



Photo: Rob Wallace



Solar Where It's Needed Most

How Shared Solar Can Deliver Equity, Community Resilience, and Climate Impact

What if clean energy weren't just a climate solution, but also a tool for economic justice, energy security, and community resilience?

Shared solar, also known as **community solar**, makes that possible. It allows households and organizations to subscribe to a portion of a solar project and receive utility bill credits. Unlike rooftop systems, it doesn't require homeownership, large upfront costs, or ideal roof conditions.

Done right, shared solar is a model for inclusive growth. It **reduces emissions, lowers bills, and builds trust** in the clean energy transition and economy — especially in the communities that have long been excluded. It's also one of the few climate solutions that can deliver **equity and decarbonization** at scale.

However, shared solar energy is not designed for equity. And today, it's failing to reach the communities most burdened by pollution and energy costs. Despite broad public support for solar energy, structural, financial, and behavioral barriers keep high-need communities from accessing its benefits, even in states where shared solar is technically allowed.

At Rare, we believe shared solar will only fulfill its promise when it is:

- **Anchored in trust**
- **Designed for real people**
- **Delivered through trusted community organizations**
- **Backed by equity-focused funding**

This report draws on insights from Rare's Solar Helping Ignite Neighborhood Economies (SHINE) pilot in Boston, consumer research, and a national analysis to map out where shared solar can thrive — and how funders and practitioners can make it succeed.

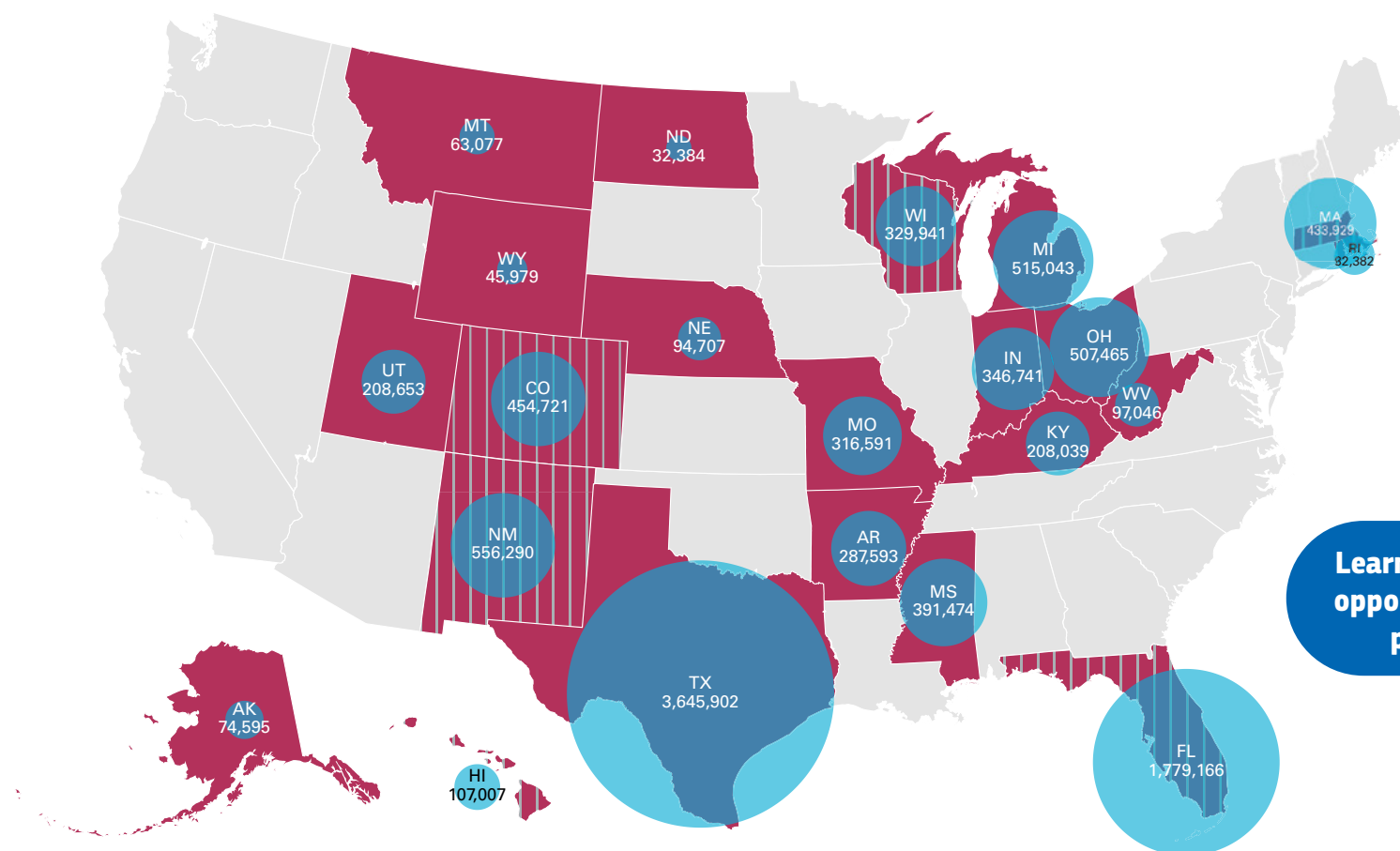
IN THIS REPORT, YOU WILL LEARN:

- **Where shared solar can do the most good** and why geography matters
- **Why shared solar remains underused** even where it's allowed
- **The central role of community organizations** in making shared solar work
- **The critical role philanthropy can play** using a portfolio approach

Where Shared Solar Can Thrive

Funding can deliver the greatest combined impact on equity and emissions in spaces where opportunity and need overlap. This map overlays...

- Where the power grid is most polluting (lb CO₂/MWh is above the national average)
- Where shared solar is legal
- Where environmental justice communities are concentrated (showing by population)



Learn about different opportunity types on pages 17–18.



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Introduction

Shared solar is one of the most promising but underused tools for advancing climate equity. Rare’s research and field experience show that unlocking its full potential requires funding models, design decisions, and delivery systems built around real people, not just regulations or markets.

The Case for Shared Solar:

How and Why It Works (and Why That Matters For Equity)

Solar power is popular, but often inaccessible. Shared solar helps communities overcome the most significant barriers to adoption: cost, complexity, and resistance. It's one of the most scalable ways to bring clean energy to those who need it most.

KEY TAKEAWAYS:

- Shared solar **creates a flexible, scalable model** for renters, nonprofits, and communities.
- **It removes key barriers** that have limited solar access, especially for low-income communities.
- When benefits are visible and local, they create **durable support and capacity for clean energy**.



How Shared Solar Works

Shared solar allows households and organizations to subscribe to a portion of a larger solar project (often located nearby), rather than requiring every household to install rooftop panels. The project sends energy to the grid, and the utility applies credits to the subscriber's electricity bill.

Shared solar reduces cost by aggregating demand. Allowing subscriptions rather than ownership increases access and flexibility. And through co-development with trusted local partners, it can overcome community resistance and build long-term support.

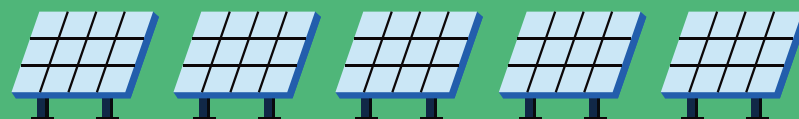
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Several households or organizations, or their combination, agree they would like solar.



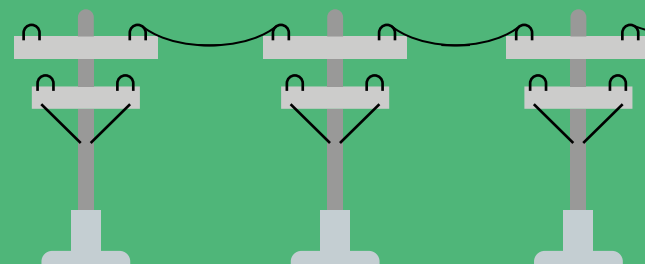
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A developer identifies a place to build the solar project and energizes it.



3

The solar project puts energy on the grid, and the utility keeps track of solar production.



4



The households and/or organizations buy a share of the solar production credits on their bills.

5

The owner of the solar project gets revenue from the sale of the solar credits.



Why it works

Because of how it works, shared solar overcomes problems of traditional solar:

- Reduces cost by building a single site for many beneficiaries
- Expands access for renters, nonprofits, and others who can't host panels
- Turns solar from a luxury product into a shared public good
- Developers know they will have customers for new installations

Why this matters for equity

Traditional residential solar is concentrated in owner-occupied, higher-income households.¹ Shared solar opens the door for those locked out of that model. But it only succeeds when designed for real people and circumstances — not just policy compliance or technical performance.

When it works, shared solar:

- Delivers real savings through discounted energy credits
- Reaches renters and non-owner occupants
- Reduces pushback against solar infrastructure when the benefits are local, visible, and supported by trusted organizations
- Provides additional benefits, including resilience during bad weather and blackouts, and local job creation.²

Examples to ground its benefits

Rare has seen these dynamics play out firsthand in our Boston SHINE pilot, where our local partner, Resonant Energy, identified and recruited five sites serving Environmental Justice neighborhoods interested in installing shared solar, totaling 1.08 megawatts of capacity.

Household savings example:

A low-income household using **8,693 kWh/year** that gets **50% of its usage** from shared solar credits at a **25% discount** would **save \$206 annually**, without any additional investment or expense. (See Appendix for calculations.)

Household emissions-reduction example:

A household using **8,693 kWh/year** that gets **50% of its energy** from shared solar would offset 4,346 kWh annually. Using national averages, that means a reduction of approximately **3,334 pounds of CO₂ emissions** every year, the equivalent of not burning **170 gallons of gasoline**. (See Appendix for calculations.)

What's Blocking Shared Solar and What to Do About It

Despite its popularity, shared solar often stalls. Even where it's legal, it often fails to reach the people who need it most. These barriers go beyond technical issues. They include financial, structural, and behavioral challenges that must be addressed to unlock equitable adoption.

KEY TAKEAWAYS:

- Shared solar needs more than popularity and legal approval; it needs **practical alignment among stakeholders**
- **Friction is cumulative:** utilities, regulators, developers, hosts, and customers all face hurdles
- **Understanding where pressure points occur is essential** to scaling shared solar with equity in mind.



Despite Popular Support, Solar Projects Still Stall

Solar energy enjoys strong support across the political spectrum³ as the cost of solar continues to drop.⁴ Community solar project capacity has begun to grow, expanding nearly 500% in the last six years.⁵ But despite widespread enthusiasm and improved pricing, shared solar projects continue to face local resistance, and equitable access remains elusive.

Every potential solar site has barriers, especially in marginalized neighborhoods: high upfront costs, zoning and siting disputes, regulatory friction, a lack of straightforward incentives, and community concerns for the spaces they live, work, and play. These issues are compounded in low-income communities, where fewer community members own the structures where community solar can be installed and where cost and trust barriers are steepest.

Shared Solar Is Legal in Many Places, But Still Stuck

As of 2024, there is at least one shared solar site in 44 states⁶, up from 23 states⁷ just ten years before. But the **legal ability to operate isn't the same as success**. In practice, projects still face cost, complexity, and resistance that limit access for low-income communities. In 2024, only 4.3% of the national capacity was identified as LMI-serving (low- and moderate-income-serving).⁸

Friction appears at every stage of the process, from regulatory design and utility implementation to customer outreach and billing. Even in supportive policy environments, shared solar can stall when the system requires different players, each with various incentives, to work together in new ways. When friction adds up, shared solar becomes too complicated, expensive, or mistrusted to succeed.

Five Stakeholders Make Shared Solar Possible

Shared solar doesn't fail because of a lack of interest. It struggles because the system of participants it depends on is fragmented, with varied drivers and barriers.

To succeed, shared solar requires alignment among **five key actors**:



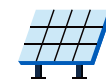
Distribution utilities connect the solar system to the grid and manage crediting



State governments and regulators set the rules and incentives



Energy service companies design, develop, and manage customer billing



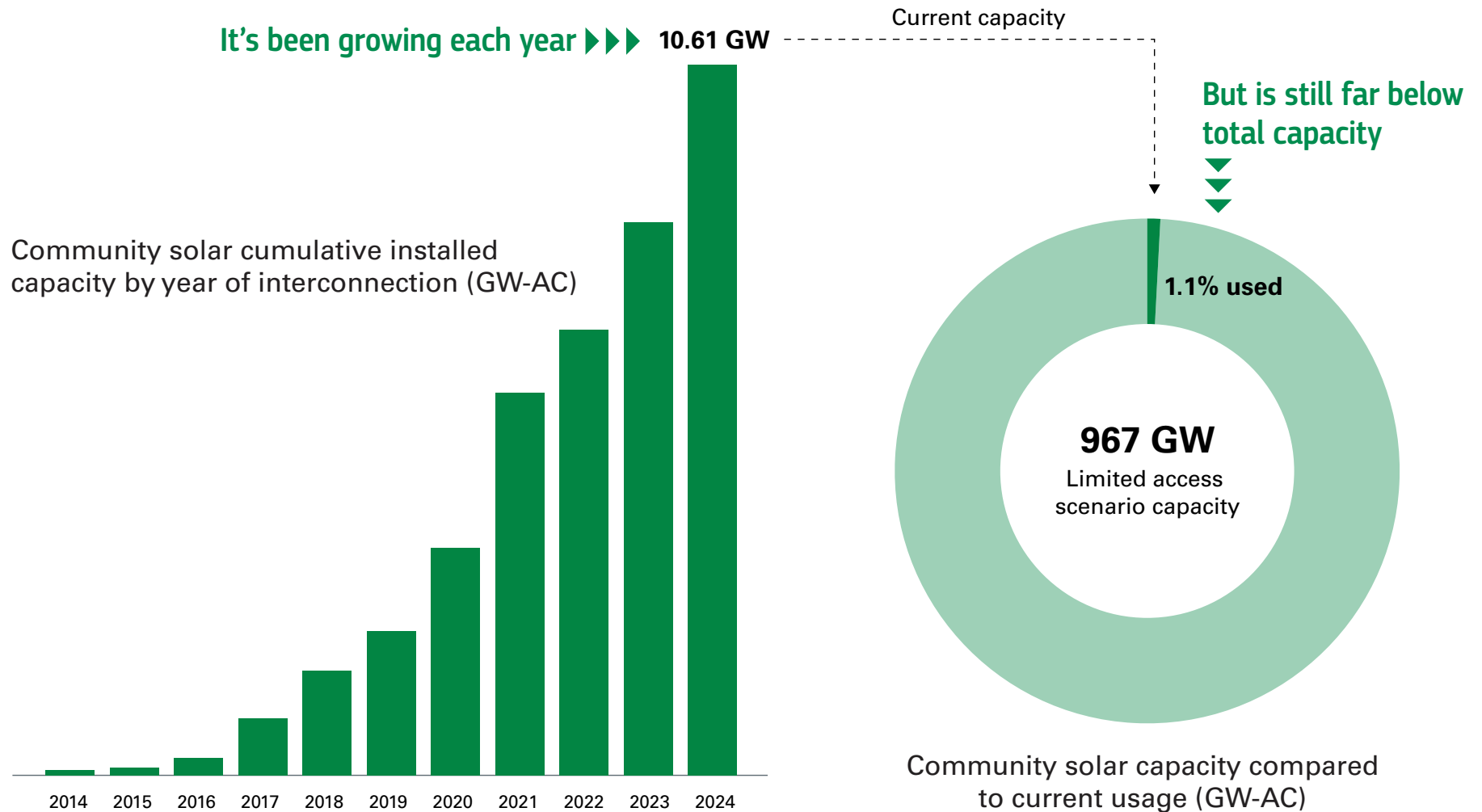
Solar hosts provide land or rooftops for project development



Customers (households or organizations) subscribe to receive credits or benefits

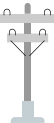
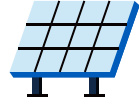
When any one actor faces barriers, the system slows. When multiple actors face friction, access collapses.

Community solar is growing but remains far from its potential



Barriers by Stakeholder: A Closer Look

Each actor in the shared solar ecosystem faces different opportunities and challenges. Understanding these dynamics is key to designing effective solutions.

Stakeholder	How they participate	Opportunities	Challenge
 Distribution utilities	Receive power from a solar system, track its output, and distribute it to other customers via credits	Deliver cleaner, distributed energy near the point of use	Grid modernization, accounting systems, and limited incentive to innovate
 State governments	Require the distribution utility to track the output of a solar system and allocate credits to other customers	Reduce emissions and extend energy equity	Supporting solar often requires complex, costly mechanisms
 Energy service companies	Develop solar projects, secure customers for shared solar projects, or both	Monetize project development and customer services	High costs for customer acquisition and equity compliance
 Solar hosts	Allow the construction of a large solar installation on their property	Earn revenue from otherwise underused space	Development costs, customer billing burdens, community opposition
 Customers	Host a shared solar project, purchase portions of the credits generated, or both	Save on bills and access clean energy	Low trust, complex offerings, poor product-market fit for low-income households with administrative burdens ⁹

Zooming in: Why Customer Households Struggle

Households face a unique mix of confusion, skepticism, and hassle. For shared solar to work at scale, it must overcome three overlapping barriers — knowledge, trust, and practicality — that shape whether people are willing or able to sign up. Rare’s behavioral research with low-income households across the U.S. shows that these barriers are not abstract. They are both practical and deeply human.

Knowledge barriers begin with unfamiliarity. Most of the 23 people we interviewed — from Massachusetts and across the country — had a general understanding of rooftop solar: panels generate electricity and can lower bills. But virtually no one had heard of “shared solar” or “community solar.” Even after detailed explanations, many still struggled to picture how it worked. The learning curve is steep for a product that doesn’t yet exist in people’s mental models.

Trust barriers compound the problem. Households were wary of solar offerings from unknown providers. Some feared losing power when the sun wasn’t shining. Others outright distrusted energy companies, especially in markets where competitive suppliers operate. Utility companies, while not beloved, were seen as safer and more reliable.

Practical barriers then make the offer feel more trouble than it’s worth. People generally liked the idea of saving money but balked at needing to manage an extra bill from a third party. When savings were described as a percentage (e.g., 10% or 15%), most couldn’t interpret what that would mean for their actual bills. Many didn’t know their current monthly power cost to begin with. Describing savings in dollars helped somewhat, but raised its own challenge: is it worth navigating a new process and sales interaction just to save \$100 a year?

As one participant put it, “I don’t want another bill for \$7. I’d rather just keep things the way they are.”

This feedback highlights a fundamental insight: shared solar isn’t just a technical product. It’s a behavioral offering. To drive household adoption, shared solar must be designed to be simple, trusted, and clearly valuable.¹⁰

Where Shared Solar Can Do the Most Good

The greatest potential for shared solar lies where environmental justice communities, polluting power grids, and enabling policy all overlap. However, the need and opportunity don't always align, making strategic intervention essential.

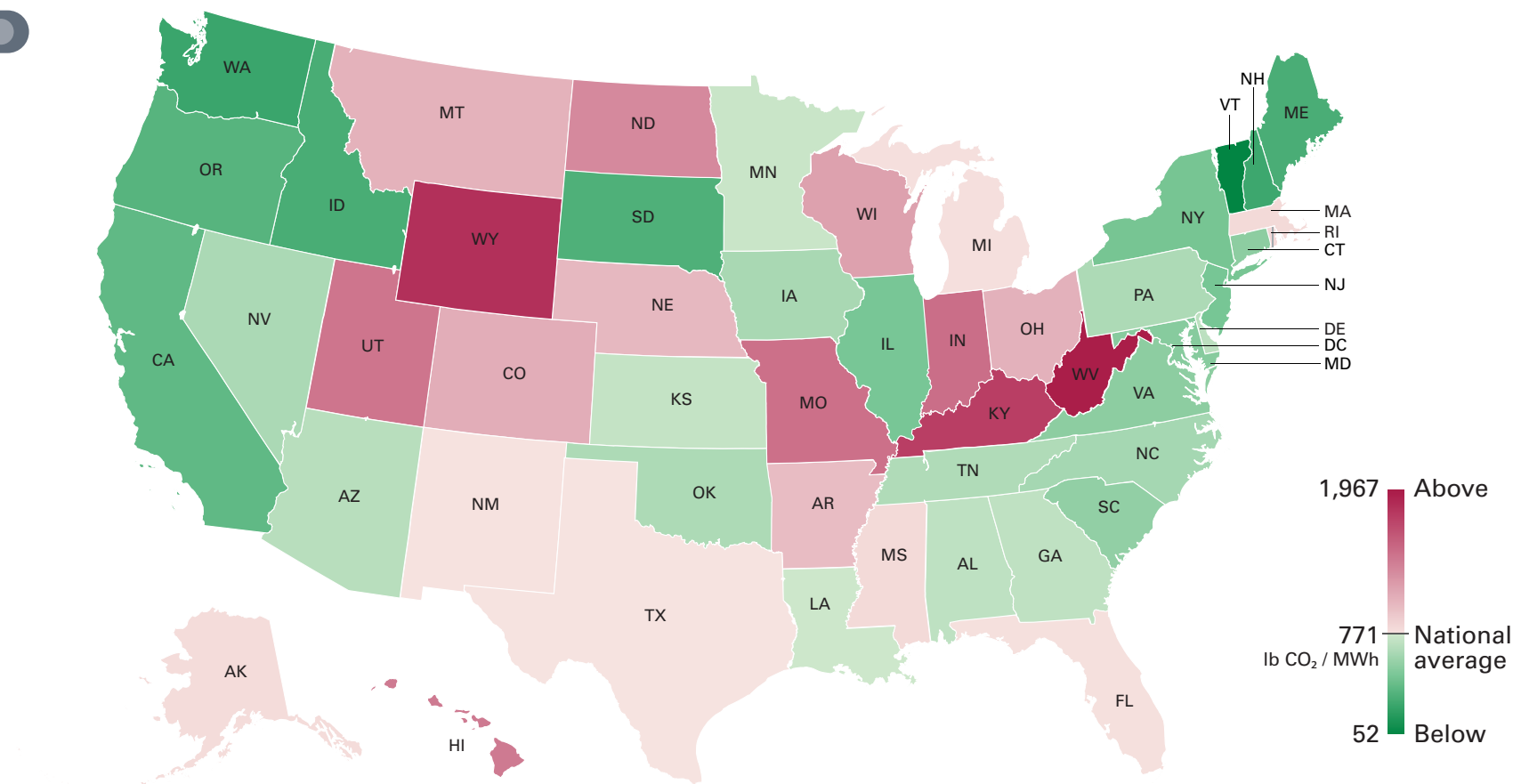
KEY TAKEAWAYS:

- Shared solar delivers the most value **where emissions, equity, and policy intersect**
- Many states with high need still **lack enabling shared solar policy**
- Philanthropy can **scale proven models or seed entirely new markets** where support is lacking
- Visit rare.org/unlocking-shared-solar to explore Rare's national analysis



Where Shared Solar Makes the Biggest Climate Impact

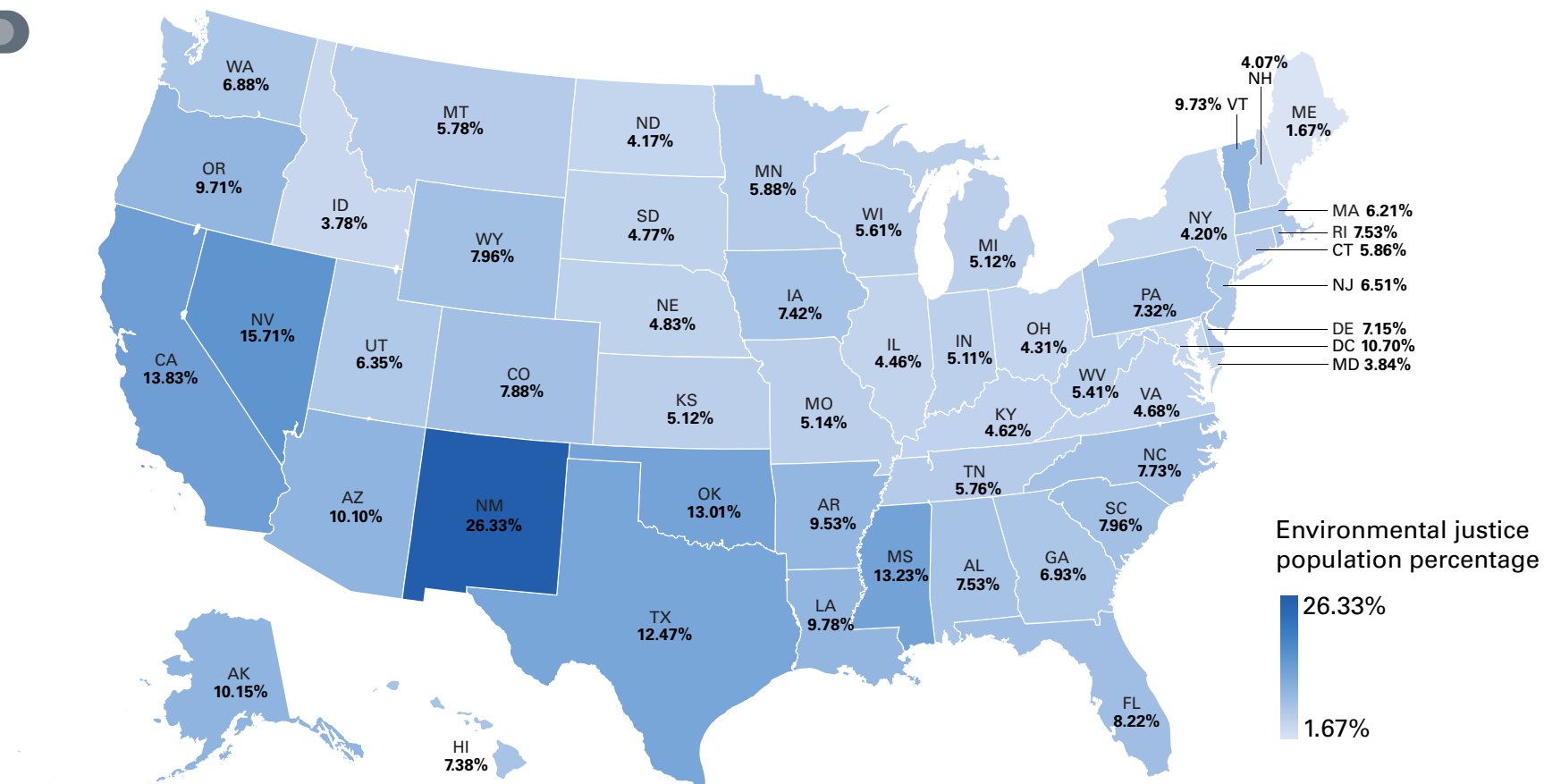
We mapped emissions intensity across U.S. power grids to identify where shared solar can do the most good. States with more polluting grids offer greater marginal climate impact for every kilowatt hour of solar added; shared solar is a climate multiplier in these areas. Places with high existing emissions have the highest potential for impact.



Where Communities Stand to Benefit Most

Using EPA-defined environmental justice indices, we identified states with large populations that face elevated pollution, health burdens, and energy costs. These communities represent an ethical imperative and an untapped opportunity: they've historically been left out of clean energy and stand to gain the most.

The numbers represent the estimated **environmental justice population** in each state.

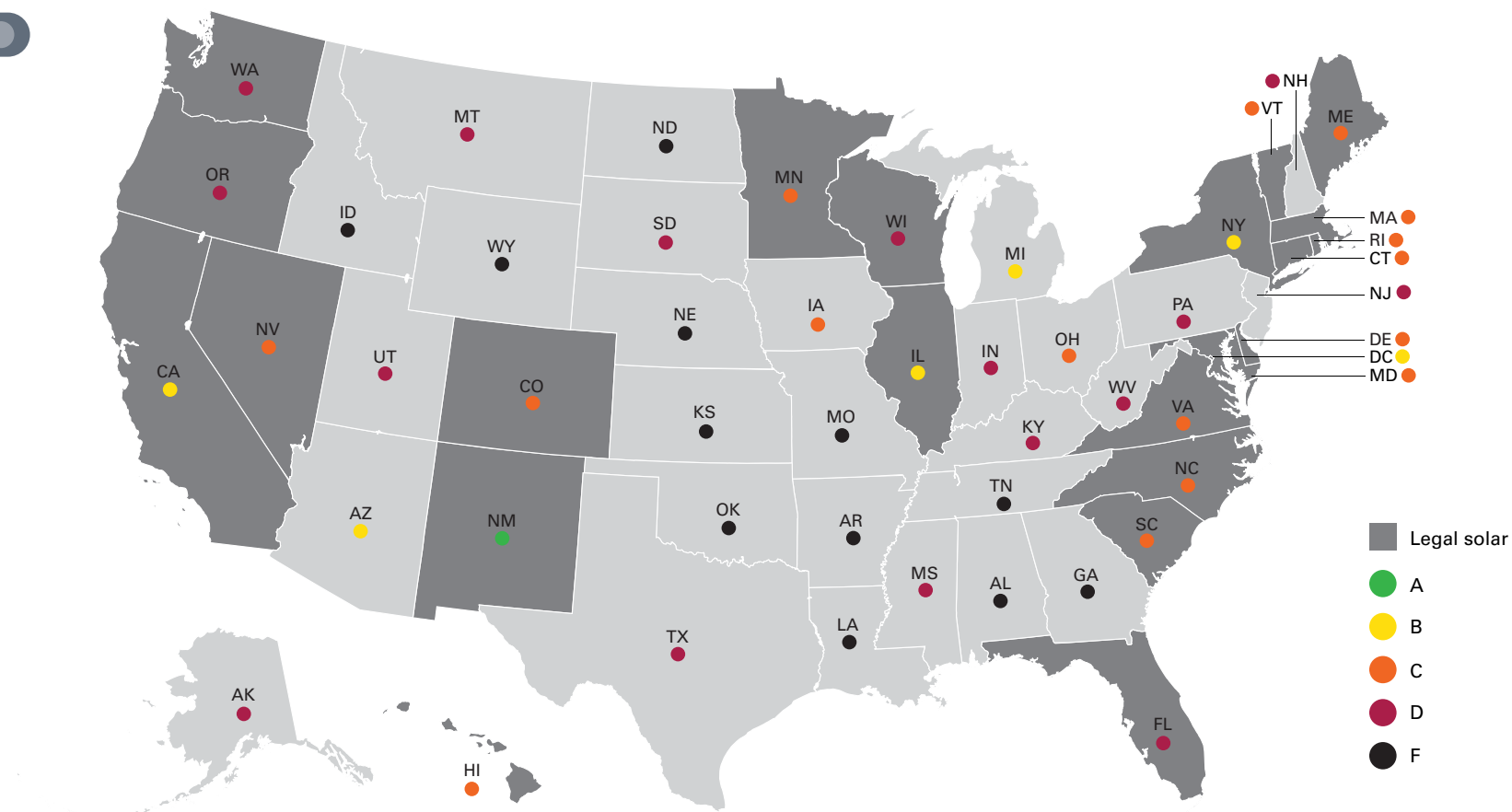


To understand how we define environmental justice and have modeled the populations, see the Appendix.

Where Shared Solar Is Legally Allowed

Policy is another key factor. While dozens of states have authorized some form of community or shared solar, the **degree of support varies widely**, from incentive-rich, flexible markets to regions where shared solar is allowed in name only. The details matter. Some provide generous incentives and flexible enrollment. Others permit shared solar in name only, with restrictive rules that hinder meaningful participation.

Legal status alone isn't enough. Local control and market conditions, utility cooperation, and administrative design determine access, resulting in a patchwork of social, economic, and energy policies at the national, state, and local levels.



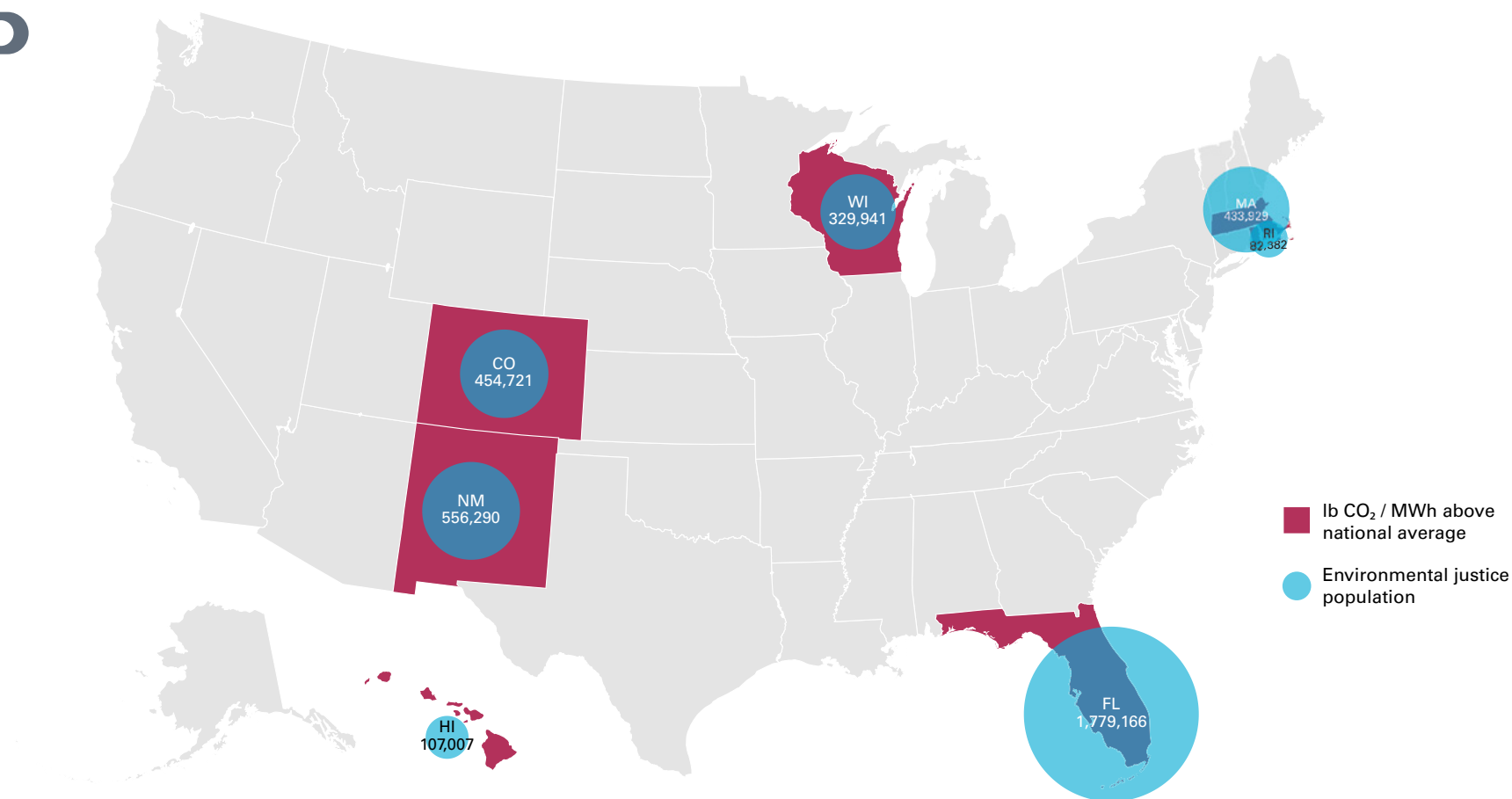
Letters indicate letter grades for how easy or hard is it to connect clean energy projects to grid.

Showing Opportunity and Need Together Reveals Two Markets

Our national analysis reveals that two distinct types of high-opportunity markets represent nearly **10 million people in environmental justice (EJ) communities** who could benefit:

Opportunity Type 1: **Scale-Up Markets**

States with dirty grids, enabling policy, and high EJ population density. These markets are ready for shared solar to grow. Philanthropy can help it grow equitably and fast. ~3.6 million EJ residents in these states would benefit from the proper support.



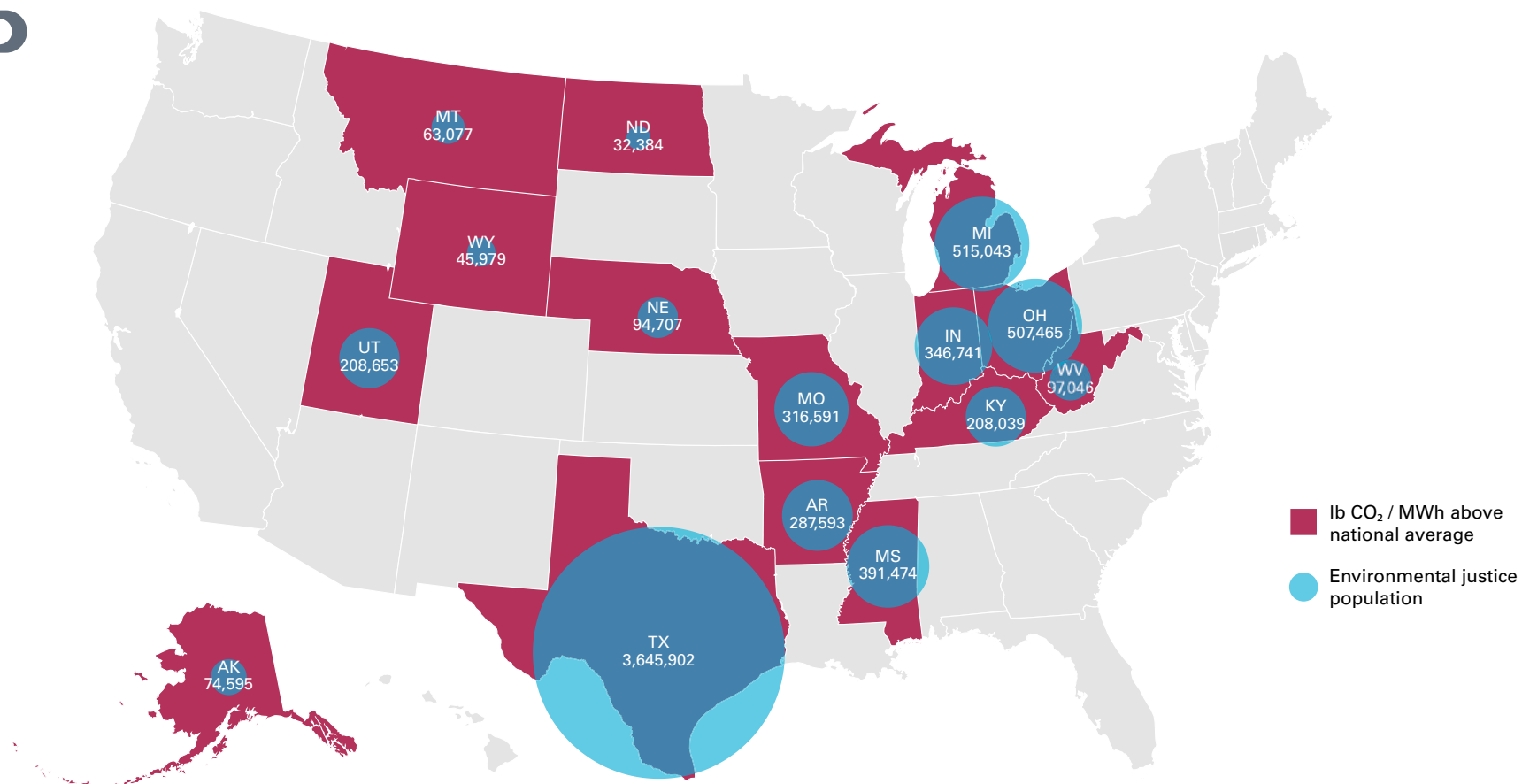
Rare's national analysis combines emissions intensity, environmental justice data, and legal frameworks to surface these high-impact markets.

Showing Opportunity and Need Together Reveals Two Markets

Our national analysis reveals that two distinct types of high-opportunity markets represent nearly **10 million people in environmental justice (EJ) communities** who could benefit:

Opportunity Type 2: **Demonstration-Markets**

States with high need but no enabling policy. These places require creativity, pilots, and narrative-building to demonstrate shared solar's potential and influence future policy. ~6.1 million EJ residents live in these more challenging but critical markets.



Rare's national analysis combines emissions intensity, environmental justice data, and legal frameworks to surface these high-impact markets.

Rare's full dataset and interactive tool are available at:

rare.org/unlocking-shared-solar

- Compare the states in Scale-Up Markets versus Demonstration Markets
- Compare the states above and below the national average for electrical grid emissions
- Explore the details of emissions, EJ populations, and readiness to scale shared solar in any state

State-Level Data

Table 1 presents a view of environmental justice communities across all 50 states (and Washington, D.C.), ranking them by total EJ population. The data reveals significant variation in both absolute numbers and percentages of EJ populations. California leads with over 5.4 million people living in EJ communities (13.83% of the state's population), followed by Texas with 3.6 million (12.47%). Notably, New Mexico shows the highest percentage of EJ population at 26.33%, despite having a smaller absolute number.

CSV

Table 1: Environmental Justice Population by State

State	State Population	EJ Population	EJ Percentage (%)
California	39,356,104	5,442,131	13.83
Texas	29,243,342	3,645,902	12.47
Florida	21,634,529	1,779,166	8.22
Pennsylvania	12,989,208	950,958	7.32
New York	19,994,379	839,618	4.20
North Carolina	10,470,214	809,488	7.73
Georgia	10,722,325	742,658	6.93
Arizona	7,172,282	724,088	10.10
New Jersey	9,249,063	602,014	6.51
Illinois	12,757,634	568,782	4.46
New Mexico	2,112,463	556,290	26.33
Washington	7,688,549	528,744	6.88
Oklahoma	3,970,497	516,698	13.01
Michigan	10,057,921	515,043	5.12
Ohio	11,774,683	507,465	4.31
Nevada	3,104,817	487,877	15.71

Explore on rare.org

Community Organizations: A Critical Link in Shared Solar

Community service groups are the connectors that can overcome the most persistent barriers to equitable solar: building trust, simplifying access, and reinvesting benefits where needed most.

KEY TAKEAWAYS:

- Community organizations are essential for equitable solar. **Their trust and presence make them powerful enablers** of solar adoption
- They bring **access, infrastructure, resources, and friction-reduction** to shared solar projects
- With proper support, **they help make solar work where it matters most**



They Can Clear the Knowledge Gap

Shared solar remains unfamiliar to many households. The language and structure of solar offerings are often more legible to businesses than to everyday consumers. Community organizations with **experienced staff navigating local service delivery** are often better positioned to understand and explain shared solar's value.

They Have a Mission to Share

Nonprofits exist to serve. Whether focused on education, housing, or food access, they are aligned with their communities' priorities. That makes them strong partners for **aligning and distributing shared solar benefits with local needs**. They can also share more innovative benefit delivery mechanisms when solar production crediting isn't available or desirable.

They Can Clear the Resistance Gap

Local opposition to solar infrastructure is often rooted in distrust. In one community Rare surveyed, residents voiced frustration that a **new solar project seemed designed "for outsiders, not for us."** They felt excluded from the process and unconvinced that they would see any benefits¹¹.

These perceptions aren't unique. Solar projects that appear imposed, particularly when the benefits aren't local, can trigger resistance rooted in past experiences of disinvestment or displacement. **When a trusted community group acts as host and benefits stay local, skepticism fades.**

They Can Unlock Funding Opportunities

Thanks to changes in federal policy, nonprofits can now access "elective pay" — or more commonly known as "direct pay" — enabling them to **receive solar tax credit value even without a tax bill**. This shifts the role of philanthropy from sole funder to strategic bridge investor, de-risking projects rather than carrying their full cost.

They Have Already Won Consumer Confidence

Rare's behavioral research shows that trust, clarity, and perceived personal benefit are critical to adoption factors that community organizations are uniquely positioned to provide.

These organizations are already delivering essential services and are trusted by their constituents. That trust translates into openness to new offerings, like shared solar, that might otherwise be met with skepticism.

They Also Need the Benefits

Many nonprofits operate on razor-thin budgets. Solar can help them cut utility costs, particularly in high-rate states, and **reinvest those savings into their core mission**. It also positions them to lead by example in community electrification and climate action.

The SHINE approach for Community Service Groups

Rare piloted a community-focused model in eastern Massachusetts. Solar Helping Ignite Neighborhood Economies (SHINE) funded shared solar installations hosted by two local nonprofits in Boston.

This approach, in concert with our partners Action for Boston Community Development (ABCD), Children's Services of Roxbury, Power52 Foundation, Resonant Energy, and the Massachusetts Clean Energy Center (MassCEC), embedded workforce development and local benefits in the design. In return, those organizations shared half of the benefits with low-income households in their communities. These projects will reduce emissions and deliver value over 20 years.

In addition to expanding access, SHINE supported workforce development in these communities. Local job training efforts prepared participants for solar installation, maintenance, and project coordination roles. This dual-benefit approach was designed to create pathways to clean energy careers while strengthening the capacity of community-serving institutions.

For more on SHINE, visit <https://www.shinecoalition.org/>.



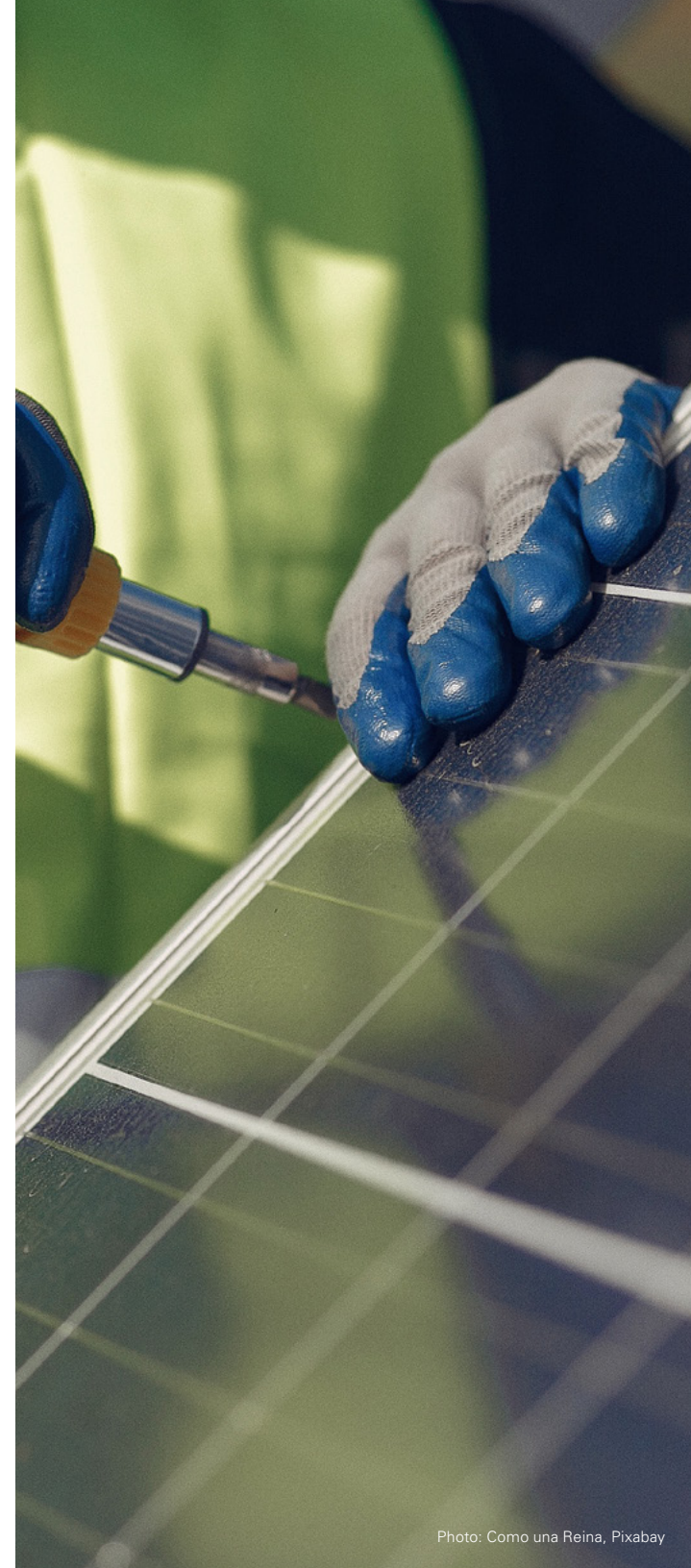
Photos: Michael Bueno for Rare

How Philanthropy Can Build the Shared Solar Movement

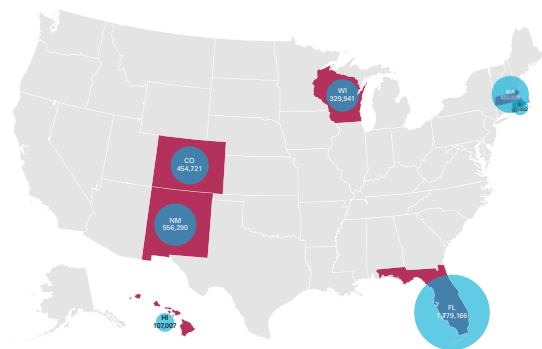
Philanthropy has a unique opportunity to accelerate equitable solar adoption by filling capital gaps, funding market entry, and enabling innovation. Shared solar will not reach its full potential without leadership from mission-aligned funders.

KEY TAKEAWAYS:

- In policy-enabled states, philanthropy can **bridge gaps and de-risk shared solar**
- Different markets need **different kinds of funding support**
- **A portfolio approach** balances speed-of-impact with long-term systemic change



Philanthropy as a Bridge in Scale-Up Markets

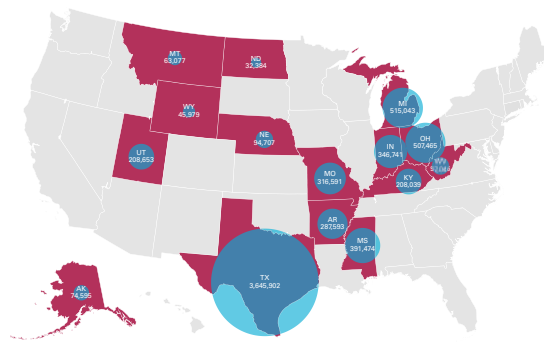


In states with enabling policy and supportive market conditions, philanthropic support can fill critical gaps to help shared solar projects go from possible to practical:

- **Upfront funding** to help nonprofits or mission-driven developers build early-stage projects and cover legal costs
- **Bridge loans** to cover costs until direct pay or tax credits arrive
- **Cost-sharing** to simplify billing or expand outreach to low-income households

Many high-potential projects stall at the last mile without philanthropy, particularly when equity goals raise costs or complexity. In these markets, philanthropy doesn't need to fund the whole project — just the missing pieces that make equity viable.

Philanthropy as a Catalyst in Demonstration Markets



In states where shared solar lacks enabling policy, philanthropy can serve as a first mover. By funding demonstration projects, helping nonprofits structure benefit-sharing models, or underwriting community outreach, funders can:

- **Support pilots** that use creative ownership or benefit structures
- **Demonstrate success** that moves public opinion and policy
- **Build the case** for equity-centered clean energy in overlooked regions
- **Lower perceived risk** for future government or market investment

In markets where for-profits won't go and governments won't lead, philanthropy can be a catalyst, demonstrating how improved conditions could drive more success.

Why a Portfolio Approach Works

Not all investments will look the same. But that's a strength. By supporting both bridge opportunities and catalytic efforts, this diversified approach enables:

- **Faster impact** where conditions are already favorable
- **Innovation and market expansion** where access is most limited
- **Deeper learning** to reveal what it takes to build equitable, scalable solar programs

Funders don't need to reinvent the space. They can help scale what's working and prove what's possible.

A Moment for Philanthropic Leadership

This is a pivotal moment. Philanthropy can help ensure that shared solar expands and evolves. Strategic support can:

- Unlock solar for communities overlooked by the market
- Reduce emissions in high-impact geographies
- Seed durable public and political support for climate action

The opportunity is here, and with it, the chance to reshape what inclusive clean energy looks like.

A Roadmap for Replication

Scaling shared solar equitably means understanding where and how it can work. The roadmap below outlines what's needed to replicate success, grounded in Rare's SHINE experience and national analysis.

This roadmap distills the most actionable insights from Rare's SHINE pilot, national analysis, and community research to help others replicate what works.

Step 1: Identify High-Impact Markets

Look for states or regions that meet three key criteria:

- **A carbon-intensive electric grid**
- **Significant populations of environmental justice** communities
- **Legal and/or informal pathways** for shared solar participation

Rare's national analysis shows that the best opportunity lies at the intersection of these factors: places where shared solar can reduce emissions and improve lives. State-level visuals earlier in this report outline exactly where these markets are concentrated.

Rare's [state-by-state datasets](#) are available for deeper inquiry.

Step 2: Engage Local Community Organizations Early

Our research shows that shared solar adoption depends heavily on trust and community relevance. Community service organizations are key to bridging the gap between solar developers and the households who can benefit most.

These organizations can:

- **Act as hosts** or subscribers of solar
- **Reduce skepticism** and overcome "outsider" resistance
- **Embed solar** into their mission delivery (e.g., housing, food security, workforce)

When nonprofits benefit from solar, they save on operating costs and help scale acceptance within their communities.

Step 3: Navigate Policy and Market Conditions

Understand the details of what's possible in targeted states, and more deeply, the utility's jurisdiction:

- Some markets (like Massachusetts) **support discounted credit subscriptions**
- Others (like Washington) **use a block-purchase model**

- Some states have no enabling policy at all but still **offer creative pathways** (e.g., shared benefits through in-kind service delivery or housing offsets)

Even in restrictive markets, shared solar can be adapted creatively with the right legal and financial design.

Step 4: Structure the Project for Equity and Simplicity

Too often, shared solar designs prioritize technical efficiency over community relevance. However, the offering must feel tangible, low-risk, and easy to understand for equitable outcomes.

Design considerations:

- Prioritize discounts that are **clearly explained in dollar terms**
- **Avoid long-term contracts**, credit checks, or penalties for customers
- **Minimize friction** with consolidated billing and familiar enrollment channels build trust

Human-centered design is key. Many households don't know their current energy usage, so concepts like "percentage savings" often fail to resonate with them.

Conclusion: What it takes to unlock shared solar

Shared solar works — but not on its own. Equity requires intention, partnerships, and investment. With the proper support, this model can bring climate benefits and economic relief to the communities that need them most.



Appendix

How We Defined Environmental Justice

We focused on communities facing the highest environmental and economic burdens to identify where shared solar could deliver the most equitable benefits.

We used the U.S. Environmental Protection Agency's **EJScreen** national dataset for defining **environmental justice (EJ) populations**, based on pollution exposure and demographic indicators.

Rare prioritized census tracts in the **90th percentile or higher** on both indices and added weight to places where the two tools agreed. This conservative method ensures we focus on areas most consistently recognized as high need.

Data note: *These priority populations appear throughout the report's maps and charts, representing the clearest opportunity to pair decarbonization with justice.*

For example, *over 6 million people in high-need communities live in states with no meaningful shared solar policy.*

Notes on Calculations

Household Savings Example: "A low-income household using 8,693 kWh/year that gets 50% of its usage from shared solar credits at a 25% discount would save \$206 annually, without any additional investment or expense."

Calculation:

Annual Household Usage = 8,693 kWh
Based on U.S. Energy Information Administration average usage of those with annual household income in the ranges of \$0 to \$39,999.

– Source: [U.S. EIA, RECS 2020](#)

Shared solar coverage = 50% of usage =
8,693 kWh × 0.50 = 4,346 kWh/year
Based on common program design guidelines

– Source: [NREL's Equitable Access to Community Solar: Program Design and Subscription Considerations](#)

Assumed retail electricity rate = \$0.19
Based on average city retail rates

– Source: [U.S. Bureau of Labor Statistics via FRED®](#)

Discount from shared solar = 25%

∴ Effective savings = 4,346 kWh × \$0.19 × 0.25 = \$206.45 per year

Emissions Impact Example: "A household using 8,693 kWh/year that gets 50% of its energy from shared solar would offset 4,346 kWh annually. Using national averages, that means a reduction of approximately 3,334 pounds of CO₂ emissions every year, the equivalent of not burning 170 gallons of gasoline."

Calculation:

Shared solar coverage = 50% of usage =
8,693 kWh × 0.50 = 4,346 kWh/year

– Source: see at left

U.S. average emissions factor for displaced electricity = 0.767 lbs CO₂/kWh

– Source: [U.S. EPA eGRID 2023 data](#)

Total avoided emissions = 4,346 kWh ×
0.767 lbs CO₂ = 3,334 lbs CO₂/year

Gasoline equivalence = 1 gallon of gasoline
burned emits ~19.6 lbs CO₂

– Source: [U.S. EPA GHG Equivalencies Calculator](#)

∴ 3,334 lbs CO₂ / 19.6 = 170 gallons
of gasoline

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