April 24, 2023

By Electronic Mail

Ms. Lora Johnson, CMC, LMMC
Clerk of Council
Room 1E09, City Hall
1300 Perdido Street
New Orleans, LA 70112

Re: IN RE: SYSTEM RESILIENCY AND STORM HARDENING Council Docket UD-21-03

Dear Ms. Johnson:

Attached please find the filing of Together New Orleans ("TNO") for filing in the above-referenced docket. TNO makes this filing pursuant to Resolution 23-74 issued by the Council of the City of New Orleans.

Thank you for your assistance, and please let us know if you have any questions about our filing.

Sincerely,

Broderick A Bagert, Jr.
Organizer
Together New Orleans

CC: Office Service List (UD 21-03)

BEFORE THE

COUNCIL OF THE CITY OF NEW ORLEANS

IN RE: SYSTEM RESILIENCY AND STORM HARDENING **DOCKET NO. UD-21-03**

FILING OF TOGETHER NEW ORLEANS

Together New Orleans ("TNO") submits this filing to comply with City Council Resolution No. R-23-74, issued on February 16, 2023. In that resolution, the City Council of New Orleans requested that TNO submit its plan for grid resilience to include:

> *(a) a list of the specific resilience hubs in Orleans Parish that it proposes to construct for grid resilience which specifically identifies what, if any, support or assistance is needed from ENO including to successfully interconnect its proposed resilience hubs to ENO's electric system, and (b) a reasonable estimate of the costs associated with the support and/or assistance required, if any, as well as the total estimated costs for the project and proposed cost recovery mechanism(s).*

Together New Orleans is honored to fulfill the Council's request.

Together New Orleans is proposing to develop a network of eighty-six resilience hubs at civic and community institutions serving every neighborhood of New Orleans, each with solar panels, back-up batteries and a real-time load management system, to provide essential services during long-duration power outages. The strategy, called Community Lighthouse, seeks to strengthen our utility system both toward the objectives of climate adaptation, by reducing the risk to life and health from long-duration power outages, and of climate action, by expanding renewable energy and reducing grid-related carbon emissions, in most cases to zero, at more than eighty community facilities across New Orleans.

TNO's filing is organized into six sections:

Section I: An introduction, which articulates TNO's purpose for intervening in Docket UD 21-03 and provides an executive summary of its proposal;

Section II: The Community Lighthouse Model, which explains the framework for engaging civic institutions, outfitted with solar + storage technology, to strengthen grid resilience;

Section III: Essential tech for resilience hubs, which outlines how three pieces of equipment – solar, storage and a real-time load management system – work together to provide long-duration resilience during long-duration outages;

Section IV: Proposed resilience hubs, which outlines a plan and project budget for eighty-six solar + storage resilience hubs across New Orleans;

Section V: Benefit-cost analysis, which assesses the project's value for ratepayers and the ratio of benefits to costs;

Section VI: Equity and workforce analysis, which establishes a framework to prioritize construction of resilience hubs in the most vulnerable neighborhoods first.

In addition, TNO is including several exhibits as part of its filing:

EXHIBIT A: A map of the proposed resilience hubs

EXHIBIT B: The list of hub locations with site details

EXHIBIT C: The project budget

EXHIBIT D: The rate impact analysis (PNNL)

EXHIBIT E: Outage-related deaths after Hurricane Ida (Orleans Parish coroner)

EXHIBIT F: Power-dependent medical device usage by zip code

EXHIBIT G: TNO's sample solar + storage plansets at pilot-phase resilience hubs

EXHIBIT H: Press coverage of Community Lighthouse

TNO developed its proposal in consultation with the Pacific Northwest National Laboratory ("PNNL"), a partnership that began when the US Department of Energy selected Community Lighthouse as one of fourteen projects nationwide to receive technical assistance under its Energy Storage for Social Equity initiative. PNNL's support has been important, in particular, to this the proposal's "equity and workforce analysis" (Section VI) and Rate impact analysis (Exhibit D).

CERTIFICATE OF SERVICE

UD-21-03

I hereby certify that I have served the required number of copies of the foregoing pleading upon all other known parties of this proceeding individually and/or through their attorney of record or other duly designated individual.

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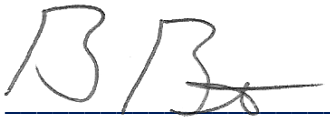
New Orleans, Louisiana, this 24th day of April, 2023



Broderick A Bagert, Jr.

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TOGETHER NEW ORLEANS

SECTION I:

INTRODUCTION

TOGETHER NEW ORLEANS

SECTION I: INTRODUCTION

On the morning of August 30th, 2021, as the remnants of Hurricane Ida moved beyond Louisiana's borders, there was cause for optimism. Louisiana had just endured the second-most powerful storm ever to hit the state, and only two residents had died. Over the following week, as the death toll from the storm began to rise, that optimism began to fade. On August 31st, two New Orleans residents died from heat-related cardiac arrest, ages 59 and 62. On September 1st, four people died from excessive heat and carbon monoxide poisoning. There were six Ida-related deaths on September 2nd, and from September 3rd to September 11th, eighteen more Louisiana residents died. In the end, Hurricane Ida killed thirty-five Louisiana residents. The leading cause of death, accounting for thirty of Ida's thirty-five deaths, was not a storm surge, driving winds, flying debris, falling trees, flooding or tornadoes, but a threat which has been responsible for more disaster-related deaths in Louisiana in recent years than all the rest of those combined – a long-duration power outage.

As the disaster of Hurricane Ida's aftermath was still unfolding, a coalition of faith and community leaders began meeting to explore how civic sector institutions might partner with local government and others to improve preparedness for long-duration power outages. In October and November 2021, TNO organized six "civic academy" sessions across New Orleans, with nearly 800 people taking part. Out of that grassroots campaign, the Community Lighthouse vision was born – a strategy to build a network of solar + storage resilience hubs at community organizations in every neighborhood, so that even when the grid goes down, our community's institutions can still stand up to serve their neighbors.

Around the same time the Community Lighthouse vision was starting to take shape, the New Orleans City Council set off on a similar path, opening, on October 27th, 2021, Docket UD 21-03 into "System Resiliency and Storm Hardening." On June 9, 2022, TNO intervened to join the docket, to explore how the Community Lighthouse strategy could strengthen the "system resilience" component of the docket.

TNO'S GOALS FOR DOCKET UD-21-03

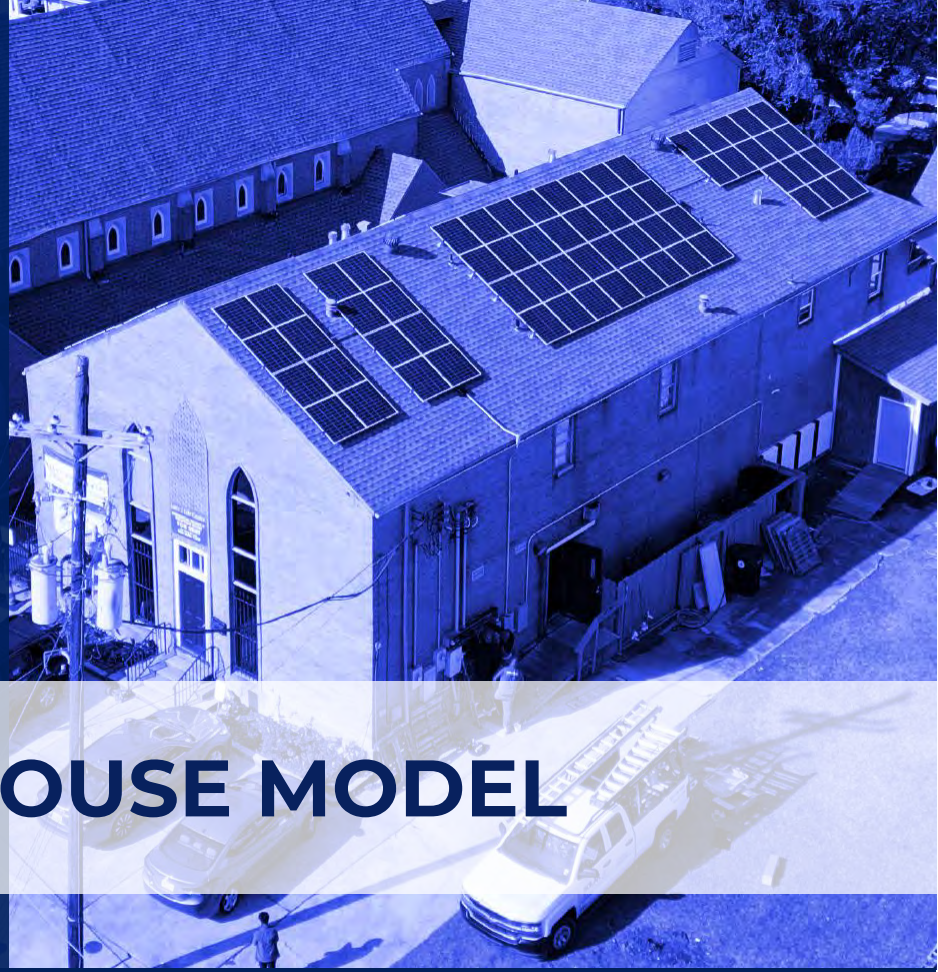
Docket UD-21-03, as TNO sees it, has two essential components, which are complementary, but distinct: the grid-hardening side of the docket, which is about making the grid less likely to fail; and the system-resilience side of the docket, which is about strengthening the ability of our community to function even when the grid does fail. Both grid hardening and system resilience, needless to say, are essential to a comprehensive plan. TNO intervened in UD 21-03 to strengthen the "system resilience" side of the docket.

SUMMARY OF PROPOSAL

In summary, TNO's proposal consists of:

- Developing eighty-six solar + storage resilience hubs across New Orleans, including 70 neighborhood-level hubs, 7 central hubs for organizations, 6 distribution hubs, 2 healthcare hubs, 1 senior living center and 1 portable battery charging warehouse.
- **System sizes:** Hubs will range in size and capacity from level 4 hubs (12 kilowatts DC average PV, 21 kilowatt-hours average battery storage) to level 1 hubs (144 kilowatts DC average PV, 216 kilowatt-hours average battery storage). The average system size for the network of resilient hubs overall will be 71 kilowatts DC of PV and 106 kilowatt-hours of battery storage.
- **Renewable generation capacity:** Project will add 6,099 kilowatts DC of distributed solar capacity, producing about 9.1 gigawatt-hours of zero-emission electricity per year.
- **Energy storage capacity:** Project will add 9.2 megawatt-hours of distributed storage capacity, which TNO proposes be usable by Entergy New Orleans ("ENO").
- **Climate impact:** Zero-emission solar energy produced will reduce CO2 emissions by about 9.4 million pounds CO2 per year.
- **Project costs**: $35 million, with $29.5 million in construction costs and $5.5 million in lifetime maintenance costs.
- **Leveraged funds:** Project will benefit from $23.7 million in leveraged funds from philanthropy, host-site revenue, IRA direct-pay subsidies and grants, covering 68% of project costs.

- **Funds requested:** Funding needed from the utility system is $11.3 million, 32% of the project costs.
- **Benefit to ratepayers:** Project generates estimated benefits to ratepayers of $148 million on $11.3 million in ratepayer costs, producing a benefit-to-cost ratio of 13.1 – $13.10 in benefits for every $1 of ratepayer funding.
- **Rate impact:** Estimated rate impact for the average residential user would be $0.28 per month if shared by all customer categories; $.30 per month if industrial customers are excluded. (TNO does not propose an industrial exclusion.)
- **Equity analysis:** TNO proposes to prioritize construction of resilience hubs in the most socially-disadvantaged census tracts – areas with an average social vulnerability index of .94 out of 1, 42% of residents living in poverty, 39% with no access to a vehicle, 21% having a disability and 41% facing three or more Community Resilience risk factors.



SECTION II:

COMMUNITY LIGHTHOUSE MODEL

TOGETHER NEW ORLEANS

Power outages have become the leading cause of disaster-related death in Louisiana & the Gulf Coast.

Louisiana Department of Health, Orleans Parish Coroner's office

Hurricane Ida killed 23 people in New Orleans …

… 21 of the 23 died from the power outage

Myron Jones

Deborah Anderson

Reginald Logan

Clarence Washington

Corinne Labat-Hingle

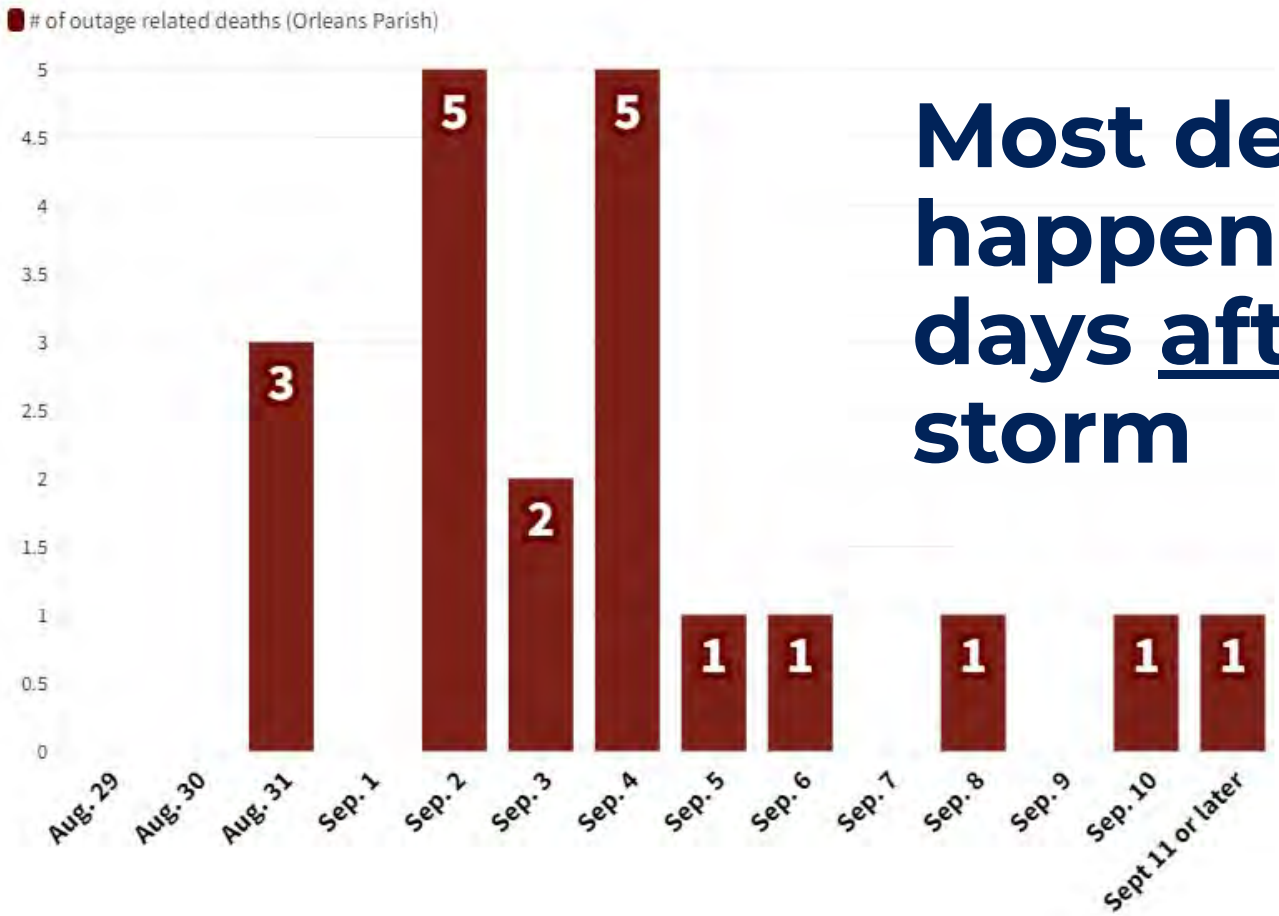
Iley Joseph

Arthur Brown

Orvin Jeovahny Villatoro Majano

David Sneed

Louisiana Department of Health, Orleans Parish Coroner's office



Most deaths happened 5 to 7 days after the storm

Louisiana Department of Health, Orleans Parish Coroner's office

THE COMMUNITY LIGHTHOUSE MODEL

Build a network of **86 civic and community institutions** across New Orleans, each with **commercial-scale solar and back-up batteries,** to serve as resilience hubs in power outages and other disasters.

During outages, trained teams of volunteers from those institutions begin operating immediately to **assess need and provide assistance** to their surrounding communities.

GOALS OF COMMUNITY LIGHTHOUSE

GRID RESILIENCE

NEIGHBORHOOD-LEVEL DISASTER RESPONSE

INVESTMENT IN RENEWABLE ENERGY

WORKFORCE TRAINING & JOBS

EACH NEIGHBORHOOD HUB PROVIDES 5 SERVICES:

Food & water

Cooling & heating centers

Device charging station

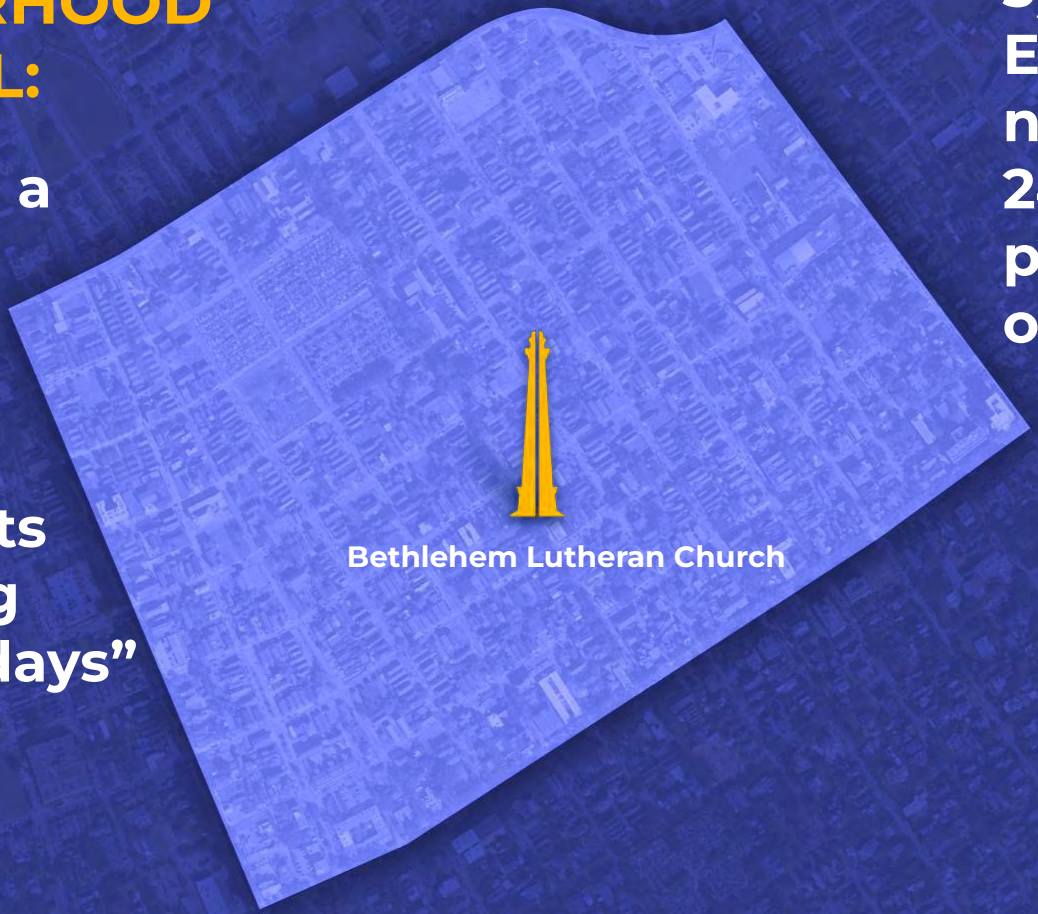
Portable battery exchange

Internet access

NEIGHBORHOOD HUBS WILL:

1) Organize a a disaster response team

2) Canvas its area during “blue-sky days” to identify vulnerable neighbors



3) Reach out to EVERY high-risk neighbor within 24 hours of a power outage or other disaster

SUPPORT FOR COMMUNITY LIGHTHOUSE

US Dep't of Energy

DOE selected Community Lighthouse as one of 14 projects to receive technical assistance from PNNL lab.

Philanthropy has invested $2 million +

City of New Orleans allocated $2 million

Congressman Troy Carter allocated $3.8 million in 2023 federal budget – the largest Community Project allocation for a solar project in the nation.

In June 2022, TNO launched 16-site pilot phase

FIRST 2 COMMUNITY LIGHTHOUSES WENT ONLINE MARCH 25, 2023

WITH FULL IMPLEMENTATION OF 86 SITES, NO NEW ORLEANS RESIDENT WOULD LIVE FURTHER THAN A 15-MINUTE WALK FROM A RESILIENCE HUB

SECTION III:

ESSENTIAL TECH FOR RESILIENCE HUBS

TOGETHER NEW ORLEANS

Community Lighthouse resilience hubs have 3 essential pieces of equipment …

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SPAN

TOGETHER NEW ORLEANS

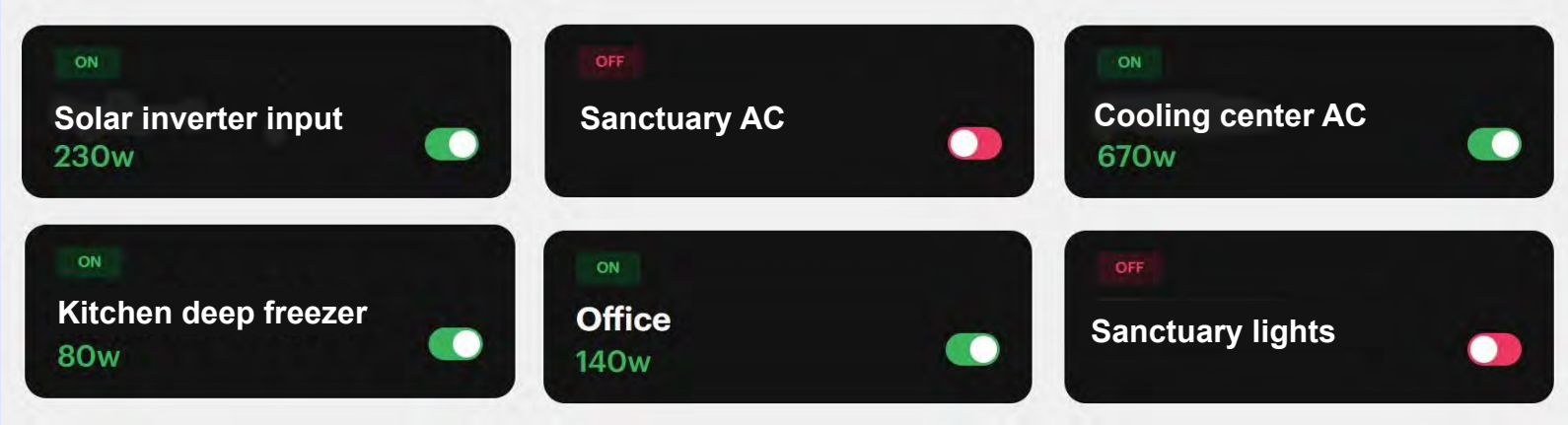
1) **Solar panels to produce energy even when the grid is down**

2) Back-up battery storage to keep things going when it’s dark or cloudy

(these are Tesla Power Walls)

TOGETHER NEW ORLEANS

3) A real-time load management system, so resilience hubs can control their energy usage down to the circuit level:



TOGETHER NEW ORLEANS

These 3 systems work together to bring community-based resilience to the grid …

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SPAN

TOGETHER NEW ORLEANS

During “blue sky” days, solar powers the facility and keeps the batteries charged.

Any excess power produced goes to the grid.

(These are actual screen-shots from a Broadmoor’s SPAN app.)

TOGETHER NEW ORLEANS

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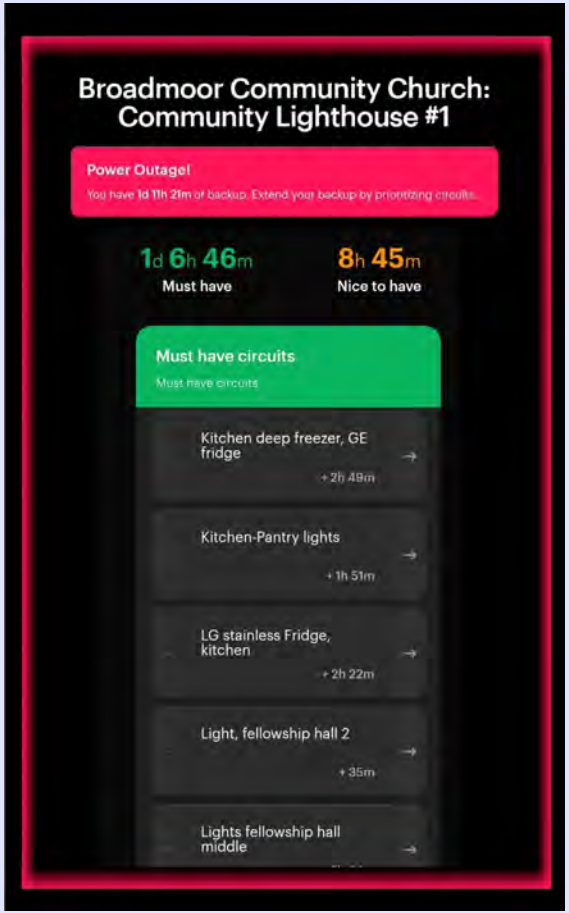
SPAN

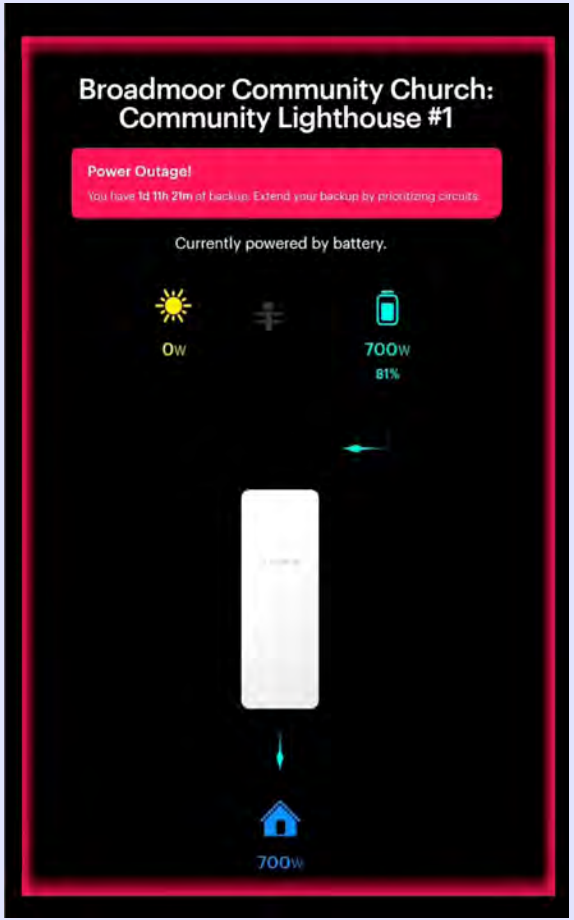


When an outage strikes, the load management system is pre-set to drop unnecessary loads and shift to “must-have” circuits to conserve power.

TOGETHER NEW ORLEANS

If it’s a daytime outage, solar powers the facility.

TOGETHER NEW ORLEANS



At night or when there's no sun, the back-up batteries power the facility.

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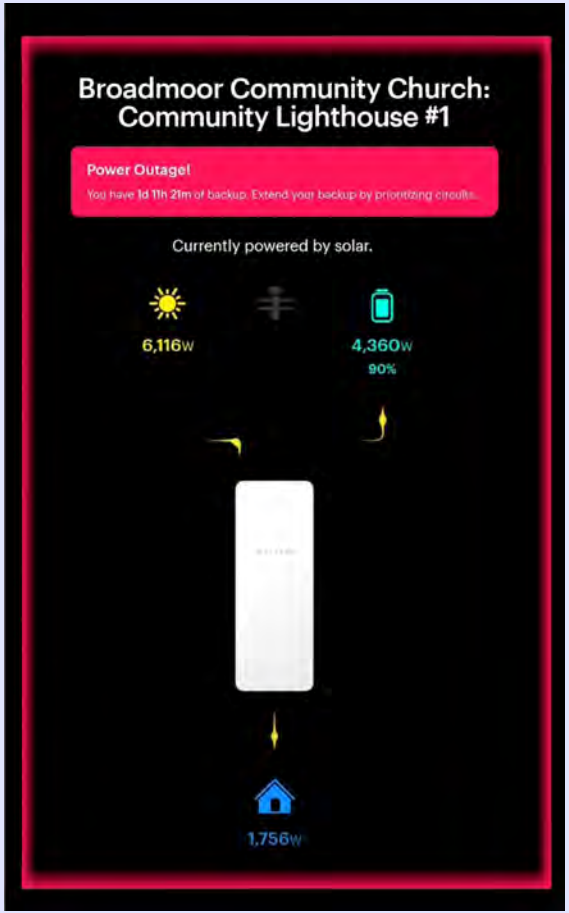

When day breaks, solar kicks back in to power the facility and recharge the batteries.

TOGETHER NEW ORLEANS

With these 3 pieces of tech, most resilience hubs can operate during a long-duration outage not just for a few hours or days …

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SPAN

TOGETHER NEW ORLEANS

As long as loads are managed properly, resilience hubs can operate <u>indefinitely</u> without the grid.

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SPAN

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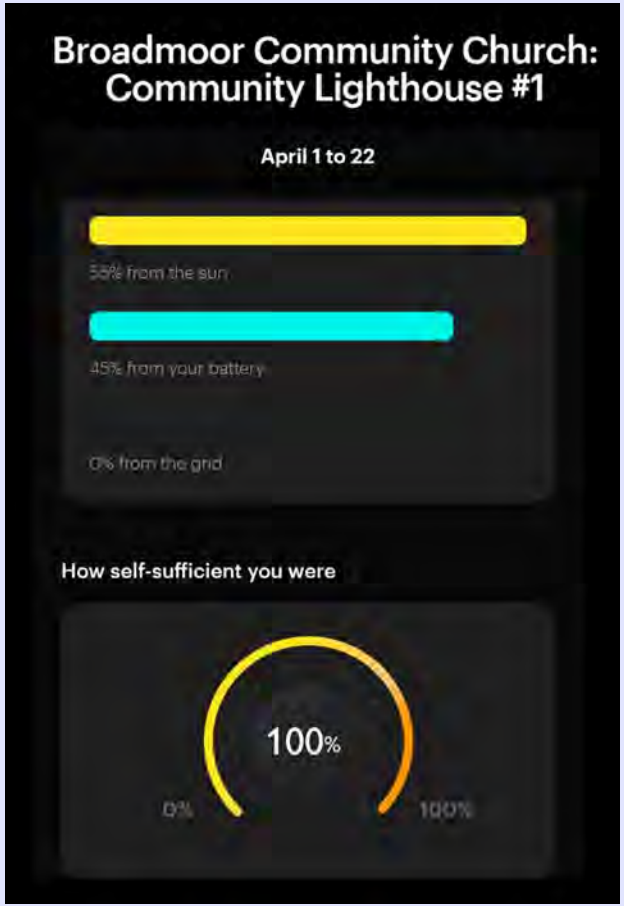


Note: A few of the hubs that use a lot of energy, such as the healthcare hubs, likely will have to limit hours of operation, especially at night.

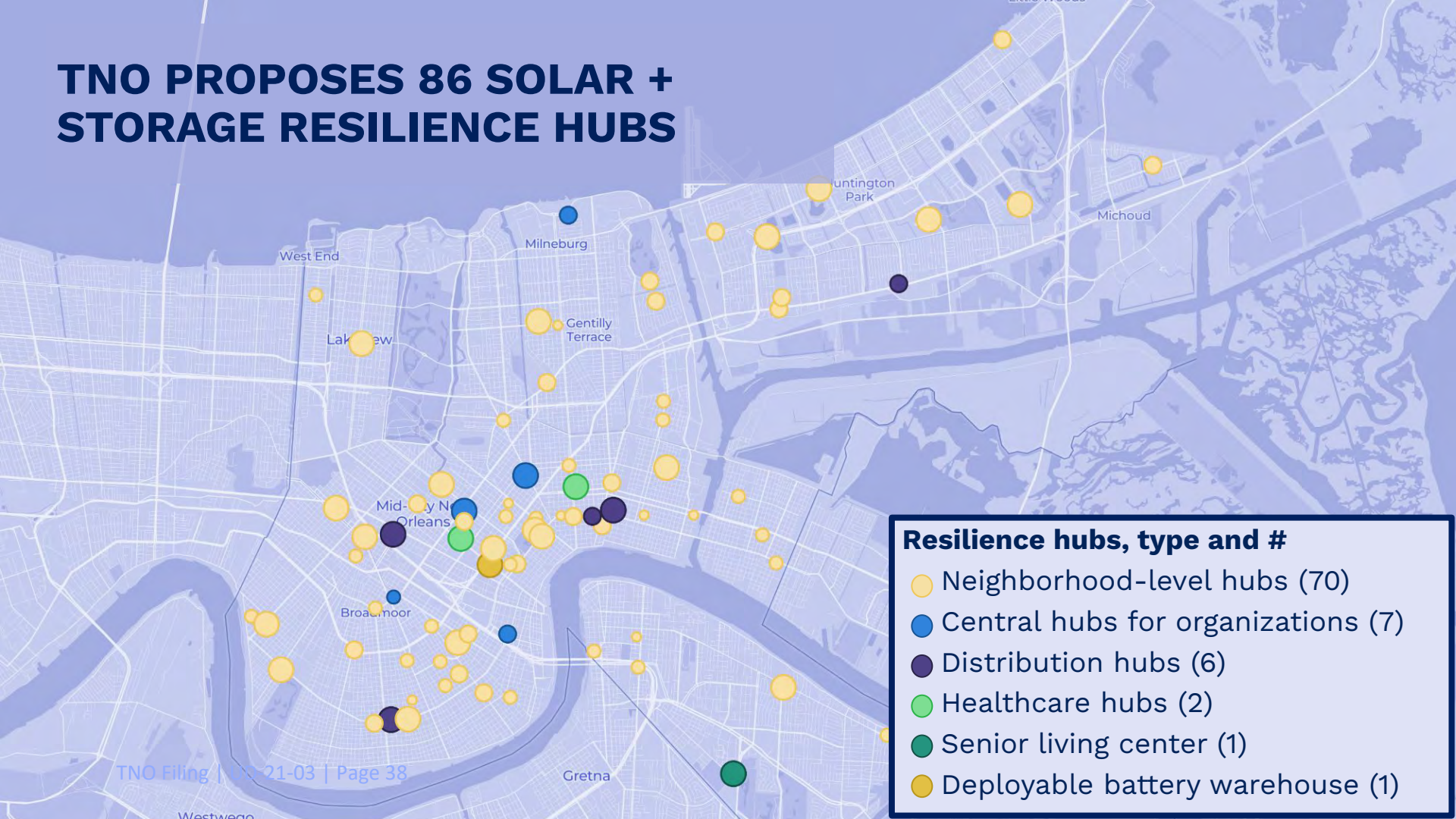
TOGETHER NEW ORLEANS

SECTION IV:

PROPOSED RESILIENCE HUBS

TOGETHER NEW ORLEANS

TNO PROPOSES 86 SOLAR + STORAGE RESILIENCE HUBS



HUB TYPES

- 70 neighborhood-level hubs
- 6 distribution hubs, eg. for food, equipment, etc
- 7 centers for response orgs (e.g., Catholic Charities, Baptist Response, etc.
- 2 healthcare hubs
- 1 senior living center
- 1 portable battery charging warehouse

TOTAL: 86 SITES

AVERAGE SYSTEM SIZES

	# sites	Avg PV size	Avg battery storage capacity
Level 1 hubs:	29	144 kWdc	216 ESS kWh
Level 2 hubs	24	56 kWdc	80 ESS kWh
Level 3 hubs	24	28 kWdc	45 ESS kWh
Level 4 hubs	9	12 kWdc	21 ESS kWh
ALL HUBS	**86**	**71 kWdc**	**106 ESS kWh**

TOTAL ANNUAL SOLAR OUTPUT

	# sites	Estimated total annual solar output
Level 1 hubs:	29	5.9 gigawatt-hours / year
Level 2 hubs	24	2 gigawatt-hours / year
Level 3 hubs	24	1 gigawatt-hour / year
Level 4 hubs	9	0.2 gigawatt-hours / year
ALL HUBS	**86**	**9.12 gigawatt-hours / year**

TOGETHER NEW ORLEANS

TOTAL BATTERY STORAGE CAPACITY

	# sites	Estimated total battery storage capacity
Level 1 hubs:	29	5.6 megawatt-hours
Level 2 hubs	24	1.9 megawatt-hours
Level 3 hubs	24	1.1 megawatt-hours
Level 4 hubs	9	.2 megawatt-hours
ALL HUBS	**86**	**9.15 megawatt-hours**

TOGETHER NEW ORLEANS

CLIMATE IMPACT

	# sites	Projected reduction of C02 emissions per year
Level 1 hubs:	29	Reduce 6 million lbs C02
Level 2 hubs	24	Reduce 2 million lbs C02
Level 3 hubs	24	Reduce 1 million lbs C02
Level 4 hubs	9	Reduce 190,000 lbs C02
ALL HUBS	**86**	**Reduce 9.4 million lbs C02**

TOGETHER NEW ORLEANS

AVERAGE SYSTEM COSTS

	# sites	Average construction cost
Level 1 hubs:	29	$667,278
Level 2 hubs	24	$253,040
Level 3 hubs	24	$144,493
Level 4 hubs	9	$69,434
Total average	**86**	**$343,218**

TOGETHER NEW ORLEANS

TOTAL SYSTEM COSTS
(construction & lifetime maintenance)

	# sites	Total cost
Level 1 hubs:	29	$22,949,742
Level 2 hubs	24	$7,202,339
Level 3 hubs	24	$4,112,733
Level 4 hubs	9	$741,124
Total average	**86**	**$35,005,938**

TOGETHER NEW ORLEANS

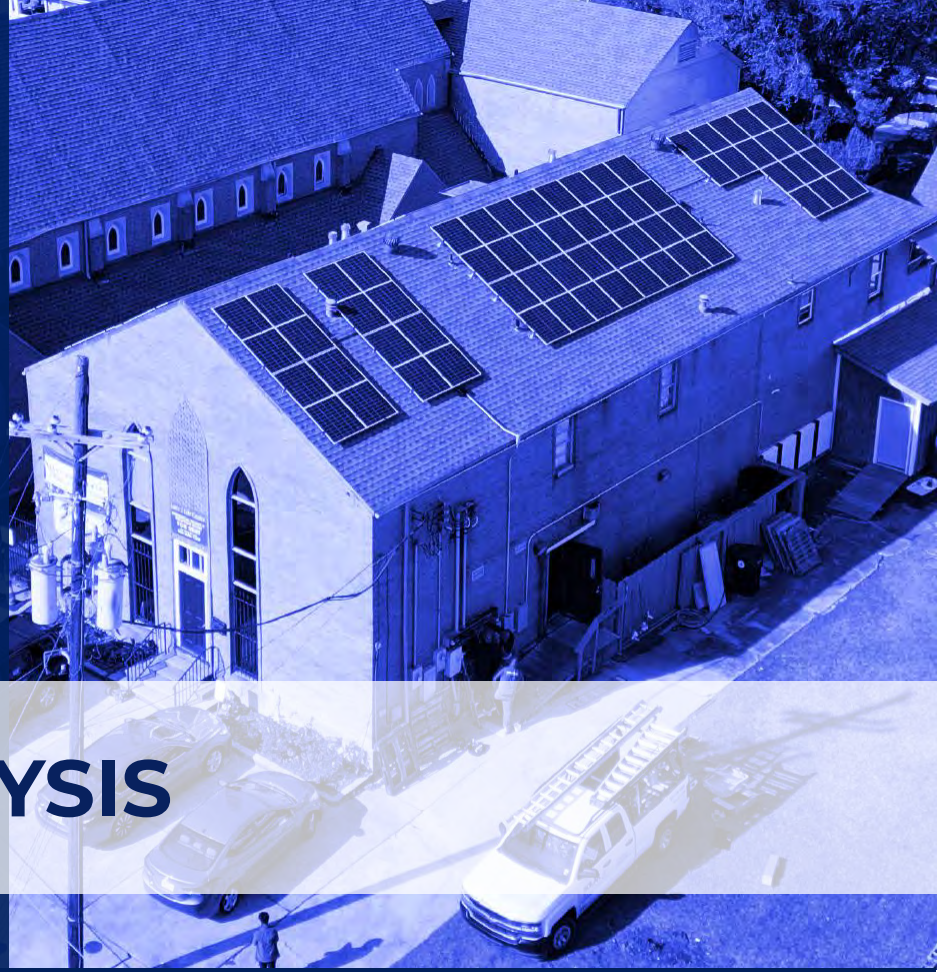
COST SHARE

Total project cost:	**$35,005,938**
Funds raised independently:	**- $23,681,262 (68%)**
System funds needed:	**$11,324,676 (32%)**

TOGETHER NEW ORLEANS

SECTION V:

BENEFIT-COST ANALYSIS



TOGETHER NEW ORLEANS

Benefit-Cost Analysis Summary

FEMA Benefit-Cost Calculator V.6.0 (Build 20230324.2039 | Release Notes)

Project Name: Community Lighthouse Resilience Hubs
Location: Orleans Parish, Louisiana

Hazard type:	Infrastructure failure (electric utilities)
Mitigation type:	Generator (solar + battery storage "resilience hubs")
Property type:	Other utility-related service
Analysis method type:	Historical damages
Project useful life:	20 years
Analysis year:	2023
# projects:	86
Number of customers served:	92,352
Value of Unit of Service: *($/person/day)*	$99.95

	Using 7% Discount Rate	*Using 3% Discount Rate*
Initial Project Cost:	$29,516,755	$29,516,755
Annual Maintenance Cost:	$368,959	$368,959
Lifetime Maintenance Cost:	$3,908,761	$5,489,183
Total Mitigation Project Cost:	**$33,425,516**	**$35,005,938**
Mitigation Project Benefits:	**$105,608,700**	**$148,308,789**
Benefit-Cost Ratio, before factoring cost-share:	3.16	4.24
Cost-share Value:	$22,100,840	$23,681,262
Cost-share Percent:	66%	68%
Costs, net of cost share:	**$11,324,676**	**$11,324,676**
Benefit-Cost Ratio, after factoring cost-share:	**9.3**	**13.1**

BENEFIT-COST SUMMARY

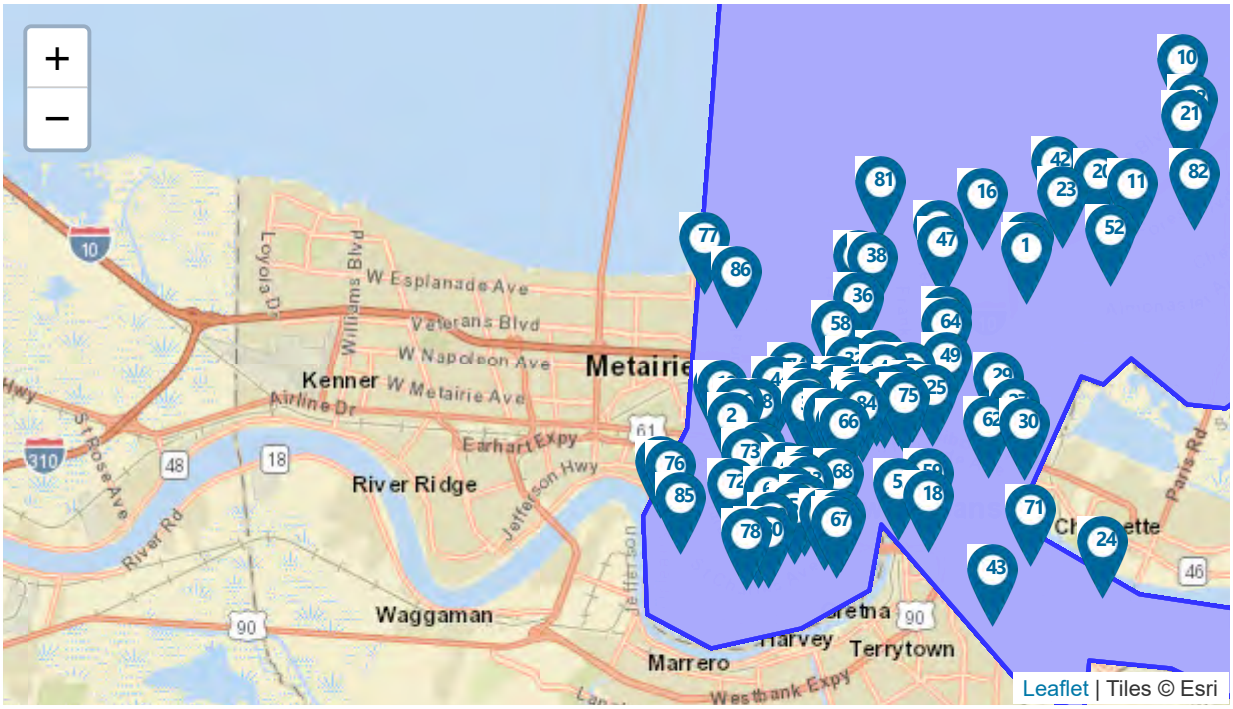
Project benefits:	**$148,308,789**
Utility system costs:	**$11,324,676**
Benefit-cost ratio (BCR):	**13.1**

$13.10 in benefit for every $1 ratepayer funds

TOGETHER NEW ORLEANS

Benefit-Cost Analysis

Project Name: Community Lighthouse Resilience Hubs - Orleans Parish



				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
1	Generator @ 6828 Chef Menteur Hwy, New Orleans, Louisiana, 70126		DFA - Infrastructure Failure	$ 1,284,768	$ 271,192	4.74	$ 1,804,236	$ 284,014	6.35
2	Generator @ 7201 Olive St, New Orleans, Louisiana, 70125		DFA - Infrastructure Failure	$ 899,347	$ 128,883	6.98	$ 1,262,979	$ 134,977	9.36
3	Generator @ 2926 Jackson Ave, New Orleans, Louisiana, 70125		DFA - Infrastructure Failure	$ 899,347	$ 182,531	4.93	$ 1,262,979	$ 191,161	6.61

				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
4	Generator @ 301 Basin St Suite 1, New Orleans, Louisiana, 70112		DFA - Infrastructure Failure	$ 899,347	$ 134,925	6.67	$ 1,262,979	$ 141,304	8.94
5	Generator @ 2801 Marais St, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 1,798,684	$ 689,096	2.61	$ 2,525,942	$ 721,678	3.50
6	Generator @ 1701 Franklin Ave, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 1,284,768	$ 230,191	5.58	$ 1,804,236	$ 241,075	7.48
7	Generator @ 6901 Chef Menteur Hwy, New Orleans, Louisiana, 70126		DFA - Infrastructure Failure	$ 1,284,768	$ 363,021	3.54	$ 1,804,236	$ 380,186	4.75
8	Generator @ 2321 Thalia St, New Orleans, Louisiana, 70113		DFA - Infrastructure Failure	$ 1,284,768	$ 291,115	4.41	$ 1,804,236	$ 304,880	5.92
9	Generator @ 2721 S Broad St., New Orleans, Louisiana, 70125		DFA - Infrastructure Failure	$ 1,541,736	$ 152,877	10.08	$ 2,165,104	$ 160,106	13.52
10	Generator @ 13800 Hayne Blvd, New Orleans, Louisiana, 70128		DFA - Infrastructure Failure	$ 1,284,768	$ 313,133	4.10	$ 1,804,236	$ 327,938	5.50
11	Generator @ 5600 Read Blvd, New Orleans, Louisiana, 70127		DFA - Infrastructure Failure	$ 1,413,263	$ 766,909	1.84	$ 1,984,685	$ 803,170	2.47

				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
12	Generator @ 1807 Rev John Raphael Jr Way, New Orleans, Louisiana, 70113		DFA - Infrastructure Failure	$ 1,413,263	$ 402,841	3.51	$ 1,984,685	$ 421,888	4.70
13	Generator @ 2128 Felicity St, New Orleans, Louisiana, 70113		DFA - Infrastructure Failure	$ 642,379	$ 67,946	9.45	$ 902,110	$ 71,158	12.68
14	Generator @ 2319 3rd St, New Orleans, Louisiana, 70113		DFA - Infrastructure Failure	$ 899,347	$ 109,551	8.21	$ 1,262,979	$ 114,731	11.01
15	Generator @ 3810 Leonidas St, New Orleans, Louisiana, 70118		DFA - Infrastructure Failure	$ 1,413,263	$ 261,477	5.40	$ 1,984,685	$ 273,840	7.25
16	Generator @ 5919 Morrison Rd, New Orleans, Louisiana, 70126		DFA - Infrastructure Failure	$ 1,284,768	$ 255,928	5.02	$ 1,804,236	$ 268,029	6.73
17	Generator @ 14001 Dwyer Blvd, New Orleans, Louisiana, 70129		DFA - Infrastructure Failure	$ 1,284,768	$ 326,263	3.94	$ 1,804,236	$ 341,689	5.28
18	Generator @ 1737 L B Landry Ave, New Orleans, Louisiana, 70114		DFA - Infrastructure Failure	$ 899,347	$ 198,749	4.53	$ 1,262,979	$ 208,146	6.07
19	Generator @ 3908 Joliet St, New Orleans, Louisiana, 70118		DFA - Infrastructure Failure	$ 642,379	$ 225,353	2.85	$ 902,110	$ 236,008	3.82
20	Generator @ 9300 I-10 Service Rd, New Orleans, Louisiana, 70127		DFA - Infrastructure Failure	$ 2,055,663	$ 834,144	2.46	$ 2,886,825	$ 873,584	3.30

				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
21	Generator @ 13000 I-10 Service Rd, New Orleans, Louisiana, 70128		DFA - Infrastructure Failure	$ 1,541,736	$ 261,477	5.90	$ 2,165,104	$ 273,840	7.91
22	Generator @ 13123 I-10 Service Rd, New Orleans, Louisiana, 70128		DFA - Infrastructure Failure	$ 1,413,263	$ 1,664,743	0.85	$ 1,984,685	$ 1,743,455	1.14
23	Generator @ 8282 I-10 Service Rd., New Orleans, Louisiana, 70126		DFA - Infrastructure Failure	$ 1,413,263	$ 1,691,647	0.84	$ 1,984,685	$ 1,771,632	1.12
24	Generator @ 2725 Ernest St, New Orleans, Louisiana, 70131		DFA - Infrastructure Failure	$ 899,347	$ 190,828	4.71	$ 1,262,979	$ 199,851	6.32
25	Generator @ 1230 Desire St, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 642,379	$ 69,812	9.20	$ 902,110	$ 73,113	12.34
26	Generator @ 2104 Elysian Fields Ave, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 899,347	$ 205,515	4.38	$ 1,262,979	$ 215,232	5.87
27	Generator @ 1438 Alabo St, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 899,347	$ 134,301	6.70	$ 1,262,979	$ 140,651	8.98
28	Generator @ 3400 Tulane Ave, New Orleans, Louisiana, 70119		DFA - Infrastructure Failure	$ 1,798,684	$ 1,682,223	1.07	$ 2,525,942	$ 1,761,761	1.43
29	Generator @ 2035 Forstall Street, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 899,347	$ 169,294	5.31	$ 1,262,979	$ 177,298	7.12

				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
30	Generator @ 6322 Saint Claude Ave, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 899,347	$ 144,940	6.20	$ 1,262,979	$ 151,793	8.32
31	Generator @ 1911 Saint Claude Ave, New Orleans, Louisiana, 70116		DFA - Infrastructure Failure	$ 642,379	$ 90,970	7.06	$ 902,110	$ 95,271	9.47
32	Generator @ 2022 Saint Bernard Ave, New Orleans, Louisiana, 70116		DFA - Infrastructure Failure	$ 2,055,663	$ 664,145	3.10	$ 2,886,825	$ 695,547	4.15
33	Generator @ 2401 Canal St, New Orleans, Louisiana, 70119		DFA - Infrastructure Failure	$ 1,541,736	$ 591,145	2.61	$ 2,165,104	$ 619,095	3.50
34	Generator @ 1700 Conti St, New Orleans, Louisiana, 70112		DFA - Infrastructure Failure	$ 1,413,263	$ 520,581	2.71	$ 1,984,685	$ 545,195	3.64
35	Generator @ 440 N Dorgenois St, New Orleans, Louisiana, 70119		DFA - Infrastructure Failure	$ 1,284,768	$ 228,231	5.63	$ 1,804,236	$ 239,022	7.55
36	Generator @ 2601 Gentilly Blvd, New Orleans, Louisiana, 70122		DFA - Infrastructure Failure	$ 1,284,768	$ 326,746	3.93	$ 1,804,236	$ 342,195	5.27
37	Generator @ 1313 Esplanade Ave, New Orleans, Louisiana, 70116		DFA - Infrastructure Failure	$ 899,347	$ 152,002	5.92	$ 1,262,979	$ 159,189	7.93
38	Generator @ 2140 Mirabeau Ave, New Orleans, Louisiana, 70122		DFA - Infrastructure Failure	$ 642,379	$ 90,916	7.07	$ 902,110	$ 95,215	9.47

				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
39	Generator @ 1923 St Philip St, New Orleans, Louisiana, 70116		DFA - Infrastructure Failure	$ 899,347	$ 134,334	6.69	$ 1,262,979	$ 140,686	8.98
40	Generator @ 1238 N Johnson St., New Orleans, Louisiana, 70116		DFA - Infrastructure Failure	$ 642,379	$ 61,166	10.50	$ 902,110	$ 64,058	14.08
41	Generator @ 2645 Toulouse St, New Orleans, Louisiana, 70119		DFA - Infrastructure Failure	$ 2,055,663	$ 510,271	4.03	$ 2,886,825	$ 534,397	5.40
42	Generator @ 7300 Crowder, New Orleans, Louisiana, 70127		DFA - Infrastructure Failure	$ 1,413,263	$ 425,745	3.32	$ 1,984,685	$ 445,875	4.45
43	Generator @ 3701 Behrman Pl,, New Orleans, Louisiana, 70114		DFA - Infrastructure Failure	$ 1,413,263	$ 412,749	3.42	$ 1,984,685	$ 432,264	4.59
44	Generator @ 3401 Canal St, New Orleans, Louisiana, 70119		DFA - Infrastructure Failure	$ 1,284,768	$ 395,216	3.25	$ 1,804,236	$ 413,903	4.36
45	Generator @ 928 Felicity St, New Orleans, Louisiana, 70130		DFA - Infrastructure Failure	$ 899,347	$ 124,587	7.22	$ 1,262,979	$ 130,478	9.68
46	Generator @ 1 Drexel Dr., New Orleans, Louisiana, 70125		DFA - Infrastructure Failure	$ 1,541,736	$ 796,284	1.94	$ 2,165,104	$ 833,934	2.60
47	Generator @ 4700 Pineda St, New Orleans, Louisiana, 70126		DFA - Infrastructure Failure	$ 1,413,263	$ 312,972	4.52	$ 1,984,685	$ 327,770	6.06

				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
48	Generator @ 1631 Elysian Fields Ave., New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 1,284,768	$ 770,049	1.67	$ 1,804,236	$ 806,459	2.24
49	Generator @ 3501 N Miro St, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 1,541,736	$ 625,675	2.46	$ 2,165,104	$ 655,258	3.30
50	Generator @ 1329 Jackson Ave, New Orleans, Louisiana, 70130		DFA - Infrastructure Failure	$ 1,413,263	$ 295,089	4.79	$ 1,984,685	$ 309,041	6.42
51	Generator @ 1823 Washington Ave, New Orleans, Louisiana, 70113		DFA - Infrastructure Failure	$ 1,284,768	$ 206,101	6.23	$ 1,804,236	$ 215,846	8.36
52	Generator @ 9301 Chef Menteur Hwy, New Orleans, Louisiana, 70127		DFA - Infrastructure Failure	$ 899,347	$ 274,602	3.28	$ 1,262,979	$ 287,586	4.39
53	Generator @ 1441 Teche St, New Orleans, Louisiana, 70114		DFA - Infrastructure Failure	$ 899,347	$ 122,144	7.36	$ 1,262,979	$ 127,919	9.87
54	Generator @ 1210 Governor Nicholls St, New Orleans, Louisiana, 70116		DFA - Infrastructure Failure	$ 1,413,263	$ 500,739	2.82	$ 1,984,685	$ 524,414	3.78
55	Generator @ 4533 Mendez St, New Orleans, Louisiana, 70126		DFA - Infrastructure Failure	$ 1,284,768	$ 273,877	4.69	$ 1,804,236	$ 286,826	6.29

				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
56	Generator @ 1325 Governor Nicholls St, New Orleans, Louisiana, 70116		DFA - Infrastructure Failure	$ 642,379	$ 77,437	8.30	$ 902,110	$ 81,099	11.12
57	Generator @ 1937 Mirabeau Ave, New Orleans, Louisiana, 70122		DFA - Infrastructure Failure	$ 1,413,263	$ 673,952	2.10	$ 1,984,685	$ 705,818	2.81
58	Generator @ 2916 Paris Ave, New Orleans, Louisiana, 70119		DFA - Infrastructure Failure	$ 899,347	$ 195,956	4.59	$ 1,262,979	$ 205,222	6.15
59	Generator @ 1124 Leboeuf St, New Orleans, Louisiana, 70114		DFA - Infrastructure Failure	$ 642,379	$ 81,653	7.87	$ 902,110	$ 85,514	10.55
60	Generator @ 3629 Dryades St., New Orleans, Louisiana, 70115		DFA - Infrastructure Failure	$ 642,379	$ 97,951	6.56	$ 902,110	$ 102,583	8.79
61	Generator @ 2722 Louisiana Ave, New Orleans, Louisiana, 70115		DFA - Infrastructure Failure	$ 899,347	$ 152,378	5.90	$ 1,262,979	$ 159,582	7.91
62	Generator @ 5200 Daupline St, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 642,379	$ 69,812	9.20	$ 902,110	$ 73,113	12.34
63	Generator @ 3343 Metropolitan St, New Orleans, Louisiana, 70126		DFA - Infrastructure Failure	$ 899,347	$ 213,517	4.21	$ 1,262,979	$ 223,612	5.65

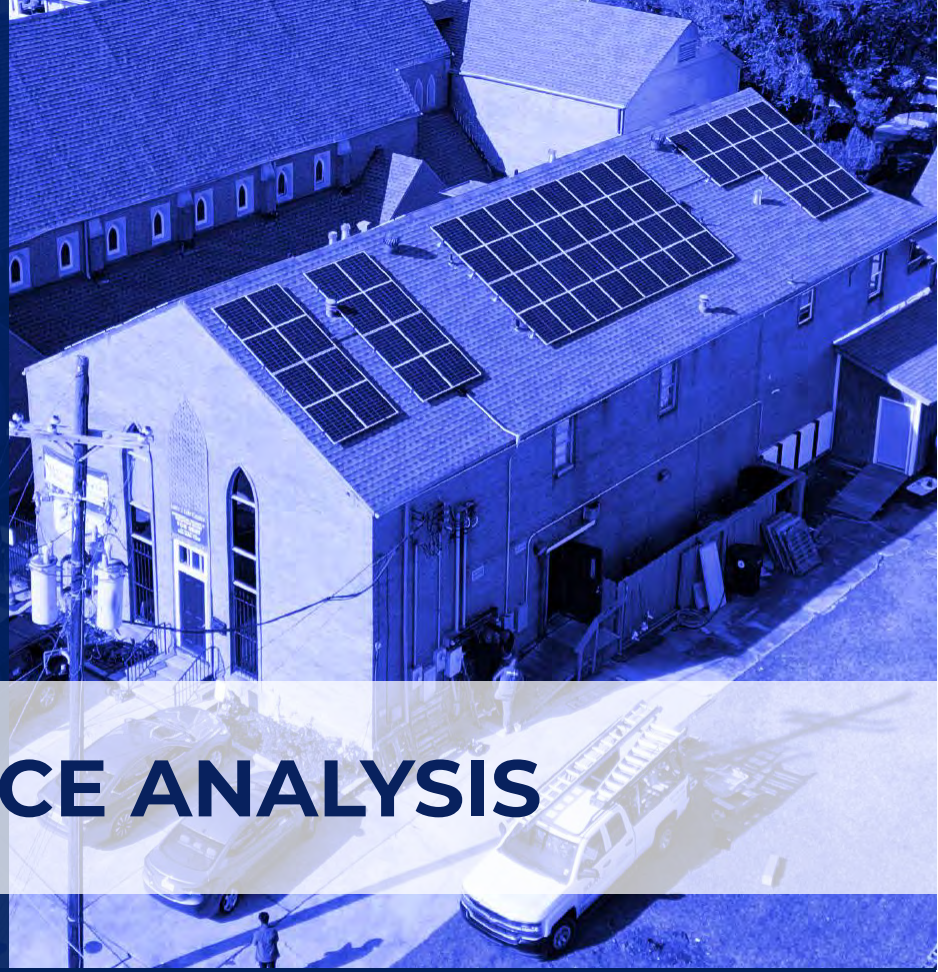
				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
64	Generator @ 3015 Louisa St, New Orleans, Louisiana, 70126		DFA - Infrastructure Failure	$ 899,347	$ 144,994	6.20	$ 1,262,979	$ 151,849	8.32
65	Generator @ 2372 St Claude Ave, New Orleans, Louisiana, 70119		DFA - Infrastructure Failure	$ 1,541,736	$ 279,086	5.52	$ 2,165,104	$ 292,282	7.41
66	Generator @ 411 N Rampart St, New Orleans, Louisiana, 70112		DFA - Infrastructure Failure	$ 1,284,768	$ 362,833	3.54	$ 1,804,236	$ 379,989	4.75
67	Generator @ 900 St Andrew St, New Orleans, Louisiana, 70130		DFA - Infrastructure Failure	$ 2,312,599	$ 2,209,789	1.05	$ 3,247,648	$ 2,314,272	1.40
68	Generator @ 919 St. Charles Ave, New Orleans, Louisiana, 70130		DFA - Infrastructure Failure	$ 1,798,684	$ 242,650	7.41	$ 2,525,942	$ 254,123	9.94
69	Generator @ 8321 Burthe St, New Orleans, Louisiana, 70118		DFA - Infrastructure Failure	$ 899,347	$ 126,198	7.13	$ 1,262,979	$ 132,165	9.56
70	Generator @ 2309 Dryades St, New Orleans, Louisiana, 70113		DFA - Infrastructure Failure	$ 1,284,768	$ 336,198	3.82	$ 1,804,236	$ 352,094	5.12
71	Generator @ 1110 Kabel Dr., New Orleans, Louisiana, 70131		DFA - Infrastructure Failure	$ 1,413,263	$ 745,536	1.90	$ 1,984,685	$ 780,787	2.54
72	Generator @ 5212 S Claiborne Ave, New Orleans, Louisiana, 70125		DFA - Infrastructure Failure	$ 1,284,768	$ 261,477	4.91	$ 1,804,236	$ 273,840	6.59

				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
73	Generator @ 2021 S Dupre St, New Orleans, Louisiana, 70125		DFA - Infrastructure Failure	$ 899,347	$ 212,896	4.22	$ 1,262,979	$ 222,962	5.66
74	Generator @ 3235 Orleans Ave, New Orleans, Louisiana, 70119		DFA - Infrastructure Failure	$ 1,413,263	$ 395,994	3.57	$ 1,984,685	$ 414,717	4.79
75	Generator @ 2624 Burgundy St, New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 1,284,768	$ 210,631	6.10	$ 1,804,236	$ 220,590	8.18
76	Generator @ 1031 S Carrollton Ave, New Orleans, Louisiana, 70118		DFA - Infrastructure Failure	$ 1,413,263	$ 428,161	3.30	$ 1,984,685	$ 448,405	4.43
77	Generator @ 6690 Fleur DE Lis Dr, New Orleans, Louisiana, 70124		DFA - Infrastructure Failure	$ 899,347	$ 164,202	5.48	$ 1,262,979	$ 171,965	7.34
78	Generator @ 4600 Saint Charles Ave, New Orleans, Louisiana, 70115		DFA - Infrastructure Failure	$ 1,284,768	$ 238,944	5.38	$ 1,804,236	$ 250,242	7.21
79	Generator @ 4238 St Charles Ave, New Orleans, Louisiana, 70115		DFA - Infrastructure Failure	$ 1,798,684	$ 826,464	2.18	$ 2,525,942	$ 865,541	2.92
80	Generator @ 3900 Saint Charles Ave, New Orleans, Louisiana, 70115		DFA - Infrastructure Failure	$ 1,413,263	$ 625,594	2.26	$ 1,984,685	$ 655,174	3.03

				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)		
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
81	Generator @ 2222 Lakeshore Dr, New Orleans, Louisiana, 70122		DFA - Infrastructure Failure	$ 1,798,684	$ 298,070	6.03	$ 2,525,942	$ 312,163	8.09
82	Generator @ 5276 Bullard Ave, New Orleans, Louisiana, 70128		DFA - Infrastructure Failure	$ 1,413,263	$ 553,167	2.55	$ 1,984,685	$ 579,322	3.43
83	Generator @ 1030 Elysian Fields Ave., New Orleans, Louisiana, 70117		DFA - Infrastructure Failure	$ 1,284,768	$ 228,231	5.63	$ 1,804,236	$ 239,022	7.55
84	Generator @ 1130 N Rampart St, New Orleans, Louisiana, 70116		DFA - Infrastructure Failure	$ 1,413,263	$ 367,854	3.84	$ 1,984,685	$ 385,247	5.15
85	Generator @ 7100 Saint Charles Ave, New Orleans, Louisiana, 70118		DFA - Infrastructure Failure	$ 1,413,263	$ 601,294	2.35	$ 1,984,685	$ 629,725	3.15
86	Generator @ 6249 Canal Blvd, New Orleans, Louisiana, 70124		DFA - Infrastructure Failure	$ 1,413,263	$ 675,356	2.09	$ 1,984,685	$ 707,288	2.81
TOTAL (SELECTED)				**$ 105,608,700**	**$ 33,425,516**	**3.16**	**$ 148,309,279**	**$ 35,005,938**	**4.24**
TOTAL				**$ 105,608,700**	**$ 33,425,516**	**3.16**	**$ 148,309,279**	**$ 35,005,938**	**4.24**

SECTION VI:

EQUITY & WORKFORCE ANALYSIS



TOGETHER NEW ORLEANS

Equity and Workforce Analysis Together New Orleans Community Lighthouse Project

December 2022

Adrienne Rackley, Saurabh Biswas, Devyn Powell

U.S. DEPARTMENT OF ENERGY

Pacific Northwest NATIONAL LABORATORY

Sandia National Laboratories

Objective

The Energy Storage for Social Equity (ES4SE) Initiative, sponsored by the U.S. Department of Energy's (DOE's) Office of Electricity Energy Storage Program, is a program conducted by Pacific Northwest National Laboratory (PNNL) and Sandia National Laboratories. ES4SE is designed to empower urban, rural, and tribal disadvantaged communities to consider energy storage technologies and applications as a viable path toward community prosperity, well-being, and resilience.

The Technical Assistance (TA) phase of the program offers comprehensive and personalized assessments of energy storage feasibility, design, and application to help communities meet their goals and enable positive outcomes.

This report was generated for Together New Orleans for the purpose of equity and workforce analysis.

Outline

- Introduction
- Approach
- Challenges
- Opportunities and Goals
- Indicators
- Metrics
- Forecast
- Challenges and Risks
- Recommendations
- Resources

Introduction

The Together New Orleans (TNO) organization, located in Louisiana, is participating in the ES4SE TA Program conducted by PNNL. The TA objective is to work with community partners to design a battery storage system that will address their challenges with the current energy system and provide benefits to underserved and overburdened community members.

The project is exploring battery storage solutions at Community Lighthouses in and around New Orleans. This report focuses on 16 pilot projects out of a planned eighty-five projects. This slides present an overview of challenges identified through conversations with the TNO team and through the ES4SE application process, social equity opportunities and goals that the battery storage project might help achieve, an overview of publicly available data to help inform discussions and planning, proposed metrics by which to measure success and progress toward identified goals, a forecasted impact of the project, and recommendations and resources.

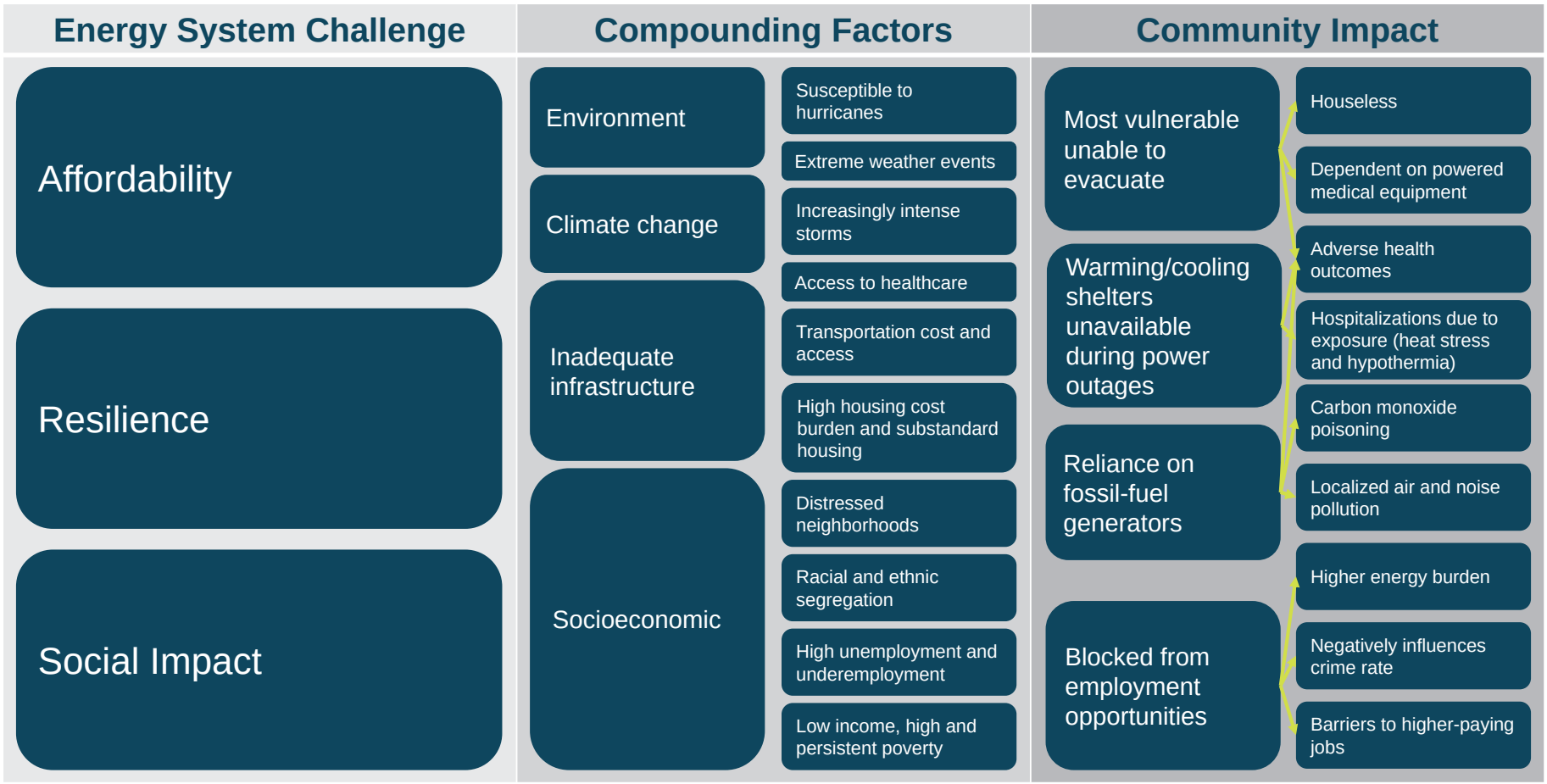
Approach

Planning for and achieving equitable outcomes is an iterative process that does not end with the completion of TA. The equity and workforce assessment is a multi-pronged approach:

- Communities receive an equity and workforce report based on project plans thus far, and
- Communities develop skills and receive tools to carry this work forward after completion of TA.

This report summarizes equity and workforce data and plans. The Resources section provides links to a framework for project planning and other tools we encourage the community to use going forward.

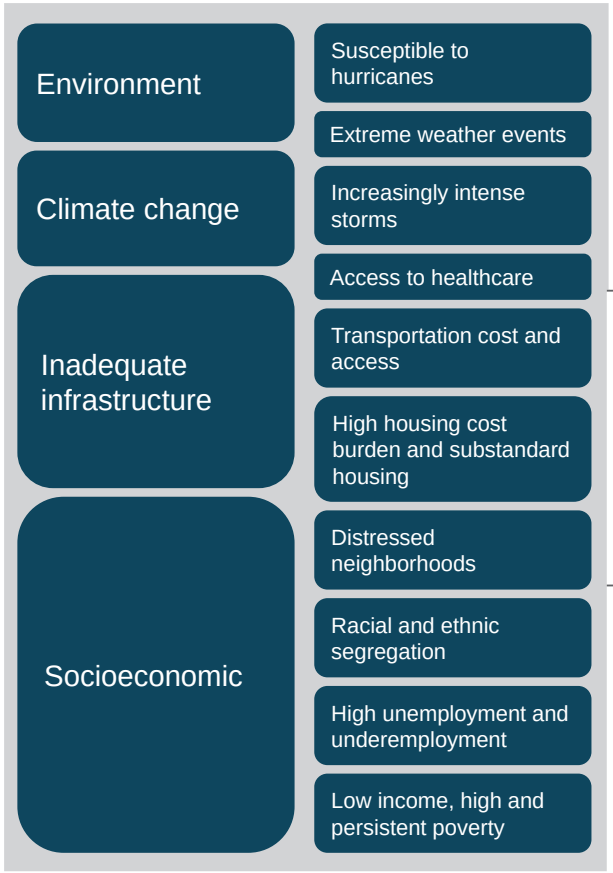
Challenges and Community Impact



Energy System Challenges Details

Affordability	• Lower cost burden for Community Lighthouse member institutions • Free cash flow to offer additional social services or reinvest in building maintenance and upgrades
Resilience	• Grid is unable to withstand extreme weather events, hurricanes, and disasters • Pilot 16 resilience hubs as proof-of-concept • Improve resilience outcomes for neighborhood • Reduce need for individual use of backup generators (health and safety, decarbonization)
Social Impact	• Create workforce development opportunities in partnership with Louisiana Green Corps • Job creation as resilience hubs are installed and require expertise related to installation, operation, and maintenance • Economic impact for community members as they gain new skills and are able to apply for higher-paying jobs

Compounding Factors Details



Environment and climate change

- New Orleans and the surrounding areas are susceptible to hurricanes. Hurricane season lasts from June through November and can cause power outages, flooding, high winds, and other hazards.
- New Orleans may also experience temperatures below freezing, which may become dangerous during power outages or if residents are not prepared.

Inadequate infrastructure

- High transportation cost and low access can prevent people from evacuating when a storm is forecasted. It can also cause difficulty accessing jobs and healthcare.
- Housing quality and affordability can affect the health and energy burden if a home has inefficient systems and/or needs weatherization.

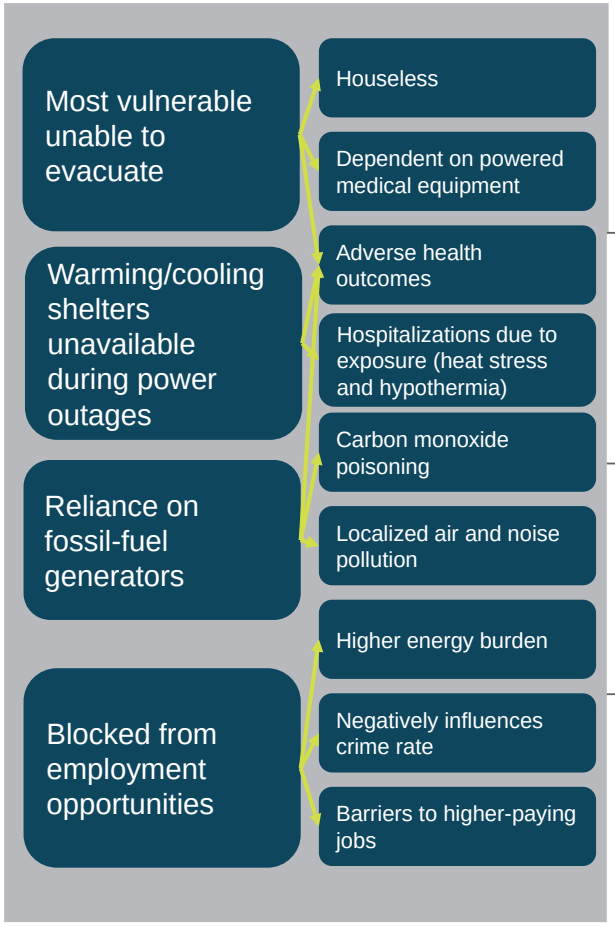
Access to services

- Inadequate access to healthcare compounds energy system challenges when medically vulnerable residents need additional support to survive storms and power outages.

Socioeconomic

- Low income, high and/or persistent poverty
- High unemployment and underemployment; those seeking clean energy employment opportunities face discriminatory hiring practices (potential employers cite skill gap, possibly racially motivated).
- Lack of job opportunities can negatively influence neighborhood crime rates

Community Impact Details



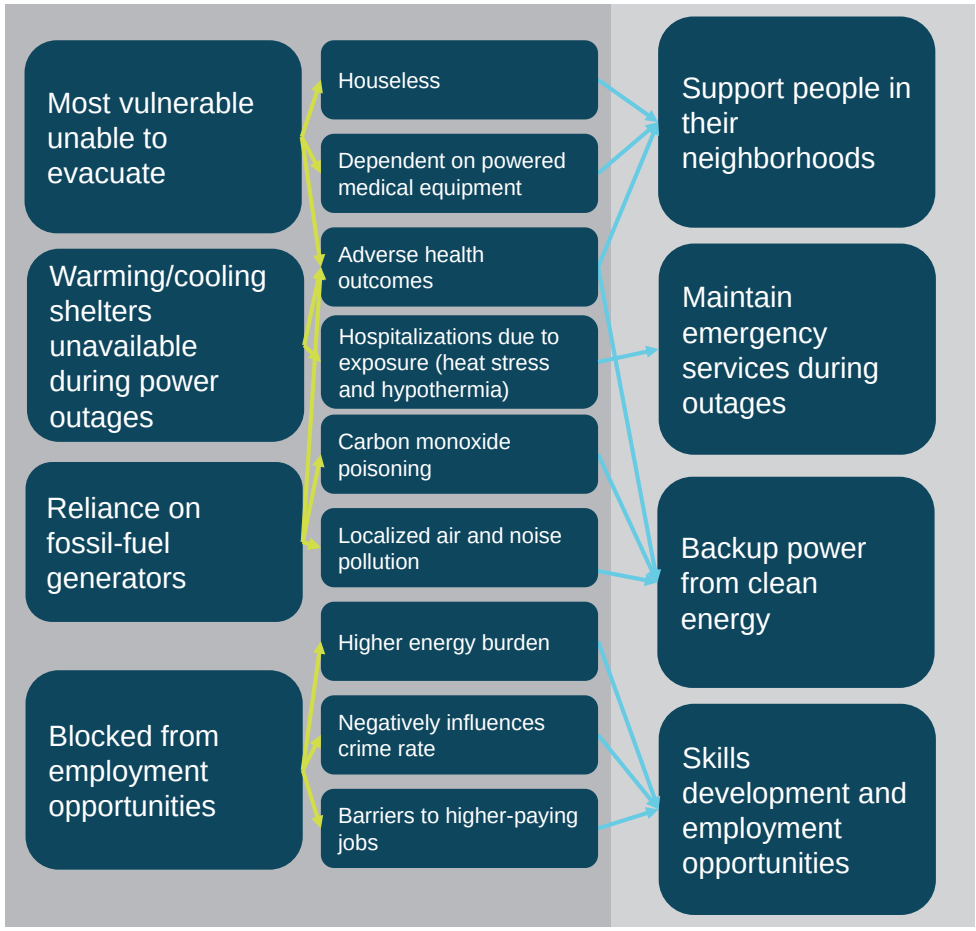
When an evacuation is ordered in anticipation of a severe storm, some may have to shelter in place. These individuals are likely to be under-resourced or they could be home-bound due to physical limitations. For those who are dependent on powered medical equipment, a power outage could be life-threatening.

During extreme weather events and resulting power outages critical resources may not be available. These resources include warming or cooling shelters. Without a safe place to shelter people face hospitalizations and death from heat stress and hypothermia. They may engage in risky behavior to escape the elements.

During power outages residences and businesses often rely on fossil-fuel-powered generators. Accidents and deaths occur from carbon monoxide poisoning, burns, and unsafe generator operation. Additionally, generators cause localized air and noise pollution, which can cause or exacerbate health problems.

Residents have been blocked from clean energy jobs. Prospective employers use discriminatory hiring practices, citing a skills gap. As a result, outside contractors are brought in, and local residents are not able to improve their economic situation. Lack of access to job opportunities may contribute to crime rates and increase the energy burden where people earn low wages.

Community Impact and Battery Storage Opportunities in Support of Community Goals



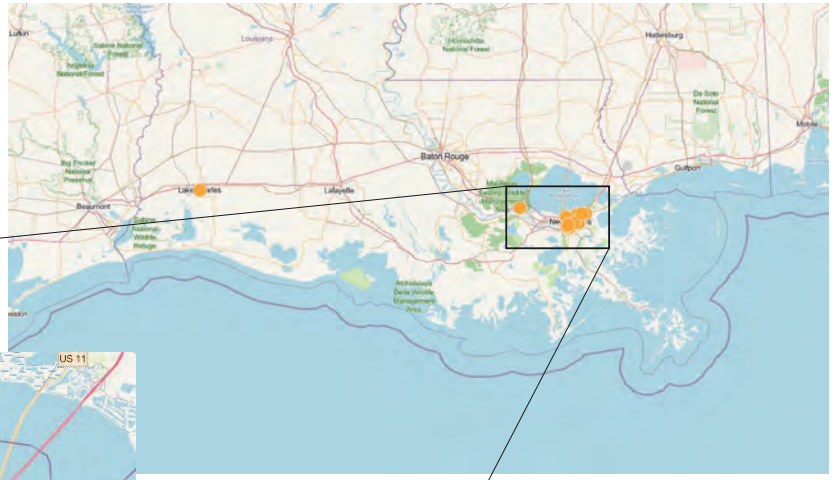
- Access for those unable or unwilling to relocate
- Maintaining emergency services during a power outage can help avoid hospitalizations and deaths.
- Hyper-local Lighthouses have local knowledge and can adjust response according to greatest need in their neighborhood.

- Community Lighthouses providing warming/cooling shelters will directly influence the rate of hospitalizations and deaths from exposure. Adverse health outcomes may also be reduced at some lighthouses through:
  - Maintain refrigeration of medications
  - Access to first aid/medical care during outages
  - A place to charge phones and small electronics as well as medical devices
  - Support emergency communications
  - Hot meals and maintain refrigeration of food

- Expand backup power not dependent on refueling (may be difficult to access fuel during a disaster)
- Reduce or eliminate localized air and noise pollution from backup generators
- Reduce and eliminate adverse health outcomes from generator use

- Partner with Louisiana Green Corps, community colleges, and others to offer apprenticeship opportunities using Community Lighthouse as hands-on learning.
- Direct employment in installation, operations, and maintenance
- New skills development becomes a resource locally and could be used to export expertise to other areas
- Removes skills gap as an excuse for contractors bringing in outside workers
- Require a training component and/or percentage of local hiring when installing and rebuilding

Pilot Sites Under Consideration for Battery Storage



Indicators

A review of demographic and socioeconomic characteristics, health markers, climate and environmental data, and infrastructure information helps ensure there are no missed opportunities to benefit the community and provides due diligence to avoid negative externalities. The information presented in this section is intended to be a nonexhaustive broad look at the neighborhoods in and around New Orleans based on publicly available data sources. In particular, the analysis focuses on the following 16 sites identified for battery storage as pilot Community Lighthouse projects:

Site Name	Address
Central Missionary Baptist	1438 Alabo St. New Orleans, LA
Mount Olive (Lake Charles)	3007 Enterprise Blvd Lake Charles, LA
St Paul Episcopal	6249 Canal Blvd New Orleans, LA
St Paul Lutheran (Marigny)	2624 Burgundy St New Orleans, LA
Pleasant Valley Baptist	5919 Morrison Rd New Orleans, LA
First Unitarian	2903 Jefferson Ave New Orleans, LA
Community Church Unitarian	6690 Fleur De Lis Dr New Orleans, LA
Together New Orleans Office	2721 S Broad St New Orleans, LA
Bethlehem Lutheran	1823 Washington Ave New Orleans, LA
Broadmoor Community Church	2021 S Dupre St New Orleans, LA
First Grace	3401 Canal St New Orleans, LA
New Wine Christian Fellowship	3353 1929 W Airline Hwy Laplace, LA
Cornerstone UMC	5276 Bullard Ave New Orleans, LA
Corpus Christi	2022 St Bernard Ave New Orleans, LA
Crescent Care	1631 Elysian Fields Ave New Orleans, LA
Household of Faith	9300 I-10 Service Rd New Orleans, LA

Indicators

The maps displayed in the ensuing slides represent the sites as orange or blue dots (depending on the background map colors). The Lake Charles and Laplace locations are presented on separate slides due to their geographic distance from New Orleans sites.

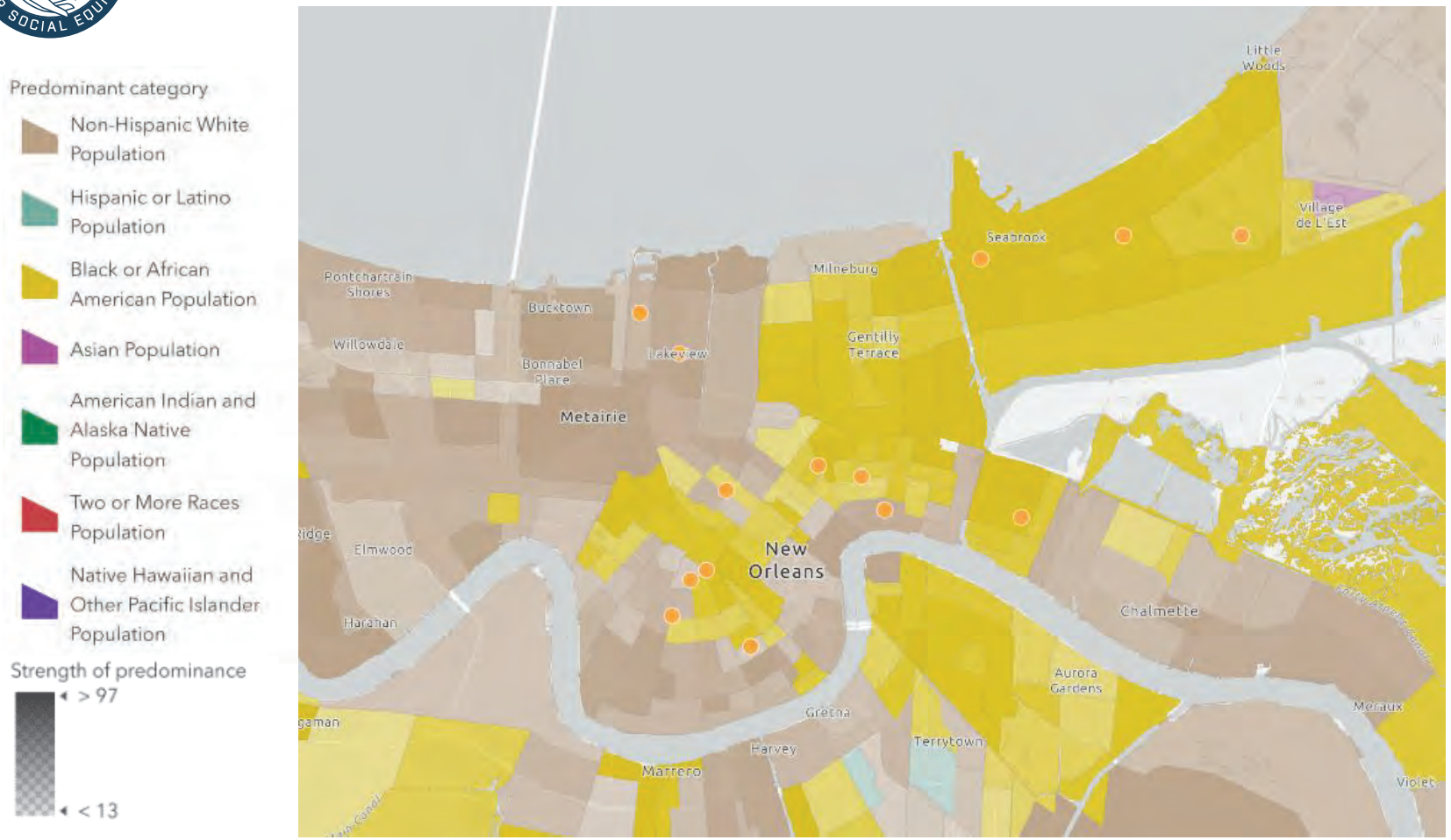
Additionally, the Lake Charles and Laplace locations are surrounded by a 1-mile radius circle, slightly larger than the Community Lighthouse goal that no one live more than a ½-mile from a Lighthouse. The 1-mile radius is intended to give a reference point for those who may be in close proximity to access resilience hub services during a power outage, extreme weather event, or natural disaster.

The radius feature is not displayed for New Orleans sites because of the number of sites (14) exceeding the mapping capabilities of the software (ArcGIS Maps for Power BI limits the number of radius sites to five at a time). If ring buffers for all sites are desired, a different software tool should be used. A different software should also be used do display radius distances of less than 1 mile.

Socioeconomic and Demographic Indicators

National-level publicly available data sources come with some limitations and should be taken in context with information from people and organizations familiar with the area. Many of these tools do not accurately capture information about recent development, houseless populations, and other hyper-local neighborhood characteristics, so where available, local knowledge and studies should be relied on to fill the gaps. This analysis is meant to provide an overview and is a sample of selected data points and indicators, with a particular focus on how neighborhoods hosting a Community Lighthouse may differ in their needs from surrounding areas. These indicators (from Census data) are presented in the following slides as a starting point to illustrate each neighborhood's unique needs when planning energy projects.

Race and Hispanic Origin by Census Tract



(Esri 2022)

Race and Hispanic Origin by Census Tract

Predominant category

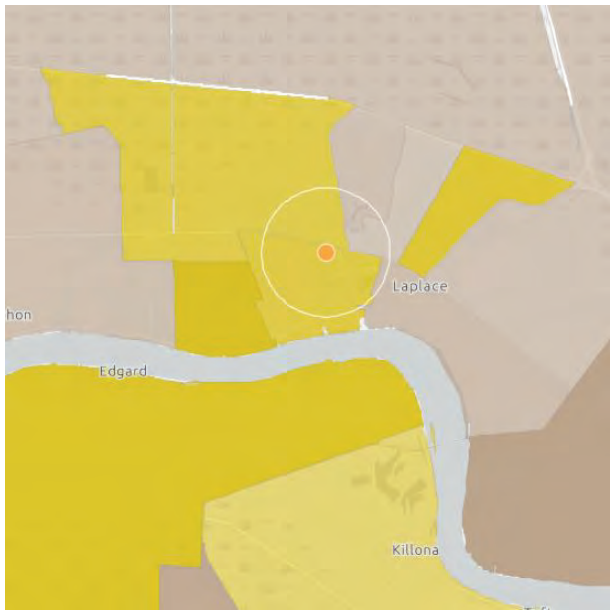
- Non-Hispanic White Population
- Hispanic or Latino Population
- Black or African American Population
- Asian Population
- American Indian and Alaska Native Population
- Two or More Races Population
- Native Hawaiian and Other Pacific Islander Population

Strength of predominance

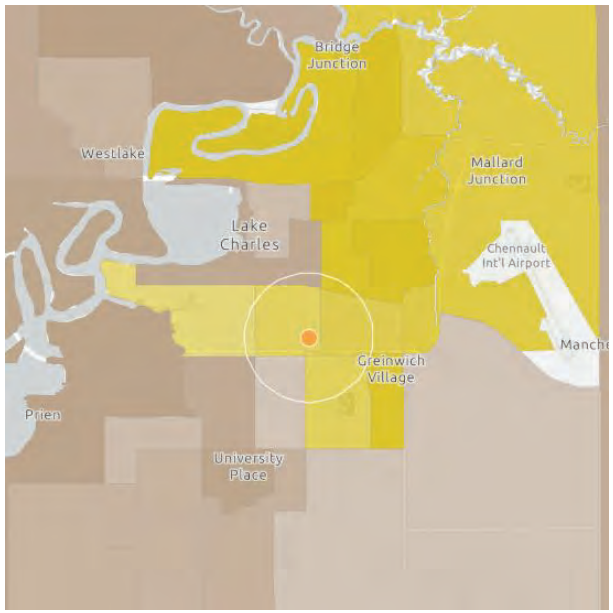
◂ > 97

◂ < 13

Laplace



Lake Charles



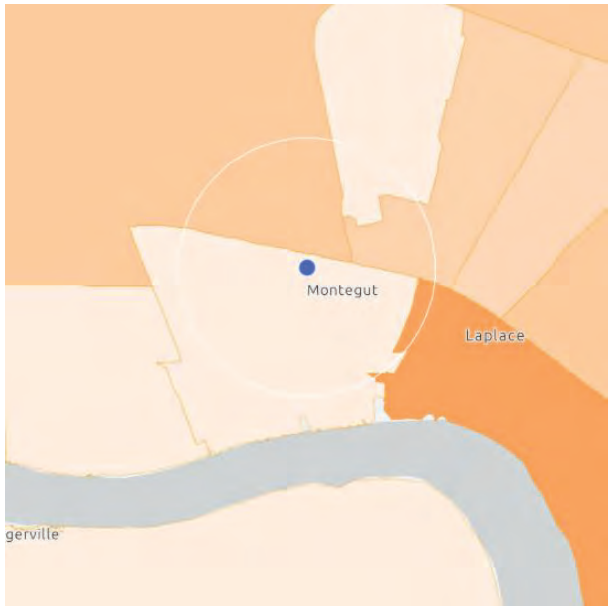
(Esri 2022)

English Ability and Linguistic Isolation by Census Tract

(Esri 2022)

English Ability and Linguistic Isolation by Census Tract

Laplace



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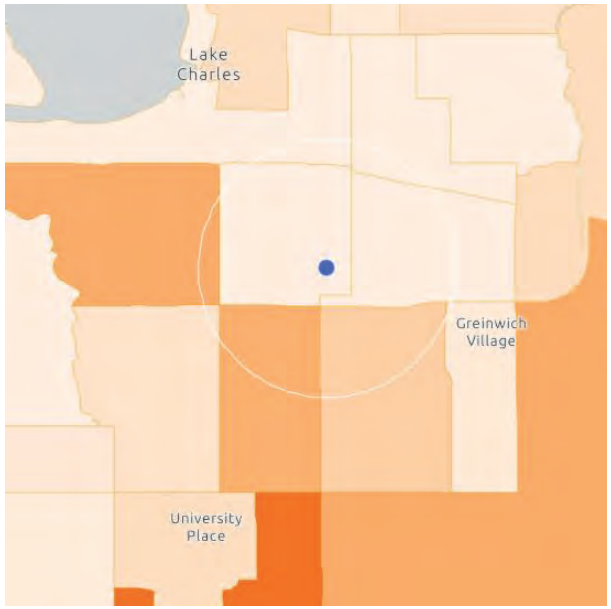


(Esri 2022)

Poverty Status by Census Tract

(Esri 2022)

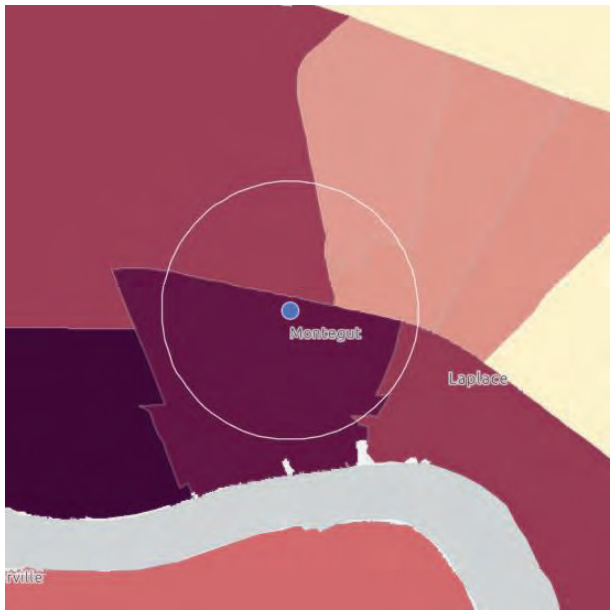
Poverty Status by Census Tract

Percent of Population whose income in the past 12 months is below poverty level

- > 26%
- 13% - national figure
- < 1%

No Value

Laplace



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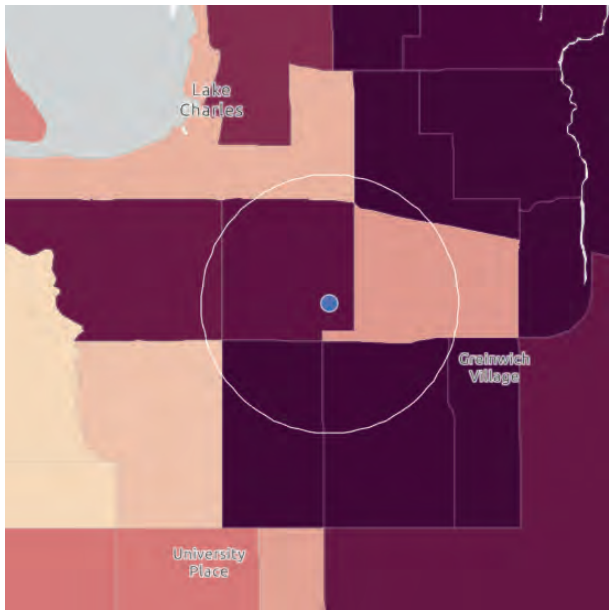
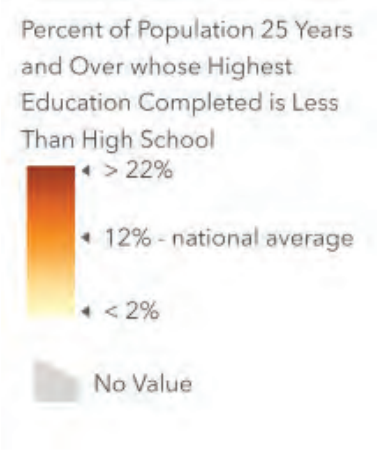


(Esri 2022)

Educational Attainment by Census Tract

(Esri 2022)

Educational Attainment by Census Tract



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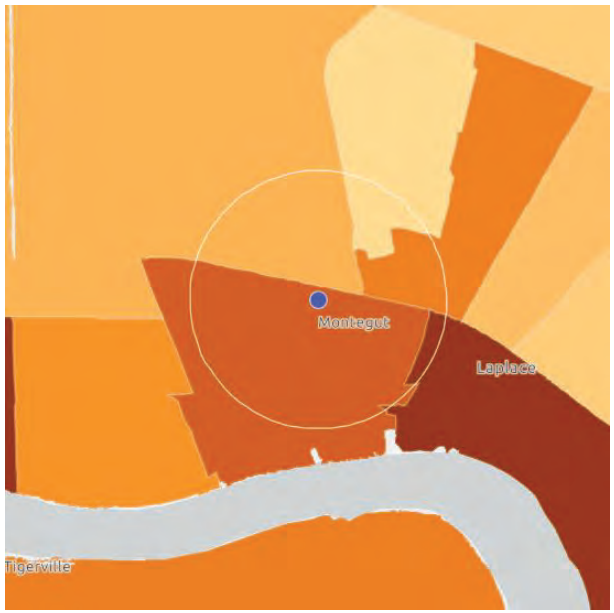

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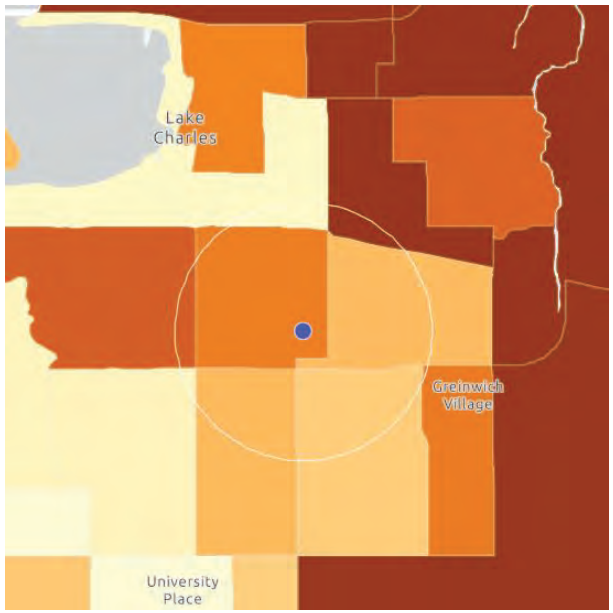
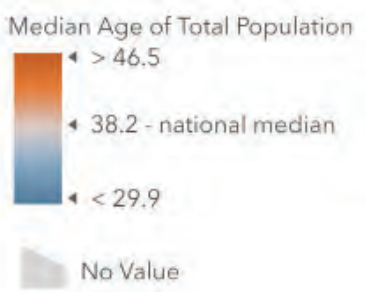


(Esri 2022)

Median Age by Census Tract

(Esri 2022)

Median Age by Census Tract



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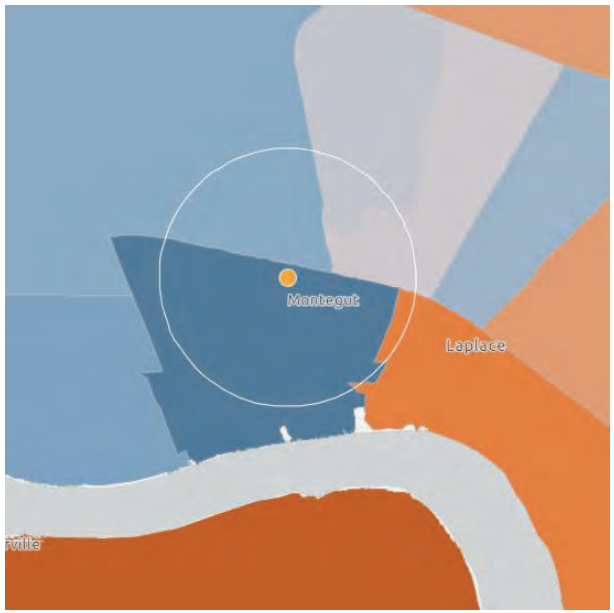

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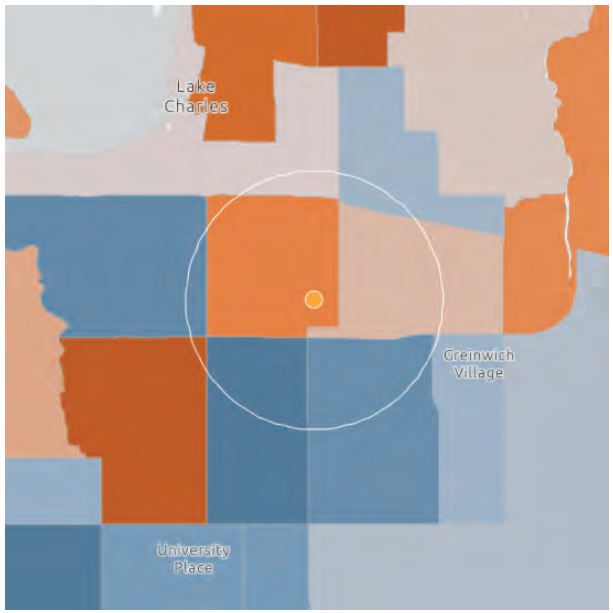
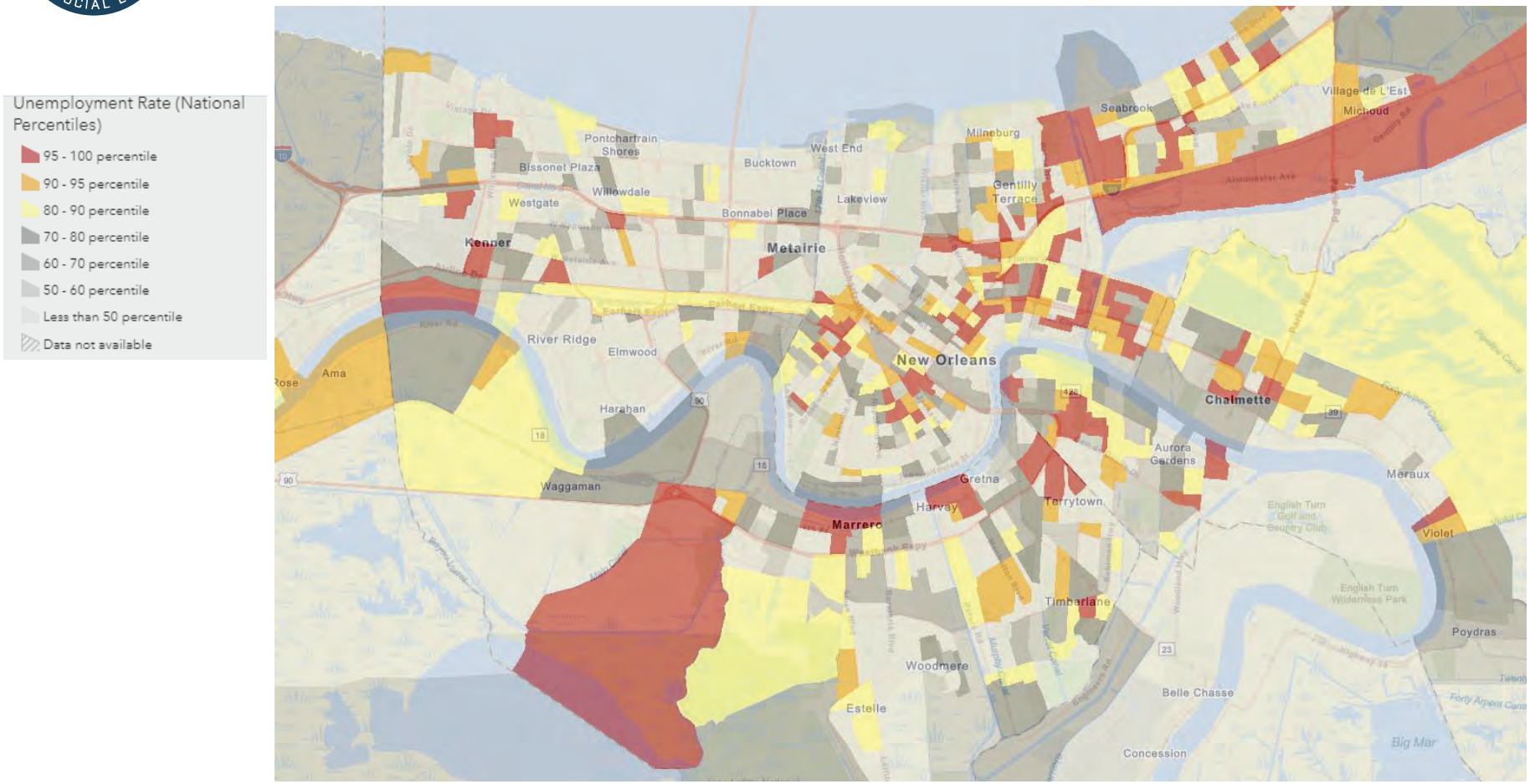


(Esri 2022)

Environmental Justice Screening and Mapping Tool (EJScreen) – Certain Census Tracts Face High Unemployment



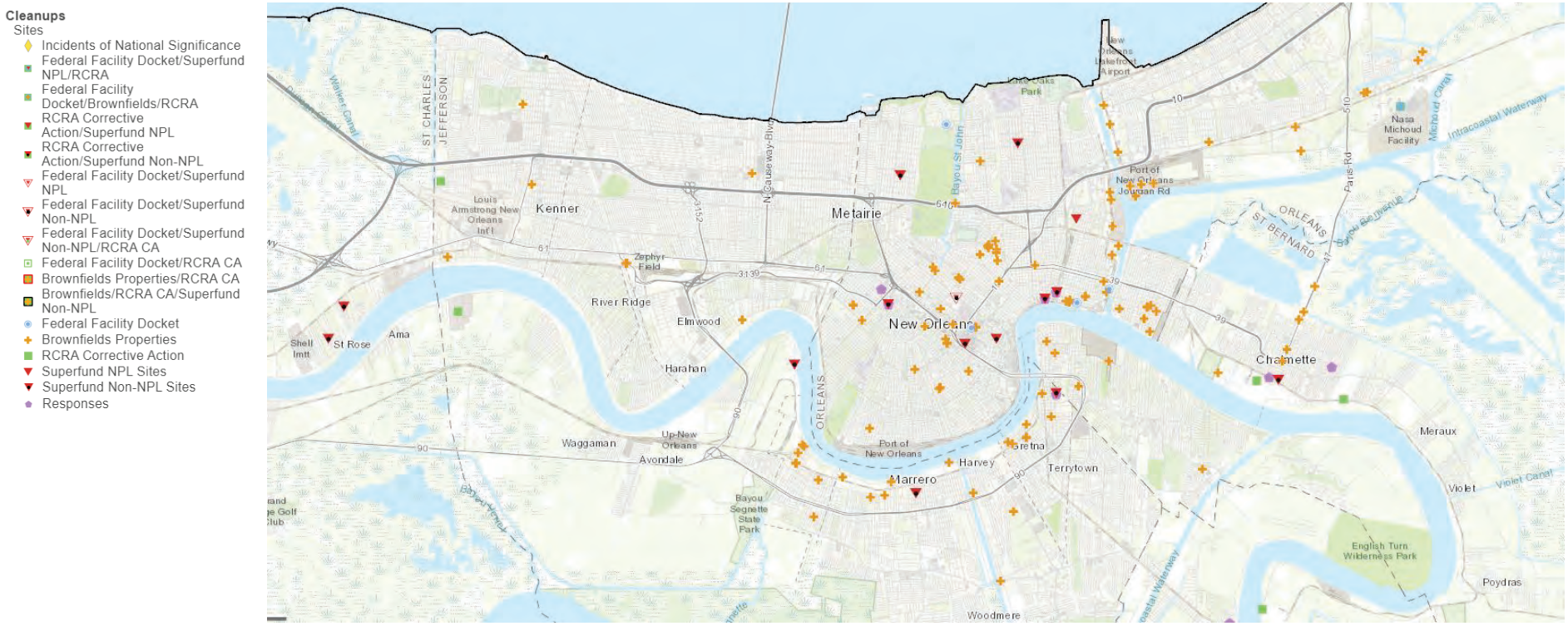
(EPA 2022)

Energy, Infrastructure, and Environmental Indicators

Energy and environmental indicators can be used in conjunction with demographic and socioeconomic indicators to begin to understand how infrastructure and environmental factors affect quality of life. Environmental indicators may show where traditional energy systems are susceptible and may benefit from a different approach.

- The Low-Income Energy Affordability Data (LEAD) tool indicates energy is affordable but may not be reflective of the situation with Community Lighthouse members. More investigation is needed in this area to determine what the goal of energy affordability means for members.
- Numerous brownfield sites may open up possibilities for funding and redevelopment.
- Certain areas face exposure to diesel particulate matter underscoring the importance of finding alternatives to diesel generators.

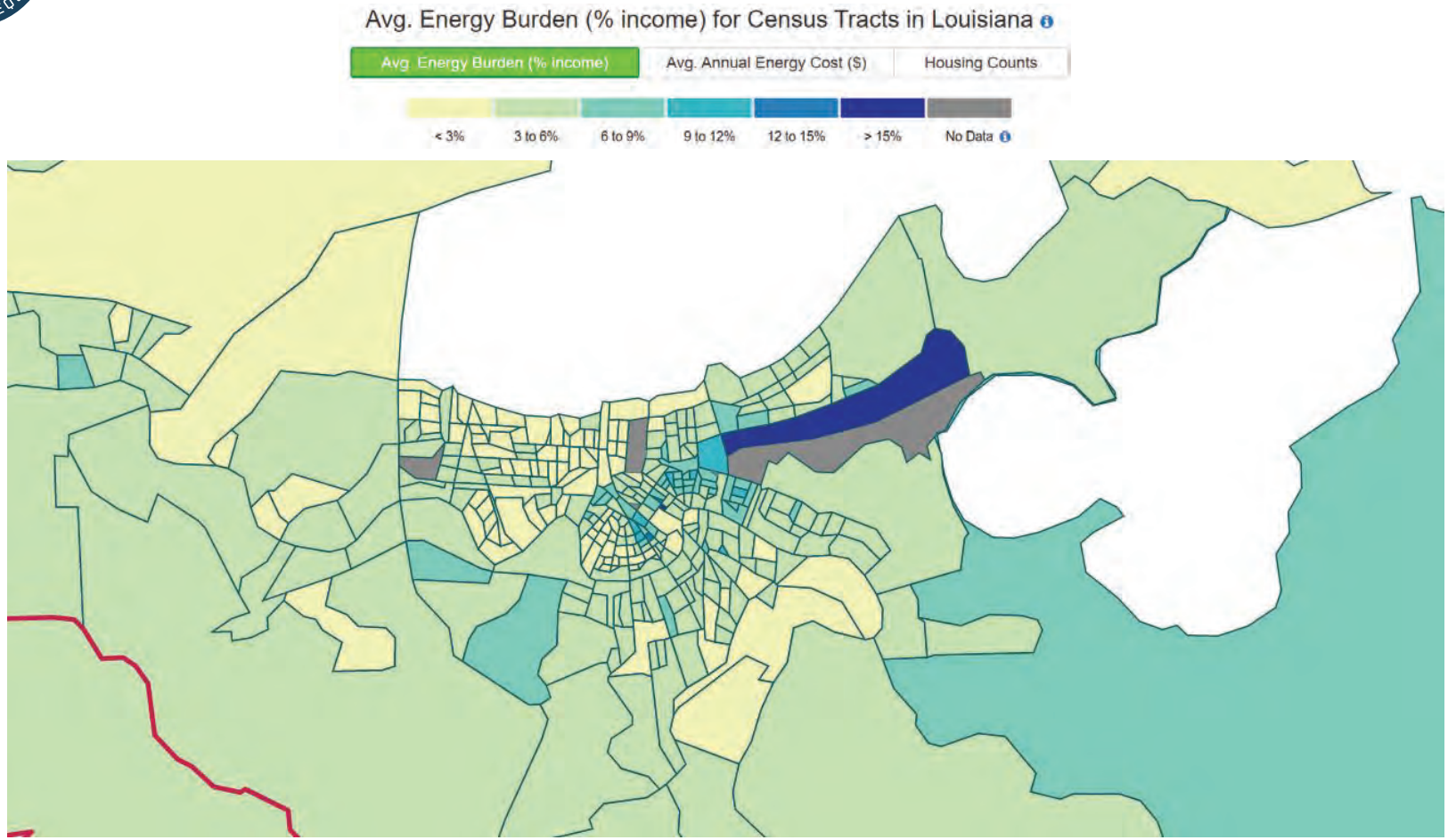
Environmental Protection Agency (EPA) Cleanups in My Community (CIMC)



(EPA 2022)

https://cimc.epa.gov/ords/cimc/f?p=101:10::::::

Low-Income Energy Affordability Data (LEAD) Tool

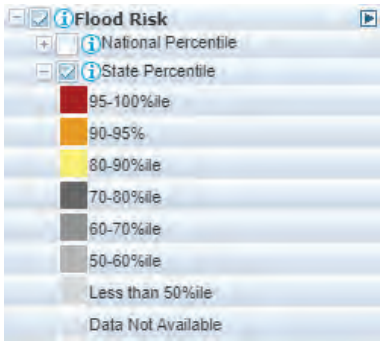


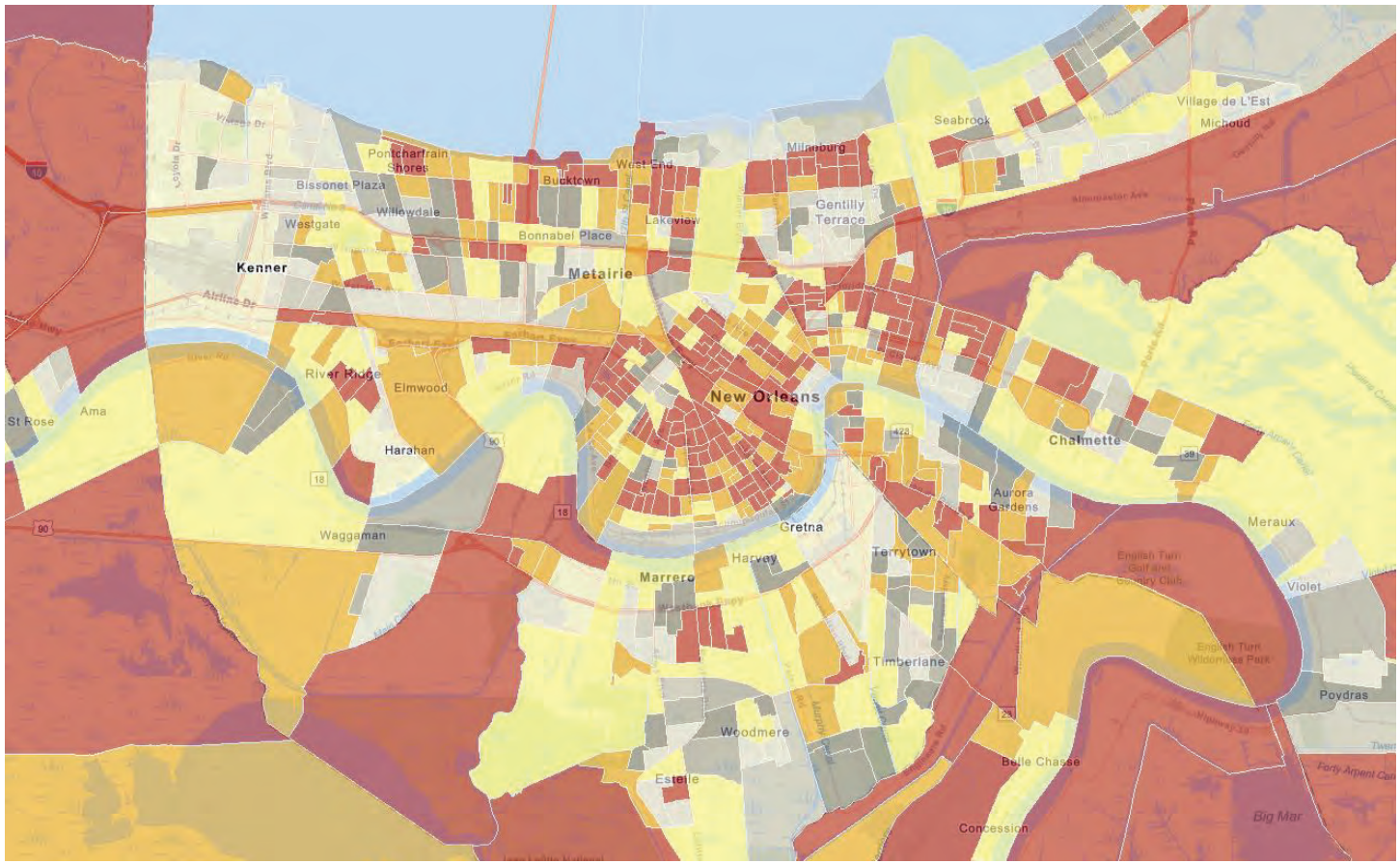
(EERE 2018)

Environmental Justice Screening and Mapping Tool (EJScreen) – New Orleans and Surrounding Areas are Medically Underserved

(EPA 2022)

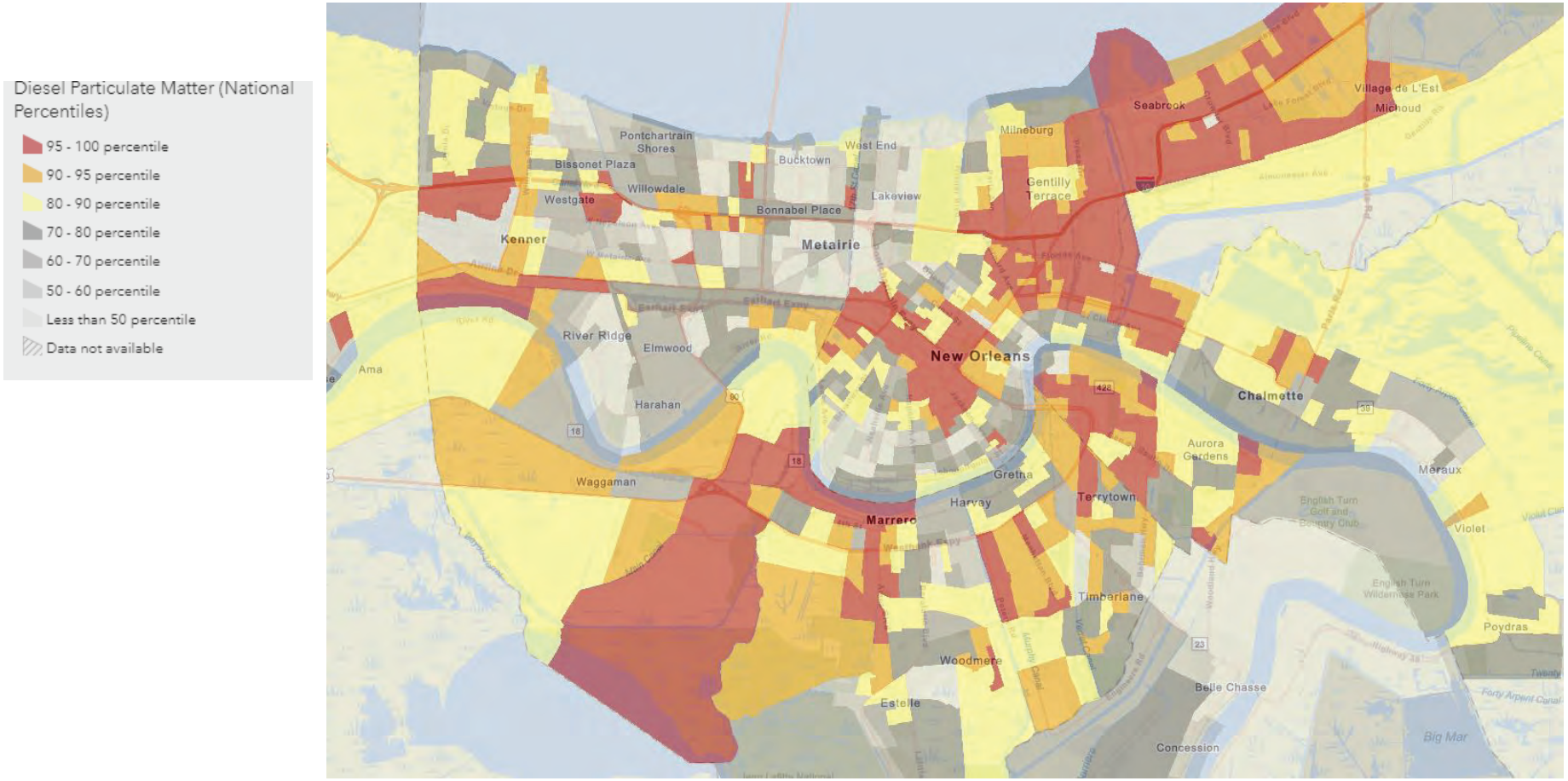
Environmental Justice Screening and Mapping Tool (EJScreen) – Many Census Tracts Face High Flood Risk





(EPA 2022)

Environmental Justice Screening and Mapping Tool (EJScreen) – High Diesel Particulate Matter Underscores Importance of Rethinking Diesel Generators



(EPA 2022)

2021 New Orleans Energy Reliability Lags U.S., Particularly During Major Events

System Average Interruption Duration Index (SAIDI)

- The total number of minutes of interruption the average customer experiences per year

	Entergy New Orleans, LLC (IEEE Standard)	U.S. Distribution System (IEEE Standard)
With Major Event Days	7,453.8 minutes per year	475.8 minutes per year
Without Major Event Days	143.0 minutes per year	125.7 minutes per year

System Average Interruption Frequency Index (SAIFI)

- The number of interruptions a customer experiences per year

	Entergy New Orleans, LLC (IEEE Standard)	U.S. Distribution System (IEEE Standard)
With Major Event Days	3.088 times per year	1.436 times per year
Without Major Event Days	1.386 times per year	1.039 times per year

Customer Average Interruption Duration Index (CAIDI)

- The average number of minutes required to restore service

	Entergy New Orleans, LLC (IEEE Standard)	U.S. Distribution System (IEEE Standard)
With Major Event Days	2,413.8 minutes per interruption	331.2 minutes per interruption
Without Major Event Days	171.4 minutes per interruption	120.9 minutes per interruption

(EIA 2022)

Composite Indicators

Composite indicators and data points attempt to show how multiple factors can compound to create greater need in one geographic area compared to other areas at the state and national levels.

Data points that make up these composite indicators may also be useful on their own and are presented in tables following each map.

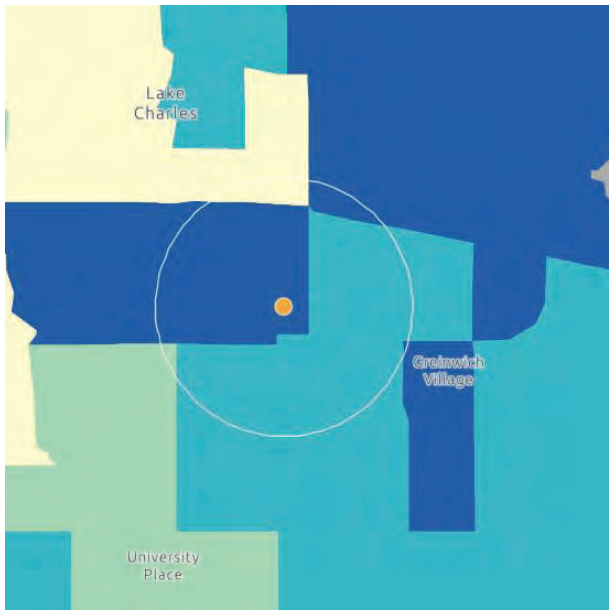
Centers for Disease Control and Prevention (CDC) Social Vulnerability Index 2018 by Census Tract

(CDC 2021)

Centers for Disease Control and Prevention (CDC) Social Vulnerability Index 2018 by Census Tract

Laplace

Lake Charles



(CDC 2021)

Indicators from the Centers for Disease Control and Prevention (CDC) Social Vulnerability Index 2018

- Detailed reports by census tract may be accessed at: https://www.arcgis.com/home/item.html?id=cbd68d9887574a10bc89ea4efe2b8087
- Report Indicators:

Housing/Transportation Indicators[a]	Socioeconomic Indicators[a]
Multi-Unit Structures	Below Poverty
Mobile Homes	Unemployed
Crowding	Median Income
No Vehicle	No High School Diploma
Group Quarters	
Household Composition/Disability Indicators[a]	**Minority Status & Language Indicators[a]**
Aged 65 or Older	Minority
Aged 17 or Younger	Speak English "Less than Well"
Civilian with a Disability	
Single-Parent Households	

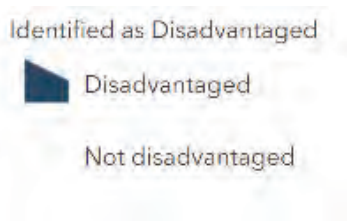
(a) Indicator definitions are available at https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/SVI_documentation_2018.html

(CDC 2021)

Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool Disadvantaged Communities by Census Tract

(ESRI 2022)

Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool Disadvantaged Communities by Census Tract



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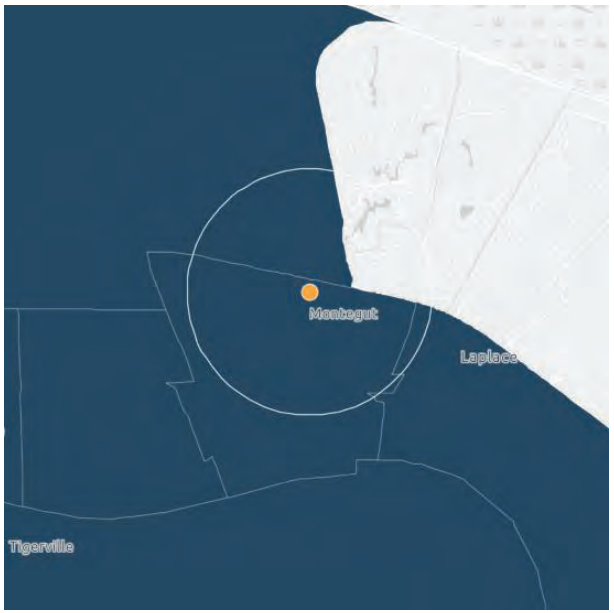


Lake Charles

(ESRI 2022)

Indicators from the Climate and Economic Justice Screening Tool

- Detailed reports by census tract may be accessed at: https://screeningtool.geoplatform.gov/en/#13.57/43.15664/-77.60792
- Report indicators:

Climate Change Indicators[a]	Clean Energy and Energy Efficiency Indicators[a]
Expected Agriculture Loss Rate	Energy Burden
Expected Building Loss Rate	PM2.5 in the air
Expected Population Loss Rate	
Clean Transit Indicators[a]	**Sustainable Housing Indicators[a]**
Diesel Particulate Matter Exposure	Housing Cost Burden
Traffic Proximity and Volume	Lead Paint
Legacy Pollution Indicators[a]	**Clean Water and Wastewater Infrastructure Indicators[a]**
Proximity to Hazardous Waste Facilities	Wastewater Discharge
Proximity to National Priorities List (NPL) Sites	
Proximity to Risk Management Plan (RMP) Facilities	
Health Burden Indicators[a]	**Workforce Development Indicators[a]**
Asthma	Linguistic Isolation
Diabetes	Low Median Income
Heart Disease	Unemployment
Low Life Expectancy	Poverty

(a) Indicator definitions are available at https://screeningtool.geoplatform.gov/en/methodology
(b) All indicator categories also include and Higher Education Non-Enrollment, except Workforce Development Indicators which include High School Degree Non-Attainment and Higher Education Non-Enrollment.

(CEQ 2022)

Department of Energy (DOE) Justice40 Disadvantaged Communities (DAC) by Census Tract

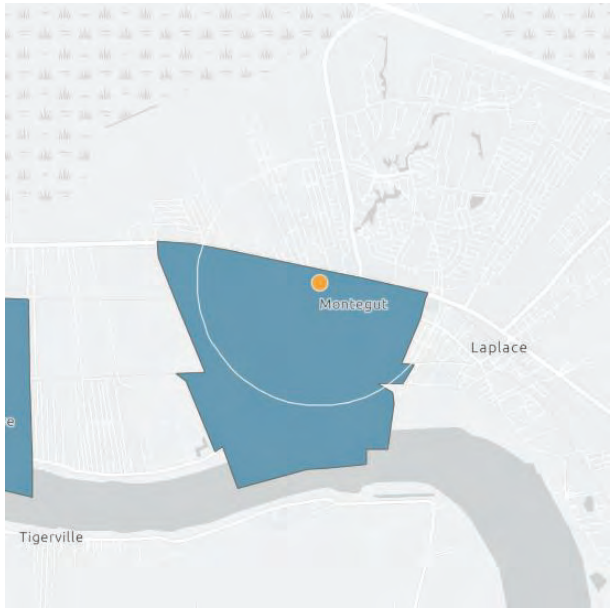
DAC

(mlodesGeo 2022)

Department of Energy (DOE) Justice40 Disadvantaged Communities (DAC) by Census Tract

DAC

Laplace



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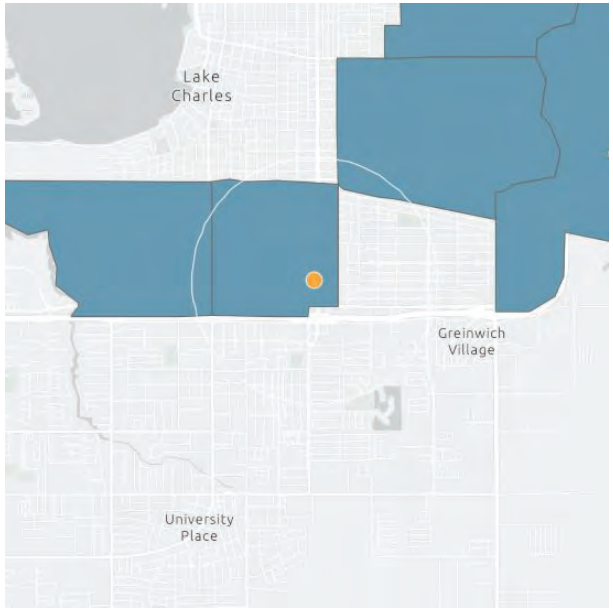

(mlodesGeo 2022)

Indicators from the DOE Disadvantaged Communities Reporter

- Detailed reports by census tract may be accessed at: https://energyjustice.egs.anl.gov/
- Report indicators:

Indicator[(a)]	Indicator[(a)]
Renters	Homelessness
Low Income Population	Outage Duration
Single Parent	Coal Employment
Disabled Population	Non-Grid-Connected Heating Fuel
Traffic Proximity	Mobile Home
No Vehicle	Housing Costs
Internet Access	Uninsured
TSDF Proximity	Fossil Energy Employment
RMP Proximity	Unemployed
Less HS Education	NPL Proximity
Low Income Population	Food Desert
Outage Events	Population 65 and Older
Linguistic Isolation	Cancer Risk
Incomplete Plumbing	PM2.5
Homes Built Before 1960	Energy Burden
Water Discharge	Transportation Costs
Diesel	Job Access
Climate Hazards Loss of Life Estimates	Parks

(a) Indicator definitions are available at https://energyjustice.egs.anl.gov/

Affordability Metrics

Category	Metric	Data Source(s)
Economic	Cost of energy per kWh (for member organizations)	Energy bills
	Avoidance of lost business revenue – Interruption cost estimate for businesses	Review any prior insurance claims (if made) for business closures and document avoidance of these losses when backup power is connected.
	Number of days doors closed due to power outage event	Interruption Cost Estimate Calculator
		Business records

Resilience Hub Metrics

Category	Metric	Data Source(s)
Health	Avoided adverse health outcomes attributable to disaster-induced outages Number of deaths Number of hospitalizations	Local news coverage Clinic/hospital records (may be accessible to healthcare facility only due to HIPAA, however, TNO could explore a data-sharing agreement)
	Population with potential to access resilience hubs Population within a given radius (e.g., 0.5 miles) Electricity-Dependent populations within a given radius (e.g., 0.5 miles)	Census data for more densely populated areas Estimate based on number of housing units, walking neighborhood https://empowerprogram.hhs.gov/empowermap Partnership with hospitals/data sharing agreement
	Number of people accessing resilience hubs once operational	Track/record resilience hub visits (paper and clipboard) during an event, transcribe to Excel (or other software) for tracking over time. Option to track specific services used such as warming/cooling, charging devices, first aid, etc.
	Ability to maintain refrigeration of food and medicine (particularly if resilience hub will supply meals or store medicine and/or supplies requiring refrigeration)	1. Are food refrigerators or critical medical refrigerators located at resilience hubs? (yes/no) 2. Are these connected to backup power? (yes/no) 3. Do community members have access to these to store their own critical supplies during an outage or can the facility distribute emergency supplies from their own stock? 4. Option to estimate monetary value of food/medicine. Review any prior insurance claims (if made) for food/medicine spoilage and document avoidance of these losses when backup power is connected.

Resilience Hub Metrics (continued)

Category	Metric	Data Source(s)
Environment/Climate	Replacement (or avoidance) of gas/diesel generators (reduction of localized noise and air pollution) Number of generators	Local survey Neighborhood observations on foot (great opportunity for student involvement) Hyper-local air quality sensors (e.g., Purple Air)

Workforce Metrics

Category	Metric	Data Source(s)
Workforce Development	Number and type of trainings attended (e.g., webinars outside of a formal training program) New job training/apprenticeship programs developed specific to clean energy and storage (most likely through a partner such as a college or trade school) How many participants are in these programs? Did participants find a job? Were participants able to increase their wage income? Number and type of direct jobs created (most likely operations and maintenance)	Trainee/participant surveys Program records
Community Partnerships	New partnerships developed with workforce development organizations and educational institutions (e.g., community colleges, Louisiana Green Corps). These may help support operations and maintenance when a full-time position is not warranted or develop a talent pipeline.	Number of partners in clean energy space.
Future Workforce	Educational opportunities Number of students educated on clean energy systems (for systems located at schools or site visits) Student engagement in conducting observational studies of neighborhoods (see climate/environment metrics), volunteering with resilience hubs, documenting local air quality data, or conducting door-to-door surveys to better understand residents' experience with energy systems. Number and types of opportunities open to students to learn and get involved. Number of students involved.	Program records
Hiring Practices	Hiring agreements with installers (apprenticeships, contracts with local businesses, direct hires) Percentage of local employees hired to rebuild (vs. external contractors) Hiring agreements with rebuilding contractors	Program records Funder (e.g., FEMA) and local government records Are hiring agreements in place with local workforce utilization requirements? (yes/no)

Forecast

- Resilience hubs will support health and safety, reducing adverse health outcomes during power outages and disasters.
  - People in surrounding neighborhood will be able to charge devices and medical equipment.
  - Emergency communications systems will remain operational.
  - First aid and refrigeration of medications may be offered at select locations.
  - Meals may be offered at select locations.
  - Reduced accidents from fossil-fuel generators including improvement of local air quality and noise pollution.
- Pilot projects will demonstrate the Lighthouse concept and be replicable.
- Social benefits will be recognized.
  - Skills development, apprenticeships, and job training through partnerships
  - Direct employment opportunities installing, operating, and maintaining equipment
  - Expertise may be marketed outside New Orleans, opening up opportunities in other geographic regions.
  - Increased employment opportunities and wages will improve outcomes in other areas such as lowering residential energy burden, improving crime rates, and freeing up cash flow for people to improve their housing situations.

Challenges and Risks

- Components are currently under a long lead time.
- For sites located in residential areas, visual impact should be considered. Residential neighbors could experience a negative visual impact from installed equipment and may not be supportive of the project. This can be mitigated through early engagement and creative solutions such as a mural on the battery container. See this example: https://www.exeloncorp.com/grid/new-mural-tells-the-story-of-bronzeville.
- People holding different views and beliefs from what a host church preaches (many Lighthouses and the overall effort are affiliated with religious institutions and leaders) may be uncomfortable receiving services from their neighborhood Lighthouse or entering the building. Consider how messaging and other tools might lower this barrier for people of diverse backgrounds and beliefs so it feels welcoming to all. Inclusive messaging can be a strong ally efforts to serve as many people as possible, while respecting their belief system and respecting wherever they may be religiously and spiritually. Those who might hesitate because of religious affiliation may feel more secure in receiving services from their Lighthouse knowing that there are no ulterior motives or “strings attached.”

Recommendations

- With 85 sites under consideration for development, community planners and project managers should regularly revisit tools to plan for equitable project outcomes (Information Mapping Canvas) used in this TA. Lessons learned from pilot projects can be incorporated through this process.
- Publicly available data may be too high-level to measure neighborhood impacts, particularly when Lighthouses are focused on serving the area within a ½ mile radius. Ground truthing public data through neighborhood walks and documenting how people interact with their environment, infrastructure conditions, and more can help each Lighthouse tailor their response to best serve the surrounding area. This is a great way to engage students.
- Develop a plan for public input and engagement. A town hall-style meeting for community members to receive information and provide feedback, or a local survey would be useful to quantify metrics and make project decisions.

Recommendations

- Actions for additive project actions to amplify equity benefits
  - Consider how resilience centers offer community benefits even when the power is on. Examples may include community-building activities such as hosting neighborhood potlucks (a sense of community is shown to improve health and resilience) or offering information about emergency preparedness.
  - Pair community messaging about clean energy projects with resources and information about home weatherization and hazard mitigation (many homes in this area have lead paint).

Resources

- Information Mapping Canvas (project planning steps for equitable outcomes)
  - https://app.box.com/s/osjbdcr0ib620s0r4mncqcs9jqejl40w
- Online data tools listed in references section
- Step-by-step guide to creating an interactive map in Power BI
  - https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-32735.pdf

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EXHIBITS

EXHIBIT A: Map of proposed resilience hubs

EXHIBIT B: List of hub locations with site details

EXHIBIT C: Project budget

EXHIBIT D: Rate impact analysis (PNNL)

EXHIBIT E: Outage-related deaths after Hurricane Ida (Orleans Parish coroner)

EXHIBIT F: Power-dependent medical device usage by zip code

EXHIBIT G: Sample solar + storage plansets at resilience hubs

EXHIBIT H: Press coverage

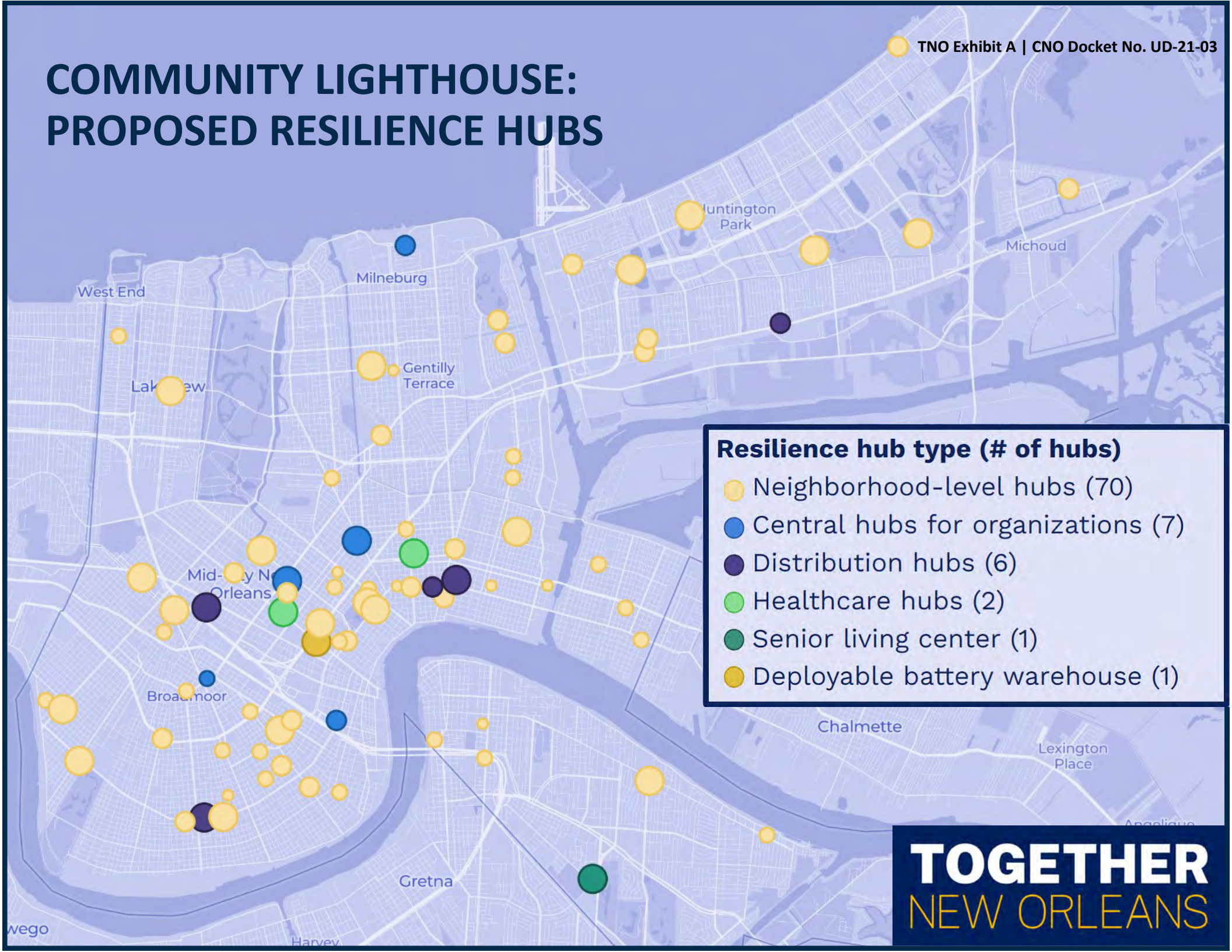
TOGETHER NEW ORLEANS

EXHIBIT A:

MAP OF PROPOSED RESILIENCE HUBS

TOGETHER NEW ORLEANS

COMMUNITY LIGHTHOUSE: PROPOSED RESILIENCE HUBS



TOGETHER NEW ORLEANS

EXHIBIT B:

LIST OF HUB LOCATIONS WITH SITE DETAILS

TOGETHER NEW ORLEANS

PROPOSED RESILIENCE HUBS

This analysis summarizes TNO's proposal for solar + storage resilience hubs, including: I) its benefits vs. costs for ratepayers, II) its energy and climate-impact, III) an equity analysis and IV) a breakdown of its projected costs, overall and by hub location.

I) COST & BENEFIT TO RATEPAYERS

II) ENERGY & CLIMATE IMPACT

SITE ID#	RESILIENCE HUB LOCATION *subject to formal site evaluation & host site approval process*	HUB TYPE	CAPACITY *1 = larger*	PROJECT ADDRESS	ZIP CODE	PROJECT COSTS	PROJECT BENEFITS	FUNDS RAISED INDEPENDENTLY	FUNDS REQUESTED IN DOCKET	RATEPAYER BENEFIT-TO-COST RATIO	SOLAR CAPACITY	SOLAR OUTPUT	CO2 EMISSIONS IMPACT	BATTERY STORAGE	DEPLOYABLE BATTERIES
						$35,005,938 *construction & 20-yr lifetime maintenance*	**$148,308,789** *ratepayer benefit per FEMA Benefit-Cost Analysis*	**$23,681,262** *68% of costs*	**$11,324,676** *32% of costs*	**$13.10** *in benefit for every $1 ratepayer funds*	**6,099** *kWdc solar capacity*	**9,148,500** *kWh per year*	**9,358,936** *lb reduction in CO2 per year*	**9,150** *kWh battery storage*	**1,000** *# portable 1kWh batteries*
1	St Paul The Apostle Church	Neighborhood	**2**	6828 Chef Menteur Hwy	**70126**	$284,014	$1,804,236	$192,133	$91,881	**19.6**	50	75,000	**76,725**	74	
2	First Zion Baptist Church	Neighborhood	**3**	7201 Olive St	**70125**	$134,977	$1,262,979	$91,311	$43,666	**28.9**	24	36,000	**36,828**	35	
3	St Thomas Baptist Church	Neighborhood	**3**	2926 Jackson Ave	**70125**	$191,161	$1,262,979	$129,319	$61,842	**20.4**	34	51,000	**52,173**	50	
4	Backatown Coffee Parlour	Neighborhood	**3**	301 Basin St Suite 1	**70112**	$141,304	$1,262,979	$95,591	$45,713	**27.6**	25	37,500	**38,363**	37	
5	Rebuilding Together New Orleans	Distribution	**1**	2801 Marais St	**70117**	$721,678	$2,525,942	$488,210	$233,468	**10.8**	127	190,500	**194,882**	189	
6	Abundant Life Tabernacle	Neighborhood	**2**	1701 Franklin Ave	**70117**	$241,075	$1,804,236	$163,085	$77,990	**23.1**	42	63,000	**64,449**	63	
7	Sisters of the Holy Family	Neighborhood	**2**	6901 Chef Menteur Hwy	**70126**	$380,186	$1,804,236	$257,193	$122,993	**14.7**	67	100,500	**102,812**	100	
8	Union Bethel AME	Neighborhood	**2**	2321 Thalia St	**70113**	$304,880	$1,804,236	$206,249	$98,631	**18.3**	53	79,500	**81,329**	80	
9	Together New Orleans	Infrastructure	**3**	2721 S Broad St.	**70125**	$160,106	$2,165,104	$108,311	$51,795	**41.8**	17	25,500	**26,087**	52	
10	New Home Full Gospel Cathedral	Neighborhood	**2**	13800 Hayne Blvd	**70128**	$327,938	$1,804,236	$221,848	$106,090	**17.0**	57	85,500	**87,467**	86	
11	Greater St Stephen Fgbc	Neighborhood	**1**	5600 Read Blvd	**70127**	$803,170	$1,984,685	$543,339	$259,831	**7.6**	141	211,500	**216,365**	211	
12	New Hope Baptist Church	Neighborhood	**1**	1807 Rev John Raphael Jr Way	**70113**	$421,888	$1,984,685	$285,404	$136,484	**14.5**	74	111,000	**113,553**	111	
13	Berean Presbyterian Community Ctr	Neighborhood	**4**	2128 Felicity St	**70113**	$71,158	$902,110	$48,138	$23,020	**39.2**	6	9,000	**9,207**	13	
14	New Zion Baptist Church	Neighborhood	**3**	2319 3rd St	**70113**	$114,731	$1,262,979	$77,615	$37,116	**34.0**	20	30,000	**30,690**	30	
15	City of Love Church	Neighborhood	**1**	3810 Leonidas St	**70118**	$273,840	$1,984,685	$185,251	$88,589	**22.4**	86	129,000	**131,967**	220	
16	Pleasant Valley Missionary Chr	Neighborhood	**2**	5919 Morrison Rd	**70126**	$268,029	$1,804,236	$181,320	$86,709	**20.8**	49	73,500	**75,191**	80	
17	Mary Queen Of Vietnam Church	Neighborhood	**2**	14001 Dwyer Blvd	**70129**	$341,689	$1,804,236	$231,150	$110,539	**16.3**	60	90,000	**92,070**	90	
18	Fischer Community Church	Neighborhood	**3**	1737 L B Landry Ave	**70114**	$208,146	$1,262,979	$140,809	$67,337	**18.8**	36	54,000	**55,242**	55	
19	Trinity Christian Community	Neighborhood	**4**	3908 Joliet St	**70118**	$236,008	$902,110	$159,658	$76,350	**11.8**	40	60,000	**61,380**	56	
20	Household of Faith Church	Infrastructure	**1**	9300 I-10 Service Rd	**70127**	$873,584	$2,886,825	$590,973	$282,611	**10.2**	218	327,000	**334,521**	220	
21	Giving Hope	Distribution	**2**	13000 I-10 Service Rd	**70128**	$273,840	$2,165,104	$185,251	$88,589	**24.4**	52	78,000	**79,794**	78	
22	The City Church	Neighborhood	**1**	13123 I-10 Service Rd	**70128**	$1,743,455	$1,984,685	$1,179,435	$564,020	**3.5**	306	459,000	**469,557**	457	
23	Franklin Avenue Baptist Church	Neighborhood	**1**	8282 I-10 Service Rd.	**70126**	$1,771,632	$1,984,685	$1,198,496	$573,136	**3.5**	311	466,500	**477,230**	465	
24	Asbury United Methodist Church	Neighborhood	**3**	2725 Ernest St	**70131**	$199,851	$1,262,979	$135,198	$64,653	**19.5**	35	52,500	**53,708**	52	
25	Greater Liberty Baptist Church	Neighborhood	**4**	1230 Desire St	**70117**	$73,113	$902,110	$49,460	$23,653	**38.1**	13	19,500	**19,949**	19	
26	Living Water Baptist Church	Neighborhood	**3**	2104 Elysian Fields Ave	**70117**	$215,232	$1,262,979	$145,603	$69,629	**18.1**	38	57,000	**58,311**	56	
27	Central Missionary Baptist Chr	Neighborhood	**3**	1438 Alabo St	**70117**	$140,651	$1,262,979	$95,149	$45,502	**27.8**	26	39,000	**39,897**	52	
28	Goodwill Industries of Southeast LA	Distribution	**1**	3400 Tulane Ave	**70119**	$1,761,761	$2,525,942	$1,191,818	$569,943	**4.4**	309	463,500	**474,161**	462	
29	Mount Carmel Baptist Church	Neighborhood	**3**	2035 Forstall Street	**70117**	$177,298	$1,262,979	$119,941	$57,357	**22.0**	31	46,500	**47,570**	47	
30	New Israel Baptist Church	Neighborhood	**3**	6322 Saint Claude Ave	**70117**	$151,793	$1,262,979	$102,687	$49,106	**25.7**	27	40,500	**41,432**	40	
31	Islamic Center Of New Orleans	Neighborhood	**4**	1911 Saint Claude Ave	**70116**	$95,271	$902,110	$64,450	$30,821	**29.3**	17	25,500	**26,087**	25	
32	Corpus Christi Catholic Church	Infrastructure	**1**	2022 Saint Bernard Ave	**70116**	$695,547	$2,886,825	$470,532	$225,015	**12.8**	125	187,500	**191,813**	220	
33	CrescentCare Community Health Ctr	Healthcare	**1**	2401 Canal St	**70119**	$619,095	$2,165,104	$418,813	$200,282	**10.8**	109	163,500	**167,261**	162	
34	Christian Unity Baptist Church	Neighborhood	**1**	1700 Conti St	**70112**	$545,195	$1,984,685	$368,820	$176,375	**11.3**	96	144,000	**147,312**	143	
35	Church of God El Milagro	Neighborhood	**2**	440 N Dorgenois St	**70119**	$239,022	$1,804,236	$161,697	$77,325	**23.3**	42	63,000	**64,449**	63	
36	Dillard University	Neighborhood	**2**	2601 Gentilly Blvd	**70122**	$342,195	$1,804,236	$231,492	$110,703	**16.3**	60	90,000	**92,070**	90	
37	St Anna Episcopal Church	Neighborhood	**3**	1313 Esplanade Ave	**70116**	$159,189	$1,262,979	$107,690	$51,499	**24.5**	28	42,000	**42,966**	42	
38	Iglesia Del Dios Vivo	Neighborhood	**4**	2140 Mirabeau Ave	**70122**	$95,215	$902,110	$64,412	$30,803	**29.3**	17	25,500	**26,087**	25	
39	St Peter Claver Church	Neighborhood	**3**	1923 St Philip St	**70116**	$140,686	$1,262,979	$95,173	$45,513	**27.7**	25	37,500	**38,363**	37	
40	Masjidur-Rahim	Neighborhood	**4**	1238 N Johnson St.	**70116**	$64,058	$902,110	$43,335	$20,723	**43.5**	11	16,500	**16,880**	17	
41	SBP / Global Green	Infrastructure	**1**	2645 Toulouse St	**70119**	$534,397	$2,886,825	$361,516	$172,881	**16.7**	94	141,000	**144,243**	140	
42	St. Maria Goretti Catholic Church	Neighborhood	**1**	7300 Crowder	**70127**	$445,875	$1,984,685	$301,631	$144,244	**13.8**	78	117,000	**119,691**	117	
43	Touro Woldenberg Village	Senior services	**1**	3701 Behrman Pl,	**70114**	$432,264	$1,984,685	$292,423	$139,841	**14.2**	76	114,000	**116,622**	113	

PROPOSED RESILIENCE HUBS

This analysis summarizes TNO's proposal for solar + storage resilience hubs, including: I) its benefits vs. costs for ratepayers, II) its energy and climate-impact, III) an equity analysis and IV) a breakdown of its projected costs, overall and by hub location.

I) COST & BENEFIT TO RATEPAYERS

II) ENERGY & CLIMATE IMPACT

SITE ID#	RESILIENCE HUB LOCATION *subject to formal site evaluation & host site approval process*	HUB TYPE	CAPACITY *1 = larger*	PROJECT ADDRESS	ZIP CODE	PROJECT COSTS	PROJECT BENEFITS	FUNDS RAISED INDEPENDENTLY	FUNDS REQUESTED IN DOCKET	RATEPAYER BENEFIT-TO-COST RATIO	SOLAR CAPACITY	SOLAR OUTPUT	CO2 EMISSIONS IMPACT	BATTERY STORAGE	DEPLOYABLE BATTERIES
						$35,005,938 *construction & 20-yr lifetime maintenance*	**$148,308,789** *ratepayer benefit per FEMA Benefit-Cost Analysis*	**$23,681,262** *68% of costs*	**$11,324,676** *32% of costs*	**$13.10** *in benefit for every $1 ratepayer funds*	**6,099** *kWdc solar capacity*	**9,148,500** *kWh per year*	**9,358,936** *lb reduction in CO2 per year*	**9,150** *kWh battery storage*	**1,000** *# portable 1kWh batteries*
44	First Grace United Methodist	Neighborhood	**2**	3401 Canal St	**70119**	$413,903	$1,804,236	$280,002	$133,901	**13.5**	103	154,500	**158,054**	80	
45	Sixth Baptist Church	Neighborhood	**3**	928 Felicity St	**70130**	$130,478	$1,262,979	$88,267	$42,211	**29.9**	23	34,500	**35,294**	34	
46	Xavier University	Neighborhood	**1**	1 Drexel Dr.	**70125**	$833,934	$2,165,104	$564,150	$269,784	**8.0**	146	219,000	**224,037**	219	
47	St Gabriel The Archangel	Neighborhood	**2**	4700 Pineda St	**70126**	$327,770	$1,984,685	$221,734	$106,036	**18.7**	57	85,500	**87,467**	86	
48	CrescentCare Community Health Ctr	Healthcare	**1**	1631 Elysian Fields Ave.	**70117**	$806,459	$1,804,236	$545,564	$260,895	**6.9**	147	220,500	**225,572**	220	
49	St Mary Of The Angels Church	Neighborhood	**1**	3501 N Miro St	**70117**	$655,258	$2,165,104	$443,277	$211,981	**10.2**	115	172,500	**176,468**	172	
50	Trinity Episcopal Church	Neighborhood	**2**	1329 Jackson Ave	**70130**	$309,041	$1,984,685	$209,064	$99,977	**19.9**	54	81,000	**82,863**	81	
51	Bethlehem Lutheran Church	Neighborhood	**3**	1823 Washington Ave	**70113**	$215,846	$1,804,236	$146,018	$69,828	**25.8**	25	37,500	**38,363**	52	
52	Camp Restore	Distribution	**2**	9301 Chef Menteur Hwy	**70127**	$287,586	$1,262,979	$194,550	$93,036	**13.6**	50	75,000	**76,725**	75	
53	All Saints Church	Neighborhood	**3**	1441 Teche St	**70114**	$127,919	$1,262,979	$86,536	$41,383	**30.5**	22	33,000	**33,759**	34	
54	St Augustine Church	Neighborhood	**1**	1210 Governor Nicholls St	**70116**	$524,414	$1,984,685	$354,762	$169,652	**11.7**	92	138,000	**141,174**	138	
55	Bethany United Methodist Church	Neighborhood	**2**	4533 Mendez St	**70126**	$286,826	$1,804,236	$194,036	$92,790	**19.4**	50	75,000	**76,725**	75	
56	Holy Faith Temple Baptist Chr	Neighborhood	**4**	1325 Governor Nicholls St	**70116**	$81,099	$902,110	$54,863	$26,236	**34.4**	14	21,000	**21,483**	21	
57	Beacon Light Intl Bapt Cthdrl	Neighborhood	**1**	1937 Mirabeau Ave	**70122**	$705,818	$1,984,685	$477,481	$228,337	**8.7**	124	186,000	**190,278**	185	
58	St. Raymond St Leo Catholic Church	Neighborhood	**3**	2916 Paris Ave	**70119**	$205,222	$1,262,979	$138,831	$66,391	**19.0**	36	54,000	**55,242**	54	
59	Mount Olive Baptist Church	Neighborhood	**4**	1124 Leboeuf St	**70114**	$85,514	$902,110	$57,850	$27,664	**32.6**	15	22,500	**23,018**	22	
60	Calvary Tabernacle AME	Neighborhood	**4**	3629 Dryades St.	**70115**	$102,583	$902,110	$69,397	$33,186	**27.2**	18	27,000	**27,621**	27	
61	Mt Zion United Methodist Church	Neighborhood	**3**	2722 Louisiana Ave	**70115**	$159,582	$1,262,979	$107,956	$51,626	**24.5**	28	42,000	**42,966**	42	
62	Sankofa CDC	Neighborhood	**4**	5200 Daupline St	**70117**	$73,113	$902,110	$49,460	$23,653	**38.1**	13	19,500	**19,949**	19	
63	Greater Carver Missionary Baptist	Neighborhood	**3**	3343 Metropolitan St	**70126**	$223,612	$1,262,979	$151,272	$72,340	**17.5**	39	58,500	**59,846**	59	
64	House Of Prayer & Refuge	Neighborhood	**3**	3015 Louisa St	**70126**	$151,849	$1,262,979	$102,725	$49,124	**25.7**	27	40,500	**41,432**	40	
65	Groundwork NOLA	Distribution	**2**	2372 St Claude Ave	**70119**	$292,282	$2,165,104	$197,727	$94,555	**22.9**	51	76,500	**78,260**	77	
66	Our Lady Of Guadalupe Church	Neighborhood	**2**	411 N Rampart St	**70112**	$379,989	$1,804,236	$257,060	$122,929	**14.7**	67	100,500	**102,812**	100	
67	Deployable Battery Charging Hub	Battery Hub	**1**	900 St Andrew St	**70130**	$2,314,272	$3,247,158	$1,565,588	$748,684	**4.3**	173	259,500	**265,469**	258	
68	Greater New Orleans Foundation	Infrastructure	**2**	919 St. Charles Ave	**70130**	$254,123	$2,525,942	$171,912	$82,211	**30.7**	45	67,500	**69,053**	67	
69	Blessed Sacrament / St Joan Of Arc	Neighborhood	**3**	8321 Burthe St	**70118**	$132,165	$1,262,979	$89,409	$42,756	**29.5**	23	34,500	**35,294**	35	
70	First Street Peck Wesley	Neighborhood	**2**	2309 Dryades St	**70113**	$352,094	$1,804,236	$238,189	$113,905	**15.8**	62	93,000	**95,139**	92	
71	Connect Church of Algiers	Neighborhood	**1**	1110 Kabel Dr.	**70131**	$780,787	$1,984,685	$528,197	$252,590	**7.9**	137	205,500	**210,227**	205	
72	First Unitarian Universalist	Neighborhood	**2**	5212 S Claiborne Ave	**70125**	$273,840	$1,804,236	$185,251	$88,589	**20.4**	78	117,000	**119,691**	80	
73	Broadmoor Community Church	Neighborhood	**3**	2021 S Dupre St	**70125**	$222,962	$1,262,979	$150,832	$72,130	**17.5**	30	45,000	**46,035**	52	
74	Bibleway Baptist Church	Neighborhood	**1**	3235 Orleans Ave	**70119**	$414,717	$1,984,685	$280,553	$134,164	**14.8**	73	109,500	**112,019**	109	
75	St Paul Lutheran	Neighborhood	**2**	2624 Burgundy St	**70117**	$220,590	$1,804,236	$149,228	$71,362	**25.3**	52	78,000	**79,794**	80	
76	St. Andrew's Episcopal Church	Neighborhood	**1**	1031 S Carrollton Ave	**70118**	$448,405	$1,984,685	$303,343	$145,062	**13.7**	79	118,500	**121,226**	118	
77	Community Church Unitarian	Neighborhood	**3**	6690 Fleur DE Lis Dr	**70124**	$171,965	$1,262,979	$116,333	$55,632	**22.7**	10	15,000	**15,345**	52	
78	St George's Episcopal Church	Neighborhood	**2**	4600 Saint Charles Ave	**70115**	$250,242	$1,804,236	$169,287	$80,955	**22.3**	44	66,000	**67,518**	66	
79	Touro Synagogue	Distribution	**1**	4238 St Charles Ave	**70115**	$865,541	$2,525,942	$585,532	$280,009	**9.0**	152	228,000	**233,244**	227	
80	Rayne Memorial United Mthdst	Neighborhood	**1**	3900 Saint Charles Ave	**70115**	$655,174	$1,984,685	$443,220	$211,954	**9.4**	115	172,500	**176,468**	172	
81	New Orleans Baptist Association	Infrastructure	**2**	2222 Lakeshore Dr	**70122**	$312,163	$2,525,942	$211,176	$100,987	**25.0**	55	82,500	**84,398**	82	
82	Cornerstone United Mthdst Chr	Neighborhood	**1**	5276 Bullard Ave	**70128**	$579,322	$1,984,685	$391,907	$187,415	**10.6**	79	118,500	**121,226**	220	
83	Baldwin & Co	Neighborhood	**2**	1030 Elysian Fields Ave.	**70117**	$239,022	$1,804,236	$161,697	$77,325	**23.3**	42	63,000	**64,449**	63	
84	St. Mark's United Methodist Church	Neighborhood	**1**	1130 N Rampart St	**70116**	$385,247	$1,984,685	$260,617	$124,630	**15.9**	68	102,000	**104,346**	101	
85	St Charles Avenue Baptist Chr	Neighborhood	**1**	7100 Saint Charles Ave	**70118**	$629,725	$1,984,685	$426,004	$203,721	**9.7**	110	165,000	**168,795**	165	
86	St Paul's Episcopal Church	Neighborhood	**1**	6249 Canal Blvd	**70124**	$707,288	$1,984,685	$478,475	$228,813	**8.7**	204	306,000	**313,038**	220	

PROPOSED RESILIENCE HUBS

This analysis summarizes TNO's proposal for solar + storage resilience hubs, including: I) its benefits vs. costs for ratepayers, II) its energy and climate-impact, III) an equity analysis and IV) a breakdown of its projected costs, overall and by hub location.

SITE ID#	RESILIENCE HUB LOCATION *subject to formal site evaluation & host site approval process*	HUB TYPE	CAPACITY *1 = larger*	PROJECT ADDRESS	ZIP CODE
1	St Paul The Apostle Church	Neighborhood	**2**	6828 Chef Menteur Hwy	**70126**
2	First Zion Baptist Church	Neighborhood	**3**	7201 Olive St	**70125**
3	St Thomas Baptist Church	Neighborhood	**3**	2926 Jackson Ave	**70125**
4	Backatown Coffee Parlour	Neighborhood	**3**	301 Basin St Suite 1	**70112**
5	Rebuilding Together New Orleans	Distribution	**1**	2801 Marais St	**70117**
6	Abundant Life Tabernacle	Neighborhood	**2**	1701 Franklin Ave	**70117**
7	Sisters of the Holy Family	Neighborhood	**2**	6901 Chef Menteur Hwy	**70126**
8	Union Bethel AME	Neighborhood	**2**	2321 Thalia St	**70113**
9	Together New Orleans	Infrastructure	**3**	2721 S Broad St.	**70125**
10	New Home Full Gospel Cathedral	Neighborhood	**2**	13800 Hayne Blvd	**70128**
11	Greater St Stephen Fgbc	Neighborhood	**1**	5600 Read Blvd	**70127**
12	New Hope Baptist Church	Neighborhood	**1**	1807 Rev John Raphael Jr Way	**70113**
13	Berean Presbyterian Community Ctr	Neighborhood	**4**	2128 Felicity St	**70113**
14	New Zion Baptist Church	Neighborhood	**3**	2319 3rd St	**70113**
15	City of Love Church	Neighborhood	**1**	3810 Leonidas St	**70118**
16	Pleasant Valley Missionary Chr	Neighborhood	**2**	5919 Morrison Rd	**70126**
17	Mary Queen Of Vietnam Church	Neighborhood	**2**	14001 Dwyer Blvd	**70129**
18	Fischer Community Church	Neighborhood	**3**	1737 L B Landry Ave	**70114**
19	Trinity Christian Community	Neighborhood	**4**	3908 Joliet St	**70118**
20	Household of Faith Church	Infrastructure	**1**	9300 I-10 Service Rd	**70127**
21	Giving Hope	Distribution	**2**	13000 I-10 Service Rd	**70128**
22	The City Church	Neighborhood	**1**	13123 I-10 Service Rd	**70128**
23	Franklin Avenue Baptist Church	Neighborhood	**1**	8282 I-10 Service Rd.	**70126**
24	Asbury United Methodist Church	Neighborhood	**3**	2725 Ernest St	**70131**
25	Greater Liberty Baptist Church	Neighborhood	**4**	1230 Desire St	**70117**
26	Living Water Baptist Church	Neighborhood	**3**	2104 Elysian Fields Ave	**70117**
27	Central Missionary Baptist Chr	Neighborhood	**3**	1438 Alabo St	**70117**
28	Goodwill Industries of Southeast LA	Distribution	**1**	3400 Tulane Ave	**70119**
29	Mount Carmel Baptist Church	Neighborhood	**3**	2035 Forstall Street	**70117**
30	New Israel Baptist Church	Neighborhood	**3**	6322 Saint Claude Ave	**70117**
31	Islamic Center Of New Orleans	Neighborhood	**4**	1911 Saint Claude Ave	**70116**
32	Corpus Christi Catholic Church	Infrastructure	**1**	2022 Saint Bernard Ave	**70116**
33	CrescentCare Community Health Ctr	Healthcare	**1**	2401 Canal St	**70119**
34	Christian Unity Baptist Church	Neighborhood	**1**	1700 Conti St	**70112**
35	Church of God El Milagro	Neighborhood	**2**	440 N Dorgenois St	**70119**
36	Dillard University	Neighborhood	**2**	2601 Gentilly Blvd	**70122**
37	St Anna Episcopal Church	Neighborhood	**3**	1313 Esplanade Ave	**70116**
38	Iglesia Del Dios Vivo	Neighborhood	**4**	2140 Mirabeau Ave	**70122**
39	St Peter Claver Church	Neighborhood	**3**	1923 St Philip St	**70116**
40	Masjidur-Rahim	Neighborhood	**4**	1238 N Johnson St.	**70116**
41	SBP / Global Green	Infrastructure	**1**	2645 Toulouse St	**70119**
42	St. Maria Goretti Catholic Church	Neighborhood	**1**	7300 Crowder	**70127**
43	Touro Woldenberg Village	Senior services	**1**	3701 Behrman Pl,	**70114**

III) EQUITY ANALYSIS

CENSUS TRACT	POPULATION	SOCIAL VULNERABILITY *Based on 16 factors assessing socioeconomics, age, language, disability, race & housing*	COMMUNITY RESILIENCE RISK *10 factors: Age, Disability status, Education, English proficiency, Housing type, Income, Language, Race/ethnicity, Vehicle access, Employment status*		POVERTY	VEHICLE ACCESS	POWER-DEPENDENT MEDICAL DEVICES
2020 FIPS	*2022 estimate*	*Social Vulnerability Index (SVI). Most-at-risk = 1.0*	*% residents with 3 or more resilience risk factors*	*% residents with 1 or more resilience risk factors*	*% residents with incomes below poverty level*	*% households with no access to a vehicle*	*# residents in zip code reliant on power-dependent medical devices*
22071000620	725	**1.0**	54	85	73	57	198
22071007200	2,964	**1.0**	35	73	35	36	81
22071007200	1,179	**0.99**	46	87	52	51	81
22071001751	389	**0.99**	31	78	66	39	28
22071008600	930	**0.98**	39	72	38	38	201
22071004800	930	**0.98**	39	72	38	38	201
22071001500	4,679	**0.96**	45	85	39	18	198
22071001500	2,054	**0.96**	62	84	55	58	83
22071014000	1,377	**0.95**	43	82	41	53	81
22071014000	3,752	**0.93**	28	76	29	20	119
22071001753	1,899	**0.91**	41	83	41	34	183
22071001746	1,043	**0.91**	33	83	43	55	83
22071009400	1,043	**0.91**	33	83	43	55	83
22071001724	1,366	**0.89**	55	87	47	59	83
22071007605	1,466	**0.88**	35	72	35	39	150
22071000611	5,550	**0.88**	41	73	25	13	198
22071001736	3,113	**0.88**	39	79	21	9	54
22071001301	953	**0.88**	34	74	58	30	211
22071004402	1,466	**0.88**	35	72	35	39	150
22071008500	2,841	**0.87**	31	82	32	15	183
22071009200	2,841	**0.87**	31	82	32	15	119
22071001749	2,841	**0.87**	31	82	32	15	119
22071001756	2,841	**0.87**	31	82	32	15	198
22071007101	4,641	**0.87**	27	79	21	14	191
22071003308	2,040	**0.87**	28	75	32	32	201
22071003308	1,212	**0.85**	43	86	38	32	201
22071003000	1,046	**0.85**	34	73	43	30	201
22071000601	2,783	**0.83**	46	71	30	40	218
22071000904	750	**0.83**	37	73	42	21	201
22071001740	1,808	**0.81**	26	75	49	26	201
22071003500	1,516	**0.81**	42	77	38	43	67
22071004900	1,411	**0.8**	44	83	52	47	67
22071004900	1,546	**0.8**	28	73	43	38	218
22071002700	1,546	**0.8**	28	73	43	38	28
22071003400	1,546	**0.8**	28	73	43	38	218
22071004000	3,710	**0.79**	39	88	36	29	262
22071000702	1,460	**0.79**	40	81	26	31	67
22071001702	3,710	**0.79**	39	88	36	29	262
22071001702	2,073	**0.78**	44	85	28	22	67
22071001702	2,073	**0.78**	44	85	28	22	67
22071004000	984	**0.76**	48	76	30	45	218
22071010200	6,801	**0.75**	19	86	27	23	183
22071014101	2369	**0.74**	47	79	50	43	211

TOGETHER NEW ORLEANS

PROPOSED RESILIENCE HUBS

This analysis summarizes TNO's proposal for solar + storage resilience hubs, including: I) its benefits vs. costs for ratepayers, II) its energy and climate-impact, III) an equity analysis and IV) a breakdown of its projected costs, overall and by hub location.

SITE ID#	RESILIENCE HUB LOCATION *subject to formal site evaluation & host site approval process*	HUB TYPE	CAPACITY *1 = larger*	PROJECT ADDRESS	ZIP CODE
44	First Grace United Methodist	Neighborhood	2	3401 Canal St	70119
45	Sixth Baptist Church	Neighborhood	3	928 Felicity St	70130
46	Xavier University	Neighborhood	1	1 Drexel Dr.	70125
47	St Gabriel The Archangel	Neighborhood	2	4700 Pineda St	70126
48	CrescentCare Community Health Ctr	Healthcare	1	1631 Elysian Fields Ave.	70117
49	St Mary Of The Angels Church	Neighborhood	1	3501 N Miro St	70117
50	Trinity Episcopal Church	Neighborhood	2	1329 Jackson Ave	70130
51	Bethlehem Lutheran Church	Neighborhood	3	1823 Washington Ave	70113
52	Camp Restore	Distribution	2	9301 Chef Menteur Hwy	70127
53	All Saints Church	Neighborhood	3	1441 Teche St	70114
54	St Augustine Church	Neighborhood	1	1210 Governor Nicholls St	70116
55	Bethany United Methodist Church	Neighborhood	2	4533 Mendez St	70126
56	Holy Faith Temple Baptist Chr	Neighborhood	4	1325 Governor Nicholls St	70116
57	Beacon Light Intl Bapt Cthdrl	Neighborhood	1	1937 Mirabeau Ave	70122
58	St. Raymond St Leo Catholic Church	Neighborhood	3	2916 Paris Ave	70119
59	Mount Olive Baptist Church	Neighborhood	4	1124 Leboeuf St	70114
60	Calvary Tabernacle AME	Neighborhood	4	3629 Dryades St.	70115
61	Mt Zion United Methodist Church	Neighborhood	3	2722 Louisiana Ave	70115
62	Sankofa CDC	Neighborhood	4	5200 Daupline St	70117
63	Greater Carver Missionary Baptist	Neighborhood	3	3343 Metropolitan St	70126
64	House Of Prayer & Refuge	Neighborhood	3	3015 Louisa St	70126
65	Groundwork NOLA	Distribution	2	2372 St Claude Ave	70119
66	Our Lady Of Guadalupe Church	Neighborhood	2	411 N Rampart St	70112
67	Deployable Battery Charging Hub	Battery Hub	1	900 St Andrew St	70130
68	Greater New Orleans Foundation	Infrastructure	2	919 St. Charles Ave	70130
69	Blessed Sacrament / St Joan Of Arc	Neighborhood	3	8321 Burthe St	70118
70	First Street Peck Wesley	Neighborhood	2	2309 Dryades St	70113
71	Connect Church of Algiers	Neighborhood	1	1110 Kabel Dr.	70131
72	First Unitarian Universalist	Neighborhood	2	5212 S Claiborne Ave	70125
73	Broadmoor Community Church	Neighborhood	3	2021 S Dupre St	70125
74	Bibleway Baptist Church	Neighborhood	1	3235 Orleans Ave	70119
75	St Paul Lutheran	Neighborhood	2	2624 Burgundy St	70117
76	St. Andrew's Episcopal Church	Neighborhood	1	1031 S Carrollton Ave	70118
77	Community Church Unitarian	Neighborhood	3	6690 Fleur DE Lis Dr	70124
78	St George's Episcopal Church	Neighborhood	2	4600 Saint Charles Ave	70115
79	Touro Synagogue	Distribution	1	4238 St Charles Ave	70115
80	Rayne Memorial United Mthdst	Neighborhood	1	3900 Saint Charles Ave	70115
81	New Orleans Baptist Association	Infrastructure	2	2222 Lakeshore Dr	70122
82	Cornerstone United Mthdst Chr	Neighborhood	1	5276 Bullard Ave	70128
83	Baldwin & Co	Neighborhood	2	1030 Elysian Fields Ave.	70117
84	St. Mark's United Methodist Church	Neighborhood	1	1130 N Rampart St	70116
85	St Charles Avenue Baptist Chr	Neighborhood	1	7100 Saint Charles Ave	70118
86	St Paul's Episcopal Church	Neighborhood	1	6249 Canal Blvd	70124

III) EQUITY ANALYSIS

CENSUS TRACT	POPULATION	SOCIAL VULNERABILITY *Based on 16 factors assessing socioeconomics, age, language, disability, race & housing*	COMMUNITY RESILIENCE RISK *10 factors: Age, Disability status, Education, English proficiency, Housing type, Income, Language, Race/ethnicity, Vehicle access, Employment status*		POVERTY	VEHICLE ACCESS	POWER-DEPENDENT MEDICAL DEVICES
2020 FIPS	*2022 estimate*	*Social Vulnerability Index (SVI). Most-at-risk = 1.0*	*% residents with 3 or more resilience risk factors*	*% residents with 1 or more resilience risk factors*	*% residents with incomes below poverty level*	*% households with no access to a vehicle*	*# residents in zip code reliant on power-dependent medical devices*
22071004401	1,077	**0.74**	45	79	29	17	218
22071005000	2,369	**0.74**	47	79	50	43	77
22071009100	2,153	**0.72**	29	79	35	24	81
22071001401	3,185	**0.72**	29	73	16	7	198
22071013702	1,298	**0.67**	44	76	32	27	201
22071006500	1,401	**0.67**	42	85	28	23	201
22071002000	1,525	**0.65**	30	76	12	27	77
22071008200	2,068	**0.65**	22	70	14	19	83
22071003702	5,083	**0.63**	18	72	21	10	183
22071006300	1,361	**0.62**	25	68	32	33	211
22071003304	1,053	**0.59**	29	72	29	28	67
22071000300	2,011	**0.59**	39	71	25	16	198
22071000400	1,053	**0.59**	29	72	29	28	67
22071003900	2,656	**0.58**	26	73	23	19	262
22071003900	3,486	**0.58**	24	66	17	18	218
22071001701	1,937	**0.58**	34	75	15	22	211
22071001402	1,590	**0.57**	40	66	29	41	145
22071010200	2,557	**0.54**	23	61	24	24	145
22071013701	1,814	**0.51**	22	75	23	17	201
22071000800	2,427	**0.5**	42	83	64	38	198
22071013400	2,427	**0.5**	42	83	64	38	198
22071001800	1,409	**0.47**	24	63	13	13	218
22071013501	1,914	**0.47**	23	63	17	37	28
22071012900	2,369	**0.43**	47	79	50	43	77
22071008400	3,074	**0.43**	26	74	21	35	77
22071001200	1,313	**0.41**	23	58	25	15	150
22071012300	1,021	**0.38**	23	68	14	20	83
22071011100	4,326	**0.34**	26	61	8	7	191
22071009900	2,026	**0.34**	24	74	25	17	81
22071009900	2,026	**0.32**	20	74	12	13	81
22071007607	2,433	**0.31**	17	46	20	15	218
22071012600	1,727	**0.31**	18	60	15	12	201
22071010700	1,638	**0.25**	17	56	17	8	150
22071010700	3,931	**0.25**	16	64	13	1	90
22071001747	1,875	**0.23**	15	55	15	10	145
22071001747	2,765	**0.22**	26	65	19	6	145
22071002600	2,765	**0.22**	26	65	19	6	145
22071013600	2,143	**0.18**	17	56	11	6	262
22071010900	4,320	**0.15**	24	67	7	0	119
22071003800	1,608	**0.14**	35	68	16	17	201
22071012000	1,284	**0.12**	27	67	7	21	67
22071011700	1,337	**0.11**	15	48	7	6	150
22071005604	1,553	**0.02**	13	46	5	1	90

PROPOSED RESILIENCE HUBS

This analysis summarizes TNO's proposal for solar + storage resilience hubs, including: I) its benefits vs. costs for ratepayers, II) its energy and climate-impact, III) an equity analysis and IV) a breakdown of its projected costs, overall and by hub location.

IV) PROJECT BUDGET

Note: Construction costs at specific locations are estimates and subject to change based on final site evaluations.

SITE ID#	RESILIENCE HUB LOCATION *subject to formal site evaluation & host site approval process*	HUB TYPE	CAPACITY *1 = larger*	PROJECT ADDRESS	ZIP CODE	TOTAL PROJECT COSTS	CONSTRUCTION COSTS	LIFETIME MAINTENANCE	BREAKDOWN OF BUDGET: SOLAR EQUIPMENT	SOLAR INSTALLATION	BATTERY EQUIPMENT	BATTERY INSTALLATION	DEVELOPMENT & DESIGN	ANNUAL MAINTENANCE
						$35,005,938 *construction & 20-yr lifetime maintenance*	$29,516,755 *total construction costs*	$5,489,183 *system maintenance over 20 years at 3% discount rate*	**$4,751,276** *PV modules, inverter & racking, etc.*	**$7,273,559** *PV balancing, installation, O&P, monitoring, etc.*	**$7,341,382** *battery, inverter, microgrid controller, load management*	**$4,009,183** *battery shipping, commissioning, installation*	**$6,141,489** *Site eval, system design, engineering, permitting, etc.*	**$368,959** *maintenance per year*
1	St Paul The Apostle Church	Neighborhood	**2**	6828 Chef Menteur Hwy	**70126**	$284,014	$239,479	$44,535	$38,549	$59,013	$59,563	$32,528	$49,828	$2,993
2	First Zion Baptist Church	Neighborhood	**3**	7201 Olive St	**70125**	$134,977	$113,812	$21,165	$18,320	$28,046	$28,307	$15,459	$23,681	$1,423
3	St Thomas Baptist Church	Neighborhood	**3**	2926 Jackson Ave	**70125**	$191,161	$161,186	$29,975	$25,946	$39,720	$40,090	$21,893	$33,538	$2,015
4	Backatown Coffee Parlour	Neighborhood	**3**	301 Basin St Suite 1	**70112**	$141,304	$119,147	$22,157	$19,179	$29,360	$29,634	$16,183	$24,791	$1,489
5	Rebuilding Together New Orleans	Distribution	**1**	2801 Marais St	**70117**	$721,678	$608,514	$113,164	$97,952	$149,951	$151,349	$82,653	$126,612	$7,606
6	Abundant Life Tabernacle	Neighborhood	**2**	1701 Franklin Ave	**70117**	$241,075	$203,273	$37,802	$32,721	$50,091	$50,558	$27,610	$42,294	$2,541
7	Sisters of the Holy Family	Neighborhood	**2**	6901 Chef Menteur Hwy	**70126**	$380,186	$320,570	$59,616	$51,602	$78,995	$79,732	$43,542	$66,700	$4,007
8	Union Bethel AME	Neighborhood	**2**	2321 Thalia St	**70113**	$304,880	$257,072	$47,808	$41,381	$63,348	$63,939	$34,917	$53,488	$3,213
9	Together New Orleans	Infrastructure	**3**	2721 S Broad St.	**70125**	$160,106	$135,000	$25,106	$21,731	$33,267	$33,577	$18,337	$28,089	$1,688
10	New Home Full Gospel Cathedral	Neighborhood	**2**	13800 Hayne Blvd	**70128**	$327,938	$276,515	$51,423	$44,510	$68,139	$68,775	$37,558	$57,534	$3,456
11	Greater St Stephen Fgbc	Neighborhood	**1**	5600 Read Blvd	**70127**	$803,170	$677,227	$125,943	$109,012	$166,883	$168,439	$91,986	$140,909	$8,465
12	New Hope Baptist Church	Neighborhood	**1**	1807 Rev John Raphael Jr Way	**70113**	$421,888	$355,733	$66,155	$57,262	$87,660	$88,478	$48,318	$74,017	$4,447
13	Berean Presbyterian Community Ctr	Neighborhood	**4**	2128 Felicity St	**70113**	$71,158	$60,000	$11,158	$9,658	$14,785	$14,923	$8,150	$12,484	$750
14	New Zion Baptist Church	Neighborhood	**3**	2319 3rd St	**70113**	$114,731	$96,740	$17,991	$15,572	$23,839	$24,061	$13,140	$20,128	$1,209
15	City of Love Church	Neighborhood	**1**	3810 Leonidas St	**70118**	$273,840	$230,900	$42,940	$37,168	$56,899	$57,429	$31,363	$48,043	$2,886
16	Pleasant Valley Missionary Chr	Neighborhood	**2**	5919 Morrison Rd	**70126**	$268,029	$226,000	$42,029	$36,379	$55,691	$56,211	$30,697	$47,023	$2,825
17	Mary Queen Of Vietnam Church	Neighborhood	**2**	14001 Dwyer Blvd	**70129**	$341,689	$288,110	$53,579	$46,377	$70,996	$71,658	$39,133	$59,946	$3,601
18	Fischer Community Church	Neighborhood	**3**	1737 L B Landry Ave	**70114**	$208,146	$175,507	$32,639	$28,251	$43,249	$43,652	$23,839	$36,517	$2,194
19	Trinity Christian Community	Neighborhood	**4**	3908 Joliet St	**70118**	$236,008	$199,000	$37,008	$32,033	$49,038	$49,495	$27,030	$41,406	$2,488
20	Household of Faith Church	Infrastructure	**1**	9300 I-10 Service Rd	**70127**	$873,584	$736,600	$136,984	$118,570	$181,514	$183,207	$100,050	$153,263	$9,208
21	Giving Hope	Distribution	**2**	13000 I-10 Service Rd	**70128**	$273,840	$230,900	$42,940	$37,168	$56,899	$57,429	$31,363	$48,043	$2,886
22	The City Church	Neighborhood	**1**	13123 I-10 Service Rd	**70128**	$1,743,455	$1,470,069	$273,386	$236,635	$362,256	$365,634	$199,676	$305,874	$18,376
23	Franklin Avenue Baptist Church	Neighborhood	**1**	8282 I-10 Service Rd.	**70126**	$1,771,632	$1,493,827	$277,805	$240,460	$368,111	$371,543	$202,903	$310,817	$18,673
24	Asbury United Methodist Church	Neighborhood	**3**	2725 Ernest St	**70131**	$199,851	$168,513	$31,338	$27,125	$41,525	$41,912	$22,889	$35,062	$2,106
25	Greater Liberty Baptist Church	Neighborhood	**4**	1230 Desire St	**70117**	$73,113	$61,648	$11,465	$9,923	$15,191	$15,333	$8,373	$12,827	$771
26	Living Water Baptist Church	Neighborhood	**3**	2104 Elysian Fields Ave	**70117**	$215,232	$181,482	$33,750	$29,213	$44,721	$45,138	$24,650	$37,761	$2,269
27	Central Missionary Baptist Chr	Neighborhood	**3**	1438 Alabo St	**70117**	$140,651	$118,596	$22,055	$19,090	$29,225	$29,497	$16,109	$24,676	$1,482
28	Goodwill Industries of Southeast LA	Distribution	**1**	3400 Tulane Ave	**70119**	$1,761,761	$1,485,504	$276,257	$239,120	$366,060	$369,473	$201,772	$309,086	$18,569
29	Mount Carmel Baptist Church	Neighborhood	**3**	2035 Forstall Street	**70117**	$177,298	$149,497	$27,801	$24,064	$36,839	$37,183	$20,306	$31,105	$1,869
30	New Israel Baptist Church	Neighborhood	**3**	6322 Saint Claude Ave	**70117**	$151,793	$127,991	$23,802	$20,603	$31,540	$31,834	$17,385	$26,631	$1,600
31	Islamic Center Of New Orleans	Neighborhood	**4**	1911 Saint Claude Ave	**70116**	$95,271	$80,332	$14,939	$12,931	$19,796	$19,980	$10,911	$16,715	$1,004
32	Corpus Christi Catholic Church	Infrastructure	**1**	2022 Saint Bernard Ave	**70116**	$695,547	$586,480	$109,067	$94,405	$144,521	$145,869	$79,660	$122,028	$7,331
33	CrescentCare Community Health Ctr	Healthcare	**1**	2401 Canal St	**70119**	$619,095	$522,017	$97,078	$84,028	$128,636	$129,836	$70,904	$108,615	$6,525
34	Christian Unity Baptist Church	Neighborhood	**1**	1700 Conti St	**70112**	$545,195	$459,705	$85,490	$73,998	$113,281	$114,337	$62,440	$95,650	$5,746
35	Church of God El Milagro	Neighborhood	**2**	440 N Dorgenois St	**70119**	$239,022	$201,542	$37,480	$32,442	$49,664	$50,127	$27,375	$41,934	$2,519
36	Dillard University	Neighborhood	**2**	2601 Gentilly Blvd	**70122**	$342,195	$288,537	$53,658	$46,445	$71,102	$71,765	$39,191	$60,035	$3,607
37	St Anna Episcopal Church	Neighborhood	**3**	1313 Esplanade Ave	**70116**	$159,189	$134,227	$24,962	$21,606	$33,076	$33,385	$18,232	$27,928	$1,678
38	Iglesia Del Dios Vivo	Neighborhood	**4**	2140 Mirabeau Ave	**70122**	$95,215	$80,285	$14,930	$12,923	$19,784	$19,968	$10,905	$16,705	$1,004
39	St Peter Claver Church	Neighborhood	**3**	1923 St Philip St	**70116**	$140,686	$118,625	$22,061	$19,095	$29,232	$29,504	$16,113	$24,682	$1,483
40	Masjidur-Rahim	Neighborhood	**4**	1238 N Johnson St.	**70116**	$64,058	$54,013	$10,045	$8,694	$13,310	$13,434	$7,336	$11,238	$675
41	SBP / Global Green	Infrastructure	**1**	2645 Toulouse St	**70119**	$534,397	$450,600	$83,797	$72,533	$111,037	$112,073	$61,204	$93,755	$5,632
42	St. Maria Goretti Catholic Church	Neighborhood	**1**	7300 Crowder	**70127**	$445,875	$375,958	$69,917	$60,518	$92,644	$93,508	$51,065	$78,225	$4,699
43	Touro Woldenberg Village	Senior services	**1**	3701 Behrman Pl,	**70114**	$432,264	$364,482	$67,782	$58,670	$89,816	$90,654	$49,507	$75,837	$4,556

TOGETHER NEW ORLEANS

PROPOSED RESILIENCE HUBS

This analysis summarizes TNO's proposal for solar + storage resilience hubs, including: I) its benefits vs. costs for ratepayers, II) its energy and climate-impact, III) an equity analysis and IV) a breakdown of its projected costs, overall and by hub location.

IV) PROJECT BUDGET

Note: Construction costs at specific locations are estimates and subject to change based on final site evaluations.

SITE ID#	RESILIENCE HUB LOCATION *subject to formal site evaluation & host site approval process*	HUB TYPE	CAPACITY *1 = larger*	PROJECT ADDRESS	ZIP CODE	TOTAL PROJECT COSTS	CONSTRUCTION COSTS	LIFETIME MAINTENANCE	BREAKDOWN OF BUDGET: SOLAR EQUIPMENT	SOLAR INSTALLATION	BATTERY EQUIPMENT	BATTERY INSTALLATION	DEVELOPMENT & DESIGN	ANNUAL MAINTENANCE
						$35,005,938 *construction & 20-yr lifetime maintenance*	$29,516,755 *total construction costs*	$5,489,183 *system maintenance over 20 years at 3% discount rate*	**$4,751,276** *PV modules, inverter & racking, etc.*	**$7,273,559** *PV balancing, installation, O&P, monitoring, etc.*	**$7,341,382** *battery, inverter, microgrid controller, load management*	**$4,009,183** *battery shipping, commissioning, installation*	**$6,141,489** *Site eval, system design, engineering, permitting, etc.*	**$368,959** *maintenance per year*
44	First Grace United Methodist	Neighborhood	2	3401 Canal St	70119	$413,903	$349,000	$64,903	$56,178	$86,001	$86,803	$47,404	$72,616	$4,363
45	Sixth Baptist Church	Neighborhood	3	928 Felicity St	70130	$130,478	$110,018	$20,460	$17,709	$27,111	$27,364	$14,943	$22,891	$1,375
46	Xavier University	Neighborhood	1	1 Drexel Dr.	70125	$833,934	$703,167	$130,767	$113,188	$173,275	$174,891	$95,509	$146,306	$8,790
47	St Gabriel The Archangel	Neighborhood	2	4700 Pineda St	70126	$327,770	$276,373	$51,397	$44,487	$68,104	$68,739	$37,539	$57,504	$3,455
48	CrescentCare Community Health Ctr	Healthcare	1	1631 Elysian Fields Ave.	70117	$806,459	$680,000	$126,459	$109,459	$167,567	$169,129	$92,363	$141,486	$8,500
49	St Mary Of The Angels Church	Neighborhood	1	3501 N Miro St	70117	$655,258	$552,509	$102,749	$88,937	$136,150	$137,420	$75,046	$114,959	$6,906
50	Trinity Episcopal Church	Neighborhood	2	1329 Jackson Ave	70130	$309,041	$260,582	$48,459	$41,945	$64,213	$64,812	$35,394	$54,219	$3,257
51	Bethlehem Lutheran Church	Neighborhood	3	1823 Washington Ave	70113	$215,846	$182,000	$33,846	$29,296	$44,849	$45,267	$24,721	$37,868	$2,275
52	Camp Restore	Distribution	2	9301 Chef Menteur Hwy	70127	$287,586	$242,490	$45,096	$39,033	$59,755	$60,312	$32,937	$50,454	$3,031
53	All Saints Church	Neighborhood	3	1441 Teche St	70114	$127,919	$107,860	$20,059	$17,362	$26,579	$26,827	$14,650	$22,442	$1,348
54	St Augustine Church	Neighborhood	1	1210 Governor Nicholls St	70116	$524,414	$442,182	$82,232	$71,178	$108,963	$109,979	$60,060	$92,004	$5,527
55	Bethany United Methodist Church	Neighborhood	2	4533 Mendez St	70126	$286,826	$241,850	$44,976	$38,930	$59,597	$60,153	$32,850	$50,321	$3,023
56	Holy Faith Temple Baptist Chr	Neighborhood	4	1325 Governor Nicholls St	70116	$81,099	$68,382	$12,717	$11,007	$16,851	$17,008	$9,288	$14,228	$855
57	Beacon Light Intl Bapt Cthdrl	Neighborhood	1	1937 Mirabeau Ave	70122	$705,818	$595,141	$110,677	$95,799	$146,655	$148,023	$80,836	$123,830	$7,439
58	St. Raymond St Leo Catholic Church	Neighborhood	3	2916 Paris Ave	70119	$205,222	$173,041	$32,181	$27,854	$42,641	$43,039	$23,504	$36,004	$2,163
59	Mount Olive Baptist Church	Neighborhood	4	1124 Leboeuf St	70114	$85,514	$72,105	$13,409	$11,607	$17,768	$17,934	$9,794	$15,003	$901
60	Calvary Tabernacle AME	Neighborhood	4	3629 Dryades St.	70115	$102,583	$86,497	$16,086	$13,923	$21,315	$21,513	$11,749	$17,997	$1,081
61	Mt Zion United Methodist Church	Neighborhood	3	2722 Louisiana Ave	70115	$159,582	$134,559	$25,023	$21,660	$33,158	$33,467	$18,277	$27,997	$1,682
62	Sankofa CDC	Neighborhood	4	5200 Daupline St	70117	$73,113	$61,648	$11,465	$9,923	$15,191	$15,333	$8,373	$12,827	$771
63	Greater Carver Missionary Baptist	Neighborhood	3	3343 Metropolitan St	70126	$223,612	$188,548	$35,064	$30,350	$46,462	$46,896	$25,610	$39,231	$2,357
64	House Of Prayer & Refuge	Neighborhood	3	3015 Louisa St	70126	$151,849	$128,038	$23,811	$20,610	$31,551	$31,846	$17,391	$26,641	$1,600
65	Groundwork NOLA	Distribution	2	2372 St Claude Ave	70119	$292,282	$246,450	$45,832	$39,671	$60,731	$61,297	$33,475	$51,278	$3,081
66	Our Lady Of Guadalupe Church	Neighborhood	2	411 N Rampart St	70112	$379,989	$320,404	$59,585	$51,575	$78,954	$79,691	$43,520	$66,666	$4,005
67	Deployable Battery Charging Hub	Battery Hub	1	900 St Andrew St	70130	$2,314,272	$1,951,378	$362,894	$314,111	$480,861	$485,345	$265,050	$406,019	$24,392
68	Greater New Orleans Foundation	Infrastructure	2	919 St. Charles Ave	70130	$254,123	$214,274	$39,849	$34,491	$52,802	$53,294	$29,104	$44,584	$2,678
69	Blessed Sacrament / St Joan Of Arc	Neighborhood	3	8321 Burthe St	70118	$132,165	$111,441	$20,724	$17,938	$27,461	$27,717	$15,137	$23,187	$1,393
70	First Street Peck Wesley	Neighborhood	2	2309 Dryades St	70113	$352,094	$296,883	$55,211	$47,789	$73,158	$73,840	$40,325	$61,772	$3,711
71	Connect Church of Algiers	Neighborhood	1	1110 Kabel Dr.	70131	$780,787	$658,354	$122,433	$105,974	$162,232	$163,745	$89,422	$136,982	$8,229
72	First Unitarian Universalist	Neighborhood	2	5212 S Claiborne Ave	70125	$273,840	$230,900	$42,940	$37,168	$56,899	$57,429	$31,363	$48,043	$2,886
73	Broadmoor Community Church	Neighborhood	3	2021 S Dupre St	70125	$222,962	$188,000	$34,962	$30,262	$46,327	$46,759	$25,536	$39,117	$2,350
74	Bibleway Baptist Church	Neighborhood	1	3235 Orleans Ave	70119	$414,717	$349,687	$65,030	$56,289	$86,170	$86,974	$47,497	$72,759	$4,371
75	St Paul Lutheran	Neighborhood	2	2624 Burgundy St	70117	$220,590	$186,000	$34,590	$29,940	$45,834	$46,262	$25,264	$38,701	$2,325
76	St. Andrew's Episcopal Church	Neighborhood	1	1031 S Carrollton Ave	70118	$448,405	$378,092	$70,313	$60,861	$93,170	$94,039	$51,355	$78,669	$4,726
77	Community Church Unitarian	Neighborhood	3	6690 Fleur DE Lis Dr	70124	$171,965	$145,000	$26,965	$23,340	$35,731	$36,064	$19,695	$30,170	$1,813
78	St George's Episcopal Church	Neighborhood	2	4600 Saint Charles Ave	70115	$250,242	$211,002	$39,240	$33,965	$51,995	$52,480	$28,660	$43,903	$2,638
79	Touro Synagogue	Distribution	1	4238 St Charles Ave	70115	$865,541	$729,818	$135,723	$117,478	$179,843	$181,520	$99,129	$151,852	$9,123
80	Rayne Memorial United Mthdst	Neighborhood	1	3900 Saint Charles Ave	70115	$655,174	$552,438	$102,736	$88,925	$136,132	$137,402	$75,036	$114,945	$6,905
81	New Orleans Baptist Association	Infrastructure	2	2222 Lakeshore Dr	70122	$312,163	$263,213	$48,950	$42,369	$64,861	$65,466	$35,752	$54,766	$3,290
82	Cornerstone United Mthdst Chr	Neighborhood	1	5276 Bullard Ave	70128	$579,322	$488,480	$90,842	$78,630	$120,372	$121,494	$66,349	$101,637	$6,106
83	Baldwin & Co	Neighborhood	2	1030 Elysian Fields Ave.	70117	$239,022	$201,542	$37,480	$32,442	$49,664	$50,127	$27,375	$41,934	$2,519
84	St. Mark's United Methodist Church	Neighborhood	1	1130 N Rampart St	70116	$385,247	$324,838	$60,409	$52,289	$80,047	$80,793	$44,122	$67,588	$4,060
85	St Charles Avenue Baptist Chr	Neighborhood	1	7100 Saint Charles Ave	70118	$629,725	$530,979	$98,746	$85,471	$130,845	$132,065	$72,122	$110,480	$6,637
86	St Paul's Episcopal Church	Neighborhood	1	6249 Canal Blvd	70124	$707,288	$596,380	$110,908	$95,999	$146,961	$148,331	$81,005	$124,088	$7,455

EXHIBIT C:

PROJECT BUDGET

TOGETHER NEW ORLEANS

Project Budget: Community Lighthouse Resilience Hubs

Cost estimate for construction and lifetime maintenance of 86-location portfolio

CONSTRUCTION COSTS			
PV EQUIPMENT			
$3,519,464	11.9%	PV Modules	
$527,920	1.8%	PV Inverter	
$703,893	2.4%	Racking	
		Subtotal - PV equipment:	$4,751,276
PV INSTALLATION			
$1,525,101	5.2%	Balance of systems	
$175,973	0.6%	Monitoring	
$5,572,485	18.9%	Installation, O&P	
		Subtotal - PV install:	$7,273,559
BATTERY EQUIPMENT			
$7,103,085	24.1%	Batteries, BMS ESS Inverter Containerization (NEMA 3R, HVAC, fire suppression, UPS, cabling) Microgrid Controller Automatic Transfer Switch Load Management Solution	
$238,297	0.8%	Isolation Transformer	
		Subtotal - Battery equipment:	$7,341,382
BATTERY INSTALLATION			
$114,566	0.4%	Shipping	
$114,566	0.4%	Commissioning	
$710,308	2.4%	Sales tax	
$3,069,742	10.4%	AC Wire, Switchgear, Trenching, Install	
		Subtotal - Battery installation:	$4,009,183
DESIGN & DEVELOPMENT			
$1,526,370	5.2%	Design, Engineering, Pre-NTP Diligence	
$91,653	0.3%	Permits	
$1,741,049	5.9%	Construction Management, Safety, Supervision	
$1,088,156	3.7%	Host institution assessments, energy modeling, rate analysis, owners rep	
$1,694,128	5.7%	Construction Contingency, Equipment Rentals	
		Subtotal - Design & Development:	$6,141,354
		TOTAL CONSTRUCTION COSTS:	**$29,516,755**
		Annual maintenance:	*$368,959*
		Lifetime maintenance (20 years):	**$5,489,183**
		TOTAL PROJECT COSTS: *Construction & 20-year maintenance*	**$35,005,938**

EXHIBIT D:

RATE IMPACT ANALYSIS

TOGETHER NEW ORLEANS

Rate Impact Analysis: Community Lighthouse Resilience Hubs portfolio
conducted for Together New Orleans by Pacific Northwest National Laboratory (PNNL)

$11,324,676	Total program cost, split evenly between year 1 and 2
$566,234	Annual Depreciation Expense
209,000	Customer Count
0.085	Utility Rate of Return

Year	Balance	Principal	Debt	Payment
1	$5,662,338	$566,234	$481,299	$1,047,533
2	$10,758,442	$1,120,000	$914,468	$2,034,468
3	$9,638,442	$1,120,000	$819,268	$1,939,268
4	$8,518,442	$1,120,000	$724,068	$1,844,068
5	$7,398,442	$1,120,000	$628,868	$1,748,868
6	$6,278,442	$1,120,000	$533,668	$1,653,668
7	$5,158,442	$1,120,000	$438,468	$1,558,468
8	$4,038,442	$1,120,000	$343,268	$1,463,268
9	$2,918,442	$1,120,000	$248,068	$1,368,068
10	$1,798,442	$1,120,000	$152,868	$1,272,868
11	$678,442	$566,234	$57,668	$623,901
				$16,554,442

Customer Class	**Count**	**Usage**	**Avg.**	
Residential	188,222	2,258,307	12	11.9981
Commercial	19,235	2,725,211	142	
Industrial	1,701	414,658	244	

AVERAGE CUSTOMER IMPACT

	Monthly Impact	**11-year Impact**
Scenario A: Residential, Commercial & Industrial		
Residential	$0.28	$36.79
Commercial	$3.29	$434.49
Industrial	$5.66	$747.57
Scenario B: Residential & Commercial only		
Residential	$0.30	$39.86
Commercial	$3.57	$470.64

EXHIBIT E:

OUTAGE-RELATED DEATHS AFTER HURRICANE IDA

TOGETHER NEW ORLEANS

New Orleans deaths related to Hurricane Ida power outage

New Orleans Coroner

Sent to Together New Orleans by email on September 14, 2022.

IDA, Heat-related: (*note: for the heat-related cases below that list a cause of death as something other than Exposure to Excessive Environmental Heat---for these cases, "Exposure to Excessive Environmental Heat" is a "significant contributing factor," to those death, which makes their manners of death an accident, FYI.)

1. REPORTED NAME OF DECEASED: Jones, Myron ADDRESS: 2110 Royal Street New Orleans, LA 70116 SEX: Male DATE AT BIRTH: Sep 27, 1955 AGE AT DEATH: 65 years 11 months 8 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 04, 2021 at 13:24 PLACE OF DEATH: 2110 Royal St. 2110 Royal Street New Orleans LA, 70116 DATE AND TIME OF AUTOPSY: Sep 06, 2021 at 09:30 CAUSE(S) OF DEATH: Exposure to Excessive Environmental Heat MANNER OF DEATH: Accident

2. REPORTED NAME OF DECEASED: Logan, Reginald ADDRESS: 2425 Louisiana Avenue New Orleans, LA 70115 SEX: Male DATE AT BIRTH: Jul 29, 1947 AGE AT DEATH: 74 years 1 months 6 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 04, 2021 at 11:30 PLACE OF DEATH: 2425 Louisiana Ave. Apt #114 2425 Louisiana Avenue New Orleans LA, 70115 DATE AND TIME OF AUTOPSY: Sep 06, 2021 at 15:00 CAUSE(S) OF DEATH: Atherosclerotic Cardiovascular Disease MANNER OF DEATH: Accident

3. REPORTED NAME OF DECEASED: Anderson, Deborah ADDRESS: 2425 Louisiana Avenue New Orleans, LA 70115 SEX: Female DATE AT BIRTH: Dec 10, 1946 AGE AT DEATH: 74 years 8 months 25 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 04, 2021 at 14:03 PLACE OF DEATH: 2425 Louisiana Ave. Apt #225 2425 Louisiana Avenue New Orleans LA, 70115 DATE AND TIME OF AUTOPSY: Sep 06, 2021 at 14:00 CAUSE(S) OF DEATH: Myocardial Fibrosis MANNER OF DEATH: Accident

4. REPORTED NAME OF DECEASED: Washington, Clarence ADDRESS: 9630 Hayne Boulevard New Orleans, LA 70127 SEX: Male DATE AT BIRTH: Jul 28, 1942 AGE AT DEATH: 79 years 1 months 7 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 04, 2021 at 10:42 PLACE OF DEATH: 9630 Haynes Blvd. 9630 Hayne Boulevard New Orleans LA, 70127 DATE AND TIME OF AUTOPSY: Sep 06, 2021 at 10:30 CAUSE(S) OF DEATH: Exposure to Excessive Environmental Heat MANNER OF DEATH: Accident

5. REPORTED NAME OF DECEASED: Sneed, David ADDRESS: 1501 Canal Street New Orleans, LA 70112 SEX: Male DATE AT BIRTH: Mar 01, 1956 AGE AT DEATH: 65 years 6 months 2 days RACE: White DATE AND TIME OF DEATH: Sep 03, 2021 at 10:17 PLACE OF DEATH: 1501 Canal St. 1501 Canal Street New Orleans LA, 70112 DATE AND TIME OF AUTOPSY: Sep 06, 2021 at 12:00 CAUSE(S) OF DEATH: Exposure to Excessive Environmental Heat MANNER OF DEATH: Accident

6. REPORTED NAME OF DECEASED: Joseph , Iley ADDRESS: 8800 I-10 Service Road Bld. 16 Apt. 312 New Orleans, LA 70127 SEX: Male DATE AT BIRTH: Apr 10, 1948 AGE AT DEATH: 73 years 4 months 23 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 02, 2021 at 17:56 PLACE OF DEATH: Decedent's Residence 8800 I-10 Service Road New Orleans LA, 70127 DATE AND

TIME OF AUTOPSY: Sep 07, 2021 at 08:00 CAUSE(S) OF DEATH: Exposure to Excessive Environmental Heat MANNER OF DEATH: Accident

7. REPORTED NAME OF DECEASED: Causey, Abrahm ADDRESS: 47 Martin Drive New Orleans, LA 70126 SEX: Male DATE AT BIRTH: Oct 31, 1952 AGE AT DEATH: 68 years 10 months 2 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 02, 2021 at 17:00 PLACE OF DEATH: 47 Martin Dr 70126 47 Martin Drive New Orleans LA, 70126 DATE AND TIME OF AUTOPSY: Sep 07, 2021 at 15:00 CAUSE(S) OF DEATH: Atherosclerotic Cardiovascular Disease MANNER OF DEATH: Accident

8. REPORTED NAME OF DECEASED: Law, Keith ADDRESS: 1907 Bodenger Boulevard New Orleans, LA 70114 SEX: Male DATE AT BIRTH: Feb 20, 1956 AGE AT DEATH: 65 years 6 months 16 days RACE: White DATE AND TIME OF DEATH: Sep 05, 2021 at 17:44 PLACE OF DEATH: 1907 Bodenger Blvd, NOLA 1907 Bodenger Boulevard New Orleans LA, 70114 DATE AND TIME OF AUTOPSY: Sep 07, 2021 at 14:00 CAUSE(S) OF DEATH: Severe Atherosclerotic Cardiovascular Disease MANNER OF DEATH: Accident

9. REPORTED NAME OF DECEASED: Jeanmarie, Walter ADDRESS: SEX: Male DATE AT BIRTH: Oct 05, 1963 AGE AT DEATH: 57 years 10 months 30 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 04, 2021 at 10:55 PLACE OF DEATH: 2404 Lavender St. 2404 Lavender Street New Orleans LA, 70122 DATE AND TIME OF AUTOPSY: Sep 07, 2021 at 10:30 CAUSE(S) OF DEATH: Exposure to Excessive Environmental Heat MANNER OF DEATH: Accident

10. REPORTED NAME OF DECEASED: Labat-Hingle, Corinne ADDRESS: 1401 Caton Street Apt. 317 New Orleans, LA 70122 SEX: Female DATE AT BIRTH: Sep 06, 1950 AGE AT DEATH: 70 years 11 months 27 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 02, 2021 at 19:00 PLACE OF DEATH: Decedent's Residence 1401 Caton Street New Orleans LA, 70122 DATE AND TIME OF AUTOPSY: Sep 07, 2021 at 09:15 CAUSE(S) OF DEATH: Exposure to Excessive Environmental Heat MANNER OF DEATH: Accident

11. REPORTED NAME OF DECEASED: Stratton, Donald ADDRESS: 10211 Springwood Street New Orleans, LA 70127 SEX: Male DATE AT BIRTH: Oct 22, 1944 AGE AT DEATH: 76 years 10 months 11 days RACE: White DATE AND TIME OF DEATH: Sep 02, 2021 at 08:44 PLACE OF DEATH: 10211 Springwood Street New Orleans LA, 70127 DATE AND TIME OF AUTOPSY: Sep 06, 2021 at 08:30 CAUSE(S) OF DEATH: Exposure to Excessive Environmental Heat MANNER OF DEATH: Accident

12. REPORTED NAME OF DECEASED: Blackwell, Jean ADDRESS: 2068 Treasure Street New Orleans, LA 70122 SEX: Female DATE AT BIRTH: Jan 17, 1937 AGE AT DEATH: 84 years 8 months 4 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 21, 2021 at 06:44 PLACE OF DEATH: 2068 Treasure St 70122 2068 Treasure Street New Orleans LA, 70122 DATE AND TIME OF AUTOPSY: Sep 22, 2021 at 08:35 CAUSE(S) OF DEATH: Metastatic Colon Cancer MANNER OF DEATH: Accident

13. REPORTED NAME OF DECEASED: Parker, Donald (Unknown Governor Nicholls) ADDRESS: SEX: Male DATE AT BIRTH: Aug 11, 1949 AGE AT DEATH: 72 years 0 months 30 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 10, 2021 at 23:16 PLACE OF DEATH: Other Residence 1331 Governor Nicholls Street New Orleans LA, 70116 DATE AND TIME OF AUTOPSY: Sep 11, 2021 at 10:00 CAUSE(S) OF DEATH: Severe Atherosclerotic Cardiovascular Disease MANNER OF DEATH: Accident

14. REPORTED NAME OF DECEASED: Holmes, Walter ADDRESS: 3601 Bender Boulevard New Orleans, LA 70114 SEX: Male DATE AT BIRTH: Jan 07, 1959 AGE AT DEATH: 62 years 7 months 24 days RACE: African American / Black DATE AND TIME OF DEATH: Aug 31, 2021 at 06:53 PLACE OF DEATH: Tulane Hospital 1415 Tulane Ave New Orleans LA, 70112 DATE AND TIME OF AUTOPSY: Sep 15, 2021 at 09:00 CAUSE(S) OF DEATH: Hypertensive Cardiovascular Disease MANNER OF DEATH: Accident

15. REPORTED NAME OF DECEASED: Meyers, Gary ADDRESS: 7201 Wayside Drive New Orleans, LA 70128 SEX: Male DATE AT BIRTH: Jun 09, 1962 AGE AT DEATH: 59 years 2 months 22 days RACE: White DATE AND TIME OF DEATH: Aug 31, 2021 at 16:40 PLACE OF DEATH: Our Lady of the Lake Hospital DATE AND TIME OF AUTOPSY: Sep 13, 2021 at 07:00 CAUSE(S) OF DEATH: Hypertensive and Atherosclerotic Cardiovascular Disease MANNER OF DEATH: Accident

16. REPORTED NAME OF DECEASED: Woodfork, Leroy ADDRESS: 6000 Chef Menteur Highway Apt #207 New Orleans, LA 70126 SEX: Male DATE AT BIRTH: Dec 03, 1962 AGE AT DEATH: 58 years 9 months 5 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 08, 2021 at 15:07 PLACE OF DEATH: 6000 Chef Hwy. Apt #207 6000 Chef Menteur Highway New Orleans LA, 70126 DATE AND TIME OF AUTOPSY: Sep 09, 2021 at 13:45 CAUSE(S) OF DEATH: Exposure to Excessive Environmental Heat MANNER OF DEATH: Accident

16. REPORTED NAME OF DECEASED: Gloger, Benjamin ADDRESS: 1831 Frenchmen Street New Orleans, LA 70116 SEX: Male DATE AT BIRTH: Jul 19, 1976 AGE AT DEATH: 45 years 1 months 18 days RACE: White DATE AND TIME OF DEATH: Sep 06, 2021 at 21:06 PLACE OF DEATH: Decedent's Residence 1831 Frenchmen Street New Orleans LA, 70116 DATE AND TIME OF AUTOPSY: Sep 08, 2021 at 10:45 CAUSE(S) OF DEATH: Pulmonary Emphysema MANNER OF DEATH: Accident

18. REPORTED NAME OF DECEASED: Brown, Arthur ADDRESS: 3200 Garden Oaks Drive Apt 413 New Orleans, LA 70114 SEX: Male DATE AT BIRTH: Jan 29, 1933 AGE AT DEATH: 88 years 7 months 4 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 02, 2021 at 12:30 PLACE OF DEATH: 3200 Garden Oaks Dr Apt 413 70114 3200 Garden Oaks Drive Apt 413 New Orleans LA, 70114 DATE AND TIME OF AUTOPSY: Sep 04, 2021 at 13:45 CAUSE(S) OF DEATH: Exposure to Excessive Environmental Heat MANNER OF DEATH: Accident

19. REPORTED NAME OF DECEASED: Hopkins, Arthur ADDRESS: 4238 South Carrollton Avenue New Orleans, LA 70119 SEX: Male DATE AT BIRTH: Nov 13, 1959 AGE AT DEATH: 61 years 10 months 0 days RACE: African American / Black DATE AND TIME OF DEATH: Sep 13, 2021 at 16:17 PLACE OF DEATH: 4238 S. Carrollton Ave. 4238 South Carrollton Avenue New Orleans LA, 70119 DATE AND TIME OFAUTOPSY: Sep 15, 2021 at 09:45 CAUSE(S) OF DEATH: Hypertensive Cardiovascular Disease MANNER OF DEATH: Accident

IDA, Carbon monoxide-related:

20. REPORTED NAME OF DECEASED: Amli, Hasan ADDRESS: 1040 Tallow Tree Lane Harvey, LA 70058 SEX: Male DATE AT BIRTH: Apr 28, 1997 AGE AT DEATH: 24 years 4 months 3 days RACE: Arabic DATE AND TIME OF DEATH: Aug 31, 2021 at 16:15 PLACE OF DEATH: 5104 Freret St., NOLA 5104 Freret Street New Orleans LA, 70115 DATE AND TIME OF AUTOPSY: Sep 01, 2021 at 08:00 CAUSE(S) OF DEATH: Asphyxia Due to Carbon Monoxide Poisoning; Use of Powered Generator in Enclosed Space MANNER OF DEATH: Accident

21. REPORTED NAME OF DECEASED: Villatoro Majano, Orvin Jeovanhy (Giovanni Villatoro Manjano) ADDRESS: 4842 Bundy Road New Orleans, LA 70127 SEX: Male DATE AT BIRTH: Oct 15, 1976 AGE AT DEATH: 44 years 10 months 19 days RACE: White DATE AND TIME OF DEATH: Sep 03, 2021 at 14:39 PLACE OF DEATH: 4842 Bundy Rd. 4842 Bundy Road New Orleans LA, 70127 DATE AND TIME OF AUTOPSY: Sep 04, 2021 at 07:40 CAUSE(S) OF DEATH: Asphyxia Due to Carbon Monoxide Poisoning; Use of Powered Generator Inside of Home MANNER OF DEATH: Accident

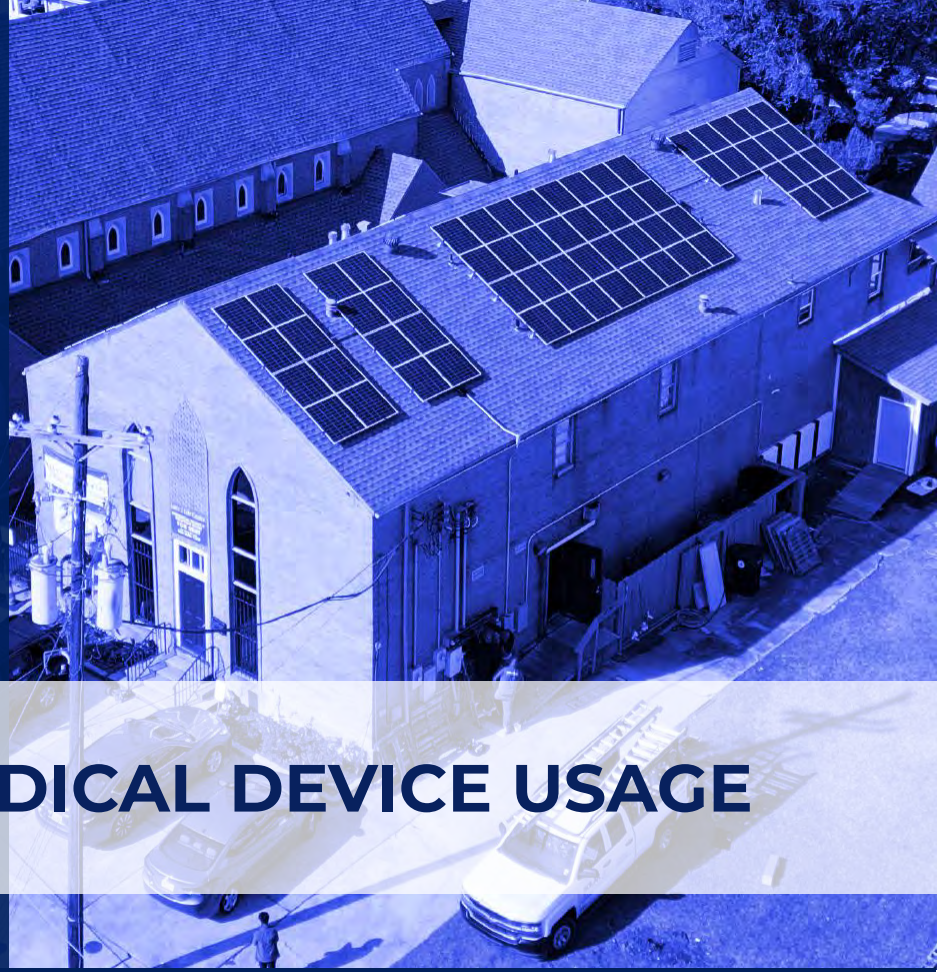


EXHIBIT F:

POWER-DEPENDENT MEDICAL DEVICE USAGE

TOGETHER NEW ORLEANS

Population with power-dependent medical devices by zip code - New Orleans

HHS emPOWER Map Historical Dataset

Link: https://empowerprogram.hhs.gov/about-empowermap.html

Includes medicare beneficiaries in valid zip codes with claim for a ventilator, BiPAP, enteral feeding tube, IV infusion pump, suction pump, power wheelchair, scooter, or electric bed in the last 13 months, an oxygen concentrator in the last 36 months, at-home dialysis in the last 3 months, or cardiac devices in the last 5 years.

Zip	Parish	State	# residents reliant on Power Dependent Devices *(December 2022)*	Total Medicare Beneficiaries *(December 2022)*
70112	Orleans	LA	28	757
70113	Orleans	LA	83	1,933
70114	Orleans	LA	211	4,489
70115	Orleans	LA	145	4,979
70116	Orleans	LA	67	2,140
70117	Orleans	LA	201	5,113
70118	Orleans	LA	150	5,370
70119	Orleans	LA	218	6,039
70122	Orleans	LA	262	7,153
70124	Orleans	LA	90	3,452
70125	Orleans	LA	81	2,409
70126	Orleans	LA	198	5,043
70127	Orleans	LA	183	4,547
70128	Orleans	LA	119	3,540
70129	Orleans	LA	54	1,537
70130	Orleans	LA	77	2,364
70131	Orleans	LA	191	4,620
70175	Orleans	LA	11	226

EXHIBIT G:

SAMPLE SOLAR + STORAGE PLANSETS

TOGETHER NEW ORLEANS

Community Lighthouse Resilience Hubs: Sample Plansets

Bethlehem Lutheran
Bethlehem Lutheran
30.78 kW PV System
1823 Washington Ave
New Orleans, LA 70113

Scope of Work
30.78 kW Enphase Roof Mounted PV System with BBU
Interconnection: Whole Home on Line Side Tie
200A Non-Fused Lockable Knifeblade Solar Disconnect

Adders
1 x Tesla Gateway 2 with Internal Generation Busbar
4 x Tesla Powerwall 2

Site Conditions
Roof Type: Shingle
Roof Height: 24'
Mounting Planes: 2
Roof Pitch & Azimuth: 18° [4/12], 57 & 237°
Utility: **ENO**

Design Details
Module: 76 x Canadian Solar CS3W-405P (1000V)
Inverter: 19 x Yotta Energy DPI-1200
Inverter Limitations: 3/string
No. branches: 7
Racking: Unirac SM Standard
Attachment: Flashkit Pro
Maximum Attachment Spacing: 72"

SOLAR ALTERNATIVES
5804 RIVER OAKS RD S,
ELMWOOD, LA 70123
PHONE: 504-267-1660

PROJECT NAME & ADDRESS
BETHLEHEM LUTHERAN CHURCH
1823 WASHINGTON AVE
NEW ORLEANS, LA 70113

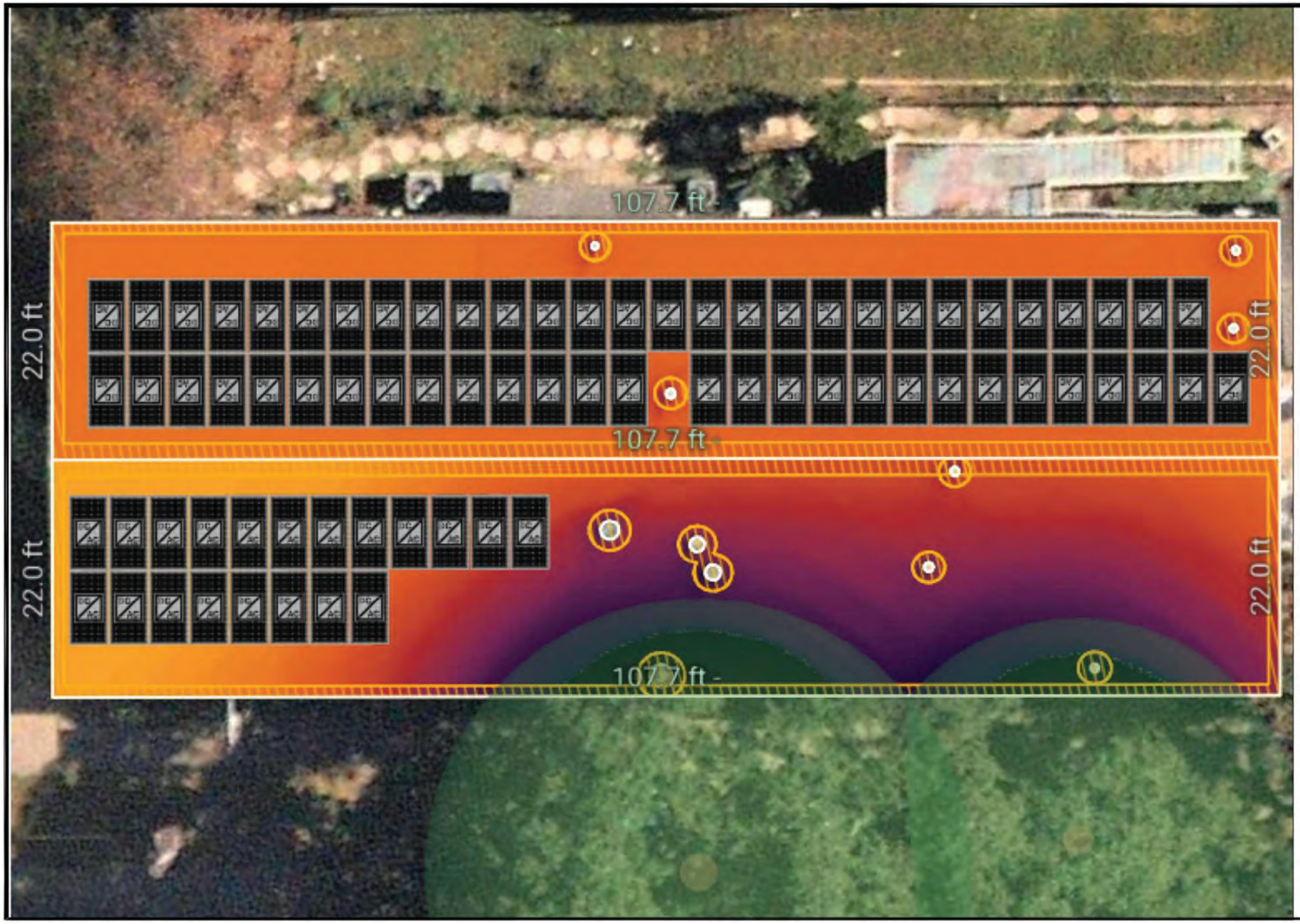
REVISIONS

DESCRIPTION	DATE	REV
MINOR CHGS	12/28/22	2.0
BESS LAYT.	12/29/22	2.1

SHEET NAME
ROOF

SHEET SIZE
ARCH D
36" X 24"

DRAWN BY
MZV



SOLAR ALTERNATIVES
5804 RIVER OAKS RD S,
ELMWOOD, LA 70123
PHONE: 504-267-1660

PROJECT NAME & ADDRESS

BETHLEHEM LUTHERAN CHURCH
1823 WASHINGTON AVE
NEW ORLEANS, LA 70113

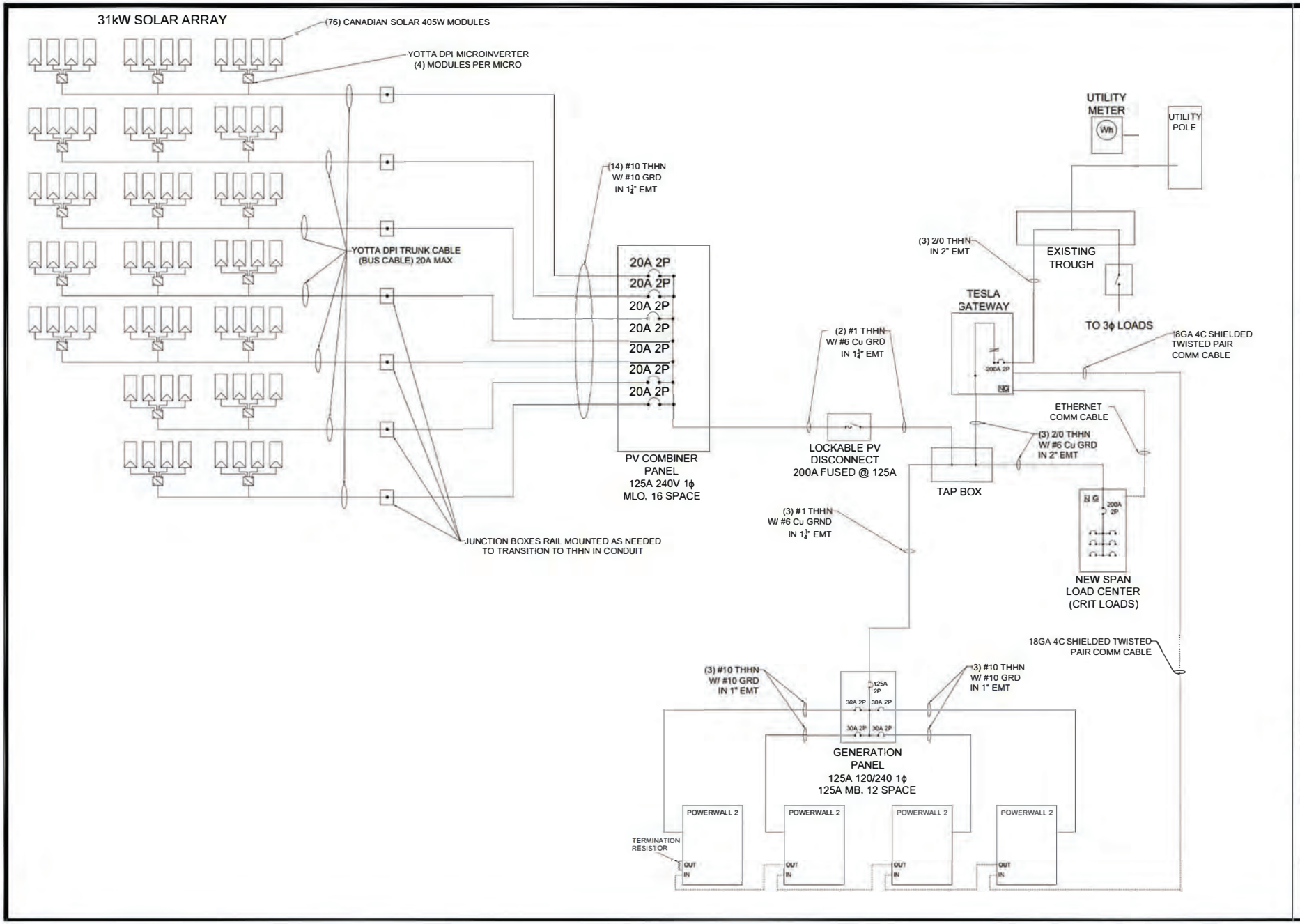
REVISIONS

DESCRIPTION	DATE	REV
MINOR CHGS	12/28/22	2.0
BESS LAYT.	12/29/22	2.1

SHEET NAME
ROOF

SHEET SIZE
ARCH D
36" X 24"

DRAWN BY
MZV



SOLAR ALTERNATIVES
5804 RIVER OAKS RD S,
ELMWOOD, LA 70123
PHONE: 504-267-1660

PROJECT NAME & ADDRESS

BETHLEHEM LUTHERAN CHURCH
1823 WASHINGTON AVE
NEW ORLEANS, LA 70113

REVISIONS

DESCRIPTION	DATE	REV
MINOR CHGS	12/28/22	2.0
BESS LAYT.	12/29/22	2.1

SHEET NAME
ONELINE A

SHEET SIZE
ARCH D
36" X 24"

DRAWN BY
MZV

SOLAR ALTERNATIVES
5804 RIVER OAKS RD S,
ELMWOOD, LA 70123
PHONE: 504-267-1660

PROJECT NAME & ADDRESS

BETHLEHEM LUTHERAN CHURCH
1823 WASHINGTON AVE
NEW ORLEANS, LA 70113

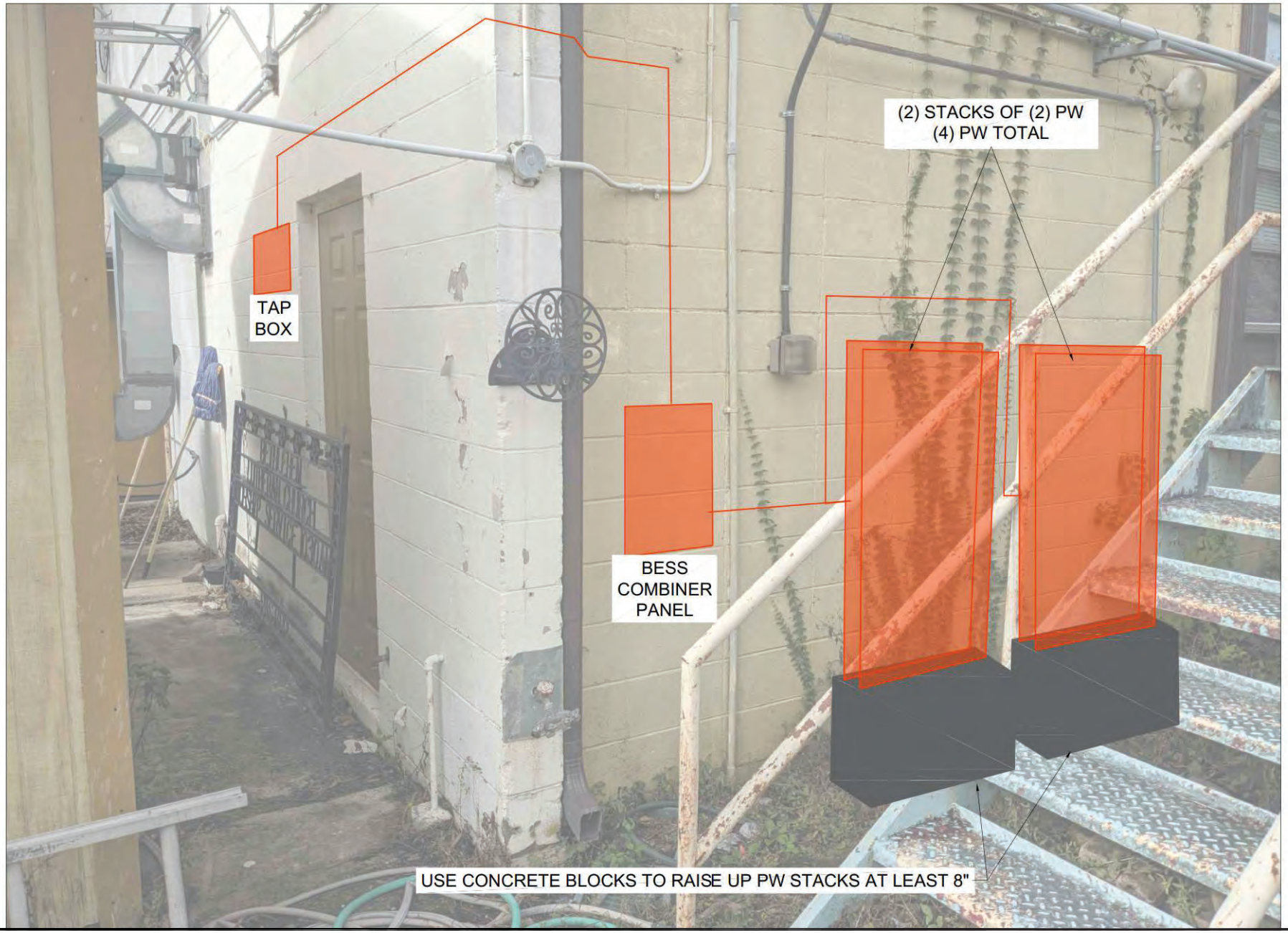
REVISIONS

DESCRIPTION	DATE	REV
MINOR CHGS	12/28/22	2.0
BESS LAYT.	12/29/22	2.1

SHEET NAME
EQUIP 1

SHEET SIZE
ARCH D
36" X 24"

DRAWN BY
MZV



SOLAR ALTERNATIVES
5804 RIVER OAKS RD S,
ELMWOOD, LA 70123
PHONE: 504-267-1660

PROJECT NAME & ADDRESS

BETHLEHEM LUTHERAN CHURCH
1823 WASHINGTON AVE
NEW ORLEANS, LA 70113

REVISIONS

DESCRIPTION	DATE	REV
MINOR CHGS	12/28/22	2.0
BESS LAYT.	12/29/22	2.1

SHEET NAME
EQUIP 2

SHEET SIZE
ARCH D
36" X 24"

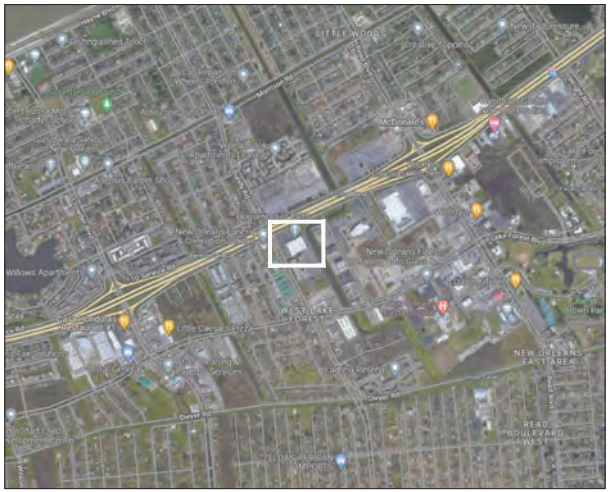
DRAWN BY
MZV

180kW ROOFTOP SOLAR ARRAY WITH
125kW/225kWh ENERGY STORAGE SYSTEM AT

Household of Faith

9300 I-10 Service Road, New Orleans, LA 70127

A Together New Orleans Community Lighthouse Project



LOCATION MAP

ROOF ARRAY PLAN

SOLAR PV SYSTEM SUMMARY

TOTAL DC SYSTEM SIZE	181.8 kW
AC SYSTEM SIZE:	150 kW
MODULE MANUFACTURER:	TALESUN
MODULE MODEL:	TP6I72M-450
MODULES PER STRING:	12, 13
MODULES QUANTITY:	404
STRING QUANTITY:	32
TILT ANGLE:	5
ARRAY AZIMUTH:	153
INVERTER MANUFACTURER:	SMA
INVERTER MODEL:	SUNNY TRIPOWER CORE1 50-US
INVERTER QUANTITY:	3

ENERGY STORAGE SYSTEM SUMMARY

BATTERY MANUFACTURER:	CURRENT ESS
BATTERY MODEL:	MG-125
MICROGRID CONTROLLER:	ELM FIELDSIGHT
BATTERY MAX POWER:	125kW
ENERGY STORAGE CAPACITY:	225kWh

SCOPE OF WORK SUMMARY

Install PV modules and rooftop racking system on roof of church building. Install inverters and electrical distribution equipment with interconnection at main service switchgear.

Install battery ESS with microgrid controller and automatic grid disconnect contactor for off-grid operation of critical loads. Battery system to be programmed for self consumption and peak shaving during on-grid use.

SOLAR ALTERNATIVES
5804 RIVER OAKS RD S
ELMWOOD, LA 70123
PHONE: 504-267-1660

ENGINEER

General Notes

PV System Specifications

DC SYSTEM SIZE:	181.8kW
AC SYSTEM SIZE:	150kW
MODULE:	TALESUN TP6I72M-450
MODULE QTY:	404
STRING QTY:	32
INVERTERS:	(3) SMA SUNNY TRIPOWER CORE1 50-US

Battery System Specifications

BESS MODEL:	MG-125
BESS MAX POWER:	125kW
BESS CAPACITY:	225kWh
MICROGRID CONTROLLER:	ELM FIELDSIGHT

Site Conditions

ROOF PITCH:	1"
MODULE PITCH:	5°
MODULE AZIMUTH:	153°
ROOF HEIGHT:	25'
BUILDING CODE:	ASCE 7-16
DESIGN WIND SPEED:	155 MPH
WIND EXPOSURE:	B

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Revisions

Project Name and Address

HOUSEHOLD OF FAITH
9300 I-10 SERVICE RD
NEW ORLEANS, LA 70127

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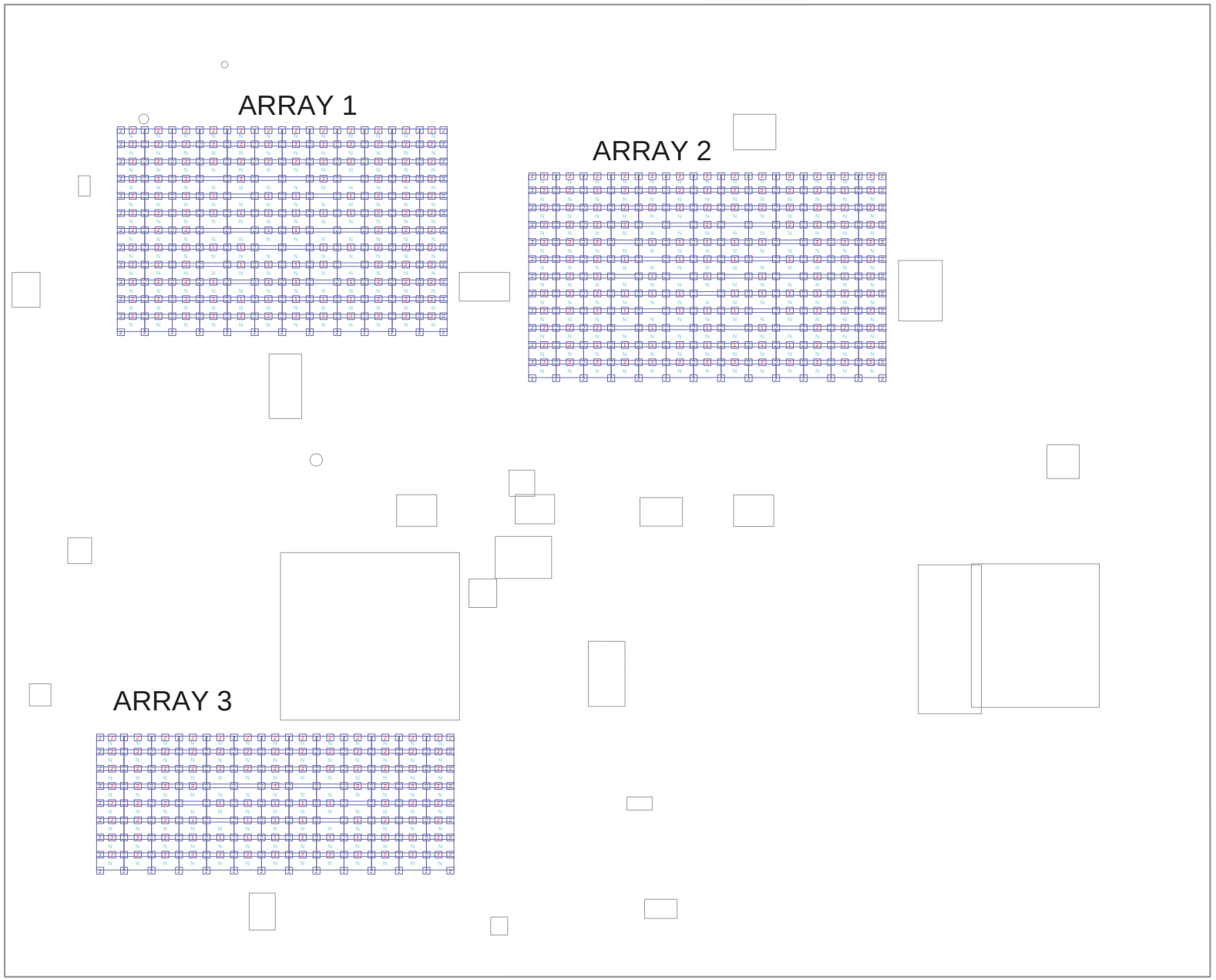

SOLAR ALTERNATIVES
5804 RIVER OAKS RD S
ELMWOOD, LA 70123
PHONE: 504-267-1660

ENGINEER

General Notes

PV System Specifications

DC SYSTEM SIZE:	181.8kW
AC SYSTEM SIZE:	150kW
MODULE:	TALESUN TP672M-450
MODULE QTY:	404
STRING QTY:	32
INVERTERS:	(3) SMA SUNNY TRIPOWER CORE1 50-US

Battery System Specifications

BESS MODEL:	MG-125
BESS MAX POWER:	125kW
BESS CAPACITY:	225kWh
MICROGRID CONTROLLER:	ELM FIELDSIGHT

Site Conditions

ROOF PITCH:	1"
MODULE PITCH:	5°
MODULE AZIMUTH:	153°
ROOF HEIGHT:	25'
BUILDING CODE:	ASCE 7-16
DESIGN WIND SPEED:	155 MPH
WIND EXPOSURE:	B

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Project Name and Address

HOUSEHOLD OF FAITH
9300 I-10 SERVICE RD
NEW ORLEANS, LA 70127

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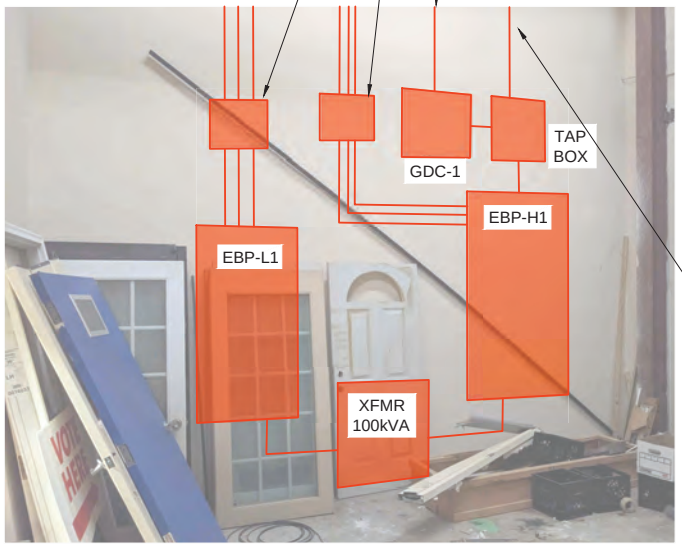

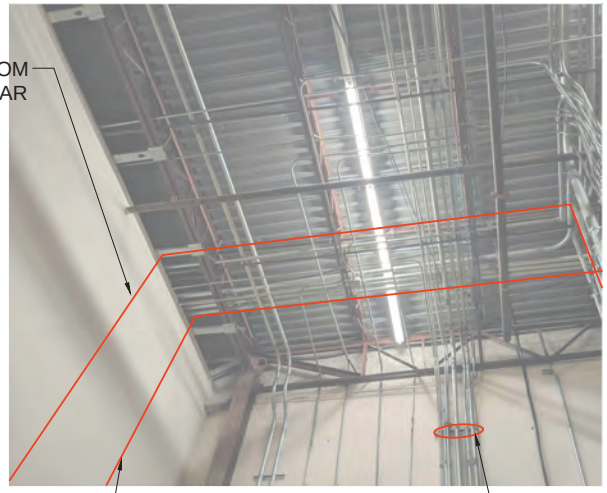

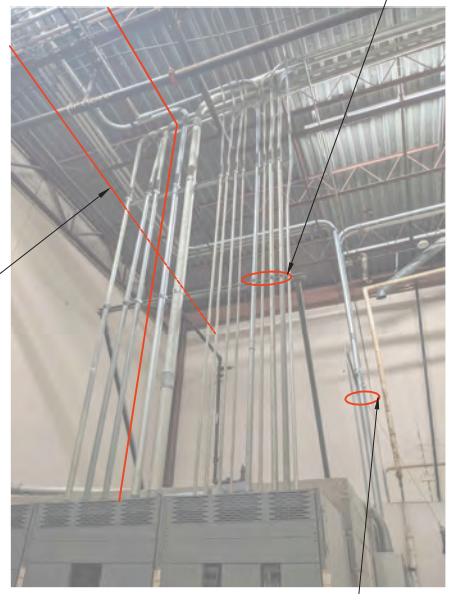

SOLAR ALTERNATIVES
5804 RIVER OAKS RD S
ELMWOOD, LA 70123
PHONE: 504-267-1660

ENGINEER

General Notes

PV System Specifications

DC SYSTEM SIZE:	181.8kW
AC SYSTEM SIZE:	150kW
MODULE:	TALESUN TP672M-450
MODULE QTY:	404
STRING QTY:	32
INVERTERS:	(3) SMA SUNNY TRIPOWER CORE1 50-US

Battery System Specifications

BESS MODEL:	MG-125
BESS MAX POWER:	125kW
BESS CAPACITY:	225kWh
MICROGRID CONTROLLER:	ELM FIELDSIGHT

Site Conditions

ROOF PITCH:	1"
MODULE PITCH:	5°
MODULE AZIMUTH:	153°
ROOF HEIGHT:	25'
BUILDING CODE:	ASCE 7-16
DESIGN WIND SPEED:	155 MPH
WIND EXPOSURE:	B

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Revisions

Project Name and Address

HOUSEHOLD OF FAITH
9300 I-10 SERVICE RD
NEW ORLEANS, LA 70127

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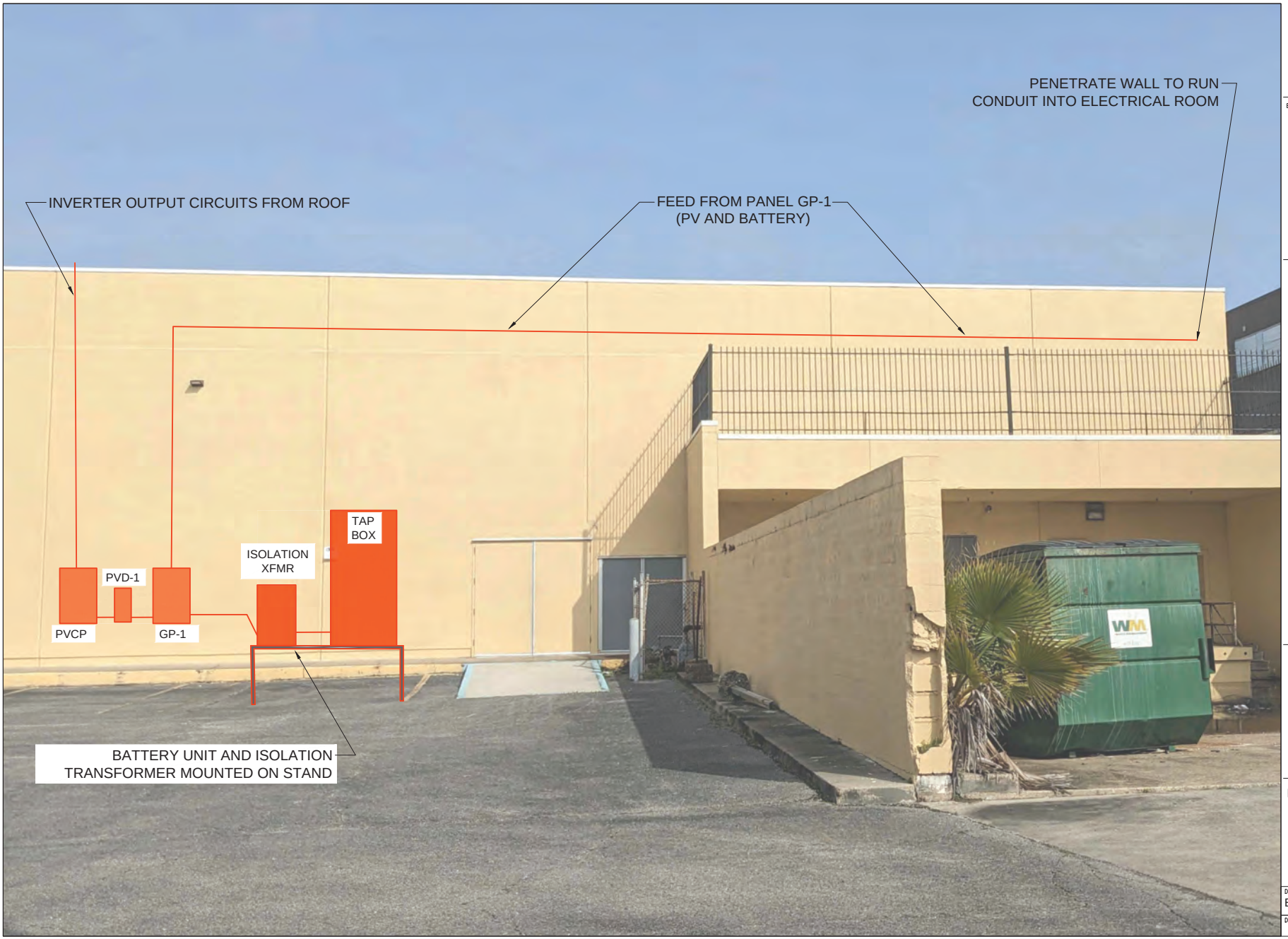

SOLAR ALTERNATIVES
5804 RIVER OAKS RD S
ELMWOOD, LA 70123
PHONE: 504-267-1660

ENGINEER

General Notes

PV System Specifications

DC SYSTEM SIZE:	181.8kW
AC SYSTEM SIZE:	150kW
MODULE:	TALESUN TP672M-450
MODULE QTY:	404
STRING QTY:	32
INVERTERS:	(3) SMA SUNNY TRIPOWER CORE1 50-US

Battery System Specifications

BESS MODEL:	MG-125
BESS MAX POWER:	125kW
BESS CAPACITY:	225kWh
MICROGRID CONTROLLER:	ELM FIELDSIGHT

Site Conditions

ROOF PITCH:	1"
MODULE PITCH:	5°
MODULE AZIMUTH:	153°
ROOF HEIGHT:	25'
BUILDING CODE:	ASCE 7-16
DESIGN WIND SPEED:	155 MPH
WIND EXPOSURE:	B

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Revisions

Project Name and Address

HOUSEHOLD OF FAITH
9300 I-10 SERVICE RD
NEW ORLEANS, LA 70127

DRAWING TITLE		DRAWING #
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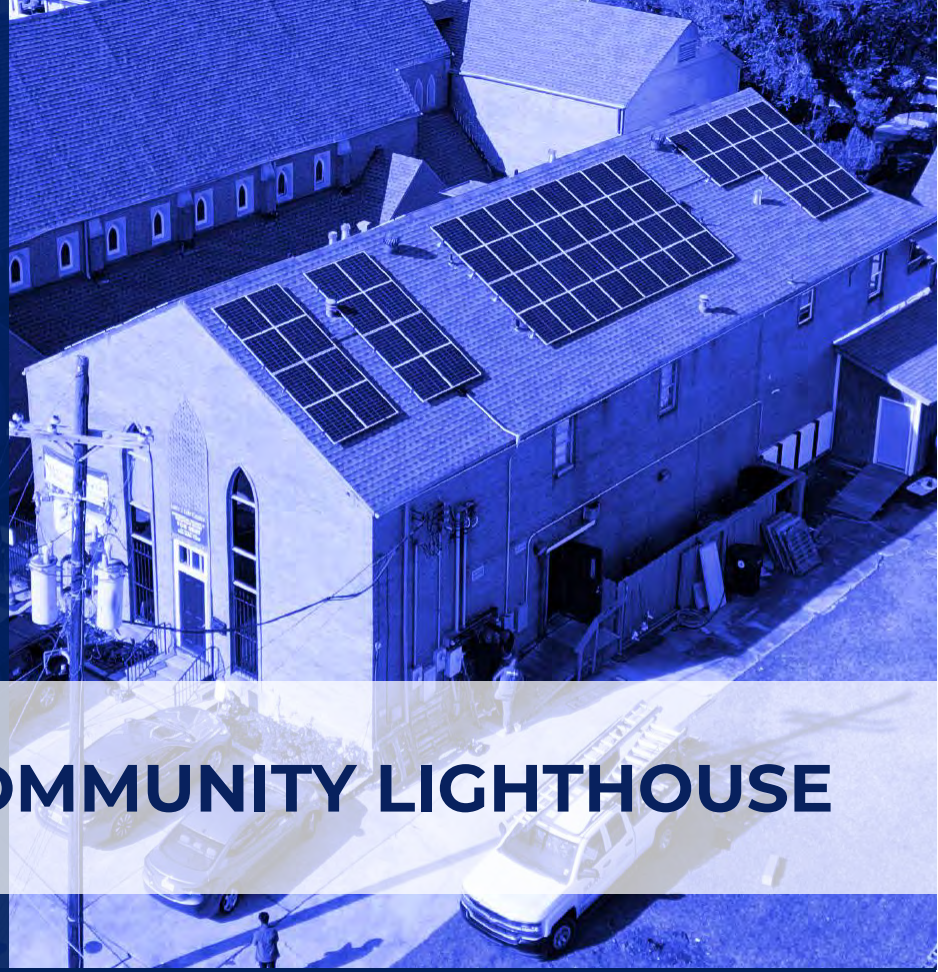
EXHIBIT H:

PRESS COVERAGE ON COMMUNITY LIGHTHOUSE



TOGETHER NEW ORLEANS

SINCE 1837

The Times-Picayune

THE NEW ORLEANS ADVOCATE

NOLA.COM | SUNDAY, MARCH 26, 2023 $2.50

STAFF PHOTOS BY SCOTT THRELKELD

Donald Clark, left, leads marchers in singing 'This Little Light of Mine' for the unveiling Saturday of a solar-powered Community Lighthouse at Broadmoor Community Church in New Orleans.

BEACON OF LIGHT

Two N.O. neighborhoods receive solar-powered storm shelters

BY ROSHAUN HIGGINS
Staff writer

Broadmoor and Central City residents could hardly stop cheering Saturday at the unveiling of two new solar-powered neighborhood shelters to use during major failures of commercial electricity, part of a drive to open 86 such safe havens — one within a 15-minute walk of every address in New Orleans.

The latest resiliency hubs are at Broadmoor Community Church and Bethlehem Lutheran Church, courtesy of the Community Lighthouse project.

They have charging stations, can accommodate light medical equipment and may serve as sites for food distribution in prolonged emergencies. Plus, they give residents a place to rest and warm up or cool off, depending on their needs and the time of year when commercial power fails in their neighborhoods.

The Rev. Gregory Manning notes that electricity for the fellowship hall has been supplied completely by solar power during the unveiling Saturday of a Community Lighthouse at Broadmoor Community Church in New Orleans.

"We're proud to have this project be the single largest community-funded project in the nation for solar-related projects," said U.S. Rep. Troy Carter, D-New Orleans. "In New Orleans we're used to being first in the places we don't want to be, so this is one we're proud to be the first in."

Community Lighthouse is an initiative of Together New Orleans, a coalition of 54 faith- and community-based organizations aiming to address issues ranging from access to healthy food to criminal justice reform. Organizers say they will have two more resiliency hubs up and running over the next three months, for a total of 16 by the peak of the 2023 hurricane season.

"As these hurricanes and other events each year put us in the dark, we will begin the process of making sure everyone

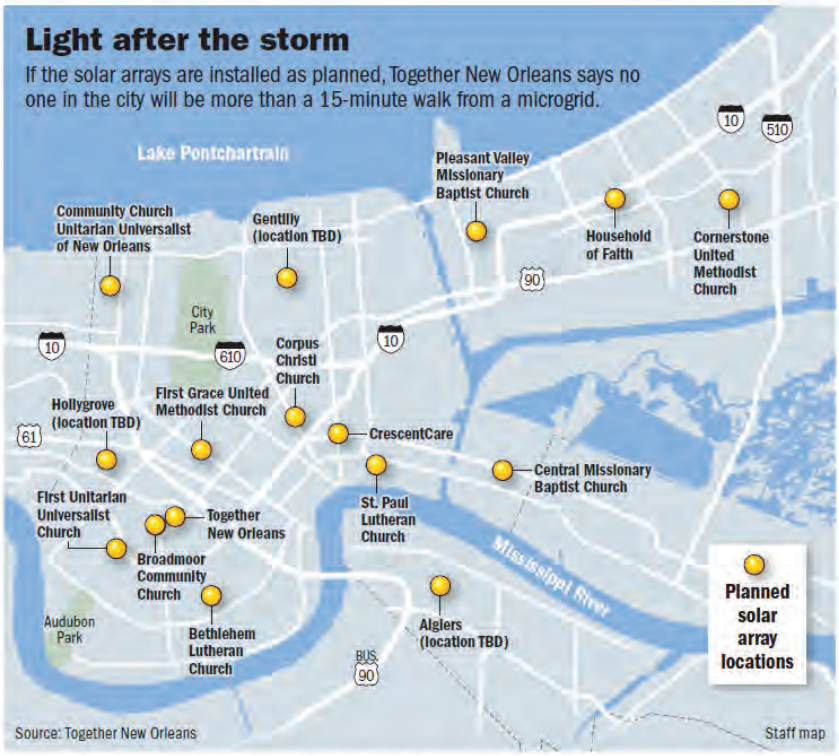
➤ See **SHELTERS**, page **2B**

STAFF PHOTO BY SCOTT THRELKELD

U.S. Rep. Troy Carter, D.-New Orleans, holds up one finger to indicate New Orleans received more federal money than any city for community projects during the unveiling Saturday of a solar-powered Community Lighthouse at Broadmoor Community Church in New Orleans.

SHELTERS

Continued from page 1B



has somewhere to see the light," City Council President JP Morrell said.

Many remember the post-Hurricane Ida landscape in New Orleans, when much of the city lost Entergy electricity service for a week.

The new "lighthouses" use solar panels to generate electricity for the building and to charge backup batteries, for when the sun isn't shining for a long period of commercial power failure.

At Broadmoor Community Church, the fully charged batteries can hold up to 7,500 watts, which can power the church for 17 hours, including air conditioning, seven deep freezers and two refrigerators.

When they're not being used for emergencies, the solar panels harvest more energy than the building needs. So the lighthouses also can send some energy back to the grid during the day.

Both churches have disaster relief teams for bad weather.

One member of the Broadmoor team, Steven Henry, joined the church just four months ago. But as someone with seven years of disaster relief experience through American Red Cross, he thought it only natural to give back to his community this way.

"During Hurricane Ida, I stayed here. I know what it was like, and I know what it's like to reach out to your neighbors," Henry said. "Following major storms, especially for those who are our most vulnerable residents ... our goal will be to reach out to them within 24 hours of a power outage."

The first 16 lighthouses are primarily funded through three major investments made in 2022:

- A $1 million donation from the Greater New Orleans Foundation
- $2 million from municipal government, via the Wisner Grant and federal American Rescue Plan Act
- $3.8 million set aside by Carter in federal law.

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STAFF PHOTO BY MAX BECHERER

New Wine Christian Fellowship in LaPlace will be equipped with solar panels on the roof as part of the 'community lighthouse' project, which plans to install panels on area locations that will serve as community emergency response hubs.

New model eyed for storm response

Project turns community locations into 'resilience hubs'

BY MATT SLEDGE
Staff writer

A LaPlace church that served food and organized volunteers after Hurricane Ida will be outfitted with solar panels in the first phase of a $40 million project to create dozens of "resilience hubs" across southeast Louisiana, officials said Tuesday.

Supporters of the far-reaching project hope that they can eventually equip up to 100 churches and community organizations with solar power and batteries. The first batch includes the New Wine Christian Fellowship and nine other locations. One goal is to create places where residents can get cool and charge up after a hurricane.

But supporters also hope to cut electricity bills throughout the year and to transform community groups like churches into disaster responders.

"We are our best selves in the wake of these storms," said Matthew Candler, a member of the group leading the solar power project, Together New Orleans. "This is a chance for us not just to survive but to thrive and provide for one another in those moments — and by the way, every single day, when our power bills drop by close to 80%."

Ida showed how important it is to have nearby staging areas after a storm but also how fragile electrical grids can be. Government leaders and community groups are increasingly looking to create "microgrids" powered by solar or natural gas to keep the power on during and after disasters.

A $1 million grant

St. John the Baptist Parish President Jaclyn Hotard and other officials who gathered inside

➤ See **RESPONSE,** page **2B**

RESPONSE

Continued from page 1B

New Wine's sanctuary on Tuesday morning were greeted by a choir singing "This Little Light of Mine."

The performance preceded an announcement by the Greater New Orleans Foundation that it is donating $1 million to kick-start what's been dubbed the "community lighthouse" project.

Together New Orleans, an advocacy group made up of churches and community organizations, began planning the lighthouse project in the first month after Ida. The foundation's money will be applied to the $4.6 million pilot phase of the project, which will equip 10 churches and community organizations with solar power and backup battery storage over the next year.

The Greater New Orleans Foundation's donation will backstop the lighthouse project, but with only half of the money raised for the pilot phase, Together New Orleans is still figuring out how to finance other sites.

One potential funding source is the $1 trillion bipartisan infrastructure deal signed into law by President Joe Biden last year. Broderick Bagert, the lead organizer with Together New Orleans, said he hopes that the pilot phase will serve as a demonstration for federal funders. Other sources could include tax credits and savings from solar power generation, he said.

Recovery hubs

In the days after Ida walloped St. John, New Wine was a major center for the parish's relief effort. The Rev. Neil Bernard and his congregation had previously coordinated food distributions and out-of-state volunteers after Hurricane Isaac, so the large church on Airline Highway needed little coaching.

When the next disaster strikes, the community lighthouse project will allow New Wine and other organizations to respond even faster, said Bernard.

Supporters say the power hubs will have a host of benefits after a storm. The electricity will turn churches into cooling centers, allow people to charge their phones and keep the power flowing for food preparation.

The project calls for more than physical infrastructure. Supporters also hope to create standing disaster response teams at the churches and community groups that are selected for the program.

People power

After Ida debilitated local power grids for days or weeks, government officials in New Orleans began considering how to install backup power on more public buildings. But Hotard said it's also crucial to create fallbacks for community groups like New Wine.

"There's only so much that government can do, and we rely on our faith-based communities, our nonprofits to come in and fill those voids," said Hotard.

In New Orleans, the goal is for the entire population to live within a 15-minute walk of one of the lighthouses. The community health nonprofit Crescent Care has received a $500,000 grant from Direct Relief to turn one of its buildings into this type of community hub.

First Grace United Methodist Church in Mid-City, Bethlehem Lutheran Church in Central City and Household of Faith in New Orleans East were highlighted in a briefing document for the New Orleans City Council that showed renderings of their roofs with solar panels.

Long-term benefits

Bagert said the group selected the solar and battery combination over alternatives like natural gas-powered generators because of the cost advantages and in recognition of the threat that climate change poses to south Louisiana. Candler noted that the price of solar power generation and backup power for nights or cloudy days have plummeted over the past decade.

Supporters of the initiative believe its benefits will extend well beyond the first days after the storm. The solar panels will be used to offset buildings' power consumption year-round, cutting their electrical bills. A portion of the savings will be applied toward ongoing maintenance.

Backers also hope that the installation of dozens of solar-and-battery setups, while small compared to the state's overall electricity demand, will catalyze an industry that has struggled in Louisiana compared to other southern states.

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Solar-powered hubs get jolt of funding

'Lighthouse' project aims to assist after hurricanes

BY MIKE SMITH
Staff writer

An ambitious new project to create a network of church "lighthouses" powered by solar panels and batteries for community use after hurricanes throughout the New Orleans area and beyond has been given a jolt of funding — but more money is still needed.

At a packed church in New Orleans East on Tuesday, local leaders and community activists from the Together New Orleans advocacy group symbolically approved the project that officials said aims to create the world's largest network of resilience hubs — a model that could be replicated elsewhere. The pilot phase of the project envisions equipping 24 locations, mostly churches, including 16 in the city and eight around Louisiana.

"The Dutch might come here to see how we do it," said the Rev. Shawn Anglim, of First Grace United Methodist Church — just as New Orleanians visited the Netherlands after Hurricane Katrina to learn how to build world-class levees.

Total funding pledged so far amounts to around $10 million, including Mayor LaToya Cantrell's $1 million commitment from the city's Wisner fund and U.S. Rep. Troy Carter's announcement Tuesday of a federal earmark of $3.8 million. The Greater New Orleans Foundation also is donating $1 million.

That's enough to finance about 15 locations, said Pierre Moses, of 127 Energy, the project developer. A total of $13.8 million is being sought.

Tuesday's event at Household of Faith Family Worship church saw rousing speeches and testimony from residents underscoring the need for such centers. One spoke of carbon monoxide poisonings; another man described a medical condition that causes his body to overheat.

Together New Orleans said of the 20 deaths in the New Orleans area during Hurricane Ida last summer, 18 were the result of power outages.

Cantrell said "renewable energy has to be not only in our future, but right now."

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HUBS

Continued from page 1B

"The future of this city not only is bright, but, hey, it is lit," she said to cheers and applause.

Together New Orleans' leaders envision the locations serving as charitable aid stations when utility-provided power fails.

The scope of the pilot "community lighthouse" project has more than doubled since it was unveiled last month, when its architects envisioned using $4.6 million to outfit 10 churches with solar panels and backup batteries.

The hope is that people near the houses of worship would have a nearby source of working power where they might be able to seek aid, get something to eat and, perhaps most importantly, recharge lifesaving medical devices. Some 2,283 New Orleanians rely on electrically powered medical devices to survive, the group said.

The group is hoping to secure additional funding through the $1.2 trillion infrastructure bill passed by Congress last year. The project was one of 14 selected by the U.S. Department of Energy to receive technical assistance, according to Together New Orleans' lead organizer Brod Bagert, which the group views as a hopeful sign.

If the project is built as designed, the group says almost all city residents would be within a 15-minute walk of one of the churches. For churches, a key ancillary benefit of the project would be that they will save a significant amount of money on their utility bills year-round, not just after power outages.

Leaders of the group said the project had its genesis in the suffering so many residents endured after Ida.

In addition to 16 locations across New Orleans, the group envisions putting solar arrays at eight other locations around the state, in Caddo, Rapides, East Baton Rouge, St. John the Baptist, Jefferson, Terrebonne, Calcasieu and St. Bernard or Plaquemines parishes. Only three of those locations have been selected to date: McKinley Alumni Center in Baton Rouge, New Wine Fellowship in LaPlace and Mount Olive Baptist Church in Lake Charles.

Staff writer Gordon Russell contributed to this report.

Email Mike Smith at MSmith@theadvocate.com or follow him on Twitter at @MikeJSmith504.

STAFF PHOTO BY MAX BECHERER

Luis Barahona, who has an illness that makes it hard for him to regulate his temperature, moves past Mayor LaToya Cantrell, state Sen. Joseph Bouie Jr. and City Council member Helena Moreno after speaking about the dangers he faces when the power goes out during a disaster as part of a presentation of the Community Lighthouse Project on Tuesday in New Orleans. The initiative plans to connect neighborhood centers fitted with solar power that people can come to for aid during an emergency.

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VOLUME 43 NUMBER 3 ■ NEWORLEANSCITYBUSINESS.COM Part of the BridgeTower Media network JULY 29-AUGUST 11, 2022 ■ $2.00

Storm resilience projects gain steam

TOMMY SANTORA
CONTRIBUTING WRITER

Entergy vice president of system resilience Sean Meredith and his team partnered with technologists from 1898 & Co., a division of Burns and McDonnell, to run a Monte Carlo simulation to determine long-term effects of intensified storms on New Orleans' grid.

"We ran 1,000 simulations over the next 50 years to determine how our assets, status quo, would hold up against intensified storms, compared to how we would do if we made long-term resilience and hardening investments to withstand intensifications," said Meredith. "We asked, how much does outage duration and recovery time

SEE **STORM** PAGE 8

Entergy New Orleans crews and contractors transport and install a 168,000-pound transformer at the Avenue C Substation in Lakeview. This was the first phase of a multi-month project to upgrade the Avenue C Substation. Photo courtesy Entergy New Orleans

'Lighthouses' to serve as resilience hubs

Together New Orleans, backed by federal funds, Greater New Orleans Foundation, Direct Relief and the U.S. Department of Energy are coordinating a $40-million, 85 resilience hub or "lighthouse" network, powered by commercial-scale solar systems with back-up battery capacity. The first phase, already financed, will build 24 lighthouses at churches and community centers, including 16 in New Orleans. There will be charging stations, battery distribution, cooling/heating stations and oxygen exchange/light medical equipment availability. Construction is expected to begin in the second quarter of 2023.

"The Community Lighthouse Project will provide our nonprofit partners with critical tools and resources to respond faster – with the electricity they need – so they can provide food, water, supplies, and be a place or refuge for our region's residents in their time of greatest need," said Andy Kopplin, president and CEO of the Greater New Orleans Foundation.

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Solar 'lighthouses' provide power to powerless

DISASTER | For those left behind in emergencies, a source of mobility, communications.

By REBECCA SANTANA
The Associated Press

LaPLACE, La. — Enthusiastic church volunteer Sonia St. Cyr lost something she treasures during the blackout caused by Hurricane Ida — her independence, afforded her by the electric wheelchair she expertly maneuvers over bumpy city sidewalks.

"After Ida I was housebound," said St. Cyr, who has multiple sclerosis. Having no electricity, she did her best to conserve power on her wheelchair, going only to the end of her block or sitting on her porch after the storm made landfall last August 29.

It took 10 more days before all of the habitable homes in New Orleans had electricity again. With the lights out and nothing open in her Broadmoor neighborhood of New Orleans, "It was not fun."

A project launching in southeast Louisiana aims to help people like St. Cyr who are especially vulnerable during extended power outages as the warming climate produces more extreme weather including bigger and wetter hurricanes.

"Community Lighthouses," outfitted with roof solar panels and a battery pack to store energy, can serve as electricity hubs after a disaster, enabling neighbors to recharge batteries, power up phones or store temperature-sensitive medications.

They're being sponsored by Together New Orleans, a nonpartisan network of churches and groups that tries to fix community problems.

REBECCA SANTANA / THE ASSOCIATED PRESS

Sonia St. Cyr, 74, of New Orleans, could not charge her electric wheelchair after a hurricane a year ago. A new program is designed to help recharge essential devices.

REBECCA SANTANA / THE ASSOCIATED PRESS

Neil Bernard, pastor of New Wine Christian Fellowship in LaPlace, Louisiana, is a leader in the Community Lighthouse program, designed to outfit select locations in southeast Louisiana with solar panels and batteries.

Organizer Broderick Bagert said they felt "impotent and powerless" as the city struggled to deliver basics like garbage collection in Ida's aftermath. They realized that local governments couldn't handle everything alone.

"You can spend a lot of time saying … 'Why don't they?' " said Bagert. "But you start to realize the real question is 'Why don't we?'"

More than just energy hardware, each lighthouse needs a team of volunteers to study their areas, learn who has health problems and who needs medication refrigerated or who depends on electric wheelchairs for mobility. While people with means can evacuate ahead of a hurricane, about one in four people live in poverty in New Orleans, and not everyone can afford to flee. Hurricanes are also forming more quickly due to climate change, making it more likely that people can find themselves stuck in a disaster zone.

Each lighthouse should be able to connect with all of its neighborhood's vulnerable people within 24 hours of an outage, Bagert said.

"This is not all about batteries and solar panels. There are some other batteries and solar panels made by the hand of God, and that is called the human personality," the Rev. JC Richardson, pastor of Cornerstone United Methodist Church, said during an event announcing one of the locations.

The pilot phase anticipates 24 sites — 16 in New Orleans and eight elsewhere in Louisiana. They've raised nearly $11 million of the anticipated $13.8 million cost with help from the Greater New Orleans Foundation, the city, federal funding and other donations.

Jeffrey Schlegelmilch, director of the National Center for Disaster Preparedness at Columbia University, said systems that can operate independent of the power grid — often referred to as microgrids — are becoming more popular as businesses and communities address climate change by trying to reduce their carbon footprint or secure backup electricity.

"We're expecting more extreme weather. We're expecting more stress on the grid," he said. It's particularly important to have such hubs in places with high levels of chronic disease, where outages can take an outsized toll, he said: Keeping them powered up could mean fewer people in ambulances.

An Associated Press analysis found that weather-related outages doubled over the past two decades. Louisiana is one of three states experiencing a 50% increase in outage duration.

Pastor Neil Bernard anticipates helping many more people at his New Wine Christian Fellowship in the New Orleans suburb of LaPlace. The church is a designated shelter of last resort in St. John the Baptist Parish, which was hard-hit during Ida.

Keeping New Wine's generator fueled and maintained was a challenge after Ida. Now the church will benefit year-round: Once the lighthouse is installed, Bernard anticipates saving $3,000 a month on energy bills.

Hurricanes aren't the only extreme weather that's triggering interest in microgrids. Experts say there's growing interest in California, where utility companies sometimes preemptively de-energize power lines when conditions are ripe for wildfires.

Ice and wind storms as well as tropical weather can cause blackouts in places like Baltimore, which launched a similar project in 2015. The city has four locations fully outfitted with solar power and battery backup systems, and aims to have 30 in three years, the city's climate and resilience planner, Aubrey Germ, said in an email.

CrescentCare lost $250,000 in medicines and vaccines in Ida's aftermath. The New Orleans-based health care center had two generators when Hurricane Ida hit, but one failed and they couldn't get enough fuel to run the other, said CEO Noel Twilbeck.

Now, the center will serve as one of the first "Lighthouses" in the area.

The solar panels are designed to withstand 160-mph winds, said Pierre Moses, the president of 127 Energy, which finances and develops renewable energy projects. He's also a technical consultant to the Community Lighthouse effort.

Direct Relief, one of the donors financing the lighthouse project, didn't aim to be an energy provider — it began funding microgrids after being asked repeatedly to pay for generators and fuel after hurricanes.

The humanitarian aid group's president and CEO, Thomas Tighe, sees the value now that medical records are computerized and more people need energy-dependent devices such as dialysis machines and oxygen.

E&E NEWS

Spending bill earmarks to fund solar project bonanza

By **Jeremy Dillon** | 12/23/2022 06:35 AM EST

Solar projects for local government buildings and facilities are set to spread across New Hampshire and other states in fiscal 2023 thanks to special funding requests by lawmakers from across the country.

Sen. Jeanne Shaheen (D-N.H.), for example. secured funding for six solar installation projects in her home state as part of the year-end omnibus spending package that passed the Senate on Thursday and will clear the House on Friday.

In all, lawmakers used the revived earmarking process to fund 50 solar projects for the current fiscal year, a twofold increase from 19 projects funded by the fiscal 2022 spending package earlier this year.

The latest omnibus would allocate 153 earmarks for projects under the Department of Energy's purview — that's up from 72 allotted in fiscal 2022, according to an E&E News review.

Solar installation earmarks far outpaced other energy earmarks, including money for efficiency upgrades, electric vehicle charging stations, geothermal deployment and hydrogen production, among others.

For New Hampshire, that means funding to install solar panels at the YMCA of Greater Nashua, at a health care facility in Keene and at an elementary school in Gorham, among other locations. In total, Shaheen secured nearly $1.9 million for solar installations across her state.

"Congressionally directed spending is an important, bipartisan process that helps ensure local projects aren't overlooked and levels the playing field for smaller states like New Hampshire to get their fair share of federal resources," Shaheen said in a press release touting her earmark haul.

Shaheen in fiscal 2022 secured funding for two solar projects in landfills, costing approximately $1 million. Her colleagues apparently took notice.

In total, the fiscal 2023 bill would allocate just over $50 million in solar-related earmarks. That's up from $22 million in the last omnibus.

While Shaheen led in total number of projects, other lawmakers secured more money. Spread across two projects, Sen. Tammy Baldwin (D-Wis.) led the field with $4.5 million in solar earmarks. The spending is set for solar installations for the city of Kenosha, Wis., and an apartment building in Madison, Wis.

"By working with folks from across Wisconsin, I am proud to deliver federal support that responds to the unique needs of so many different communities," Baldwin said in a statement posted to Twitter.

The largest single earmark went to Rep. Troy Carter (D-La.) at $3.8 million. Sponsored by Together New Orleans, the money would go to "establish a network of disaster resilience hubs with solar power and back-up batteries at churches and civic institutions that will remain online after a disaster," according to Carter's earmark proposal.

Democratic leaders were able to secure funding for projects.

The second-largest single earmark for a solar project went to outgoing House Speaker Nancy Pelosi (D-Calif.), who was able to secure a $3 million earmark to build a solar and battery storage project on behalf of the Golden Gate National Parks Conservancy.

Senate Majority Whip Dick Durbin (D-Ill.) secured $2.4 million for two projects. Incoming House Minority Whip Katherine Clark (D-Mass.) secured $1.5 million for one project.

Of the 50 solar earmarks, only three went to Republicans.

Two of those came as part of a joint earmark from West Virginia Sens. Shelley Moore Capito (R) and Joe Manchin (D).

Other Senate Republicans did secure other energy project earmarks for things related to hydrogen production and biofuels.

The majority of Republicans, especially House Republicans, rebelled against submitting earmark proposals. They oppose a practice they see as corrupt and costly. But despite the shunning, House Republicans did not eliminate earmarks as part of their rules for the next Congress.

Rep. Andrew Garbarino (R-N.Y.) was the lone House Republican to secure a solar-related earmark. Garbarino received $1 million for a solar project in Oyster Bay, N.Y., that would help the energy costs of an ice-skating rink.

"All of the Community Funding Projects I submitted were requested by my constituents, and, as is required by this process, came with proof of community support and public benefit," Garbarino said in a statement to E&E News.

"This particular request was submitted by the Town of Oyster Bay so they can utilize solar power to reduce energy costs and extend the hours of operation for a local ice rink, the additional revenue from which will present financial relief to the town."

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POWER STRUGGLE

America's Backup Plan

Wary of being left in the dark, homeowners and businesses are increasingly producing their own power—if they can afford to

By Jennifer Heller

As the American electric grid becomes less dependable, a growing number of businesses and homeowners are buying their own power systems to protect themselves from being left in the dark.

Twenty years ago, only 0.57% of U.S. homes worth $150,000 or more had installed backup generators, mainly along hurricane-prone coastlines, according to backup-power provider Generac Holdings Inc. Now the number is 5.75%, a 10-fold increase.

Manufacturers delivered more than 143,000 generators last year in North America, up from 138,778 in 2015, despite pandemic-related supply-chain logjams, said Lucrecia Gomez, a research director at consulting firm Frost & Sullivan. Microgrids, which can create islands of power for campuses, businesses or neighborhoods amid a blackout, grew more than sevenfold between 2010 and 2019, according to the industry group Edison Electric Institute.

Many entrepreneurs now consider secondary power systems to be a necessary cost of doing business. Steve Peterson, who owns Hungry Howie's Pizza franchises in Michigan, learned their value in 2003, when a massive blackout knocked out power to much of the Midwest and Northeast. Mr. Peterson had invested in backup generation—and said he had lines of people who wanted a hot meal stretching 200 to 300 feet out the door.

"It was like people were waiting in line for concert tickets," Mr. Peterson said, adding that the generators paid for themselves in a few days. Since then he has grown from about four locations to 15 in Michigan, all with backup power.

The backup power system at a Hungry Howie's franchise paid for itself within days.

New systems cost around $25,000 per location, he said, but help avoid the seven to eight power outages each year that would otherwise cause him to throw out food. "You can sleep at night," he said.

Reliability isn't the only driver of the power-independence trend. The cost of renewables have fallen enough that some companies are adding on-site renewable energy to reduce their use of power from the electric grid or to meet corporate sustainability goals.

Whirlpool Corp. installed wind turbines near a dishwasher factory in Findlay, Ohio, where a large share of electricity generation comes from coal, after it started tracking its greenhouse gas emissions. The turbines don't supply all of the factory's power, but provide electricity at a locked-in price for 20 years.

"It's not just green," said Ron Voglewede, global sustainability lead at Whirlpool. "It's also just cheaper."

The ability to add battery systems to homes to store large amounts of power is a relatively new market, tied to the rise in solar-panel installation. While battery costs have plummeted, adding them often extends the time it takes for home solar to pay off, said Chloe Holden, an analyst with Wood Mackenzie. People are installing them nonetheless.

After a winter storm knocked out power to most of Texas last February, home solar company Sunrun Inc. said traffic to its website spiked 350%. In California, the company said orders for solar paired with battery storage rose following devastating wildfires and policies by utilities such as PG&E Corp. to shut off electricity in certain areas during high winds to reduce the risk that downed power lines could spark fires.

Microgrids such as those sold by Enchanted Rock Holdings LLC provide backup power for customers such as grocers, data centers and water plants that never want to go dark. The natural gas-powered systems can operate independent of the grid or sell power into the grid when electricity prices are high. New customers have included pharmaceuticals manufacturers and senior-living centers—the kind of businesses that used to consider outages "a one-off and nothing really to protect against," said the company's chief executive, Thomas McAndrew.

Houston's Holly Hall Retirement Community experienced about four eight-hour outages each year before installing one of the microgrids. Now, "the lights don't even flicker" during storms, said Amy S. Ward, a senior director at Holly Hall.

The nonprofit previously depended on diesel generators, but running out of fuel would have required an evacuation—and potentially imperiled the health of residents, many of whom rely on medical devices that need power to operate. During last year's winter storm, with the power out across much of Texas, residents stayed warm and the microgrid fed power into the state grid. Holly Hall touts the consistent power supply on its website: "Take a deep breath, and relax," it reads.

After losing power and discovering that his fireplace was "more for decoration" than warmth during the Texas freeze, Tyler Troutman invested about $10,000 in a generator that will keep the power on the next time the grid fails. "Both my wife and I work from home, so we have Zoom meetings," Mr. Troutman said.

Not everyone can invest in backup power, though. When Hurricane Ida knocked out the eight transmission lines carrying electricity into New Orleans in September, many people spent days in the dark.

Brenda Lomax-Brown, president of the city's Hollygrove-Dixon Neighborhood Association, said median incomes of around $30,000 made it difficult for many in the area to evacuate or afford generators. Challenges included spoiled food, the inability to refrigerate medicine, and the difficulty for the elderly to find a place to stay cool. Cell phones died and cut off communications.

"People were desperate," said Ms. Lomax-Brown.

New Orleans nonprofits are now stepping in to try to provide emergency power. Together New Orleans, a coalition of religious and civic groups, is raising money to add rooftop solar with batteries to 85 congregations and community centers. Their goal is for everyone in New Orleans to be a mile or less away from what they are calling "community lighthouses," said Gregory Manning, pastor at Broadmoor Community Church.

"You get the ordinary benefits of solar, but if and when the grid goes out, you've got a real network that can respond," said Together New Orleans organizer Broderick Bagert.

Another nonprofit, Feed the Second Line, has launched a "Get Lit, Stay Lit" effort to add similar systems to neighborhood restaurants.

"After a major hurricane, there's no gasoline, there's no driving around the city. The logistics are impossible," said Feed the Second Line board member Devin De Wulf. "What we need is to go block by block, neighborhood by neighborhood and make sure that there's little hubs of resiliency that are already built in."

The backup system at the Holly Hall Retirement Community, above, has become a selling point for residents, right. Pastor Gregory Manning and Broderick Bagert, below, want to bring solar power to 85 New Orleans spots, like the Broadmoor Community Church, bottom.

MEREDITH KOHUT FOR THE WALL STREET JOURNAL (2); KATHLEEN FLYNN FOR THE WALL STREET JOURNAL (2)