Lessons Learned:
Community-Led Solar in Boston

Lessons learned from developing and implementing an innovative equitable model of community solar alongside community members

energyallies

We believe climate-impacted communities have the power and knowledge to lead our equitable clean energy transition

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Executive Summary

Our energy system is complicated and exclusionary.

To address the barriers climate-impacted communities face accessing solar energy, Energy Allies has developed a community-led approach centering paid **Community Advisory Boards (CABs)**. Composed of local leaders, our CABs are dismantling barriers to solar access and building a future where clean energy is a right, not a privilege. Working with CABs ensures decision-making power lies with those who live and work in areas commonly excluded from community development and sustainability initiatives.

This document shares lessons learned from our pilot project in Boston, MA, which include how to engage with communities from the start, how to create democratic decision-making processes, and the challenges we faced with siting and keeping the community engaged throughout the process. We will also share the impacts of our work, which includes the creation of a fully independent Community Solar Co-op and the establishment of their first solar array.

Introduction and Background

As of November 2023, less than 4% of all community solar constructed in Massachusetts was allocated to low-to-moderate (LMI) households (NREL 2023)[1]. While community solar theoretically represents an opportunity to expand access, this data proves it is not our reality. Similarly, energy efficiency represents one of the most cost-effective ways to lessen energy burden: but uptake rates of energy efficiency programs are primarily present in predominantly white, affluent neighborhoods (Stanton et. al, 2018)[2]. Despite rapid electrification in Massachusetts over the last decade, access to clean energy and related programming remains far from equitable. As policymakers rapidly increase the capacity of renewable energy brought online, it is imperative to advance a just transition to clean energy that prioritizes equal opportunity for all communities, not only the affluent. Without a community-led energy justice movement prioritizing the needs of LMI and Black, Indigenous, People of Color (BIPOC) communities, we are at risk of electrifying our energy system using methods that will further perpetuate a cycle of high energy burdens for communities bearing the highest climate impacts. Barriers to entry into energy conversations are high. Technical jargon, legal dockets, and convoluted policy create an exclusionary space in which not everyone feels able or comfortable engaging in what are presented as overly technical conversations. Furthermore, decades of discriminatory and predatory practices have dissuaded many from finding agency in advocating for a better system, and programs designed to address equitable clean energy access have not been administered effectively.

In 2020, Energy Allies staff, then Solstice Initiative, chose to pursue equitable solar development as a major program focus. This initiative was born out of a lengthy

[1] https://www.nrel.gov/docs/fy24osti/87235.pdf

[2] https://aeclinic.org/publicationpages/2018/2/26/accessing-energy-efficiency-in-massachusetts

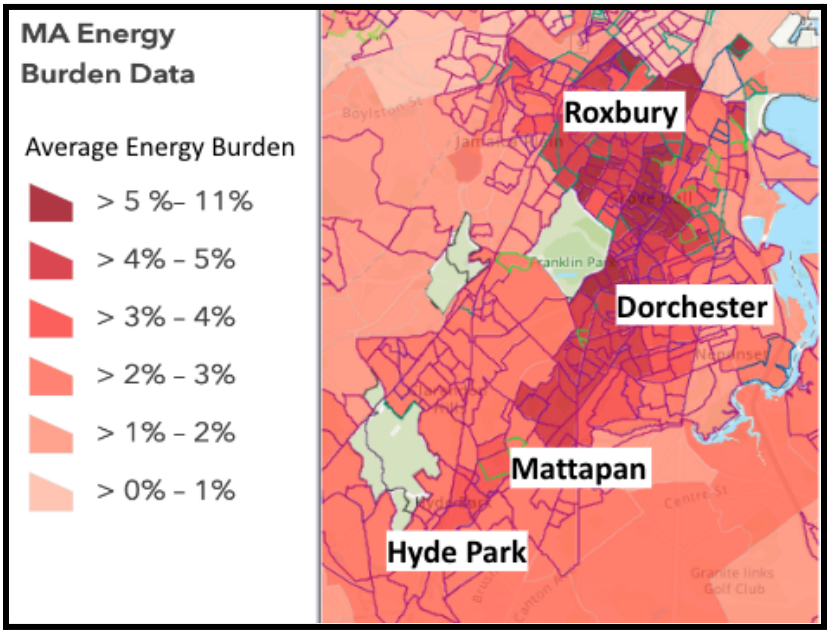
discussion on how to increase organizational impact. Through our research, conversations with community partners, and observations of the solar industry we noticed a significant lack of community-shared solar projects being built that delivered meaningful benefits to LMI households. During this time we also assessed our ability to reach and impact BIPOC community members and broaden our scope to include them explicitly in our work. Our team now uses the term climate-impacted communities to encompass all communities that have experienced disproportional climate burdens and hazards due to infrastructural, social, or historical factors, including but not limited to utility and government neglect, redlining and income. Our team completed extensive research into what it would take to enter the solar development space and set out to co-develop a community solar project with residents that would provide maximum benefits to climate-impacted community members.

Project Development Capacity

Our team began by researching different approaches to equitable solar development. The Clean Energy States Alliance Solar for Justice Report served as a great resource for this work. We also defined the primary tasks involved in solar development, including but not limited to siting, financing, permitting, and construction. We then assessed our own internal ability to carry out each phase of the process, identifying capacity and skill gaps to understand where we would need to partner with an experienced developer or other industry experts. Given our organizational history working in community solar, we already had a robust understanding of solar policy. The Energy Allies team also researched and identified viable funding sources for this innovative work, so we could begin building a pilot project. At the time, we decided not to engage in the actual development processes, and to focus instead on community engagement efforts to bring community voices directly into the planning process. However, we wanted to ensure that our future partner(s) were mission aligned and understood the goals of our community-led process. We researched and vetted several local developers, conducted interviews, and made a decision based on how well they aligned with our project objectives. It

was also important to us to partner with a collaborative developer who was willing to teach both our team and participating community members about solar in order to grow capacity. We partnered with Revision Energy, an employee owned B-Corp who has an apprenticeship program and an impact investment fund. They were enthusiastic about taking the time to educate both our team and community partners.

Identifying a location



We initially set out to create a community solar project providing between 300-500 kW. Given our team's location at the time, we decided our first project would serve some of Boston's highest energy burden communities: Dorchester, Roxbury, and Mattapan. We chose to focus on these environmental justice communities due to the higher than average energy burden rate experienced by residents. Census tracts in these three communities have a calculated energy burden of 7%, which is more than twice the median energy burden for the City of Boston (Drehobl, Ross, Ayala, 2020; LEAD, US Dept. of Energy, 2018). Older housing stock, inequities in accessing clean energy programs such as MassSave, and decades of systemic disinvestment have led to this marked disparity. Dorchester, Roxbury, and Mattapan also have three of the four highest calculated Social Vulnerability Indexes in all of Boston. Neighborhoods with higher Social Vulnerability scores tend to have lower median incomes, a higher proportion of renters, and higher energy burden. Thus, there is a clear link between

Social Vulnerability, energy burden, and the need for energy justice. A 2019 Carbon Free Boston Social Equity Report determined that the Social Vulnerability Index for the city of Boston as a whole is 35. Dorchester, Roxbury, and Mattapan's indices are 43, 49, and 47 respectively.

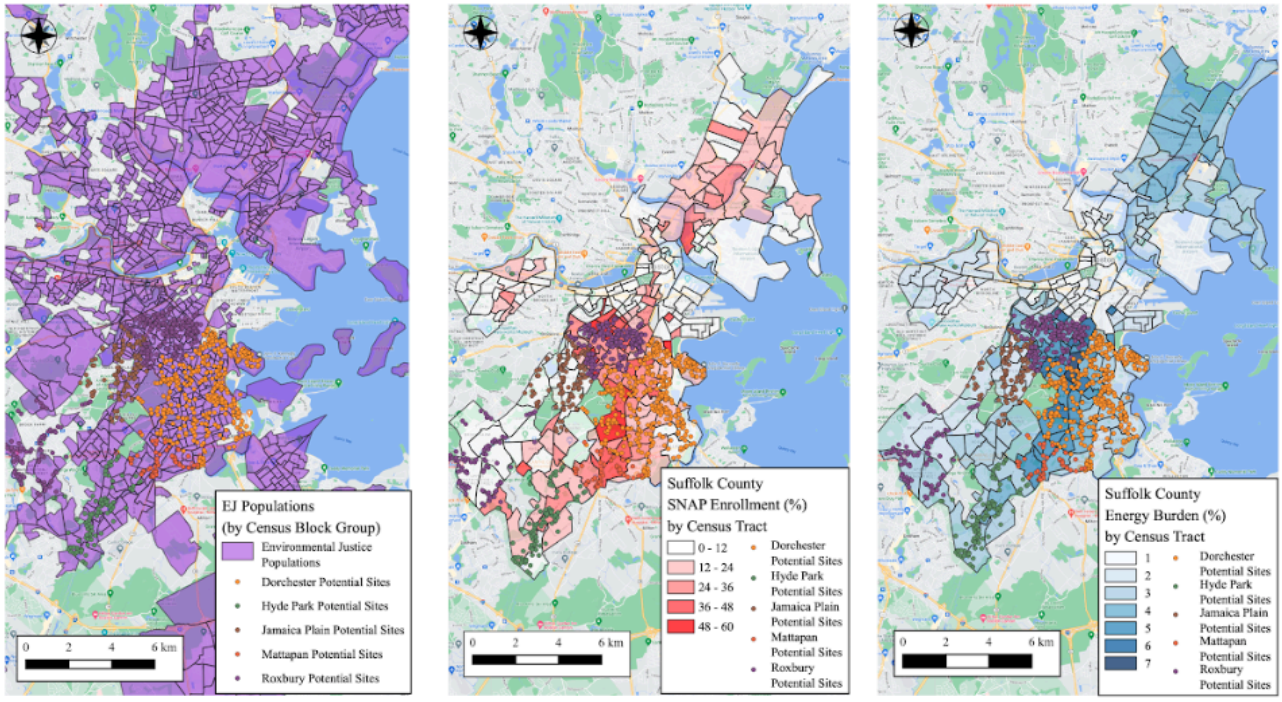
Siting process

A project development task we were confident taking on was vetting potential rooftop solar sites. We began by using Google Earth to identify large rooftops (greater than 10,000 sq ft) in Dorchester, Roxbury and Mattapan to assess their capacity for solar. Google Earth was also used to assess whether a building was near three-phase power lines, which was essential for interconnecting our project to the grid. We used the Massachusetts Assessor Database to identify property owners so we could begin outreach. We quickly realized that community focused non-profits were our ideal property owners: most responses to our inquiries came from them. Along with this outreach, we also identified both private and public buildings that fit our criteria. This process was slow, and took a lot of staff and fellow time. But we remained steadfast in identifying a site within the community we wanted to work with, ensuring the benefits of the project (such as jobs and potential revenue) would stay within the community.

Over time, we made our siting process more efficient by using QGIS to identify the large rooftops rather than identifying them manually. This allowed us to identify 10x more sites at a time. QGIS is a free platform available to everyone, but it has

limitations, such as being unable to share maps between users. From our list of almost 1000 identified sites, we narrowed it down with additional criteria including neighborhood demographics and areas designated environmental justice zones, all of which were readily available data layers we found online. Once a site owner expressed interest in building a project on their roof, we used our development partner Revision Energy to conduct a more indepth rooftop analysis using Heliscope and financial analysis of those rooftops.

Boston Project Demographic GIS Data



We contacted more than 200 property owners and held many meetings with a dozen or so prospective site owners. We created email and call scripts and built a system to conduct regular, repeat outreach to building and land owners, tracking everything through detailed spreadsheets. The best success we had was from mission-aligned property owners, such as health and community centers. Many were interested, but

only a few were actually viable. The closest we came to finding a site happened with a large developer, Ruggles Progressive Partners, bidding on a large tract of land in Roxbury from the Boston Planning and Development Agency that was being dispossessed. We were able to secure a Letter of Intent (LOI) with this developer that they would use rooftop space on one of the large buildings in the complex for community solar. While initially exciting, this developer did not win the bid and we could not move forward with the project.

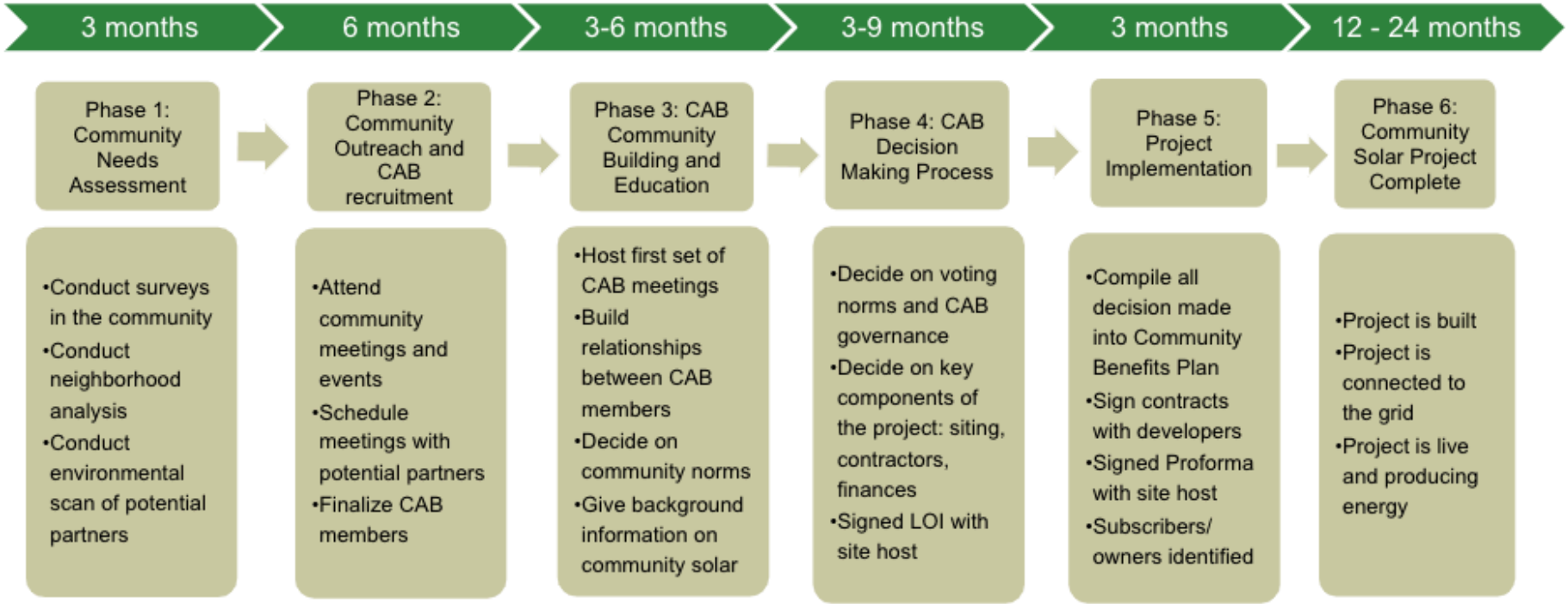
We took on a majority of the siting work because it was so labor intensive, however we did involve the community in identifying sites and connecting us with property owners later in the process. We also considered running siting trainings and creating siting scouts but that idea was not very popular and we needed additional funding to do it.

Community-led solar

Central to our work is ensuring that community members served by our projects make all important decisions on each project. Energy Allies firmly believes that any just transition to renewables must be led by local champions in order to best remedy these systemic economic and social inequities. This is why our project was centered around bringing climate-impacted community members into the conversation to help them lead and determine optimal means to reduce their energy burden, reduce local reliance on fossil fuels, and explore opportunities to enter the renewable energy workforce.

> "It's really important that we create tools and resources that engage community members where they live so that they can make informed choices about what investments should be made in their community."
>
> -Gregory King

Participatory community-led solar process



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Community Needs and Outreach

The team spent significant time speaking to local community groups and nonprofits working in the area, disseminating surveys to better understand the energy justice knowledge and needs of the community. We wanted to build trust amongst these community groups, recognizing we were not the first to approach them. We created an outreach plan consisting of developing materials to explain our project, conducting outreach to community groups, hosting virtual meetings with organizations, and attending community events where we could share our work. We translated our materials to languages most widely spoken in those communities: Spanish, Haitian Creole, Vietnamese, and Portuguese. We met with more than 30 organizations over the course of 6 months who helped us gauge interest in the project, connected us with other community leaders and groups, and distributed our survey. We also gave presentations at events hosted by other groups and attended numerous farmers markets.

Our initial survey results and community conversations showed there was great interest in building a project in Dorchester, Roxbury or Mattapan that centered community needs, allowed residents to save money and had wealth building opportunities like jobs for local community members. However, the results also reinforced that there was mistrust around solar and energy companies getting the benefits to the people that need it most and we needed to be very careful and patient in our messaging to communities and ensure their voices were heard.

Community Advisory Board

Recruitment and Payment

As time went on, we shifted from our initial outreach phase of building trust and gauging interest to recruiting CAB members. The CAB would guide all decisions including but not limited to siting, community benefits, and the project's final ownership model. By letting the CAB lead, Energy Allies ensured that local needs, priorities, and values were reflected in the project. We wanted the CAB to be representative of the diverse communities of Dorchester, Roxbury and Mattapan, so we sought out individuals and community groups to be a part of the CAB. Of the initial 12 CAB members, 78% identified as people of color and 82% were from low to moderate income households. We had representatives from 5 local organizations. One of our partners, Bikes Not Bombs, brought several youth apprentices into the CAB, adding to the age diversity of our initial group.

We signed Memorandums of Understanding (MOUs) with the first 12 CAB members, articulating expectations and communicating how they would be compensated for their time and to have a written record of their commitment to the project. Some MOUs were signed directly with individuals while others were with organizations. We initially set these MOUs for 6 month terms: we naively thought the process would only take that long to complete. At first, compensated CAB members and organizational partners with a lump sum payment. Once we realized the process would take longer than 6 months, we re-evaluated our engagement and payment methods. We had some initial challenges with meeting attendance, which encouraged us to change payments from a lump sum to a per-meeting basis. In hindsight, we should have given CAB members the option of receiving compensation through gift cards to avoid taxes. One particular organization we worked hard to get onto the CAB was the Fairmont Indigo Community Development Collaborative (FICC).

CAB Member Spotlight

Kendra Beaver (she/her) is passionate about improving the lives of and bringing power to communities by working on issues including sustainability, environmental justice, environmental policy, and climate change.

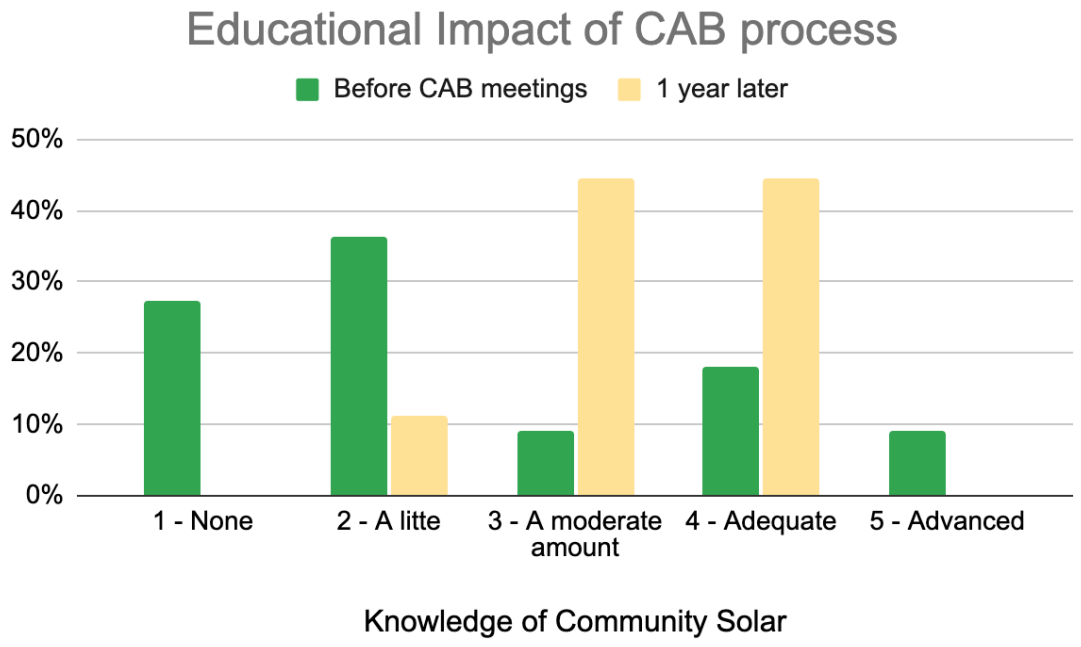
As Climate Justice Coordinator for the Fairmount Indigo CDC Collaborative (FICC), Kendra is coordinating the implementation of a three-year action plan to mitigate the impact of climate change and build community resilience, engagement, health equity, and policy change in the communities united by the Fairmount Commuter Rail Line in Boston, the neighborhoods of Dorchester, Mattapan, Hyde Park, & Roslindale.

As a proud Dorchester resident, Kendra appreciates the ability to work in the community she also lives in. Kendra was a part of the Community Advisory Board from the beginning of this project and still serves on the board of the Boston Community Solar Co-op, working mostly on community outreach.

Community Advisory Board Meetings

Initial design and planning

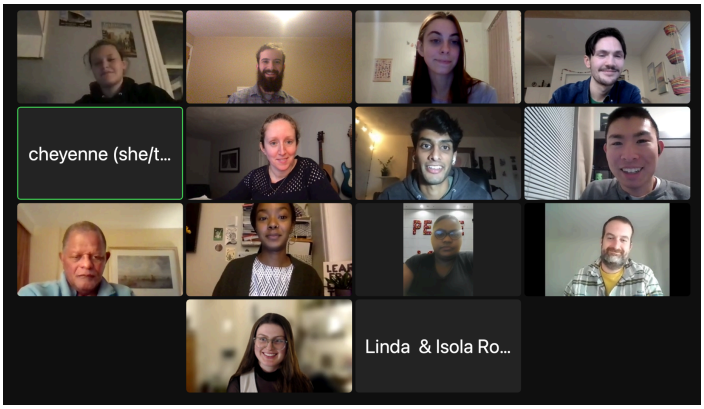
In October 2021, we hosted our first Boston CAB meeting. Initial CAB meetings were scheduled every two weeks, running for around 2 hours in the evening. We surveyed CAB members to ensure they had agency in both when and how often we met. Our first meeting centered on community building, getting to know each other, and establishing a set of community agreements. Early CAB meetings were structured to be interactive yet fairly content heavy, as it was essential for us to ensure they understood the basics of community solar. This structure was important, and ensured CAB members were on the same page and comfortable engaging with the content we were discussing. CAB members arrived with a range of knowledge on community solar, energy justice, and related topics. Before we began meeting with the CAB, we conducted a survey in order to set an accurate baseline level of knowledge and best understand where we needed to start. We surveyed them periodically throughout the process to see if those baseline levels of knowledge had increased, which they did. Examples of these surveys are located in the Appendix.



We regularly met as a team and hired an external facilitator to design our initial educational meeting topics. We created an internal facilitation guide and prepared slides to ensure our staff were best prepared to host meetings. At our peak, three staff members, an external facilitator, and one fellow were assisting our Boston CAB. The external facilitator was hired to ensure our facilitation processes were built with an equitable foundation. At the time, our staff did not reflect the diversity of the community. It was important for us to bring in someone with a perspective rooted in the community we were serving to contribute to our curriculum. This facilitator led us through a series of grounding exercises that helped with "big picture" planning, rooting the values we wanted to see reflected in our project outcomes. We also routinely invited guest speakers to share their own expertise and experiences in developing solar with the CAB.

Initially, it was necessary to have more individuals involved to get the project moving forward. But at the same time, this number of staff and external support sometimes made it more difficult to decide who led meetings. It also created more planning meetings both internally and with our external contractor. Ideally, we believe this process should only require two staff members: a manager and a coordinator. This smaller staff size will more efficiently regularly engage with, plan and execute CAB meetings, calling in assistance from others as needed. These staffers must have a combination of solar industry knowledge and facilitation skills.

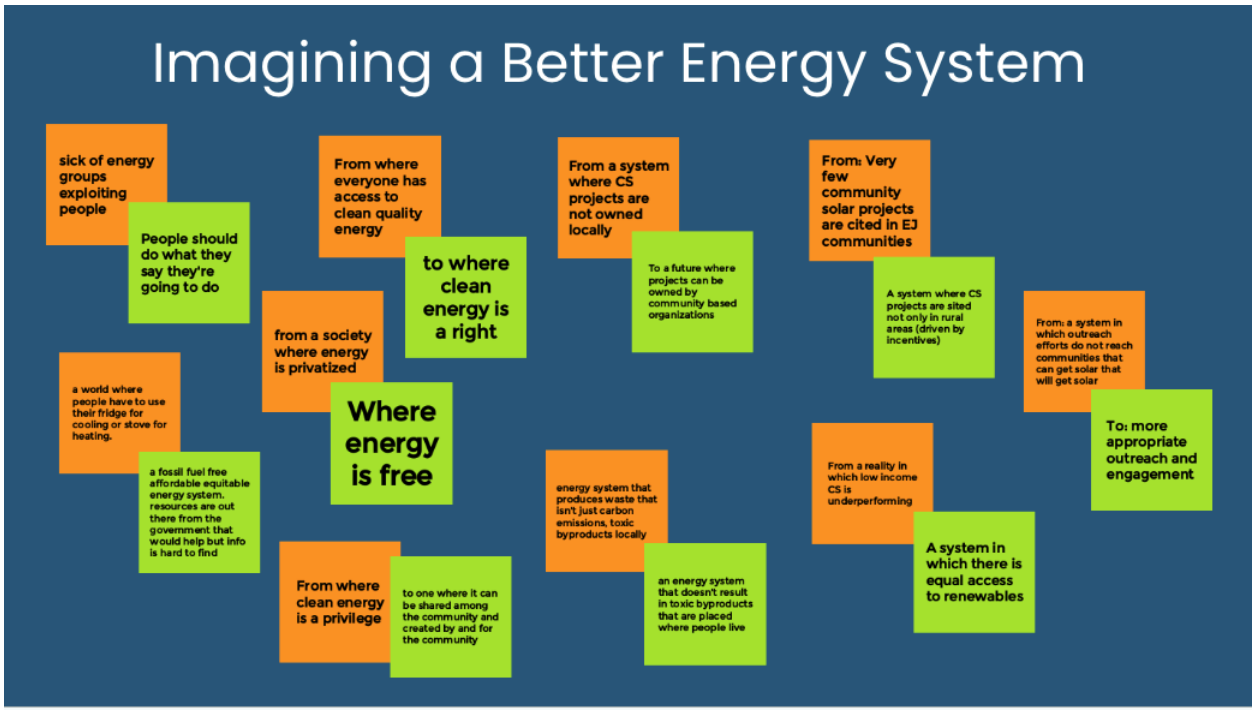
Due to the Covid-19 pandemic, our initial meetings were held entirely via zoom due to the CAB member's preferences at the time. We utilized tools such as Jamboard to engage members in regular activities, which proved to be a critical and highly useful tool. Ideally, we would have preferred that some of our initial meetings were held in person



in order to build trust and relationships between those attending. However, outside of Covid-19 health concerns, virtual meetings were more accessible for many CAB members as they did not have to worry about transportation or childcare in order to attend. We would recommend a mix of in person and virtual meetings for any future groups wanting to do this process. If planning for in-person meetings, making sure people have access to transportation, translation services and child care is key to making it accessible to as many people as possible.

We created and maintained a website to publish meeting agendas, meeting notes, and resources to supplement materials shared during meetings. In retrospect, we don't think it was accessed often, and was probably unnecessary. Instead, we would suggest creating a shared Google Drive folder for members to save materials to and access as needed. This was done in conjunction with the website, and over time proved to be sufficient on its own. After each meeting, we would email CAB members with links to these resources for their reference. We tried other forms of communication such as Slack for quick communications and decision making, but it was not a familiar platform to many. Email proved itself to be the best way for us to

share information. However, some CAB members were better reached via text and phone call, so we often used those methods to remind people of meetings or any follow up activities that we were counting on them for.



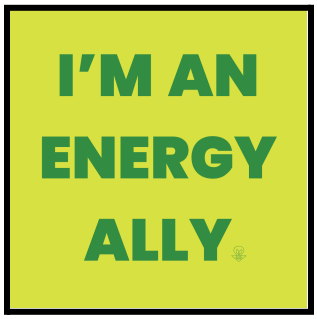
Decision Making and Working Groups

After completing our initial set of planned topics, our external facilitator recommended we begin offering circular agendas to CAB members. This approach allowed them to dig deeper into the topics they wanted to discuss further, voting on topics they wanted to cover at the start of each meeting. While inherently democratic, this process was hard to plan for. It often meant that staff came to CAB meetings fully prepared to facilitate a discussion on two separate topics, which required detailed planning in the week leading up to the meeting. If a similar process is to be used moving forward, we suggest voting on a discussion topic at the end of the previous meeting. This approach would allow staff to better use their time and prepare for one topic instead of two, targeting the area of interest identified by CAB members during the previous meeting.

We also needed to identify and define ways for the CAB to make collective decisions on project decisions. We presented the CAB with numerous decision making methods, and they collectively chose ranked choice voting. If members were not present at a meeting where a vote took place, they had a week to follow up with Energy Allies staff to cast their vote. However, we want to stress that ranked choice voting is not the only effective way to make democratic decisions. Each community group should decide their own method of governance.

Over time, it became clear that meeting for two hours every other week was a large commitment for members and led to attrition. Around four months into meeting regularly, the CAB decided to vote on meeting frequency and structure recognizing a need for change to sustain the project. They decided to switch to monthly 90 minute meetings, splitting into defined working groups to focus on specific areas of work. Once this decision was made, project progress advanced quickly. These working

groups met at alternate times to push work items forward. Depending on the size of the CAB and member's knowledge prior to CAB establishment, breaking into working groups earlier in the project timeline has the potential to make projects progress faster. Another way of breaking up the work would be to split CAB meetings into opening with the full group, and then meet separately in working groups rather than create alternate meeting times. This step would ensure that we are not overburdening members with meetings and commitments. We created working groups on the following topics, which we would recommend using going forward: siting, workforce development, ownership/governance, community engagement.



While we wanted the CAB to make all project decisions we did not intend for them to do all the work. We saw ourselves as facilitators and behind-the-scenes workers, bringing information and serving as a resource to the CAB to support them in making informed decisions. For example, we helped create a contractor scoring card, which allowed the values of the CAB to be used to evaluate contractors being considered to build the project. The CAB wanted to prioritize minority and women-owned businesses (MWBE's) and companies who prioritized workforce development and local hiring.

Project finance required several meetings and discussions. We presented three different models of community solar financing: 3rd party owned, transitional or flip model, and community owned. The CAB was initially split on these options and needed more information to make a decision. We shared case studies of each model, and invited guest speakers to come to a meeting to discuss the community ownership approach. It's important to note that all of this occurred before the Inflation Reduction Act (IRA) was implemented. Potential ownership options and structure would be slightly different now. However, even without the incentives of the IRA, the CAB eventually voted to have a community-owned project since it would enable community wealth building on top of energy savings.

Around the same time, one of the CAB members was talking to another local group led by people from Co-op Power Boston, who was also working to build a community-owned solar project. After some initial meetings and separate discussions, it became clear that both groups had similar goals and values. It made sense to combine forces: there wasn't a need for two groups trying to establish a community-owned solar project in the same part of Boston. This collaborative development also helped renew energy and interest in the project. By then, roughly half of the original CAB had decided they could no longer participate. It had been about 9 months since the first CAB meeting, and the other group had been meeting for even longer. Even if there were some initial challenges to overcome, this merger helped reinvigorate both groups and provide new resources for them to work with.

Boston Community Solar Cooperative

Establishing a Co-op

Once we established our new group structure and discussed the work that would need to go into creating a community-owned entity, a core group of around 10-12 people began meeting every other week for two hours in the evenings. Since the pandemic had cooled off by then, we also held a few in person meetings to build better relationships between people and get some critical work done. The initial discussions consisted of roles and responsibilities between Co-op Power and Energy Allies. Eventually, it was decided that the group wanted to form their own entity separate to Co-op power in order to have more control over the decision making.

Shortly after the merger, the Inflation Reduction Act (IRA) was passed. This opened up new opportunities for community ownership through direct pay as well as more

reductions in overall costs through additional incentives and adders. Before the IRA was passed, most nonprofits or non tax-paying entities that wanted to go solar had to work with partners and design a tax equity flip in order to access the 30% tax credit that for-profit businesses could access when installing solar. This model conflicted with the CAB's desire to have their projects owned locally. As part of the IRA, Congress amended the tax code to allow nonprofits and other non tax-paying entities to access that 30% without tax equity flips, making ownership of the solar projects both possible and affordable. Because of this, we had lengthy discussions on whether or not to form a non-profit entity or a cooperative. We discussed if Energy Allies could be the non-profit entity to initially own the project and then transfer ownership to a cooperative entity, but had reservations about whether that made it truly community owned. In the end, the group decided to form a for-profit cooperative with Energy Allies as fiscal sponsor. Along with the 30% tax credit, the cooperative will also have access to tax credit adders based on environmental justice metrics that could reduce the cost of the project by 10-20%, depending on the project. This means the project costs could be reduced by up to 50% which allows more of the benefits to go back to the community.

In order to set up the co-op, they needed to establish bylaws and get legal advice. The group applied for and received a Massachusetts Clean Energy Center Empower Capacity Building Grant to get the initial funds for legal advice and incorporation.

Energy Allies was eligible to receive the funds as a 501c3 non-profit and manage their payments to lawyers on their behalf. The whole process took about 18 months. We met with other groups from around the country who had created similar entities so we could build off some of the work they had done and tailor them to local needs. In the end, we created a draft set of bylaws that was enough to establish us as an entity, knowing full well that we would need to get larger community input eventually.

We established three member types: Worker Members, Investor Members and Subscriber Members. Each type would have an equal say in the governance of the co-op and would not be tied to the size of their share. Profits from the solar array would be distributed equally amongst worker and investor members, while subscribers would see savings on their energy bills. Additionally, we agreed there would be 5 board of directors and initially nominated board members from the existing group to act as President, Treasurer, and Clerk, until we could host additional elections to add an investor board member and subscriber representative board members. After over two years since our first CAB meeting, in December 2023, the Boston Community Solar Co-op (BCSC) was established as a legal entity.

First Solar Array

Members of the original Co-op Power Boston group were already working on a solar array on the Dorchester Food Co-op's (DFC) roof. Several founding members of the Dorchester Food Co-op - a first of its kind, community-owned grocery store in Boston - were also in our group. The solar array on the roof of the Dorchester Food Co-op at 195 Bowdoin Street, Dorchester, MA is a 85.3 kW PV system. This project embodies a triad of justice: economic, food, and environmental. The collaborative project has strengthened community bonds, and sparked widespread local interest and involvement in community-owned solar. While it is not a traditional community solar project (in the sense that it will only have one off-taker, the DFC) that entity is still community-owned, and will see energy savings up to 100% for the co-op, which flows back to the community. The BCSC is currently in negotiations with VietAid, (the property owner) and Dorchester Food Co-op (the off-taker) to develop a lease agreement and Power Purchase Agreement with respective parties.

Membership Recruitment and Expansion

With the establishment of the co-op completed and the development of their solar array underway, the co-op's next focus is to diversify its membership. The BCSC has already hosted several community events to both increase awareness about their model and recruit new members. Since the first solar array does not need household subscribers, recruitment has been focused on worker and investor members. There is also a special focus on enrolling income-eligible individuals through the co-op's Solidarity Fund, which offers scholarships for eligible participants to join the cooperative at no cost while enjoying the same financial benefits of other members.

Eventually, the BCSC hopes to have a portfolio of projects, including ones at a much larger scale that could include household subscribers. They are currently working on identifying future project sites in Boston, as well as securing grants and other sources of financing for their work.

If you are interested in joining the Boston Community Solar Co-op as a worker or investor member, please contact them through their website:

https://bostoncommunitysolar.org/contact

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Building the Boston CAB: A Timeline

Winter 2020-21

Research on the solar development process begins. Internal capacity & skill gaps are identified. Our first grant is received, and we establish a partnership with Revision Energy.

Summer 2021

Community outreach and engagement is conducted. Siting analysis and site-owner outreach begins. The Energy Allies team develops CAB session formats.

Fall 2021

Community Advisory Board meetings kick off.

Spring 2022

Received a Letter of Intent from a site owner.

Summer 2022

The CAB combines with another local group. The siting process is refined.

Fall 2022

Energy Allies becomes the fiscal sponsor for the Boston Community Solar Cooperative. Pre-development work for the Dorchester Food Coop Solar array begins.

Winter 2022-23

Solstice Initiative becomes Energy Allies.

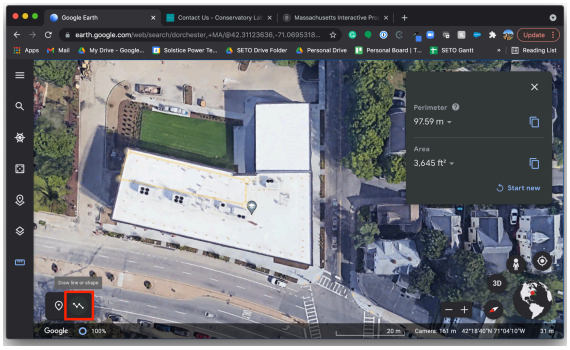
Winter 2023

The Boston Community Solar Cooperative is officially established.

Challenges

Siting

We initially set out to create a 500 MW community solar project developed by community members. One of the biggest challenges we faced was finding a large, suitable space or rooftop in a densely populated part of Boston. Siting challenges are not unique to this project: many well-established project developers also struggle with this. Getting property owners to agree for you to build something on their roof or land takes a lot of time and persistence. As new players in this field, there were some things that made it more difficult for us.



As previously mentioned, we analyzed over 1000 sites and conducted outreach to more than 200 property owners. In many cases this was cold outreach. Without a direct connection to the property owners, this did not lead to a high response rate. The property owners we did manage to connect with who seemed interested often did not respond a second time to engage in further discussion. Several groups who were interested had roofs that were too old, and they did not have the capacity to replace them at that time. Much of this work took place during the pandemic, which contributed its own unique challenges. Places like community health centers had other, more pressing issues to deal with and solar was not a top priority for them. We tried to use CAB member connections to open up conversations with property owners they knew, which got us a few more meetings, but follow up remained challenging.

Another challenge we faced was having a lack of experience developing projects internally including creating financial models. This made it difficult for us to exude the confidence needed to get site owners involved in this project. We relied on our

partners at Revision for financial modeling and site analysis, which sometimes created a bottleneck in responding to property owner's questions. If we internally had both the financial and analytical skill set needed, we would have potentially made a stronger pitch to property owners, leading to better results. Some property owners were more interested in how they could benefit from the project than the community. If they had the access to the capital needed to install these systems, then it was actually more advantageous for site owners to install behind the meter systems feeding directly into their building's energy costs. We quickly determined that if they didn't see the value in providing clean energy to the community, they were not the right fit for the project.

CAB Attrition

As mentioned above, we initially thought the CAB engagement process would take around 6 months. We highly underestimated just how much time it took to both engage and make decisions. Project siting delays turned the project's end date into an ever-moving target. We started out with 12 CAB members, which went down to 6, and then back up to 10 again when we combined with another group. In hindsight, we should have shared that we didn't know how long their involvement would be, but that they could renew their commitment every 6 months or so.

> "I've really appreciated the patience that Energy Allies came with for myself and other members of the CAB who didn't necessarily have the technical expertise about what community solar entails. I appreciate folks needing to take things a little slow and recognize that we're all working towards the same goal but come with different backgrounds... if you're interested and you're passionate there is space for you."
>
> -Kendra Beaver, CAB member

Sustained Funding

As mentioned above, both the siting process and the educational & decision-making processes took longer than originally expected. This led to some challenges around

securing sustainable funding. Some of our funding was also tied to milestones centered on finding a suitable siting location, which added to the challenges. For almost 3 years, we needed funding for staff time to facilitate meetings, do community outreach, site analysis, and grant management, but we also needed funding to pay CAB members for their time. We were thankfully able to secure funding from several grants, but it meant that in order to continue the work we had to continuously fundraise for the project as well.

Successes

While the project did not go exactly as planned, we believe the project was a success for a number of reasons:

> "Serving on the Community Advisory Board has been such a great experience. I love how members of the community and organizations are a part of the process. The beauty of collaborating with multiple people and organizations is they bring different perspectives and ideas that you wouldn't have been able to think of on your own."
>
> -Beth Griffith, CAB member

A replicable model

We created and piloted a completely community-led process which resulted in the establishment of the Boston Community Solar Co-op, which is now independently run and will be a driving force for equitable solar development in Boston going forward. This model can be replicated in other communities even if the outcomes turn out differently.

****A Note on Lessons Learned from Creating a Cooperative**

While the creation of the Boston Community Solar Cooperative was a successful outcome of this process, we did not include detailed information on the formation of the cooperative in this report. The BCSC will be writing their own case study once they have completed the construction of their first solar array, figured out their financing model, and completed the first stage of their member recruitment process.

Inspiring others

One of the conversations we had with a potential site owner led to the creation of a first-of-its-kind Clean Energy Prescription Program at the Boston Medical Center (BMC). When we spoke to the BMC about using one of their roofs for our project, we learned that they were already planning on building a 365 kW solar array. However, they had not considered giving the energy to patients and community members. As a result of our conversations with them, they changed their initial plans to a community solar project that would provide energy savings to patients who enrolled in the project. BMC staff recognized that providing their patients with a more in-depth approach to care would not only help them with their energy bills, but also support their most vulnerable.

Supporting energy justice champions

One of the main goals of our CAB process was to empower community members to become clean energy ambassadors for their communities. Many CAB members either became champions or were reinvigorated by the process like Beth:

CAB Member Spotlight

Beth Griffith (she/her) is a servant leader with a demonstrated history of working in the energy industry. Beth's work promotes and supports fellow business owners and aspiring green energy professionals.
As CEO of **Renewable Renegades**, a company that provides high-quality training, consulting, and solar in the renewable energy industry, she advises clients in the development and implementation of sustainable business models, investments, environmental, and social projects.

Beth has been a part of the CAB since the beginning of the project, but she was skeptical at first. Given her professional experience, she did not have a lot of trust in the solar industry, but she was reinvigorated by the group and saw that Energy Allies (then Solstice) was **"putting the soul back in solar"**. She learned a lot through working with other members of the CAB and continues to serve on the board of the BCSC. She has been focused on workforce training and community outreach aspects of the project.

Recommendations

As a pilot project, we were bound to make mistakes and face unknown challenges. Outlined below are our biggest lessons learned from this project that we and others can learn from so this process can be even more successful for future projects.

Community Advisory Board Process

Generally speaking, our Community Advisory Board process worked quite well as it helped inform community members, create more trust and lay the groundwork for collective decision making. It took us 6 months to build our CAB. It would have been a bit quicker if we had an anchor partner to work with who already had deep ties in the community. In our second community-led solar project in Buffalo, NY we have a community-based partner who led that process, but it still took them 3 months to recruit the CAB. Getting out into the community and having clear materials explaining the CAB process was a key component in successfully recruiting CAB members.

To create a baseline of understanding and trust between community members and facilitators, we recommend planning about 6-8 educational-based meetings at minimum to go over the basics of community solar and lay the groundwork for decision-making. It's also important to build in multiple sessions for complex topics such as project finance. We recommend planning 3 - 6 months for those early sessions, and that each meeting runs for 90 minutes with ample time for questions and discussion. For those educational sessions, it was helpful to have a facilitator guide and slides to ensure we were best prepared to host meetings. However, we often packed too much information into each meeting and did not accurately account for time needed for open discussion and questions. Facilitator notes are useful for in-person meetings when you're not using slides, and help document what was done during each session. However, once the CAB moved to the decision-making phase, facilitator notes were less useful and created additional

administrative tasks that were not necessary. We phased the facilitator notes out over time, replacing them with meeting agendas and notes but would do this sooner for future projects. A sample of our facilitator notes are located in the appendix of this document. Once the basics are covered, we recommend polling the CAB on what topics they would like more information on using a circular agenda and/or polls/surveys conducted at the end of each session.

Another key to our success in Boston was the dedication of our CAB members, some of which has been highlighted in this report. Working with dedicated champions who are 100% bought in and can get others excited is critical to keeping momentum going and driving decision making. Gregory King was an instrumental part of the success of this project.

CAB Member Spotlight

Gregory King (he/him) is an environmental justice advocate and clean energy workforce development consultant with deep expertise in renewable energy and building energy efficiency. Mr King's work involves the intersection of innovation, workforce development and environmental justice. He is currently the Managing Director of TSK Energy Solutions LLC, a Minority Business Enterprise (MBE) focused on delivering innovations to environmental justice and workforce development program design.

At TSK Energy Solutions, Mr. King's work is focused on diversifying the clean energy industry in Massachusetts. Mr King is also an experienced facilitator of community involvement in energy justice matters. His energy justice work is focused on reshaping how we collaborate for social and climate impact. Mr. King was instrumental in bringing the two groups together to form the BCSC. Without his expertise and commitment, this project would not have been as successful. Mr. King serves as the Board president of the BCSC and his expertise continues to shape all aspects of the organization.

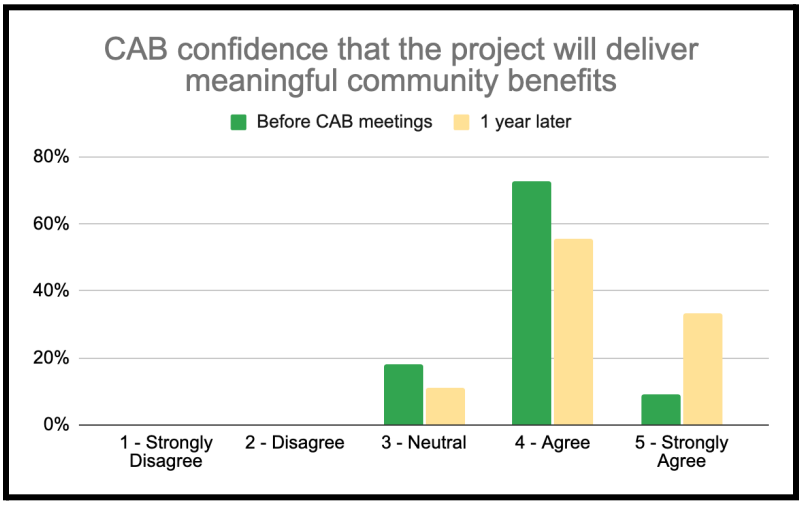
Siting

As stated above, siting was our biggest challenge but it is not unique to us. There are several things we would do differently in future projects. We recommend prioritizing outreach to mission-aligned organizations, who will more easily understand the value community solar can bring to their communities. We also recommend pursuing developer contacts. Since many mission-aligned organizations had the interest but not the capacity to host a solar array due to their roof age, newer building projects would eliminate that barrier. Another recommendation would be to fundraise for roof repairs for site hosts, allowing more mission-aligned property owners to pursue solar projects.

It took us a while to get our siting process to an efficient state, however, it still has room to improve. QGIS, while free and accessible, does not allow for multiple staffers to easily view mapping projects. Maps are saved on individual computers, and must be downloaded and re-uploaded to another person's computer, which is inefficient. It meant only one person could work on a given map, and the mapping work was frequently very tedious. Investing in a full ArcGIS platform that allowed multiple staff (including interns) to support the siting process would have enhanced siting speed and efficiency immensely. However, ArcGIS is expensive, so building this platform into grant budgets is a key part of accessing it. In the future, we also plan to invest in the solar specific platform Heliscope to do deeper analysis on the solar potential of individual buildings. This is a trainable task, and we are planning to teach our staff how to use it in the future so we are less reliant on external technical support.

Project management and staffing

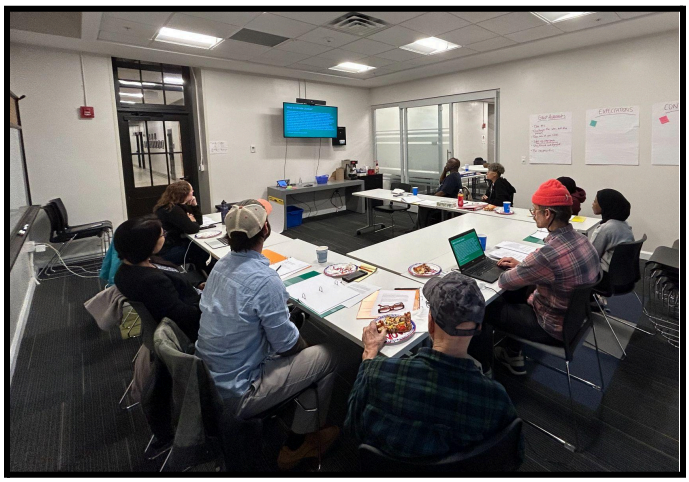
In addition to investing in platforms and skill sets related to siting, we recommend that multiple staff members are able to speak to site hosts and clearly explain financial models. This was something we did not recognize early enough. If we had invested in our staff to learn those skills earlier, it may have resulted in a different outcome. As mentioned previously, we think a Program Manager and Program Coordinator would be sufficient staffing for a project like this. However at a few stages of the project, like the CAB recruitment phase and the membership/subscription recruitment phase, support from community engagement and organizing staff is needed. Towards the end of the project, our staff had opportunities to take the University of New Hampshire's course on Community Solar Development, which greatly accelerated their understanding of related financial models. We recommend other groups interested in developing community solar find opportunities to join the UNH course. There are a few free options through the Department of Energy's Community Accelerator Prize and the People's Solar Energy Fund Movement for Solar Capacity and Leadership Program.



This process is slow, and being able to show progress while not quite reaching your goal is critical for sustained funding. Funders often want to know how many kwH of clean energy you have built or what energy savings you have provided community members. That data is only available once a project is built, and does not account for the work that was done to get a project to that point. Setting up project evaluation and monitoring metrics is a key component in tracking the work that has been done so you can more easily report back to funders. About a

year into the project, we started a project metrics spreadsheet to track the work we were doing. In hindsight, this should be set up at the very beginning of a project. We may have lost some metrics from early stages of the project, but we did our best to retroactively estimate that work. This proved vital when reporting back to funders, especially when we had not yet identified a site. We were able to show how many sites we evaluated and how many meetings we had as evidence of our progress. We also used it to keep track of CAB meeting metrics including attendance, what they learned and how their views changed throughout the process. Not only did the CAB increase their understanding of complex topics but also built their confidence that this process will result in something positive for their community.

Next steps



We have already begun to implement these lessons learned in our second community-led solar project in Buffalo, NY alongside our partners PUSH Buffalo. The project is moving forward quickly: we have already found a site for the project on the roof of a mission-aligned property owner which will allow for subscribers. The CAB is currently working through financial models and figuring out what energy bill savings these subscribers could receive. The Buffalo CAB has decided they do not want to establish a cooperative for direct community ownership, but are exploring ways for co-ownership using PUSH Buffalo as an owner representing the community. They are currently working on selecting a Engineering, Procurement and Construction (EPC) contractor for the project.

Energy Allies hopes that these learnings from our pilot project will be useful to other groups seeking to develop their own community-led energy process. We don't expect every community to form a cooperative but to be able to have agency in where their energy comes from, who owns it, and who receives the benefits through this process. We are looking to support more climate-impacted communities across the country to expand our impact and create more access to clean energy projects. The clean energy transition is happening, but if we don't prioritize the voices and needs of communities most impacted by climate change in the decision-making process, we will only repeat the mistakes made during past energy transitions. There are huge opportunities for scaling up community-led models like this in the coming years with programs like the Environmental Protection Agency's Solar for All which will invest $7 billion USD in low-income solar programs around the country. In order for the clean energy transition to be equitable and just, it must be community-led. Please reach out if you have questions about our process or would like to partner with us to facilitate a clean energy project for your community.

Inclusion@energy-allies.org

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And finally we'd like to thank our funders and donors who supported this project:

Appendix

Energy Allies Resources

- Community survey example
- CAB facilitator notes
- CAB evaluation and feedback surveys
- Siting process
- Contractor scorecard
- Project metrics template
- Energy Justice glossary

External Resources

- For help accessing federal funds and understanding tax credits and incentives check out the Environmental Protection Network.
- To learn more about the technical aspects of developing community solar projects check out the University of New Hampshire's Community Power Accelerator Lab and People's Solar Energy Fund Movement for Solar Capacity and Leadership Program
- To learn more about other groups around the country leading their own energy initiatives check out the Energy Democracy Project

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Energy Allies is a 501c3 non-profit organization dedicated to revolutionizing energy by ensuring the communities most impacted by climate change lead local clean energy solutions.

www.energy-allies.org

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