JULY 2023

Solar with Justice Case Study Series

Strengthening a Minnesota Community with Solar and Resilience

A Collaboration among State Energy Agencies and Community Organizations

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About this Report

The Clean Energy States Alliance (CESA) prepared this case study to describe how the community based organization, Ecolibrium3, developed a community solar array and resilience hub to benefit residents of a low-income, historically marginalized community in Duluth, MN. To create these two distinct projects Ecolibrium3 made use of stakeholder partnerships, technical assistance, and community outreach. This case study illustrates how these two projects were developed, what they learned, and what advice they would give to those developing future programs.

This case study was developed as part of CESA's Solar with Justice: Connecting States and Communities project. The Solar with Justice project aims to bring together state energy agencies (SEAs) and community-based organizations (CBOs) developing solar for environmental justice (EJ) communities to create opportunities for dialogue and collaboration. This case study is one of six case studies that will be published by CESA under the Solar with Justice project, highlighting models of collaboration between CBOs and SEAs on solar for environmental justice communities.

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SOLAR ENERGY TECHNOLOGIES OFFICE

This case study was produced by the Clean Energy States Alliance and based upon work supported by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) under the Solar Energy Technologies Office (SETO) Award Number DE-EE0009360. Under this project, known as Solar with Justice, CESA is working in conjunction with academic, state, and nonprofit partners to understand and improve how state energy agencies and community-based organizations collaborate on solar. Learn more at: https://www.cesa.org/projects/solar-with-justice.

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Acknowledgement

The author interviewed many of the collaborating partners on their experiences building this pilot project. He would like to thank Kari Moeller of the Minnesota Department of Commerce, Jodi Slick and Lora Wedge of Ecolibrium3, and Joel Haskard of the Clean Energy Resource Teams (CERTs). Additional assistance was provided by Warren Leon, Abbe Ramanan, and Maria Blais Costello of CESA.

All photos courtesy of Ecolibrium3.

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Introduction

As climate change increases the frequency and intensity of extreme weather, low-income and minority communities are often most affected. These communities are frequently characterized by older, less efficient housing which significantly increases exposure to indoor air pollution and leads to higher energy costs.[1] For both community-based organizations (CBOs) and state energy agencies (SEAs) across the US, coupling socioeconomic initiatives and climate resilience efforts can mitigate racial and economic disparities while also addressing climate change. For CBOs, equity-focused climate initiatives can increase access to both new partnerships and funding sources while advancing their organizational objectives. At the same time, SEAs can achieve designated targets for established state energy and equity goals.

This report highlights the work of Ecolibrium3, a CBO that recently constructed a community solar array and is currently developing a community Resilience Hub, both of which will benefit a low- and moderate-income (LMI) community in the Lincoln Park neighborhood

1 York, D. Cohn, C. Morales, D. Tolentino, C. "Building Decarbonization Solutions for the Affordable Housing Sector. April 2022. ACEEE. Accessed at https://www.aceee.org/research-report/u2204.

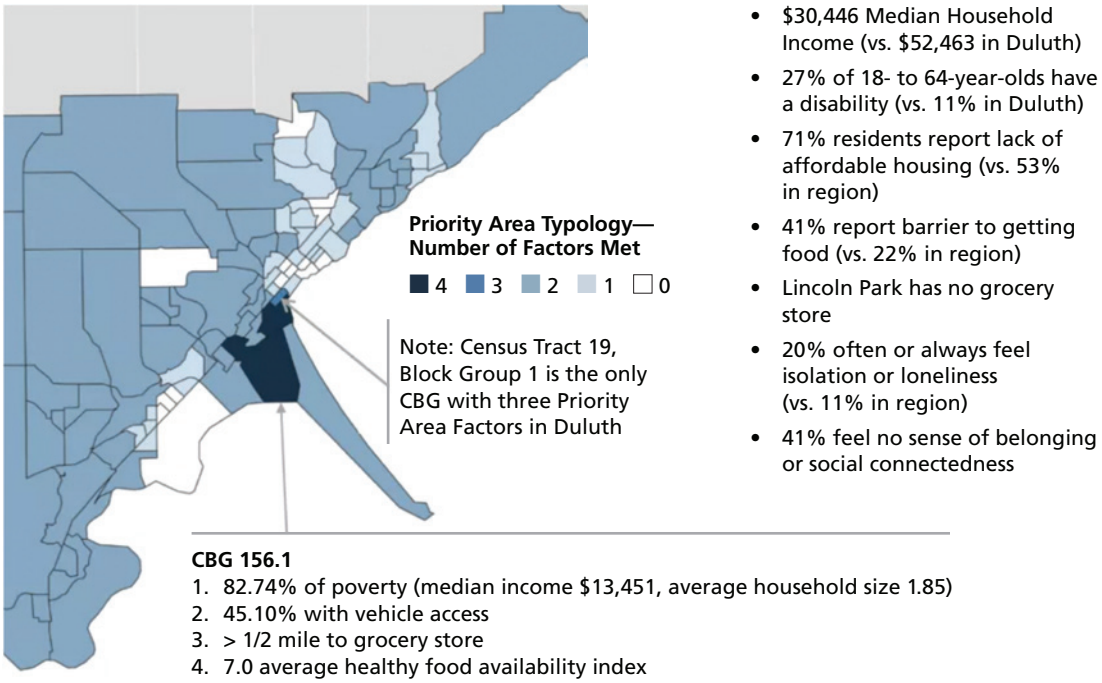
of Duluth, Minnesota. The Solar Garden and Resilience Hub offer exciting examples of how community outreach and building relationships with key stakeholders can improve the design, funding opportunities, and equity considerations for renewable energy projects and resilience efforts of CBOs.

Ecolibrium3

Ecolibrium3 began as Common Ground Deconstruction Services and Reuse Center in 2004, a 501(c)3 nonprofit that trained low-income individuals in the trades, with an emphasis on recovering building materials. In 2011, half of Common Ground's staff and board spun off to form Ecolibrium3, which now has nine staff and an expanded mission to include residential energy efficiency, environmental protection, and sustainable economic development.

FIGURE 1

Lincoln Park Community Challenges at a Glance



This map of Duluth highlights some of the social, economic, and health disparities faced by the Lincoln Park community (shown in dark blue). Courtesy of CERTs.

Ecolibrium3 is a neighborhood organization serving Duluth's low-income Lincoln Park neighborhood. It works to guide sustainable revitalization that addresses energy, housing, economic security, and health concerns. Ecolibrium3 boasts a broad range of work to achieve its mission, largely focusing on energy efficiency, developing sustainable housing

2 Lincoln Park Neighborhood Data. MN Compass. 2021. Accessed at: https://www.mncompass.org/profiles/city/duluth/lincoln-park?undefined

solutions, and promoting a more climate-resilient Duluth. It provides energy audits. Ecolibrium3 also runs a number of initiatives intended to revitalize the Lincoln Park neighborhood more broadly, working to provide resources and support to local businesses, entrepreneurs, and artists in the community.

The Lincoln Park neighborhood is a community of approximately 6,000 residents to the southwest of Duluth's downtown. In Lincoln Park approximately 46 percent of households earn less than $35,000 annually.[2] Ecolibrium3 reports that Lincoln Park's average household income is almost $12,000 lower than that for the city as a whole (see Figure 1).

Ecolibrium3's Lincoln Park Solar Garden is a 38-kilowatt array that was completed in 2020. The income generated from the array provides revenue for an Eco3 Energy Fund and also provides benefits to veterans under the care of the Minnesota Assistance Council for Veterans.

Lincoln Park Solar Garden

Ecolibrium3's Lincoln Park (LNPK) Solar Garden is a 38-kilowatt array that was completed in 2020. The income generated from the array provides revenue for an Eco3 Energy Fund and also provides benefits to veterans under the care of the Minnesota Assistance Council for Veterans (MACV). A portion of the energy savings goes to MACV and is then allocated directly to MACV tenants' electricity bills at the Duluth Veterans' Place. The Eco3 Energy Fund is not yet in use but is expected to provide low-income families with low or no-cost weatherization and energy efficient home upgrades. At present, Ecolibrium3 is still weighing possibilities for the exact uses of the fund while money continues to accrue in the Energy Fund until it is ready to be deployed.

The Resilience Hub

The Resilience Hub is a larger Ecolbrium3 project which is being rolled out in phases. The concept of a 'Resilience Hub' was created by the Urban Sustainability Directors Network (USDN). USDN defines Resilience Hubs as community-serving facilities that are augmented to support residents and coordinate resource distribution and services before, during, and/or after a natural hazard event.[3]

These facilities are intended to be established, trusted, and community-managed institutions that operate year-round as centers for community activities. They allow for more efficient emergency response plans that are readily accessible and known by residents. Resilience hubs can also build community power and leadership to provide health improvement initiatives, socioeconomic opportunities, and a greater sense of community among residents.

3 *Resilience Hubs: Shifting Power to Communities and Increasing Community Capacity.* Urban Sustainability Directors Network. Accessed at: https://www.usdn.org/resilience-hubs.html.

Ecolibrium3's Resilience Hub will primarily be in the organization's newly acquired headquarters, which is housed on the site of a former senior center. The hub is connected to two affordable housing towers, providing easy access for many residents who may benefit from its resources and resilience benefits. In addition to serving as Ecolibrium3's office, the Resilience Hub currently serves as a warming center for anyone exposed to extreme cold during the winter. The hub will soon include a cooling center for relief from extreme summer heat, a computer lab, a workforce development training space, a commercial kitchen for entrepreneurial use, a nearby grocery store, and transportation access. Ecolibrium3 hopes to eventually add solar arrays and battery storage.

To build the community Solar Garden and Resilience Hub, Ecolibrium3 collaborated closely with community partners as well as statewide organizations and state agencies, such as the Minnesota Department of Commerce. These partnerships provided technical assistance, community outreach, visioning, and project funding.

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This report will detail the development of both the solar array and the Resilience Hub, highlighting how both projects were designed, the community engagement strategies used, the role of key stakeholders such as Minnesota's Department of Commerce, and the challenges faced by Ecolibrium3. In doing so, CESA hopes to provide lessons learned and recommendations for other CBOs and SEAs interested in developing their own equity-focused energy and resilience projects.

Partnerships with the Minnesota Department of Commerce and CERTs

To develop both the Solar Garden and Resilience Hub, Ecolibrium3 first needed to build trusting relationships with partner organizations. Building organizational trust is a two-way street, with both sides establishing shared goals and delivering on agreed-upon expectations. Two of Ecolibrium3's primary partners for the Solar Garden and Resilience Hub are the Minnesota Department of Commerce (Commerce) and Clean Energy Resource Teams (CERTs).

While Commerce is not directly involved in the creation of Ecolibrium3's Resilience Hub, it serves as an available resource for Ecolibrium3 anytime they need guidance from the state. Commerce works with organizations like Ecolibrium3 across the state to provide resources and funding for renewable energy projects that fit the specific needs and conditions of each region in Minnesota. Commerce offers a variety of programming and funding opportunities and has maintained a strong relationship with Ecolibrium3 since 2019. Commerce provided Ecolibrium3 with seed funding in past years for various climate initiatives. Commerce staff

also provided technical assistance as needed. In general, Commerce works to provide guidance and resources for community organizations to prepare and apply for other state and federal funding outside of their seed grants.

While Commerce provided seed funding and technical expertise to Ecolibrium3, Ecolibrium3 also shared community input with Commerce through the department's Community Energy Collaboration. Commerce invited Ecolibrium3 to join their Community Energy Collaboration, which ran from 2019–2022. It also paid a stipend for Ecolibrium3. The goal of the collaboration was to create information-sharing opportunities between community-based organizations and Commerce in order to better reach under-served communities and reduce their energy burdens. Commerce sought community input to better understand the barriers and then use that information to design a model that was informed by disadvantaged communities across the state. The Community Energy Collaborative allowed Commerce to shift from being a largely reactive government agency waiting to engage with CBOs only after new legislation passes to instead proactively understanding community needs and serving communities regardless of legislative outcomes.

For Ecolibrium3, the most significant role played by both Commerce and CERTs was to amplify Ecolibrium3's success stories, which was integral to building further community partnerships and accessing funding opportunities that were otherwise unknown to them.

CERTs and Ecolibrium3 are longtime partners, and CERTs has provided funding to Ecolibrium3 multiple times over the past six years. CERTs provided a $5,000 Northeast CERT Seed grant for the Lincoln Park (LNPK) Solar Garden. The CERT Seed Grant is funded by Commerce and administered by CERTs. Although the funding from CERTs and Commerce is small in comparison to the overall project costs for the LNPK Solar Garden and Resilience Hub, both organizations focus much of their efforts on disseminating information and community education. Commerce seeks to use stakeholder engagement to help organizations prepare for state and federal funding opportunities as they become available. By engaging with CBOs early on in the development of energy projects, Commerce can provide input, address concerns, and provide resources to help smooth the project development process. Commerce emphasizes the importance of supporting the development process rather than trying to direct specific project outcomes to their CBO partners. For Ecolibrium3, the most significant role played by both Commerce and CERTs was to amplify Ecolibrium3's success stories, which was integral to building more community partnerships and assisting additional communities to access funding opportunities that were otherwise unknown to them.

State Agency Partners for Clean Energy

Commerce and CERTs are statewide resources for renewable energy and energy efficiency initiatives across Minnesota. Below are descriptions of both organizations.

Minnesota Department of Commerce (Commerce)

The Department of Commerce oversees more than 40 industries. Its roles are broad and wide ranging, with a focus on energy, financial institutions, real estate, and more. Commerce's Division of Energy Resources covers energy regulation and planning, energy environmental review, and analysis. That division is also home to the State Energy Office and Minnesota's Energy Assistance Program. It promotes policies for reliable, affordable, and clean energy for Minnesota; advocates for rate payers; maintains state emergency energy and recovery plans; oversees Minnesota's Conservation Improvement Program; administers Energy Assistance and Weatherization Assistance Programs; and promotes energy-efficient buildings and emerging energy technologies. The State Energy Office receives federal funding that is used to accelerate the use of energy efficiency and renewable energy. The State Energy Office also provides energy information and assistance to local government and organizations about access to resources and best practices.

In recent years, Commerce committed resources to ensure that diversity, equity, and inclusion (DEI) are a central focus. For the State Energy Office, the push for more equity-centered work began with their Community Energy Collaboration that works to reach underserved communities across Minnesota. The Collaboration provides insights into regionally specific needs and solutions to reduce economic and environmental disparities. The work of the Community Energy Collaboration will be bolstered by broader DEI efforts across the agency using funding from the US Environmental Protection Agency (EPA) and Inflation Reduction Act (IRA) and guided by the Justice40 initiative. Commerce works with local governments across the state to build energy resilience and offer resources to reduce organizational strain to apply for grants, access information, report on data, and make connections with relevant organizations. Learn more at Minnesota Department of Commerce.

Clean Energy Resource Teams (CERTs)

CERTS is a statewide public-private partnership operated by four core members: Commerce, the University of Minnesota, the Southwest Regional Development Commission, and the Great Plains Institute. CERTs provides educational outreach and project assistance regarding clean energy, engaging with communities across the entire state. CERTs works with municipalities, counties, utilities, businesses, organizations, farmers, schools, residents, and tribal nations in Minnesota and provides education, analysis, and catalyzing grants to jumpstart energy projects and then continues support through a project's development. Learn more at Clean Energy Resource Teams.

Lincoln Park Solar Garden

The Lincoln Park community solar garden is a 38-kilowatt development located at 1450 W Michigan Street in Duluth. It is comprised of four elevated solar arrays, which are raised 12 feet off the ground to allow for the eventual creation of a community garden underneath. The panels can be tilted to better capture sunlight from April through September.

The Lincoln Park solar array was fully funded by grants and private donations. The project's development and construction costs were $209,000. The land was acquired for free from the City of Duluth, but it is still owned by the city. The solar garden was built on a vacant lot adjacent to a busy street in an industrial section of Duluth's port on Lake Superior. This tract of land is also the entrance to the Lincoln Park neighborhood coming from Duluth's downtown, and the solar garden is intended to build a sense of neighborhood pride.

The Lincoln Park Solar Garden's total cost was $209,000. The total dollars raised to support the project was $240,000. The electrcity generated from the project will support a Community Clean Energy Fund and provide assistance to the Duluth Veteran's Place. The project developer was Wolf Track.

Ecolibrium3 will place 75 percent of the energy savings into an Eco3 Energy Fund which will be used to help low-income families with emergency bill payments, home weatherization, and/or reduced-cost or free energy-efficient appliances. The remaining 25 percent of the power generated benefits the tenants of the Duluth Veteran's Place as they were interested in but unable to install, solar on their own buildings. The MACV is a benefactor of the solar garden and did not need to contribute to the project's construction for Ecolibrium3 to extend energy savings to the veterans they serve at the Duluth Veteran's Place.

Since coming online in 2020, the solar garden has produced 135 megawatt-hours (MWh), or approximately $13,000 in dollars earned through net metering. As of this writing, MACV's portion of the energy generated by the array has been approximately 34 MWh, and which generated $2,972. The portion of the electricity generated for the Community Energy Fund generated by the array was 102 MWh and $8,915. (See Table 1.) (The Energy Fund has yet to be accessed and is currently accumulating capital for a future start date.)

These dollar values are slightly below the respective 25 percent and 75 percent of the total income generated as Ecolibrium3 retains approximately 10 percent for operating expenses. For Ecolibrium3, this means being able to both demonstrate the benefits of solar clearly to their residents and to be able to build resilience in their community with renewable energy and the energy efficiency measures it will afford.

TABLE 1 **LNPK Solar Garden Solar Generation and Allocations ($ and KWh)**

Year	Total Project		MACV		Community Energy Fund	
	kWh Generated	Economic Value	kWh Allocated	Economic Value	kWh Allocated	Economic Value
2020–21	59,088.65	$ 5,084.71	14,772.16	$1,271.18	44,316.49	$3,813.53
2021–22	50,274.04	$ 5,275.77	12,568.51	$1,318.94	37,705.53	$3,956.83
2022–23	26,123.439	$ 2,726.13	6,530.86	$381.53	19,592.58	$1,144.60
Total	135,486.13	$ 13,086.61	33,871.53	$2,971.65	101,614.59	$8,914.96

The table depicts the kilowatt hours (KWh) and dollars ($) generated by the LNPK Solar Garden from its construction in 2020 until April 2023. Approximately 10% of the total income generated from the solar array is not included in the table as it is reserved for operating expenses. Source: Ecolibrium3.

Solar Garden Partnerships and Fundraising

Ecolibrium3 worked with 38 partners in the development of the LNPK Solar Gardens. These partners range widely in terms of organization type and level of involvement. They include other local CBOs, state and municipal government, local businesses, national businesses, and foundations. Many provided funding, while others provided community guidance and technical expertise (see Appendix 1 for the complete list). Many of the funding partnerships were cultivated through Ecolibrium3's strong presence in the community and their relationship with the city of Duluth. This long-held relationship with the city positioned them to obtain the site at no cost. Additionally, the city of Duluth nominated Ecolibrium3 for a US

Conference of Mayors Award, which came with funding for the organization when it received that award. Publicity about the award caught the attention of others who then wanted to participate and contribute to the solar garden's development. It is particularly notable that through these funding partners, the Lincoln Park Solar Garden recevied funds that exceeded the costs of the solar array, raising $31,000 additional dollars that will be used for project management, site work, builders risk insurance, and any unexpected costs. As a result, almost every dollar generated from the solar panels can be directed to beneficiaries over the full lifespan of the array.

The Lincoln Park Solar Garden project shows that community-supported solar development has considerable appeal for a wide range of organizations and can be used by a CBO as a centerpiece for its fundraising.

During the development of the solar garden, Ecolibrium3 engaged community members and local stakeholders in a series of workshops. The aim of the workshops was to include and empower residents to be a part of development decisions that they are too often left out of.

COMMUNITY OUTREACH

During the two-year development of the solar garden, Ecolibrium3 engaged community members and local stakeholders in a series of four workshops. The aim of these workshops was to include and empower residents to be a part of development decisions that they are too often left out of. The four workshops were themed as 1) Storytelling, 2) Adapting, 3) Developing, and 4) Sustaining.

Ecolibrium3 Community Outreach Event for LNPK Solar Garden

The Storytelling workshop focused on recognizing experiences of current and past residents, including a history of Duluth and the historic significance of the LNPK Solar Garden site, known as Point of Rocks to the Anishinaabe communities who resided in what is now Duluth. The Adapting workshop discussed community challenges and opportunities related to climate change. The Developing workshop asked residents to vote on their favorite murals in the neighborhood while also creating new art that is now on display in Ecolibrium3's headquarters.

The Sustaining workshop capped off the community outreach phase and was held in conjunction with the Eco3 Fall Party to make it a festive event. Residents offered input into what future uses and amenities they would like at the LNPK Solar Garden. Local transportation, infrastructure, stormwater management, sustainability, and public policy experts cycled in and out of various workshops to have informal conversations and provide answers regarding city processes.

These direct outreach events allowed Ecolibrium3 to build trust with the Lincoln Park community, receive valuable community input about what residents want to see in their neighborhood, and also provide learning opportunities and connections to many of Duluth's decisionmakers. During these workshops Ecolibrium3 asked themselves, and were able to ask residents, a series of questions regarding the community's equity concerns and needs, and then incorporated what they learned into the solar garden's design, such as the inclusion of public art and a community garden with pollinator plants underneath the raised solar. Ecolibrium3 incorporates various models of community engagement into all of their work to ensure that their efforts meet the needs of and improve the lived experiences of the communities they serve.

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Barriers to Development

The single largest challenge to the development of the LNPK Solar Garden was the COVID-19 pandemic. COVID-19 caused project delays as well as disruptions to conducting community outreach efforts intended to understand and incorporate input from residents about the project. Ecolibrium3 was able to adapt by hosting outdoor events as the weather warmed to conduct outreach safely. Covid-19 also dramatically stretched the bandwidth of Ecolibrium3 and partner CBOs as they shifted resources and staff time to respond to their communities in the wake of the pandemic. This in turn slowed down the pace of creating organizational partnerships and new initiatives as the CBOs instead focused on the health and economic stability of their communities.

The Resilience Hub

Ecolibrium3's Lincoln Park Resilience Hub is still in development. It is currently serving as a winter warming center that is open from October 15th to April 15th for anyone without shelter to get out of the cold and spend the night as needed. The existing space is currently under major renovations to incorporate the rest of the resilience hub facets still to come. Incoming features to the hub include a computer lab for workforce training, a summer cooling center, a commercial kitchen to be used for entrepreneurs, a BIPOC-led meeting space, a micro mobility hub, and a grocery store that will be located a few blocks away.

Ecolibrium3 also sought to add renewable energy components to the hub; however, initial feasibility studies found the complicated mechanical features of the resilience hub would add significant upfront electrical renovations and inverter replacement costs, making solar panels and accompanying battery storage financially unfeasible. Ecolibrium3 hopes to reexamine possible renewable energy implementation options in the future.

The Resilience Hub is working to establish itself as a community meeting place for the Lincoln Park community. By offering numerous services and providing both comfort and familiarity

Ecolibrium3 Resilience Hub

with the space, Ecolibrium3 expects that the resilience hub will be well known to anyone who needs to get to a point of safety during a disaster.

Once completed, the Resilience Hub will provide the following services to the community:

- A BIPOC-led community space will provide programming to be facilitated by two partner nonprofits, Divine Connections and Family Rides Together. This space is intended to offer a dedicated, comfortable setting for BIPOC-centered organizations and communities of color to congregate and host events at no cost.
- A cooling center will operate in the same space as the warming center to allow anyone in need of a space to cool off from extreme heat during the summer.
- The micro mobility center will provide access to bikes, e-bikes, cargo bikes, and a truck that residents can check-out and use free of charge. The micro mobility hub is intended to support Lincoln Park residents with little access to cars and provide for those with mobility barriers.
- The commercial kitchen currently exists as a serving kitchen, but it will be renovated and scaled up to be used for emerging entrepreneurs as well as for use as needed by the Resilience Hub.
- A computer lab will be constructed to expand digital access, job navigation sessions, and youth summer programming.
- The final project phase includes the addition of a grocery store on W Superior St. as there are currently no grocery stores operating in Lincoln Park and the neighborhood is classified by the USDA as a food desert.

Resilience Hub Partnerships

Ecolibrium3 conducted significant outreach and leveraged a wide variety of partnerships to launch the Resilience Hub with a total of 30 partners involved. Many of Ecolibrium3's partners assisted in providing community input for the Hub's design. These contributions included specific knowledge of community needs from a variety of direct service providers, including the need for more dedicated spaces for BIPOC programming and community gathering. Partner contributions also allowed Ecolibrium3 to better understand the equity considerations specific to the Lincoln Park community, offering insight into underrepresented populations and unmet community needs that the hub could address. Ecolibrium3's partner organizations have built and established trust with community members in a way that would be extremely time intensive for Ecolibrium3 to replicate. The project partners include residents in Lincoln Park, renewable energy experts, and local government. Ecolibrium3 COO Lora Wedge emphasizes the importance of establishing partnerships to successfully build the Resilience Hub. As a result of these diverse partnerships, Ecolibrium3 gained a rich understanding and access to local expertise to

Ecolibrium3's partner organizations spend significant amounts of time and have histories of established trust with community members in a way that would be extremely time intensive for Ecolibrium3 to replicate.

identify and address community needs, barriers, strengths, and weaknesses of Lincoln Park. Some of these partnerships include the following (see Appendix for a complete list of Resilience Hub partners):

- Community Action Duluth
- St Louis County Services
- Divine Connections
- Family Rides Together
- University of Minnesota Duluth (UMD)
- Clean Energy Resource Teams (CERTs)
- Minnesota Department of Commerce (Commerce)
- Clean Energy Group (CEG)

Financing the Resilience Hub

To fund the various components of the Resilience Hub, Ecolibrium3 is accessing funding from government, foundations, and individual donors. For an initial solar and storage feasibility assessment of the Resilience Hub, Ecolibrium3 applied for and received $7,500 from Clean Energy Group's Technical Assistance Fund, along with the Northeast CERT Seed Grant of $5,000 for early project development costs. Ecolibrium3 also received $80,000 from the Minnesota Department of Employment and Economic Development (DEED) for future window upgrades. The United States Department of Agriculture (USDA) is funding the construction of the neighborhood grocery store. Resilience Hub funders also include the City of Duluth and Duluth Local Initiatives Support Corps (LISC).

Barriers to Development

The initial feasibility assessment that Ecolibrium3 was able to conduct for a proposed solar plus battery storage system underscores the importance of a CBO undertaking a careful assessment before embarking on a solar and/or energy storage project, and Clean Energy Group's Technical Assistance Fund (TAF) exists for just that purpose. The Fund provides community-serving organizations with one-on-one support and technical expertise to evaluate the feasibility of combined solar and storage systems at critical community facilities.[4] In this case, the TAF enabled American Microgrid Solutions to conduct a technical and financial feasibility study of the LNPK Resilience Hub. Additional one-on-one support was provided by CERTs to answer questions and complete the analysis in collaboration with American Microgrid Solutions.

Unfortunately, the results of the analysis showed that even if the renewable energy system was fully paid for, the Resilience Hub would require significant upfront building upgrades

4 Resilient Power Technical Assistance Fund. Clean Energy Group. Accessed at: https://www.cleanegroup.org/ceg-projects/technical-assistance-fund.

and would need to replace multiple inverters over the system's lifespan, which would cost approximately $30,000 a year if the costs were spread out annually. The proposed solar and storage system would have combined a 57-kW solar array with a 125-kW battery. The solar array would have offset approximately 17 percent of electricity usage with the economic benefits varying from $1,527 to $3,194 per month for winter and peak summer months, which would not be enough to offset the anticipated building upgrade and maintenance costs. While Ecolibrium3 hopes to revisit the potential for solar and battery storage implementation down the road, these barriers necessitated removing the renewable energy components from the Resilience Hub's current design.

While Ecolibrium3 hopes to revisit the potential for solar and battery storage implementation down the road, these barriers necessitated removing the renewable energy components from the Resilience Hub's current design.

Ecolibrium3 was able to have the feasibility study conducted free of cost. Accessing these funds through CERTs and Clean Energy Group's Technical Assistance Fund enabled Ecolibrium3 to receive critical information before spending money or using valuable staff time. Funding for feasibility studies is very valuable to CBOs. It allows CBOs with limited resources or internal capacity to learn if renewable energy such as solar and battery storage can increase community resilience and provide additional revenue streams to support their organizational missions.

INTRICACIES OF PARTNERSHIPS

A diverse range of partnerships is at the core of the Resilience Hub's design and success. Developing a wide range of strong relationships with project partners will ensure that the Resilience Hub equitably serves the Lincoln Park community, but it requires navigating lots of details with various stakeholders. Ecolibrium3 found partners among private, nonprofit, and government stakeholders. However, Ecolibrium3 also found that incorporating these different entities into the project significantly slowed the development process. The need to move slowly is likely to be an inevitable outcome for projects seeking meaningful community input and organizational partners. CBOs would be wise to anticipate delays and plan accordingly to meet deadlines and ensure project partners are engaged early with mutually agreed upon timelines.

Lessons Learned and Recommendations

One of the biggest lessons learned from both the Solar Garden and the Resilience Hub is how powerful partnerships with community stakeholders, local businesses, municipal government, and state agencies can be. The various partnerships allow both the solar array and the Resilience Hub to meet many diverse needs through a single project. Additionally, the wide range of partnerships enabled Ecolibrium3 to tap into new funding sources and secure land for the solar array that made these projects viable.

Recommendations for CBOs

CONNECT WITH YOUR STATE AND MUNICIPAL GOVERNMENTS

For CBOs seeking to create similar community solar arrays and/or resilience hubs, one of the first things to do is to reach out to their state energy agencies (SEAs) about the proposed projects. Those organizations can provide useful advice and may have access to funding. Reaching out to SEAs is especially important with expanded federal funding through the IRA and BIL programs that are injecting billions of dollars into climate and energy projects across the US. SEAs can help CBOs identify opportunities for federal funding and in some cases

assist with applying for funding. SEAs and affiliated organizations such as CERTs can also serve as a connector to other relevant players as well as a provider of seed funding to get projects started. Many CBOs likely feel as though they are working in isolation and may not realize that SEAs might be working with similar projects across the state and would be able to assist them with making connections.

In addition to reaching out to their SEA, CBOs should also reach out to their local government, as municipalities may be able to provide access to resources and partnerships that can aid in the development of renewable energy and resilience projects. Through their partnership with the City of Duluth, Ecolibrium3 was able to access free land, a cash award, and significant publicity that led to further donations for the development of community solar.

CRITICAL QUESTIONS FOR ACHIEVING EQUITY GOALS

During an interview with CESA, an Ecolibrium3 staff member suggested three questions that CBOs should ask both themselves and stakeholders when developing equity-focused resilience plans:

- "How can our organization make itself a place that community members are interacting with daily rather than just a space for responding to crises?"
- "How can we design communities that allow people to be more resilient from the bottom up before a disaster occurs?"
- "How can we connect our residents to feel more socially connected and establish access to nature, food, and other needed resources?"

Asking these questions while designing a resilience hub can yield insights into what components will need to be included in the project and what type of partners may need to be included.

Recommendations for SEAs

SEEK INPUT FROM CBOS

For SEAs seeking to better support and work with CBOs, especially pertaining to renewable energy and resilience projects, the first step is to seek input from CBOs in economic and environmental justice communities on their needs. SEAs should focus efforts on communities that do not already have the resources to improve their livelihoods by themselves. Many low-income and historically marginalized communities require major renovations to their homes and surrounding infrastructure. Especially as cities move towards strategic electrification, efforts should be made to ensure that marginalized communities are at the forefront of receiving the benefits. Improvements such as heat pumps, weatherization, renewable energy technologies, and battery storage can reduce household energy burdens, improve indoor air quality, and boost resilience in the event of power outages and climate disasters.

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SEAs can create tools and resources that CBOs can use to access new federal funding. Examples of this could be new software for conducting home energy assessments, or access to other back-end resources that can increase CBO capacity, such as free data collection and analysis software.

OFFER FUNDING FOR FEASIBILITY STUDIES

Funding for feasibility assessments on potential energy projects can be critical for CBOs that may benefit from adopting renewable energy and battery storage to bolster their work. Although Ecolibrium3's solar and storage proposal proved to be infeasible at present, their access to funding for a feasibility study prevented the organization pursuing a project that was untenable and allowed them to allocate that money to other programming for the LMI community they serve. For projects that prove to be economically feasible, a renewable energy installation can create an excellent opportunity to increase organizational partnerships and tap into new funding streams to benefit the communities they serve, as demonstrated by Ecolibrium3's LNPK Solar Garden.

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IDENTIFY COMMUNITY SPARK PLUGS

Finding community "spark plugs" such as Ecolibrium3 is another great way for SEAs to advance their work. Identifying on-the-ground CBOs that have knowledge of environmental justice and clean energy can help an SEA meet a state's clean energy objectives.

Joel Haskard of CERTs describes Minnesota as being very fortunate to have a thoughtful state energy agency. Through programs such as the Community Energy Collaborative, Commerce is working to make community involvement and tenets of diversity, equity, and inclusion central to its work. Other SEAs across the country should place similar emphasis on establishing strong community networks to guide programming.

Conclusion

By developing a large and diverse coalition of stakeholders, Ecolibrium3 is leading the charge for a resilient Lincoln Park. The Solar Garden is a highly visible array at the entrance of the community and will lead to thousands of dollars generated annually to reduce the energy burdens of US military veterans in affordable housing. Additionally, the Solar Garden will increase the capacity of Ecolibrium3's Community Energy Fund to reduce energy burdens and improve weatherization for low-income residents. Although still in its infancy, the Resilience Hub will meet a variety of community needs and is laying the groundwork to be fully operational in the next one to two years. The Resilience Hub offers emergency relief to unhoused individuals during dangerous winter freezes while also providing needed meeting spaces and training facilities for marginalized communities to congregate and foster social and economic opportunity. The Resilience Hub is a clear example of how socio-economic equity and climate goals can be coupled together to mitigate environmental harms while also improving quality of life for marginalized communities. Both the Solar Garden and the Resilience Hub can serve as models for other CBOs and SEAs interested in expanding renewable energy access, cost savings, and climate resilience measures for communities across the country.

Appendix—Project Partners

LNPK Solar Garden Partners

- Bent Paddle Brewing Co.
- Bernick's of Duluth
- Cartier Agency, Inc.
- Castle Danger Brewing
- City of Duluth
- Clean Energy Resource Teams
- Community Action Duluth
- Duluth Climate and Energy Network
- Duluth Grill Family of Restaurants
- Duluth Pottery
- Duluth Superior Area Community Foundation
- Enbridge
- Grandma's Saloon and Grill
- Hotel Pikku
- Johnson Insurance Consultants
- Kwik Trip
- The Left Coast Fund
- LISC Duluth
- Love Creamery
- MACV
- Mielke Electric
- Minnesota Power
- MN Dept of Commerce
- North Shore Bank
- Ordean Foundation
- Pachel Foundation
- Peace United Church of Christ
- Sheet Metal Solutions
- St. Luke's
- The United States Conference of Mayors
- Unitarian Universalist Congregation of Duluth—Climate Action Team
- Ursa Minor Brewing
- US Bank
- Young & Associates Insurance
- Wagner Zaun Architecture
- Wells Fargo
- The Witraks
- Wolf Track Energy

Resilience Hub Partners

- American Red Cross
- Arrowhead Economic Opportunities Agency
- CHUM
- City of Duluth
- Community Action Duluth
- Divine Connections
- Duluth Aging Support
- Duluth Art Institute
- Duluth Children's Museum
- Duluth Community Garden Program
- Duluth Housing and Redevelopment Authority
- Duluth LISC
- Duluth Workforce Development

- Duluth YMCA
- Entrepreneur Fund
- Essential Health
- Family Freedom Center
- Family Rise Together
- Food Farm
- Generations Healthcare
- ISD 709- Duluth Family Schools Collaborative
- Irving Community Club
- Johns Hopkins Center for American Indian Health
- Lake Superior College
- Lake Superior Sustainable Farming Association
- Main Street Lincoln Park
- Saltless Sea Farms
- St. Louis County Public Health
- UMD Labovitz School of Business
- University of Minnesota Sustainable Development Partnership

Resilience Hub Funders

- CERTs
- City of Duluth
- Duluth LISC
- MN DEED
- USDA

The Clean Energy States Alliance (CESA) is a national, nonprofit coalition of public agencies and organizations working together to advance clean energy. CESA members—mostly state agencies—include many of the most innovative, successful, and influential public funders of clean energy initiatives in the country.

CESA works with state leaders, federal agencies, and other stakeholders to develop and promote clean energy programs and markets, with an emphasis on renewable energy, energy equity, financing strategies, and economic development. CESA facilitates information sharing, provides technical assistance, coordinates multi-state collaborative projects, and communicates the views and achievements of its members.

Ørsted US Offshore Wind/Block Island Wind Farm

Clean Energy States Alliance

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Clockwise from upper left: Shutterstock/Soonthorn Wongsaita; Tom Piorkowski; Resonant Energy; Portland General Electric; RE-volv; Bigstockphoto.com/Davidm199