage

- MN's renewables capacity has grown only 8% since 2022.
- WI's renewables capacity has increased by 25% since 2022, and OH's has more than doubled.
- Renewables support both decarbonization and lower industrial electricity prices.

Minnesota has added more renewable energy capacity than most of the Great Lakes states, but has lagged since IRA passage in 2022

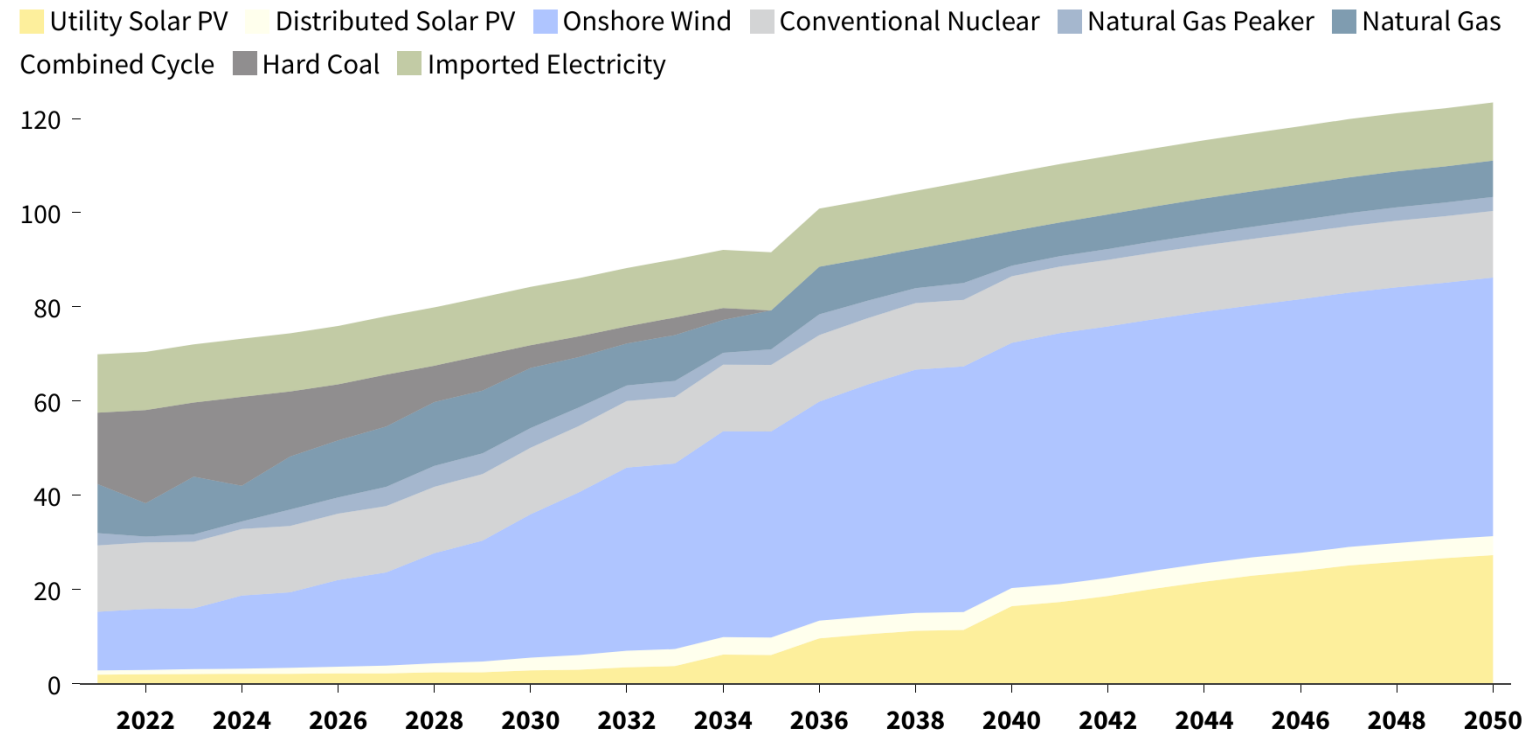
Cumulative Renewable Generation Capacity Additions since 2012, in total Nameplate Capacity (MW)



To meet the requirements of Minnesota’s 100% clean energy law, projections show significant growth in wind generation to power the state’s grid

Minnesota Projected Electricity Generation Through 2050

In terrawatt-hours (TWh) / year. Generation sources that produce under 1 TWh/year are omitted from the chart.



Source: Energy Policy Simulator

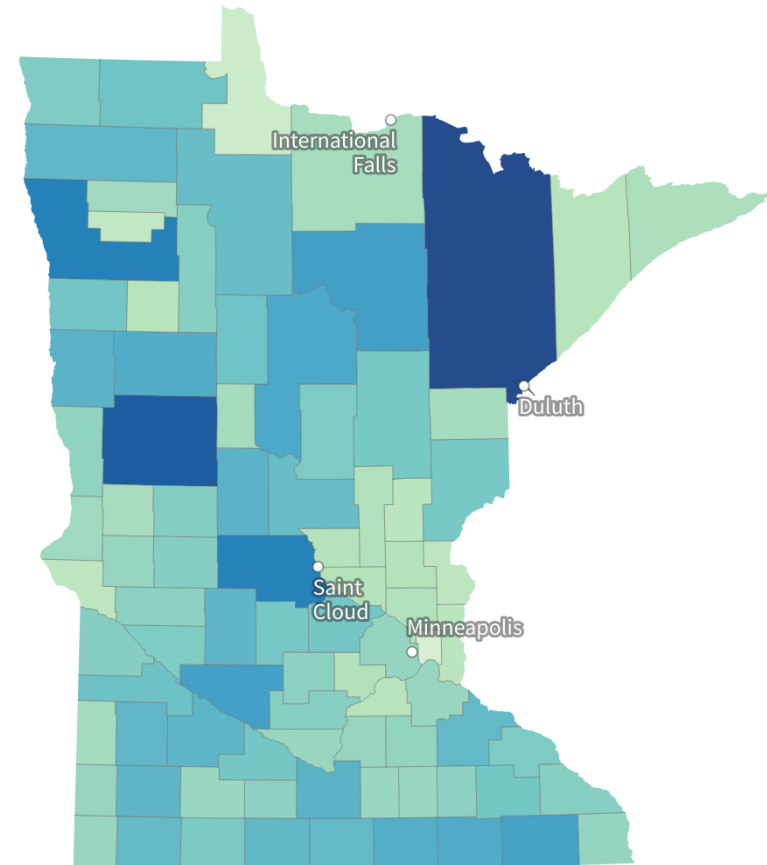
Minnesota has substantial wind generation potential

- In 2023, wind accounted for 25% of Minnesota's total net generation.
- Improved transmission infrastructure and faster interconnection would help the state maximize its wind potential.

Minnesota Technical Wind Generation Potential

Cumulative estimated potential for land-based and distributed wind.

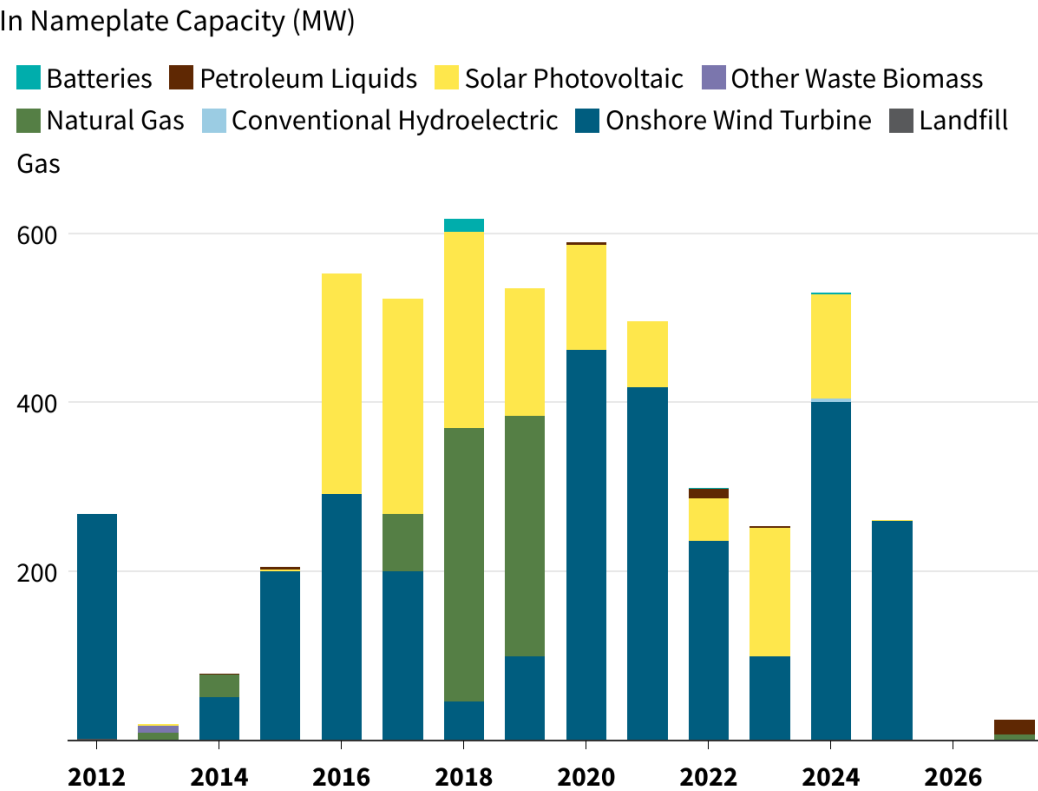
Potential MWh



Source: NREL SLOPE

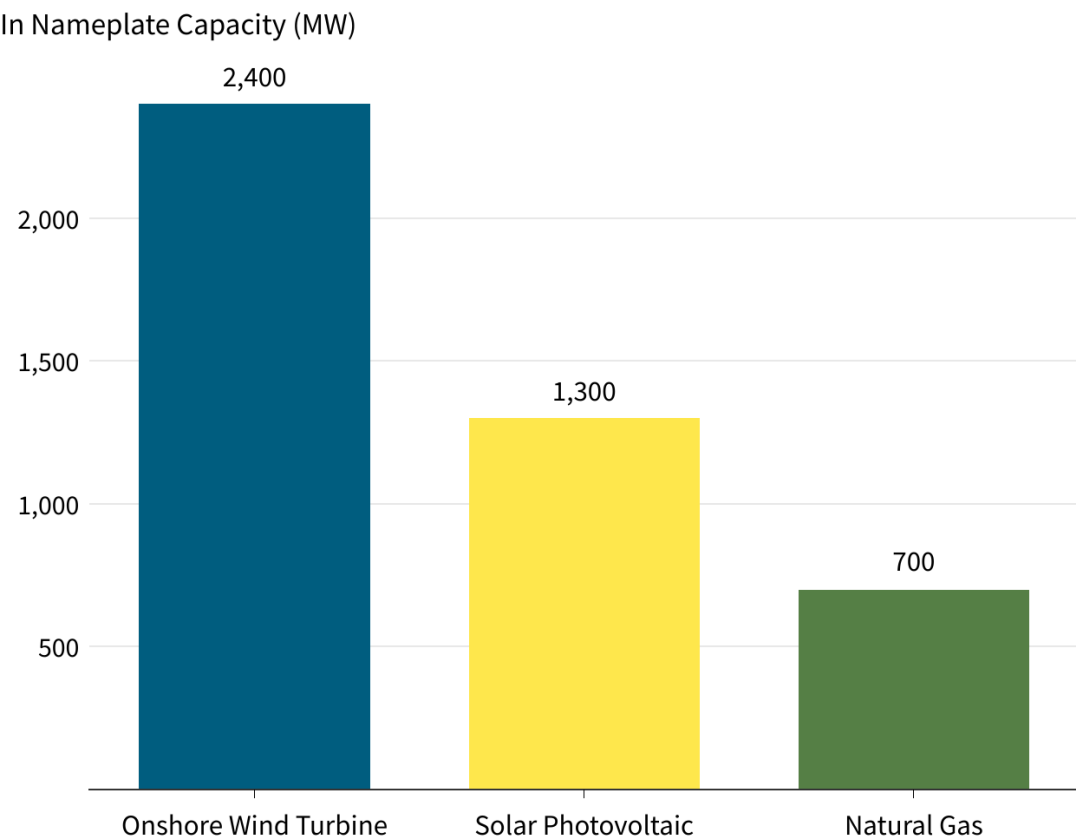
Minnesota's clean energy generation capacity has increased over the past decade

Operating Generation Capacity Additions and Proposed Additions by Technology in Minnesota since 2012



Source: EIA

Top Operating Generation Capacity Additions in Minnesota since 2012



Source: EIA

Siting and permitting affect the speed of bringing new clean energy online

- **MN's 100% clean electricity law simplified the process for siting and building clean energy projects.**
- **MN passed additional legislation that could halve permitting time.**
 - Some large-scale wind projects will no longer require PUC approval.
 - Developers no longer are required to show a clean energy project is a needed part of the energy system nor to study alternative sites and routes.
- **Nationally, inadequate interconnection points and regulatory red tape continue to hamper project development.**
 - The timeline for project development in MN is in line with states with similar regulations. It is typically quicker than NY and CA and slower than TX.

Minnesota has a strong foundational finance landscape

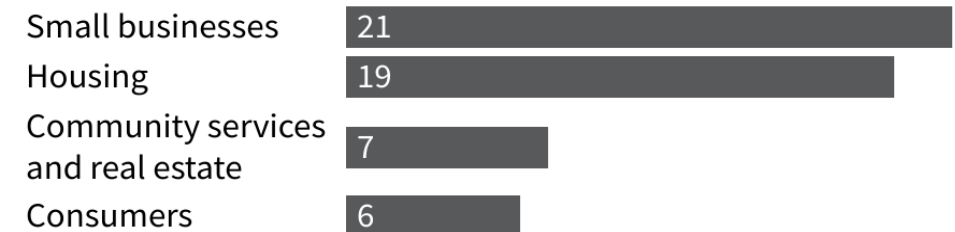
- CDFIs: 33 based in the state
 - 27 loan funds, 4 credit unions, 1 bank, 1 bank holding company
 - + national CDFIs
 - + additional community lenders
- Green bank: MN Climate Innovation Finance Authority (MnCIFA)
 - Large projects
 - State energy financing institution
- Coordination: Minnesota CDFI Coalition, Catalyst Coalition, Initiative Foundations, Minnesota Credit Union Network

Minnesota Certified Community Development Financial Institutions



Source: CDFI Fund • Created with Datawrapper

Minnesota Community Lender Activities



Source: MN CDFI Coalition

Lenders are interested in but largely unfamiliar with green finance

- **Most MN lenders have not engaged in dedicated green finance.**
- **Existing products and services can be adapted for green finance.**
 - Neighborhood Development Alliance home improvement loans
 - Greater Minnesota Financing Fund multifamily predevelopment and construction loans
 - Indian Land Capital Company sawmill efficiency loan
 - Sunrise Banks dedicated green products for renewables, buildings, vehicles

Minnesota's clean energy workforce lags in a challenging labor market

Strengths

- **Key ingredients:**
 - State clean energy workforce grant programs
 - Clean energy workforce training programs
 - Cleantech startup accelerator
- **Clean energy jobs grew 4% in 2023 – 5x faster than overall.**
- **Job seekers are interested in well-paying clean energy jobs.**

Challenges

- **Uneven coordination on workforce training and alignment with clean energy opportunities**
- **Slower clean energy job growth than national average**
- **Challenging overall labor market**
- **Less interest among young people in some jobs**



Regional Economic Competitiveness Opportunities

Competitiveness Key Messages



Minnesota's workforce has the skills needed across the power sector, buildings, and manufacturing to support the energy transition nationally and statewide.



Minnesota has a comparative advantage in manufacturing products like low-carbon metals, heat exchangers, and solar components and in generating solar power.



IRA tax credits are one driver of recent solar manufacturing investments in the state.

Understanding economic competitiveness: High feasibility, high complexity industries are more likely to attract investment and create good jobs

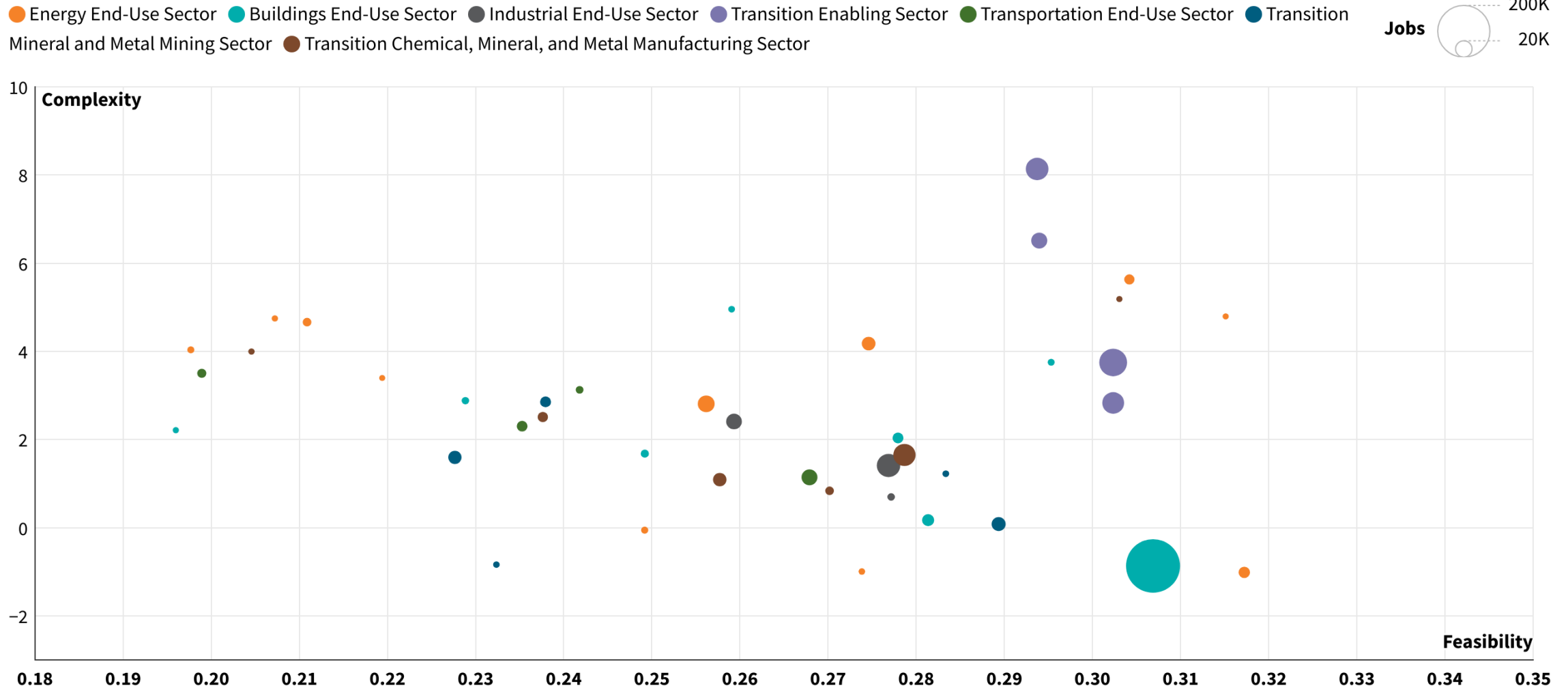
Definitions of terms used:

- Feasibility is a measure of how related an industry is to all the high-concentration industries in a region, in terms of those industries' shared productive capabilities. Feasibility can be used to predict which industries are more likely to appear in a region — or grow faster than the average — in terms of employment or output.
- Complexity is a metric that describes industries' capability requirements, based on the industry's ubiquity and whether it is present in cities with a diverse composition of other industries. As higher complexity industries start to succeed in a city, the city's overall economic complexity increases, leading to more innovation and economic growth.
- Good jobs are those paying at least the local median annual earnings for full-time workers while providing employer-sponsored health insurance (a proxy for other types of employment benefits).

Feasibility and complexity, illustrated

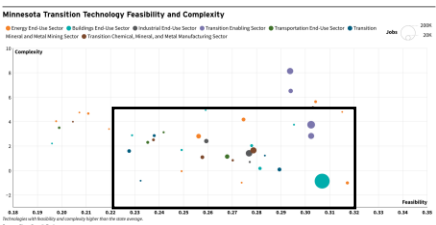
The following slides describe portions of this chart, which shows technologies associated with the energy transition.

Minnesota Transition Technology Feasibility and Complexity



Technologies with feasibility and complexity higher than the state average.

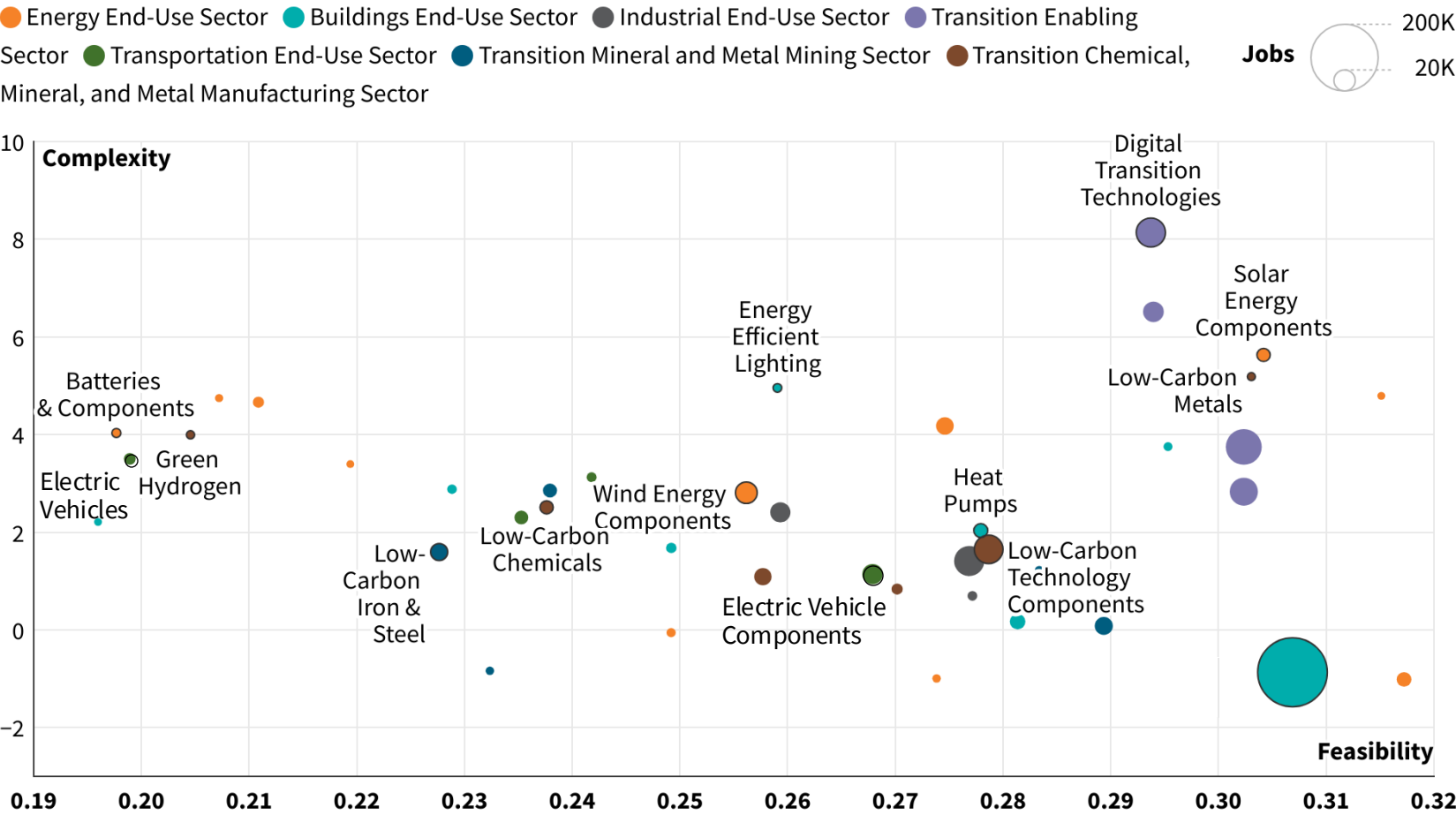
Buildings and energy sector skills drive job growth and help the state meet its clean energy goals.



Source: Clean Growth Tool

Minnesota has workforce skills needed to support the energy transition nationally and statewide

Existing manufacturing skills support local development and meet nationwide demand.

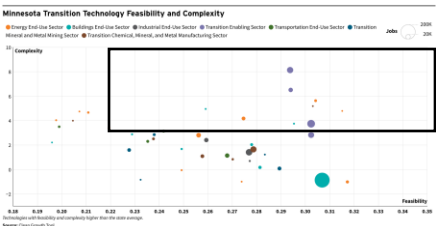
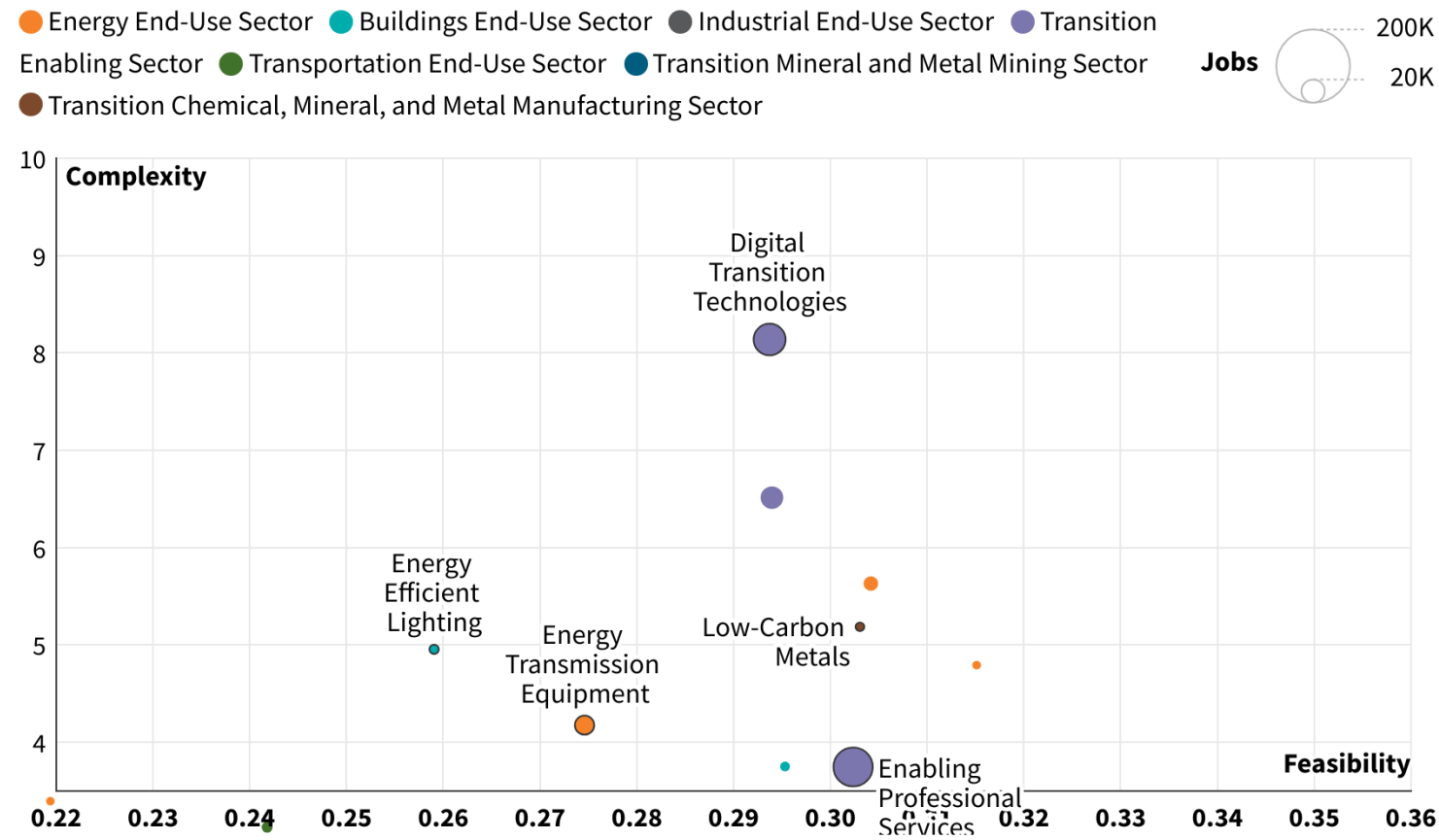


Technologies with feasibility and complexity higher than the state average.

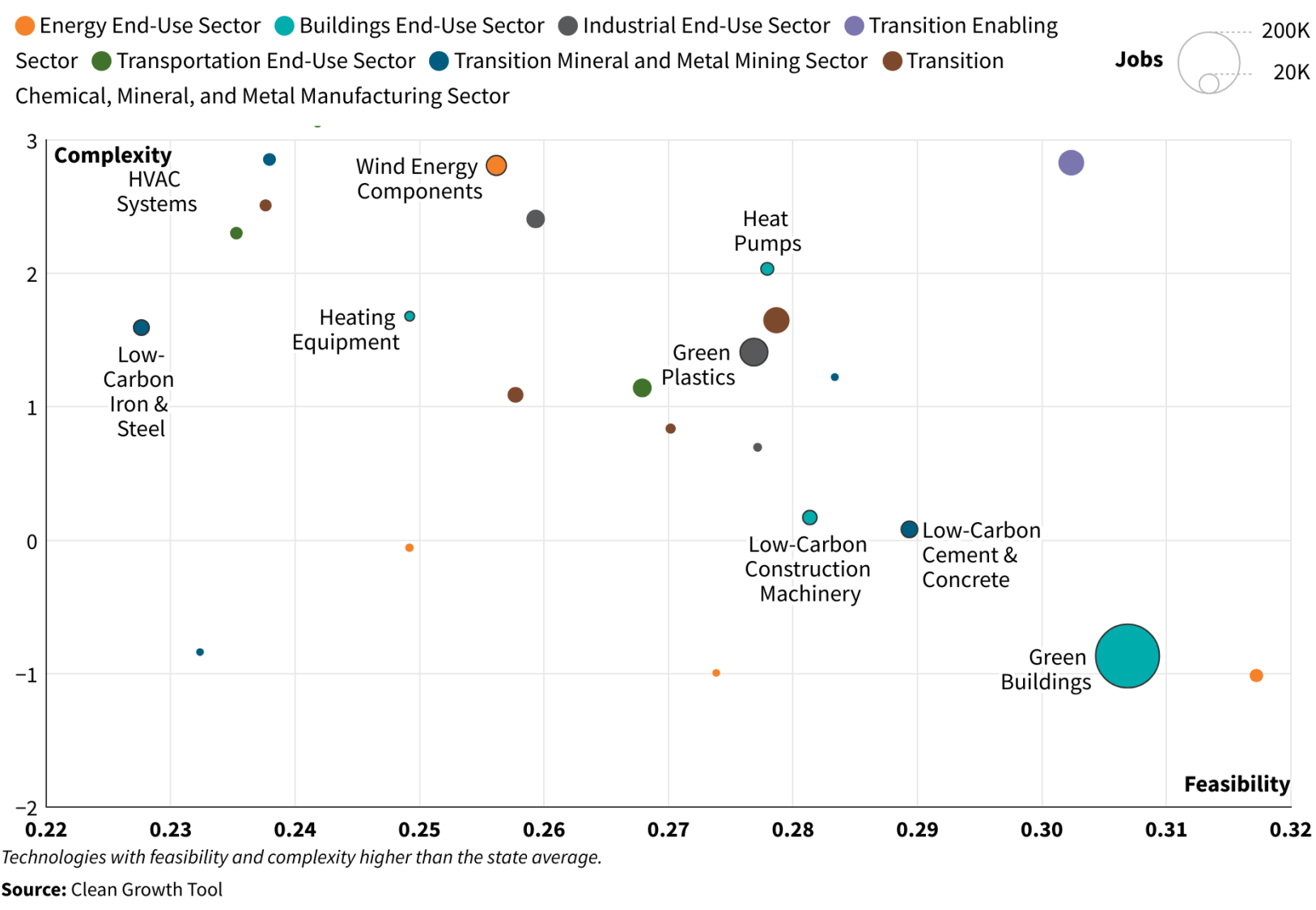
Source: Clean Growth Tool

Minnesota has workforce skills needed to support the energy transition nationally and statewide

The existing science and technology workforce and opportunities in low-carbon metals can help attract high-complexity industries that drive innovation and economic growth.



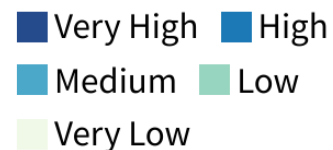
Manufacturing + energy + buildings = supply chain opportunity?



Minnesota is better positioned than many states to attract investments in key technologies

Transition Technologies by Minnesota Feasibility Percentile

Numbers are feasibility percentile for Minnesota compared to other states.

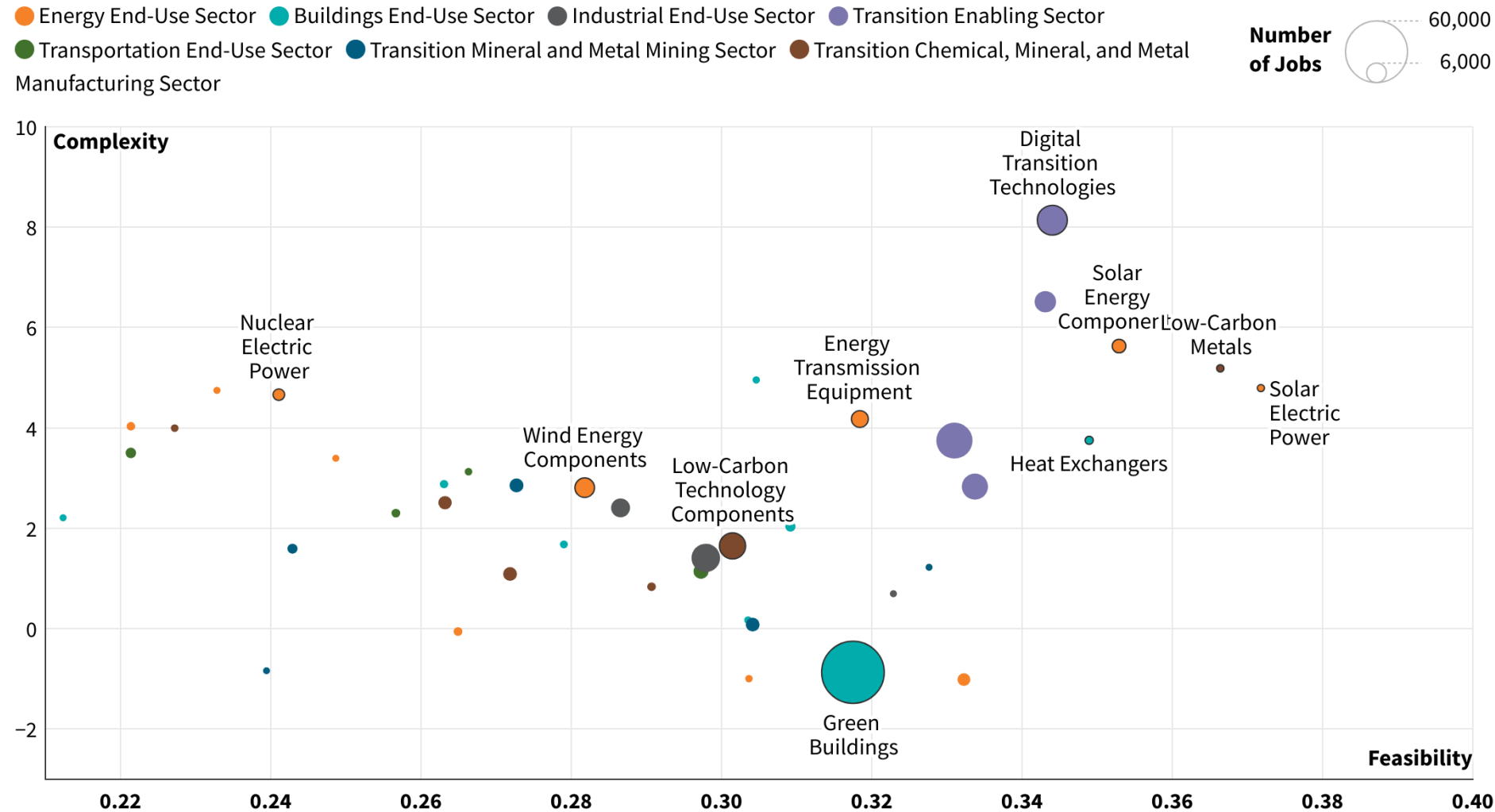


Energy Transition Technology	Feasibility Percentile
Low-Carbon Metal Manufacturing	94
Heat Exchanger Manufacturing	92
Solar Electric Power Generation	90
Solar Energy Component Manufacturing	86
Low-Carbon Mining Equipment Manufacturing	86
Electric Industrial Vehicle Manufacturing	73
Digital Transition Technologies Manufacturing	71
Energy Transmission Equipment Manufacturing	69
Digital Transition Services	69
Research & Development Services	69

Source: Clean Growth Tool, Brookings Institution

Shared strengths between Greater Minnesota and the Twin Cities present coordination opportunities to attract investment and support transition sectors, especially for energy end-use sectors

Twin Cities MSA Transition Technology Feasibility and Complexity



Comparative advantage in solar and wind + IRA tax credits = new investments

Heliene, Premier Energies to build joint Minnesota solar plant

The upcoming facility aims to meet growing demand for solar modules and projects due to Inflation Reduction Act tax credits.

Published Aug. 19, 2024



200 jobs

1 GW silicon cells/year

Minnesota's biggest solar project will help replace a huge coal plant

Xcel Energy's 710-megawatt Sherco solar facility will create union jobs in a coal community, pilot long-duration storage tech, and advance the state's climate goals.

1 May 2024



5th largest solar project in the nation



Regional Constraints

Constraints Key Messages



Minnesota lacks a coherent clean energy economic development strategy and the full suite of targeted industry policies and incentives to encourage economic development and manufacturing.



Individual workforce development efforts are successful but not aligned with clean energy and cleantech opportunities.



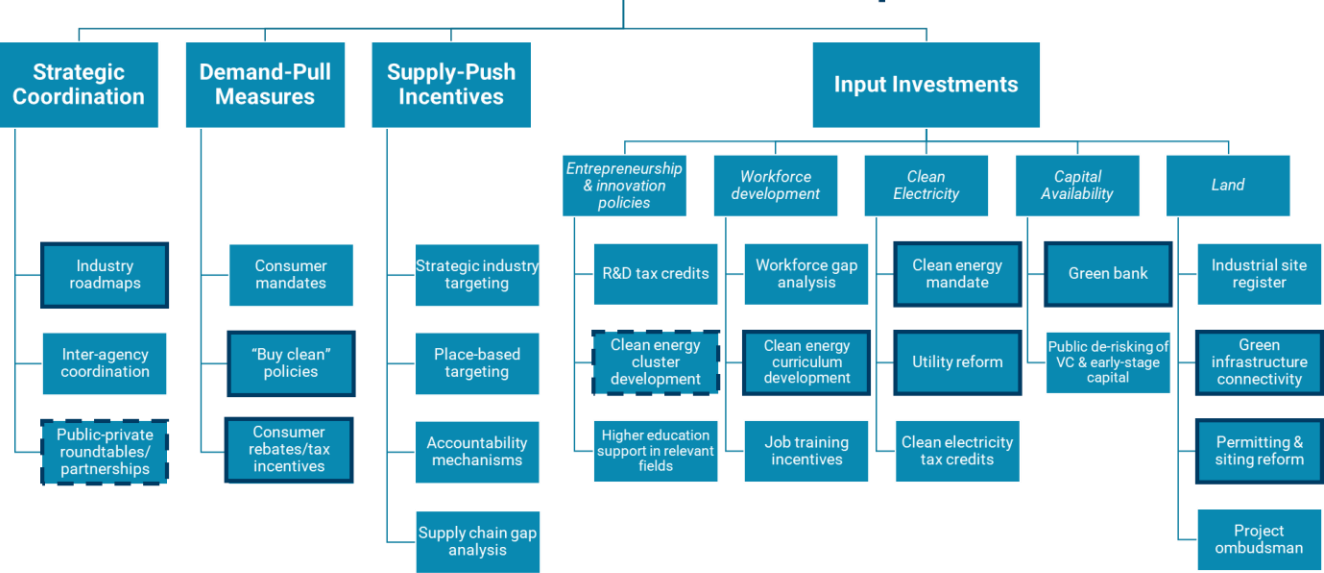
CDFIs are new to green finance and have limited capital and capacity; GGRF awardees are looking for experience.



Red tape, siloing, and local opposition slow clean energy and cleantech deployment.

Climate-aligned goals lack the sectoral policies for effective implementation

Minnesota has taken limited action to support cleantech-led economic development



Renewables Ready Communities Program

Renewables Ready Communities Strategic Plan

Brownfield Renewable Energy Pilot

Siting and permitting TA

Workforce development

Clean energy laws

Discrete workforce development efforts miss opportunities

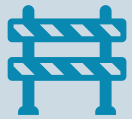
- Individual clean energy and manufacturing workforce efforts aren't oriented to competitiveness opportunities.
- Workforce development efforts need to connect actors across education, training, and job placement.
- Limited supportive services (e.g., housing, childcare, transportation) constrain enrollment in workforce training in Greater Minnesota. Housing remains a constraint in the Twin Cities region.

Positive examples:

- Xcel Energy Power Up Program
- Illinois Solar Training Pipeline Program

Limited capital and capacity hinder green finance

Universal challenges are still challenges.



Some CDFIs and customers feel that money doesn't get to the people who need it most or who are closely connected with implementation.

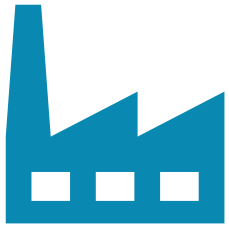


Without a clear template, CDFIs don't know where to start on green finance.

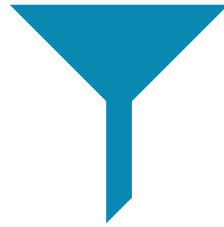


Clean Communities Investment Accelerator (CCIA) awardees may prioritize CDFIs with green finance experience.

More universal challenges: Red tape, siloing, and local opposition slow deployment



Siting and permitting



Siloed actors



**Limited understanding of
local project impacts**



Regional Coordination Opportunities and Needs

Coordination Key Messages



Minnesota has a strong stakeholder ecosystem without major gaps.



Similar organizations work together, but different types of organizations are siloed.



Existing connectors and coalitions could help break down silos.



Coordination will be essential to securing investment to scale cleantech and clean energy deployment.

Minnesota has a comprehensive stakeholder ecosystem

Similar organizations coordinate relatively well.



Improved coordination can build on existing efforts

Leverage connectors and coalitions to break down silos.

Established

- Department of Employment and Economic Development
- Department of Labor and Industry
- Department of Commerce
- Minnesota Training Partnership
- BlueGreen Alliance
- Catalyst Coalition
- Minnesota Community Energy Network
- Grid Catalyst

See also: Minnesota Medical Alley

Nascent

- Minnesota CDFI Coalition
- Minnesota Climate Innovation Finance Authority
- Minnesota Energy Alley
- Power Up Program

See also: Groundbreak Coalition

Opportunities

- MnCIFA could provide balance sheet capital to MN CDFIs for climate-aligned investments or as GGRF co-finance.
- Catalyst Coalition and MN CDFI Coalition could partner on GGRF capacity building and training for MN CDFIs.
- DEED and DLI could work with grant recipients and employers to ensure job placement.



A Closer Look at Three Opportunities for Greater Minnesota and the Twin Cities



Focus Area 1 Green Steel Manufacturing



What is green steel?

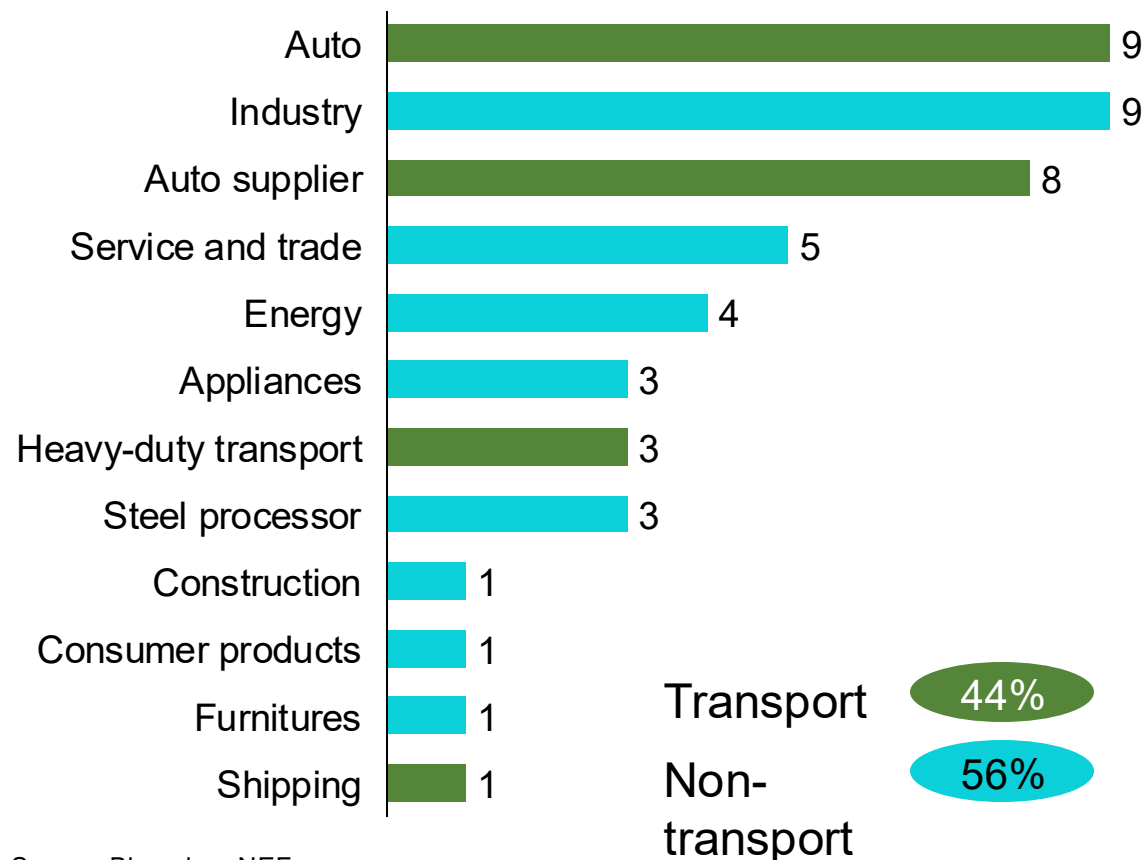
- Steel production contributes to ~8% of global greenhouse gas emissions.
- Green steel refers to the production of steel with zero carbon emissions.
- The primary production method we will focus on is **hydrogen-based reduction** (H2-DRI), which replaces coal with hydrogen.
 - Federal incentive programs and tax credits can make H2-DRI competitive with incumbent production methods.
- Global demand for green steel products is being driven by the automotive industry with green product premiums reaching 20%–30% above traditional market value.

Demand for primary green steel is growing, with buyers – led by the auto industry – signing offtake agreements with producers

Green secondary steel is also becoming available in the market with EAF producers procuring or generating renewable electricity. That said, offtake and demand for primary green steel remains essential to meet global climate goals.

Tracked supply agreements for green steel

Count of supply agreements



Source: [BloombergNEF](#)



SSAB

Deal of undisclosed amount to supply SSAB fossil-free steel that started at a “small scale” in 2022 with Volvo’s heavy-duty electric trucks



H2green steel

Following an equity investment, deal to supply 50,000 metric tons of “almost carbon-free steel” per year for European production



H2green steel

\$1.6B deal with auto supplier ZF Friedrichshafen AG to cover a “significant share” of 2.5-million-ton annual steel demand

Minnesota is well positioned to produce near-zero-emissions steel

Available skilled labor force

- Current tight labor market in the US and the Great Lakes region requires acute targeting and funded training/apprenticeship programs.

Demand centers for offtake

- The Great Lakes region continues to invest in manufacturing sectors that require large steel volumes (automotive, clean energy, etc.).

Logistics

- Minnesota has ample heavy material transport methods via waterway, roadway, or rail already used for transporting ore.

Clean energy

- Ambitious clean energy generation targets paired with streamlined siting policy and regulation indicate that MN can support the development of industrial clean hydrogen production faster than most states.

Iron ore

- Home of the Iron Range, MN is better positioned than any other state to supply green steel assets with direct reduction (DR) pellets.
- USS and Cleveland-Cliffs have invested \$100M or more to develop DR-pellet capacity already.
- Mesabi Metallics and MagIron are developing projects that intend to considerably expand MN's DR-pellet production capacity.

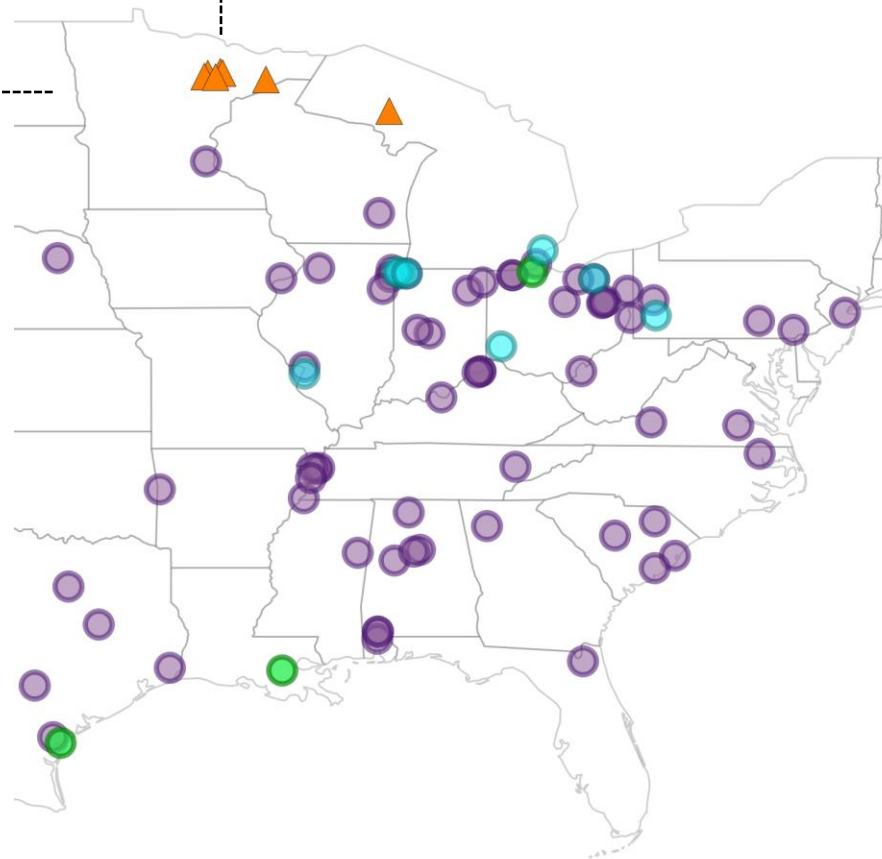
Clean steel announcements, trials, and investments abound across the US iron and steel supply chain, including in Minnesota's Iron Range



Cleveland-Cliffs (2019) and US Steel (2023) both made investments to upgrade equipment to produce DR-grade pellets from iron ore sources in MN

(2023) Coalition of northern MN partners awarded multimillion dollar grant from Clean Energy to Communities Program (DOE) to pursue green hydrogen production and subsequent green iron production.

- ▲ Iron ore mine
- DRI
- EAF
- BF-BOF



Minnesota is working to create a policy-enabling environment for green steel and hydrogen production

- Minnesota’s Buy Clean program prioritizes the purchase of steel with low-embodied carbon.
- Executive Order 22-22 will support project development by assessing the state’s regulatory preparedness for hydrogen.

Green Steel Policy Gap Analysis in the Great Lakes

Despite being home to some of the mos valuable steelmaking in the country, most Great Lakes states lack a coordinated industrial strategy to support the technological transition to a sustainable steel industry.

Domains	Example Policy Instruments	Federal	MN	WI	MI	IN	IL	OH	PA
Strategic Coordination	Technology Roadmaps								
Production Instruments	R&D/Jobs/Production Tax Credits								
Demand-Pull	Public Procurement/Product Standards								
Inputs	Hydrogen support								
	Clean Electricity								
	CCS support								
	Land availability								
	Workforce development								

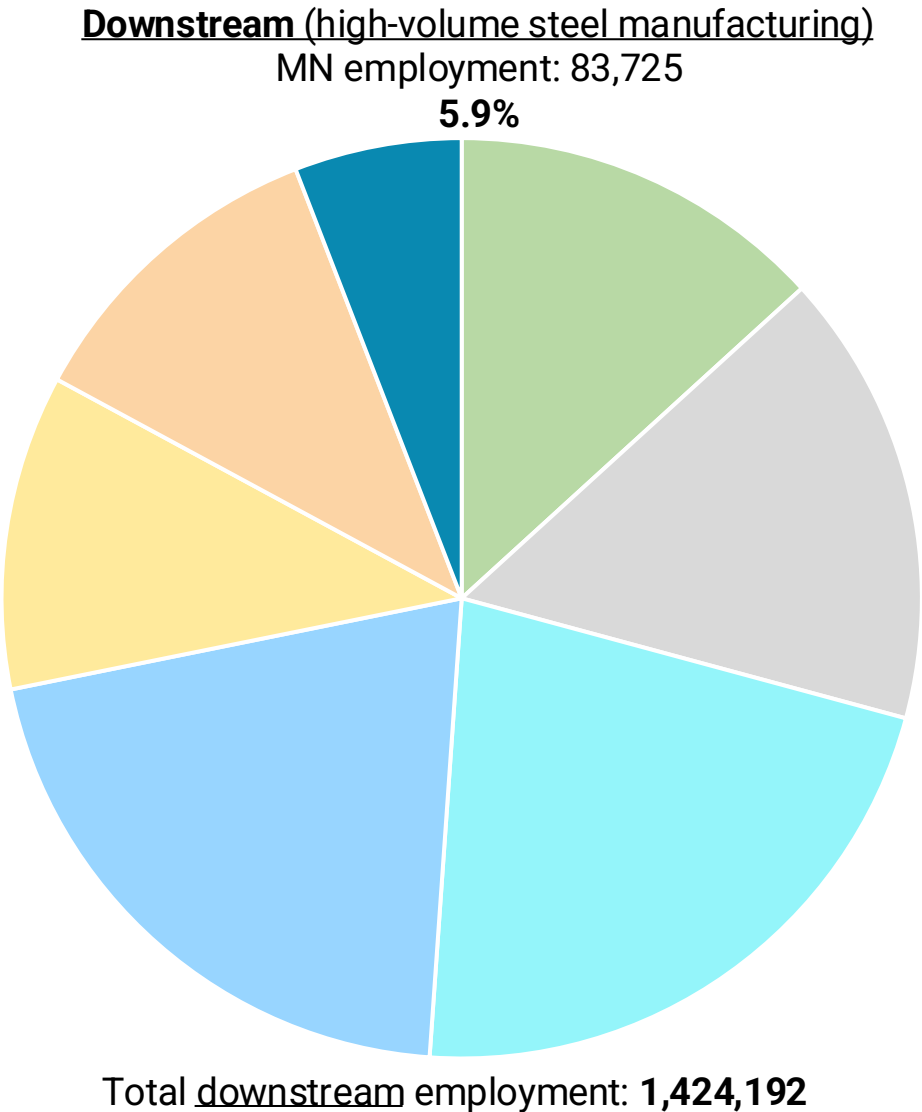
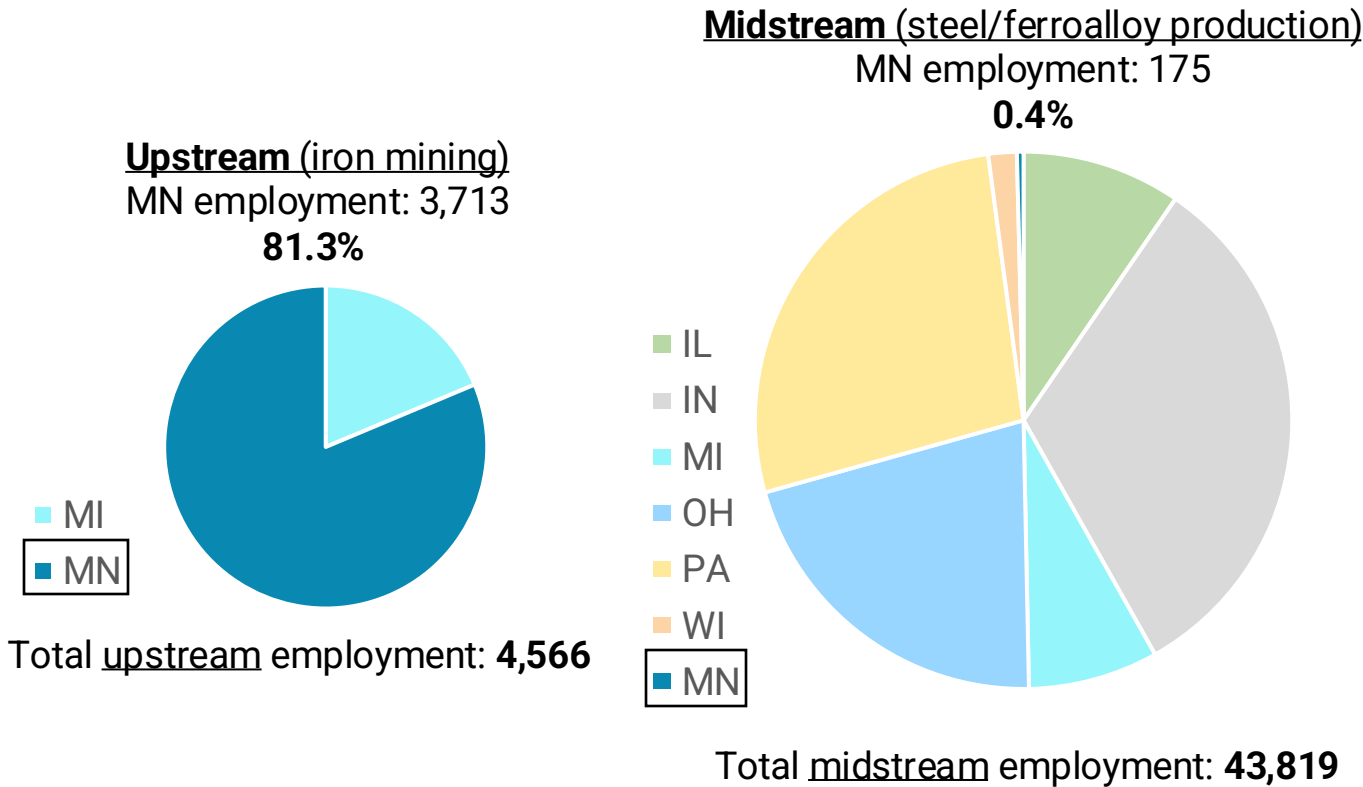
Weak

Moderate

Strong

MN can move down the steel value chain and drastically increase employment density in the sector

- **MN** has the **smallest share of employment in midstream and downstream** steel sectors compared to other Great Lakes states.
- **Midstream activities employ 10x** more people than upstream processes
- **Downstream activates employ 300x more** than upstream processes



Employment totals apply to Great Lakes states: PA, OH, WI, MI, MN, IL, and IN. Employment figures are based on NAICS classification. Upstream includes Iron ore mining (212210); midstream includes iron and steel mills and ferroalloy manufacturing (3311); downstream includes machinery manufacturing (333), transportation equipment manufacturing (336), steel production manufacturing from purchased steel (3312), and household appliance manufacturing (3352).

Transition Challenges

- Scaling green steel will require significant increases in renewable generation capacity and transmission reform to improve interconnection timelines and provide the necessary infrastructure to accommodate increased loads.
 - Sourcing clean energy compatible with 45V tax credit guidance will be critical for developing green steel production.
- New financing mechanisms and technological advancements are needed to expand carbon capture technology.

Minnesota can begin taking steps to make green steel an attractive industry in the state

- Identify brownfield or suitable industrial zoned sites viable for hydrogen production and DRI development.
- Work with local utilities and electrical grid stakeholders to start planning for large load introduction, and sourcing of 45V eligible renewable energy sources.
- Establish regulatory processes to manage hydrogen production, storage, transmission and use in the state.
- Connect with community stakeholders across the Iron Range to hear local development perspectives and coordinate co-benefits.
- Develop workforce training opportunities to retrain and equip existing workers with the necessary skills for the green steel value chain.



Focus Area 2

Clean Repowering and Transmission

Minnesota Clean Repowering Key Messages

What is clean repowering?

Clean repowering allows new clean energy to use existing points of interconnection, **reducing interconnection times from 5 years to <1 year.**

Why is important?

Clean repowering offers a way to build new clean energy to **address load growth while avoiding significant interconnection delays and transmission congestion.**

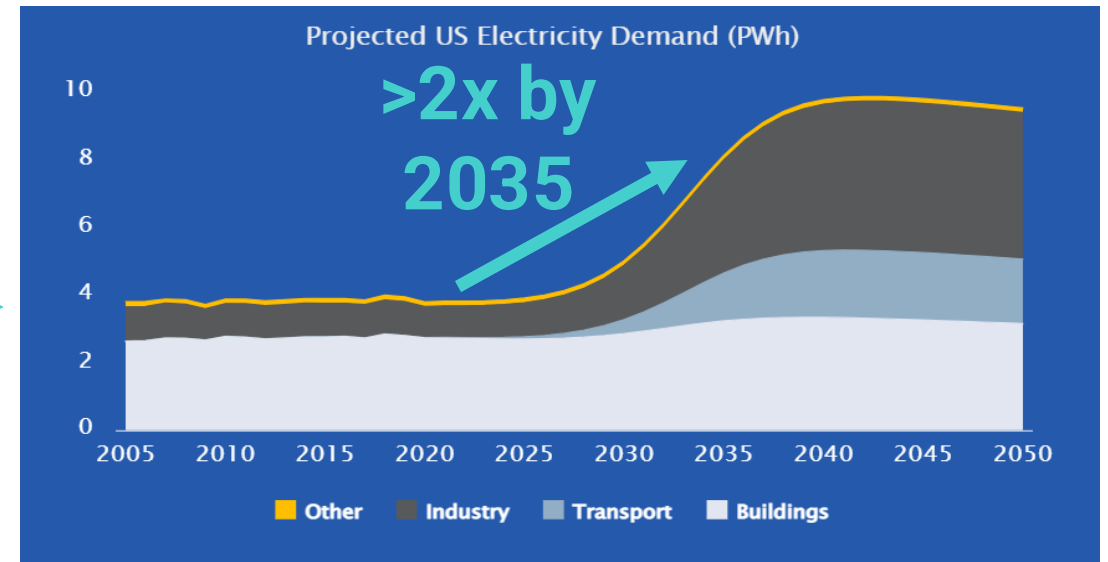
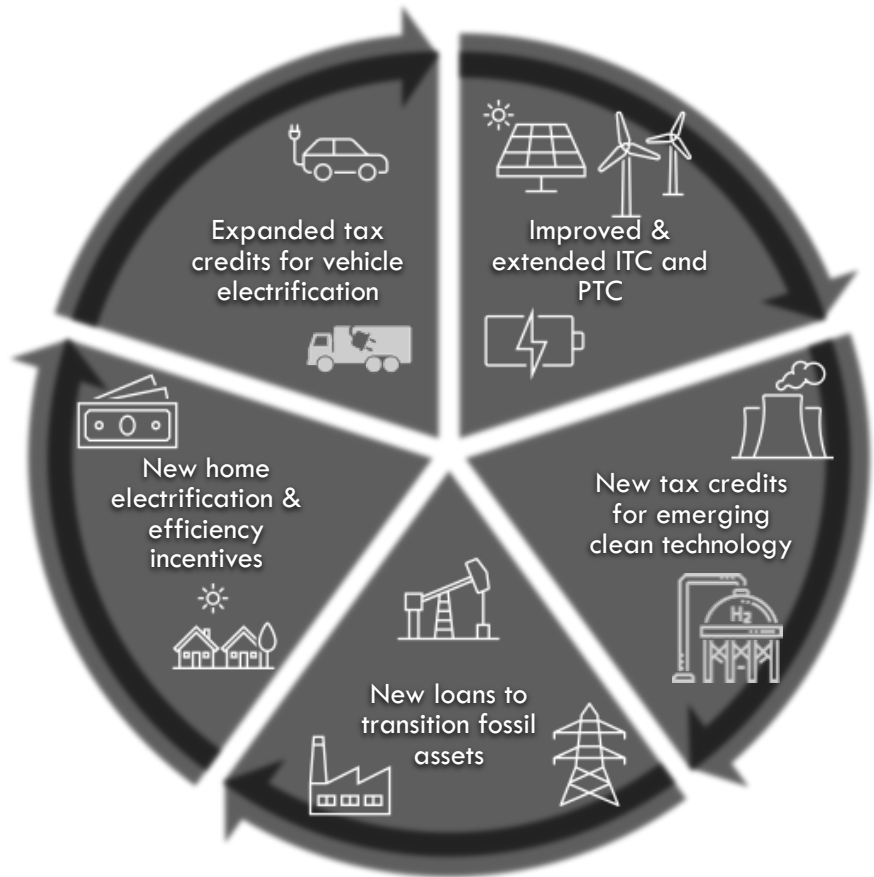
How could Minnesota benefit?

Clean repowering is an opportunity to deploy **3.7 GW of clean energy** in Minnesota and save customers **\$63 million** each year.

What are the risks of forgoing clean repowering?

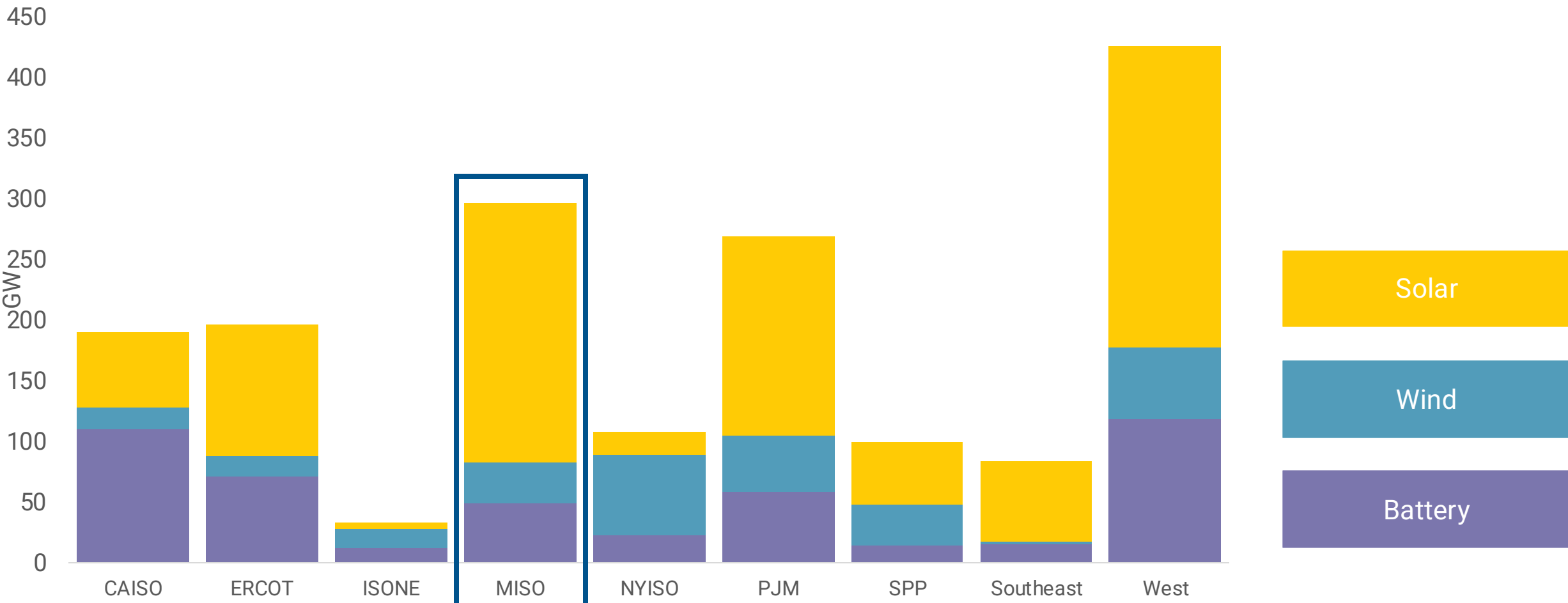
Between Minnesota requiring **100% clean electricity by 2040** and EPA regulations **requiring CCS** on new high-capacity factor gas plants, a rush to gas could prove costly for ratepayers when clean alternatives are available.

Electrification and clean manufacturing incentivized by the Inflation Reduction Act, as well as new datacenters, are driving significant load growth



Demand projection for 1.5°C-aligned scenario

But US interconnection queues now have over 1.3 TW of renewables and storage with 3–5 years of wait time – a key barrier to 1.5°C alignment

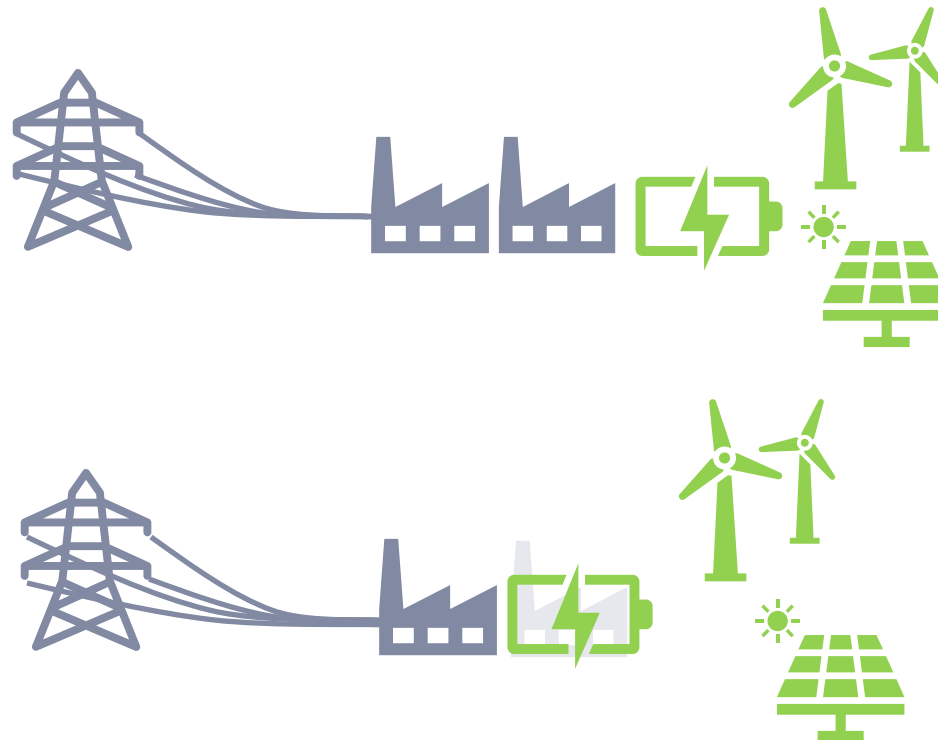


Clean repowering leverages two IRA incentives to deploy clean energy using existing fossil plants' interconnections, accelerating interconnection of cost-competitive clean energy

Regional interconnection rules include two cases that allow for a more streamlined process.

Surplus interconnection service: adding new generation at the site of an **existing** plant that would continue operating

Generator replacement: adding new generation at the site of a **retiring** unit or plant

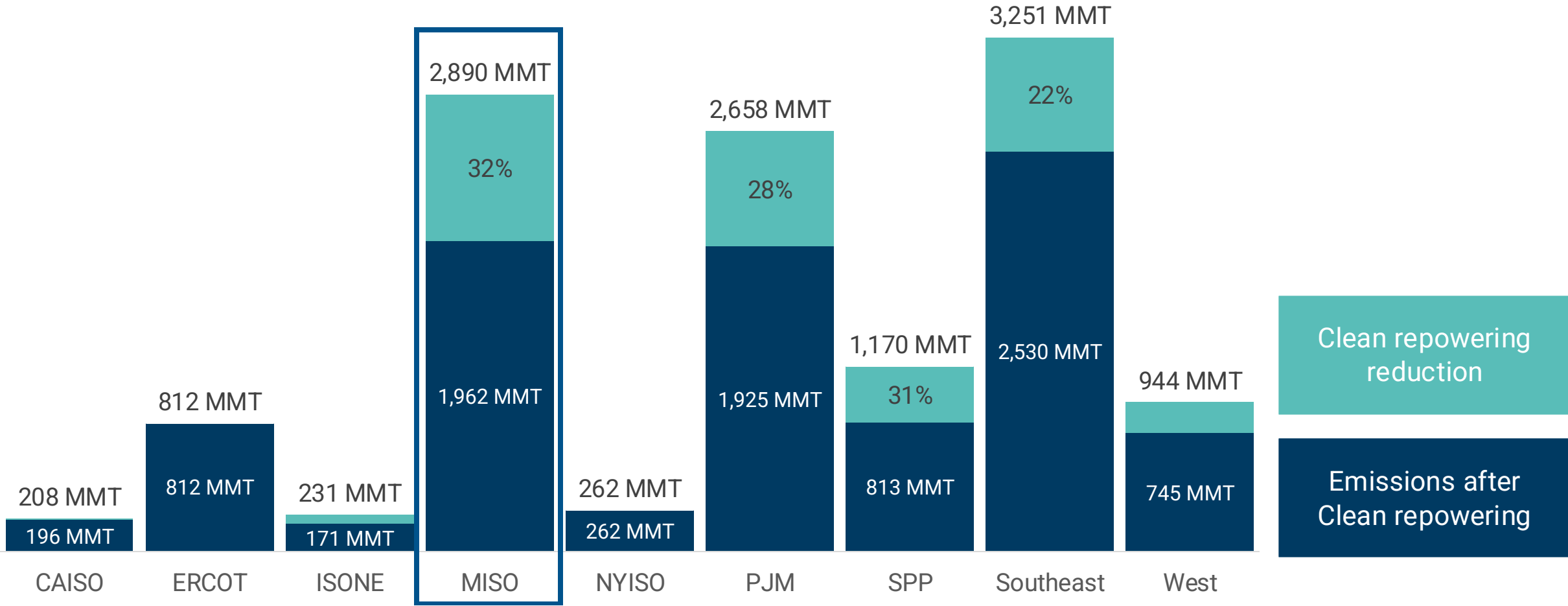


Two key IRA incentives improve the economics

Energy community tax credit bonuses:
+10% on ITC or PTC

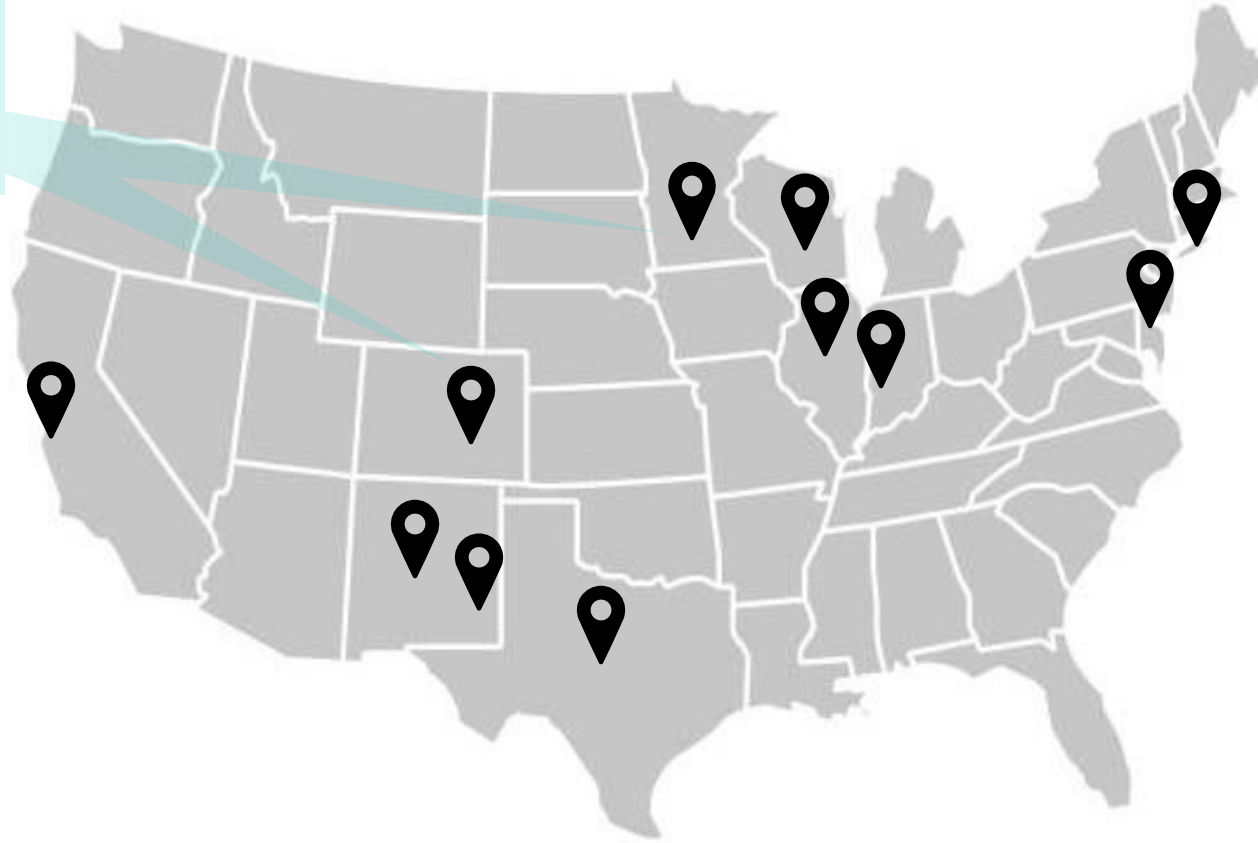
DOE Energy Infrastructure Reinvestment (EIR) Loans: up to \$250B

Clean repowering could reduce US electricity emissions by 25% through 2035 – and MISO emissions by 33%



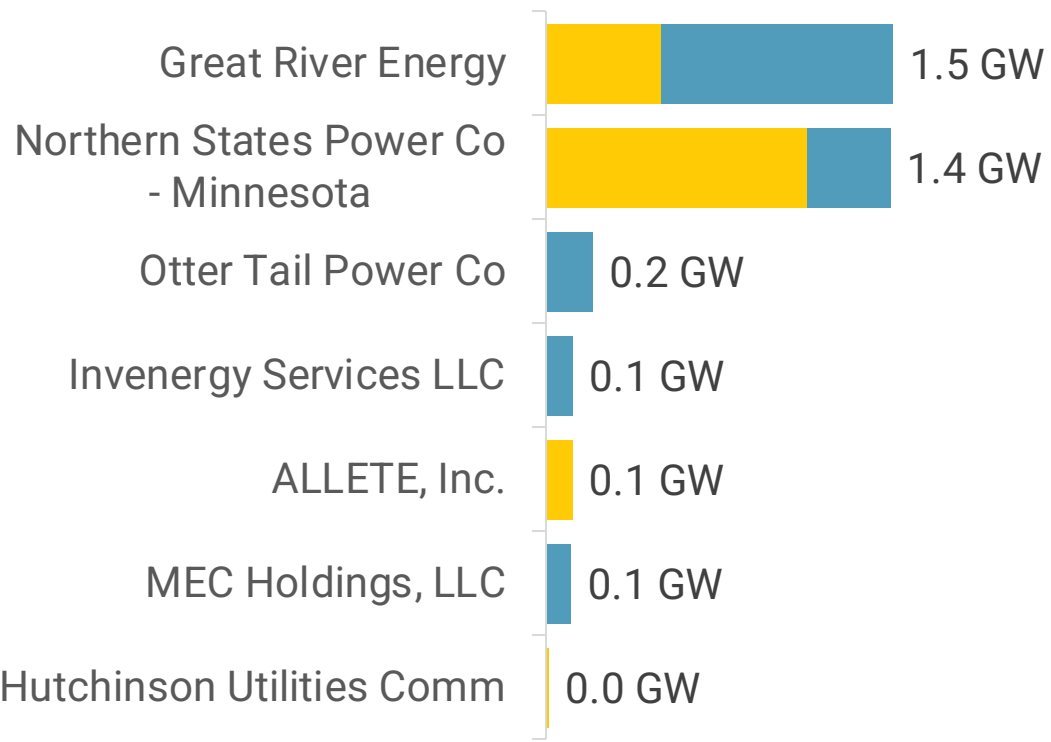
Plans for clean repowering projects are in development in Minnesota and growing nationwide

Xcel Energy plans to replace coal plants in **Minnesota** and **Colorado** with solar and long-duration iron-air storage.

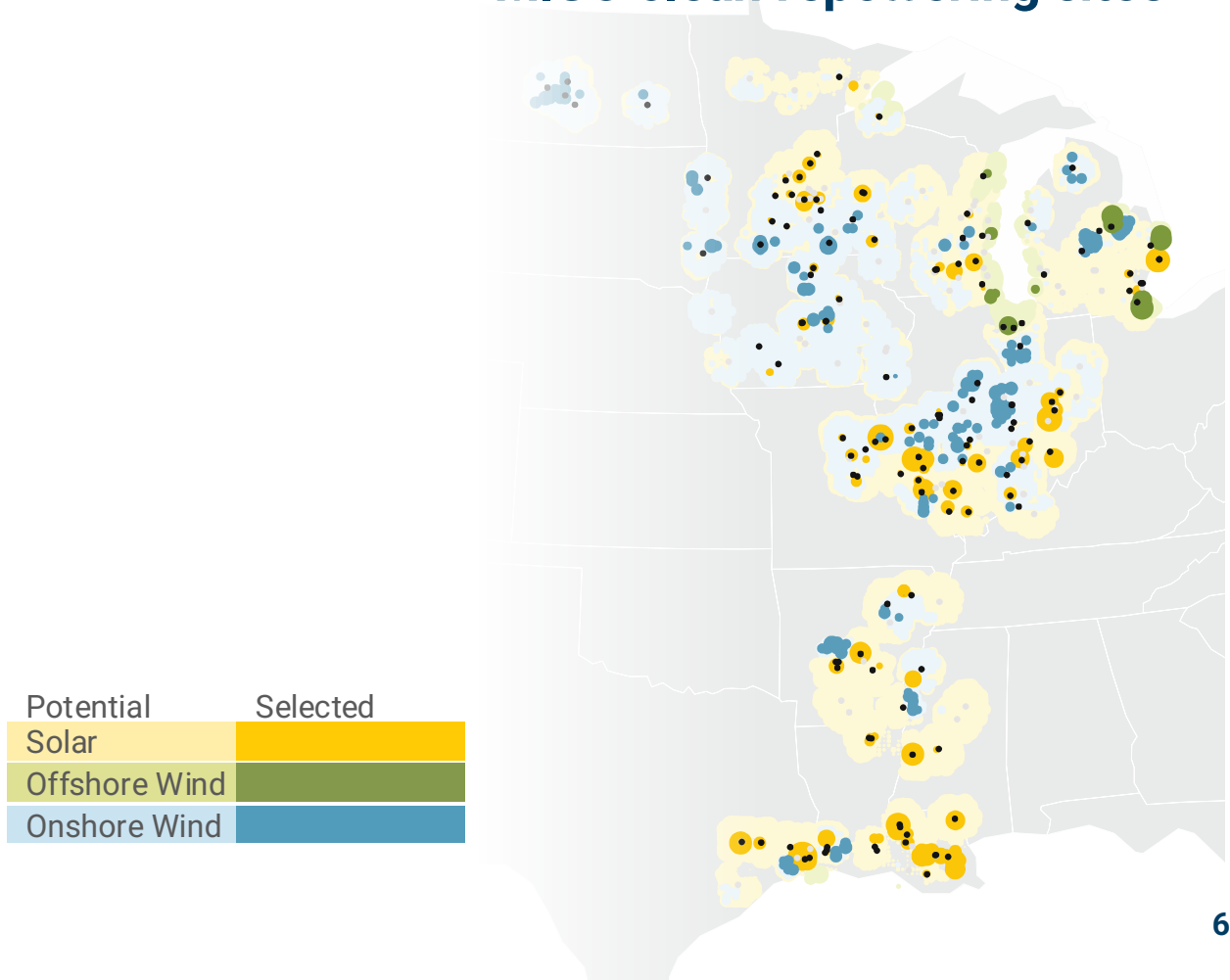


Clean repowering will help Minnesota replace coal and natural gas generation with wind and solar, helping the state meet the requirements of its 100% clean energy law

MN utilities by clean repowering opportunity

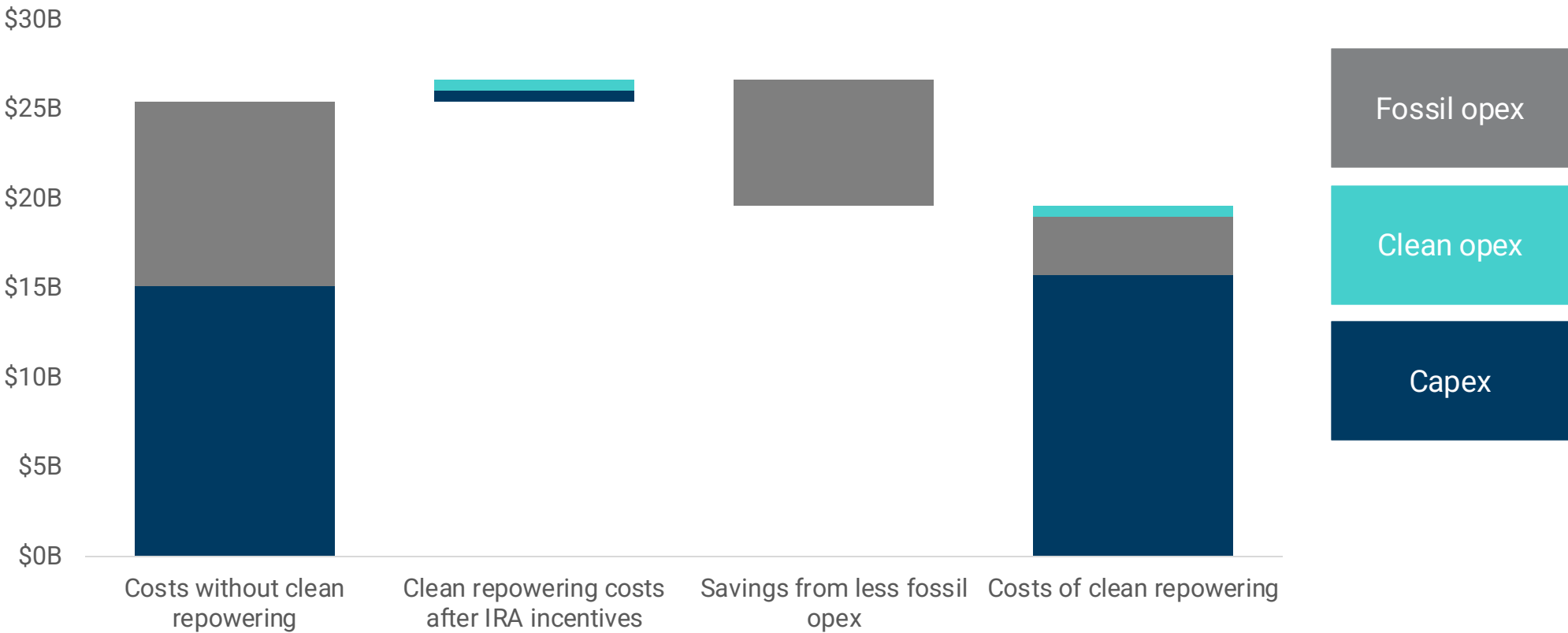


MISO clean repowering sites



Minnesota savings

Cost impact of clean repowering



Total regional annualized savings	\$ 63 million
Total reduction in annual carbon emissions	11 MMT
Average Annual Household Bill Savings	\$14.29

There are multiple avenues for Minnesota to accelerate efforts for clean repowering

- EIR applications must be approved by September 2026.
- Coordinate with MISO and PUC to place a greater emphasis on clean repowering in long-term planning processes.
- Local government support is essential to ease permitting processes and support additional economic development.



Focus Area 3

GGRF Preparedness



Putting together the pieces: GGRF, clean investment, economic development, and community development

- **Minnesota needs to get in the game on green finance. Markets are shifting to net-zero investments, and regions have to get on board or be left behind.**
- **GGRF can help overcome market challenges and deliver needed financing.**
- **Minnesota needs to position itself to capture GGRF funding.**

Investment needs and barriers exist across the country, but local resources influence transition ease

Minnesota has the finance, workforce, and other supportive resources to meet its needs.

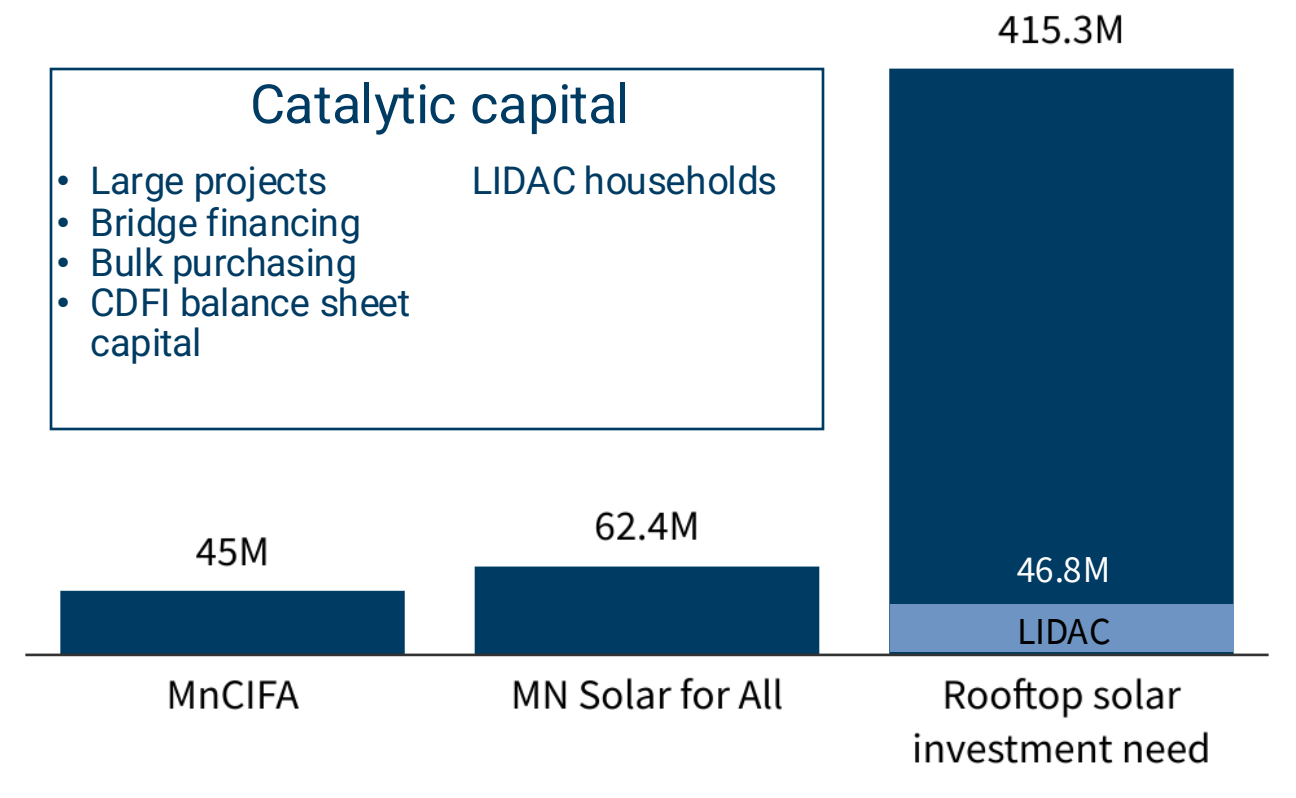
Minnesota GGRF Priority Project Category Investment Needs Through 2035



Source: Climate Policy Initiative

Finance: Existing resources build capacity and crowd in investment

Minnesota Resources and Investment Needs



Local know-how



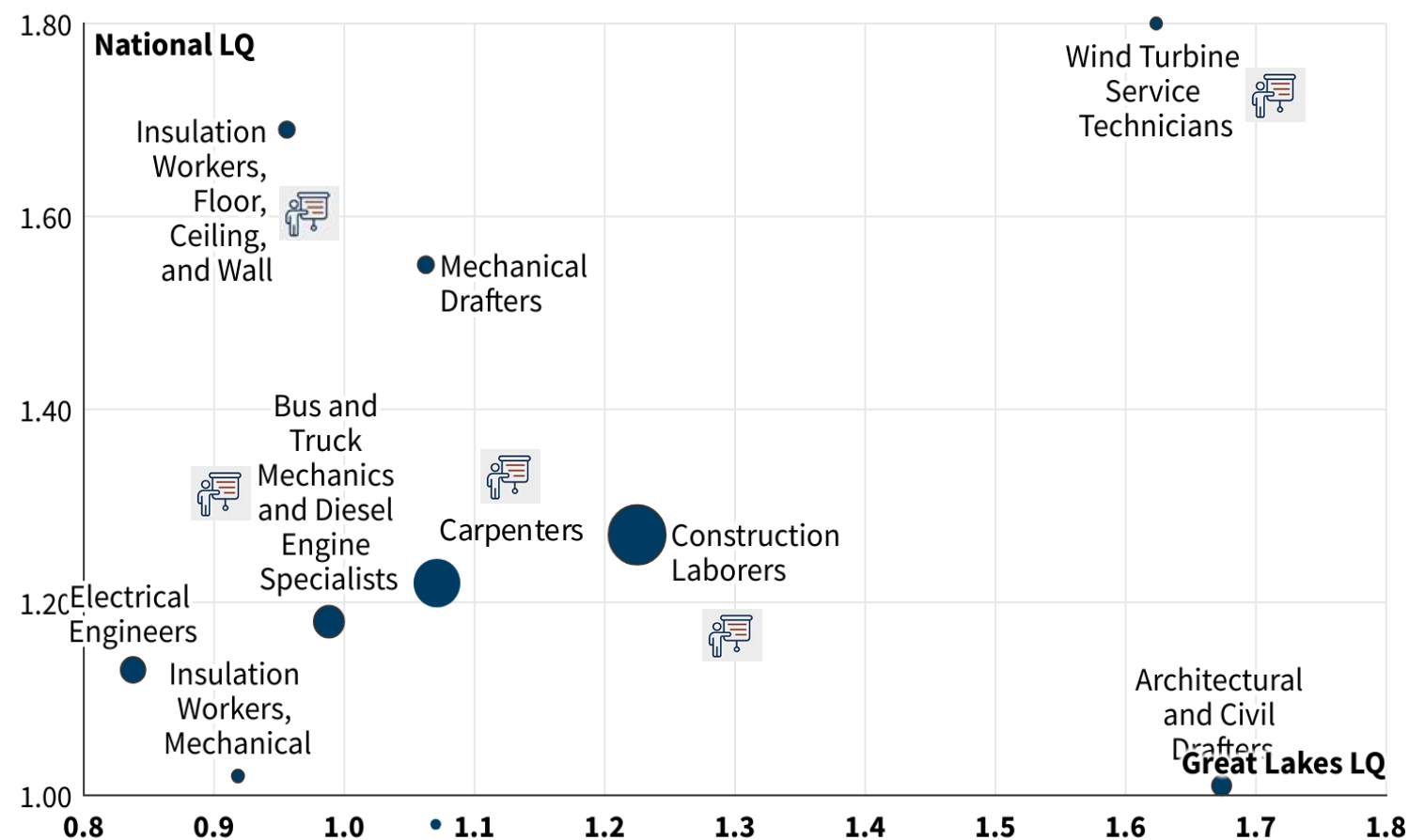
National GGRF capacity building



Workforce: Minnesota is ahead in some areas

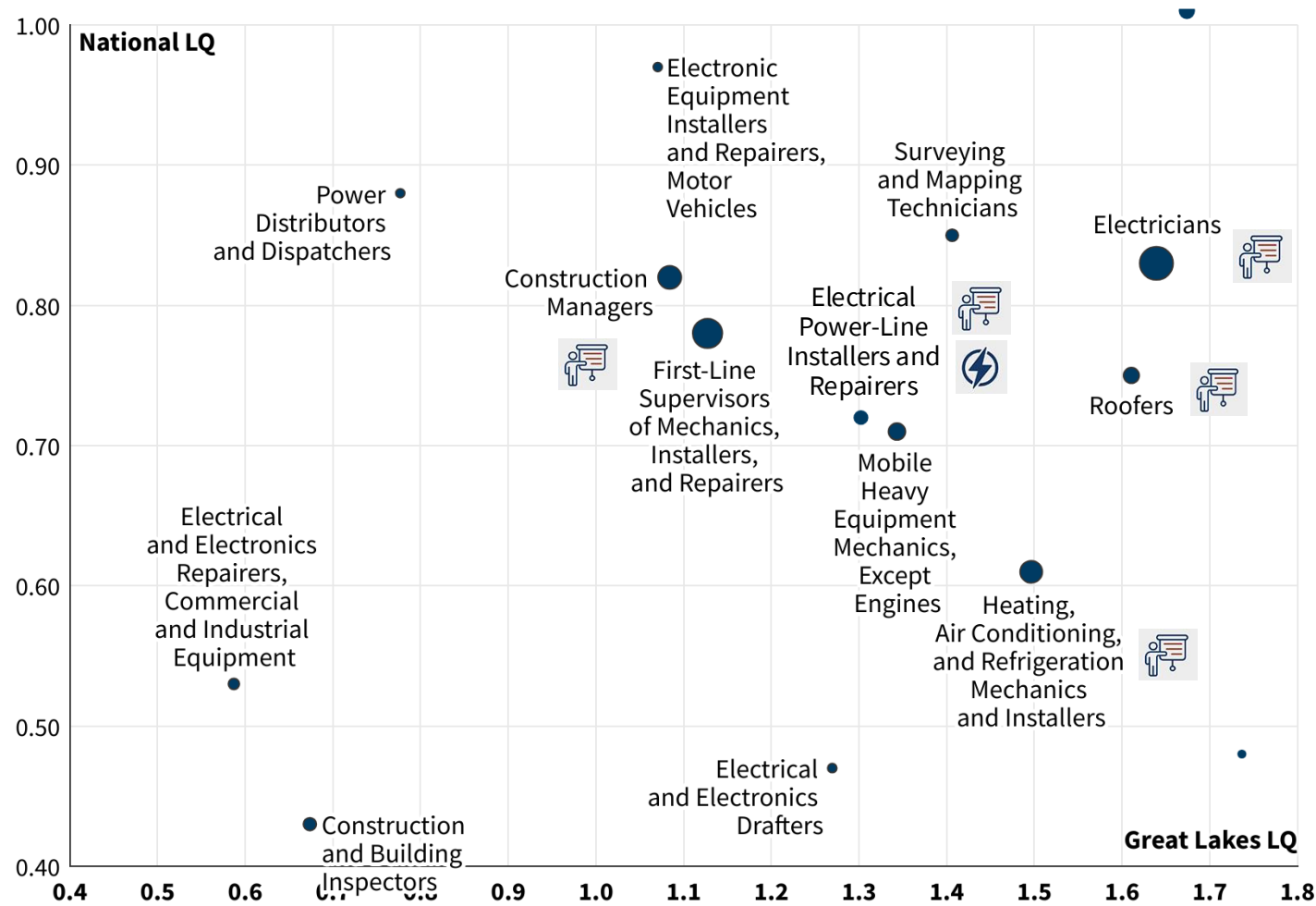
Developed GGRF Occupations in Minnesota

Current Employment ○ 2,000 ○ 8,000 ○ 20,000



Workforce: Existing programs can help address gaps

Underdeveloped GGRF Occupations in Minnesota



What Minnesota needs to do now to capture GGRF funding



Identify and promote the projects that will deliver the greatest economic and community development benefits.



**Present a cohesive picture of plans and opportunities to NCIF awardees.
Bring pipeline projects to NCIF awardees.**



Work with national capacity-building groups in supporting CDFIs to build project pipeline and make first loans.



Appendix: Twin Cities Regional Analysis

Twin Cities Region

In this analysis, “Twin Cities” refers to the 13 Minnesota counties included in the Minneapolis–St. Paul-Bloomington Metropolitan Statistical Area

- Anoka County
- Carver County
- Chisago County
- Dakota County
- Hennepin County
- Isanti County
- Le Sueur County
- Mille Lacs County
- Ramsey County
- Scott County
- Sherburne County
- Washington County
- Wright County

Minnesota Counties in the Minneapolis-St. Paul-Bloomington MSA



Source: US Census Bureau

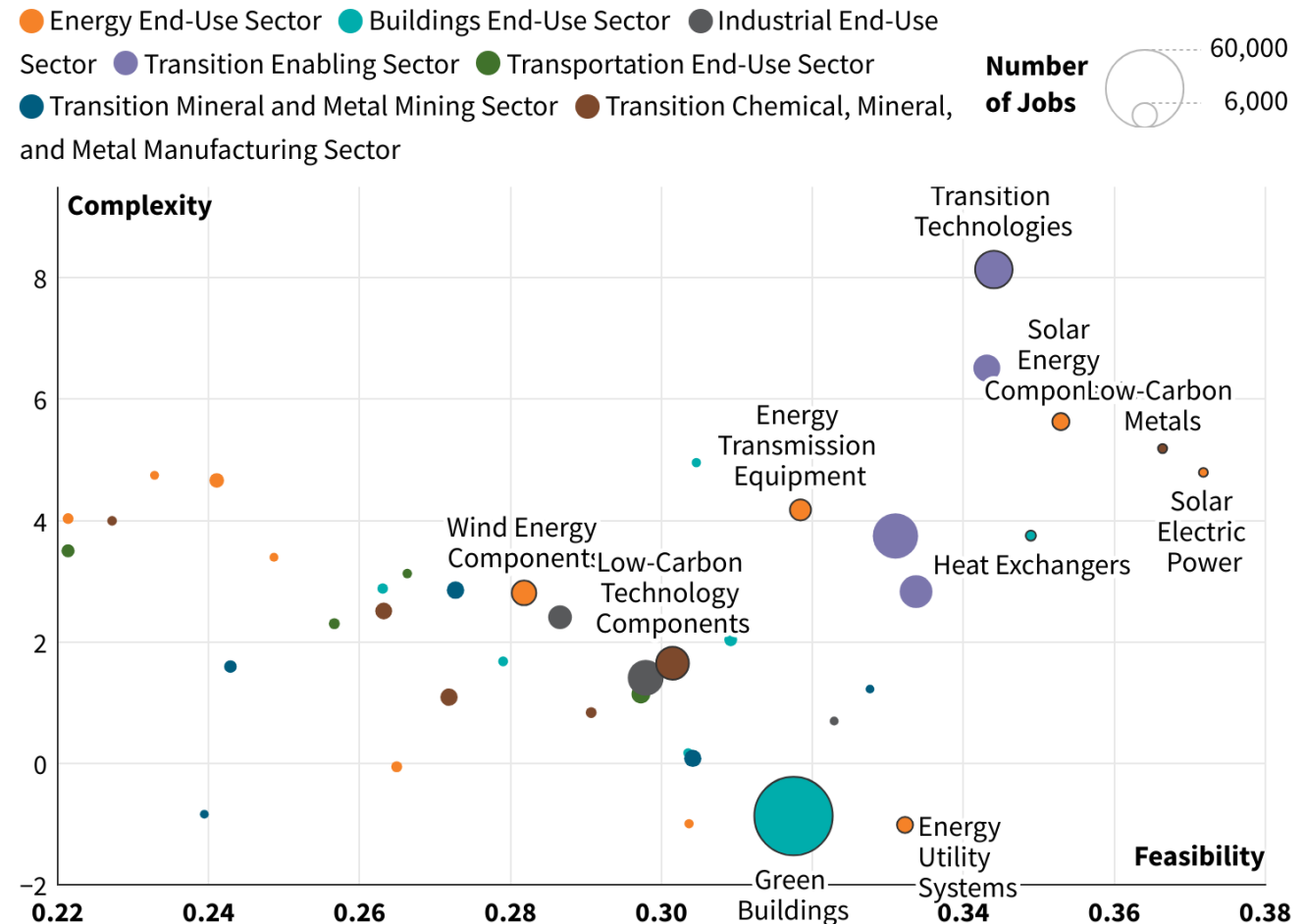
Twin Cities Region Key Takeaways

- The Twin Cities region is well positioned to attract investments in solar manufacturing jobs and has the potential to develop advanced manufacturing clusters in both semiconductors and solar panels.
- The state and the Twin Cities share high feasibility and complexity opportunities, so growth in these sectors in the Twin Cities would drive and support the rest of the state.
- The region should take advantage of the high feasibility of green buildings to accelerate the energy transition locally and relieve energy burden.

Like the state, the Twin Cities region can support the energy transition locally and nationally

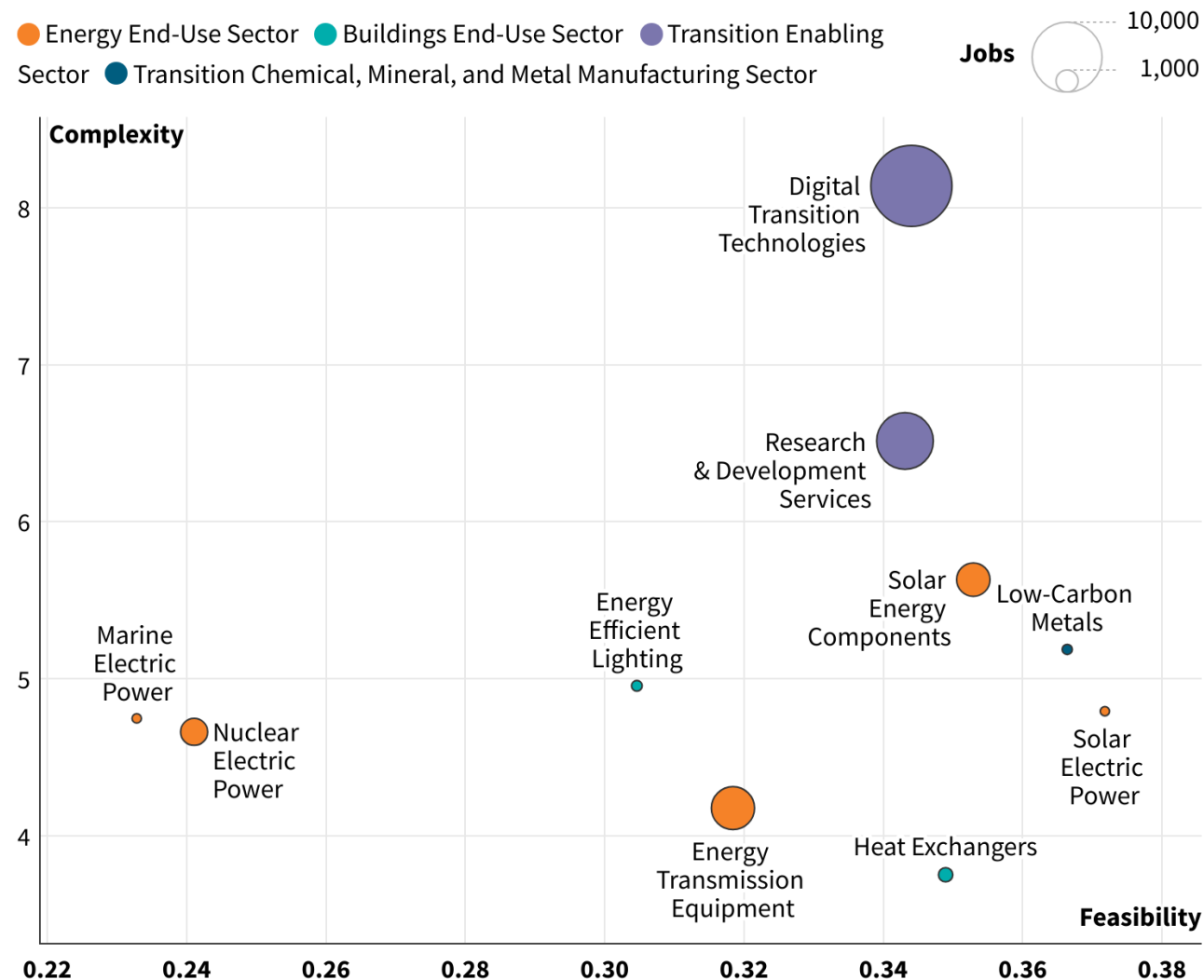
- The Twin Cities region is positioned to specialize in manufacturing solar energy components and low-carbon metals and to deploy solar electric power.
- The region has the basis for a strong workforce to meet its own green buildings needs (including rooftop solar).

Twin Cities Region Transition Technologies



The region has skills (although in some cases in small numbers) in high-complexity areas across the energy transition, including manufacturing, clean energy deployment, and professional services.

Twin Cities Region Top Feasible and Complex Transition Technologies



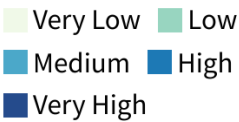
Source: Clean Growth Tool

The substantial overlap in feasibility between the Twin Cities and the state presents opportunities for collaboration.

Compared to other metro areas, feasibility in the region is among the highest in the country for generating solar power and manufacturing low-carbon metals, solar energy components, and heat exchangers.

Twin Cities Region Feasible Cleantech Opportunities

Ranked by feasibility percentile compared to MSAs nationally



Energy Transition Technology	Feasibility Percentile
Solar Electric Power	100
Low-Carbon Metals	98
Solar Energy Components	97
Heat Exchangers	95
Digital Transition Technologies	91
Research & Development Services	90
Digital Transition Services	86
Energy Utility Systems	83
Enabling Professional Services	79
Low-Carbon Mining Equipment	78

Source: Clean Growth Tool, Brookings Institution



Contact

Aaron Brickman, abrickman@rmi.org

Julia Meisel, jmeisel@rmi.org