

green
town

GreenTown Rockford

November 12 | Embassy Suites Rockford Riverfront

From Energy Efficiency to Net Zero: How to Use Energy to Combat Climate Change

November 12, 2021

Katie Kaluzny, Associate Director



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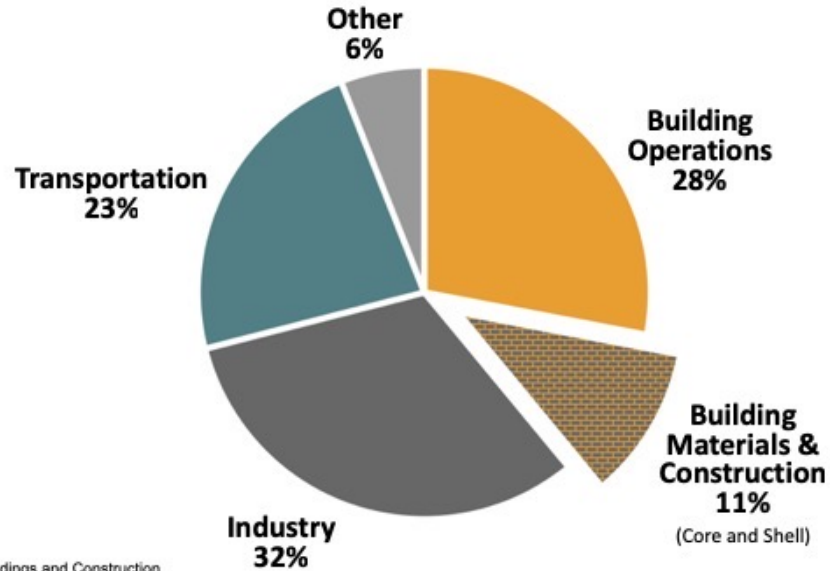
BUILDING GREEN TOGETHER

- 600+ green building professionals in member network
- Over 50 educational programs each year
- Initiatives that extend into communities
 - Illinois Green Schools Project
 - Neighborhood Power Project
- Strategic plan centers on making net zero buildings affordable, feasible, and commonplace through three key strategies:
 - Educating architecture, engineering, and construction professionals
 - Removing barriers through information and policy
 - Demonstrating net zero can work everywhere



Buildings are the largest source of carbon pollution

Global CO₂ Emissions by Sector



Source:
Global Alliance for Buildings and Construction.
2018 GLOBAL STATUS REPORT.

Net Zero Definition

Simple Definition...

Energy produced by renewable energy (both on-site and off-site) exceeds the energy consumed by building.

Building Electrification

The terms “building electrification,” “beneficial electrification” and “building decarbonization” all describe shifting to use electricity rather than fossil fuels for heating and cooking. The goal of such a transition: all-electric buildings powered by solar, wind and other sources of zero-carbon electricity.

Stretch Code

- **Stretch code is simply a code that is more energy efficient than the model code.**
 - Some states do not allow local jurisdictions to adopt stretch codes.
 - Some states have a statewide code but allow municipalities to adopt their own code (Ex: MA, NY, WA, CO, TX)
 - Home Rule states do not have a statewide code, municipalities can just simply adopt their own code.
 - Municipalities with a Stretch Code include:
 - Seattle (commercial only)
 - Denver
 - Austin
 - Boulder

2021 Climate and Equitable Jobs Act

The **Illinois Clean Jobs Coalition** is made up of hundreds of environmental groups, health-care professionals, environmental justice champions, businesses, community leaders, labor groups, consumer advocates, and faith-based organizations from across the state.

Over 100 + public meetings around the state and the feedback focused on four policy pillars:

- **100% renewable energy by 2050**
- **Sustainable and equitable job creation**
- **Carbon-free power sector by 2030; and**
- **Major reduction from transportation**

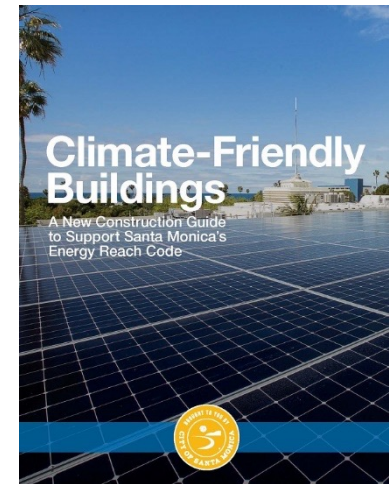
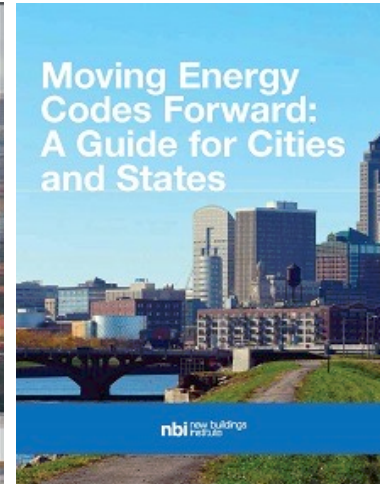
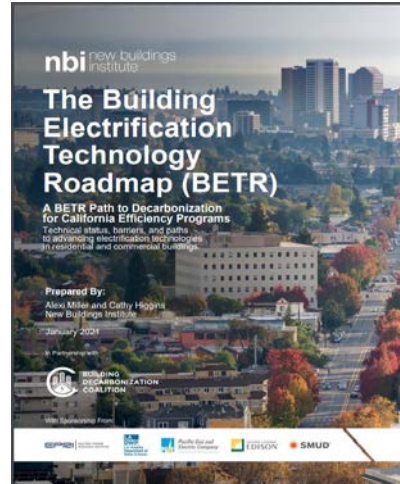
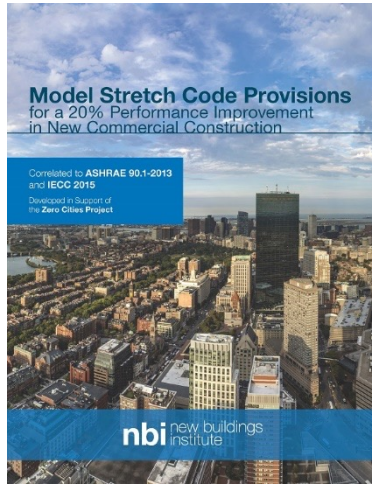


The Climate and Equitable Jobs Act establishes Illinois as a national leader on climate and generates billions in economic investment in infrastructure

- ✓ Phases fossil fuels completely out of Illinois' electric sector by 2045
- ✓ Drives Illinois to 40% renewable energy by 2030, and 50% by 2040, by building 3.5x more renewable energy per year than under FEJA
- ✓ Commits to investments that will achieve 1,000,000 electric vehicles in Illinois by 2030
- ✓ Over \$80 million per year for workforce and contractor development programs targeted in equity focused communities
- ✓ Increases the Illinois Solar for All program from \$10m/year to \$50m/year
- ✓ Extends successful electric efficiency programs out past 2030
- ✓ Creates a model Stretch Energy Code for municipalities



New Buildings Institute Code & Policy Resources



Learn more:

- [NBI codes and policy resources – tools & guides](#)
- [NBI Zero energy policy tools & guides](#)

New Buildings Institute + Rocky Mountain Institute

Codes for Climate™

Delivering on buildings that
contribute to community health,
resilience, and equity.

nbi new buildings
institute



NBI + RMI: [Codes for Climate: Building Today for a Zero-Carbon Future](#)

Architecture 2030: [Achieving zero carbon through government policy](#)

New Buildings Institute Code & Policy Resources



Map and List | Analysis

NBI Getting to Zero Buildings Database

Use the filters on the left to filter projects in the map, and/or select a bubble on the map to filter the table below. Click on the Analysis tab above to see the big picture and create customized charts. Reset Filters

ZE Status **Count**

- Emerging 548
- Verified 136

State or Province

- (All)
- Alabama
- Alberta
- Arizona
- Arkansas
- British Columbia
- California
- Colorado
- Connecticut
- Delaware

Building Type

- (All)
- Education
- Food Sales
- Food Service
- Health Care (Inpatient)
- Health Care (Outpatient)
- Lodging
- Mercantile (Enclosed ...)
- Mercantile (Retail Oth...
- Multi-Family

ZE Status	State or Province	Name	Certifications	City	Building Type	Size (sf)	Total Site EUI	Net Site EUI
Verified	AR	Entegrity Headquarters	LEED, ILFI	Little Rock	Office	13,342	13	0
Verified	AZ	DPR Construction - Phoenix	LEED, ILFI	Phoenix	Office	16,533	26	-2
Verified	BC	VanDusen Botanical Garden Visitor Centre	LEED, ILFI	Vancouver	Public Assembly	19,000	37	-1
Verified	CA	008 Energy Commission Building		Sacramento	Office	142,378	39	0
Verified	CA	010 Dept. of Rehabilitation		Sacramento	Office	163,350	49	0
Verified	CA	013 EDD Solar Building (incl. subterr.)		Sacramento	Office	272,546	38	0
Verified	CA	021 State Personnel Building		Sacramento	Office	84,400	47	0
Verified	CA	039 and 045 Office Building 8 and 9		Sacramento	Office	628,592	44	0
Verified	CA	049 Education Building		Sacramento	Office	562,582	41	0
Verified	CA	106 State Record Ctr. & Whse		Sacramento	Warehouse and Stl.	82,682	24	0

© 2020 Mapbox. © OpenStreetMap

© New Buildings Institute

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Add to the list:

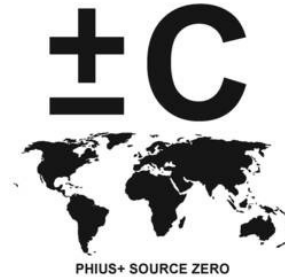
Do you know about a low or zero energy building not listed here? [Submit the building to their registry.](#)

Illinois Clean Energy Community Foundation

Grantee	Project	Program Areas	Granted	Awarded
Adlai E. Stevenson HSD 125 Lincolnshire, IL Lake County	East Building Addition	<ul style="list-style-type: none"> Net Zero Projects Net Zero Energy Buildings Net Zero Energy Buildings 	08/1/2017	\$1,000,000
City of Countryside Elgin Cook County	City of Countryside Site Net Zero Energy Municipal Complex	<ul style="list-style-type: none"> Net Zero Projects Net Zero Energy Buildings Net Zero Energy Buildings 	01/22/2018	\$1,000,000
Downers Grove Sanitary District Downers Grove, IL DuPage County	Combined Heat And Power Facilities Phase 2	<ul style="list-style-type: none"> Net Zero Projects Net Zero Waste Water Treatment Plants 	11/1/2016	\$500,000
Granite City Housing Authority Granite City, IL Madison County	Net Zero Energy PHIUS Certified Affordable Housing Residence	<ul style="list-style-type: none"> Net Zero Projects Net Zero Energy Buildings Net Zero Energy Buildings 	01/1/2017	\$261,480
Northbrook Park District Northbrook, IL Cook County	Site Net Zero Energy Activities Center at Techny Prairie Park	<ul style="list-style-type: none"> Net Zero Projects Net Zero Energy Buildings Net Zero Energy Buildings 	07/22/2019	\$1,776,770
Park District of Oak Park Oak Park, IL Cook County	Site Net Zero Energy Carroll Center Addition and Renovation	<ul style="list-style-type: none"> Net Zero Projects Net Zero Energy Buildings Net Zero Energy Buildings 	05/13/2019	\$577,800
Plainfield Park District Plainfield, IL Will County	Bott Park Indoor Recreation Center	<ul style="list-style-type: none"> Net Zero Projects Net Zero Energy Buildings Net Zero Energy Buildings 	11/1/2017	\$1,000,000
River Trails School District 26 Mount Prospect, IL Cook County	Park View School Net Zero Energy Renovation	<ul style="list-style-type: none"> Net Zero Projects Net Zero Energy Buildings Net Zero Energy Buildings 	01/27/2020	\$2,000,000



Zero Energy or Carbon Ratings / Verifications



- [LEED Zero Carbon](#)
- [LEED Zero Energy](#)
- [ILFI Zero Carbon](#)
- [ILFI Zero Energy](#)
- [PHIUS+ Source Zero](#)
- [PHIUS+ Getting to Zero](#)
- [DOE Net Zero Energy Ready Homes](#)



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Net Zero Energy Buildings: Funding Opportunities and Examples

Greentown Rockford
Conference

November 12, 2021

Net Zero Energy Buildings

What?

- **Combine high energy efficiency with renewable energy generation**
- **Generate enough renewable energy to offset total annual energy consumption of the building**

Why?

- **Misperception that net zero energy buildings not economical/feasible in Illinois**
- **Shift to outcome-based building performance**

Net Zero Energy Building Program

Eligibility

- Building located in Illinois
- 501(c)3 status
- Local government agencies
- Colleges and universities
- Public schools
- Not yet under construction

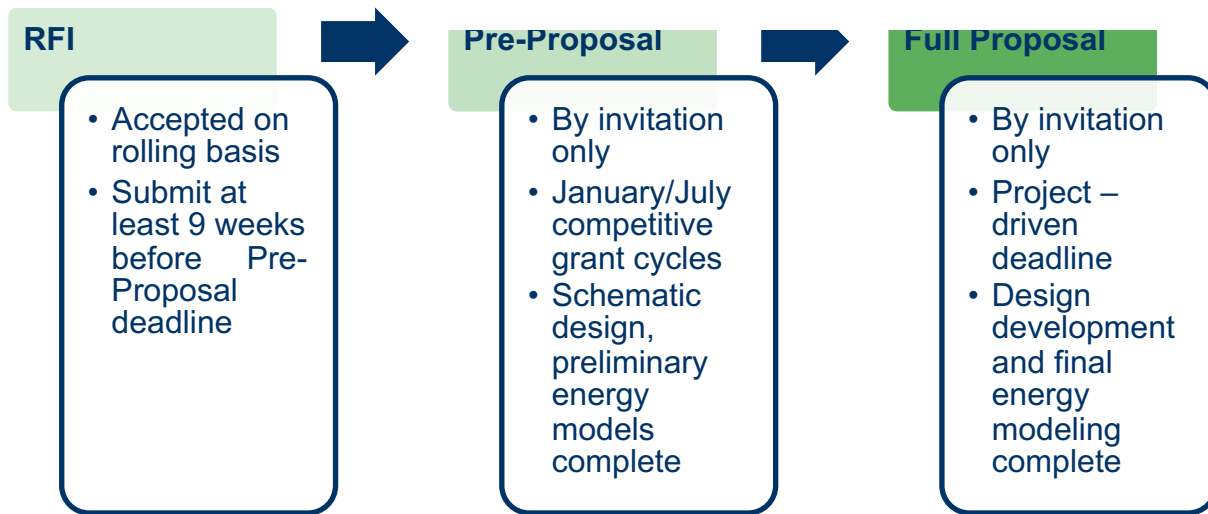
Criteria

- Maintain site net-zero performance
- Load-specific building performance monitoring
- Have a strong educational component
- Provide public access to building
- New construction or retrofit
- Obtain PHIUS+ or Living Building Challenge certification

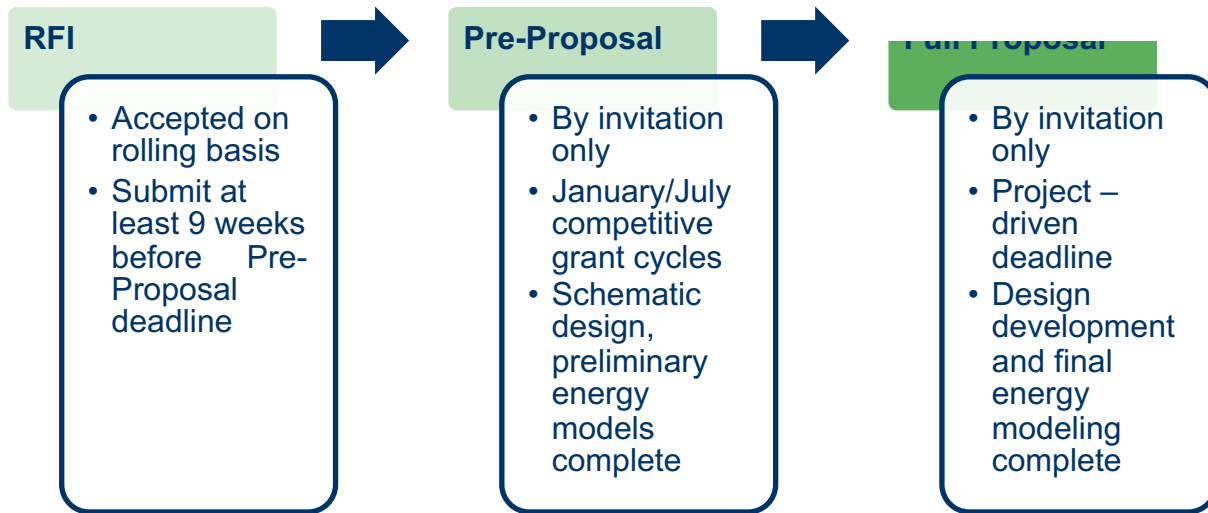
Funding

Up to \$2,000,000

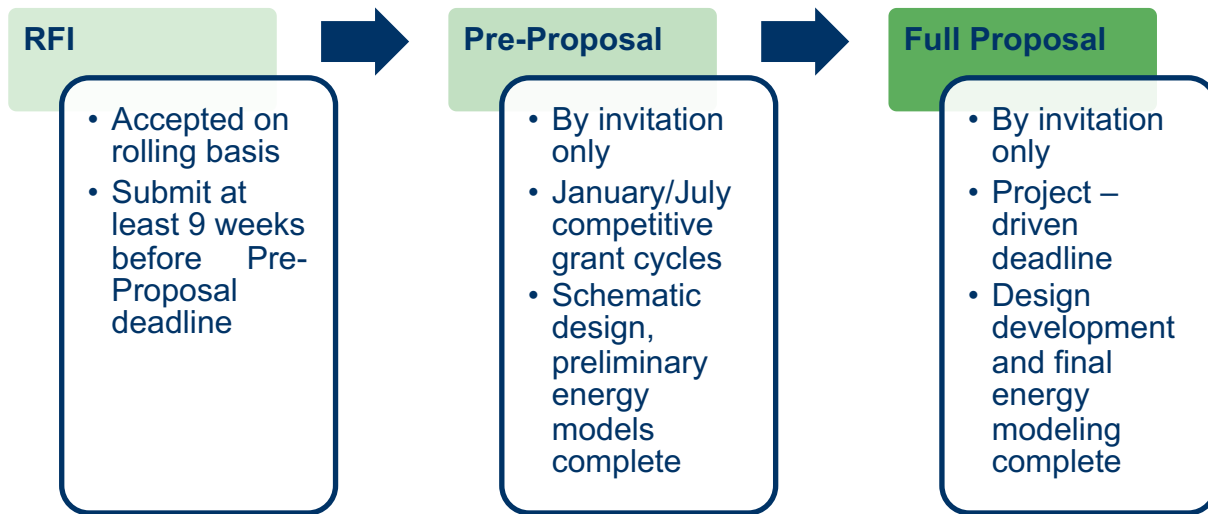
Grant Application Process



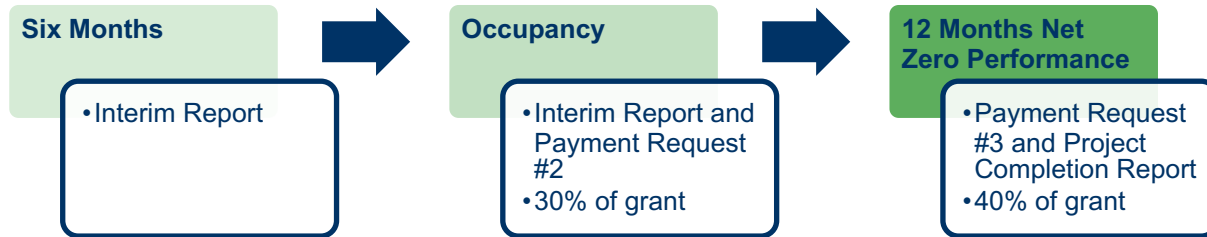
Grant Application Process



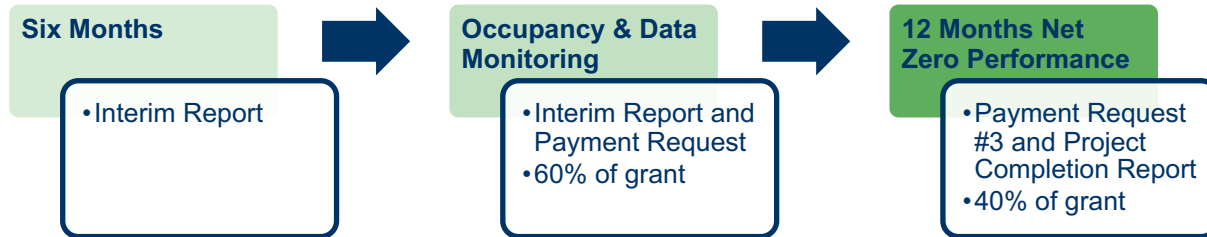
Grant Application Process



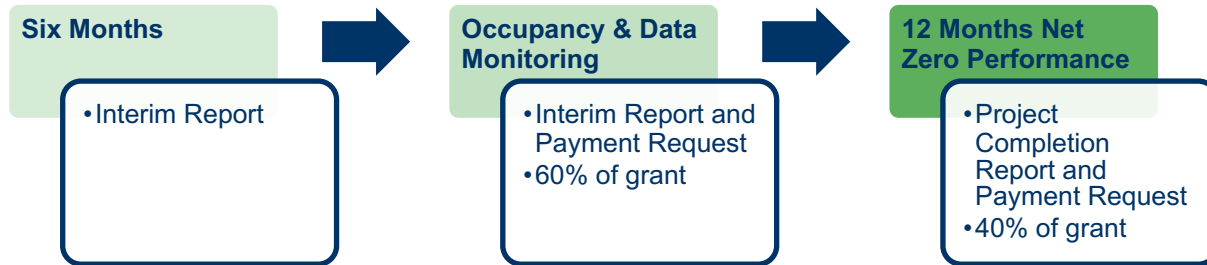
Grant Payment and Reporting



Grant Payment and Reporting



Grant Payment and Reporting



Additional Assistance

- ComEd New Construction: financial/technical assistance (incl. energy modeling) available for buildings pursuing advanced certifications, net zero energy, or aggressive energy performance targets. Apply early!

www.comed.com/newconstruction

- ComEd Solar Rebates and Incentives

<https://www.comed.com/SmartEnergy/MyGreenPowerConnection>

- Ameren Illinois

<https://amerenillinoissavings.com/>



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Plainfield Park District Prairie Activity Recreation Center



Photo: Jennifer Rooks-Lopez

Granite City Housing Authority



Photo: Granite City Housing Authority

Adlai E. Stevenson High School



Photo: Connor Steinkamp

St. Joseph School



Photo: St. Joseph School

River Trails School District Park View School



Photo: River Trails School District

City of Countryside City Hall/Police Complex



Photo: Mariusz Mizera

Park District of Oak Park Carroll Center



Photo: Park District of Oak Park

Northbrook Park District Techny Fields Activities Center



Photo: Northbrook Park District



Illinois Clean Energy
community foundation

Oak Park Residence Corporation 7 Van Buren



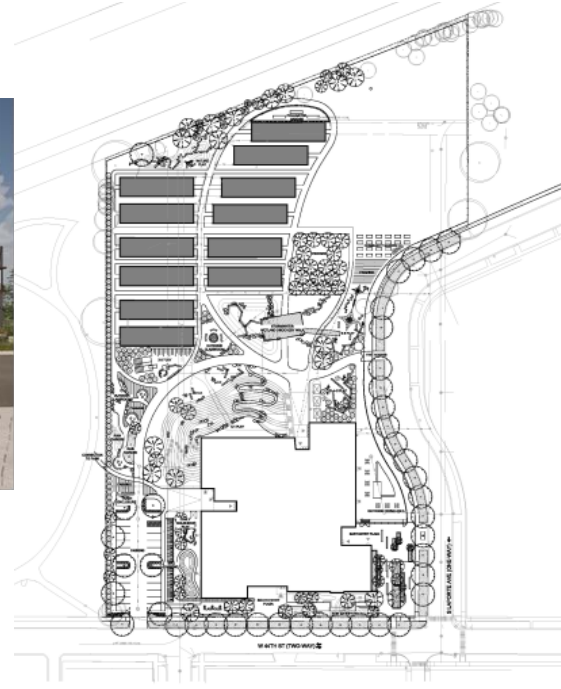
Park District of Oak Park Community Recreation Center





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Academy for Global Citizenship



Contact Information

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Net Zero Facilities



PARK DISTRICT
of OAK PARK

Case Study - Carroll Center

- ▶ ICECF Funded \$577,800
- ▶ 3600 sq. ft. addition on 100yr old 3100 sq.ft. facility
- ▶ PHIUS +Source Zero
- ▶ Energy Prove out very positive
- ▶ Thoughtful design on tight budget
- ▶ All Electric Facility



Challenges

- ▶ Air sealing leaky old building
- ▶ Existing conditions
- ▶ Insulation R-values
- ▶ PDOP as GC/ Multiple Trades Bid
- ▶ Budget
- ▶ Of Course, COVID



Results

- ▶ Certified October 1, 2021 (thanks ComEd)
- ▶ Designed to cover entire building load, exceeded goals
- ▶ Generates enough energy for entire site
- ▶ Great press, multiple awards
- ▶ Happy Board
- ▶ No utility bills = Happy Me





GARROLI
COMMUNITY CENTER

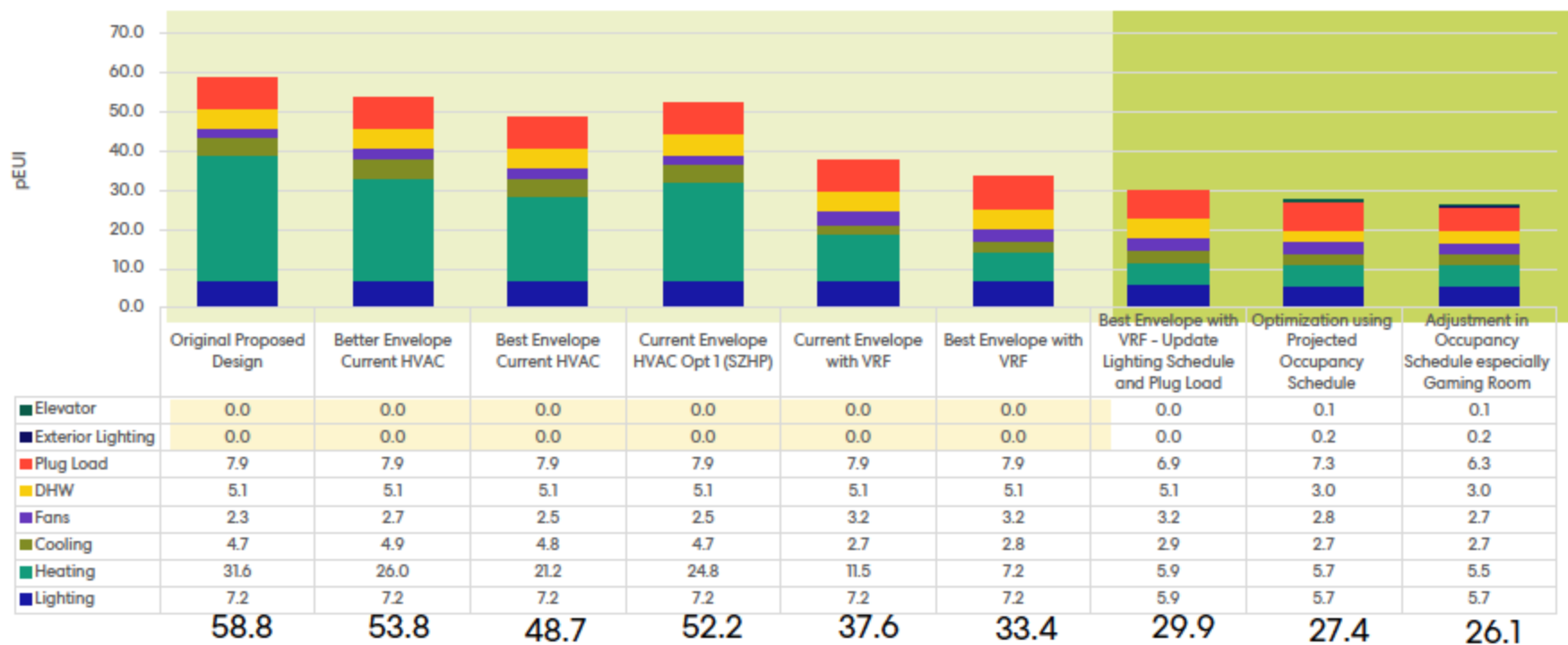
OP Community Rec Center

- ▶ All electric facility
- ▶ 40,000 sq. ft. rec facility
- ▶ 315 kW Solar Array - ILFI Net Zero Design
- ▶ Battery back-up (no gas generator)
- ▶ March 2022 - April 2023



CRC

pEUI Progress to Achieve Net Zero



Elevator Load and Exterior Lighting were not included in the first stage of the optimization

1st Stage Optimization focus on new system selection to achieve net zero

2nd Stage Optimization focus on building operation and plug load

Pre-Project Thoughts

- ▶ Ownership's goals - Establish as early as possible
- ▶ Project Team
 - ▶ Experience in Net Zero
 - ▶ Shared mission
 - ▶ Be Wary, “We can build it to that, but you don't need to waste the money to certify it.”
 - ▶ Commissioning/ Certification = Accountability
 - ▶ Ensure the right people on your team are involved in planning
 - ▶ Take into account the end game; (Staff expertise vs. facility complexity)
 - ▶ Talk to peers, Learn from others

Operating Net Zero Facilities

- ▶ Monitoring
- ▶ Staff Knowledge of systems / contracted assistance
- ▶ Build in training
- ▶ Communication with facility users
- ▶ Overall knowledge of energy use must change

Q & A

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