CleanEnergy States Alliance

Community Solar + Resilience Hub in Duluth, Minnesota

July 27, 2023

Webinar Logistics

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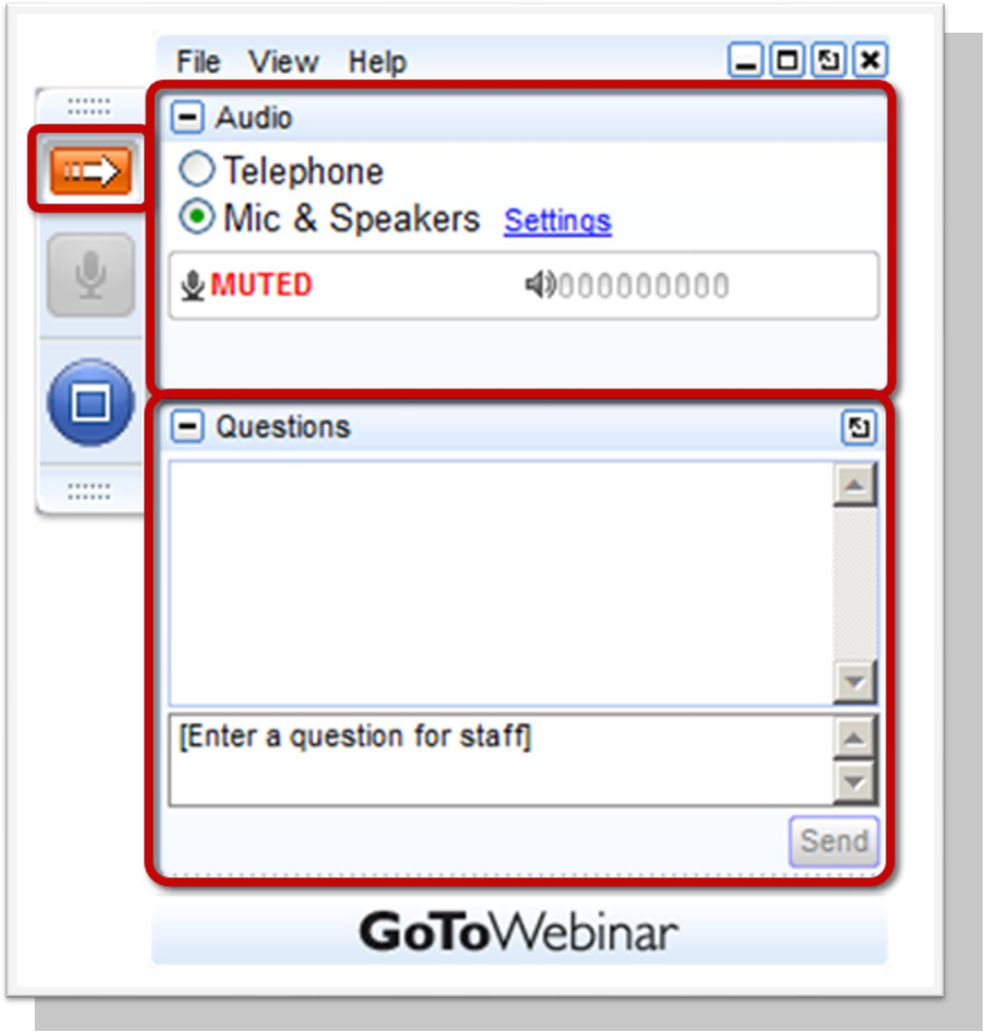

Celebrating 20 Years of State Leadership

Clean Energy States Alliance

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.

www.cesa.org

CleanEnergy States Alliance

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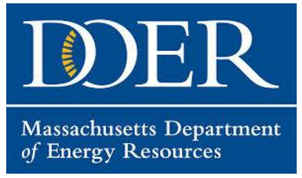
Powering forward.
Together.

Wisconsin Office of Energy Innovation

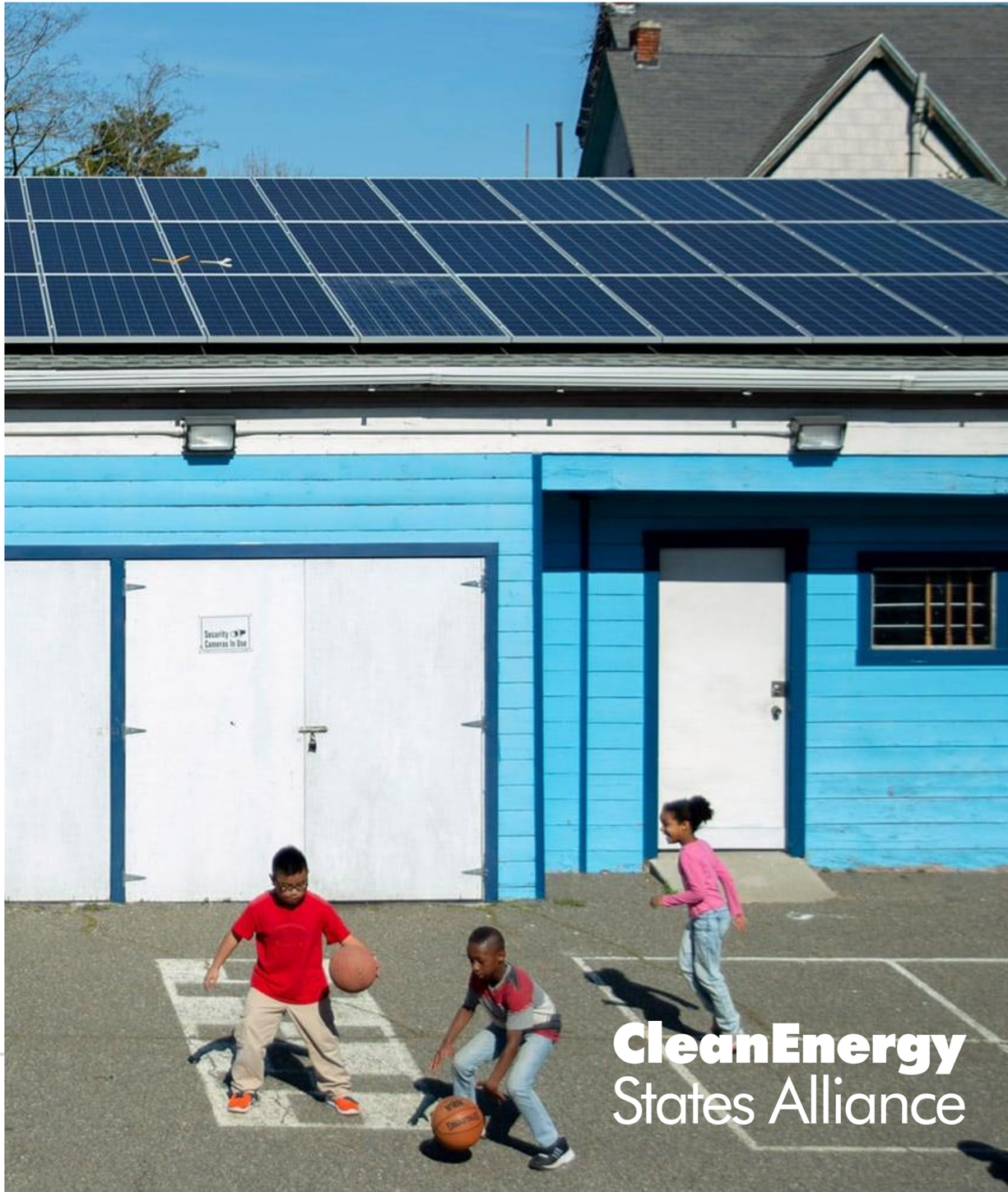


Solar with Justice:
Connecting States and Communities

Identifying models for how state energy agencies and community-based organizations can collaborate more effectively to expand access to solar.

U.S. DEPARTMENT OF ENERGY
SOLAR AWARDEE™

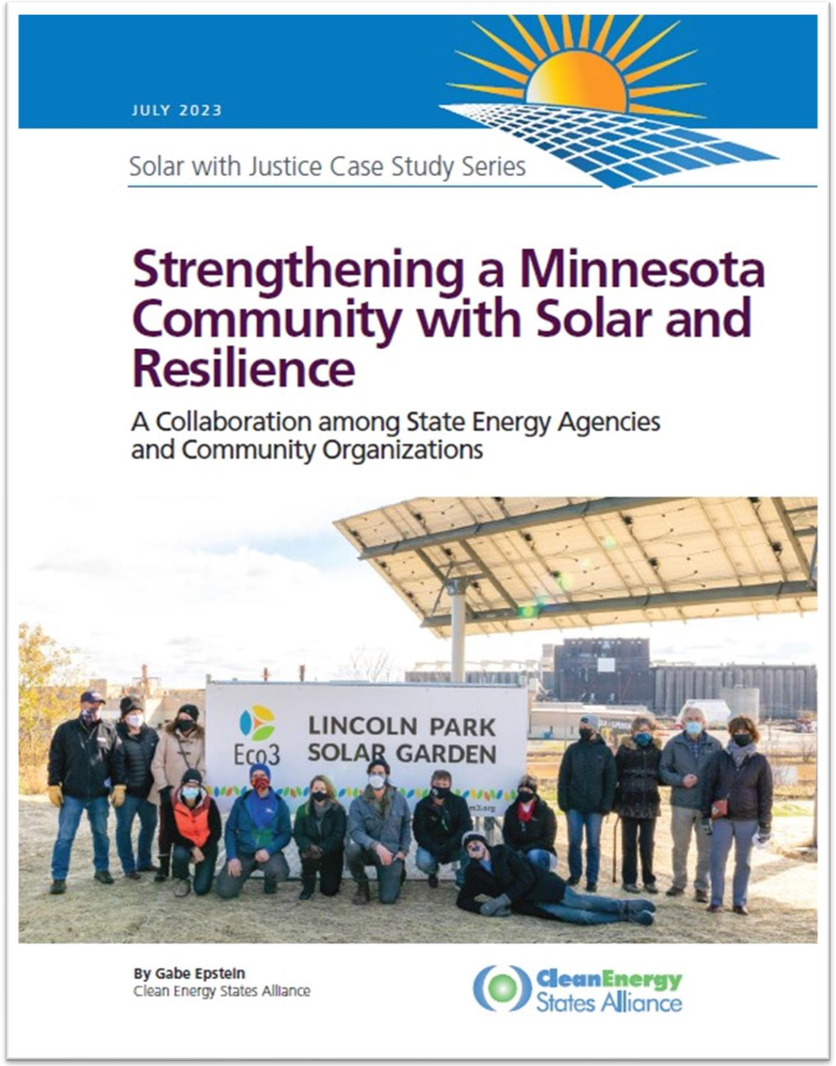
www.cesa.org/projects/solar-with-justice



Strengthening a Minnesota Community with Solar and Resilience

July 2023

By Gabe Epstein, Clean Energy States Alliance



www.cesa.org/resource-library/resource/minnesota-case-study/

Webinar Speakers

Gabe Epstein
Project Associate
Clean Energy States Alliance

Jodi Slick
Founder & CEO
Ecolibrium3

Community Solar + Resilience Hub in Duluth, Minnesota | July 27, 2023

CleanEnergy States Alliance

gabe@cleanegroup.org

www.cesa.org

Upcoming Webinar

Can Virtual Power Plants Replace Peaker Plants? A Conversation with CEG and Brattle Group (8/3)

Read more and register at www.cesa.org/webinars

Eco3

Jodi Slick, Founder and CEO
Jodi@ecolibrium3.org

MAIN STREET LINCOLN PARK

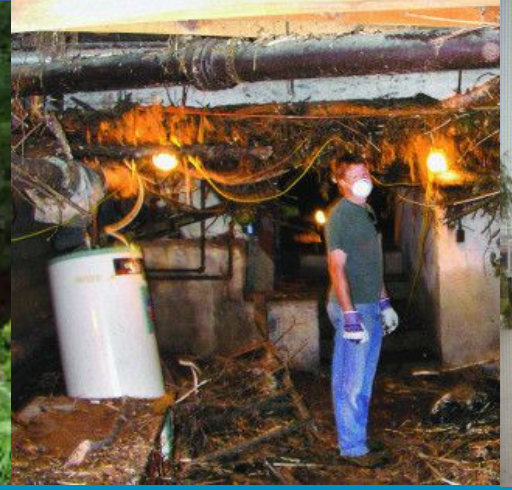
LINCOLN PARK

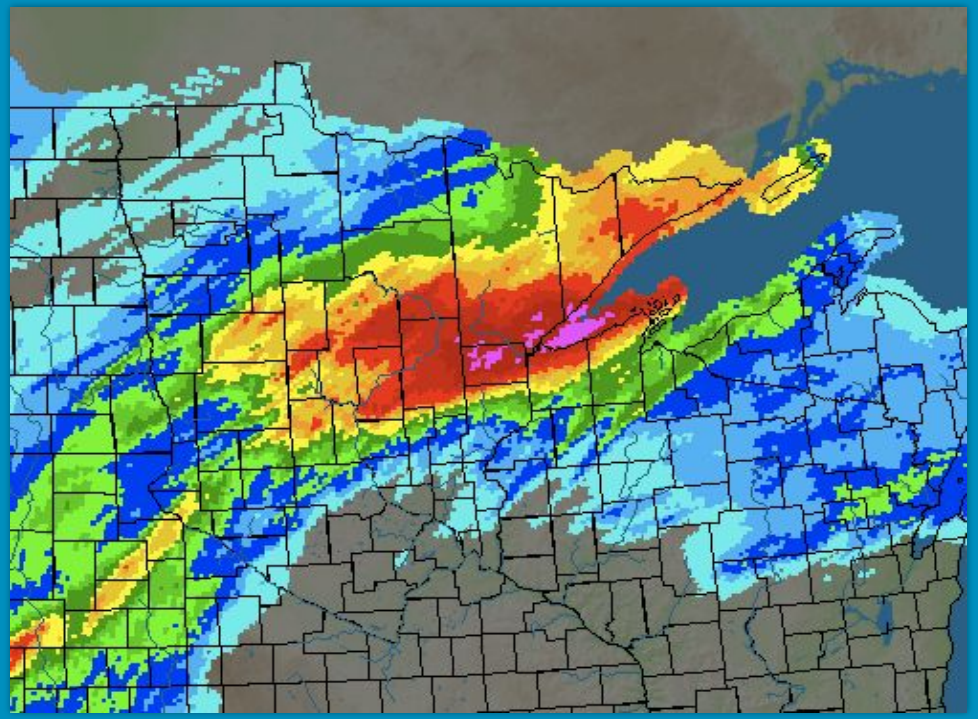
DULUTH CITIZENS' CLIMATE ACTION PLAN

EARTH WEEK

Eco3 ENERGY


Eco3 ENERGY






June 19-20, 2012 Flooding Rains
International Falls
Ely
Grand Marais
Bemidji
Hibbing
Grand Rapids
Silver Bay
Duluth
Bayfield
Ironwood
Rhinelander
Hayward
Park Falls
Rain (in.)
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UMD
Geospatial Analysis Center
University of Minnesota Duluth
Driven to Discover
DULUTH
solarmarket PATHWAYS
ecolibrium3
LOCAL ENERGY MATTERS
Duluth Shines!
Duluth's Solar Suitability Application
Type in an address
-92.138 46.763 Degrees
USDA FSA, GeoEye, Maxar
POWERED BY esri


Eco3 ENERGY

OUR STORY

Clean energy produced by Eco3's Lincoln Park Solar Garden benefits Duluth residents experiencing energy poverty and financial hardship.

Developed by Ecolibrium3, a Lincoln Park-based nonprofit, this project demonstrates community solutions at the intersection of energy, equity, and economic vitality.

Power generated supports Eco3's Community Energy Fund and transitional housing for veterans.

Eco3

www.ecolibrium3.org
218 | 336 - 1038

OUR PARTNERS

This project was funded in part by Minnesota Power.

Kwik Trip
Pachel Foundation
Sheet Metal Solutions
St. Luke's
Ursa Minor Brewing
Young & Associates Insurance

Bent Paddle Brewing Co.
Bernick's of Duluth
Cartier Agency, Inc.
Castle Danger Brewing
Clean Energy Resource Teams
Community Action Duluth
Duluth Climate and Energy Network
Duluth Grill Family of Restaurants
Duluth Pottery
Grandma's Saloon and Grill
Hotel Pikku
Johnson Insurance Consultants
Love Creamery
Mielke Electric
North Shore Bank
Unitarian Universalist Congregation of Duluth - Climate Action Team
U.S. Bank
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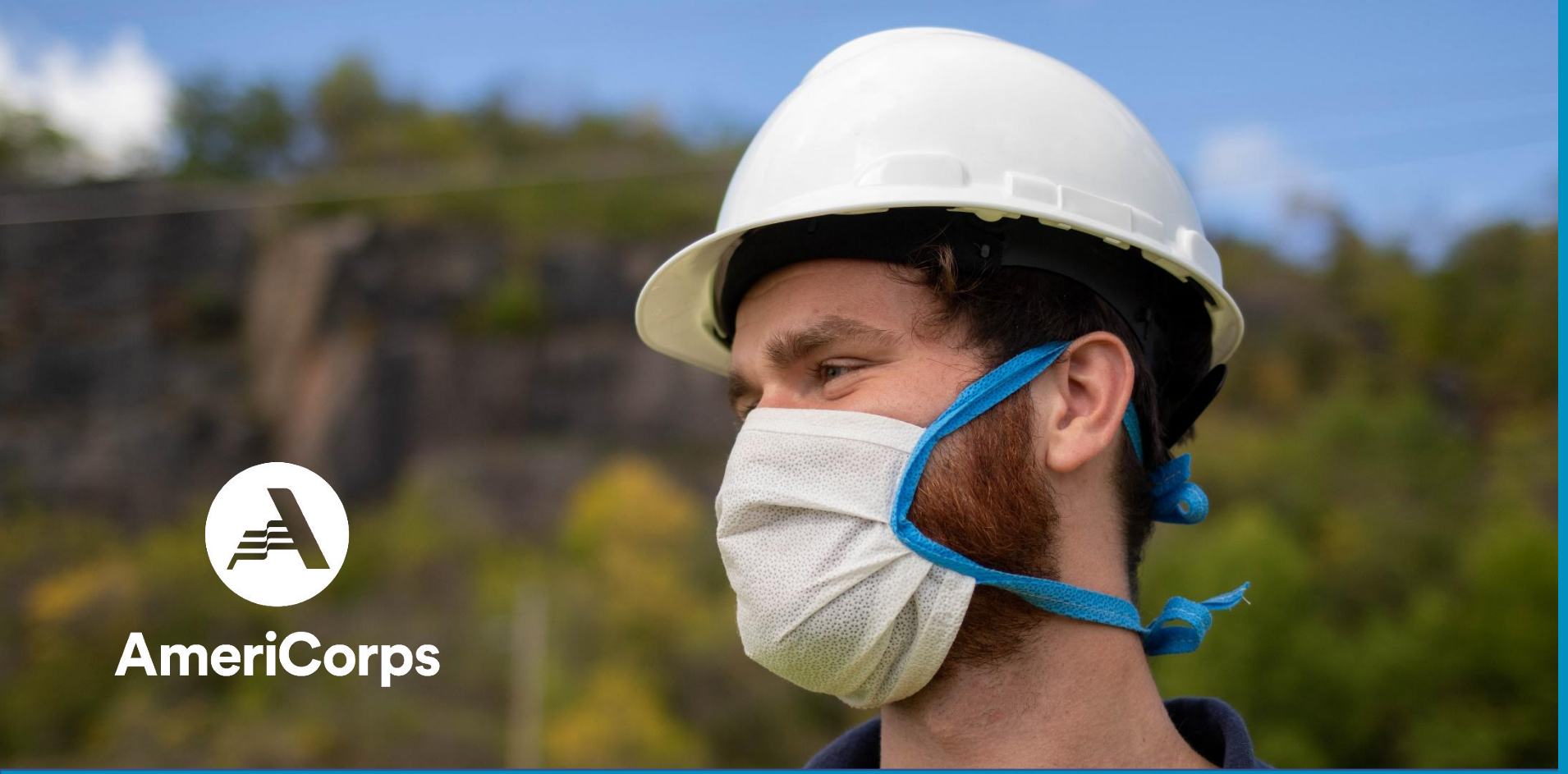
The Witraks



AmeriCorps

Positions Available Now! Full-time & Summer

Eco3

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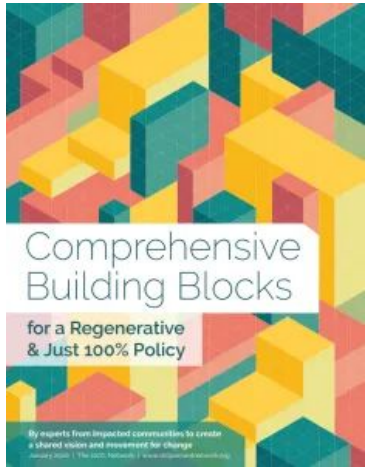
Process

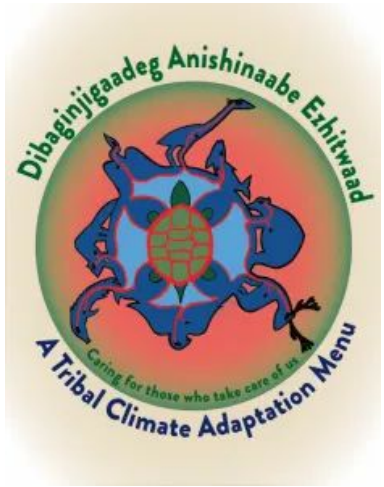
DULUTH CITIZENS' CLIMATE ACTION PLAN

PROJECT DRAWDOWN.

IMAGINEDULUTH2035 FORWARD TOGETHER

Minnesota GreenStep Cities 10 CELEBRATING 10 YEARS





CLIMATE JUSTICE ALLIANCE
COMMUNITIES UNITED FOR A JUST TRANSITION

Interviews with 20 local experts- Dozens of meetings

Legacy House

Eco3 VISTA

This November, Ecolibrium3 challenges you to #LiveLikeAVISTA.

Lincoln Park

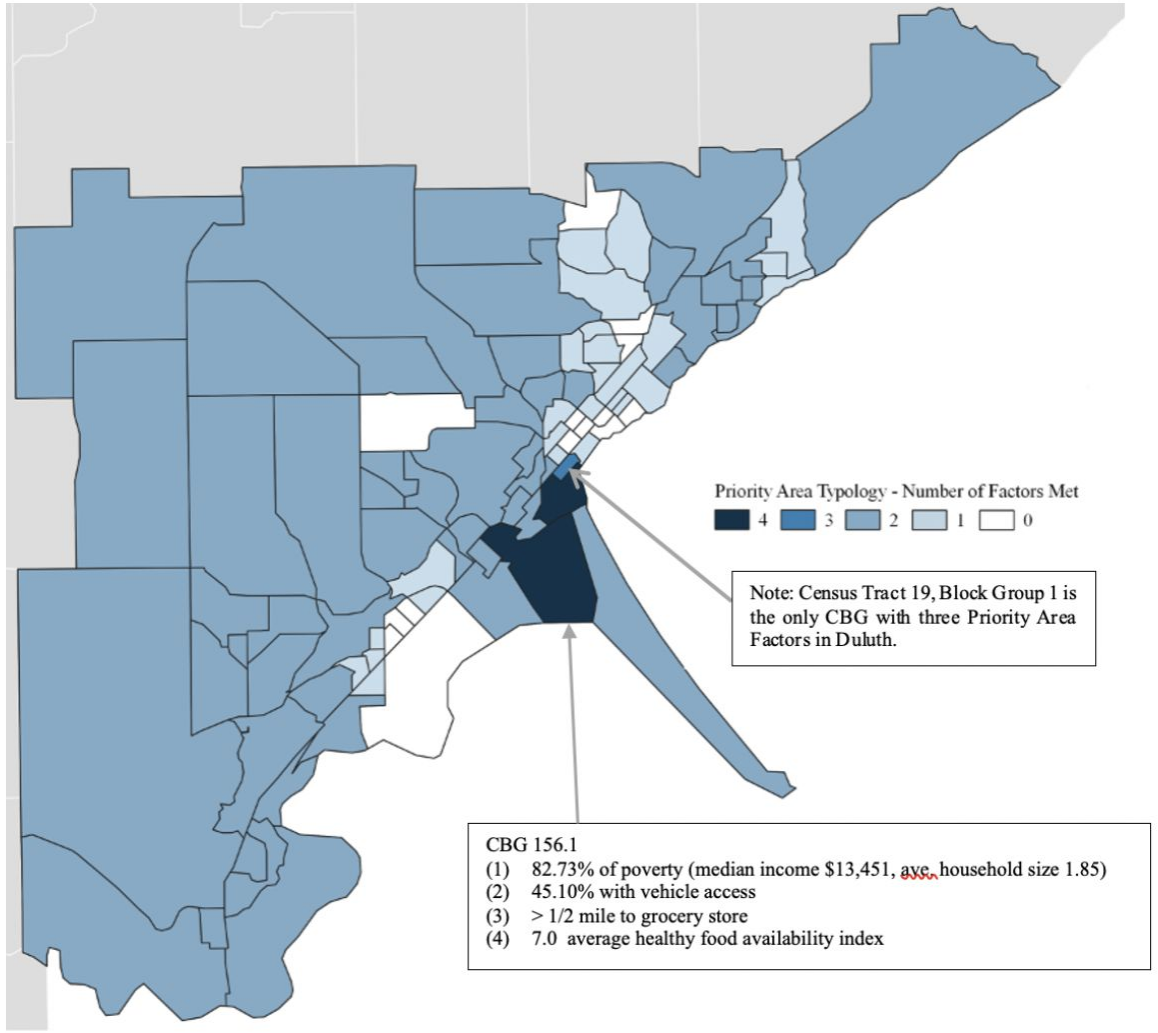
Environmental justice in a frontline community

- Frontline communities are those experiencing the most immediate and worst impacts of climate change

- Frontline community groups are those with a primary mission to represent and serve these people, improving living situations by addressing the root causes of oppression and injustice, economic disadvantage, and environmental harm.

Lincoln Park 156

- ~2,740 people
- $30,446 Median Household Income (vs. $52,463 in Duluth)
- 27% of 18-64 year-olds have a disability (vs. 11% in Duluth)
- Lowest 1/2% of at-birth life expectancy in all of Minnesota
- >10 year less life expectancy than in other census tracts in Duluth



LNPK 156 - Built Environment

- 71% residents report lack of affordable housing (vs. 53% in region)
- 20% residents report barriers to keeping housing (vs. 7% in region)
- >300 homes with lead water service lines

Source: Bridge to Health Survey

LNPK 156 - Food and Nutrition

- 41% report barrier to getting food (vs. 22% in region)
- 57% report cost is a barrier
- 39% shop convenience or gas station 1+ times per week
- 26% have 5+ servings of fruit and vegetables yesterday
- 69% overweight (vs. 2030 Health Priority Goal of 36%)
- High Priority Food Area (<185% poverty, <45% vehicle access, >1/2 mile to grocery store, very low access to food stores with healthy food)
- Lincoln Park has no grocery store

Sources: Bridge to Health Survey, American Community Survey 2019 5-year estimate

LNPK 156 - Social Connectedness

- 55% of residents report inadequate internet access for expense or lack of skills (higher than region)
- 20% often or always feel isolation or loneliness (vs. 11% in region)
- 41% feel NO sense of belonging or social connectedness
- 42% depression (vs. 27% region)
- 31% would seek mental health care if available
- 13% only sometimes or hardly ever have transportation to see relatives or friends (vs. 4% in region)

Source: Bridge to Health Survey

What is a resilience hub?

According to the Urban Sustainability Directors Network:

“Resilience Hubs are community-serving facilities augmented to:

1. Support residents, and 2. Coordinate resource distribution and services before, during, or after a natural hazard event.

They leverage established, trusted, and community-managed facilities that are used year-round as neighborhood centers for community-building.

Designed well, Resilience Hubs can equitably enhance community resilience while reducing GHG emissions and improving local quality of life.

Moreover, Resilience Hubs provide an opportunity to build local community power and leadership.”

Lincoln Park Resilience Hub

Former Lincoln Park Community Center

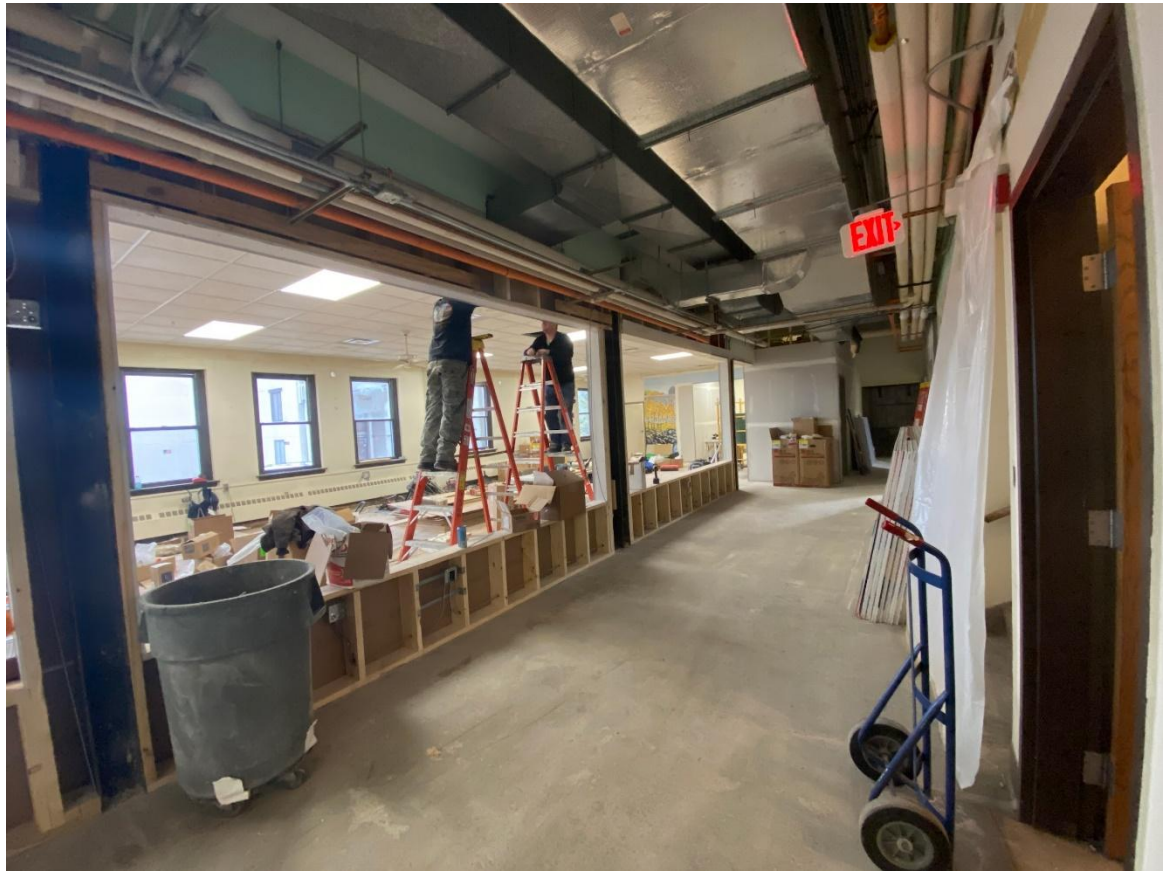
11,200 sf 2-story community center attached via skywalks to two public housing buildings (14-floors each) and a dining hub.

Lincoln Park Resilience Hub

2400 sf dining pod, 1000 sf serving kitchen, 500 sf hall/janitorial/bathrooms

Lincoln Park Resilience Hub

Construction for the warming shelter



Lincoln Park Resilience Hub

- Expanded food, health, digital and resource access for low-to-moderate income community residents in Lincoln Park
- Develop shared-spaces resource center with multiple agencies to increase access to existing programs and resources
- Reimagine the space to incorporate programs/resources missing in Lincoln Park
- Develop complementary activities that optimize the use of the facility year-round
- Provide community solutions that demonstrate sustainability and build community resilience during times of disaster

Lincoln Park Resilience Hub Vision

- Winter warming shelter, summer cooling shelter
- BIPOC-led organizational space
- Computer lab for digital access
- Financial, tax, housing, job navigation
- Energy efficiency and service referrals
- Summer youth programming
- Small footprint grocery store
- Food processing and small food-based entrepreneur development
- Micro-mobility hub
- Power and access resilience in case of disaster or grid outage
- Kitchen/dining space for disaster relief and response

Just some of our Hub partners:

Eco3

Family Rise Together

Saint Louis County Minnesota

Divine Konnectio

HRA Duluth

Duluth Aging Support
Senior support led by love

Chum
Food • Shelter • Dignity • Hope

BIRDSEYE VIEW

THE WORKPLACE NEEDS FOUR ESSENTIAL SPACE TYPES TO SUPPORT DIFFERENT KINDS OF WORK:

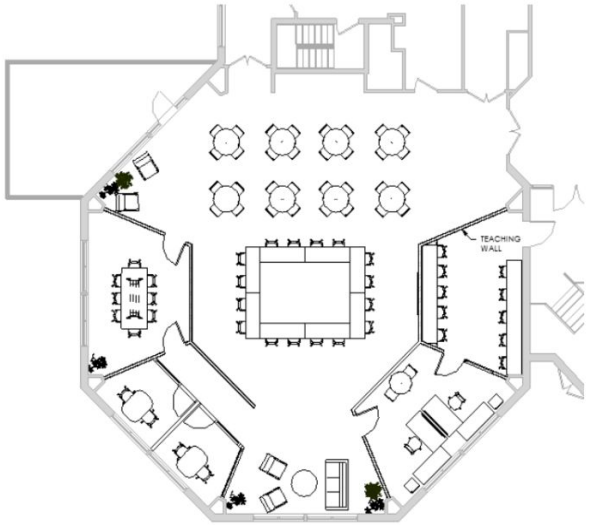
- **PERSONAL SPACES:** A RANGE OF SPACES BALANCING THE NEEDS OF "ME" AND "WE" GIVES PEOPLE CONTROL OVER THEIR PRIVACY AND COMFORT.
- **COLLABORATION SPACES:** FLEXIBLE SETTIGNS, MOBILE TOOLS AND TECHNOLOGY SUPPORT IN-PERSON AND DISTRIBUTED TEAMS OF ALL SIZES.
- **SOCIAL SPACES:** AN INTENTIONAL FLEXIBLE MIX OF SHARED AND INDIVIDUAL EXPERIENCES FOSTER A SENSE OF COMMUNITY AND BELONGING.
- **LEARNING SPACES:** HIGH-PERFORMING, ADAPTABLE SPACES DELIVER INTEGRATED LEARNING OPPORTUNITES FOR IN-PERSON AND DISTRIBUTED GROUPS.

OPEN FLEX SPACE

FEATURED DESIGN ELEMENTS:

- SPACE TO SIT SHOULDER TO SHOULDER
- MULTIPLE SEATING OPTIONS
- SOFT CORNERS FOR EASE OF ACCESS
- NEARBY OPTIONS FOR FACE-TO-FACE INTERACTIONS

HUB FLOOR PLAN



Lincoln Park Resilience Hub

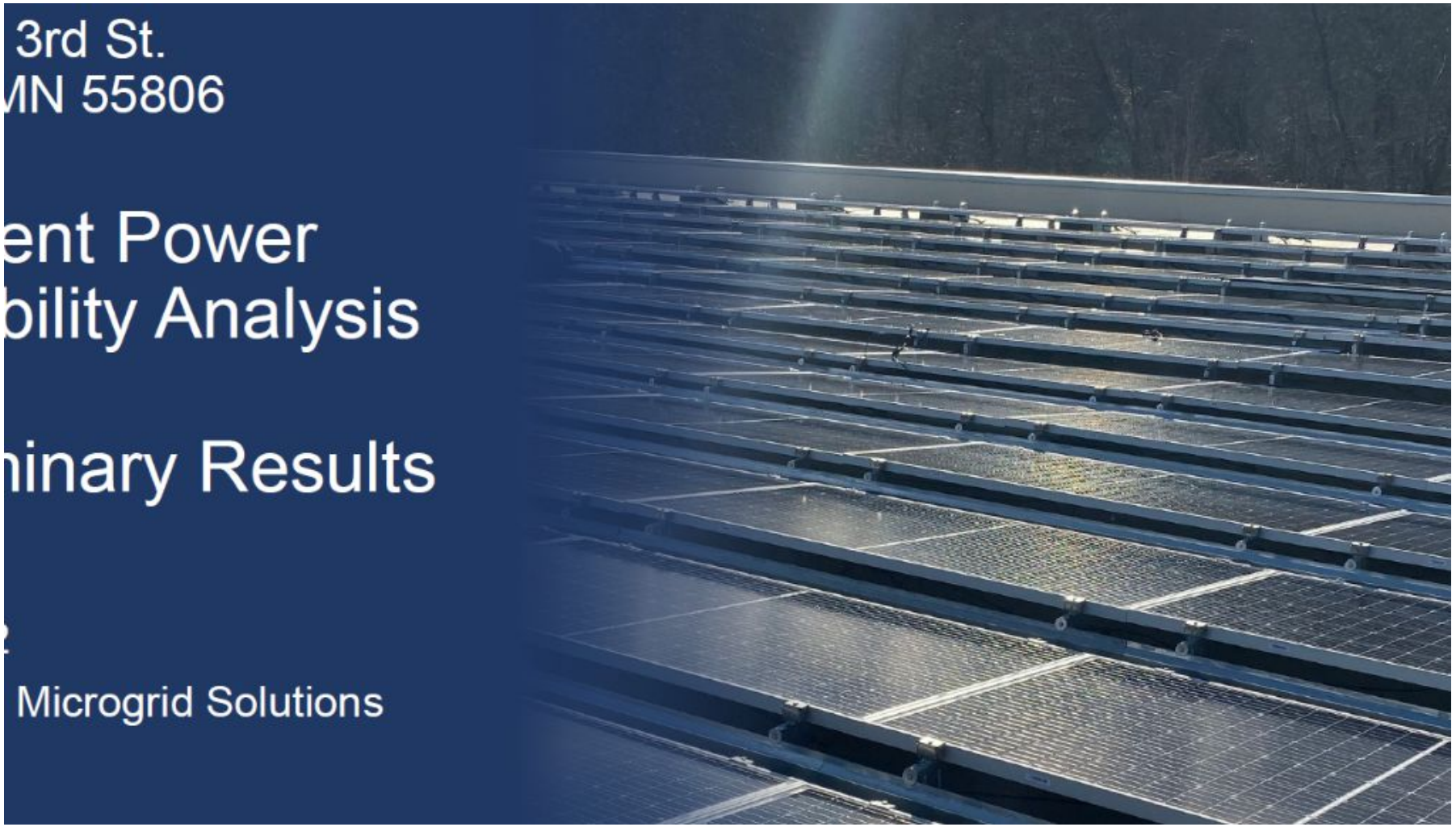
In process:

- **CDBG:** Accessible entrance (half story lift and ADA power doors)
- **DEED:** Hub reconstruction and grocery store buildout
- **USDA:** Initial grocery store inventory, neighborhood outreach

Completed:

- **Clean Energy Group** and **CERTs**: feasibility study for resilient power system

Resilient Power Feasibility Analysis



Results

Summary Results

- **Solar Only** delivers utility savings by offsetting 17% of electricity needs with renewable energy but does not provide any resilience.
- **Solar & Battery** provides significant resilience to the facility during the summer months when the facility will be acting as a Cooling Center.

	Solar Only	Solar & Battery
Solar	57 kW	57 kW
Battery	--	125 kW / 440 kWh
Generator	--	--
Financial		
Capital Cost	$165,984	$574,275
Y1 Utility Savings & Incentives	$4,818	$5,437
Sustainability		
Renewable Generation (kWh)	52,798	52,798
Usage offset by renewables	17%	17%
Carbon Offset (metric tons)	37	37
Resilience		
Resilient Load Support (summer)	--	26 hours minimum 58 hours typical
Threshold Value of Resilience	--	$19,400

Battery

The battery is selected to provide at least 26 hours of backup power during the summer months.

Solar

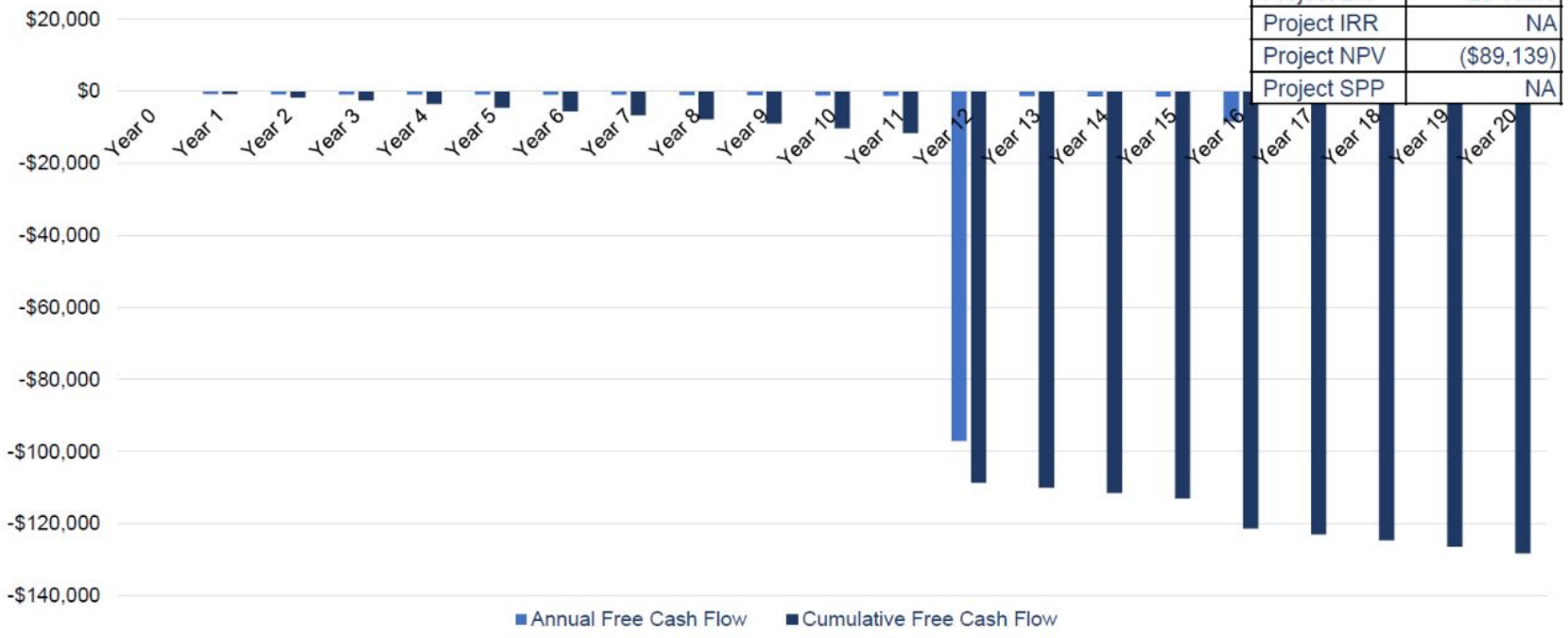
Solar panels supplement the battery's stored energy and offset electricity needs by 17%.

Cash flow forecast

Cash Flow Forecast – Solar & Battery (Grant-Funded, Host Owned)

Grant-Funded Project has a negative NPV to the host principally due to the requirement to replace inverters and modules to keep the system operating properly.

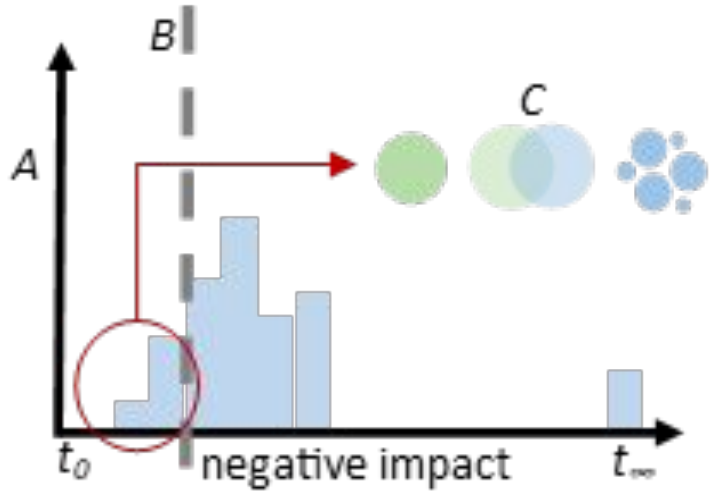
Project Life	20 Years
Project IRR	NA
Project NPV	($89,139)
Project SPP	NA



Next steps

- Usage monitor study - eGauge that looks at all the circuits
- Replicate this work in the old commercial buildings on Main Street
- Develop commercial group buy for solar

RACER and Geothermal



renewables accelerating community energy resilience

LNPK 156 Geothermal Coalition:

Designing and Deploying Clean Energy in a Justice40 Cold Climate Community

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