Expanding Solar Access to Underserved Communities Through SolSmart

Val Stori
Dreek Morgan
Maya Chilcote
Expanding Solar Access to Underserved Communities Through SolSmart

Val Stori
Senior Program Manager, Renewable Energy
Great Plains Institute

Dreek Morgan
Program Associate, Renewable Energy
Great Plains Institute

Maya Chilcote
Energy Transitions Intern, Renewable Energy
Great Plains Institute

Table of Contents

Executive Summary .................................................................................................................. 2
Introduction .......................................................................................................................... 3
What Is Equitable Solar Deployment? .................................................................................. 4
How Does SolSmart Support Equitable Solar Deployment? ............................................. 5
The Communities .................................................................................................................. 6
  Washington, DC, & Solar Works DC .................................................................................. 6
    Summary ......................................................................................................................... 7
    Climate Change Leadership & SolSmart Designation ...................................................... 7
    Program Overview .......................................................................................................... 8
    Benefits .......................................................................................................................... 11
    SolSmart Criteria Alignment ......................................................................................... 12
    Lessons Learned ........................................................................................................... 14
  Minneapolis, Minnesota & Green Zones/Green Cost Share ........................................... 14
    Summary ......................................................................................................................... 14
    Climate Change Leadership & SolSmart Designation ...................................................... 14
    Program Overview – Green Zones .................................................................................... 16
    Program Overview – Green Cost Share ............................................................................ 18
    Benefits .......................................................................................................................... 20
    SolSmart Criteria Alignment ......................................................................................... 23
    Lessons Learned ........................................................................................................... 23
Conclusion .......................................................................................................................... 24
Executive Summary

As the U.S. energy sector shifts toward more sustainable clean energy generation, the country has an opportunity to reshape not only the resources powering our homes, communities, and business, but also the way we engage community stakeholders, including those historically and currently underserved, in creating a just, equitable, and sustainable transition.

Solar energy development delivers meaningful environmental, economic, and social benefits as it reduces reliance on fossil fuels, creates sustainable skilled green jobs for a local workforce, and reduces household energy bills. It is critical that these benefits accrue to marginalized communities, including those at the frontline and bearing the brunt of legacy fossil fuel pollution as well as those historically marginalized through racial and other socio-economic policies. Centering solar equity as a key principle of solar programs and policies can make solar energy more accessible and distribute meaningful benefits to disadvantaged communities. A key component of centering solar equity includes engaging community members and community-based organizations in the genesis of solar programs and establishing task forces or steering committees to guide the management of solar programs.

This report was produced by the Great Plains Institute (GPI) for SolSmart, a national program helping cities, towns, counties, and regional organizations become solar energy leaders. The purpose of this report is to share how SolSmart assists communities in equitably deploying solar and to highlight two cities’ programs as case studies. The SolSmart program offers solar assistance to local and regional governments through no-cost technical assistance across five criteria pathways on planning and zoning, permitting and inspection, community engagement, government operations, and market development. Within each criteria category, SolSmart has action items that local governments can undertake to achieve different levels of SolSmart designation. The SolSmart designation is based on the number of points awarded for completing certain actions. The criteria pathways include equity components, and cities are encouraged to consider and implement these as they develop their solar programs.

To demonstrate the impact of SolSmart’s equity criteria on local governments’ solar energy programs and the impact of these programs on marginalized communities, GPI investigated SolSmart-designated cities that sought to address solar energy equity through workforce development, community solar access, access to low-cost finance, community collaboration, low- and medium-income (LMI) incentives, and alternative financing/repayment structures. GPI was especially interested in grassroots programs—programs that were initiated at the community level or that included a steering committee or task force with representatives from marginalized communities.

The two cities chosen for the report’s case studies are Washington, D.C., and Minneapolis, Minnesota. Both cities demonstrate how local governments can simultaneously pursue economic development and equitable solar deployment. In addition, the cities serve as replicable examples for centering equity into solar and other clean energy initiatives.
Washington, D.C.’s Solar Works D.C. program offers district residents the opportunity to participate in a solar installation job training program that provides rooftop solar to low-income households at no cost. In Minneapolis, the City’s Green Cost Share program offers grants for energy efficiency, solar, and other air pollution reduction projects to property owners across the city, particularly in neighborhoods overburdened with environmental injustice, known as Green Zones. The lessons learned from Washington, D.C., and Minneapolis demonstrate how solar equity programs could be developed with deep community engagement, specifically through partnerships with community-based organizations (CBOs), underserved residents, and grassroots organizations.

**Introduction**

Historically, low-income communities and communities of color have been disproportionately impacted by pollution related to fossil fuel energy infrastructure; these communities now face inequitable climate change impacts and lack resilient infrastructure to support disaster recovery in the event of power outages and natural disasters. In addition, low-income communities have faced significant public disinvestment in infrastructure and public services. Furthermore, low-income; rural; and Black, Indigenous, and people of color (BIPOC) communities have not had equal opportunities to engage or invest in the clean energy transition, and the multiple benefits of clean energy deployment have largely benefitted wealthier communities and households. This trend is changing, however. Solar adoption in low-income communities has risen from 11% in 2010 to 22% in 2022.¹ This growth is largely due to third-party solar ownership or lease models now common in the market. Thirty-four percent of all residential solar deployed in 2022 were third-party lease systems on households whose annual income was under $55,000. This ownership model avoids the high-upfront capital cost of outright ownership yet delivers utility bill savings.²

A recent report from the Lawrence Berkeley National Lab highlights that the median income of households adopting solar in 2022 was $117,000; this is largely due to two factors—1) rooftop solar is largely developed by people who own their own homes and 2) solar developers concentrate their outreach in higher-income states and communities.³ Under-resourced communities face several significant barriers to solar deployment and solar access including high upfront costs, limited workforce experience, and poor access to capital. The U.S. Department of Energy’s (DOE) national SolSmart program seeks to reduce barriers to equitable solar access through local government engagement and technical assistance around designing programs, policies, and regulations that improve access.

---


² “New Berkeley Lab report on solar-adopter income and demographic trends.”

³ “New Berkeley Lab report on solar-adopter income and demographic trends.”
This report, produced by the Great Plains Institute for the SolSmart program—a national program helping cities, towns, counties, and regional organizations become solar energy leaders—is a resource for local governments, particularly sustainability and planning staff as they develop solar programs and zoning ordinances. Local governments can establish programs and policies and adopt siting and permitting standards that reduce the cost of solar for low- to moderate-income (LMI) communities and can engage residents in identifying major barriers and solutions to solar access. They can also take actions to drive solar investment in underserved communities to help communities and their cities achieve specific goals around workforce and economic development, public health, green infrastructure, climate, and community wealth. Through the SolSmart program, local governments receive technical support and gain recognition for the development of programs and policies that establish partnerships with community-based organizations and that work with them to define solar equity goals including access to information in multiple languages, finance programs for low-income residents, and policies and best practices to support community solar. In this report, we provide two case studies highlighting local government programs that have expanded solar adoption among LMI households through LMI-specific incentives and workforce development. The case studies are replicable examples for centering equity into solar and other clean energy initiatives. Some of these programs were designed specifically to address equity, whereas others extended access into LMI communities through “spillover” deployment. In our nationwide scan to identify local government solar programs with equity components, we looked for programs that were SolSmart designated, that had established partnerships with community-based organizations, and that addressed a variety of different barriers to equitable solar access. After conducting research and interviews with local government staff, we narrowed our list to two programs to feature as case studies. The two programs meet SolSmart designation criteria and can be replicated by other units of local government.

What Is Equitable Solar Deployment?

Low- to moderate-income communities and communities of color are less likely to have access to solar largely due to financial barriers, lack of contractor/installer awareness, and poor infrastructure (e.g., inadequate roofs). This inequitable solar deployment distribution means that LMI communities are left without fair access to meaningful solar benefits and solar ownership, further exacerbating wealth disparities and environmental pollution in communities. Equitable solar deployment ensures that all community members, including disadvantaged, underserved, or historically marginalized members, have access to solar energy and its myriad benefits. These benefits include not only clean, local, and renewable power, but also the creation of local jobs and economic development, local climate goals, and reduced energy bills and price stability. Solar equity programs seek to provide access to solar power for low- to moderate-income residents who have a higher energy burden than their higher-income neighbors and which impacts their ability to pay for other essential services such as health care and
Furthermore, equitable solar programs can also address procedural equity and distributional equity. Procedural equity includes engaging and empowering community-based organizations and underserved community members to take a leadership role in planning and structuring solar programs. Distributional equity allows communities to equitably benefit from solar deployment, which includes benefiting not only from lower-cost energy bills but also from building community wealth. Local governments should consider both procedural and distributional equity as they begin their equitable clean energy transition journey. It is vital to the success of these programs that local governments engage community-based organizations early in the process to identify community needs and define program goals. Through early engagement, local governments can implement innovative programs, educate developers and contractors, and work with partners to develop incentives and financing that support equitable solar deployment.

Communities have many tools, strategies, and resources available to support equitable solar development, which they can use to increase funding for solar deployment, provide technical assistance, introduce training programs for solar installation, or facilitate community-specific programs that implement equitable solar deployment.

### How Does SolSmart Support Equitable Solar Deployment?

SolSmart is a national program for communities to expand their solar energy implementation through no-cost technical assistance, receiving SolSmart designation based on achievement criteria related to solar deployment. It is part of the federal government’s Justice40 Initiative that works to ensure that benefits from environmental, energy efficiency, clean energy sustainable housing, workforce development, remediation of legacy pollution, and other investments are equitably shared by historically underserved communities. The program is led by the Interstate Renewable Energy Council (IREC) and the International City/County Management Association (ICMA). Funding for the program is through the U.S. Department of Energy Solar Energy Technologies Office.

To receive SolSmart designation, communities implement specific program criteria. Different criteria are worth a different number of points; points accrue for each criterion implemented. As a community gains a certain number of points, it is eligible for different levels of SolSmart designation: bronze, silver, gold, and platinum. SolSmart has five criteria categories in which communities can earn points: permitting and inspection (PI), planning and zoning (PZ), government operations (GO), community engagement (CE), and a special category for equity and minority outreach.

---

4 Households with low incomes that spend a disproportionately high percentage of their household income on energy costs are “energy burdened.” These households frequently face the potential for utility shutoffs due to unpaid energy bills, and poor indoor comfort and air quality due to less-efficient housing and older heating infrastructure.
and market development (MD). Each designation includes required and elective criteria elements.

Many of these criteria categories have an equity component. When communities pursue any of these equity criteria, they display a commitment to equitable solar deployment. These specific criteria include dismantling barriers to residential/community solar, providing financial assistance for LMI residents, establishing programs with existing community-based organizations, and ensuring that zoning ordinances do not provide unnecessary barriers to equitable solar development. Below are three examples of SolSmart criteria with an equity component that communities can pursue to achieve a certain designation level:

- Supporting solar information sessions to explain opportunities and policies, particularly with disadvantaged communities. Hosting these sessions and developing materials in other languages are potential ways to increase participation from underserved and low-income community members. (CE-13)
- Support a community solar program. (MD-4)
- Provide solar incentives to LMI households, disadvantaged communities, and minority- or women-owned businesses. (MD-9)

The Communities

In this case study, we focus on two SolSmart-designated communities that have addressed equity in their solar deployment. These communities are Washington, DC, and Minneapolis, Minnesota, with its Green Zone and Green Cost Share programs. Both these communities offer several solar programs, but the two chosen for the case studies specifically highlight how they’ve incorporated equity within their solar programs based on community engagement and feedback.

The Solar Works D.C. program combines solar workforce development training with a hands-on learning opportunity for participants to install solar on low-income rooftops throughout the District.

The community-driven Minneapolis Green Zones brings community participation into the city’s planning and decision-making processes around social, environmental, and economic development. The Minneapolis Green Cost Share program provides match funding for energy efficiency and pollution reduction projects with a particular focus on Green Zones.

Washington, D.C., & Solar Works D.C.

Editor’s note: This case study was written during a transition period for Solar Works D.C. Solar Works D.C. is expanding and reorganizing and is now called the Next Gen Training Academy. This training academy is using many of the lessons learned from Solar Works D.C. to improve the program. Next Gen Training Academy will continue to be run in partnership with GRID Alternatives Mid-Atlantic.
Summary

The Solar Works D.C. program was a partnership between GRID Alternatives Mid-Atlantic and the District’s Department of Energy and Environment (DOEE). The program provided job training with wraparound services to individuals and no-cost rooftop solar installations to low-income D.C. residents. Many District LMI residents benefited from this program—both from a job training and annual electricity savings standpoint.

Climate Change Leadership & SolSmart Designation

Washington, D.C., has been a climate change leader since 2011, when it began convening community conversations around what a sustainable D.C. might look like. Notably, the city emphasized community conversations prioritizing people of color and trusted community-based organizations (CBOs). Working groups and community volunteers developed recommendations that became the foundation for the Vision for a Sustainable D.C., a nation-leading innovative vision for urban sustainability that led to the Sustainable D.C. Act of 2012. This act, the Vision’s implementation plan, created property-assessed clean energy (PACE) financing tools for energy efficiency retrofits and continued the District’s renewable energy rebate programs. The following year, the Mayoral Order of 2013, formally established Sustainable D.C. and required District agencies to perform sustainability assessments. In 2019, Sustainable D.C. was updated to take advantage of new technology developments and to integrate diverse community voices. Sustainable D.C. 2.0 centers on equity and community priorities as it positions the District to become the healthiest, greenest, most livable city in the nation.

That same year, the District passed new legislation—the Clean Energy D.C. Omnibus Amendment Act of 2018—to curb greenhouse gas emissions by 50% by 2032 in comparison to the measured emissions in 2006 and to codify several initiatives in the Clean Energy D.C. plan. At the time, this act represented one of the country’s most aggressive and innovative climate change actions, positioning D.C. as a global leader in curbing greenhouse gas emissions. Through policies and initiatives, the act accelerates clean and efficient energy adoption across various emissions sectors, as well as the development of workforce training programs. The Clean Energy D.C. 2.0 plan places specific emphasis on rooftop solar deployment due to the district’s residential and

---


commercial density and lack of available open areas for solar development. This includes rooftop solar on businesses and residences. It also highlights programs such as Solar for All, a DOEE program established in 2016 through the Renewable Portfolio Standard (RPS) Expansion Act, to increase local renewable generation and its multiple benefits for low-income residents. Community solar is noted as one way to increase opportunities for low-income households to access solar energy.\textsuperscript{8} Solar for All aims to help 100,000 low-income households in D.C. cut their energy bills in half by 2032\textsuperscript{9}; reducing living expenses for low-income households through community solar is a crucial step toward ensuring that the benefits of solar do not just benefit affluent homeowners.

The District began integrating equity considerations into its sustainability plans and climate policies from the very beginning to ensure that clean energy initiatives such as Sustainable D.C. included meaningful community engagement and equitable access to clean and healthy initiatives for the city’s low- to moderate-income residents. In June 2017, one month after the launch of Solar Works DC, a program that provided solar installation job training and no-cost rooftop solar installation for D.C. residents in single-family homes, D.C. Mayor Muriel Bowser reaffirmed the District’s commitment to the Paris Agreement and offered Solar Works D.C. as a prime example of her administration’s commitment to local climate change action, green careers, and affordable access to clean energy.\textsuperscript{10}

**Program Overview**

In 2016, the DOEE developed the Solar for All initiative, seeking to increase access to clean energy for 100,000 LMI District residents.\textsuperscript{11} The Solar for All initiative was part of the Renewable Portfolio Standard (RPS) Expansion Amendment Act of 2016 and is

\textsuperscript{8} Community solar projects provide residents without suitable rooftops, renters, and homeowners who cannot afford installing solar on their rooftop an opportunity to access renewable energy. These community systems reduce ratepayer bills, providing energy bill cost-savings to low-income households. Washington, DC, is increasing the participation of low-income residents in community solar projects through financial incentives and programs that increase equitable access to community solar.


funded by the Renewable Energy Development Fund.\textsuperscript{12} This Solar for All funding was available for projects that would address challenges to equitable solar access, and as a result, DOEE and the Department of Employment Services (DOES) received funding, which they in turn used to contract with GRID Alternatives Mid-Atlantic to operate the Solar Works D.C. program. Solar Works D.C. was a no-cost job training program for D.C. residents that began in May 2017 and ran until 2024, when it was combined with other GRID programs. As part of its hands-on training, the program also provided residential solar installations for underserved communities.

Solar Works D.C. originally envisioned operating three cohorts per year, but later expanded to five cohorts each year. The program provided classroom and onsite training to approximately 15–25 trainees per cohort. The original summer cohort consisted of participants from the Green Zone Environmental Program (GZEP)—one of the largest summer environmental job training programs for young people in the nation. The GZEP partnered with the Mayor Marion S. Barry Summer Youth Employment Program to provide youth and young adults aged 14 to 24, with opportunities to learn about and complete energy and environmental community-based work projects.\textsuperscript{13}

Each cohort session was six to seven weeks long, and DCIA provided participants with stipends and wraparound services. Program participants earned $16 an hour for 35 hours per week of training. In comparison, solar installers working in D.C. earned approximately $26 per hour.\textsuperscript{14} DCIA’s wraparound services included transportation fare for participants to get to and from the Infrastructure Academy and childcare for trainees while they were in class.\textsuperscript{15} There were more than 500 applicants to the program and more than 369 Washington, DC, residents participated. GRID Alternatives, DOEE, and DOES collaborated on the recruitment process.\textsuperscript{16} Trainees were chosen by GRID Alternatives through an application and interview process. Their availability, interest in a

\textsuperscript{12} The Renewable Energy Development Fund, a fund established by the RPS into which competitive energy suppliers must make a compliance payment per kWh for failing to comply with the RPS for that year;


\textsuperscript{14} “Mayor Bowser Launches Summer Cohort of Solar Works DC, Accepts SolSmart Gold Award.”

\textsuperscript{15} “Solar Works DC,” GRID Alternatives Mid-Atlantic (website), accessed April 4, 2024, https://gridalternatives.org/solar-works-dc-0.

\textsuperscript{16} Interview with Daniel Jones, GRID Alternatives Mid-Atlantic, February 13, 2024.
solar career, and physical ability to install solar were all part of the application review criteria.

During the classroom portion of the training, participants learned about PV systems, solar installation, solar installation safety, and electrical systems. They also worked on techniques such as public speaking, resume building, financial literacy, and other related skills. After the classroom portion of the training, participants received hands-on training as they helped to install two to four rooftop solar installations on single-family homes. As part of the installation process, participants worked on creating designs for each house. GRID Alternatives worked on permit approval, and trainees worked with experienced solar installers to install the solar systems in two days. According to GRID Alternatives, most trainees grasped the technical parts of solar installation very quickly.

A unique component of Solar Works DC’s program was the hands-on solar installation on the homes of low-income district residents. District homeowners can apply to GRID Alternatives for a no-cost solar system. Applicants must have a household income below 80% of the area median income to qualify. If approved, GRID Alternatives conducted a home inspection to assess if the roof was adequate to support solar panels. In the case that it was not, GRID Alternatives was able to fund home upgrades such as basic roof repairs, electrical upgrades, or even a new roof. Once installed, a third party (currently a financier for solar developers) owns the solar system, guaranteeing that the solar panels will be insured and maintained for the lifetime of the agreement between the third-party owner, the resident, and GRID Alternatives, and that any upgrade and repair costs are not passed onto the homeowner. However, the homeowners can benefit from the solar systems through their reduced electric bills as a result. Over the life of the Solar Works D.C. program, the cohorts installed 10 to 20 rooftop solar arrays each year and provided 266 residences with rooftop solar, reducing their utility bills by as much as $619 annually.

At the end of the training program, GRID Alternatives Mid-Atlantic provided study materials and practice sessions so participants could prepare for the NABCEP exam. Grid Alternatives paid for and provided program participants the opportunity to take the NABCEP certification exam, which, if successful, shows that the trainee has a fundamental understanding of the application, design, installation, and operation of PV systems. The certification is highly recognized by solar installers across the country.

GRID Alternatives Mid-Atlantic worked to stay in contact with program graduates, providing job placement support within six months of program completion. One hundred thirteen of the program participants were placed into clean energy jobs in the D.C. metropolitan area (GRID Alternatives only tracks graduates placed into clean energy jobs in the D.C. metro area). Other program graduates may be finding careers in

17 Interview with Daniel Jones, GRID Alternatives Mid-Atlantic, February 13, 2024.
19 Interview with Daniel Jones, GRID Alternatives Mid-Atlantic, February 13, 2024.
20 Interview with Daniel Jones, GRID Alternatives Mid-Atlantic, February 13, 2024.
related fields or in solar outside of the D.C. area. This training program was highly recognized by contractors in the D.C. area.

### Partners in this program and their roles:

<table>
<thead>
<tr>
<th><strong>DOEE</strong></th>
<th>Provides funding through the Solar for All initiative, which is part of the Renewable Energy Development Fund (RPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRID Alternatives Mid-Atlantic</strong></td>
<td>Administers the program, facilitates permits for rooftop solar, hires additional instructors, and conducts classroom and onsite training</td>
</tr>
<tr>
<td><strong>DCIA</strong></td>
<td>Provides some staffing for training program, facilitates funding to trainees, provides wraparound services, and provides classroom space</td>
</tr>
<tr>
<td><strong>DOES</strong></td>
<td>Provides stipend for trainees (DCIA is part of DOES)</td>
</tr>
</tbody>
</table>

### Benefits

Solar Works D.C. is an example of a unique and important program in equitable solar deployment due to the stipends that it was able to provide to program participants and the wraparound services that made it easier for low-income residents to attend classes. This program provided D.C. residents with solar installation job training and helped low-income D.C. residents receive rooftop solar at no cost. GRID Alternatives Mid-Atlantic, DOEE, and DOES focused on recruiting trainees from underserved communities in the District to help them build sustainable, supporting careers. The $16/hour stipend for the 35-hour training week allowed trainees to participate without a large financial burden. Advisors from the training program worked with each trainee on career soft skills such as financial literacy and resume building to help address other barriers trainees may be facing.

Solar Works D.C. also benefited low-income single-family homeowners and renters, typically from underserved communities, who received these no-cost rooftop solar installations. Younger families, older residents on a fixed income, and residents with health issues who may not be able to work tend to pay a higher percentage of their incomes on their utility bills than any other group. Most low-income households in the District have an energy burden greater than 6% and can benefit from lower electricity bills.21 Rooftop solar also increases property values. And with the third-party ownership

---

model, homeowners can glean the benefits without owning their own rooftop solar system. The third-party owner also benefits from this arrangement by receiving the federal and state tax incentives from the solar system.

**SolSmart Criteria Alignment**

The workforce training and no-cost solar installation components of Solar Works D.C. provides a strong example of an equitable solar workforce development program. Local governments that choose to replicate the Solar Works D.C. program can receive credit for three SolSmart criteria:

CE-10: Distribute solar job training and career opportunities in coordination with local colleges and/or workforce development organizations.

MD-9: Provide local incentives for solar PV to low- to moderate-income (LMI) households, disadvantaged communities, disadvantaged business enterprises (DBEs), minority- and women-owned business enterprises (MWBEs), and/or nonprofit organizations that provide community services.

MD-10: Partner with financial institutions and/or foundations to offer loans, rebates, grants, or other incentives for solar PV projects.

As part of its commitment to sustainability and its comprehensive approach to meeting its renewable energy goals, Washington, DC, pursued SolSmart designation, achieving the highest designation level available at the time—Gold—in 2017 with 435 points. The District earned 45 points in the “Utility Engagement” and 135 points in the “Community Engagement” categories.22 Below are a few examples of the criteria D.C. met for which it was awarded SolSmart credit:

Examination%20of%20District%20Residents%E2%80%99%20Experiences%20with%20Utility %20Burdens%20and%20Affordability%20Programs.pdf.;

The US DOE data show that the average US energy burden for low-income households is 8.6%, nearly three times higher than the national average for non-low-income households. “Low-Income Community Energy Solutions,” Office of State and Community Energy Programs (website), accessed February 21, 2024, https://www.energy.gov/scep/slsclow-income-community-energy-solutions#:~:text=Energy%20burden%20is%20defined%20as,which%20is%20estimated%20at %203%25;

In DC, the median energy burden is 2% versus 6% for low-income households. Forty percent of those households have a severe energy burden above 10%. Drehobl, Hernández, Ayala, and Ross, An Examination of District Residents’ Experiences with Utility Burdens and Affordability Programs.

22 Note that SolSmart criteria have changed since DC’s designation. These criteria numbers and some of the categories do not align with the current SolSmart criteria. For example, the “Utility Engagement” category no longer exists; criteria that fell under this category have been rolled into other categories.
- Forming an active energy task force or working group that meets at least three times per year (CE-1)
- Encouraging solar on nonprofit or community facilities through fee waivers, technical assistance, or connections to other forms of support (CE-3)
- Supporting or hosting a community group purchase program (CE-4a)
- Publicly encouraging community solar projects or other solar projects on community facilities (CE-5d)
- Engaging with community in robust, ongoing discussion around climate, energy, or sustainability plans (CE-5e)
- Discussing community or shared solar programs with the local utility (U-2)
- Launching and conducting outreach support for utility community solar program (U-5)
- Providing PACE financing in the District (MDF-6)
- Providing local incentives or locally enabling finance (MDF-7)
- Created an online permitting checklist, increasing transparency for community members and solar installers (PI-16)
- Allowed solar by-right accessory use in all zones (so solar installations don’t require special permits or hearings) (PZ-4)
- Provided a streamlined permitting pathway for small PV systems (PI-4)²³

Washington, DC, received credit for programs it had already established through its Sustainable D.C. Act, programs it was developing for the Clean Energy D.C. plan, and actions it was taking to improve solar permitting and siting. For example, as it pursued SolSmart designation, the District was designing its Affordable Solar Program, which helped income-qualified district residents install solar panels at no cost, earning 20 points under MDF-7.²⁴ Other examples of programs that were under development around the time the District was pursuing SolSmart designation include Solar for All (single-family and community solar for LMI households) and Solarize D.C. (community-based group bulk-purchasing solar installation). The District made outreach materials available in Spanish, French, Amharic, Chinese, Korean, Vietnamese, and English.

**Lessons Learned**

The Solar Works D.C. program is no longer operational, but its successor program—the Next Gen Training Academy—is making its debut in 2024. The goal of this program will be to create solar career pathways for underrepresented groups. Next Gen Training Academy will also be focusing on a broader range of skills in the solar energy field, including sales, design, management, and other roles. This more holistic approach expands the initiatives began by Solar Works D.C. and creates more opportunities for underrepresented communities in the D.C. area. This program will be privately funded

²³ Data from SolSmart Salesforce database. Accessed February 27, 2024.

but will continue to do much of the same work. Grid Alternatives will continue to administer the program.

Minneapolis, Minnesota & Green Zones/Green Cost Share

Summary
The city of Minneapolis, Minnesota, is a SolSmart Gold-designated community that runs two programs—Green Zones and the Green Cost Share Program—that work together to promote more equitable solar access to communities that have been disproportionately impacted by environmental pollution and climate change. Minneapolis adopted its first climate plan that addressed equity considerations in its 2013 Climate Action Plan and continues to center climate and energy equity through new policies such as the Climate Equity Plan of 2023. To effectively address the energy burden and environmental injustices in marginalized communities, Minneapolis established Green Zones and the Green Cost Share Program. Green Zones are citywide neighborhood designations based on demographics, environmental inequities, institutional racism, and underinvestment. The Green Cost Share program is a funding program that awards grants to residences and businesses for projects that save energy, reduce air pollution, and cut carbon emissions. In addition, the Green Cost Share program prioritizes making solar more affordable to underserved residents by providing a higher rate of matching funds to nonprofits, businesses, and single-family and multifamily properties located in Green Zones that are looking to install solar.

Climate Change Leadership & SolSmart Designation
Minneapolis has long been a leader in creating a more sustainable and climate-just future and in addressing inequitable access to renewable energy, environmental, and other sustainability programs. Minneapolis adopted its first greenhouse gas emissions reduction targets in 1993, later revising these targets in the Minneapolis Climate Action Plan of 2013 (CAP). The CAP outlined a roadmap to reduce energy use by 17%, and generate 10% of the city’s electricity from local, renewable energy sources by 2025. The CAP focused on reducing emissions from three key sectors: buildings and energy, transportation and land use, and waste and recycling. The CAP planning process

---


28 Minneapolis Climate Action Plan.
sought the engagement of the Environmental Justice Working Group to incorporate an environmental justice lens. The Environmental Justice Working Group brought social and environmental equity considerations and action items to the plan so that the people most impacted by climate change could share in the benefits of climate action.

The city of Minneapolis introduced the 100% Renewable Electric Resolution (100RE) in 2018. The goal of 100RE is to achieve 100% renewable electricity community-wide by 2030. Notably, 100RE was the city’s most intentional effort to address equity in renewables and solar energy. Achieving 100% renewable electricity requires innovative transitions as to how residents, businesses, and the city consume electricity. The blueprint of 100RE is a community-driven plan centered on the voices of residents and BIPOCI (Black, Indigenous, people of color, and immigrant) community leaders. In addition to providing guidance to policymakers on how to generate clean community-wide electricity, 100RE includes commitments to allocate dollars in the city budget to be directed to small business development, community-based infrastructure, and other community-level amenities to reverse and repair harm experienced by BIPOCI residents.

In 2023, the Minneapolis City Council adopted a Climate Equity Plan (Equity Plan), which outlines strategies for the city to reach net-zero emissions by 2050. Building on the goals and programs established by the 2013 CAP, the Equity Plan centers on equity, environmental justice, and public health. Green Zones help provide a specific focus on neighborhoods that have historically been marginalized by previous city policies, which led to years of environmental and economic harm for some community members. This plan has a stronger focus on community engagement and environmental equity. The vision of the Climate Equity Plan is to “achieve an environmentally just, resilient, low-carbon and equitable city.”

The city of Minneapolis’ energy transition and equitable solar deployment efforts sparked interest in SolSmart and the opportunities and technical resources that SolSmart provides for reviewing zoning ordinances and other local government barriers to solar uptake. Minneapolis enrolled in the SolSmart program, achieving Gold designation in 2016, and creating regulatory frameworks that support solar deployment. The city achieved its designation earning points for streamlining the permitting process for small solar systems, allowing solar as a “by-right accessory” use across all zones, creating an online solar map, and installing over 240kW of solar capacity on city facilities including on critical infrastructure such as fire stations.

their active citizen advisory boards helped the city earn points under the Community Engagement Category. The city earned a total of 425 points toward its Gold designation, earning 105 of these points in the Community Engagement category. Below are a few examples of the criteria Minneapolis met for which it was awarded SolSmart credit:

- Creating an online permitting checklist, increasing transparency for community members and solar installers (PI-16)
- Allowing solar by-right accessory use in all zones (so solar installations don’t require special permits or hearings) (PZ-4)
- Discussing community or shared solar programs with the local utility (U-2)
- Engaging and communicating with utility on community goals for solar, net metering, and interconnection processes (U-3a)
- Forming an active energy task force or working group that meets at least three times per year (CE-1)
- Establishing partnerships with local nonprofits or organizations on solar with multiyear goal or initiatives (CE-5c)
- Publicly encouraging community solar projects on community facilities (CE-5d)
- Engaging with community in robust, ongoing discussion around climate, energy, or sustainability plans32 (CE-5e)

Program Overview – Green Zones

Green Zones are neighborhoods that have been concurrently affected by environmental pollution and racial, political, and economic oppression.33 The concept of Green Zones was first envisioned by the Environmental Justice Working Group as a result of planning for the first 2013 CAP. Community-identified Green Zones were mobilizing and creating health and environmental work plans as early as 2013, several years before the city of Minneapolis formally recognized Green Zones in 2017. Environmental justice organizations in Minneapolis and Minnesota, such as Community Members for Environmental Justice, the MN BIPOC EJ Table, and the Environmental Justice Working Group spearheaded efforts of community building and mobilization, speaking out against the environmental and economic oppression that disproportionately impacts communities of color. Ultimately, the city of Minneapolis formally established Green Zones (Northside and Southside) in 2017, following a year of engagement with the Green Zones Work Group and residents across the city. The Work Group identified

32 Note that SolSmart criteria have changed since Minneapolis’ designation. These criteria numbers and some of the categories do not align with the current SolSmart criteria. For example, the “Utility Engagement” category no longer exists. Criteria that fell under this category have been rolled into other categories.

Green Zones as communities faced with the greatest levels of pollution, disinvestment, and marginalization.

Each Green Zone has a community advisory board that advises the City Council and creates work plans for social, economic, health, and environmental development in their neighborhoods. Board members of each Green Zone have experience in environmental justice, climate resiliency, and cumulative health impacts of pollution. Each Green Zone advisory body meets every month where members look at current work plans, projects, and progress. These groups are focused on social justice, health, green energy, environmental justice, and a variety of other topics as the task force sees fit.

The Northside Green Zone contains Hawthorne, McKinley, Near-North, Marshall Terrace, Sheridan, Bottineau, and St. Anthony West neighborhoods. The area experiences environmental pollution from several sources including I-94, neighborhood sources, and industrial facilities. One facility of concern for residents is the Hennepin Energy Recovery Center (HERC), which is a waste-to-energy incinerator that burns trash to create steam for energy production or heat.\(^{34}\) The area also previously contained the Northern Metals metal shredder, which caused severe PM10 air pollution.\(^{35}\) The Northside Green Zone is managed by an advisory board—the Northside Green Zone Task Force, which contains 19 members chosen by city staff, city council, and community leaders through an application process. Fifteen must be community members who live in the designated region, and four are non-voting city staff members. Four of the community members are also partners of the Environmental Justice Coordinating Council (EJCC).

The EJCC was formed in 2017 and is a council of Black and brown leaders focused on environmental and social justice change.\(^ {36}\) As a collective, the EJCC works to understand and address environmental justice overburden in their communities.\(^ {37}\) One vital role the EJCC plays is to facilitate working groups for the community to conduct outreach, raise awareness of air pollution, leverage funds, and implement projects to benefit those living in areas disproportionately impacted by environmental injustices.\(^ {38}\)

The Southside Green Zone contains Cedar-Riverside, Ventura Village, East Phillips, Midtown Phillips, and Phillips West neighborhoods. A former arsenic superfund site in East Phillips, Smith Foundry, and the roof depot has been a serious cause for concern

---


37 “Environmental Justice Coordinating Council.”

38 “Environmental Justice Coordinating Council.”
by residents. The Southside Green Zone Council manages the Green Zone with a council of 20 community members. There are 16 voting members who must live in the community, with four of those for youth members ranging from ages 14–24. The Council also includes four non-voting members who may live outside of the community but must actively work in the Southside Green Zone.

Program Overview – Green Cost Share

The Green Cost Share program is a local government financial incentive program. The program offers grants for energy efficiency, solar, and other air pollution reduction projects to property owners across the city. The city of Minneapolis continues to transform this program to meet its many evolving environmental justice, climate change, and air pollution reduction goals.

The city of Minneapolis established the Green Cost Share program in 2012 to help businesses complete voluntary air pollution reduction projects and reduce local air pollution from dry cleaners. At the same time, dry cleaners produced the hazardous cancer-causing chemical, perchloroethylene. The city took a novel approach by offering dry cleaning businesses financial assistance to eliminate the use of pollutants before passing any new regulation. The program was successful, and Minneapolis became the first city in the U.S. to remove all the perchloroethylene from dry cleaning businesses.

Over the next decade the program evolved to become a key component of the City of Minneapolis’ strategy to reach its goal to cut greenhouse gases 30% by 2050, and 80% by 2050. With this expanded, longer-term vision, the city started offering match funding to residential, commercial, and industrial property owners as an incentive to invest in renewable energy, energy efficiency, and pollution reduction projects. A full list of eligible properties is shown in Table A. An important evolution of the Green Cost Share program was the emphasis on environmental justice. The city offers higher incentives and prioritizes projects in Green Zones, income-qualified housing, and buildings damaged by the civil unrest of 2020. See Table B.

Before 2017, about 20% of program participants were located in environmental justice neighborhoods. The Minneapolis Green Zone task force expressed a desire for more

---


40 “Green zones.”


investment in renewables, energy efficiency, and green jobs. In 2017, the Green Cost Share program staff adjusted the program’s match funding formula to galvanize more projects in the Green Zones. Initiatives to deploy more solar projects in environmental justice neighborhoods through the Green Cost Share program steadily increased. In fact, from 2019–2021, more than 200 environmental justice projects were funded that included funding for solar deployment, projects decreasing energy costs, and pollution reduction projects in Green Zones.

---

Green Cost Share program helps local auto shop in Southside Green Zone go solar

The Life Garage on East Lake Street in Minneapolis, founded by Cathy Heying, opened 10 years ago to provide low-cost automobile repairs for those in need.

Due to the garage’s location in the Southside Green Zone, the solar project qualified for a higher incentive rate and secured $13,251 in funding through the Green Cost Share program for a 38.4 kW rooftop solar system.

No cost was required for solar installations due to the various incentives for which The Life Garage qualified.

As a result, The Life Garage saved $2,366.50; Heying is able to put those savings back in to her business and pass along cost reductions to her community customers.

---

44 Karas, “Minneapolis’ Data Driven Green Cost Share Program Delivers Environmental Justice.”

45 Karas, “Minneapolis’ Data Driven Green Cost Share Program Delivers Environmental Justice.”

46 “2023 Climate Equity Plan.”


48 Carlin, “Minneapolis Green Cost Share program helps local garage lift community with solar.”
Green Cost Share program helps Native community in Minneapolis

MIGIZI, a nonprofit Native youth organization located in the Southside Green Zone, qualified for a higher match of almost $13,000 for a 28.3 kW solar array on their building’s rooftop and carport.

Bob Blake, a member of the Red Lake Nation and founder and CEO of Solar Bear, a solar installation company, helped MIGIZI apply for the Green Cost Share funding opportunity and then installed the panels.

Due to the solar incentives for which MIGIZI qualified, the organization decreased its energy costs, allowing for economically sustainable operation. MIGIZI hopes that the solar array will entice more organizations and disenfranchised communities to get involved in the advancement of clean energy.

Benefits

The Green Cost Share Program provides property tax breaks, solar incentives, and funding for energy efficiency upgrades to Minneapolis property owners who meet the program’s affordable housing standards. Through the Green Cost Share program, the city also offers free energy audits for homes and has multiple financial aid programs to incentivize commercial, residential, and environmental investment in Green Zones.

Once prospective applicants have identified a solar developer, they can apply for match funding for their solar project through the program’s website. There are some eligibility requirements for the program and three different incentive categories that determine how much funding a project can receive.

<table>
<thead>
<tr>
<th>Eligible Properties for Green Cost Share Incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business/commercial</td>
</tr>
<tr>
<td>Industrial</td>
</tr>
</tbody>
</table>


51 “2023 Climate Equity Plan.”

Multifamily (3+ units)

Nonprofit

Enrolled in 4d Affordable Housing Incentive Program

Single-family or duplex (must be solar group purchase*)

* Solar group purchase is an eligibility category that must include 5+ properties with 20% of them being environmental justice or income qualified.

Table B. Incentive rates for the Environmental Justice and Income Qualified categories compared to the Base Case.

<table>
<thead>
<tr>
<th>Base Category</th>
<th>Environmental Justice Category</th>
<th>Income-Qualified Housing Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fulfills eligible property requirements</td>
<td>Fulfills base category requirements</td>
<td>Fulfills base category requirements</td>
</tr>
<tr>
<td>Properties located in a Green Zone or Great Street Eligible Priority Area</td>
<td>Part of income-qualified housing or utility bill support program (Ex: low-income rental classification (LIRC))</td>
<td></td>
</tr>
<tr>
<td>Incentive Rate per kWh-AC: 20 cents</td>
<td>Incentive Rate per kWh-AC: 35 cents</td>
<td>Incentive Rate per kWh-AC: 40 cents</td>
</tr>
</tbody>
</table>

Those interested in pursuing Green Cost Share funding can either go to city staff or a solar developer before applying. City staff can provide more information about the Green Cost Share program. Applicants may also contact a solar developer for a quote before contacting the city’s Sustainability Department to apply to the program. In either order, the solar developer calculates the estimated annual production of the solar system, and city staff then multiply the estimated annual production by the incentive rate based on the project’s category, yielding the amount of the City Solar Match. Businesses, nonprofits, or residents can apply using these estimates. Each project that is accepted by the city can receive up to $50,000 in funding.53 Entities that are awarded funding receive the amount based on the City Solar Match calculation. The payment is typically in the form of a reimbursement, but many solar developers are aware that the reimbursement model is a barrier for low-income residents, businesses, and organizations that are likely not able to pay the high up-front capital costs of solar systems. Thus, many developers have been flexible with the payment of the upfront costs since they know the exact amount of the City Solar Match award and can anticipate receiving that payment once the project is installed.54

---

53 “Solar Overview.”

54 Interview with Isaac Evans, Sustainability Coordinator, City of Minneapolis, July 25, 2023.
Solar developers have been on board with the Green Cost Share program and its incentives. Isaac Evans, Minneapolis’ Sustainability Program Coordinator, says “once a solar developer finds out about the incentives, they are quick to react and incorporate them into their sales pitches.”\textsuperscript{55}

The Green Cost Share program maintains a project database to track the capacity, location, and incentive category for funded projects. Sixty-six projects have been completed in Green Zones, totaling 3,684,492 kWh and $1,098,673 of funding (See Table C and Figure 1).\textsuperscript{56}

Table C. Overview of the solar project data maintained by the Green Cost Share program. Data are from 2012–2022.

<table>
<thead>
<tr>
<th></th>
<th>Northside Green Zone</th>
<th>Southside Green Zone</th>
<th>Total (in Green Zones)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar projects completed</td>
<td>42</td>
<td>24</td>
<td>66</td>
</tr>
<tr>
<td>Capacity</td>
<td>2,050 kW-DC</td>
<td>906 kW-DC</td>
<td>2,956 kW-DC</td>
</tr>
<tr>
<td>Electricity saved</td>
<td>2,544,095 kWh</td>
<td>1,140,397 kWh</td>
<td>3,684,492 kWh</td>
</tr>
<tr>
<td>Total spent</td>
<td>$784,263</td>
<td>$314,410</td>
<td>$1,098,673</td>
</tr>
<tr>
<td>Average incentive per project</td>
<td>$18,672.93</td>
<td>$13,100.42</td>
<td>$16,646.56</td>
</tr>
</tbody>
</table>

\textsuperscript{55} Email from Isaac Evans (Sustainability Coordinator, City of Minneapolis), to Maya Chilcote, August 9, 2023.

\textsuperscript{56} Email from Isaac Evans (Sustainability Coordinator, City of Minneapolis), to Maya Chilcote, July 25, 2023.
SolSmart Criteria Alignment

Communities interested in replicating these programs would fulfill the following current SolSmart criteria:

CE-2: Establish partnerships with local community-based organizations or other organizations focused on serving disadvantaged communities within your community to define your community’s solar equity goals, develop implementation strategies, and establish a plan for tracking and reporting on progress.

CE-9: Post an online dashboard or summary of solar PV metrics for your community, including total installed solar PV capacity, solar PV + storage installations, and community solar and/or solarize subscribers (if applicable). Metrics should identify solar PV adoption in disadvantaged communities as well.

MD-8: Provide local incentives or locally enabled finance (e.g., a revolving loan fund) for solar PV and/or solar PV + technologies (e.g., battery storage and/or electric vehicle charging).

GO-12: Directly install or provide technical or financial support for the installation of solar PV on affordable housing, multifamily housing, community-based organizations, and/or resilience hubs.

Lessons Learned

Grassroots community engagement was the driving force behind the initial designation of the city’s Green Zones. The formalization of the Green Zone tasks forces centered on the engagement and input of community leaders in city programs and policy. For example, the task force was instrumental in directing Green Cost Share funding to the Green Zones at a higher match rate for environmental justice neighborhoods. However, the coordination and engagement of community-based groups in city planning and policy development has not always been straightforward or coordinated. Initial engagement developed organically, and the city process to seek and formalize engagement was at times long and bureaucratic. That said, the continued formal engagement of the task forces and the Environmental Justice Working Group in climate policies and programs highlights the importance of community engagement and demonstrates the city’s and communities’ success in centering equity, environmental justice, and community health. The inclusion of Green Zones and the prioritization of solar and pollution reduction projects in environmental justice communities in the new Climate Equity Plan speaks to the ongoing impact of the Environmental Justice Working Group. Despite the success of the two programs, in 2023, Green Cost Share funding was proposed to be reduced to $155,000 in 2024 from its $416,000 level in 2023.57

Conclusion

To fully and equitably decarbonize our cities, communities, and neighborhoods, the clean energy transition must include opportunities for low-income businesses and residents to participate in and build wealth from clean energy access and ownership. The ability for low-income and marginalized communities to engage in solar can be challenging for several reasons: 1) they may not own their home; 2) the lack of access to capital to finance the high up-front costs associated with solar projects; 3) low to no credit ratings to be able to access loans; 4) low-income families are typically not in a qualifying tax bracket to qualify for the federal investment tax credit (ITC), so the tax implications or burdens they may face if they do not fall within a qualifying tax bracket can hinder low-income families from taking advantage of the federal ITC; 5) lack of trust of government policies and initiatives due to a history of injustice; and 6) unfamiliarity with solar energy. To adequately address the various obstacles including low-income businesses and residents to clean energy access, cities and other units of local government can integrate equity solutions into their clean energy, climate, and decarbonization goals and programs, which can range from expanding access to solar for those with low credit scores to developing community workforce trainings that provide wraparound services.

Minneapolis and Washington, D.C., are two low-income-serving solar programs at the city level that are integrating equity into their solar offerings. They serve as exemplars of how equity programs should be developed with deep community engagement, in particular through partnership with CBOs, underserved residents, and grassroots organizations. Building relationships with community members and establishing community task forces, working groups, or advisory committees—similar to the EJCCs in Minneapolis’ Green Zones or Sustainable DC’s task forces, can help to build community trust, engagement, and collaborative development of program and policy design. As cities consider creating equitable solar access programs, they should also be considering creating wealth-building opportunities—for example, through community ownership of community solar projects or by employing minority-owned contractors to lead workforce trainings or through the installation of rooftop solar or community solar, which can reduce energy burdens and increase property values.

Local governments seeking to increase equitable access to solar and bring solar’s myriad benefits to underserved neighborhoods can pursue SolSmart designation using SolSmart’s equity criteria as a framework for implementing solar equity into local government programs and offerings. The two case studies provided in this report are meant to inspire local governments and engage citizens in advocating for and designing local programs and policies that provide equitable solar access, build community wealth, lower energy burdens, and support economic and workforce development. SolSmart technical assistance providers can help local governments set frameworks that both support equitable engagement and provide access to rebates, incentives, low-interest loans, or other financing products.