

ADVANCING SMALL BUSINESS SOLAR EQUITY

APPENDIX F: SOLAR INSTALLERS BRIEF

LAKE STREET–WEST BROADWAY–UNIVERSITY AVENUE
MINNEAPOLIS AND SAINT PAUL, MINNESOTA



Photo by Brandon Stengel for BWBR Architects, Inc (www.bwbr.com)

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About this document

This document is an appendix of “Advancing Small Business Solar Equity: Final Technical Insights Report” (Kazinka et al. 2024), a report published by Lake Street Council and its partners as an outcome of their participation in the Solar Energy Innovation Network. The full report and other appendices can be found at www.visitlakestreet.com/business-blog/sein-report.

About the Solar Energy Innovation Network

The Solar Energy Innovation Network (SEIN) seeks to overcome barriers to solar adoption by connecting teams of stakeholders who are pioneering new ideas with the resources they need to succeed. SEIN is funded by the US Department of Energy Solar Energy Technologies Office and is led by the National Renewable Energy Laboratory.

Teams that participate in SEIN receive direct funding and analytical support from the US Department of Energy national laboratories and participate in peer-to-peer learning with other teams tackling similar challenges. These teams are developing and documenting their solutions for solar adoption with scale in mind so that others can adapt those solutions to their own contexts. Ultimately, the true impact of these teams’ efforts will be to enable a wide array of communities to adopt solar solutions that meet their needs in their contexts.

Disclaimer

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Overview

The “Solar Installers Brief” captures key themes and insights from interviews with local installers with experience working in the Solar Energy Innovation Network (SEIN) Advancing Small Business Solar Equity program corridors (Lake Street and West Broadway in Minneapolis and University-Midway in Saint Paul). While the primary focus of the interviews conducted for this project was on expanding the team’s understanding of Black, Indigenous, and people of color (BIPOC)- and immigrant-owned small businesses, the scope extended into the solar installation industry in order to gather and share insights from the delivery side of the solar procurement and installation process and to understand the current relationship between solar installers and small businesses in the program corridors.

Company overviews: Identity, operation, and structure

The project team identified and interviewed five local solar companies with the goal of collecting diverse opinions on working within the program corridors. Each installer brings a different background and unique perspective to the solar field in the Twin Cities.

Apadana Solar Technologies: Apadana Solar Technology is an LED and solar installation company that opened in 2007 and is located in New Hope, Minnesota. The company emphasizes hiring engineers to ensure their arrays are designed well and also to keep engineering, procurement, and construction in-house as much as possible. They have about 40 employees and don’t have any formal equity goals; however, over half of their staff identifies as BIPOC throughout all levels of the organization. Apadana’s niche is small- to mid-range commercial and nonprofit solar installations, typically less than 40 kilowatts (kW). Occasionally, they will partner with Cooperative Energy Futures and Solar United Neighbors to complete mission-driven work, especially for affordable housing complexes.

GoSolar: Based in Bloomington, Minnesota, GoSolar’s mission is to serve BIPOC communities in the Twin Cities with solar. GoSolar comprises two separate businesses—GoSolar Construction and GoSolar Education. GoSolar Construction is the solar installation side. They frequently collaborate with Renewable Energy Partners and Lake Street Solar to install low-income-focused community solar gardens and have taken a lead role in some innovative projects, including the Emerge Second Chance Recycling and Shiloh Temple community solar gardens. GoSolar Education is working to develop an employment pipeline and wraparound services for youth interested in pursuing a career in solar, offering hands-on experience with GoSolar Construction’s real-world community solar installations to train students.

Just B Solar: Just B Solar describes itself as a connector or facilitator of solar for BIPOC communities in the Twin Cities rather than a traditional solar installer. In 2022, Just B Solar served a project manager role for about 40 projects and was the installer on about 25 of those (pre-pandemic, this was about 20-30 projects per year). They frequently partner with GoSolar and Renewable Energy Partners and have

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had a lead role in several innovative projects that have been developed in North Minneapolis, including the Shiloh Temple community solar garden. Just B Solar is also working with Cooperative Energy Futures to develop its own solar co-op called Renewable Energy United. Lastly, Just B Solar hosts Solar Camps for kids in elementary through high school to introduce them to solar and help them envision a career in solar. For older students, they help them earn their North American Board of Certified Energy Practitioners (NABCEP) certifications.

Solar Farm: Solar Farm opened in 2006, originally installing solar hot water arrays and eventually incorporating solar photovoltaic (PV) once it became more affordable for residents and small businesses. Solar Farm has a staff of four, plus two contractors they regularly hire. They manage about 20 projects per year on average and focus on delivering high-quality customer service. Solar Farm's installations are typically split between the Twin Cities metropolitan area and around the Brainerd, Minnesota, area, two hours north of the Twin Cities. About 50 percent of their projects end up being residential, and the other 50 percent end up being commercial, typically for small family farms in Greater Minnesota.

TruNorth: TruNorth, based in Arden Hills, Minnesota, was established in 2010, and today the company has grown to over 30 employees. The company averages about 200 projects per year, with more projects being residential (smaller in size, around 9–10kW) and fewer being commercial (larger in size, up to 750kW). TruNorth values a strong attention to detail and customer service, keeping detailed records of the 73 discrete tasks they have identified as part of each successful installation. While there are no formally stated equity goals, TruNorth operates on the philosophy of “no mission, no margin” (and conversely, “no margin, no mission”). They keep a healthy balance of profit-driven projects and projects they support to benefit the community and community actors and leaders. They have used their tax appetite to monetize tax credits, have done weatherization work, and have constructed power purchase agreements (PPAs) with various other mission-driven organizations.

Customers & barriers

Nearly every solar installer interviewed offered the same response on why businesses ultimately decide to go solar: to reduce energy bills. Solar is a means to reduce a fixed monthly cost many business owners previously felt they didn't have control over. With electricity rates rising historically (and projected to continue rising) and with the potential to improve property values while also being able to capture ample federal tax benefits, many installers called the decision to install solar a “no-brainer.” One installer mentioned that, ten years ago, their solar client base consisted of several churches that viewed solar as the moral thing to do. Today, businesses choose solar because it's a good financial investment.

However, one installer argued that while the finances make a strong case, it's not quite a “slam dunk” just yet. There is still risk involved with solar, and their customers typically are motivated in part by a desire to do something beneficial for the environment, in addition to the financial benefit.

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Still, managing expectations on what solar can and cannot do and being viewed as a trusted source of information is an important shared sentiment among all the installers interviewed. Following the passage of the federal Inflation Reduction Act and with solar PV's general trend toward greater affordability, many are wary of the number of "fly-by-night" installers now cropping up who are offering their potential customers shoddy workmanship and overpriced services. Even for the larger, more established installers we interviewed, interviewees stated that customer service was essential to their business model because customer referrals make up the majority of their business. They worry that illegitimate installers are damaging the reputation of both solar and solar installers in the Twin Cities.

For the installers we interviewed with a prominent presence in North Minneapolis, where many of Minneapolis' Black residents live, churches have been the best way to recruit solar interest within the community. These installers are particularly wary of a history of predatory schemes that have affected the Black community there, such as racial housing covenants or the scam loans leading to the 2008 Great Recession, which decimated homeownership. They worry about illegitimate solar becoming another way to harm Black Twin Cities residents. Most installers recommended that, upon implementation, this project have some sort of vetting mechanism.

The solar companies we interviewed must manage customer expectations around costs, program limitations (such as time-limited or money-limited incentive programs), and project timelines. One interviewee is often wary of including competitive and less reliable incentives in their bid proposals because customers who lose out on receiving them might back out at the last minute, expecting a lower price tag. The installation process can also take a longer time than most customers would expect. Between our array of interviewees, the typical timeline range for installation fell between 120 days after a customer signed a contract and up to eight months.

Part of this wait is determined by the customer's utility interconnection process to connect the solar array to the grid. One installer said that interconnection was often the most frustrating part of an installation process—the panels are installed, but the customer can't start receiving benefits until interconnection has happened, which can sometimes take weeks or months.

Another installer noted that even if they could streamline the process more than they already do, it may not make the final decision to go solar any easier. Even without hitches, customers need time to think before making large capital purchases.

Ultimately, expectation management with small businesses comes down to addressing misinformation or misunderstandings of incentives or benefits available. One interviewee said that any model for small business solar development needed to be able to connect potential customers with details about financing and loans from the get-go and contain a simple list of installers to keep people from getting overwhelmed with option shock. [EnergySage.com](https://www.energysage.com) was recommended as a great resource by another for showing customers available incentives and the vetted installers in their area.

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Language can be a big barrier to understanding solar and how projects work, including benefits and risks. One installer recalled getting a call from an exasperated foreign hotel owner who had a misunderstanding that the federal government was installing solar for free. They had to explain this was not the case, and when they tried to get in contact six months later, unfortunately, the hotel had closed.

One barrier associated with small solar installers specifically may include requiring the customer to foot an approximately \$1,000 bill for a site inspection. A site inspection includes evaluating the building's structural integrity and rooftop solar potential, which are used in proposal development. Larger solar companies can often absorb this cost in their overheads if a customer ultimately backs out, but smaller companies can't necessarily afford to swallow the cost on their margins. It requires the customer to put extra "skin in the game" before they are even sure how suitable their site might be for solar.

Many installers brought up the various Minnesota state regulations they need to comply with when doing their installations. Since solar is considered electrical work in Minnesota, there must be one journeyman for every two electrical apprentices on every rooftop, in addition to several other specificities. As elaborated in the workforce development section below, these certifications present challenges to bringing new and often historically excluded people into these high-paying jobs. On the company side, strict regulations have led some of our interviewees to believe it might be easier to maintain small and flexible operations or, even still, to choose not to expand and instead work as a project-based contractor.

Financing & risk

Solar is more affordable than it ever has been for all audiences. Between 2010 and 2020, the National Renewable Energy Laboratory documented that "there has been a 64%, 69%, and 82% reduction in the cost of residential, commercial-rooftop, and utility-scale PV systems, respectively," mostly due to hardware efficiencies and reduced equipment costs (2021). Additionally, the Inflation Reduction Act (IRA) passed in 2022 presents consumers with the best set of federal incentives ever available for solar to the public. The investment tax credit presents all eligible commercial solar projects with a baseline tax credit covering 30 percent of all qualified costs. Additional 10 percent adders will be available for certain projects meeting various criteria, which some small businesses on our project corridors expect to take advantage of (US Department of Energy, 2023). For more detail on IRA tax credits, see "Appendix D: Incentive Options Brief."

Every installer we spoke with described the IRA as a "game changer," and many are considering how they can best market the available incentives. Some expressed excitement about how the IRA can support their work to unlock barriers to solar for low- to moderate-income customers. Additionally, the State of Minnesota and the Twin Cities both offer several incentives and financing options that make going solar accessible to small businesses. For more detail on local incentives and financing options available in the Twin Cities, see "Appendix D: Incentive Options Brief" and "Appendix E: Financing Options Brief."

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Still, the price tag on a solar array can be prohibitively expensive to small businesses. Installers who have installed small business commercial solar said that their customers almost always have paid the sum upfront or figured out a way to finance the project without the installer's help. This may suggest that the businesses installing solar are only the ones financially secure enough and have the appetite for risk and tax credits—and that there is a need for multiple models beyond the traditional upfront purchase to serve the community.

Many solar companies offer a power purchase agreement (PPA) model, and some offer this model specifically for mission-driven work. Others direct customers to commercial property assessed clean energy (C-PACE), a financing mechanism operated through the Saint Paul Port Authority. Many recommend C-PACE because it helps address the split incentive between renters and property owners, but others note that it still presents some barriers through collateral and credit check requirements. Further discussion on these models may be found in “Appendix C: Solar Procurement Options Brief” and “Appendix E: Financing Options Brief,” respectively.

Installers have had mixed feelings about the Xcel Energy (the utility serving much of the Twin Cities metro) Solar*Rewards® program. One installer finds this program useful only when its low-income incentive is applied, which offers an upfront payment based on system capacity and a higher production-based rate. Solar*Rewards® is also a competitive pot of money that can and does run out, and some installers have found that inconsistent incentives are harder to promote to customers because they might back out if they can't receive the benefits. Many of those interviewed agreed that working with Xcel Energy is also often a slow process.

Finding Muslim-friendly financing can also be a barrier to some small businesses. Solar installers would need to be able to offer loans that don't contain interest or incorporate expected interest in a creative way.

Outside of formal financing for a solar array, many finance-related hiccups could arise in the solar process that affect a business's ultimate decision to go through with a project. One installer noted that supply chain difficulties during the pandemic and the associated increased cost and wait times led many potential customers to reconsider. Others also mentioned some costs associated with Xcel Energy's distribution system upgrades that they pass down to solar customers.

Often, however, the biggest surprise cost for solar customers is roofing. For a project to be economically viable, a property needs a roof less than 10 years old before installation in order to reduce the likelihood that the roof will need to be replaced again prior to the end of the solar installation's useful life. Several installers suggested building relationships with local roofers or offering a bundled roof plus solar package.

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Businesses might also simply perceive the opportunity costs of the solar process as too high to consider. Installing solar can be an involved process, and it takes time away from running a business. One interviewee mentioned that sometimes solar isn't the priority when small businesses are too busy. The interviewee also mentioned that there's a lack of certainty in the investment itself or whether the business will survive long enough to see the system's benefits.

Battery storage is also a pressing topic in the solar industry now. At the second SEIN workshop, hosted at the National Renewable Energy Laboratory's headquarters in Golden, Colorado, many teams were considering how to incorporate batteries into their models to further support grid resiliency. However, all installers the Advancing Small Business Solar Equity project team interviewed tend to gently nudge their customers away from considering battery storage. Simply, they view battery storage as too expensive relative to Minnesota's fairly safe climate change location and reliable grid system.

One installer said that, preferably, their company would never install battery storage with a solar system, as it makes the return on investment much longer. Another installer said that the customers who ask them the most about battery storage are first-generation immigrants who have experienced frequent power outages in their home countries. Still, interviewees agreed that battery backups are a more acceptable consideration for specific residential customers, especially those who need electricity to power important medical devices, such as a continuous positive airway pressure (CPAP) machine, or require refrigeration for medications.

While return on investment and risk are typically framed from the customer's perspective, this underlines the type of risk calculations that solar installers do on the other side of the deal. Installers say that commercial projects are significantly bigger compared to residential projects and so have a bigger risk factor as well. Installers need to deeply consider whether a commercial project is worth it for them. There is an economy of scale for larger projects, so less revenue is generated per panel (making it a better deal for the customer). Additionally, small businesses are high-risk enterprises, and a solar installer may question whether the business will last as long as the 25-year lifespan of a solar installation.

A small installer shared the same concerns and elaborated on some risks they cannot take compared to larger installers. As a small business themselves, they need to feel certain their customer is in a stable position before moving forward, or else they are left footing the bill. Smaller installers also run on smaller overheads, so they may need to have their customers pay for the site assessment because they can't absorb the costs and risk associated with taking on a commercial project and then having the potential buyer back out—something that bigger companies will often offer.

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Workforce development

The Inflation Reduction Act contains significant incentives for installers to support workforce development. Federal tax credits for projects above 1 MWac (megawatt-alternating current) are only available to those who incorporate prevailing wages and create registered apprenticeship programs.

The current solar workforce is overwhelmingly white and male. While workforce development and diversification aren't explicitly covered under the umbrella of the SEIN grant, many solar installers we spoke to are thinking deeply about this in innovative ways—especially Just B Solar and GoSolar, who often work in North Minneapolis and other predominant Twin Cities BIPOC communities.

A legacy of systemic racism has left North Minneapolis with almost a third of its residents living under the federal poverty level and an unemployment rate nearly twice the national average as of January 2023 (Minnesota Compass 2023).

Just B Solar and GoSolar recognize that solar can provide good, high-paying jobs that can help uplift the North Minneapolis community. Just B Solar organizes solar summer camps for kids K-12 to introduce them to solar and to get creative about how solar can be used, for example, in projects like Solar Go-Karts. For older students, the company offers green career exploration and guidance on earning a North American Board of Certified Energy Practitioners (NABCEP) certification. GoSolar is working on creating a comprehensive apprenticeship-to-job pipeline into the solar industry.

The leaders of Just B Solar and GoSolar both recognize that their personal introduction to this career wouldn't be possible for many of the people they hope to serve. Keith Dent, president of Just B Solar, went to a green career exploration event and became interested in solar—his first installation, after completing an educational installation course, was in the middle of winter, a two-hour drive outside of the Twin Cities on a pig farm. President of GoSolar, Joaquin Thomas, came into the solar field with a bachelor's degree in electrical engineering and a master electrician license, allowing him regular and higher-paying positions.

Thomas first started thinking deeply about the challenges surrounding workforce development when GoSolar partnered with Renewable Energy Partners to install a community solar garden on top of North Community High School in North Minneapolis. Renewable Energy Partners asked GoSolar to hire all local community members to install the array. Thomas recalls asking people on the street and in a Taco Bell if they wanted a job installing solar. Eventually, a work crew was assembled, and the panels were installed. Later, when Thomas approached the same work crew members for a second installation, most had moved on to other jobs due to the time lag. Additional challenges included a lack of transportation to get to the project site and a lack of available cash to buy personal protective equipment.

With this in mind, GoSolar is developing a solar apprenticeship program that takes interested youth and participants from A to Z, offering baseline education on solar, bussing to and from a project site, and

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extra personal protective equipment. Additionally, GoSolar has plans to maintain regular community solar garden projects in the works so that apprentices can have real-life experience installing solar before the end of the program. Now well-qualified for a position in solar, the company helps those apprentices find work elsewhere. Ideally, they would like to see their trained apprentices not just taking entry-level positions but eventually looking at careers in management or administration, which offers more regular work and more transferable skills. Or, even following in the GoSolar footsteps, taking a risk, and opening their own solar company sometime in the future.

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